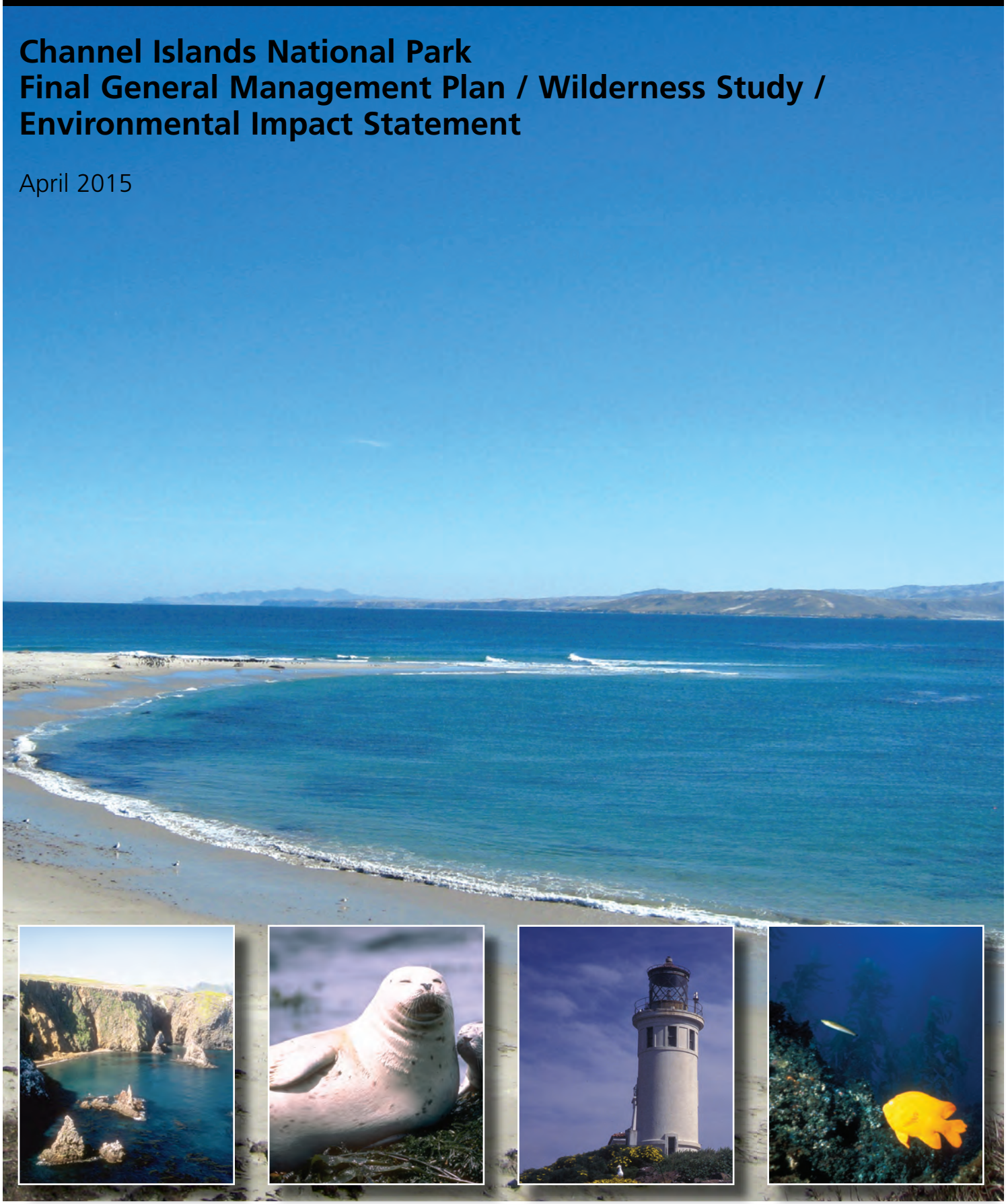
National Park Service
U.S. Department of the Interior

Channel Islands National Park
California

Channel Islands National Park
Final General Management Plan / Wilderness Study / Environmental Impact Statement

April 2015



Final
General Management Plan / Wilderness Study / Environmental Impact Statement
Channel Islands National Park
Ventura and Santa Barbara Counties, California

SUMMARY

The purpose of this Final General Management Plan / Wilderness Study / Environmental Impact Statement (plan/EIS or this plan) is to clearly define a direction for resource preservation and visitor experience at Channel Islands National Park over the next 20 to 40 years.

Presented and analyzed within this plan are three alternatives for the management and use of Channel Islands National Park. The alternatives present different ways to manage resources and visitor use and to improve facilities and infrastructure at Channel Islands National Park. The alternatives are based on the purpose and significance of this 250,000-acre park and include issues and concerns identified by the public and National Park Service (NPS) staff as part of the initial planning efforts.

PURPOSE AND NEED FOR A GENERAL MANAGEMENT PLAN

A general management plan for Channel Islands National Park is needed to fulfill the following purposes:

- Confirm the purpose and significance of the national park.
- Clearly define resource conditions and visitor experiences to be achieved in Channel Islands National Park.
- Provide a framework for park managers to use when making decisions about such issues as how to best protect national park resources, how to provide a diverse range of visitor experience opportunities, how to manage visitor use, and what kinds of facilities, if any, to develop in the national park.
- Ensure that this foundation for decision making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action.
- Serve as the basis for later more detailed management documents, such as five-year strategic plans and implementation plans.

The Park Service has identified five goals that this planning effort would address. Specifically, the goals of this plan are to:

- restore and maintain natural ecosystems and processes;
- preserve and protect cultural resources;
- provide opportunities and access for the public to experience and connect to the park;
- promote stewardship of park resources; and
- administer the park efficiently and effectively.

PLANNING PROCESS

The process of preparing this GMP/EIS for Channel Islands National Park began in November 8, 2001 with publication of a "Notice of Intent" to prepare an environmental impact statement in the *Federal Register*.

A notice of availability of the *Channel Islands National Park Draft General Management Plan/Wilderness Study/Environmental Impact Statement* was published in the November 14, 2013 *Federal Register*. The public comment period on the draft plan ran from November 8, 2013 through March 10, 2014. Public meetings on the draft plan were held at the park headquarters on December 3, 2013, and at Santa Barbara on December 4, 2013. The park headquarters meeting also included a public hearing for the wilderness study, as required under the Wilderness Act.

Any long-term park management program needs to address a number of key issues and questions. The major issues that were raised for this plan are:

Access to the Islands

Access across the sea to the islands is expensive and difficult. The islands are only accessible by park concessioner boats and planes or private boats. The issue this plan needs to answer is whether more opportunities for public access should be provided to the islands.

Access on Santa Rosa Island

This issue addresses the question of the level and type of access that should be provided to visitors. Santa Rosa is a relatively large island. When most visitors are dropped off at Bechers Bay they are now faced with walking long distances to see the 53,000-acre island.

Type and Level of Recreation Development that is Appropriate on the Islands

This issue addresses the question of the appropriate balance of developments that should be provided for visitors (i.e., the general types and intensities of development needed to provide for public enjoyment of the park, while assuring negligible impacts on park resources).

Providing Sustainable Park Operations

This issue focuses on whether the existing administrative and operational facilities are functioning effectively and efficiently, meeting the needs of both park staff and visitors.

Designation of Wilderness

To fulfill the requirements of the park's enabling legislation and the Wilderness Act, the Park Service must determine whether any lands in the park should be proposed for inclusion in the National Wilderness Preservation System.

Climate Change

This plan primarily focuses on the climate issue of the anticipated effects of climate change on the park's resources and visitors.

With publication of the Final General Management Plan / Environmental Impact Statement, the Park Service presents a range of alternatives, including the NPS preferred alternative, for managing Channel Islands National Park. The alternatives are summarized here, and explained in further detail in Chapter 2.

ALTERNATIVES

The alternatives in this plan were all developed using the desired conditions. Some components of each alternative may meet the desired conditions more successfully than another alternative.

In addition to the components of each alternative, management zones were developed to help define the management approaches to be achieved and maintained in each area of the park. Seven management zones have been developed for Channel Islands National Park, and these zones are applied to different islands of the park in each action alternative:

Terrestrial Zones

- Backcountry
- Cultural Landscape
- Frontcountry

- Administrative

Marine Zones

- Marine Stewardship
- Marine Protected (State Marine Reserves)
- Marine Protected (State Marine Conservation Areas)

The following sections describe the basic concept of each of three alternatives, and summarizes the differences between alternatives. A detailed discussion of management zones and alternatives for each park area and for the park's wilderness is included in Chapter 2 and summarized in Table 17.

Alternative 1: The No Action Alternative

The no action alternative, alternative 1, is required by the National Environmental Policy Act and provides the baseline from which to compare other alternatives. Under this alternative, there would be no major change in the management direction of the islands. All facilities, resource programs, and visitor opportunities would continue as they are. None of the park would be proposed for wilderness designation.

Summary of Impacts from Implementing Alternative 1. Impacts resulting from the no action alternative would be mostly negligible to minor and adverse for natural resources. Localized moderate adverse impacts on water quality are possible from boat discharges in marine waters and disposal of human waste on Santa Rosa Island. Flooding in Scorpion Valley could have moderate impacts on human life and property. Moderate impacts on marine and terrestrial wildlife on Santa Rosa and Santa Cruz Islands due to increased use by boaters on beaches are possible. Alternative 1 may affect, but is unlikely to adversely affect, threatened and endangered species.

The visitor experience and recreational opportunities would remain relatively unchanged with minor to moderate and beneficial effects. Limited interpretive and educational media and crowding could detract from the visitor experience, resulting in minor to moderate impacts on visitor use. No effect on the soundscape is likely except for localized areas where moderate adverse impacts are possible due to concentrations of visitors, boats, and park operations. The no action alternative would have negligible to minor adverse impacts on the wilderness character of lands eligible for wilderness.

Minor adverse impacts on archeological resources are possible, while minor beneficial effects are expected for historic structures and ethnographic resources. Impacts on cultural landscapes would be minor to moderate from historic vegetation removal.

Moderate adverse impacts on park operations would occur due to inadequate funding and staffing to manage the large and spread out marine and terrestrial park.

Alternative 2

Alternative 2 emphasizes ecosystem preservation, restoration, and preservation of large expanses in relatively pristine resource conditions. Resource stewardship including ecosystem preservation and restoration, and preservation of natural landscapes, cultural landscapes, archeological resources, and historic structures would continue to be emphasized. Increased recreational opportunities would be provided for visitors to enjoy and appreciate the park.

Under alternative 2, 66,576 acres of the park would be proposed for wilderness designation, primarily on Santa Rosa and Santa Cruz Islands.

Minimal new development would occur on the islands; however, limited new facilities might be built on the islands for specific

resource protection, research, management, or visitor services. There would be few changes in the transportation methods used to reach the islands or travel on the islands. Marine areas and resources would continue to be managed to protect ecosystems and biological diversity.

Partnerships would be expanded with governmental agencies, educational institutions, and others to bring the island experience to the public and facilitate educational opportunities, resource stewardship, and research.

Commercial services that use sustainable practices and were more ecologically sensitive in their operations would be encouraged.

Summary of Impacts from Implementing Alternative 2. Alternative 2 would have both minor to moderate adverse and beneficial impacts on natural resources. Removal of roads and restoration of the landscape on Santa Rosa Island would have beneficial effects on fresh water quality, while discharges from visitor boats would have minor effects on marine water quality. Restoration of the estuarine wetland in Scorpion Valley would have moderate beneficial effects on floodplain values, with periodic moderate adverse impacts from removal of sediment. This work also would have moderate beneficial impacts on wetlands. Increased backcountry use and new facility construction would have negligible to minor adverse impacts on vegetation and wildlife with moderate beneficial impacts from road closure and restoration activities. Designation of backcountry management zones, additional monitoring, and road closure would have minor beneficial effects on wildlife. Alternative 2 may affect, but is unlikely to adversely affect, threatened and endangered species. Minor beneficial impacts on Hoffmann's slender flower gilia are possible.

Increased recreation, interpretative, and educational opportunities would have moderate beneficial impacts on the visitor experience. For most of the park, there would be no impact on natural soundscape; however, there would be localized minor to moderate adverse noise impacts due to concentrations of visitors, boats, and park operations. Designation of wilderness and closure and restoration of roads would have a major beneficial effect on wilderness character.

More controlled visitor access and emphasis on preservation, site monitoring, education, and wilderness designation would benefit archeological resources. Additional visitors could result in minor to moderate adverse impacts on archeological sites, historic structures, and ethnographic resources. Vegetation removal at Smuggler's Cove would have a moderate adverse impact on the cultural landscape.

Adverse impacts on park operations would occur from changes in facilities and new management actions. However, increased staff and funding, along with management actions and phased development, would have minor to moderate beneficial effects on park operations.

Alternative 3 — Preferred

As in all of the alternatives, alternative 3 is intended to emphasize resource stewardship, including ecosystem preservation and restoration, and preservation of natural landscapes, cultural landscapes, archeological resources, and historic structures.

Alternative 3 would place more attention than the other alternatives on expanding education and recreational opportunities and accommodations to provide diverse visitor experiences on the islands. Visitors would have more opportunities to see and experience the islands.

Under alternative 3, 66,576 acres of the park would be proposed for wilderness designation, primarily on Santa Rosa and Santa Cruz Islands. The lands on Santa Rosa

and Santa Cruz Islands would be proposed as potential wilderness due to temporary nonconforming uses.

There would be expanded opportunities to bring the park to the people through additional facilities and activities, including an expanded visitor center in Ventura Harbor and expansion of learning programs and video telecasts. Increased efforts would be made to provide educational programs that focus on all grade levels and adults throughout the adjacent mainland communities, as well as throughout the nation through interactive distance learning programs.

Although many roads might be removed or converted into trails on Santa Cruz and Santa Rosa Islands, selected roads would continue to be maintained for visitors to see Santa Rosa Island and to administer and protect resources on both Santa Rosa and Santa Cruz Islands.

Limited new facilities might be built, or existing facilities rehabilitated, on Santa Cruz and Santa Rosa Islands for specific resource protection, management, and visitor services. There would be few changes in the transportation methods used to reach the islands or travel on the islands.

Partnerships would be expanded with governmental agencies, educational institutions, and others to bring the island experience to the public and facilitate educational opportunities, resource stewardship, and research. New concessions and other commercial uses might be permitted to expand visitor experiences on the islands. These businesses could include lodging with food service and visitor shuttle service (both on Santa Rosa Island), rentals (snorkel and kayak gear), guided camping, pinniped viewing on San Miguel Island, and environmental education throughout the park.

Summary of Impacts from Implementing Alternative 3. Impacts under alternative 3 would be similar to alternative 2 for most resources. Water quality, floodplain values, wetlands, vegetation, wildlife, and threatened and endangered species would have the same range of adverse and beneficial effects as described for alternative 2.

The diversity of visitor experiences, including recreational, interpretative, and educational opportunities, would have moderate beneficial impacts on the visitor experience. Increased recreational opportunities on Santa Cruz and Santa Rosa Islands, an expanded visitor center in Ventura Harbor, a new educational camp and campgrounds on Santa Cruz Island, new campgrounds on Santa Rosa Island, and guided multiday trips on San Miguel Island would contribute to the beneficial impacts. Additional visitors to Santa Rosa Island could have minor to moderate adverse impacts due to perceived crowding. Similar to alternative 2, there would be no impact on the natural soundscape for most of the park; however, there would be localized minor to moderate adverse noise impacts due to concentrations of visitors, boats, and park operations. Designation of wilderness and closure and restoration of roads would have a major beneficial effect on wilderness character.

Increased visitors and new developments would have minor to moderate adverse impacts on archeological resources, historic structures, and the cultural landscape, and slightly greater adverse impacts on ethnographic resources than alternative 2.

Impacts on park operations would be the same as alternative 2, with adverse impacts from changes in facilities and new management actions. Increased staff and funding, along with management actions and phased development, would have minor to moderate beneficial effects on park operations.

The Park Service recognizes in this plan that climate change is a far-reaching and long-term issue that will affect the park, its resources,

visitors, and management throughout the timeframe of the plan and beyond. The plan notes the need for increased focus on sustainable design and development to reduce emissions of greenhouse gases, to encourage scientific studies to predict potential changes to the park, and to identify and pursue adaptive strategies to ensure the resilience of Channel Islands National Park to expected impacts from sea level rise, coastal erosion, higher storm surges, weather changes, and possible wildfires. The continued ecological restoration efforts on the islands will aid in ecosystem resilience against the impacts of climate change. The continued long-term monitoring of park resources coupled with the proposed field research station also will assure that programs are in play to monitor, understand, and mitigate impacts associated with climate change.

MAJOR CHANGES MADE IN THE FINAL PLAN

Based on the comments the planning team received on the draft plan, a number of changes were made in the final plan. The major changes that were made in this final plan are listed below. Unless otherwise stated, all changes below apply to the preferred alternative.

- The wilderness proposal for east Santa Cruz and Santa Rosa Islands was changed to propose these areas as potential wilderness due to several nonconforming uses.
- No changes were proposed in the number of campsites on Anacapa Island.
- The number of accommodations for the concessioner on Santa Cruz Island was reduced.
- Mitigation measures were proposed to protect the Townsend's big-eared bat in Scorpion Valley on Santa Cruz Island.
- Zoning of the Prisoners Harbor frontcountry area was broadened on Santa Cruz Island.
- The scope of the visitor shuttle system on Santa Rosa Island was reduced, with the shuttle being proposed to take visitors from Bechers Bay only to Johnsons Lee, Torrey Pines, and Lobo Canyon.
- The proposal for lodging at Bechers Bay was changed to provide only rustic economy accommodations.
- The user capacity was changed from 500 people per day at Bechers Bay to 500 people per day for all of Santa Rosa Island.
- A third possible location was added for the research field station — the ranch itself.
- The user capacity for San Miguel Island was not increased in the final plan.
- Biosecurity protocols to prevent the introduction of nonnative species to the park were included as part of the plan.
- Park managers would work with the Channel Islands National Marine Sanctuary, the National Marine Fisheries Service, and the State of California to evaluate the impact of anchoring by private boaters and determine if environmentally sensitive mooring devices should be employed in the park.

THE NEXT STEPS

Following distribution of this Final General Management Plan / Environmental Impact Statement and a 60-day no-action period, a "Record of Decision" approving a final plan will be signed by the NPS regional director. The "Record of Decision" documents the NPS selection of an alternative for implementation. With the signed "Record of Decision," the plan can then be implemented, depending on funding and staffing.

If the decision is made to propose wilderness and potential wilderness in the "Record of Decision," and the NPS director concurs, a wilderness proposal would be sent to the Department of the Interior, which may revise or approve the proposal. A wilderness recommendation may then be sent to the

president, who in turn may approve or revise the recommendation and then transmit his recommendation to Congress for consideration.

FUNDING AND IMPLEMENTATION STRATEGIES

A "Record of Decision" does not guarantee funds and staff for implementing the approved plan. The Park Service recognizes that this is a long-term plan and in the framework of the plan, park managers would take incremental steps to reach park management goals and objectives. Although some of the actions can be accomplished with little or no funding, some actions would require more detailed implementation plans, site-specific compliance, and additional funds. The park would actively seek alternative sources of funding, but there is no guarantee that all the components of the plan would be implemented.

Because the general management plan is a programmatic document, future compliance documents will tier off this plan. Additional compliance (environmental and cultural resources) will be prepared as site-specific plans and designs are completed.

Finally, it is likely that park staff would need to employ adaptive management in response to likely future climate changes, and elements of the plan may need to be modified. Depending on the nature of climate and resulting changes that occur, the Park Service either would take additional actions consistent with the management directions in this plan or, if necessary, amend or replace the plan. In all cases, appropriate environmental compliance would occur before new actions are taken.

Contents

Summary v

Chapter 1: Introduction 1

A Guide to this Document 3
Brief Description of the Park 4
  Parkwide Description 4
  Mainland and Island Descriptions 5
Purpose and Need for the Plan 11
  Purpose and Need for the Wilderness Study 12
  Scope of the General Management Plan / Wilderness Study / EIS 12
Overview of the NPS Planning Process 14
Foundation for Planning and Management 15
  Park Purpose 15
  Park Significance 15
  Fundamental and Other Important Resources and Values 16
  Primary Interpretive Themes 18
  Park Goals 19
  Special Mandates and Administrative Commitments 20
  Servicewide Laws and Policies 22
  Other NPS Plans and Related Guidance 24
Planning Issues/Concerns 25
  Access to the Islands 25
  Access on Santa Rosa Island 25
  Appropriate Type and Level of Recreation Facilities 25
  Effective and Efficient Operation of the Park 26
  Designation of Wilderness 26
  Climate Change 26
Issues Beyond the Scope of the Plan /Wilderness Study 29
  Management of Marine Waters 29
  Replacement of the Scorpion Pier 30
  Public Safety on San Miguel and Prince Islands 30
Next Steps and Implementation of the Plan / Wilderness Study 32
  General Management Plan 32
  Wilderness Study 33

Chapter 2: Alternatives, Including the Preferred Alternative 35

Introduction 37
  Formulation of the Alternatives 37
  Identification of the NPS Preferred Alternative 38
  Consideration of Boundary Adjustments 38
Management Zones 39
User Capacity 43
Commercial Services 46
Wilderness Study and Proposal 48
  Purpose and Definition of Wilderness 48

Summary of Uses, Developments, and Management Actions Permitted and Prohibited in Wilderness 48
Brief Description of the Study Area 50
Wilderness Eligibility 50
Public Comments on Wilderness 52
Options Analyzed in this Wilderness Study 52
Alternative 1 — Parkwide 56
Concept 56
Natural Resources 56
Cultural Resources 57
Management Zoning 57
Wilderness Proposal 58
Visitor Access 58
Visitor Uses, Overnight Accommodations, and User Capacity 58
Overnight Accommodations 59
Visitor Uses, Access, Facilities, and Services 59
Commercial Services 60
Park Operations and Facilities 62
Costs 65
Alternative 1 — The Mainland 66
Alternative 1 — Anacapa Island 68
Natural Resources 68
Cultural Resources 68
Visitor Uses, Access, Facilities, and Services 68
User Capacities (Day Use and Overnight) 68
Park Operations and Facilities 69
Alternative 1 — Santa Cruz Island 71
Natural Resources 71
Cultural Resources 71
Natural–Cultural Resources 71
Wilderness Proposal 71
Visitor Uses, Access, Facilities, and Services 71
User Capacities (Day Use and Overnight) 72
Park Operations and Facilities 72
Alternative 1 — Santa Rosa Island 79
Natural Resources 79
Cultural Resources 79
Wilderness Proposal 79
Visitor Uses, Access, Facilities, and Services 79
User Capacities (Day Use and Overnight) 79
Park Operations and Facilities 79
Alternative 1 — San Miguel Island 87
Natural Resources 87
Visitor Uses, Access, Facilities, and Services 87
User Capacities (Day Use and Overnight) 87
Park Operations and Facilities 87
Alternative 1 — Santa Barbara Island 89
Natural Resources 89
Visitor Uses, Access, Facilities, and Services 89
User Capacities (Day Use and Overnight) 89

Park Operations and Facilities 89
Alternative 2 — Parkwide 91
Concept 91
Natural Resources 92
Cultural Resources 92
Management Zones 93
Wilderness Proposal 93
Visitor Access 94
Visitor Uses, Overnight Accommodations, and User Capacity 94
Overnight Accommodations 94
User Capacity 95
Visitor Orientation, Interpretation, and Education 95
Commercial Services 96
Park Operations and Facilities 97
Alternative 2 — The Mainland 102
Visitor Center 102
Other Visitor Contact Stations 102
Park Operations and Facilities 102
Alternative 2 — Anacapa Island 104
Natural Resources 104
Cultural Resources 104
Management Zones 104
Wilderness Proposal 104
Visitor Uses, Access, Facilities, and Services 104
User Capacities (Day Use and Overnight) 105
Park Operations and Facilities 105
Alternative 2 — Santa Cruz Island 107
Natural Resources 107
Cultural Resources 107
Natural–Cultural Resources 108
Management Zones 108
Wilderness Proposal 109
Visitor Uses, Access, Facilities, and Services 109
User Capacities (Day Use and Overnight) 110
Park Operations and Facilities 111
Alternative 2 — Santa Rosa Island 119
Natural Resources 119
Cultural Resources 119
Management Zones 119
Wilderness Proposal 119
Visitor Uses, Access, Facilities, and Services 119
User Capacities (Day Use and Overnight) 121
Park Operations and Facilities 121
Alternative 2 — San Miguel Island 129
Natural Resources 129
Management Zones 129
Visitor Uses, Access, Facilities, and Services 129
User Capacities (Day Use and Overnight) 130
Park Operations and Facilities 130
Alternative 2 — Santa Barbara Island 132

Natural Resources 132
Management Zones 132
Visitor Uses, Access, Facilities, and Services 132
Wilderness Proposal 132
User Capacities (Day Use and Overnight) 132
Park Operations and Facilities 132
Alternative 3 (Preferred) — Parkwide 134
Concept 134
Natural Resources 135
Cultural Resources 136
Management Zones 136
Wilderness Proposal 137
Visitor Access 137
Visitor Uses, Overnight Accommodations, and User Capacity 138
Overnight Accommodations 138
Visitor Orientation, Interpretation, and Education 139
Commercial Services 140
Park Operations and Facilities 141
Alternative 3 (Preferred)— The Mainland 146
Other Visitor Contact Stations 147
Alternative 3 (Preferred)— Anacapa Island 149
Natural Resources 149
Cultural Resources 149
Management Zones 149
Wilderness Proposal 149
Visitor Uses, Access, Facilities, and Services 150
User Capacities (Day Use and Overnight) 150
Park Operations and Facilities 150
Alternative 3 (Preferred)— Santa Cruz Island 152
Natural Resources 152
Cultural Resources 152
Natural–Cultural Resources 153
Management Zones 154
Wilderness Proposal 154
Visitor Uses, Access, Facilities, and Services 154
User Capacities (Day Use and Overnight) 156
Park Operations and Facilities 157
Alternative 3 (Preferred)— Santa Rosa Island 165
Natural Resources 165
Cultural Resources 165
Management Zones 165
Wilderness Proposal 165
Visitor Uses, Access, Facilities, and Services 165
User Capacities (Day Use and Overnight) 167
Park Operations and Facilities 167
Alternative 3 (Preferred)— San Miguel Island 175
Natural Resources 175
Management Zones 175
Visitor Uses, Access, Facilities, and Services 175
User Capacities (Day Use and Overnight) 176

Employee Housing and Park Operations 176
Alternative 3 (Preferred)— Santa Barbara Island 178
Natural Resources 178
Management Zones 178
Visitor Uses, Access, Facilities, and Services 178
Wilderness Proposal 178
User Capacities (Day Use and Overnight) 178
Park Operations and Facilities 178
Mitigative Measures 180
Natural Resources 180
Cultural Resources 183
Sustainable Design and Aesthetics 185
Development of Cost Estimates of the Alternatives 186
Future Plans and Studies Needed 187
Environmentally Preferable Alternative 189
Consistency of the Alternatives with the Purposes of the National Environmental Policy Act 190
Planning Actions/Alternatives Considered but Not Analyzed Further 191

Chapter 3: Affected Environment 215

Introduction 217
Natural Resources 234
Soils 234
Paleontological Resources 237
Water Quality 238
Floodplains (Scorpion Valley and Lower Reach of Cañada del Puerto) 240
Wetlands (Scorpion Valley and Prisoners Harbor) 241
Terrestrial Vegetative Communities and Flora 243
Terrestrial Wildlife, Seabirds, and Pinnipeds 254
Federally and State Listed Threatened and Endangered Species 268
Soundscape 275
Cultural Resources 277
Historical Overview 277
Aids to Navigation 285
Military Activities 285
Era of Conservation — Evolution of the National Park 286
Properties Listed in, or Potentially Eligible for Listing in, the National Register of Historic Places 287
Description of Park's Cultural Resources 287
Visitor Use, Interpretation, and Education 298
Current Visitor Use 298
Visitor Access 298
Principal Visitor Recreational Activities 299
Interpretation and Education 300
Wilderness Character 301
Natural 301
Undeveloped 302
Untrammeled 302

Opportunities for Solitude and Primitive and Unconfined Recreation and Opportunities 303
Other Features of Value 305
Park Operations 306
Park Roads 307
Other Infrastructure and Facilities 308

Chapter 4: Environmental Consequences 309

Introduction 311
Assumptions 312
Climate Change 312
Methodology for Analyzing Impacts 313
Negligible Impact Requirement 313
Natural Resource Methodology and Definitions 314
Impacts on Cultural Resources and Section 106 of the National Historic Preservation Act 318
Cultural Resource Methodology and Definitions 319
Visitor Experience, Interpretation, and Education Methodology and Definitions 321
Wilderness Character 322
Park Operations 323
Duration 323
Cumulative Impacts 323
Impacts of Alternative 1 (No Action) 326
Natural Resources 326
Cultural Resources 337
Visitor Experience, Interpretation, and Education 342
Wilderness Character 344
Park Operations 345
Unavoidable Adverse Impacts 346
Irreversible and Irretrievable Commitments of Resources 347
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity 347
Impacts of Alternative 2 348
Natural Resources 348
Cultural Resources 367
Visitor Experience, Interpretation, and Education 372
Wilderness Character 376
Park Operations 378
Unavoidable Adverse Impacts 380
Irreversible and Irretrievable Commitments of Resources 380
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity 380
Impacts of Alternative 3 382
Natural Resources 382
Cultural Resources 401
Visitor Experience, Interpretation, and Education 405
Wilderness Character 409
Park Operations 411
Unavoidable Adverse Impacts 413

Irreversible and Irretrievable Commitments of Resources 414
The Relationship between Short-Term Uses of the Environment and Long-Term Productivity 414

Chapter 5: Consultation and Coordination 417

Summary of Public and agency Involvement 419
Plan Development 419
Draft General Management Plan/Wilderness Study/ Environmental Impact Statement 419
Consultation with the State Historic Preservation Office and the Advisory Council on Historic Preservation 420
Consultation with Native Americans 420
Section 7 Consultation with the Fish and Wildlife Service and National Marine Fisheries Service 421
Coastal Zone Management Consistency Determination and Consultation 421
Consultation with the U.S. Navy 421
Future Compliance Requirements 422
Comments and Responses on the Draft Plan/Wilderness Study/Environmental Impact Statement 425
Agencies 425
Organizations 425
Responses to Comments 425
Agencies and Organizations to Whom this Document was Sent 457
Federal Agencies 457
U.S. Senators and Representatives 457
California State Agencies 457
California State Officials 457
American Indian Tribes with Potential Cultural Affiliation to the Park 457
Local, City, County, and Regional Governments 458
Organizations and Businesses 458
Media 459
Libraries 460

Appendixes, Selected References, Preparers and Consultants, Index 461

Appendix A. Summary of Legislative History for Channel Islands National Park 463
Appendix B. Servicewide Mandates and Policies Pertaining to Channel Islands National Park 464
Appendix C. Relationship of Other Planning Efforts to this General Management Plan 487
Appendix D. Species Lists 494
Appendix E. Statement of Findings for Scorpion Creek 504
Appendix F. List of Classified Structures 510
Appendix G. Biosecurity Protocols. Preventing the Introduction of Nonnative Species to Channel Islands National Park (N.D.) 512
Appendix H. Letters Received from Government Agencies on the Draft General Management Plan/Wilderness Study/Environmental Impact Statement 516
Selected References 536
Preparers 546
Core Planning Team 546
Other Contributors and Consultants 547

Index 549

MAPS

Map 1. Park Region and Vicinity 10
Map 2. Park Headquarters – Alternative 1 67
Map 3. Anacapa Island – Alternative 1 70
Map 4. Santa Cruz Island – Alternative 1 74
Map 5. Scorpion Valley – Alternative 1 75
Map 6. Prisoners Harbor – Alternative 1 77
Map 7. Santa Rosa Island – Alternative 1 81
Map 8. Bechers Bay – Alternative 1 83
Map 9. Johnsons Lee – Alternative 1 85
Map 10. San Miguel Island – Alternative 1 88
Map 11. Santa Barbara Island – Alternative 1 90
Map 12. Park Headquarters – Alternative 2 103
Map 13. Anacapa Island – Alternative 2 106
Map 14. Santa Cruz Island – Alternative 2 113
Map 15. Scorpion Valley – Alternative 2 115
Map 16. Prisoners Harbor – Alternative 2 117
Map 17. Santa Rosa Island – Alternative 2 123
Map 18. Bechers Bay – Alternative 2 125
Map 19. Johnsons Lee – Alternative 2 127
Map 20. San Miguel Island – Alternative 2 131
Map 21. Santa Barbara Island – Alternative 2 133
Map 22. Park Headquarters – Alternative 3 148
Map 23. Anacapa Island – Alternative 3 151
Map 24. Santa Cruz Island – Alternative 3 159
Map 25. Scorpion Valley – Alternative 3 161
Map 26. Prisoners Harbor – Alternative 3 163
Map 27. Santa Rosa Island – Alternative 3 169
Map 28. Bechers Bay – Alternative 3 171
Map 29. Johnsons Lee – Alternative 3 173
Map 30. San Miguel Island – Alternative 3 177
Map 31. Santa Barbara Island – Alternative 3 179

TABLES

Table 1. Management Zones 39
Table 2. Commercial Services Evaluation Criteria 47
Table 3. Continuing Commercial Services for Visitors in Channel Islands National Park under Alternative 1 61
Table 4. Existing Infrastructure and Facilities in Channel Islands National Park 62
Table 5. Permanent Park Staffing Levels (in FTEs), 2010 64
Table 6. Channel Islands National Park Operational Costs, Fiscal Year 2010 65
Table 7. Commercial Services Provided for Visitors in Channel Islands National Park under Alternative 2 96
Table 8. Changes in Infrastructure and Facilities in Channel Islands National Park under Alternative 2 97

Table 9. Changes in Permanent Park Staffing Levels from Current Management (in FTEs) 99
Table 10. Cost and Phasing for Alternative 2 101
Table 11. Commercial Services Provided for Visitors in Channel Islands National Park under Alternative 3 140
Table 12. Changes in Infrastructure and Facilities in Channel Islands National Park under Alternative 3 141
Table 13. Changes in Permanent Park Staffing Levels from Current Management (in FTEs) 143
Table 14. Cost and Phasing for Alternative 3 145
Table 15. Cost Estimates and Staffing for Full Implementation of the Action Alternatives 186
Table 16. Island Use Limits (Day Use and Overnight) 193
Table 17. Summary of Alternatives 195
Table 18. Summary of the Wilderness Study 203
Table 19. Summary of Key Impacts 204
Table 20. Impact Topics Retained or Dismissed 218
Table 21. Number of Vascular Plant Taxa on the Channel Islands 243
Table 22. Nonnative Vertebrates at Channel Islands National Park 266
Table 23. Visitor Data 2013 298
Table 24. Existing Park Staffing 2011 307
Table 25. Implementation Actions that Could Affect Cultural Resources and Associated SHPO and ACHP Compliance Requirements 423

Acronyms and Abbreviations used in this Document

1998 Concessions Act	NPS Concessions Management and Improvement Act of 1998
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ASMIS	NPS Automated Site Management Information System
ATMP	Air Tour Management Plan
CDF&G	California Department of Fish and Game (now known as California Department of Fish and Wildlife)
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMAR	Coastal Maritime Archeological Resources
Corps of Engineers	U.S. Army Corps of Engineers
CUAs	commercial use authorizations
DDT	dichlorodiphenyltrichloroethane
DO	Director's Order
DOI	Department of the Interior
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESF	Essential Fish Habitat
FAA	Federal Aviation Administration
FTE	full-time equivalent
GIS	Geographic Information Systems
GMP	General Management Plan
IPCC	United Nations Intergovernmental Panel on Climate Change
MLPA	Marine Life Protection Act
MPA	Marine Protected Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
PAHs	polycyclic aromatic hydrocarbons
park	Channel Islands National Park
PL	Public Law
SHPO	State Historic Preservation Officer
TNC	The Nature Conservancy
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey

Channel Islands National Park

Chapter 1: Introduction

A GUIDE TO THIS DOCUMENT

This *Draft General Management Plan / Wilderness Study / Environmental Impact Statement* (this plan) is organized in accordance with the Council on Environmental Quality's (CEQ) implementing regulations for the National Environmental Policy Act and the National Park Service's (NPS) Director's Orders (DO) on *Conservation Planning, Environmental Impact Analysis, and Decision Making* (DO-12) and *Wilderness Preservation and Management* (DO-41).

Chapter 1: **Introduction** sets the framework for the entire document. It describes why the plan and wilderness study are being prepared and what needs they must address. It gives guidance for the alternatives that are being considered, which are based on the park's purposes, significance, and NPS *Management Policies*.

The chapter also describes park policies and practices that would continue to guide management of the park, and identifies the issues and concerns that were raised during public scoping meetings. The chapter describes the scope of the environmental impact analysis, specifically what impact topics were or were not analyzed in detail. This chapter concludes by identifying special mandates and administrative commitments that affect planning for and management of Channel Islands National Park.

Chapter 2: Alternatives begins by describing how the alternatives were developed for this plan. It then describes the management zones used in the alternatives and the approach to addressing user capacity. The wilderness eligibility and study process is described next. A no action alternative (alternative 1), alternative 2, and alternative 3 (the agency's preferred alternative) are then presented. Wilderness proposals are incorporated into the plan's alternatives. Next is a discussion of which alternative was determined to be the environmentally preferable alternative and a description of alternatives considered but not analyzed. The chapter concludes with summary tables of the alternatives and the environmental consequences of implementing those alternative actions.

Chapter 3: Affected Environment describes those areas and resources that would be affected by implementing the various alternatives — natural resources, cultural resources, visitor experience, interpretation and education, wilderness character, and park operations.

Chapter 4: Environmental Consequences analyzes the impacts of implementing the alternatives on the topics described in the "Affected Environment" chapter. Methods that were used for assessing the impacts in terms of the intensity, type, and duration are outlined at the beginning of the chapter.

Chapter 5: Consultation and Coordination describes the history of public and agency coordination during the planning effort and lists agencies and organizations who will be receiving copies of this document.

The **Appendixes** present supporting information for the document, along with selected references, a list of the preparers of this document, responses to selected comments on the draft document, and an index.

BRIEF DESCRIPTION OF THE PARK

PARKWIDE DESCRIPTION

Located off the coast of southern California, the eight Channel Islands and waters of the *Southern California Bight* encompass a diverse and unique marine environment (map 1). Five of the islands — Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara — and the submerged lands and waters within 1 nautical mile of each island were designated by Congress as Channel Islands National Park on March 5, 1980 (Public Law (PL) 96-199; 16 USC § 410ff). The park bridges two major biogeographical provinces within approximately 250,000 acres of land and sea, protecting a rich array of natural and cultural resources. A much larger area, approximately 1,426,173 acres of ocean, lies between the five islands.

The mild climate, with short wet winters, long dry summers, and extensive coastal fog is one of the best examples of the Mediterranean ecosystem in North America. Unique island species of plants and animals persist here, as do island plant communities. Nearly 10% of island plants exist only on these islands.

The nearby confluence of ocean currents swirling around the islands brings nutrients from cold ocean depths into warm sunlight, building one of the most productive marine environments on earth. Giant kelp forests, seagrass beds, rocky reefs, and submarine canyons in the park are populated with more than 1,000 species of fish, invertebrates, and algae. The park provides essential vital nesting and feeding grounds for more than 90% of the sea birds in southern California (some of which are very rare) on pristine sand beaches, rocky tidepools, and sheer cliffs. Twenty-six species of marine mammals (including blue whales) feed, transit, or raise their young in the park because they are near abundant food and are safe from disturbance.

The fact that the islands have never been connected to the mainland has greatly limited the number of species that have reached their shores. Isolation allowed plants and animals to evolve into new species and subspecies different in both their appearance and behavior from relatives on the mainland. The same small populations and limited island habitats that relegate many species to rarity also accelerate evolution of unique life forms. The park represents a wild remnant of coastal California that can be viewed and experienced as a standard for comparisons with other more altered parts of the region.

The park's paleontological record provides evidence of the evolution of the island fauna and the effects on this fauna of human colonization. The Pleistocene paleontological record includes several extinct species, including the Columbian mammoth, island pygmy mammoth, flightless goose, two species of giant mouse, and vampire bat. It also contains the best representation of a Pleistocene marine avifauna on the Pacific coast.

The archeology of the Channel Islands provides a unique opportunity to understand the historical ecology of Pacific Coast environments, the evolution of human maritime adaptations over a period of more than 12,000 years, and the interaction of maritime peoples with dynamic coastal ecosystems over a very long period. The natural abundance of the rich terrestrial resources and the surrounding sea has attracted humans to the islands for some 13,000 years. More than 2,500 archeological resources have been identified within the park boundaries, representing a continuous occupation spanning the entire human prehistory of North America. The oldest positively dated human remains in North America were unearthed on Santa Rosa Island. A site on San Miguel Island shows evidence of occupation as much as 12,000

years ago and has yielded the remnants of a small woven child's sandal. Spanish and other European explorers, otter hunters, ranchers, fishers, and the military have all used island resources during the last 500 years. Historic ranches, military structures, and more than 100 known shipwrecks remain as examples of California's rich and diverse heritage.

Today nearly 20 million people live within 100 miles of the islands. The waters of the Santa Barbara channel provide, as well as limit, public access to the islands. Each year thousands of scuba divers explore island reefs and kelp forests. Boaters find shelter in more than 100 secluded anchorages. Thousands of day visitors and campers enjoy island vistas, trails, sea caves, and tidepools. Researchers and educators find the island environments to be an accessible laboratory of unequalled quality.

Human activities over the last 12,000 years altered island and marine environments. The rate of change greatly accelerated over the past 300 years. The park's waters once were one of the best places to fish in California. These fisheries, once thought to be inexhaustible, have not been sustainable under traditional management. Keystone species, like the California sea otter, have been eliminated from park waters. Air and water pollution from nearby metropolitan and industrial developments threaten fragile island ecosystems. Ranching on the islands introduced both nonnative animals and nonnative plants, eliminated vegetative cover, and accelerated erosion.

The introduction of nonnative species to the Channel Islands has imperiled many of the park's unique plants and animals. For more than three decades, it has been a goal of the park staff to control or eradicate nonnative species that threaten the viability of native island species and function of ecological processes. The park and partner agencies and organizations have achieved tremendous success eliminating invasive mammals from the islands and restoring populations of native species, including the recovery of the island fox and the reestablishment of bald eagles and peregrine falcons. Additional ecosystem restoration efforts are ongoing and will continue.

MAINLAND AND ISLAND DESCRIPTIONS

By law (Section 401 of Title IV of Public Law 93-477), the Park Service is allowed to use up to 5 acres of land and submerged land for administrative and visitor facilities in the Ventura Marina, within the City of Ventura. The Park Service currently manages about 2 acres in Ventura Harbor for the park's administrative offices and main visitor center. Several other buildings are leased within the harbor to provide office space for staff.

The five islands in the national park vary greatly in size and isolation, but all are characterized by windswept landscapes, rugged coastlines, and unspoiled beaches. Santa Barbara Island, just 644 acres, is the smallest of the Channel Islands, lying 45 miles southeast of Ventura. The Santa Barbara and Anacapa Islands were originally designated Channel Islands National Monument in 1938.

Anacapa Island

This island is a 5-mile-long chain of three small islets—East, Middle, and West—and encompasses 737 acres (1.1 square miles). It lies 14 miles south of Ventura. Waves have eroded the volcanic island, creating steep, towering sea cliffs, sea caves, and natural bridges, such as 40-foot-high Arch Rock—the symbol of Anacapa Island and Channel Islands National Park. The Anacapa Island Light Station Historic District and the SS *Winfield Scott*, a shipwreck near Middle Anacapa, are listed on the National Register of Historic Places (national register), and the entire island is listed as an archeological district.

Thousands of seabirds find critical breeding and nesting habitat on Anacapa Island due to the relative lack of predators.

East Anacapa is a perfect place for a half-day, one-day, or short overnight camping trip; and is an ideal place for swimming, snorkeling, diving, and kayaking. Almost all trips to Anacapa Island are to East Anacapa. There are 2 miles of trails on East Anacapa Island, and the scenery is spectacular. Except for the staircase to the top of the island, the trails are relatively flat and easy. Because East Anacapa is a cliff island, access is only at the landing cove (there is no beach access). During the summer, park divers go underwater into the magnificent kelp forest, broadcasting live interpretive programs to audiences on the island and the mainland; this program is critical to connecting people on the mainland to the underwater aspects of the park as well as the terrestrial resources. There are excellent wildlife viewing opportunities for wildflowers, seabirds (western gull chicks in summer), seals, sea lions, and tidepool organisms.

There are no trails or developed access on Middle Anacapa Island. Access to water-based activities is via concessioner boats or private boats.

A limited number of concessioner-led tide-pooling trips are offered throughout the year to Frenchy's Cove on West Anacapa Island. Access to West Anacapa Island is from the water only and limited to Frenchy's Cove. There are no trails on West Anacapa Island and it is designated a Research Natural Area and is closed to public access.

Santa Cruz Island

Santa Cruz, the largest of the Channel Islands, covers 61,971 acres (96 square miles), and is 22 miles long. It lies 25 miles offshore, parallel to the coast between Ventura and Santa Barbara. In its vastness and variety of flora, fauna, and geology, Santa Cruz resembles a miniature California. It contains two rugged mountain ranges; the highest peak on the islands (rising 2,470 feet); a large central valley/fault system; deep canyons with year-round springs and streams; and 77 miles of craggy coastline cliffs, giant sea caves, pristine tidepools, and expansive beaches. One of the largest and deepest sea caves in the world is found on the island's northwest coastline. The eastern 24% of Santa Cruz Island (some 14,500 acres) is owned by the Park Service, while the western 76% is owned by The Nature Conservancy (TNC). Ninety percent of the island is listed on the national register as an archeological district. The island's historic ranch complexes are eligible for listing on the national register.

Santa Cruz Island offers many opportunities for hiking, swimming, snorkeling, diving, and kayaking. One-day trips and short or long overnight camping trips are available. The trail system on the NPS portion of eastern Santa Cruz Island is a combination of unmaintained trails and unimproved administrative roads. The connection to the beach and water is one of the primary attractions for visitors to Scorpion Valley. Beach access is available at Scorpion, Smugglers Cove, and Prisoners Harbor. Opportunities for seeing wildlife, especially the endemic island scrub-jay (found only on Santa Cruz Island and no other place in the world) and bald eagles, are available.

Santa Rosa Island

With about 53,000 acres (84 square miles), Santa Rosa is the second largest of the Channel Islands. Roughly diamond-shaped, it is 15 miles long and 10 miles wide, and lies 40 miles west of Ventura. The island's relatively low profile is broken by a high, central mountain range rising 1,589 feet at its highest point. Santa Rosa's coastal areas are variable, ranging from broad sandy beaches gently sloping toward the ocean to sheer cliffs. The island's archeological resources and historic

ranch structures are eligible for listing in the national register.

The island has rugged peaks, magnificent canyons, and beautiful beaches. One-day trips and short or long overnight camping trips are available, as are many hiking options. Hikers use a limited trail system and an extensive unimproved administrative road system. Beach access is available, although seasonal restrictions apply. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking are limited and only recommended for the experienced visitor.

San Miguel Island and Prince Island

The northernmost and farthest west of the Channel Islands, San Miguel Island is 55 miles northwest of Ventura. Wind and weather constantly sweep across the North Pacific to batter its shores. The 9,376-acre (14-square-mile) island is primarily a plateau about 500 feet in elevation, but two 800-foot rounded hills emerge from its windswept landscape. The coastline is rocky, with shoreline cliffs relieved by sandy beaches, where more than 100,000 seals and sea lions haul out and breed. San Miguel Island is owned by the U.S. Navy and, under an agreement, is managed by the Park Service. The island is listed on the national register as an archeological district.

This island is an ideal place for seeing native vegetation, the unique caliche forest, and seals and sea lions (with ranger escort). Despite the wind, Cuyler Harbor is one of the most scenic beaches in the park. One-day trips and long overnight camping trips (minimum stay is generally three days — Friday to Sunday) are available. To see the island, specifically Point Bennett and Cardwell Point, visitors must be escorted by a ranger. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking are limited and only recommended for the experienced visitor.

The 35-acre Prince Island, specifically referenced in the park's enabling legislation, is about 0.5 mile off the northwest coast of San Miguel Island. This island also is owned by the U.S. Navy and, under an agreement, is managed by the Park Service. It is one of the most important sites for seabird nesting habitat in the park. In particular, Prince Island is noted for nesting Ashy and Leach's storm-petrels, Brandt's cormorant, double-crested cormorant, pelagic cormorant, Scripp's murrelet, Cassin's auklet, pigeon guillemot, and occasionally, the southernmost extent of nesting tufted puffins. Common murres also bred on San Miguel historically and in 2011.

Santa Barbara Island

Just 644 acres (1 square mile), Santa Barbara is the smallest of the Channel Islands and lies 45 miles southeast of Ventura. Formed by underwater volcanic activity, the island emerges from the ocean as a twin-peaked mesa above steep cliffs. No trees are present and the island is covered with grasses and scattered patches of shrubby vegetation. The island serves as important breeding grounds and haul-outs for pinnipeds. Santa Barbara Island is a place to witness the recovery of plant and animal life after years of habitat and species loss due to ranching and farming activities. The island is listed on the national register as an archeological district.

Unlimited and exceptional island coastal views await the visitor to Santa Barbara Island. The island is an ideal place for swimming, snorkeling, diving, and kayaking. One-day trips and long overnight camping trips (at least three days) are available. Roughly the same size as East Anacapa Island, the entire island is accessible via the 6 miles of scenic trails. Trails are seasonally closed to protect nesting California brown pelicans. Because Santa Barbara Island is a cliff island, access to the water is only at the landing cove (beaches are closed to protect wildlife). There are excellent wildlife viewing opportunities for seabirds, seals, and sea lions. Thousands of seabirds find critical breeding and nesting habitat on

Santa Barbara Island due to the relative lack of predators.

Anacapa Island is in Ventura County. Santa Barbara, Santa Cruz, Santa Rosa, and San Miguel Islands are in Santa Barbara County.

The Park's Marine Environment

Nearly half of Channel Islands National Park, approximately 125,000 acres, is found in the waters that extend 1 nautical mile around each island. There are nearly 180 miles of dramatic interface between land and sea along park shorelines. The ocean masks the topographic relief of the park. The top of Diablo Peak on Santa Cruz Island to the bottom of the nearby submarine canyon is equivalent to going from the top to the bottom of the Grand Canyon.

The park contains a wide array of benthic landforms of soft sediment and hard substrates to depths of more than 1,000 feet at the boundary of two major oceanic biogeographic provinces, concentrating exceptionally high biological diversity in a small area. The park's underwater seascapes include broad sandy plains, ancient inundated shoreline terraces, rocky reefs, and abyssal submarine canyons. Kelp forests, temperate equivalents of tropical rainforests and coral reefs, shelter nearly 1,000 species of marine life in the park. Cold water from the California Current sweeps down the North American coast from the Gulf of Alaska and surrounds San Miguel Island and Santa Rosa Island. The assemblages of fish, invertebrates, and plants in this western part of the park resemble those found off the coast of Oregon. A counter current brings warm water up from Baja California along the mainland coast, swirling around Santa Barbara, Anacapa, and eastern Santa Cruz Islands, which supports biological communities reminiscent of northern Mexico. Between these extremes, along the western Santa Cruz Island coast, a dynamic transition zone provides a unique place for those plants and animals tolerant of widely varying environmental conditions.

Complementing this exceptionally high biodiversity, the park's oceanographic setting and Mediterranean climate combine to produce one of the world's most productive biological communities. A region of persistent upwelling lies just north and west of the park off Point Conception. This brings deep, nutrient-rich waters from the deep sea up into bright sunlight. Photosynthesis by microscopic phytoplankton combines the nutrients and sunlight to form the base of a massive food web composed of thousands of forage species needed to support the largest animals on earth, blue whales, and apex predators such as white sharks, orcas, and elephant seals. A series of interconnected deep ocean basins and ridges lie south and west of the park islands. These deep basins provide additional sources of nutrients during winter winds that cause upwelling along the southern shores of the northern islands.

The park's ocean realm, in such close proximity to 20 million people on a highly developed mainland coast, is remarkable for its biodiversity, productivity, and near pristine conditions. Park ecosystems once supported valuable and productive marine fisheries, including five species of abalone and rockfish, but those fisheries have been depleted over the past 25 years.

More than 100 vessels are known to have wrecked in the waters surrounding the islands. These wrecks provide a visual history of maritime exploration and commerce along the West Coast of North and South America and within the Santa Barbara Channel.

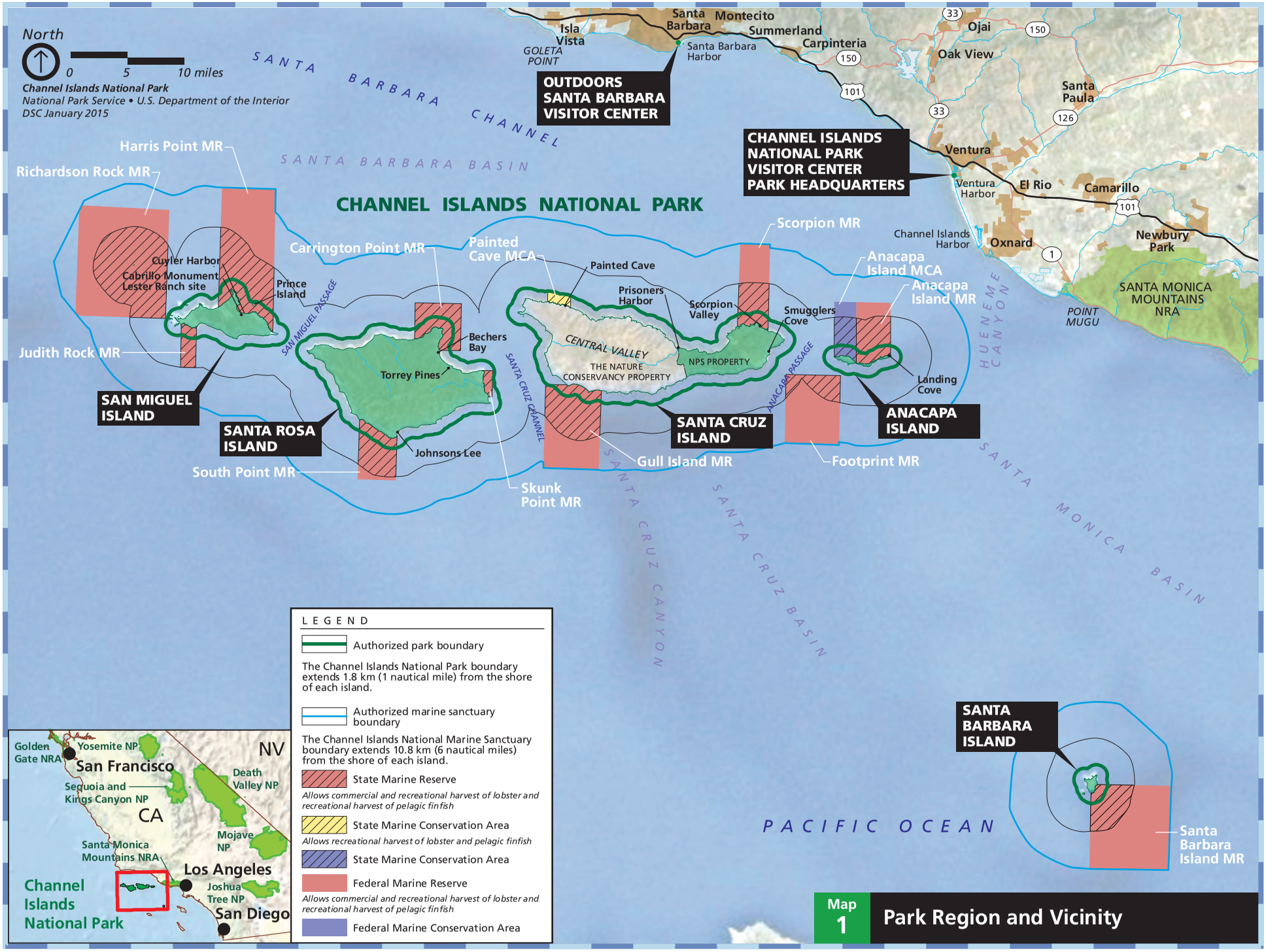
Few visitors to Channel Islands National Park are aware that almost half of the park's resources are beneath the sea. The underwater part of the park encompasses one of the most diverse marine environments in the world. Traditionally, this unseen yet crucial marine ecosystem has suffered from an out-of-sight, out-of-mind philosophy.

With the advent of the underwater video program in 1984 (now called "Channel Islands

Live"), the out-of-sight, out-of-mind situation has been partially addressed. Through advanced technology, many park visitors are enjoying their first journey into the marine world. The audience joins the program via television monitors on Anacapa Island or on the mainland via microwave and the Internet, as a park ranger dons a special microphone-equipped dive mask for communication to the surface and descends into the ocean's kelp forest, camera in hand. When the camera is turned on, the kelp forest comes to life. From underwater the diversity of the marine environment is apparent. The kelp forest and its many inhabitants are unveiled and explained as the visitors and divers "hike" among spiky, spiny sea urchins, iridescent abalone, and soft, slow-moving sea cucumbers. Brightly colored fish move through the forest and are captured through the camera's eye. The story of the kelp forest is told. During the summer this underwater program is presented in the landing cove of Anacapa Island and broadcast back to the mainland visitor center in Ventura and via the Internet. It is open to the public and free of charge. Thousands of people have seen this program and Internet viewing has dramatically expanded the viewing audience.

In 2003, the California Fish and Game Commission created 13 Marine Protected Areas (MPAs) within the state waters of Channel Islands National Park. In 2006 and 2007, the boundaries of these MPAs were extended to federal waters by Channel Islands National Marine Sanctuary. Two types of MPAs were established: marine reserves, which prohibit all take of living, geology, or cultural resources (although scientific take is permitted); and marine conservation areas, which prohibit specific commercial and/or recreational take of living, geology, or cultural resources (although scientific take is permitted).

In 1999, the State of California enacted the Marine Life Protection Act (MLPA). The purpose of this law is to protect and restore habitats and ecosystems, conserve biological diversity, provide a refuge for sea life, enhance recreational and educational opportunities, provide reference areas for scientists to measure changes elsewhere in the environment, and help rebuild depleted fisheries. The Channel Islands MPA proposal was established more than a year before the MLPA process began and was pursued independently of this landmark effort.



Map 1 Park Region and Vicinity

PURPOSE AND NEED FOR THE PLAN

Why We Do General Management Planning

The National Parks and Recreation Act of 1978 requires each unit of the Park Service to have a general management plan (GMP or plan), and NPS *Management Policies 2006* states "[t]he Service will maintain an up-to-date management plan for each unit of the national park system" (2.3.1 General Management Planning). But what is the value, or usefulness, of general management planning?

The purpose of a general management plan is to ensure that a park system unit has a clearly defined direction for resource preservation and visitor use to best achieve the NPS's mandate to preserve resources unimpaired for the enjoyment of future generations. In addition, general management planning makes the Park Service more effective, collaborative, and accountable by:

- providing a balance between continuity and adaptability in decision making — Defining the desired conditions to be achieved and maintained in a park unit provides a touchstone that allows NPS managers and staff to constantly adapt their actions to changing situations while staying focused on what is most important about the park unit.
- analyzing the park unit in relation to its surrounding ecosystem, cultural setting, and community — This helps NPS managers and staff understand how the park unit can interrelate with neighbors and others in ways that are ecologically, socially, and economically sustainable. Decisions made within such a larger context are more likely to be successful over time.
- affording everyone who has a stake in decisions affecting a park unit an opportunity to be involved in the planning process and to understand the decisions that are made — National park system units are often the focus of intense public interest. Public involvement throughout the planning process provides focused opportunities for NPS managers and staff to interact with the public and learn about public concerns, expectations, and values. Public involvement also provides opportunities for NPS managers and staff to share information about the park unit's purpose and significance, as well as opportunities and constraints for the management of park unit lands.

The purpose of this plan is to clearly define a direction for resource preservation and visitor experience at Channel Islands National Park over the next 20 to 40 years. The approved plan would provide a framework for proactive decision making, which would allow managers to effectively address future opportunities and problems. The plan would not provide specific and detailed answers to every issue or question facing Channel Islands National Park.

The National Parks and Recreation Act of 1978 (PL 95-625) requires the preparation and timely revision of general management plans for each unit of the national park system. Channel Islands National Park's current general management plan was first completed in 1980 and was amended in 1984 and 1985. Conditions have substantially changed since 1985. Among the significant changes that have occurred over the past 20 years are the following: the Park Service has acquired new lands on Santa Rosa and Santa Cruz Islands, the condition of several resources has declined, several actions are underway to eliminate nonnative species and restore altered ecosystems, park visitation has tripled, MPAs have been established, and recreational uses and use patterns have changed. A new general management plan is essential to address issues and concerns confronting the park, to ensure that park resources are preserved, and to provide opportunities for visitors to have quality park experiences.

The Park Service has identified five goals that this planning effort would address. Specifically, the goals of this plan are to:

- restore and maintain natural ecosystems and processes;
- preserve and protect cultural resources;
- provide opportunities and access for the public to experience and connect to the park;
- promote stewardship of park resources; and
- administer the park efficiently and effectively.

PURPOSE AND NEED FOR THE WILDERNESS STUDY

A wilderness study evaluates if lands and waters in a national park system unit are appropriate for designation as wilderness. The purpose of this wilderness study is to determine if and where lands within Channel Islands National Park should be proposed for wilderness designation. The study identifies a range of possible wilderness configurations within the park and evaluates their effects on the human environment. Based on the findings of this study, a formal wilderness proposal may be submitted to the Park Service director for approval and subsequent consideration by the U.S. Department of the Interior, president, and Congress under the provisions of the Wilderness Act.

Channel Island National Park's 1980 enabling legislation (§ 206 of PL 96-199) called for a wilderness study to be prepared. In addition, the Wilderness Act and NPS *Management Policies 2006* (§ 6.2.1) require that all lands administered by the Park Service be evaluated for their eligibility for inclusion within the national wilderness preservation system. Section 6.2.2 further states "lands and waters found to possess the characteristics and values of wilderness, as defined in the Wilderness Act and determined eligible would be formally studied to develop the recommendation to Congress for wilderness designation."

A wilderness study may be a separate document accompanied by an environmental impact statement, or it may be part of a general management plan / environmental impact statement. This wilderness study is included as part of the plan because of legislation, public interest, and timeliness. Including the wilderness study with the plan provides efficiencies of time and money, as the two processes have similar environmental compliance and public involvement needs.

What is Wilderness?

As defined in the Wilderness Act (§ 2(c)), wilderness is "…an area of undeveloped Federal land…without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land *or* is of sufficient size as to make practicable its preservation and use in an unimpaired condition…."

SCOPE OF THE GENERAL MANAGEMENT PLAN / WILDERNESS STUDY / EIS

Use of San Miguel Island

The U.S. Navy owns San Miguel Island and associated Prince Island. The Park Service has managed the islands under an agreement with the U.S. Navy. Prior to NPS management of the island, the U.S. Navy and U.S. Air Force used the islands and surrounding waters as part of a bombing range. Due to safety concerns regarding the presence of unexploded ordnance, the U.S. Navy asked the Park Service in 2014 to temporarily halt all recreational visits to the island while it conducts a risk assessment and, if necessary, cleanup of the island.

On April 17, 2014, San Miguel Island was closed to all public entry. All proposed actions on San Miguel Island are subject to the U.S. Navy and Park Service entering into an agreement and the terms and conditions

associated with the agreement. Until this agreement is approved, San Miguel Island will remain closed to public use. However, it is expected that agreement will be reached between the U.S. Navy and the Park Service, and the visitor closure will be temporary in nature. Thus, it is assumed throughout this plan that the island will be open to public access during the life of the plan and that the actions proposed in the alternatives for San Miguel Island could be implemented.

Marine Waters

This plan focuses primarily on the park's island terrestrial resources and uses. However, Channel Islands National Park encompasses the 1 nautical mile of ocean surrounding the islands. As noted previously, nearly half of the park's acreage (124,299 acres) is in the ocean, and jurisdiction is overlapping with the State of California and the Channel Islands National Marine Sanctuary (sanctuary). Approximately 21% of the park waters are within state-designated marine protected areas. The park's waters support productive, diverse, biological resources, including many important commercial resources.

The Park Service recognizes the significance and fundamental resources and values of the marine waters within the park boundary. In this regard the plan provides some general desired conditions and strategies for managing marine resources (see appendix B), and zones the park's waters according to how they are to be managed.

The Park Service would continue to consult, advise, and cooperate with the state and the National Oceanic and Atmospheric Administration (NOAA) (both NOAA National Marine Fisheries Service (NMFS) and NOAA Sanctuaries) in monitoring and managing all resources and uses within park waters. In particular, NPS staff would continue to work with the state and sanctuary staff to maintain the marine protected areas and to monitor and study their effectiveness and the value of expanding them. Future NPS plans would address appropriate management, issues, and concerns regarding the waters within the park boundary.

OVERVIEW OF THE NPS PLANNING PROCESS

The Channel Islands National Park planning process followed NPS *Management Policies 2006* and "Park Planning Program Standards" (NPS 2004). Law and policy require general management plans to address four key elements:

- the types of management actions required for the preservation of park resources;
- the types and general intensities of development (including visitor circulation and transportation patterns, systems, and modes) associated with public enjoyment and use, including general locations, timing of implementation, and anticipated costs;
- visitor carrying capacities and implementation commitments for park areas; and
- potential modifications to the external boundaries of the park, if any, and the reasons for the proposed changes.

The process employed in creating this plan / wilderness study / EIS is sequential, and the presentation of the plan / wilderness study / EIS follows the stages in this process. It begins with collecting, reviewing, and defining key information about the park, which includes inviting public opinion about the parks and the plan. This leads to the formulation of elements such as park purpose and significance, interpretive themes, and goals (desired or ideal conditions). The above information was used to identify issues that the plan needed to address. In the subsequent and central stage of the process, the planning team created management alternatives, which describe objectives, or desired future conditions, and potential resulting actions. Input from the public was crucial at several stages, particularly the scoping, review of alternatives, and this, the draft plan / wilderness study, stage. The next steps, after the conclusion of the public comment period, are described at the end of this chapter.

The National Environmental Policy Act and this Plan

The National Environmental Policy Act (NEPA) requires federal agencies to fully consider the environmental impacts of their proposed actions before they make any decision to undertake those actions. The level of decision making in this plan / wilderness study triggers the National Environmental Policy Act because the NPS decisions would affect future land and resource use in Channel Islands National Park. Thus, this document is a combined NEPA document and a general management plan / wilderness study. It fulfills the requirements of the National Environmental Policy Act and the National Parks and Recreation Act (as well as other legislation and NPS policies). As an environmental impact statement, this document includes an analysis of the impacts of any proposal that has the potential to affect the human environment, as well as alternatives to that proposal and a description of the "affected environment."

FOUNDATION FOR PLANNING AND MANAGEMENT

This section defines the legal and policy requirements that direct the park's basic management responsibilities. The foundation was instrumental in the development of this general management plan, and provides the base upon which all future planning efforts at the park are built. It identifies what is most important to the park, notes special mandates that affect management of the park, and identifies fundamental resources and values that are critical to maintaining the park's purpose and significance. The section also articulates the general goals the Park Service is striving to attain at Channel Islands National Park. All of the alternatives and management zones in this management plan should be and are consistent with and support the park's purpose, significance, and goals.

PARK PURPOSE

Park purpose statements clarify the reasons the park was established as part of the national park system and provide the foundation for park management. They are based on the park's enabling legislation and legislative history (appendix A).

In the park's enabling legislation (16 USC § 410ff) Channel Islands National Park was set aside to protect the nationally significant natural, scenic, wildlife, marine, ecological, historical, archeological, cultural, and scientific values of the Channel Islands in the state of California. These values include, but are not limited to, the following:

1) the brown pelican nesting area;
2) the undisturbed tidepools providing species diversity unique to the eastern Pacific Coast;
3) the pinnipeds (marine mammals such as seals and sea lions) that breed and pup almost exclusively on the Channel Islands, including the only breeding colony for northern fur seals south of Alaska;
4) the eolian (wind-dominated) landforms and caliche;
5) the presumed burial place of Juan Rodriguez Cabrillo; and
6) the archeological evidence of long-term use by many groups of Native Americans.

In addition, it is recognized that protection of scientific values requires that park management provides opportunities for research and ensures that activities or uses do not harm the integrity of the resources of current or future scientific interest.

PARK SIGNIFICANCE

Significance statements identify the resources and values that are central to managing the park, as well as express the importance of the park to the nation's natural and cultural heritage. The statements are based on the park's enabling legislation, legislative history (appendix A), agency management policies, and the knowledge and insights of park visitors, partners, and staff. Understanding the park's significance helps managers and the public preserve the resources in a manner consistent with the park's purposes.

Channel Islands National Park is significant for both its natural and cultural resources. The significance of Channel Islands National Park stems from the islands' remote, isolated position at the confluence of two major ocean currents, a region of persistent oceanic upwelling, and the border of two tectonic plates.

- The park contains examples of two biogeographical provinces in the ocean, the Oregonian and the Californian, and a dynamic transition zone between them.

- In a remarkably small area, the park harbors the biologic diversity of nearly 1,000 miles of the West Coast of North America.
- In addition to this diversity, park waters are also exceptionally productive. Swirling around the islands, cool, nutrient-rich oceanic waters rise into abundant sunlight and mix with warm coastal waters, accelerating photosynthesis and growth rates of myriad forms of sea life from microscopic plankton to blue whales.
- The park preserves some of the finest remnants of the coastal Mediterranean-type ecosystem in America. Among the most endangered in the world, this type of ecosystem is found in only five places: 1) California and northern Baja California; 2) the basin of the Mediterranean Sea; 3) southwestern Australia; 4) the western cape of South Africa; and 5) the central coast of Chile.
- The unique suite of plants and animals that have colonized the islands and their isolation from the mainland and each other over eons has resulted in the evolution of many rare, endemic species and subspecies. Rare plant communities support more than two dozen federally listed terrestrial plant species.
- The park provides critical habitat for nesting seabirds and for five species of pinnipeds.
- The park also harbors a prolific paleontological record.
- The park's archeological resources record some 13,000 years of human occupation and maritime adaptation.
- Historic structures, landscapes, and sites represent ranching, fishing, hunting, navigation, and other endeavors from a wide variety of cultures.
- The Channel Islands have long been recognized for their scientific values. The extensive archeological record, the unique island ecosystems and taxa, and the isolation from development and human impacts contribute to creating an environment of great interest to researchers, the public, and park management.
- Additionally, Channel Islands National Park provides the public with almost unparalleled opportunities for solitude, tranquility, wildlife viewing, and appreciation of natural history, outdoor recreation, and education.

FUNDAMENTAL AND OTHER IMPORTANT RESOURCES AND VALUES

Fundamental resources and values are systems, processes, features, visitor experiences, and scenes that deserve primary consideration in planning and management because they are critical to maintaining the park's purpose and significance. In the case of Channel Islands National Park, six fundamental resources of the park are in fact identified in the enabling legislation (see the "Park Purpose" section earlier in this chapter).

In addition to these fundamental resources, other important resources and values of the park include the following:

Physical Environment and Processes

- five distinct islands that have never been connected with the mainland, but have undergone significant geological and biogeographical changes over time as the islands rise, sea level rises and falls, and climate changes
- lands where fog, winds, marine currents, and upwellings provide habitat and food for significant concentrations and diversity of plants and animals

Natural Environment and Processes

- unique island endemic species and assemblages that have evolved due to isolation including island chaparral, island oak, island deer mouse, island night lizard, island fox, and island scrub-jay

- critical habitat for seabird nesting, marine mammals, rare plant communities, and more federally listed species than any park in the contiguous United States
- a refuge for species once more widespread during cooler moister climates of the past, like the Torrey pines and island ironwood that have largely vanished from the mainland
- used by migratory marine mammals and bird life that cover the extent of the Pacific, but rely on Channel Islands during critical times for mating and reproduction
- opportunities for successful ecological recovery and removal of nonnative species due to isolation
- natural darkness important for nocturnal seabirds and other animals
- natural soundscape and clean air that contribute to wildlife habitat and an increasingly rare visitor experience

Marine Environment

- complex protected marine ecosystem that contains warm and cold currents, providing habitat for species typical of Baja California through Oregon in a relatively small area
- abundant tidepools and kelp forests that provide sufficient habitat to support an extirpated population of threatened southern sea otter
- rare rocky habitat for southern California that facilitates a rich kelp forest

Scientific Values

- relatively untouched living laboratory that offers a baseline for more highly altered environments
- simple terrestrial ecosystem that offers great opportunity to study interrelationships
- decades of existing research, monitoring, and collections that document ecological conditions and cultural resources
- site of much current Pacific Rim archeological research, producing evidence of early coastal migration and some of the earliest human occupation of North America
- relatively intact paleontological sites undisturbed by burrowing animals or human development
- museum collections numbering 345,000 objects contain archeological, archival, and paleontological materials; botanical and zoological specimens; and objects related maritime navigation, fishing, ranching, military, and other historic activities on the islands
- opportunities to study evolutionary processes

Ethnographic Resources

- living descendants of people who inhabited the islands thousands of years ago and throughout more recent history and who maintain a spiritual connection to the islands and stories
- records, including oral histories, diaries, and photos, from people with recent and older island affiliations
- museum collections that tell the story of human use of the islands

Archeological Resources

- the absence of burrowing animals and limited human access have contributed greatly to the preservation of archeological resources and surrounding areas in a relatively undisturbed state, resulting in an intact 13,000-year archeological record and evidence of some of the earliest archeological resources in California and the Pacific Coast of North America
- archeological investigations show the development of an extremely complex culture from relatively simple beginnings, sustained by an abundant marine resource

- remains of shipwrecks in the park area are associated with the gold rush era, maritime commerce during the period from the 1870s to the present, and the evolution of merchant shipping since the 1870s

Historical Resources

- the Anacapa lighthouse and its supporting structures – the last lighthouse complex to be constructed along the Pacific coast – illustrate the theme of navigational aid development to facilitate maritime transportation
- ranching, fishing, hunting, navigation, military, and other human endeavors from a wide variety of cultures and time periods
- site of extensive environmental impacts in the 1960s and 1970s, including research into the decline of California brown pelican and its linkage to dichlorodiphenyltrichloroethane (DDT) and the Santa Barbara oil spill, catalyzed a number of environmental laws in the early 1970s and galvanized the 20th century environmental movement

Visitor Values

- opportunities to experience peace, pristine soundscape, natural dark, and explore an environment with few other people present
- unparalleled diving opportunities that provide immersion into little seen underwater marine resources

PRIMARY INTERPRETIVE THEMES

Interpretive themes are ideas, concepts, or stories that are central to the park's purpose, significance, identity, and visitor experience. The primary interpretive themes define concepts that every visitor should have the opportunity to learn. Primary themes also provide the framework for the park's interpretation and education programs; influence the visitor experience; and provide direction for planners and designers of the park's exhibits, publications, and audiovisual programs. Subsequent interpretive planning may elaborate on these primary themes.

The park has identified six primary interpretive theme topics, which are listed below. Following each theme is a list of topics and concepts that provide further elaboration and embellishment of the primary statement.

1. ISOLATION

More than 2 million years of continuous isolation from the mainland have manifested the unique natural and cultural resources of Channel Islands National Park.

2. RESTORATION AND RECOVERY

To facilitate the preservation of natural and cultural resources of Channel Islands National Park, and to provide a dynamic balance between them, the Park Service is actively restoring, and is allowing recovery of these resources.

3. MARINE RESOURCES

The ocean currents of cold and warm tropical waters that mix in Channel Islands National Park connect the park to the whole world and produce highly diverse and prolific marine ecosystems.

4. CONNECTIONS

The resources of Channel Islands National Park are broadly connected throughout the Pacific, supporting a wide variety of interdependent land and sea animals and plants, and a long continuum of human cultures.

5. GEOGRAPHIC INFLUENCES

Geographic characteristics have influenced and determined natural processes and cultural uses of Channel Islands National Park.

6. HUMAN ATTRACTION TO THE ISLANDS

Humans have been attracted to the islands and sea of what is now Channel Islands National Park for more than 13,000 years.

PARK GOALS

The park's goals are essentially a vision for the future. These statements articulate, in broad terms, the ideals that the National Park Service strives to achieve at Channel Islands National Park.

Restore and maintain natural ecosystems and processes

Channel Islands National Park was set aside, in part, to protect nationally significant natural and scientific values. Channel Islands are particularly noted for the abundance of wildlife and the high percentage of species only found on the islands. However, these resources are fragile, and considerable degradation of the island ecosystem has occurred due to human impacts.

Preserve and protect cultural resources

The enabling legislations for Channel Islands National Park recognizes the highly significant archeological remains of Native Americans, the role of the islands in the European exploration of North America, and the broad cultural values of the park.

Provide opportunities and access for the public to experience and connect to the park

Channel Islands National Park offers visitors an unparalleled opportunity to recreate and experience solitude and learn about their natural and cultural resources heritage in a remote park surprisingly close to a major urban area. Access is limited to the park due its remote nature, weather, and cost. Consequently, the park is bringing the resources to the people by providing real-time educational programs and wildlife viewing via Channel Islands Live. Through Channel Islands Live, anyone can access remote park locations and understand the value of the Channel Islands. The resources are both fragile and sensitive and they must be experienced in a manner that assures negligible adverse impacts. The park would continue to be managed on a low-intensity, limited-entry basis. The Park Service is committed to connecting the park to the public through distance learning and other programs.

Promote stewardship of park resources

Protection of the resources of Channel Islands National Park is dependent on the actions of many agencies and individuals. Opportunities for research and active involvement of the public would increase understanding and broaden the support for the park mission and stewardship. The park would continue to seek new opportunities to bring the park to the people, whether through direct visitation, education outreach, volunteerism, citizen science, or through evolving technologies such as the Internet.

Administer the park efficiently and effectively

The demands of running island operations are considerable. The budget available to the park would likely always be less than what the needs are to achieve park goals. All management decisions would be reviewed and evaluated in light of the need to ensure an efficient and effective operation. The park would strive to promote and implement clean fuel technologies and the use of renewable energy.

These five goals are intertwined, and no one goal can be emphasized to the complete exclusion of the others. In fact, achieving every goal in the general management plan to its fullest extent is not possible due to inherent conflicts among the goals. Although broad, these goals are also ambitious, and the challenges associated with accomplishing them are both significant and complex. Working toward the achievement of these broad goals is critical to the long-term management of Channel Islands National Park for the benefit of present and future generations. The park's enabling legislation mandates that Channel Islands National Park be administered on a low-intensity and limited-entry basis. In recognition of the special fragility and sensitivity of the resources, visitor use would be limited to ensure negligible adverse impacts on park resources. To that end, the Park Service and the public must work together to achieve a plan that meets these goals and ensure long-term preservation and public enjoyment of Channel Islands National Park.

SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS

Channel Islands National Park's enabling legislation includes special mandates (16 USC § 410ff-3a and b). Congress mandated that

(a) "the park shall be administered on a low-intensity, limited-entry basis."
(b) "in recognition of the special fragility and sensitivity of park resources, it is the intent of Congress that visitor use within the park be limited to assure negligible adverse impact on the park resources. The Secretary shall establish appropriate visitor carrying capacities for the park."

Management of Lands and Waters within the Park

About 250,000 acres are within the boundary of Channel Islands National Park. Many federal, state, and local agencies and private entities either have overlapping jurisdictions and management responsibilities or own lands within the park. The primary agencies and entities and their responsibilities or rights are summarized below.

The **Park Service** manages activities on five islands and the submerged lands, waters, rocks, and islets surrounding the islands to a distance of 1 nautical mile. The Park Service owns and manages the islands of Santa Barbara, Santa Rosa, the east end of Santa Cruz, and Anacapa. The Park Service manages San Miguel; however, the island is owned by the U.S. Navy. The Park Service may apply its regulations to activities on the surface of the water, within the water column, in the area below mean or ordinary high water, and in some cases on the sea bed, even on state-owned submerged land. The Park Service can use the *Superintendent's Compendium* per 36 CFR § 1.5 or permitting authority under 36 CFR §§ 3.3 and 1.6 to protect underwater and coastal resources from impacts. The Park Service would consult with state agencies and potentially affected parties to ensure cooperative management takes place.

Channel Islands National Marine Sanctuary (National Oceanic and Atmospheric Administration) overlaps the

park's marine waters and extends 6 nautical miles beyond the mean high tide for each island. The sanctuary regulates uses and activities within the park's marine waters, including oil and mineral extraction; disturbance to wildlife from aircraft, discharge or deposits of substances; alteration of or construction on the seabed; commercial vessel operations; and protection of submerged cultural resources.

The **U.S. Navy** owns San Miguel Island and associated Prince Island. The Park Service manages San Miguel Island under a 1991 agreement with the U.S. Navy. Although day-to-day management and protection of the island rest with the park staff, military activities can take precedence over other uses.

The **U.S. Coast Guard (Department of Homeland Security)** retains rights to install and maintain aids to navigation on the park's islands. The former Coast Guard light station on East Anacapa is now owned and managed by the Park Service. Among its many responsibilities, the Coast Guard enforces regulations related to vessel safety and ocean dumping, oversees oil spill cleanups, and provides emergency services to boaters.

California State Lands Commission is responsible for administering and managing the use of the state's tidelands, submerged lands, and submerged cultural resources around the islands. Although lands under the commission's jurisdiction are leased to the Park Service under Lease No. PRC 8390.9, the commission has retained authority over these areas for oil, gas, geothermal, and other mineral exploration and development. The commission also has permit authority over dredging, disposal of dredging spoils, mining, piers, docks, moorings, and salvage operations on these lands. Title to all abandoned shipwrecks, archeological sites, and historic or cultural resources in or on the tide and submerged lands of California is vested in the state and under the jurisdiction of the commission.

The **California Department of Fish and Wildlife** has jurisdiction and management over the living marine resources in the water column and seabed surrounding the park islands, starting at the mean high tide. In particular, commercial and sport fishing are regulated by the agency.

Santa Barbara County has authority over Santa Cruz, San Miguel, Santa Barbara, and Santa Rosa Islands regarding domestic water and wastewater systems and some law enforcement responsibilities.

The Nature Conservancy owns the western 76% of Santa Cruz Island. TNC has various easements on NPS property such as the Prisoners Harbor pier and the Navy Road. They also have easements and 25-year use and occupancy rights for several facilities. In addition, the U.S. Navy has a lease from TNC at the radar site on Santa Cruz Island, which is a TNC inholding. The Nature Conservancy also retains easement rights at several other places, including the barracks facility and associated water system.

The heirs of Pier Gherini have a deed that grants them a 25-year use and occupancy right-to-use (ending in 2014) of specified land areas and facilities on property on the east end of Santa Cruz Island.

Several other agencies, though not directly engaged in management of park resources, are consulted to ensure compliance with legislation, executive orders, and other mandates. These agencies include:

- U.S. Fish and Wildlife Service (management of threatened and endangered species, migratory birds, wetlands protection)
- National Marine Fisheries Service (management of threatened and endangered species and marine mammals)
- Bureau of Ocean Energy, Management, Regulation and Enforcement (oil and gas development on the outer

continental shelf, including tracts near the park that have oil and gas platforms and renewable energy projects)
- U.S. Army Corps of Engineers (Clean Water Act)
- California Coastal Commission (management of the coastal zone)
- California Office of Historic Preservation (management of cultural resources)
- Central Coast Regional Water Quality Control Board (manages and protects water quality, including issuing permits for discharges into water bodies and certifications of water quality for work in streambeds)
- Ventura Port District (management of Ventura Harbor Development in which the headquarters facility is located)
- Santa Ynez Band of Mission Indians
- California Department of Health Services, Sanitary Engineering Branch (management of two public water systems)

Cooperative Management of Park Waters

As noted above, overlapping jurisdictions manage the park's waters. Under the park's enabling legislation, Congress directed the Park Service to enter into a cooperative [agreement] with the State of California for the enforcement of federal and state laws on lands and waters owned by the State of California [16 USC § 410ff-2(b)]. The State of California owns the submerged seabed lands around each of the five main islands. Although the State of California owns these submerged lands, the legislative boundary for the park extends 1 nautical mile offshore from each of the park's five main islands. The Park Service has the authority to enforce park regulations on the waters within park boundaries regardless of ownership status of the underlying seabed [36 CFR Section 1.2(a)]. As a result of this authority, the State of California and the Park Service have overlapping jurisdiction for waters within park boundaries. NPS rangers enforce applicable laws and regulations of the State of California, such as those applicable to marine fishing, as authorized by 36 CFR and by Title 16, USC.

In addition, the sanctuary, under the administration of the NOAA, imposes an additional layer of federal jurisdiction over some of the offshore areas. To enhance cooperation among these agencies, the Park Service would pursue an agreement with the State of California and NOAA to coordinate enforcement of laws relating to the protection and management of marine resources and to the use of waters within park boundaries.

SERVICEWIDE LAWS AND POLICIES

This section identifies what must be done at the park to comply with federal laws and policies of the Park Service. Many of the park's management directives are specified in laws and policies guiding the Park Service and are therefore not subject to alternative approaches. For example, there are laws and policies about managing environmental quality (such as the Clean Air Act, the Endangered Species Act (ESA), and Executive Order (EO) 11990, "Protection of Wetlands"); laws governing the preservation of cultural resources (such as the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act); and laws about providing public services (such as the Americans with Disabilities Act (ADA)) — to name only a few. In other words, a general management plan is not needed to decide, for instance, that it is appropriate to protect endangered species, control exotic species, protect archeological resources, preserve the cultural landscape, conserve artifacts, or provide for handicap access. Laws and policies have already decided those and many other issues for the park. Although attaining some of these conditions set forth in these laws and policies may have been temporarily deferred in the park because of funding or

staffing limitations, the Park Service would continue to strive to implement these requirements with or without a new general management plan.

Some of these laws and executive orders are applicable solely or primarily to national park system units. Two key laws are the 1916 Organic Act that created the National Park Service, and the General Authorities Act of 1970. The Organic Act stated that the National Park Service was created to

> Promote and regulate the use of the Federal areas known as national parks, monuments and reservations by such means and measures as conform to the fundamental purpose of the said parks, monuments and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

The National Park System General Authorities Act (1970) states

> The authorization of activities shall be construed and the protection, management, and administration of national park areas shall be conducted in light of high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.

Two other important laws for the National Park Service include the act of March 27, 1978 relating to the management of the national park system, and the National Parks Omnibus Management Act (1998). Other laws and executive orders have much broader application, such as the Wilderness Act, the ESA, the National Historic Preservation Act, and EO 11990 addressing the protection of wetlands.

The National Park Service also has established policies for all units under its stewardship. These are identified and explained in a guidance manual titled NPS *Management Policies 2006*. The alternatives considered in this document incorporate and comply with the provisions of these mandates and policies.

To truly understand the implications of an alternative, it is important to combine the servicewide mandates and policies with the management actions described in an alternative.

Appendix B shows the servicewide mandates and policy topics related to planning and managing Channel Islands National Park; across from each topic are the desired conditions that the staff is striving to achieve for that topic and thus that part of the appendix tables are written in the present tense. The strategies for achieving these desired conditions are also shown in the appendix tables. The alternatives in this plan address the desired future conditions that are not mandated by law and policy and that must be determined through a planning process.

It should be stressed that new uses or activities that arise in the future, which have not been considered in this plan, would be fully evaluated before being permitted in Channel Islands National Park. Only appropriate uses and activities that are compatible with the purposes of the park or values and that are consistent with other laws, regulations, executive orders, and servicewide mandates and policies would be permitted. As required under the park's enabling legislation, visitor uses or activities that would result in impacts that exceed a negligible level would not be allowed.

Impairment of National Park Resources

In addition to determining the environmental consequences of implementing the preferred and other alternatives, NPS *Management Policies 2006* (§ 1.4) requires a determination that none of the proposed actions would impair a park's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on park resources and values. However, the laws do give the Park Service the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park. That discretion is limited by the statutory requirement that the Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (NPS *Management Policies 2006*). Whether an impact meets this definition depends on the particular resources that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. As noted in § 1.4.7 of NPS *Management Policies 2006*, in addition to the above environmental consequences, park managers also take into consideration consultations required under § 106 of the National Historic Preservation Act, relevant scientific information, information from subject matter experts, and the results of civic engagement and public involvement activities.

The determination of no impairment will be provided as an attachment to the record of decision.

OTHER NPS PLANS AND RELATED GUIDANCE

A number of plans developed by the Park Service or other agencies have a relationship to this plan. Appendix C provides a list of such plans.

PLANNING ISSUES/CONCERNS

NPS staff; representatives from other county, state, and federal agencies and organizations; and members of the public identified various issues and concerns during the scoping (early information gathering) period for this plan. An issue is defined as an opportunity, conflict, or problem regarding the use or management of public lands. Comments were solicited at public meetings, through planning newsletters, and on the park's website (see the "Consultation and Coordination" chapter).

Comments received during scoping demonstrated that there is much that the public likes about the park — its management, use, and facilities. The issues and concerns generally involve determining the appropriate visitor use, types, and levels of facilities, services, and activities while remaining compatible with desired resource conditions. The general management plan alternatives provide strategies for addressing the issues within the context of the park's purpose, significance, and special mandates.

The major issues that were raised for this plan included access to the islands, access on Santa Rosa Island, the type and level of recreation development that is appropriate on the islands, providing sustainable park operations, designation of wilderness, and climate change.

ACCESS TO THE ISLANDS

Access across the sea to the islands is expensive and difficult. The islands are only accessible by park concessioner boats and planes or private boats. Airplanes can only take visitors to Santa Rosa Island. Concession boat transportation is available year-round to all of the islands, although weather and ocean conditions (e.g., fog, high winds, and rough seas) are unpredictable and can limit access. The issue this plan needs to answer is whether more opportunities for public access should be provided to the islands. Some people want the Park Service to provide more access (boat and/or aircraft) to the islands. They note that segments of the population cannot travel to the islands. On the other hand, others argue that increased access opportunities would result in more people degrading sensitive park resources and would change the experience of visiting this remote and isolated environment.

ACCESS ON SANTA ROSA ISLAND

This issue addresses the question of the level and type of access that should be provided to visitors. Santa Rosa is a relatively large island. When most visitors are dropped off at Bechers Bay they are now faced with walking long distances to see the 53,000-acre island. Some have suggested that opportunities be provided for visitors to ride bikes and horses, or be provided vehicle transportation so they can go farther in the relatively short time most visitors spend on the island. On the other hand, these new opportunities could increase the potential for visitor impacts on sensitive resources in the backcountry, as well as increase NPS staff workloads.

APPROPRIATE TYPE AND LEVEL OF RECREATION FACILITIES

This issue addresses the question of the appropriate balance of developments that should be provided for visitors. What general types and intensities of development are needed to provide for public enjoyment of the park, while assuring negligible impacts on park resources? Should more overnight accommodation opportunities be provided? Should more visitor facilities be provided at the park's most popular island locations, Scorpion and Prisoners Harbor on Santa Cruz, and Bechers Bay on Santa Rosa? There are very few visitor facilities currently on the

islands, including primitive campgrounds, roads, interpretive facilities, and a few trails. There are no services such lodging, food stores or gear rental shops on the islands. Some people support additional facilities being provided to improve the quality of the visitor experience, as well as supporting more people, in limited areas. Others believe such facilities would change the visitor experience, increase impacts on the resources, and increase NPS costs and staffing requirements.

Some of the existing facilities also are located in areas with resource issues. For example, at Scorpion, the campground is within the floodplain. At Scorpion, Smugglers Cove, and Prisoners Harbor, historic structures occur in the floodplain (or, in the case of Scorpion, in the stream channel). What should be done to preserve these facilities indefinitely, if anything?

EFFECTIVE AND EFFICIENT OPERATION OF THE PARK

This issue focuses on whether or not the existing administrative and operational facilities are functioning effectively and efficiently, meeting the needs of both park staff and visitors. With the park spread out over approximately 2,228 square miles, the geography of the park's islands poses operational challenges. The closest island, Anacapa, is separated from park headquarters by 14 miles of open ocean, while San Miguel, the farthest island, lies 55 miles offshore. The park's facilities and infrastructure including piers, campgrounds, utilities, employee housing, trails, and roads are spread across five remote islands. A small number of park staff need to support visitors; monitor, protect, and manage both terrestrial and marine resources; and maintain the operation of facilities, vehicles, vessels, and utilities at all of these locations. As a result, the park must rely heavily on marine and air transportation for daily operations. Support for island operations is expensive because of these transportation costs and weather problems. Temporary housing facilities in Scorpion are inadequate, as are administrative facilities at Prisoners Harbor, Bechers Bay, and East Anacapa. There is also a shortfall for facilities maintenance, primarily related to operations and backlog maintenance needs, parkwide.

DESIGNATION OF WILDERNESS

To fulfill the requirements of the park's enabling legislation and the Wilderness Act, the Park Service must determine whether any lands in the park should be proposed for inclusion in the National Wilderness Preservation System. Some people may oppose wilderness designation because they believe it limits their access and what they can do in the park. Some management actions would be constrained or limited (e.g., use of mechanized equipment and roads), which may complicate administration and management of the park. Others likely support wilderness designation, believing it would provide permanent protection to the park and its resources, and limit changes the Park Service could propose. Others may support wilderness designation, but disagree on which part(s) of the park should be proposed for wilderness.

CLIMATE CHANGE

Climate change refers to any substantial changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change (IPCC 2007) provide clear evidence that climate change is occurring and would accelerate in the coming decades. The effects of climate change on national parks are beginning to emerge as both science and impacts become clearer; however, it is difficult

to predict the full extent of the changes that are expected under an altered climate regime.

In response to climate change, the National Park Service prepared a strategy involving science, mitigation, adaptation, and communication (NPS 2010). A *Green Parks Plan* has been published, which calls for the National Park Service to reduce greenhouse gas emissions and adapt facilities at risk from climate change (NPS 2012).The park staff also prepared a "Climate Friendly Action Plan" specific to Channel Islands (NPS 2011). The Park Service recognizes that the major drivers of climate change are outside the control of the agency. However, climate change is a phenomenon and those impacts throughout the national park system cannot be discounted. Some of these impacts are already occurring or are expected in Channel Islands National Park in the time frame of this management plan. Increasingly, the Park Service is considering climate change in its management actions, including actions to mitigate effects and adapt to climate change, while also meeting park goals. Therefore, climate change is included in this document to recognize its role in the changing environment of the park, provide an understanding of its impact, and incorporate climate change into park management decision making.

There are two different issues to consider with respect to climate change: (1) what is the contribution of the proposed action to climate change, such as greenhouse gas emissions and the "carbon footprint?" and (2) what are the anticipated effects of climate change on the park's resources and visitors that are affected by the management alternatives? Because the contribution in comparison to the region of the proposed actions in all of the alternatives to climate change is negligible, the first issue has been dismissed as an impact topic. This plan primarily focuses on the second issue, addressing the anticipated effects of climate change on the park's resources and visitors.

Although climate change is a global phenomenon, it manifests differently depending on regional and local factors. Climate change is expected to result in many changes to the southern California region and the park in particular. Some of these changes are already occurring. In the Ventura region, including the park, temperatures are projected to increase 2.2 to 3.3 C between 1990 and 2100, while precipitation is projected to decline from 13 to 20% during this period (Gonzalez et al. 2010; IPCC 2007; Mitchell and Jones 2005). More generally, under medium to medium-high greenhouse gas emission scenarios, mean sea level along the California coast is projected to rise from 1.0 to 1.4 meters (39 to 55 inches) by the year 2100 (Heberger et al. 2009). Other models project a sea level rise along the coast of 7 inches by 2030, 14 inches by 2050, and 47 inches (medium projection) by 2100 (California Ocean Protection Council 2011). None of the proposed permanent developments in the alternatives would be in areas that would be inundated by sea level rise. (Proposed facilities on or near the beach at Scorpion Valley would be built so they would be moveable.) The existing mainland visitor center is in an area that could be vulnerable to sea level rise, but not in the near future.

Climate change is also expected to affect other aspects of the park's weather (e.g., temperature extremes, fog frequency and extent); resources (e.g., shorelines, vegetation, wildlife, ocean acidity, marine upwelling, historic structures, and archeological resources); facilities (e.g., roads and piers); and visitor experiences on the islands. The high number of endemic species on the Channel Islands, by definition of limited distribution and small population size, may be particularly vulnerable to altered climates. These changes would have direct implications on resource management and park operations, and on the way visitors access, use, and experience the park.

Climate change may affect visitors' park experiences in a variety of ways, including

- changes in wildlife activities due to altered terrestrial and marine ecosystems
- reduced visitor access to sites and structures affected by climate change
- disruption of visitor services and recreational opportunities

Climate change also may affect cultural resources. For example, higher sea levels could increase erosion of archeological resources near the shorelines of the islands. Although historic structures and cultural landscape features are currently at some risk from wildfires and storm damage, these risks could potentially increase as climate change intensifies the severity of fires and severity and frequency of storms.

Climate change is a far-reaching and long-term issue that would affect the park, its resources, visitors, and management beyond the scope of this plan and its 20- to 40-year timeframe. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which temperature would continue to rise and whether global emissions of greenhouse gases can be mitigated before serious ecological thresholds are reached.

Climate change science is a rapidly advancing field, and new information is being collected and released continually. The full extent of climate change impacts to resources and the visitor experience is not known, nor do managers and policy makers yet agree on the most effective response mechanisms for minimizing impacts and adapting to change. Thus, unlike the other issues noted above, this plan does not provide definitive solutions or directions to resolving the issue of controlling impacts of climate change on Channel Islands National Park. Rather, the plan provides some general directions and strategies that can help minimize the park's contribution to climate change (see the desired conditions and strategies in appendix B and the park's climate action plan (NPS 2011)). The Park Service also recognizes that the management actions and facilities being proposed in all of the alternatives need to be adopted with future climate change and impacts in mind because past conditions are not necessarily useful guides for future planning.

The impacts of climate change on the park are not expected to differ among the alternatives, and the lack of qualitative and quantitative information about climate change effects adds to the difficulty of predicting how these impacts would be realized in the park. Additionally, management actions that are inherently part of each alternative, such as allowing natural processes to dominate or managing nonnative plants to prevent spreading, would not fundamentally change with the anticipated added effects of climate change. Also, the range of variability in the potential effects of climate change is large in comparison to what is known about the future under an altered climate regime in the park in particular, even if larger-scale climatic patterns have been predicted for the California Coast (California Natural Resources Agency 2009). Therefore, the potential effects of this dynamic climate on national park resources were included in "Chapter 3: Affected Environment." However, these effects are not analyzed in "Chapter 4: Environmental Consequences" in general with respect to each alternative because of the uncertainty and variability of outcomes, and because these outcomes or management are not expected to differ among the alternatives.

ISSUES BEYOND THE SCOPE OF THE PLAN /WILDERNESS STUDY

MANAGEMENT OF MARINE WATERS

Management jurisdiction over the waters within the park boundary is confusing and not always clear. Multiple federal and state agencies have overlapping different legal controls, jurisdictions, and management responsibilities. The Park Service has jurisdiction within the ocean 1 mile around each of the five park islands. The State of California also has jurisdiction over ocean areas within the park, including the living marine resources and the sea bottom. NOAA, which manages the sanctuary, promulgates regulations that encompass the waters surrounding the islands. Other federal agencies that have management responsibility and regulations include the Coast Guard (vessel safety), the National Marine Fisheries Service (management of marine mammals), and U.S. Navy (management of the Sea Range where military training and testing is conducted). The Park Service would continue to consult and coordinate with the above agencies to resolve issues that arise over management of park waters.

Fishing

Commercial and recreational fishing has been implicated in the declines in the stocks of many fish and invertebrates that are harvested within park waters, including several groundfish species (e.g., rockfishes and lingcod), giant seabass, pelagic sharks, warty sea cucumber, red urchins, and abalone (NPS 2006a). Management of fish and invertebrate populations and fishing has changed with the establishment of state marine reserves and marine conservation areas by the State of California, and federal marine reserves and conservation areas by the NOAA outside of the park. These marine protected areas are expected to better protect fish populations in the park. The Park Service would continue to work with the California Department of Fish and Wildlife and NOAA to resolve any fishing issues that arise in the future.

Special Closure

Special closures provide for localized protection for seabird nesting and rookery sites, and marine mammal haul-out sites. These areas are designated by the State of California. Two Special Closures are within the park. The Anacapa Island Special Closure is designed to protect a brown pelican fledgling area and the San Miguel Island Special Closure to protect marine mammals. Special closures may overlap with other marine protected areas.

Aquaculture

Aquaculture is the practice of farming shellfish, finfish, and aquatic plants in controlled or selected environments (16 USC § 2802(1), (5)). Aquaculture production of seafood in the U.S. will undoubtedly increase in the near future.

Aquaculture is agriculture and as such is prohibited in parks pursuant to 36 CFR § 2.60 except when specifically authorized by federal statute, required under a reservation of use rights, or needed for a recreational activity or historic scene. This prohibition applies even on state-owned submerged lands pursuant to 36 CFR § 1.2(a)(3). Any aquaculture allowed in parks for one of those three reasons must be conducted in accordance with a permit, contract, or other agreement pursuant to 36 CFR § 5.3, but in no circumstance can be allowed to pollute or contaminate park area waters or water courses (see 36 CFR § 2.14). In addition, any aquaculture project will be subject to appropriate NEPA compliance and any other applicable federal law.

The reason for generally prohibiting aquaculture in parks is because of the potential of aquaculture to negatively impact or impair park resources and values. The introduction or release of hatchery or domesticated stocks can alter or dilute natural population genetic structure when introduced species are able to interbreed with native species, and can introduce novel diseases. The introduction of non-indigenous or alien species alters natural diversity and community dynamics. Aquaculture facilities often attract avian and marine predators eager to feast on the dense numbers of fish in the enclosures, which can result in entanglement of eagles, raptors, and wading birds in nets covering the pens.

Additionally, aquaculture may have adverse impacts on submerged lands and benthic resources. For example, when mesh cages used for estuarine clam aquaculture are pulled up from seagrass beds, the seagrass and other benthic resources are damaged.

When an aquaculture project is proposed near a park unit, the Park Service must work closely with the state and other permitting entities to ensure the consideration of park resources and values. The U.S. Army Corps of Engineers (Corps of Engineers), U.S. Environmental Protection Agency (EPA), NOAA, and Fish and Wildlife Service have federal authority over the activities necessary to conduct aquaculture operations. The Corps of Engineers has the authority to issue permits for structures located in navigable waters (33 USC § 403; 33 CFR § 329.12(a)). The EPA has authority to regulate discharges from aquaculture facilities as "concentrated aquatic animal production facilities" (33 USC § 1342; 40 CFR § 122.24(a)). The NOAA and Fish and Wildlife Service have an opportunity to review and comment on proposed permits to be issued by the Corps of Engineers or EPA.

Development of Oil and Gas Deposits within the Park Boundary

The Ventura Port District has a 2.8-acre oil and gas mineral reservation within the park boundary. Although there is the potential that this area could be drilled for oil and gas, exploratory and development drilling is considered very unlikely given the size of the reservation and the small likelihood that this area contains economic deposits of oil and gas.

REPLACEMENT OF THE SCORPION PIER

The existing Scorpion Harbor pier is a flatbed railcar that was installed as a temporary pier in 2000 and is rapidly deteriorating due to wave action and saltwater. The pier has been closed numerous times due to weather hazards, wave damage, and to perform required repair and maintenance activities. Additionally, the pier cannot be used by park or concession boats during very low tides because of inadequate water depth.

A separate environmental impact statement is being prepared to address the pier issue, which would address this site-specific plan in more detail than this general management plan (see also appendix C).

PUBLIC SAFETY ON SAN MIGUEL AND PRINCE ISLANDS

The U.S. Navy and U.S. Air Force used San Miguel and Prince Islands as targets for bombing and shelling from 1942 to 1963, and then more sporadically until the early 1970s. In 1965, the U.S. Navy initiated a four-day ordnance sweep to remove ordnance from San Miguel Island. Since that time, shrapnel, ammunition, and bomb casings occasionally have been found. However, park rangers or researchers have not found unexploded ordnance in the last 25 years.

As noted earlier in the "Scope of the General Management Plan/Wilderness Study/EIS," the U.S. Navy closed the islands to public use due to concerns over the potential threat of unexploded ordnance to public health and safety. This issue is being addressed by the U.S. Navy and the Park Service independently of this general management planning process, and should not affect the actions being proposed in this plan.

NEXT STEPS AND IMPLEMENTATION OF THE PLAN / WILDERNESS STUDY

Following distribution of the *Final General Management Plan / Wilderness Study / Environmental Impact Statement* and a 30-day no action period, a record of decision approving a final plan would be signed by the NPS regional director. The record of decision documents the NPS selection of an alternative for implementation. With the signing of the record of decision, the plan can then be implemented.

GENERAL MANAGEMENT PLAN

Once the planning process is completed, the selected alternative would become the new management plan for the park and would be implemented over 20 to 40 years. It is important to note that not all of the actions in the alternative would necessarily be implemented immediately or at all.

The implementation of the approved plan would depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Full implementation of the actions in the approved general management plan could be many years into the future and some may never be implemented.

In addition to funding, the implementation of the approved plan could be affected by other factors, such as changes in NPS staffing, visitor use patterns, requirements for additional data or regulatory compliance, competing national park system priorities, and uncontrollable environmental changes (described below). More detailed planning and environmental documentation may need to be completed, if appropriate, before some of the actions would be carried out.

This plan provides direction and lays the groundwork for addressing specific issues. Other future program and implementation plans describing specific actions that managers intend to undertake and accomplish in the park would tier from the desired conditions and long-term goals set forth in the approved *Final General Management Plan*.

Once the *Final General Management Plan* has been approved, additional feasibility studies and more detailed planning and environmental documentation would be completed, as appropriate, before some proposed actions can be carried out. For example,

- Because the general management plan is a programmatic document, future compliance documents will tier off this plan. Additional compliance (environmental and cultural resources) will be prepared as site-specific plans and designs are completed.
- Appropriate permits would be obtained before implementing actions that would impact wetlands.
- Appropriate federal agencies would be consulted concerning actions that could affect threatened and endangered species.
- Native American tribes and the state historic preservation officer would be consulted regarding undertakings with the potential to impact cultural resources.

These more detailed plans would tier from the approved *Final General Management Plan*, describing specific actions managers intend to take to achieve desired conditions and long-term goals.

Finally, it needs to be recognized that climate change would likely affect the park in a myriad of different ways, both during the 20- to 40-year life of this plan and beyond. It is

likely that park staff would need to employ adaptive management in response to these changes, and elements of the plan may need to be modified. For example, if sea levels rise, public access to some of the islands may be affected. If climate change threatens the sustainability of rare species, additional management actions may be necessary. Depending on the nature of climate and resulting changes that occur, the Park Service either would take additional actions consistent with the management directions in this plan, or if necessary, amend or replace the plan. In all cases, appropriate environmental compliance would occur before new actions are taken.

WILDERNESS STUDY

As noted above, a minimum of 30 days after the publication of the *Final General Management Plan / Wilderness Study / Environmental Impact Statement*, a record of decision would be prepared and published in the *Federal Register*. This record of decision would document what action the Park Service intends to take regarding a wilderness proposal for the park.

If the decision is made to propose wilderness, and the NPS director concurs, a wilderness proposal would be sent to the assistant secretary of Fish and Wildlife and Parks and the secretary of the interior, who may revise or approve the proposal. The secretary may then forward a wilderness recommendation to the president. The president may approve or revise the recommendation and then transmit his recommendation to Congress for consideration. Congress may enact legislation needed to include the area within the national wilderness preservation system as "designated" and/or "potential" wilderness. Areas proposed as potential wilderness would become designated wilderness upon the secretary of the interior's determination in the *Federal Register* that the nonconforming uses have ceased or terminated.

Adaptive Management

Adaptive management can be described as a series of repeating incremental steps: collect information on an existing problem, analyze it, propose appropriate interventions, implement the interventions, monitor the interventions, and if needed, use additional interventions to address the problem.

Channel Islands National Park

Chapter 2: Alternatives, Including the Preferred Alternative

INTRODUCTION

This chapter presents the three alternative approaches to managing Channel Islands National Park — the "no action" alternative (alternative 1), which describes a continuation of current management, and two "action" alternatives (alternatives 2 and 3). The alternatives and the assessment of the potential environmental consequences of the alternatives form the core of this plan.

The alternatives in this plan describe different general visions for the future of the park. They are intended to enable managers and the public to consider different approaches to managing visitor use and resources, protecting park resources, directing development, providing access, and resolving conflicts that may arise at Channel Islands National Park.

This chapter first briefly describes the planning process used to develop the alternatives as well as the management zones that were applied to specific areas of the park to help define each of the action alternatives. The chapter then describes how the wilderness study was prepared, and the options identified in the alternatives. The alternatives are then described and shown graphically. This is followed by mitigation measures that would be taken to reduce the intensity of impacts under the alternatives, identification of the environmentally preferable alternative, and a description of actions that were considered but dropped from further analysis for various reasons. Table 17 and Table 19 at the end of the chapter summarize the alternative actions and the impacts that would result from implementing each alternative.

FORMULATION OF THE ALTERNATIVES

Many aspects of the desired conditions of Channel Islands National Park are defined in the establishing legislation, the park's purpose and significance statements, and the servicewide mandates and policies described in appendix B. Within these parameters, the Park Service solicited input from the public, NPS staff, governmental agencies, tribal officials, and others regarding issues and desired conditions for Channel Islands National Park — resource conditions and the quality of visitor experiences that the Park Service aspires to achieve and maintain over time. Information was collected through newsletters, meetings, and personal contacts. All of the planning issues and concerns described in chapter 1 (e.g., access to the islands, appropriate levels and type of recreation facilities, and designation of wilderness) were considered in the development of the alternatives. Planning team members also gathered information about existing visitor use and the condition of the park's facilities and resources. Then a set of management zones and management alternatives were developed to reflect the range of ideas proposed by NPS staff and the public.

As noted in chapter 1, the U.S. Navy, which owns San Miguel and Prince Islands, closed the islands to public use in 2014 due to concerns over the potential threat of unexploded ordnance to public health and safety. All proposed actions in the two action alternatives on San Miguel and Prince Islands are subject to the U.S. Navy and Park Service entering into a real estate agreement and the terms and conditions associated with the agreement. Until this agreement is approved, San Miguel and Prince Islands will remain closed to public use and the actions proposed in these alternatives will not be implemented.

The alternatives in general management plans focus on *what* resource conditions and *what* visitor uses, experiences, and opportunities should be at Channel Islands National Park rather than on details of *how* these conditions, uses, and experiences should be achieved.

Thus, the alternatives do not include many details on resource or visitor use management.

Several constraints limited the range of alternatives the planning team could consider. These constraints included: physical limitations due to the islands being isolated and remote, the presence of sensitive natural and cultural resources, limited existing infrastructure, high cost of access and maintenance and development of facilities, the special mandates and administrative commitments that govern management and use of the park, and the determination of wilderness eligibility. For these reasons, there are not many major differences between the two action alternatives, alternatives 2 and 3.

The planning team developed three alternatives or approaches for managing the park. All of the alternatives emphasize resource stewardship, including ecosystem preservation and restoration. Alternative 1, the no action alternative, describes the continuation of current management and trends; it serves as a basis for comparing the other alternatives. The two action alternatives, alternatives 2 and 3, seek to incorporate both resource protection and visitor opportunities, and were developed to be functional and viable. Although all of the alternatives are consistent with maintaining the park's purposes, significance, mission, and fundamental resources and values, and avoid unacceptable resource impacts, they respond to differing public desires and concerns. The alternatives thus vary primarily in their focus with regard to opportunities for visitor experiences and facilities on the islands.

IDENTIFICATION OF THE NPS PREFERRED ALTERNATIVE

Initially, the Park Service uses a value analysis method called "Choosing by Advantages," or "CBA," to decide which GMP alternative is the preferred alternative. The CBA process is a tool for determining the specific advantages each alternative would provide toward meeting specific park objectives. The advantages described in the CBA process represent the benefits that would be gained under each alternative. The advantages for each alternative are compared to the expected costs of each alternative to determine the cost/benefit ratio of each alternative. The alternative that provides the most benefit per dollar, with the least adverse environmental impacts, is the best value alternative and the one that is labeled "preferred" in this plan. The preferred alternative incorporates both the general management plan and the wilderness proposal. Since the initial preferred alternative was identified, some analysis, such as commercial and operational feasibility, has provided valuable input and modified the initial preferred alternative over time.

CONSIDERATION OF BOUNDARY ADJUSTMENTS

The National Park and Recreation Act of 1978 requires general management plans to address whether boundary modifications should be made to park units. In the case of Channel Islands National Park, no specific boundary adjustments were identified as being needed. Thus, none of the alternatives propose changes to the park boundary.

MANAGEMENT ZONES

An important tool in planning and management is the establishment of management zoning for the park. Management zones identify how different areas could be managed to achieve a variety of resource conditions and visitor experiences. Each zone specifies a particular combination of resource, social, and management conditions. The Park Service would take different actions within various zones relative to the types and levels of uses and facilities. Uses that are not prescribed would generally not be permissible.

Table 1 describes the seven management zones developed for Channel Islands National Park. Alternatives for future park conditions and management have been developed by placing these zones in different configurations in the park. The existing West Anacapa Research Natural Area (an administrative designation that federal land management agencies apply for research and educational purposes and/or to maintain biological diversity) would be retained as part of the backcountry management zone. Note that the land zones do not apply to the no action alternative. ***(However, the State of California Marine Reserves and Conservation Areas would apply under the no action alternative).***

As indicated in Table 1, the three marine zones are very similar in how these waters would be managed. The primary difference between the zones is the level of consumptive activities that would be permitted. The marine stewardship zone would allow fishing subject to federal or state regulations; the marine protected (state marine reserves) zone would only allow nonconsumptive activities; the marine protected (state marine conservation areas) would allow sustainable harvest of selected marine resources, subject to federal or state regulations.

TABLE 1. MANAGEMENT ZONES

Resource Condition	Visitor Experience/Activity	Appropriate Development
Terrestrial Zones		
BACKCOUNTRY		
Native species and natural processes would predominate in this zone. Some visitor use would occur and natural resources might be modified slightly to accommodate moderate levels of visitor use. Native species and natural processes would take precedence over visitor accommodation. However, on San Miguel Island – Cuyler Harbor, maintaining undeveloped access for small craft landings could require management of natural resources sufficient to ensure access. Naturally functioning ecosystem components and processes would be maintained and restored. Exotic species would be eliminated where feasible and otherwise would be controlled. Human-caused habitat fragmentation would be minimal.	This zone would provide opportunities for outdoor activities in diverse natural settings, consistent with the protection of natural and cultural resources. Low visitor use levels would be accommodated in this zone; the experience would be primitive, require self-reliance, and offer some opportunities for solitude. Challenge, adventure, and discovery would be components of the experience. Although only minimal on-site interpretive media would be appropriate, moderate levels of interpretation and orientation might be provided off-site to prepare visitors for their backcountry experience and encourage appropriate care of sensitive resources. All recreation would be nonmotorized and nonmechanized.	Developments in this zone would be unobtrusive and blend with the natural environment. Only those facilities necessary to support visitor activities would be appropriate. Trails, marked routes, designated backcountry campsites, toilets, wind screens, food storage boxes, and water pumps could be included. Other site-hardening devices such as boardwalks, fencing, and pedestrian paths would be permitted as necessary to protect resources. Adaptive use of existing structures, including historic structures, might be appropriate in this zone. Developments and uses would be compatible with wilderness values.

Resource Condition	Visitor Experience/Activity	Appropriate Development
Cultural resources would be preserved, rehabilitated, or, in the case of backcountry resources, allowed to deteriorate depending on the location and significance of the resource; treatment of cultural resources would be determined on a case-by-case basis depending on the resource's significance and future resource plans. Wilderness character would be maintained.	Appropriate activities in this zone might include hiking, backpacking, backcountry camping, and nature observation. All camping would be at designated campsites.	
CULTURAL LANDSCAPE		
Historic buildings, structures, and other landscape characteristics and features would be preserved or rehabilitated to represent the history of human use and occupation. Resources might be used for interpretive and/or compatible operational purposes by the Park Service or its partners. Nonhistoric development and activities that are necessary for visitor and operational support might occur as long as the overall character of the cultural landscape would not be compromised. Natural resources that have been identified as important to the cultural landscape would be managed to perpetuate that landscape. The treatment of natural resources in this zone would be determined on a case-by-case basis.	A primary experience in this zone would be visiting and learning about the historic uses and occupants of the islands. Other activities might include walking, hiking, camping, and other compatible activities provided by the Park Service and its partners. Visitation would be maintained at moderate levels to allow some opportunities for discovery, occasional solitude, and enjoyment of the cultural setting with only moderate noise. Interpretation would be important to the experience, but would not compromise the cultural landscape character. Additional information and orientation might be offered off-site.	Modest development would be permitted if necessary to support visitor and operational activities. Development might include interpretive media, walkways, trails, picnic areas, employee housing, campsites, and restrooms. All developments would be compatible with the cultural landscape, such that new structures would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing cultural landscape features; and sensitively located so as not to detract from the historic landscape character, including circulation patterns, land use, natural features, vegetation, and the spatial density of the landscape features. Compatible design also will consider the number, size, and location of all proposed development in order to avoid a cumulative adverse impact. Facilities would be fully accessible to the extent feasible without compromising the cultural character.
FRONTCOUNTRY		
Sensitive natural and cultural resources occurring in the zone would be protected. Invasive species would be eliminated where feasible, and otherwise would be controlled. Human-caused habitat fragmentation would be mitigated to the extent possible. Cultural resources would be preserved or rehabilitated and adaptively used for visitor support or park operational purposes.	Higher levels of visitor recreational and educational activity would be accommodated in this zone. Activities might include hiking, camping, picnicking, fishing, kayaking, and interpretive / educational activities. Opportunities for challenge and exertion would be components of the experience in this zone; fairly high levels of noise would be expected. There would be more contact with NPS staff and concessioners compared to the other zones. Times of high noise levels and large concentrations of people would be expected.	Destination-oriented visitor facilities, such as visitor centers, museums, staging areas, and developed campgrounds, would be in this zone. Other appropriate facilities that support visitor activities could include visitor contact stations, unpaved maintained roads, surfaced or paved walkways and trails, restrooms, picnic tables, and benches. Resources would be protected by site-hardening devices such as boardwalks, fencing, and paved pathways, and by design of visitor circulation systems.

Resource Condition	Visitor Experience/Activity	Appropriate Development
ADMINISTRATIVE		
Invasive species would be eliminated where feasible, and otherwise would be controlled. Cultural resources in the zone might be rehabilitated for adaptive uses, which would be preferable to new construction.	There would generally be no visitor use in this zone, but areas in the zone would be used by park staff, volunteers, partners, and others engaged in park operations and administration. Efficiency, safety, and convenience would be important components. Times of high noise levels and large concentrations of people would be expected.	Administrative offices, maintenance areas, employee housing, road corridors, and other facilities needed to support park operations would be in this zone.
Marine Zones		
MARINE STEWARDSHIP		
Natural processes and native species would predominate. Evidence of human impact would be infrequent and of limited extent. Archeological resources would be protected. The natural character, habitats, living resources, and vistas would be preserved.	A variety of experiences (e.g., boating, fishing [subject to federal or state regulations], diving, and snorkeling) would be available. Boats would be needed to access this area. A high level of independence would be required. There would be a high chance for solitude. Interpretation might be provided in some areas.	Underwater trails. Few to no visible/permanent facilities. Monitoring/research equipment. Existing infrastructure maintained to support visitor access and park operations.
MARINE PROTECTED **State Marine Reserves**		
Protect or restore rare, threatened, or endangered native plants, animals, or habitats in marine areas. Protect or restore outstanding, representative, or imperiled marine species, communities, habitats, and ecosystems. Protect or restore diverse marine gene pools. Contribute to the understanding and management of marine resources and ecosystems by providing the opportunity for scientific research in outstanding, representative or imperiled marine habitats or ecosystems.	A variety of nonconsumptive experiences (e.g., boating, diving, snorkeling, and educational activities) would be available. Research, restoration, and monitoring may be permitted.	Possible monitoring/research equipment. The natural character, habitats, living resources, and vistas would be preserved. Existing infrastructure maintained to support visitor access and park operations.

Resource Condition	Visitor Experience/Activity	Appropriate Development
	MARINE PROTECTED **State Marine Conservation Areas**	
Protect or restore rare, threatened, or endangered native plants, animals, or habitats in marine areas. Protect or restore outstanding, representative, or imperiled marine species, communities, habitats, and ecosystems. Protect or restore diverse marine gene pools. Contribute to the understanding and management of marine resources and ecosystems by providing the opportunity for scientific research in outstanding, representative, or imperiled marine habitats or ecosystems. Preserve outstanding or unique geological features. Provide for sustainable living marine resource harvest.	A variety of consumptive and nonconsumptive experiences (e.g., boating, diving, snorkeling, and educational activities) would be available. Research, restoration, and monitoring may be permitted. Sustainable harvest of selected marine resources would be allowed (subject to state or federal regulation).	Underwater trails. Few to no visible/permanent facilities. Monitoring/research equipment. Existing infrastructure maintained to support visitor access and park operations.

USER CAPACITY

General management plans for national park system units are required by law to identify and address implementation commitments for user capacity, also known as carrying capacity. The Park Service defines user capacity as the types and levels of visitor use that can be accommodated while sustaining the quality of park resources and visitor experiences consistent with the purposes of the park. Managing user capacity in national parks is inherently complex and depends not only on the number of visitors, but also on where they go, what they do, and the "footprints" they leave behind. In managing for user capacity, park staff rely on a variety of management tools and strategies rather than relying solely on regulating the number of people in a park area. In addition, the ever-changing nature of visitor use in parks requires a deliberate and adaptive approach to user capacity management.

The foundations for making user capacity decisions in this plan are the park's purpose, significance, special mandates, and management zones associated with the park. The purpose, significance, and special mandates define why the park was established and identify the most important resources, values, and visitor opportunities that would be protected or provided. The management zones in each action alternative describe desired resource conditions and visitor experiences, including appropriate types of activities and general use levels, for different locations throughout the park. The zones, as applied in the alternatives, are consistent with, and help the Park Service achieve, the park's specific purpose, significance, and special mandates. As part of the Park Service's commitment to implement user capacity, park staff would abide by these directives for guiding the types and levels of visitor use that would be accommodated while sustaining the quality of park resources and visitor experiences consistent with the purposes of the park.

In addition, this plan sets day and overnight use limits for the islands and popular use areas. These limits were largely established by three Channel Islands plans — the 1980 *General Management Plan / Environmental Impact Statement*, the 1984 *Draft General Management Plan Supplement / Environmental Assessment*, and the 1995 *Development Concept Plan / Environmental Impact Statement for Santa Rosa Island*. These actions were taken to meet the park's enabling legislation (PL 96-1999), which stated the following:

> In recognition of the special fragility and sensitivity of the park's resources, it is the intent of Congress that the visitor use within the park be limited to assure negligible adverse impact on the park resources.

Table 16 near the end of this chapter shows the day and overnight visitor use limits that have been set by alternative in Channel Islands National Park.

With a couple of minor exceptions, the existing day use limits would not change on the islands in the alternatives. These limits would not change in most cases because:

- Most of the day use numbers have been in effect for 10 years or more and have proved successful in attaining desired conditions — these numbers have helped manage visitor use to avoid unacceptable changes in park resource conditions or visitor experiences.
- These numbers have and should continue to allow for the range of natural and cultural resource conditions and visitor experiences that are desired on the islands.
- With the exception of Scorpion Valley, day use levels have not approached the existing limits. In the case of Scorpion Valley, which is the primary destination of

visitors on Santa Cruz Island, use levels have reached the use limits, particularly in the summer. Because the Park Service manages the number of passengers the concessioners transport to Scorpion Valley (which accounts for most visitors who go there), use levels are not believed to exceed the day use limit. Although private boaters who land at Scorpion Valley are not regulated or tracked, it has not been documented that use levels are causing unacceptable changes in park resource conditions or visitor experiences at Scorpion.

With regard to overnight use, the alternatives differ in the number of people allowed to camp at designated campsites in several areas. Changes were made in overnight capacities, consistent with the alternative concepts, to provide additional opportunities for visitors to camp on the islands.

In several areas public use would continue to be prohibited, with the exception of escorted groups, due to resource sensitivity concerns and/or public safety concerns. These areas include Middle and West Anacapa, and most of San Miguel Island (with the exception of the ranch complex). Seasonal closures also would continue to apply to areas on Santa Barbara, Santa Cruz, and Santa Rosa Islands to protect sensitive resources such as threatened and endangered species, nesting birds, and pinnipeds on those islands.

In several areas no use limits have been set for backcountry day or overnight use, including Smugglers Cove and the interiors of Santa Cruz and Santa Rosa Islands. Use limits have not been necessary in these areas due to the very few visitors who access these areas. However, it is possible that use levels on the islands could increase in the future or use patterns could change due to several causes:

- More private boaters could visit the islands, attracted by new developments or recreational opportunities.
- Concessioners could seek to bring more visitors to islands where the use limits have not been reached; improvements in boat technology may enable concessioners to bring more people to the more remote islands.
- A future parkwide backcountry management plan could call for increased opportunities for dispersed use on Santa Rosa and Santa Cruz Islands, which in turn could increase the number of people who visit the islands.

In this regard it is important for the park staff to increase monitoring of visitor use levels at the primary points of disembarkation on the islands, and on areas in proximity to these points, to determine how much overall use is occurring in the park. Visitor use and resource condition monitoring would be instituted before visitor use opportunities would be expanded in the action alternatives.

In addition to monitoring and managing use levels, key resources that are sensitive to changes in visitor use would be regularly monitored to ensure that unacceptable changes are not occurring and to indicate if and where management action is required to address problems. These indicators would be developed and implemented as part of a monitoring and management program to track attainment and maintenance of desired conditions in each zone. Standards that define minimum acceptable conditions would be set for each indicator. Examples of indicators that may be monitored include the following:

- presence of social trails (where people go ashore or in the interior of the islands), either width of trails or number of trails
- disturbance of tidepools (number and diversity of organisms)
- increase in law enforcement violations (e.g., disturbing seabirds and pinnipeds, fishing in closed waters, camping and landing on prohibited beaches)
- damage to the sea bottom caused by boats anchoring

- congestion at docks, loading and unloading (e.g., wait times and complaints)
- wait times at restrooms
- visitor complaints regarding crowding or resource conditions
- documentation that visitor use levels are exceeding the set use limits

Park staff would use the information from the monitoring program to adjust visitor use management actions. Park staff would take management actions if resource conditions or visitor experiences are out of standard or if monitoring indicates a downward trend in conditions. Management actions could range from:

- providing information about low impact recreational use and the principles of Leave No Trace
- directing visitors to lesser-used areas or off-peak times
- adding or altering facilities (e.g., trails and campsites) for containment of use to designated areas
- requiring all visitors to have permits to go on the islands
- regulating the types of recreation activities permitted, reducing current use limits, or setting new use restrictions for areas with no limits

Park managers generally would implement the least intrusive actions first and evaluate their effectiveness before taking more restrictive actions. Restrictions on visitor use would be based on a determination by the park superintendent that such measures were consistent with the park's enabling legislation and were necessary either to prevent the degradation of the purposes and significance of the park or to minimize visitor use conflicts.

With limited staffs and budgets, NPS managers would focus monitoring efforts more frequently on areas where there are likely visitor use changes and/or clear evidence of problems, or where problems can reasonably be anticipated during the life of this plan. This means monitoring would more frequently take place where conditions are changing rapidly, specific and important values are threatened by visitation, and/or the effects of management actions taken to address impacts are uncertain.

If there was a need to change the use limits (see Table 16) to establish new use limits in areas that do not currently have limits or to adopt other visitor restrictions, supplemental environmental compliance and a public involvement process would be conducted before establishing the new island use limits.

COMMERCIAL SERVICES

National park system units are special places, saved by the American people so that all may experience the country's natural and cultural heritage. The national parks movement of the mid-19th century was fueled by a determination to save beautiful and historic places in America, in part to keep them from being "populated" with hotels, curio shops, and amusements. Overcommercialization and development can spoil the very character of the places visitors come to see. Yet some kinds of commercial activities are appropriate and may be necessary in national park system units. They help visitors enjoy natural and cultural wonders to which they might not otherwise have access. Often commercial providers help protect park resources.

All commercial activities that occur within lands administered by the Park Service must be authorized by a permit, contract, or other written agreement (36 *Code of Federal Regulations* (CFR) 5.3). Commercial activities may be authorized through a range of legal authorities using a variety of legal instruments, depending upon the type and location of the activity involved. The Park Service must determine what types and levels of commercial activities are permissible under applicable laws and regulations. At a minimum, all commercial activities must operate in a manner that is consistent with the mission of the park and should provide high-quality visitor experiences while protecting important natural, cultural, and scenic resources. Other requirements may also apply. For example, the NPS Concessions Management and Improvement Act of 1998 (1998 Concessions Act) limits the development of concession services to those that are necessary and appropriate for public use and enjoyment of the park system unit and that are consistent to the highest practicable degree with the preservation and conservation of the resources and values of the unit.

The NPS Organic Act of 1916 that established the National Park Service and the 1998 Concessions Act emphasize conservation and preservation of park resources, while allowing for their use and enjoyment by means that leave them unimpaired for future generations. The 1998 Concessions Act mandates the use of concession contracts for authorizing any visitor services except as may otherwise be authorized by law (such as through a commercial use authorization if applicable). That act further places significant limitations on the types and kinds of public accommodations, facilities, and services that may be authorized by concession contracts. Such public accommodations, facilities, and services must be "necessary and appropriate for public use and enjoyment" of the unit in which it is located and must be "consistent to the highest practicable degree with the preservation and conservation of the resources and values of the unit" (16 USC 5951).

Depending on the analysis of commercial activities, different types of authorizations may be issued by the Park Service. If an activity is found to be appropriate, but not necessary, then a commercial use authorization may be issued. If an activity is found to be necessary and appropriate, then a concession contract may be issued.

The NPS Organic Act, the purpose and significance of the park, and this general management plan together form the basis for determining if commercial services are necessary and/or appropriate for Channel Islands National Park. The criteria in Table 2 would be used to evaluate existing and potential future commercial activities at the park to determine if these activities are necessary and/or appropriate.

Based on the criteria in Table 2, the following types of commercial services operations could

be considered appropriate at Channel Islands National Park:

- kayaking instruction and guide services
- outfitting services (including kayaking and snorkeling rentals)
- vessel-supported whale watching, sightseeing, research, and education services
- sailing tour services
- environmental education and instruction guide services
- guided hiking and camping

The following types of commercial service operations could be considered necessary and appropriate for the park:

- visitor convenience merchandise
- boat transportation
- air transportation
- water-based recreation services
- lodging and food services

Over the life of this plan, additional activities may be considered and would be evaluated using the necessary and appropriate criteria. Some activities are illegal within the park and, therefore, would not be considered either necessary or appropriate activities. These illegal activities would not be eligible for any type of commercial visitor use agreement with the Park Service.

TABLE 2. COMMERCIAL SERVICES EVALUATION CRITERIA

Necessary		Appropriate
A service that is **necessary** accomplishes **one or more** of the following: 1. The service contributes to visitor understanding and appreciation of park purpose and significance. 2. The service enhances visitor experiences consistent with park area philosophies. 3. The service assists the park in managing visitor use and educating park visitors. 4. The service is an essential service or facility not available within a reasonable distance from the park.		A service that is **appropriate** accomplishes **all** of the following: 1. The service is consistent with the purpose and significance of Channel Islands National Park. 2. The service is consistent with laws, regulations, and policies. 3. The service does not compromise public health and safety. 4. The service does not significantly impact or impair park resources or values. 5. The service does not unduly conflict with other park uses and activities. 6. The service does not exclude the public from participating in limited recreational opportunities.

WILDERNESS STUDY AND PROPOSAL

As noted in chapter 1, Channel Island National Park's enabling legislation, the Wilderness Act, and NPS *Management Policies 2006* require that lands within the park be studied for wilderness designation. This section provides background information on wilderness, what it is, and what uses and developments are permitted in wilderness. The section then discusses the wilderness study and proposal for the park.

PURPOSE AND DEFINITION OF WILDERNESS

The purpose of wilderness designation is to preserve and protect wilderness characteristics and values in perpetuity, including opportunities for solitude or primitive and unconfined recreation. With the passage of the 1964 Wilderness Act (16 USC 1131 et seq.), the guiding piece of legislation for all wilderness areas, Congress declared that it is national policy to secure for present and future generations the benefits of an enduring resource of wilderness. Wilderness can be officially designated only through congressional action.

The Wilderness Act of 1964 defines wilderness as follows:

- "lands designated for preservation and protection in their natural condition"—section 2(a)
- "an area where the earth and its community of life are untrammeled by man"—section 2(c)
- "an area of undeveloped federal land retaining its primeval character and influence, without permanent improvement or human habitation"—section 2(c)
- "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable"—section 2(c)
- "has outstanding opportunities for solitude or a primitive and unconfined type of recreation"—section 2(c)
- "shall be devoted to the public purposes of recreation, scenic, scientific, educational, conservation and historic use"—section 4(b)
- "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value"—section 2(c)

SUMMARY OF USES, DEVELOPMENTS, AND MANAGEMENT ACTIONS PERMITTED AND PROHIBITED IN WILDERNESS

The Wilderness Act and agency policies identify uses, facilities, and management actions that are and are not permitted in wilderness areas. Note that submerged marine wilderness (discussed in a separate section below) is a special case in that motorboats are allowed on the water in the national park.

Recreational uses, management actions, and facilities **permitted** in wilderness areas under the Wilderness Act and NPS policies include the following:

- nonmechanized recreational uses (e.g., hiking, backpacking, picnicking, horseback riding, canoeing/kayaking, and camping)
- hunting and trapping (where otherwise permitted by law) and fishing
- American Indian religious activities and other actions recognized under treaty-reserved rights
- guided interpretive walks and on-site talks and presentations

- wheelchair use by individuals whose disability requires its use
- scientific activities, research, and monitoring (provided the activities are appropriate and use the minimum requirement to accomplish project objectives)
- management actions taken to address impacts of human use; examples of such actions include restoration of extirpated species, controlling invasive nonnative species, managing endangered species, and protection of air and water quality
- fire management activities (including fire suppression and prescribed fire) as approved in a fire management plan
- preservation of historic properties eligible for listing in the National Register of Historic Places
- trails necessary for resource protection or for providing for visitor safety
- campsites, where essential for resource protection and preservation or to meet other specific wilderness management objectives
- toilets, where they would resolve health and sanitation problems or prevent serious resource impacts
- signs (such as those identifying routes and distances) and other infrastructure necessary for visitor safety or to protect wilderness resources
- certain administrative facilities if necessary to carry out wilderness management objectives (e.g., storage or support structures and a ranger station)
- uses and facilities permitted for landowners with valid property rights in a wilderness area

Certain uses and developments are prohibited under the Wilderness Act. Under the definition of wilderness in section 2(c) of the act, permanent improvements or human habitation are prohibited. Section 4(c) specifically **prohibits** the following:

- commercial enterprises
- permanent roads
- temporary roads
- use of motor vehicles
- motorized equipment, motorboats, and airboats
- landing of aircraft
- other forms of mechanical transport (e.g., bicycles)
- structures or installations

With the exception of permanent roads and commercial enterprises, the Wilderness Act recognizes that the above uses may be permitted if necessary to meet the minimum requirements for administration of the area as wilderness or for emergency purposes. Other sections of the Wilderness Act also provide for some exceptions, including the preservation of features of historical value in section 2(c) and certain recreational commercial services in section 4(d)(6).

Additionally, NPS policies prohibit some other developments as follows:

- new utility lines
- permanent equipment caches (unless necessary for health and safety or determined to be the minimum requirement)
- improvements for nonemergency use
- borrow pits (except for small quantity use of borrow material for trails)
- new shelters for public use (unless determined to be the minimum facility necessary for the health and safety of wilderness users or for the preservation of wilderness resources and values)
- picnic tables
- interpretive signs, trails, and waysides

Because the Park Service manages proposed wilderness similar to designated wilderness, these prohibited uses are also prohibited within proposed wilderness.

BRIEF DESCRIPTION OF THE STUDY AREA

The wilderness study area for the park includes all of the lands and waters within the legislated boundary. The study area includes Anacapa Island, the federally owned lands on Santa Cruz Island, Santa Rosa Island, San Miguel Island, and Santa Barbara Island, the marine waters within the park boundary, and all of the small islets, islands, and rocks off of the main islands within the park boundary. The study area also includes several developed areas, unimproved roads, and easements on the islands.

WILDERNESS ELIGIBILITY

The first step in a wilderness study is typically to identify wilderness-eligible lands, or lands that possess wilderness character. NPS *Management Policies* (section 6.2.1.1) direct that:

> NPS lands would be considered suitable for wilderness if they are at least 5,000 acres, or of sufficient size to make practicable their preservation and use in an unimpaired condition, and if they possess the following characteristics (as identified in § 2(c) of the Wilderness Act):

- The earth and its community of life are untrammeled by humans, where humans are visitors and do not remain;
- The area is undeveloped and retains its primeval character and influence, without permanent improvements or human habitation;
- The area generally appears to have been affected primarily by the forces of nature, with the imprint of humans' work substantially unnoticeable;
- The area is protected and managed so as to preserve its natural conditions; and
- The area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

The Channel Islands National Park planning team has determined that significant portions of Channel Islands National Park are eligible to be considered for wilderness designation. Although several of the islands would include less than 5,000 acres of proposed wilderness, these separate islands are surrounded by protected ocean waters and meet the definition of "sufficient size."

Areas determined to not be eligible for wilderness failed to meet the Wilderness Act and NPS eligibility criteria: they were developed areas with permanent improvements, had actively maintained and used roads, or were not under sole NPS ownership. Although TNC lands on Santa Cruz Island may have wilderness character qualities, wilderness eligibility, proposals, and designations only apply to federal lands.

Based on the above Wilderness Act 2(c) criteria, the following lands were determined to be either eligible or not eligible for wilderness designation (all acreage figures are approximate):

Santa Barbara Island

- **Lands Eligible for Wilderness:** 639 acres or more than 99% of the island. Most of Santa Barbara Island is undeveloped, with few signs of people. It generally appears affected primarily by natural forces. There are outstanding opportunities for solitude or primitive recreation. The island has a diversity of habitats, including steep cliffs, canyons, and badlands, and is a haven for sea birds, including one of the world's largest colonies of Scripp's murrelets. The rocky shores also provide resting and

breeding areas for California sea lions, and elephant and harbor seals.

- **Lands Not Eligible for Wilderness:** Approximately 4 acres (includes, but is not restricted to, two Coast Guard sites and the current NPS developed area).

East Anacapa Island

- **Lands Eligible for Wilderness:** None.
- **Lands Not Eligible for Wilderness:** All of East Anacapa: 117 acres (much of the islet is a NPS developed area).

Middle Anacapa Island

- **Lands Eligible for Wilderness:** 160 acres, the entire islet. This area is undeveloped and appears to be affected primarily by the forces of nature. There are few signs of people. The islet has outstanding opportunities for solitude. Sea bird roosting and nesting sites and pinniped haul-out and rookery sites are present.
- **Lands Not Eligible for Wilderness:** None.

West Anacapa Island

- **Lands Eligible for Wilderness:** 460 acres, the entire islet. This area also is undeveloped, and appears to be affected primarily by the forces of nature. Few people use this islet, which is mostly closed to public access to protect sensitive resources. The islet supports the largest breeding colony of the endangered California brown pelican in the U.S. Along with the other two islets, West Anacapa supports the largest breeding colony of western gulls in the world. The islet also provides resting and breeding areas for California sea lions and harbor seals.
- **Lands Not Eligible for Wilderness:** None.

Santa Rosa Island

- **Lands Eligible for Wilderness:** 50,802 acres or 96% of the island. Much of Santa Rosa is undeveloped. Although heavily grazed by livestock beginning in the 1850s, and later browsed by introduced deer and elk, the island is primarily affected by natural forces. Few signs of people are evident on most of the island. There are many opportunities for outstanding solitude and primitive recreation. The island supports several rare plants, some of which are found nowhere else in the world. It also is home to the endangered and endemic island fox. The sandy beaches and cliffs are breeding and resting areas for sea birds, seals, and sea lions. Archeological and paleontological sites are abundant on the island, including the site of the world's most complete pygmy mammoth skeleton, which was excavated in 1994.
- **Lands Not Eligible for Wilderness:** Approximately 300 acres including, but not restricted to, the Bechers Bay developed area, NPS housing and maintenance areas, a public campground, a Coast Guard site, the Johnsons Lee area, and several unimproved roads. The unimproved roads are used by park staff and researchers to facilitate management. At a minimum (they vary slightly by alternative), the following roads would be maintained and thus would not be eligible for wilderness: Main Road, Old Ranch Road, Upper Torrey Pines, Quemada Canyon, South Road, Johnsons Lee, Signal Road, Piedragosa Road, Lighthouse Road, China Camp (Rita's) Road, Burma Road, Sandy Point, Tecolote Canyon, Soledad Beach, Smith's Highway, and Carrington Point Road.

Santa Cruz Island

- **Lands Eligible for Wilderness:** 14,476 acres or 23% of the island (or 97% of NPS lands, covering most of the isthmus and eastern end of the island). Most of Santa

Cruz Island is undeveloped and generally appears to be affected primarily by the forces of nature. There are many opportunities for outstanding solitude and primitive recreation. The island is very scenic, with mountain ranges, deep canyons, craggy coastline cliffs, one of the largest and deepest sea caves in the world, pristine tidepools, and expansive beaches. The island supports a very diverse biotic community, including nine federally listed plant species, large colonies of nesting sea birds, and breeding harbor seals and California sea lions. In addition, the island has a rich cultural history, with many archeological resources.

- **Lands Not Eligible for Wilderness:** Approximately 47,500 acres including, but not restricted to, TNC lands and easements (e.g., the Navy Road), the Scorpion developed area, the Smugglers Ranch area, Smugglers Road, Scorpion Canyon Road, Service Road, the historic Rancho Del Norte area and Del Norte Road, Chinese Harbor Road, and the Prisoners Harbor developed area.

San Miguel Island, including Prince Island

- **Lands Eligible for Wilderness:** None, unless ownership transferred to the Park Service.
- **Lands Not Eligible for Wilderness:** 9,376 acres (San Miguel Island under the ownership of the U.S. Navy); 35 acres (Prince Island under the ownership of the U.S. Navy).

Small Islets, Islands, and Rocks (Excluding Prince Island)

- **Lands Eligible for Wilderness:** 39 acres. Many of these small rocks and islets are offshore of the main islands, within the park boundary. They are all undeveloped and are affected primarily by the forces of nature. All of these areas are closed to public access to protect wildlife. They are important breeding and resting areas for sea birds and sea mammals.
- **Lands Not Eligible for Wilderness:** None.

Marine Waters within the Park Boundary

- **Waters Eligible for Wilderness:** None (multijurisdictional and complex ownership issues).

The total area of the park eligible for wilderness designation comprises approximately 66,576 acres, or 53% of the total lands within the park boundary (approximately 125,000 acres).

PUBLIC COMMENTS ON WILDERNESS

After a *Federal Register* notice was published on April 8, 2009 regarding the intent of the Park Service to prepare a wilderness study for Channel Islands National Park, informational meetings were held at the park's mainland visitor center (June 17, 2009) and at Santa Barbara (June 18, 2009). Two written comments were received during the comment period. One commenter was supportive of the designation of wilderness. The other questioned the need to study wilderness, noting that the park was already managed as de facto wilderness, and expressed concerns about the cost of the study.

OPTIONS ANALYZED IN THIS WILDERNESS STUDY

This wilderness study examines whether, and if so, where, wilderness should be designated within the above eligible lands, given the best available current information about wilderness character, public input, and practical considerations. As the terms are used in this document, *proposed wilderness* is an area that has wilderness characteristics and would be proposed by the Park Service for

designation. *Proposed potential wilderness* is an area that has wilderness characteristics but has temporary nonconforming conditions or uses. If these areas were designated by Congress as potential wilderness, they would be converted to designated wilderness once the nonconforming conditions have been rectified.

Due to several nonconforming activities and developments (i.e., roads), lands on east Santa Cruz Island and Santa Rosa Island would be proposed as potential wilderness.

The planning team developed one wilderness proposal in the wilderness study (aside from the no action alternative). All lands eligible for wilderness on each island were combined into a wilderness proposal that would be consistent with the park's purpose and significance and meet park goals (see chapter 1). The same wilderness proposal is included in both of the action alternatives that follow in this chapter. Alternative wilderness proposals were not identified for Channel Islands National Park because of the congressional purpose of and special mandates for this park, the emphasis in the alternatives on protecting sensitive resources throughout the park's islands, and the need for few or no new facilities on most of the undeveloped lands in the alternatives.

Implications of Managing Lands Proposed for Wilderness Designation and for Potential Wilderness

Any lands within the park that are proposed for wilderness designation (including lands proposed as potential wilderness) in the "Record of Decision" for this planning process are to be managed "to preserve wilderness character" until such time as Congress specifically decides whether or not to include them in a formal wilderness designation (NPS *Management Policies 2006*). This mean that management activities on lands proposed for wilderness cannot be allowed to diminish the wilderness character of those lands.

As noted above, much of East Santa Cruz and Santa Rosa Islands would be proposed as potential wilderness in the NPS preferred alternative. The wilderness character of this area has been degraded by the presence of nonnative species, livestock overgrazing, and other evidence of past human manipulation. Park managers recognize that a substantial amount of research and resource management activity is needed to restore the ecosystem of the areas, and that access to sites, installation of monitoring devices, and other activities normally prohibited under the Wilderness Act may be required to meet this need. Removal of roads and restoration of the landscape also would require the use of heavy machinery. As a result, it is expected there would be a number of short-term impacts on the wilderness character in the areas being proposed as potential wilderness. However, these activities would be carefully carried out so as to prevent long-term degradation of the wilderness character and, over the long term, these activities would be expected to enhance the area's wilderness character.

Planning and Management

A wilderness stewardship plan is typically developed to guide preservation, management, and use of NPS wilderness areas. Such a plan would be developed with public involvement and would contain measurable objectives for preservation of wilderness qualities as specified in the Wilderness Act and NPS *Management Policies 2006*. Wilderness stewardship plans, which are often combined with backcountry management plans, articulate management actions such as regulations, monitoring, and permit systems—such as those currently in place for backcountry camping in the park. Such a plan would be developed for any new wilderness areas in the park.

Minimum Requirements Analysis

The Wilderness Act of 1964 prohibits certain activities in designated wilderness that detract from wilderness character. Prohibited activities include such actions as installing structures or using motorized equipment. However, the act and NPS policy recognize an exception to this rule: otherwise prohibited activities may be allowed in proposed, potential, and designated wilderness if it can be demonstrated that the activity in question is "the minimum necessary" for administration of the area as wilderness, and that the activity will not cause a significant impact on wilderness resources and character. This showing is made via a Minimum Requirements Analysis (MRA).

Management decisions affecting wilderness would be consistent with the "minimum requirements" concept. This concept is a documented process used to determine whether administrative activities affecting wilderness resources or visitor experiences are necessary in wilderness, and if so, how to minimize impacts from such activities. Parks are to complete a minimum requirements process for evaluating administrative actions and equipment uses that could affect wilderness character.

Where practical alternatives do not exist, maintenance or other activities may occasionally be accomplished through the use of motorized equipment. The use of motorized equipment should be based on the minimum requirement concept. Motorized equipment need not be allowed for activities that can reasonably be accomplished using nonmotorized means.

For areas proposed for wilderness designation and as potential wilderness in the Record of Decision for this plan, a MRA would be performed for all proposed management actions in these areas. However, the nature and scope of the MRA analysis would vary depending on the nature of the activity. For some activities that are short-term, reversible in nature, and would not have the potential to degrade long-term wilderness character, a programmatic MRA may be prepared. A programmatic MRA could cover such activities as helicopter landings, minor installations that would be removed within one year, handheld motorized or mechanized equipment, and vehicles using existing roads. For activities that would have the potential to result in long-term degradation of wilderness character, an individual or program-specific MRA would be prepared (e.g., for installations that are expected to last more than one year, for creation of new routes/trails to access field sites, and for any vehicle use in areas without existing trails or developed roads).

In all cases, the intent of preparing the MRA is to avoid or minimize as much as possible short-term impacts on the areas' wilderness character while still allowing needed research, resource management, and restoration activities in proposed designated wilderness and potential wilderness that ultimately would benefit the areas' overall wilderness character.

Private Rights

Wilderness designation does not extinguish valid existing private rights such as land or right-of-way ownership or valid mineral interests. Valid private rights in wilderness are administered in keeping with the specific terms and conditions of each right.

Recreational Use

Recreational uses of NPS wilderness are to be of a type and nature that enable the areas to retain their undeveloped primeval character and influence, protect, and preserve natural conditions; leave the imprint of man's work substantially unnoticeable; provide outstanding opportunities for solitude or primitive and unconfined types of recreation; and preserve wilderness in an unimpaired condition. Hiking, canoeing, kayaking, and fishing are appropriate uses of wilderness at the park. Public use of motorized equipment or any form of mechanical transport, such as bicycles, is prohibited, except as provided for in specific legislation. Wheelchair use by

persons whose disability requires its use is allowed in wilderness. Service animals accompanying persons with disabilities are also allowed in wilderness.

Emergency Services

In emergency situations involving human health and safety, the use of aircraft, motorboats, and other motorized or mechanical equipment is allowed in wilderness. Wildfires would be controlled as necessary to prevent loss of life, damage to property, the spread of wildfire to lands outside wilderness, and unacceptable loss of wilderness values or natural or cultural resources. The use of tool caches, aircraft, motorboats, and motorized firefighting equipment may be permitted for such control. Prescribed fire and hazard fuel reduction programs may be implemented according to approved plans. The MRA concept would be followed for all fire activities in wilderness.

Resource Management and Research

Wilderness designation does not prevent the Park Service from protecting and maintaining historic and other cultural resources within wilderness areas. Using the MRA concept, cultural resource surveys would be conducted as needed in wilderness areas, and identified resources would be protected and maintained according to the pertinent laws, policies, and plans governing cultural resources. Natural resource management activities, including management of endangered species and critical habitat, may be carried out in a similar fashion under the MRA concept and with consideration of the duration and magnitude of impact on wilderness character. Natural processes would be allowed, insofar as possible, to shape and control wilderness ecosystems. To allow natural processes to be effective in wilderness in the park, invasive nonnative species control (plant and animal) would be necessary.

Scientific activities are appropriate in wilderness. Even scientific activities (including inventory, monitoring, reintroductions, nonnative species removal, and research) that involve a potential impact on wilderness resources or values, such as instrumentation and temporary structures, are allowed when the benefits of what can be learned outweigh the impacts on wilderness resources or values. However, all such activities must be evaluated using the MRA concept.

ALTERNATIVE 1 — PARKWIDE

CONCEPT

This alternative provides a baseline for evaluating changes and impacts in the other alternatives. Under alternative 1 the Park Service would continue to manage Channel Islands National Park as it has under the 1985 *General Management Plan Supplement,* the 1980 *General Management Plan*, and the 1995 *Development Concept Plan / Environmental Impact Statement, Santa Rosa Island*. For the foreseeable future there would be no major change in the management direction of the islands. All facilities, resource programs, and visitor use opportunities would continue to proceed as they are. None of the park would be proposed for wilderness designation.

Resource stewardship would continue to be an overriding consideration in all activities. The natural resource program would continue to focus on restoring species and ecosystems, inventorying and monitoring, protecting and preserving resources, mitigating impacts, and conducting research efforts. The cultural resource program would continue to focus on research, resource monitoring, the protection of archeological resources, the preservation of historic structures (including associated archeological resources) and cultural landscapes, and curation of the park's museum collection. The Park Service would continue to foster partnerships with TNC, the sanctuary, the State of California, the U.S. Navy, and other resource agencies and organizations, primarily for resource stewardship, interpretive, educational, and administrative purposes.

The National Park Service would continue to maintain opportunities for visitors to access all of the islands. Transportation methods to the islands would continue as they are, and the roads on Santa Cruz and Santa Rosa Islands would continue to be used and maintained for administrative purposes. Efforts to encourage visitors to come to the islands and to assist visitors on the islands would continue. The park's outreach through interpretive and education programs would continue including distance learning opportunities for schools and the public in mainland communities. The management of concessions and commercial use authorizations would continue as is.

Identified below are general actions called for under this alternative. Island-specific actions are identified later in this section.

NATURAL RESOURCES

The management of natural resources would continue as at present, with the desired conditions as stated in appendix B.

Terrestrial Ecosystems/ Ecological Restoration

The conservation of biological diversity would continue to be a core value in carrying out the preservation of Channel Islands National Park.

The restoration of terrestrial ecosystems would continue to be emphasized. The guiding philosophy of park restoration efforts would continue to be the protection and recovery of native island species and ecosystems from the most devastating human-caused impacts. The park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The park's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts. Additionally, some nonnative plants contribute to cultural landscapes. Within the cultural landscapes, the management of nonnative plants would be evaluated on a case-by-case basis. Actions would continue to be taken to control invasive nonnative plants

that can have severe ecological impacts and may not be significant cultural resources.

Floodplains and Wetlands

No new permanent facilities would be built in the 100-year floodplains.

CULTURAL RESOURCES

Under this alternative, historically significant sites, structures, and landscape features would be protected and preserved. Archeological resources, ethnographic resources, and museum collections would continue to be protected through ongoing preservation and monitoring programs.

Nonnative plants within cultural landscapes would continue to be considered for removal on a case-by-case basis to limit the spread of these plants into areas of native vegetation and to reduce safety hazards.

Cultural Landscape Resources

A cultural landscape is characterized both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions. Under this alternative, significant landscape patterns and features would continue to be preserved. Patterns of land use would continue to remain as they are today, within the existing configuration of historic developed areas and circulation systems. Structures, spatial organization, cluster arrangements, and other historic landscape features and characteristics in the historic developed areas would continue to be maintained and rehabilitated.

Archeological Resources

Archeological resources would continue to be protected and preserved *in situ* to the greatest extent possible. Protection and management of archeological resources would be informed by an Archeological Overview and Assessment (Braje et al. 2010). Identification and recording of archeological resources would continue. Research, resource monitoring, stabilization, and impact mitigation would continue as funding allows.

Ethnographic Resources

Through existing agreements and ongoing consultation with federally recognized tribes, lineal descendants from the islands, and other Native American groups, access would continue for traditional and ceremonial activities. The park would continue to consult with these groups to identify and protect sites and areas of traditional or spiritual importance. When burials are discovered, provisions outlined in the Native American Graves Protection and Repatriation Act and its implementing regulations would continue to be followed.

Museum Collection (including Archives and Research Library)

The museum collection, archives, and research library would continue to be catalogued and maintained in various cooperating facilities. Most of the park's museum collection would continue to be housed in the Santa Barbara Museum of Natural History and the Santa Barbara Botanic Garden. Several objects are on exhibit in visitor centers at Anacapa and Santa Cruz Islands and at several local museums.

MANAGEMENT ZONING

Management zoning is used by the Park Service to prescribe areas where certain desired conditions are to be achieved and where certain uses might be provided. The current management zones, in the 1980 *General Management Plan*, are based on composite resource sensitivity maps that show

cultural resources, vegetation distribution, wildlife habitat, geological and paleontological features, scenic areas, and existing facilities. Four primary zones — natural, historic, development, and special use — with subzones were established. This zoning would continue under this alternative. Please refer to the 1980 *General Management Plan* for full zone descriptions and maps.

WILDERNESS PROPOSAL

No lands in the park would be proposed for wilderness designation under alternative 1.

VISITOR ACCESS

Air Transportation

Public air transportation for day use and overnight visitors would continue to be available year-round only to Santa Rosa Island (Bechers Bay) via a park concessioner. The airstrip would continue to be maintained.

General aviation aircraft would continue to not be permitted to land on parklands due to concerns regarding disturbance of sensitive coastal resources and visitors, potential safety issues regarding landing on a primitive airstrip, the lack of supplies and fuel if the need arises, and the lack of space to park aircraft.

Public Boat Transportation

Public boat transportation for day use and multiday visitors would continue to be available year-round to all five of the park islands by a park concessioner. The park would maintain a pier or dock facility at each of the current locations except San Miguel, where no pier or dock facility will be provided. Existing piers and docks would continue to be maintained. The points of departure would continue to be at Channel Islands (Oxnard) Harbor and Ventura Harbor.

Private Boat Transportation

Private boaters would continue to access any of the five NPS-managed islands/lands without permits. Landing permits would continue to be required for the western 76% of Santa Cruz Island (TNC lands). Landings would continue to not be permitted on rocks, islets, or at sea caves on or near any of the islands. All landing beaches would continue to be subject to seasonal closures.

Specific landing information is given for each of the islands later in this section.

On-Island Vehicle Transportation and Horse Use

Most destinations on each of the islands would continue to be accessible by foot within a few minutes to a few hours. The Park Service would continue to provide limited ground transportation for visitors to the Torrey Pines and Lobo Canyon on Santa Rosa Island. No other public vehicular transportation would be provided on any of the islands.

Horse use would continue to not be permitted on any of the NPS-managed portions of the islands.

VISITOR USES, OVERNIGHT ACCOMMODATIONS, AND USER CAPACITY

A variety of visitor uses would continue to be permitted on the islands. Opportunities for hiking, overnight camping, swimming, snorkeling, diving, kayaking, scenery and wildlife viewing, and other activities would continue to be available on each of the islands. All island uses also would be subject to periodic closures to protect wildlife.

OVERNIGHT ACCOMMODATIONS

Reservations would continue to be required for all frontcountry camping, and permits would continue to be required for backcountry camping.

Frontcountry camping would continue to be available year-round within established campgrounds on all five park islands. The capacity for each island campground is as follows:

Anacapa Island – 30 campers
Santa Cruz Island – 256 campers
Santa Rosa Island – 75 campers
San Miguel Island – 30 campers
Santa Barbara Island – 30 campers

Camping conditions would continue to be primitive. Picnic tables would continue to be provided at each campsite. Drinking water would continue to be provided only on Santa Rosa and Santa Cruz Islands; there would continue to be no potable water on Anacapa, San Miguel, or Santa Barbara Island. All camping supplies must be hand carried from the dock/beach to the campground and back. There would continue to be no trash receptacles on any of the islands, requiring that all personal trash items be removed from the islands by visitors. With the exception of the Santa Rosa Island campground, which has flush toilets, and the Del Norte campground, which has a pit toilet, vault toilets would continue to be available at each of the campgrounds.

Backcountry beach camping would continue on Santa Rosa Island, and limited backcountry camping would continue to be available on Santa Cruz Island (see the later discussions on these two islands for more details).

There would continue to be no lodging facilities on any of the five islands in the park.

User Capacity

Under the no action alternative the existing limits on day and overnight use would continue. Table 16 near the end of this chapter shows the day and overnight visitor use limits that have been set in Channel Islands National Park. No changes would occur to these use limits, and no new use limits would be set in the park under this alternative.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Orientation and NPS interpretive and educational services would continue at current levels.

The mainland visitor center and island interpretive facilities and services would continue to provide a broad-spectrum, multicultural education program about the natural and cultural resources preserved within Channel Islands National Park. All education programs are aligned to the curriculum content standards of the State of California. Interpretive and education programs would continue to be offered on a diversity of topics to a wide array of visitor and student groups. By using the most up-to-date remote broadcast communications and technology, many of the island and ocean resources would continue to be available via distant learning opportunities to students and the public to experience on the mainland.

Formal education opportunities and programs would continue at the mainland visitor center, through the Parks as Classroom program at schools throughout Ventura and Santa Barbara counties, and nationwide via the Internet and videoconferencing as part of Channel Islands Live. Additional standards-based education programs would continue to be provided by the park concessioner on their vessels and on the park islands.

Mainland Facilities and Interpretive Services

Making the park relevant to a growing and diverse neighboring population and visiting public is essential. The park headquarters/visitor center would remain in Ventura Harbor and serve as the primary location for the dissemination of park information, and interpretive and educational opportunities to connect the park to the people. This would continue to be accomplished by providing opportunities for visitors to indirectly experience and learn about the park resources on the mainland.

Under alternative 1 the Park Service would continue to maintain a visitor contact station in Santa Barbara.

On-Island Interpretive Services

Interpretive and educational services provided on the islands would continue at present levels provided by NPS personnel and volunteers.

Interpretive programs on the islands would continue to give visitors the opportunity to experience the islands in their remote natural settings. Personal interpretive services would be provided by a combination of park staff and volunteer interpreters on the islands, as well as on concessioner boats traveling to or near the islands. Park interpretive staff would continue to train concession and volunteer personnel to serve as interpreters, encouraging charter companies to furnish trained personnel on each of their trips. Interpretation would address visitors' interests and key interpretive themes and would include ecosystem management and the fragile interrelationship of all park resources. Visitor appreciation of park resources would continue to be enhanced through nonpersonal interpretive services including wayside exhibits, websites, webcams, publications, and other educational media.

The existing exhibit areas on East Anacapa, Santa Barbara, Santa Rosa, Santa Cruz, and San Miguel Islands would be maintained.

Interpretative programs and media would continue to foster an understanding of the natural and cultural resources of the islands and marine environment. Evening programs would continue to be given on all of the islands as staffing permits.

To build upon the idea of making the park more relevant to a growing and diverse neighboring population and visiting public, the Channel Islands Live program would continue with underwater and terrestrial programs provided in the summer season into the academic year. The remote broadcasting via the Internet, microwave, and videoconferencing services of Channel Islands Live would be extended to include more regular broadcasts from other park islands in addition to Anacapa Island.

COMMERCIAL SERVICES

Based on a commercial services feasibility analysis, Table 3 lists the commercial services that would continue to be provided under alternative 1 for visitors on Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands.

TABLE 3. CONTINUING COMMERCIAL SERVICES FOR VISITORS IN CHANNEL ISLANDS NATIONAL PARK UNDER ALTERNATIVE 1

Area	Service
Anacapa Island	ferry access to East and West Anacapa Islands, and to water-based activities off of Middle Anacapa Island
East Santa Cruz Island – Scorpion Valley	ferry access to Scorpion Valley
East Santa Cruz Island – Prisoners Harbor	ferry access to Prisoners Harbor
Santa Rosa Island	ferry access to Bechers Bay airplane access to Bechers Bay
San Miguel Island	none

PARK OPERATIONS AND FACILITIES

Channel Islands National Park headquarters operations and three (leased) auxiliary office buildings would remain in the Ventura Harbor area with no proposed changes. A base for island operations would continue on each of the islands. The existing employee housing would also remain.

Mainland Operations

No changes would occur in existing mainland operations under alternative 1.

Park Roads (Santa Rosa and Santa Cruz)

No change would occur in the maintenance of the existing roads on Santa Cruz Island. Roads on Santa Rosa Island would continue to be removed and the landscape restored on a case-by-case basis. The park staff would continue to maintain roads at current minimum standards.

Research/Education Facility

No new research or education facilities would be provided under alternative 1.

Other Infrastructure and Facilities

Under alternative 1, the Park Service would continue to maintain the existing infrastructure and facilities on the mainland and islands. Table 4 lists the current park facilities and infrastructure that would continue to be maintained. On all of the islands there would continue to be visitor facilities and administrative facilities for on-site protection, resource management, and park maintenance. Park rangers and volunteers would continue to provide visitor services on all of the islands.

TABLE 4. EXISTING INFRASTRUCTURE AND FACILITIES IN CHANNEL ISLANDS NATIONAL PARK

Area	Facilities and Infrastructure
Mainland	Robert J. Lagomarsino Visitor Center and administrative office complex General Services Administration-leased office facilities in Ventura Harbor (3) visitor contact station at the Santa Barbara Harbor
Santa Barbara Island	combination visitor contact station/bunkhouse/one-bedroom housing unit nursery generator building, water system, three vault toilets 9-site 30-camper campground dock* 6 miles of trails
Anacapa Island	dock* dock building derrick crane and crane building water tank building oil storage building lighthouse fog signal building generator building and maintenance shop (with an efficiency apartment) assistant lightkeeper's house (serves as a single-family residence) storage building (which houses a bunkhouse, storage, and a visitor contact station) 2 miles of hiking trails four vault toilets two photovoltaic systems generating a total of 9.6kW and two backup generators, two 50,000-gallon historic redwood water tanks, septic system with evapotranspiration disposal field 7-site 30-camper campground

Area	Facilities and Infrastructure
East Santa Cruz Island – Scorpion Valley and Smugglers Cove	31-site 240-camper campground two 1880s historic ranch houses historic bunkhouse in the valley ranch outbuildings visitor contact center and orientation station in historic ranch house park housing consists of six temporary housing units, a bathhouse, and a community kitchen/dining area (Scorpion) temporary maintenance facilities (in the Scorpion housing area) pier (Scorpion)* five public comfort stations with vault toilets three photovoltaic systems generating a total of 7.6kW, one backup generator, two water wells, three water tanks with 10,000-gallon capacity total, two septic system with leach fields, two septic tanks
East Santa Cruz Island – Prisoners Harbor and Rancho Del Norte	2,400-square-foot historic masonry warehouse 374-foot timber pile pier vault toilet Historic Rancho Del Norte ranch house (used occasionally for employee housing) 4-site 16-camper primitive backcountry campground near Rancho Del Norte with a pit toilet 20,000-gallon water tank fed by a U.S. Navy well
Santa Cruz Island	20.2 miles of roads also used as hiking trails (includes the 10.6-mile TNC easement road)
Santa Rosa Island	15-site 75-camper campground flush toilets at campground and ranch historic ranch at Bechers Bay (includes 18 historic structures) 139 miles of roads also used as hiking trails pier* 2,250-foot administrative dirt airstrip maintenance facility two garages two 2-bedroom duplexes two 1-bedroom duplexes one photovoltaic system generating 12.5kW, two 45kW generators, two wind turbines generating a total of 20kW, two water wells, two 57,000-gallon water tanks, four 6,000-gallon tanks, three septic leach fields
San Miguel Island	9-site 30-camper campground 14 miles of hiking trails combination ranger station/residences/bunkhouse research station two dirt administrative airstrips one water well vault toilets

*Current EIS planning process (see page 487).

Park Staffing

Under alternative 1 park operations would continue as they have in the past. Park headquarters, which oversees park operations, would continue to be in Ventura. The park staff would continue to be operationally organized into seven divisions, each with a functional area of responsibility:

- **Facility Management Division —** Responsible for buildings, grounds, roads, trails, docks, piers, airstrips, utilities equipment maintenance, crane operation, and construction project management. Staff are stationed on three of the primarily visited islands.

- **Visitor and Resource Protection Division** — Responsible for resource protection, law enforcement, public safety, visitor use management and emergency services, structural and wilderness fire management, campground management, concessions management, and special use permits. Staff are primarily stationed on park islands or conduct marine patrols from park headquarters.

- **Division of Natural Resource Management** — Responsible for all natural resource management and research. Staff are primarily located at park headquarters.

- **Division of Interpretation and Education** — Responsible for public affairs, public information, communication, information/orientation services, community outreach, education, interpretive services, and visitor center and field operations. Staff are primarily based at park headquarters.

- **Division of Cultural Resources Management** — Responsible for research, preservation, and management of archeological resources, historic structures, cultural landscapes, museum collections, and historic preservation compliance. Staff are primarily based at park headquarters.

- **Division of Administration** — Responsible for personnel, property and procurement, and fiscal management. Staff are primarily based at park headquarters.

- **Division of Transportation** — Responsible for parkwide dispatch, contract aircraft scheduling, housing reservations, marine operations and scheduling, and safety. Staff are primarily based at park headquarters.

Staff expertise and specialties would continue to be distributed throughout the divisions using position management planning.

Table 5 shows the current park staffing levels as of October 2010.

TABLE 5. PERMANENT PARK STAFFING LEVELS (IN FTES), 2010

Title	Number of FTEs	Staff Levels
Superintendent	1	park manager (1)
Administration	6	HR specialist (1) IT specialist (1) contract specialist (1) budget analyst (1) fiscal assistant (1) administrative specialist (1)
Interpretation	10	supervisory park ranger – chief (1) supervisory park ranger – vc (1) interpretive park rangers – interpretive (5) (one of which is also the dive officer) volunteer coordinator assistant (1) education coordinator (1) biological science technician (1)
Visitor and Resource Protection	10	supervisory park ranger — chief ranger (1) supervisory park rangers (2) park rangers – law enforcement (4) park rangers – marine law enforcement (2) budget and financial support assistant (1)

Title	Number of FTEs	Staff Levels
Natural Resources	12	supervisory resource management specialist (1) supervisory natural resource managers (2) natural resource manager (1) wildlife biologist (1) ecologists (2) botanist (1) biologists (2) biological science technician (1) administrative support assistant (1)
Maintenance	11	facility manager (1) crane operator supervisors (2) crane operators (3) maintenance mechanics (2) maintenance workers (2) administrative support assistant (1)
Transportation	5	supervisory small craft operator (1) small craft operators (3) deckhand (1)
Cultural Resources	3.5	chief of cultural resources (1) archeologist (0.5) exhibit specialist (1) (network position) preservation specialists (1) (network position)
TOTAL	58.5	

Terms: 12
Seasonals: 13.5

COSTS

Funding for NPS operations (appropriated and nonappropriated) for Channel Islands National Park in 2010 was **$11,944,601**. Table 6 presents the budget for Channel Islands National Park. There would be no change to staffing or funding levels under this alternative.

TABLE 6. CHANNEL ISLANDS NATIONAL PARK OPERATIONAL COSTS, FISCAL YEAR 2010

	Appropriated		Nonappropriated		Total
Functional Areas and Programs	**Base**	**Nonbase**	**Reimbursable**	**Revenue**	**Funds**
Natural Resources Management					
Subtotal	$2,164,076	$154,500	$1,127,664	$74,535	$3,520,775
Facility Operations/Maintenance					
Subtotal	$1,181,139	$475,467	$22,476	$49,637	$1,728,719
Visitor Protection					
Subtotal	$1,104,319	$80,918		$1,333,090	$2,518,327
Management and Administration					
Subtotal	$1,047,152	$1,944	$41,216		$1,090,312
Interpretation					
Subtotal	$917,770	$526,683		$163,437	$1,607,890
Transportation – Logistical Support					
Subtotal	$583,292	$59,800	$40,000		$683,092
Cultural Resources Management					
Subtotal	$581,252	$188,000		$26,234	$795,486
Grand Total	**$7,579,000**	**$1,487,312**	**$1,231,356**	**$1,646,933**	**$11,944,601**

ALTERNATIVE 1 — THE MAINLAND

There would be no changes in park facilities, operations, or visitor experiences under alternative 1. The mainland visitor center would continue to provide exhibits and programs, and on-site education programs to school groups, including higher education. The Santa Barbara visitor contact station also would continue to operate as it currently does.

Map 2 Park Headquarters – Alternative 1

ALTERNATIVE 1 — ANACAPA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

Historic structures and associated archeological resources in the Anacapa Island Light Station Historic District on East Anacapa Island would continue to be preserved. Several structures are in use for park housing, park administrative uses, and visitor services.

Within the historic district, the management of nonnative plants would be evaluated on a case-by-case basis.

The lighthouse would continue to be closed to the public.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

East Anacapa

East Anacapa would continue to be an ideal place for hiking (2 miles of trails); overnight camping trips; and swimming, snorkeling, diving, kayaking, and spectacular scenery and wildlife viewing opportunities (seabirds, seals, sea lions, and tidepool organisms). Access would continue to be only at the landing cove for loading and unloading passengers. The Channel Islands Live program would continue to be broadcast to the mainland. There would continue to be no anchoring permitted in the cove.

The small visitor contact station with minimal exhibits (in the historic storage building) in the Anacapa Island Light Station Historic District would remain.

The 30-person campground would continue to be available for use.

Middle Anacapa

There would continue to be no public maintained trails on Middle Anacapa. Access to water-based activities would continue to be via concessioner boats or private boats, and the island would continue to be closed to all landings unless accompanied by an NPS-approved escort.

West Anacapa

A limited number of mostly concessioner-led tide-pooling trips to Frenchy's Cove would continue to be offered throughout the year. Access to West Anacapa would continue to be from the water only and limited to Frenchy's Cove. There would continue to be no public maintained trails on West Anacapa. Camping would continue to not be permitted.

USER CAPACITIES (DAY USE AND OVERNIGHT)

User capacity would continue to not exceed 100 visitors per day by concessioner boat plus private boaters on East Anacapa. Thirty campers per night would continue to be allowed and would be counted as part of the 100-person user capacity.

User capacity would continue to be managed on Middle Anacapa by requiring that visitors be accompanied by an NPS-approved escort. Camping would continue to not be permitted.

On West Anacapa at Frenchy's Cove, no more than 75 day visitors at one time would be allowed and no more than 600 visitors per month. Any groups of 30 or more must be supervised in an NPS-led or NPS-approved group. Camping would continue to not be permitted.

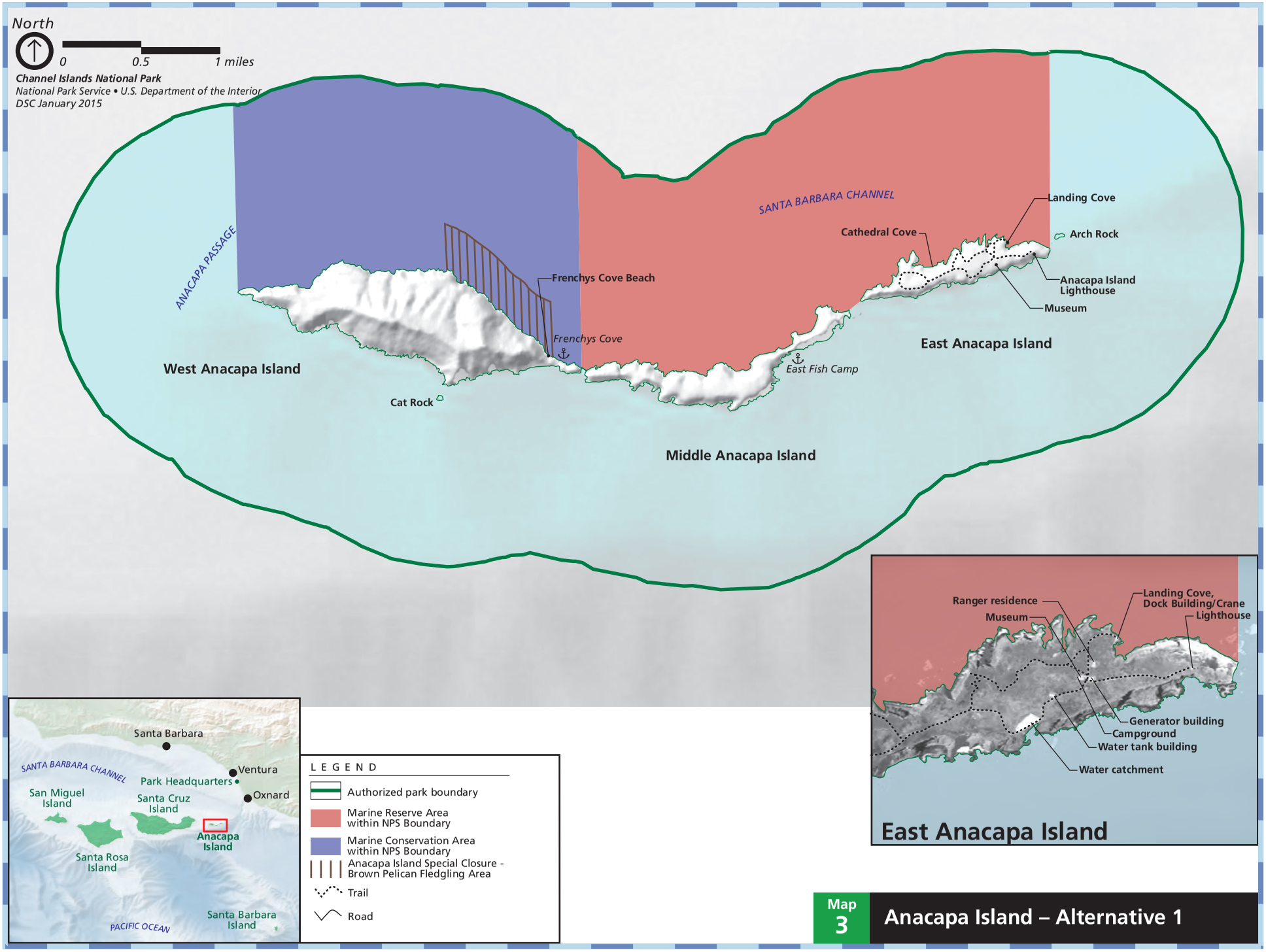
PARK OPERATIONS AND FACILITIES

On East Anacapa Island all housing would remain as is, in the Anacapa Island Light Station Historic District. The single-family residence (in the assistant lightkeeper's house) would remain, as would the efficiency apartment (in the historic generator building) and the bunkhouse in the historic storage building (which also houses the visitor contact station).

Other Infrastructure and Facilities

The power on Anacapa Island has a decentralized layout with solar systems at two different locations but tied together in an electrical grid. There is a 4kW solar system near the communal bathhouse and shop, a 2kW system on one of the employee residences, and a 1.6kW system on another employee residence. There are no water wells on Anacapa Island. There are two historic 50,000-gallon water storage tanks. Filling the tanks requires transport of water from the mainland to the island. Chlorinated water flows by gravity from the tanks through a 2-inch distribution line to the residential area. Drinking water is not provided to the public.

A septic infiltrator system on Anacapa Island handles gray water and human waste.



Map 3 **Anacapa Island – Alternative 1**

ALTERNATIVE 1 — SANTA CRUZ ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

No new actions would occur to protect floodplain values, including additional channel excavation work — no action would be taken to remove sediment from the flood channel.

CULTURAL RESOURCES

Under this alternative, historic buildings and structures, landscapes, and archeological resources would continue to be preserved. The historic ranch buildings would continue to be used for park administrative and interpretive purposes.

See below for the management of nonnative trees on the island.

NATURAL–CULTURAL RESOURCES

A rare bat (the Townsend's big-eared bat) uses the former bakery in the ranch house seasonally as a maternity roost. This causes some conflicts with interpretation and preservation of the bakery. However, the Park Service would continue to protect the bats in the building unless another suitable maternity colony can be established.

At the Scorpion Valley nonnative plants in cultural landscapes and historic districts would be managed on a case-by-case basis to prevent ecological impacts and limit the spread of these plants (e.g., olives, pepper trees, and stone pine). Nonnative and native plants would only be removed if they pose hazards to human safety.

Individual eucalyptus trees would continue to be removed on a case-by-case basis from the campground if the trees present a hazard to visitors.

Small stands of eucalyptus and the long row of trees between the upper and lower Scorpion campgrounds would continue to be preserved as a remnant of the historic landscape tree plantings provided the spread of eucalyptus can be contained.

Delphine's grove would continue to be preserved as a significant feature of the cultural landscape.

The historic olive grove at Smugglers Cove would be maintained in a manner that perpetuates the grove as a landscape feature but prevents the olive trees from spreading, as much as possible, throughout the island.

WILDERNESS PROPOSAL

No lands on Santa Cruz Island would be proposed for wilderness designation under alternative 1.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Santa Cruz Island would continue to offer many opportunities for hiking, swimming, snorkeling, diving, kayaking, one-day trips, and short or long overnight camping trips. Opportunities for seeing wildlife, especially the endemic island scrub-jay (found no other place in the world) and bald eagles would continue. Beach access would continue at

primarily Scorpion, Smugglers Cove, and Prisoners Harbor. Private boaters would continue to use the piers at Scorpion and Prisoners Harbor for loading and unloading passengers only. No new facilities or services would be added. Drinking water and toilets would continue to be provided to the public only at Scorpion.

There would be no change in conditions or facilities for kayaking and snorkeling. No new commercial services would be provided under this alternative.

The trail system in the NPS portion of eastern Santa Cruz Island, a combination of unmaintained trails and unimproved administrative roads, would continue as it is.

The existing campground at Scorpion would continue to be maintained in its present condition, with a capacity of 240 campers per night. The historic masonry structure at Scorpion would continue as a visitor contact station with exhibit and office space.

At Prisoners Harbor, there would continue to be no visitor contact station. Camping would continue to not be permitted there.

No visitor facilities would continue to be provided at Smugglers Cove.

The existing campsites near Rancho Del Norte would continue to be maintained, with a capacity of 16 campers.

USER CAPACITIES (DAY USE AND OVERNIGHT)

The user capacity at Scorpion Valley would continue to be 200 people per day, not including campers. The campground capacity would continue to be 240 campers per night.

There would be no limit on the number of private boaters at Smugglers Cove. Camping would continue to not be permitted.

The user capacity at Prisoners Harbor would continue to be no more than 100 visitors per day. Camping would continue to not be permitted.

Day use and limited backcountry camping would continue to be available on the NPS portion of Santa Cruz Island. There are sites for 16 campers near Rancho Del Norte. Camping would continue to be available only by permit on NPS lands.

PARK OPERATIONS AND FACILITIES

Park Roads

Park staff would continue to abandon (i.e., not maintain) unneeded parts of the existing 20.2 miles of roads on NPS lands on Santa Cruz Island on a case-by-case basis. (The 10.6-mile main road from Prisoners Harbor to the U.S. Navy site is an easement held by TNC.) All maintained roads would be solely to meet park operational needs.

Other Infrastructure and Facilities

The power on Santa Cruz Island has a decentralized layout with solar systems at different locations but is tied together in an electrical grid. There is a 4kW solar system near the communal bathhouse and shop, a 2kW system on one of the employee residences, and a 1.6kW system on another employee residence. At Scorpion, there is one water well and three 10,000-gallon storage tanks. Chlorinated water flows by gravity from the tank through a 2-inch distribution line to the campground and six-unit residential area. There is also a septic leach field with two large (greater than 5,000-gallon) tanks on the island – one in the campground and one near the six residential employee units.

There is an existing water well and septic leach field at Smugglers Cove. Rancho Del Norte has a 20,000-gallon water tank fed by the U.S. Navy well. The water is nonpotable.

Scorpion Valley

In 1998, to meet housing needs, six temporary housing units were constructed to move employees out of the floodplain at Scorpion and out of a deteriorated structure. These units would remain.

Maintenance would continue at the current Scorpion temporary housing site.

Smugglers Cove

The historic masonry building at Smugglers Cove is being rehabilitated. Once completed, it would continue to serve as park housing.

Prisoners Harbor

Housing would continue not to be available at Prisoners Harbor.

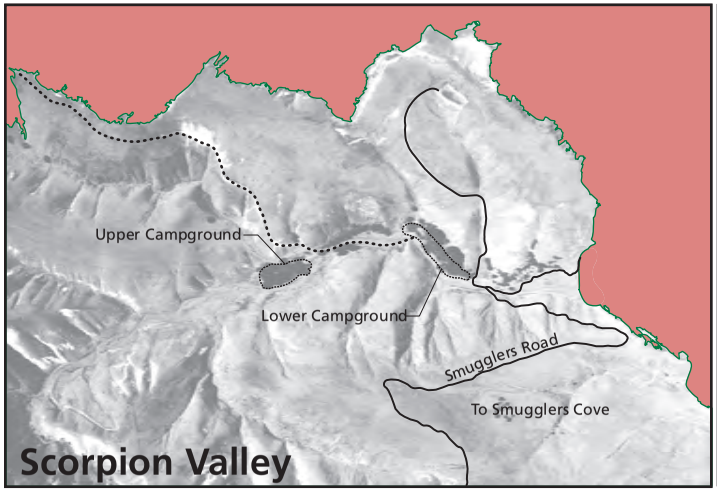
Maintenance operations would continue at various locations.

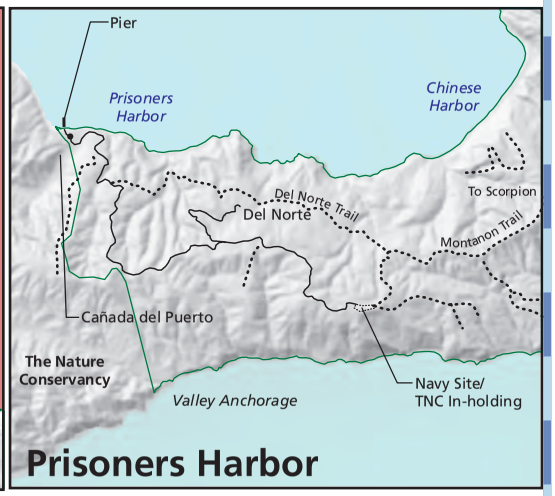
Rancho Del Norte

The one employee (seasonal) housing unit at Rancho Del Norte would remain.

LEGEND

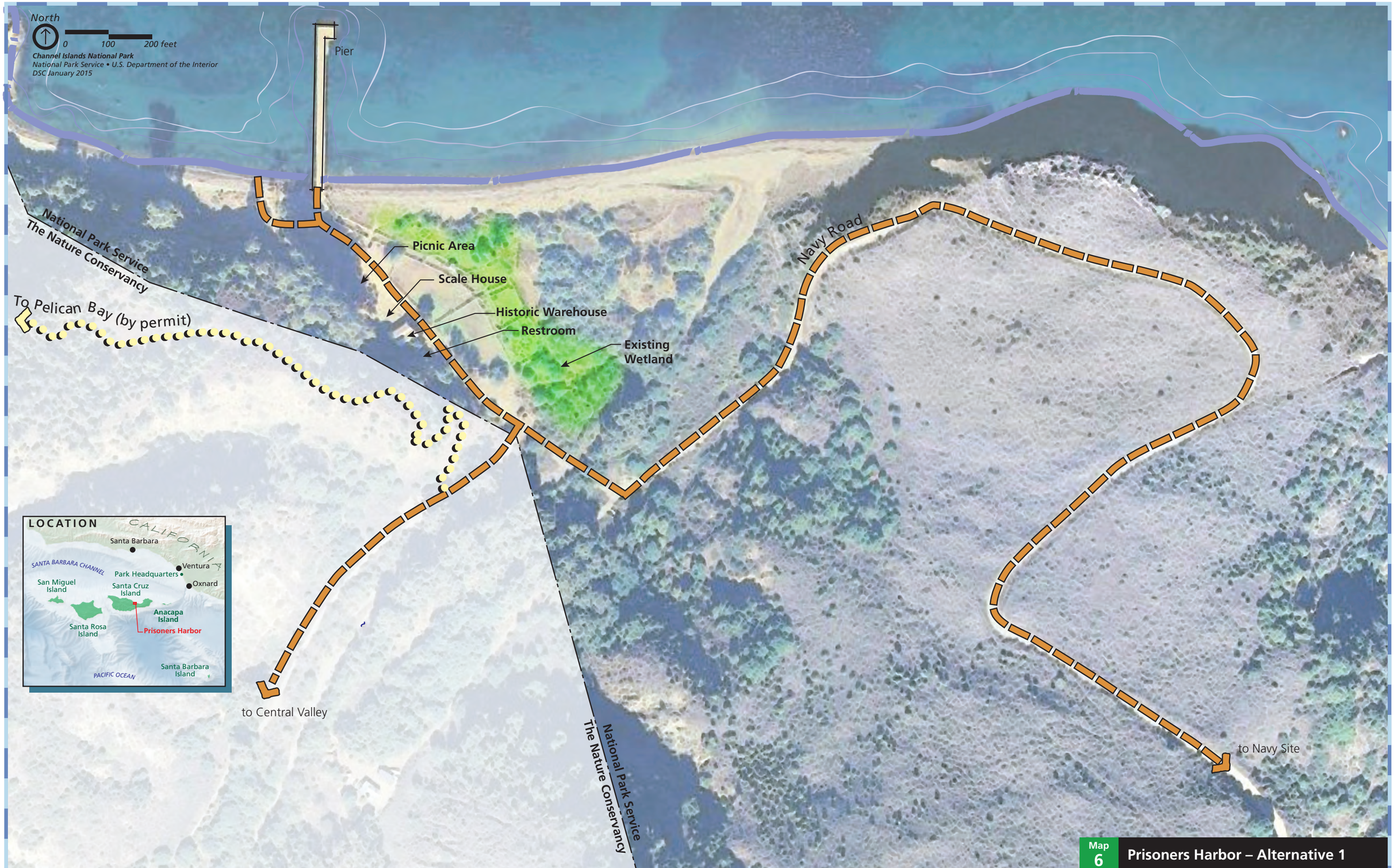
- Authorized park boundary
- Marine Reserve Area within NPS Boundary
- State Marine Conservation Area
- Trail
- Road





Map 4 Santa Cruz Island – Alternative 1

Map 5 Scorpion Valley – Alternative 1



Map 6 Prisoners Harbor – Alternative 1

ALTERNATIVE 1 — SANTA ROSA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

Under this alternative, historic buildings and structures, cultural landscapes, archeological resources, and ethnographic resources would continue to be protected through ongoing preservation and monitoring programs.

WILDERNESS PROPOSAL

No lands on Santa Rosa Island would be proposed for wilderness designation under alternative 1.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Numerous hiking options on the existing unimproved administrative road system and one-day trips and short or long overnight camping trips would remain available. Beach access would continue at Bechers Bay. Private boaters would continue to use the pier at Bechers Bay for loading and unloading passengers only. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking would continue to be limited and recommended for the experienced visitor.

There would be no change in visitor facilities. The 75-person campground at Water Canyon would continue to be maintained.

Beaches around Sandy Point would continue to be closed year-round to landings and camping. The beaches between Carrington Point and East Point would continue to be closed year-round to camping, while the beaches between Skunk Point and East Point would continue to be closed to all entry seasonally.

There would continue to be no visitor contact station or lodging on Santa Rosa Island. There would be no change in conditions or facilities for kayaking and snorkeling.

The Park Service would continue to provide limited ground transportation on the island. The Park Service would continue to work with the private sector to provide year-round air transportation via a concessioner for day use visitors and campers. The airstrip would continue to be maintained.

USER CAPACITIES (DAY USE AND OVERNIGHT)

The user capacity at Bechers Bay would continue to be up to 100 people per day, including the 75 campers per night that would continue to be permitted at Water Canyon.

Backcountry beach camping would continue on Santa Rosa Island. Seasonal restrictions/closures would continue to protect nesting shorebirds and seabirds, as well as pupping seals and sea lions.

PARK OPERATIONS AND FACILITIES

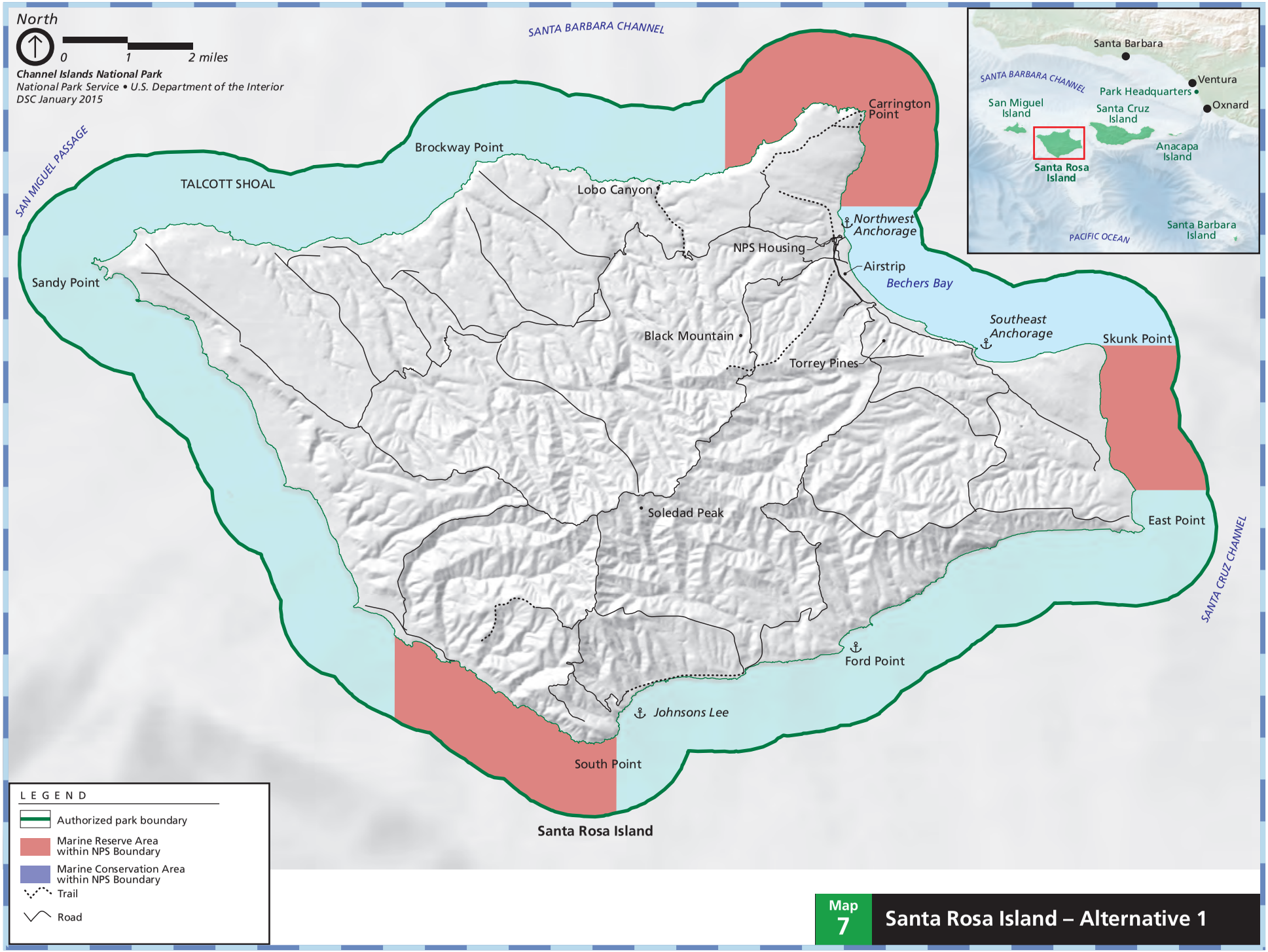
Park Roads

Park staff would continue to remove existing roads and restore the landscape on Santa Rosa Island on a case-by-case basis. With the exception of the roads to Torrey Pines and the

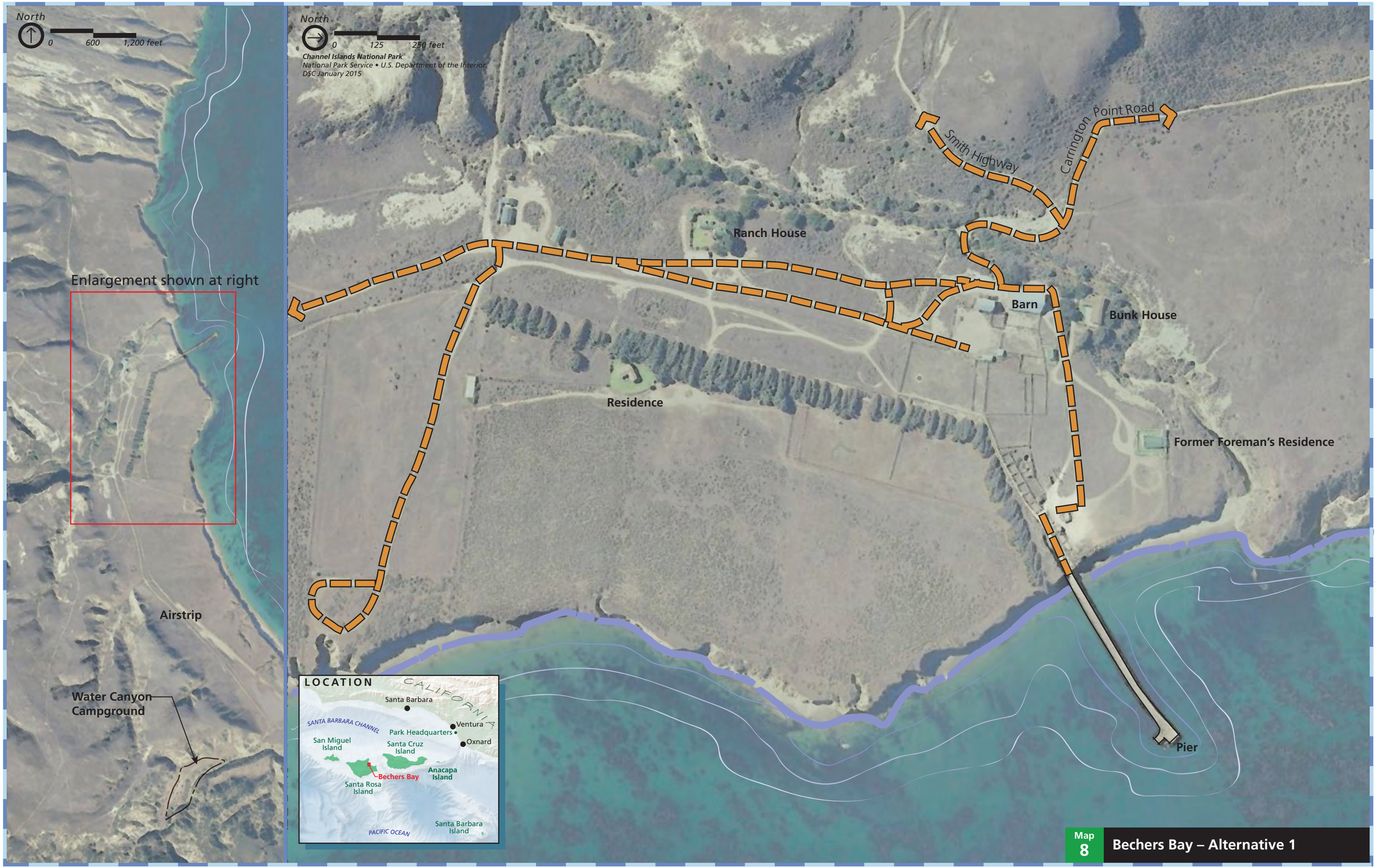
Lobo Canyon trailhead, where the Park Service provides vehicle transportation to visitors, the remaining roads would be maintained solely to meet park operational needs.

Other Infrastructure and Facilities

Two 2-bedroom duplexes and two 1-bedroom duplexes would remain on the island. There is a minimal grid system for electricity with pockets of facilities providing power via solar systems, wind turbines, and generators on Santa Rosa Island. The power consists of a solar system generating 12.5kW of power with a battery bank consisting of 60 batteries providing 240 volts and 1,900 amp hours, two wind turbines providing a total of 20kW, and two 45kW generators. Water is provided on the island by two wells, which is then stored in two 57,000-gallon tanks. Four 6,000-gallon tanks provide storage capacity for only the housing area in Bechers Bay. The wastewater system consists of three septic leach fields for individual structures: one near the Old Ranch House, one near the residence, and one near the Barn. There is also one septic leach field at Johnsons Lee.



Map 7 **Santa Rosa Island – Alternative 1**



Map 8 Bechers Bay – Alternative 1

Map 9 Johnsons Lee – Alternative 1

ALTERNATIVE 1 — SAN MIGUEL ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

This island would continue to be an ideal place for seeing native vegetation, the unique caliche forest, seals and sea lions (with ranger escort), scenic Cuyler Harbor beach; to do limited hiking (to the Cuyler Harbor beach and 0.75 mile to the ranger station); and to take day and long overnight camping trips. To see other parts of the island, specifically the pinnipeds at Point Bennett and Cardwell Point, visitors must continue to be escorted by a ranger. (Boating visitors must contact the park staff in advance to coordinate this one-day activity.) Visitors would continue to come ashore only at Cuyler Harbor. Overnight anchorages would continue to be restricted to Cuyler Harbor and Tyler Bight. All boating and landings would continue to be restricted seasonally around Point Bennett. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking would continue to be limited and recommended for the experienced visitor.

No new visitor facilities would be provided in alternative 1. The existing 30-person campground would continue to be maintained. A visitor contact station would remain in the NPS ranger station / housing complex.

USER CAPACITIES (DAY USE AND OVERNIGHT)

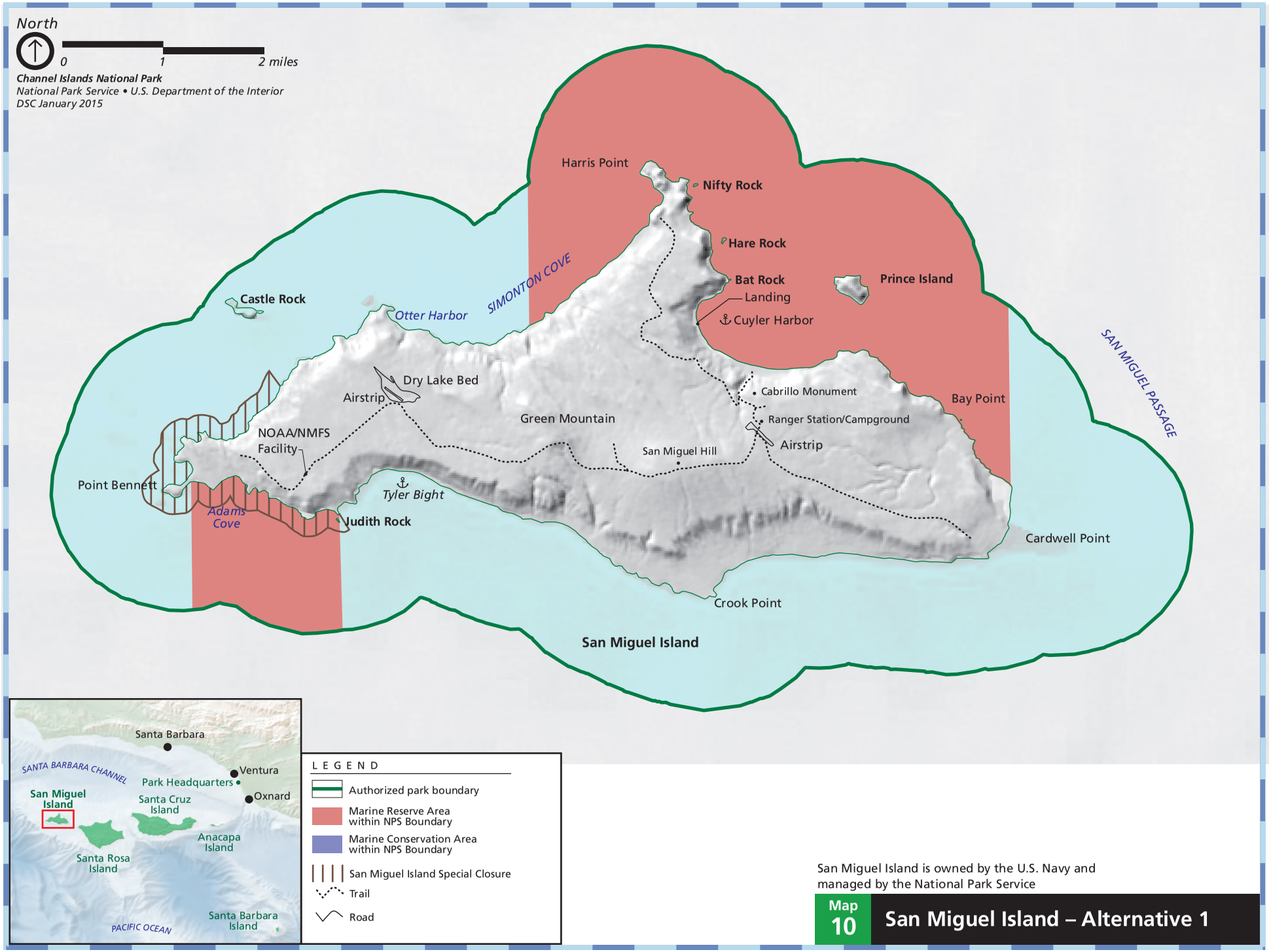
The user capacity in the ranch complex area would continue to be 75 people per day, which would not include the 30 campers per night that would continue to be allowed.

On the remainder of the island, day use would be limited to ranger-guided hikes, and no camping would be permitted.

PARK OPERATIONS AND FACILITIES

The existing visitor contact station / housing structure, which includes two 1-bedroom units and a bunkhouse, would continue to be maintained.

An airstrip within the Dry Lake Bed on San Miguel Island would be maintained to support the operations of the NMFS Field Station.



San Miguel Island is owned by the U.S. Navy and managed by the National Park Service

Map 10 San Miguel Island – Alternative 1

ALTERNATIVE 1 — SANTA BARBARA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Santa Barbara Island has exceptional island coastal views and ideal places for swimming, snorkeling, diving, kayaking, hiking, and seeing wildlife (seabirds, seals, and sea lions). Trails would continue to be closed seasonally to protect nesting California brown pelicans. Access to the island would continue to be only at the landing cove. Beaches would continue to be closed to aquatic activities to protect wildlife. There would continue to be no landing on beaches.

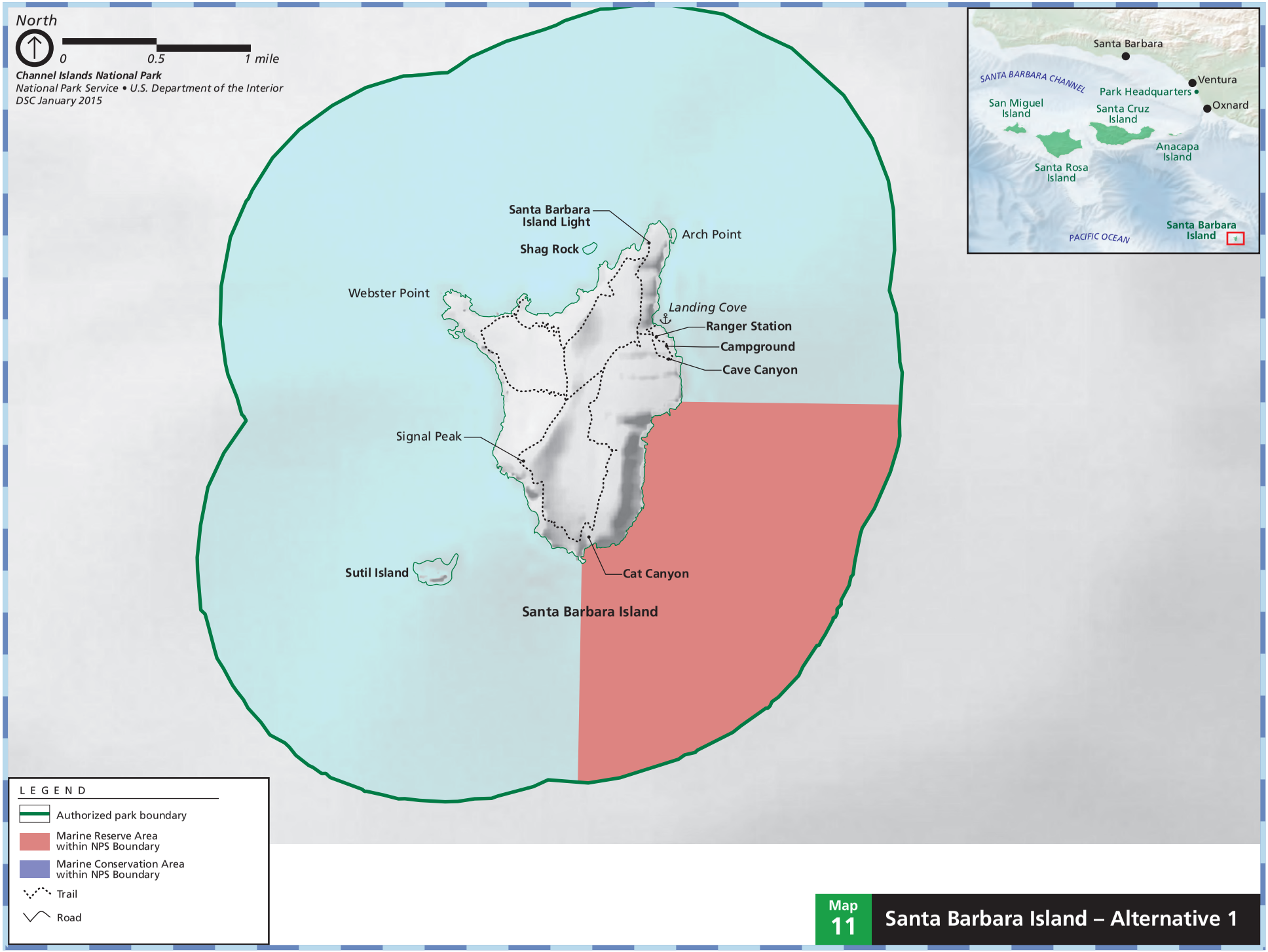
No new visitor facilities would be provided. The existing 6 miles of scenic trails and the 30-person campground would continue to be maintained. The visitor contact station (part of the employee housing structure) would remain.

USER CAPACITIES (DAY USE AND OVERNIGHT)

The user capacity would not exceed 100 people per day (campers not included) and 30 campers per night.

PARK OPERATIONS AND FACILITIES

The existing visitor contact station / housing structure, which includes one 1-bedroom unit and one bunkhouse, would remain in use.



Map 11 Santa Barbara Island – Alternative 1

ALTERNATIVE 2 — PARKWIDE

CONCEPT

Under this alternative resource stewardship, including ecosystem preservation and restoration; and preservation of natural landscapes, cultural landscapes, archeological resources, and historic structures would continue to be the park's highest priority. Slightly more emphasis would be placed on resource stewardship compared to alternative 1. However, under alternative 2, increased opportunities would also be provided for visitors to enjoy and appreciate the park. The National Park Service would continue to maintain opportunities for visitors to access all of the islands.

Alternative 2 would place an emphasis on protecting park resources by making the park more relevant to a growing and diverse neighboring population and public. There would be expanded opportunities to bring the park to the people through additional facilities and activities, including the expansion of the visitor center in Ventura Harbor, distance learning programs, and live interactive video telecasts. Increased efforts would be made to provide education and interpretive programs that focus on all grade levels and adults throughout the adjacent mainland communities as well as nationally through interactive distance learning programs.

Under alternative 2, 66,576 acres of the park would be proposed for wilderness designation, primarily on Santa Rosa and Santa Cruz Islands.

Under alternative 2 there would be additional opportunities for recreational activities in the park compared to alternative 1. On Santa Rosa Island more wilderness and dispersed visitor use opportunities would be provided under alternative 2 than currently exist.

Minimal new development would occur on the islands under alternative 2. Limited new facilities might be built on the islands for specific resource protection, research, management, or visitor services. There would be few changes in the transportation methods used to reach the islands or travel on the islands. Marine areas and resources would continue to be managed to protect ecosystems and biological diversity.

Partnerships would be expanded with governmental agencies, educational institutions, and others to bring the island experience to the public and facilitate educational opportunities, resource stewardship, and research.

Commercial services that use sustainable practices and were more ecologically sensitive in their operations would be encouraged.

Identified below are general actions called for under alternative 2. Most island-specific actions are identified later in this section.

Primary Differences of Alternative 2 from Alternative 1

In alternative 2:

- overnight use levels on East Anacapa Island would be reduced
- sediment in the flood channel in Scorpion Valley on Santa Cruz Island would be periodically excavated
- kayaking and snorkeling at Scorpion Valley would be managed through a concession
- the existing Scorpion Valley campground would be reconfigured to accommodate groups
- an education/research field camp would be established, if possible, at Prisoners Harbor on Santa Cruz Island

- limited ground transportation would be provided on Santa Rosa Island via a concessioner
- a concessioner would provide lodging and food service at Bechers Bay on Santa Rosa Island
- the Water Canyon campground on Santa Rosa Island would be reduced, while a new campground would be provided at Bechers Bay
- a day use facility and ranger station would be provided at Johnsons Lee on Santa Rosa Island
- a field station to support research and education would be established at Bechers Bay
- guided multiday trips would be established to see pinnipeds at Point Bennett on San Miguel Island
- the existing mainland visitor center would be expanded and administrative offices consolidated
- park staff would develop and monitor key user capacity indicators and standards
- approximately 53% of the land portion of the park would be proposed for wilderness designation

NATURAL RESOURCES

Terrestrial Ecosystems/ Ecological Restoration

The conservation of biological diversity would continue to be a core value in carrying out the preservation of Channel Islands National Park.

The restoration of terrestrial ecosystems would continue to be emphasized in alternative 2. The guiding philosophy of park restoration efforts would continue to be the protection and recovery of native island species and ecosystems from the most devastating human-caused impacts. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. Best management practices and appropriate technology would be used to control nonnative species, including helicopters, mechanized equipment, and integrated pest management practices, while minimizing impacts on the wilderness character as much as possible. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts. Additionally, some nonnative plants contribute to cultural landscapes. Within the proposed cultural landscapes zone, the management of nonnative resources would be evaluated on a case-by-case basis. Actions would continue to be taken to control invasive nonnative plants that can have severe ecological impacts.

Floodplains and Wetlands

No new permanent facilities would be built on floodplains.

CULTURAL RESOURCES

This alternative would continue to preserve historic buildings, structures, and landscape features that are listed in or eligible for listing in the national register. Archeological and ethnographic resources would continue to be protected and traditional uses by culturally associated Native Americans would continue to be encouraged.

Cultural resources are an integral component of the wilderness area being proposed in the park (see below). These cultural resources, such as the historic line camps on Santa Rosa Island, would be protected and maintained according to the pertinent laws and policies governing cultural resources and using methods consistent with the preservation of wilderness character and values.

Historic Buildings and Structures

Historic buildings and structures would be preserved and rehabilitated for administrative and/or interpretive purposes as appropriate.

Cultural Landscape Resources

Under this alternative, the significant features and patterns of cultural landscapes would be preserved and protected. Significant cultural landscape features and patterns, such as buildings, structures, small-scale features, spatial organization, circulation patterns, natural features, and vegetation, would be preserved and protected or rehabilitated as appropriate. However, nonnative plants in the cultural landscapes zone that have unacceptable ecological impacts or invade natural areas could be removed and replaced with appropriate noninvasive substitutes.

Archeological Resources

Archeological resources would continue to be inventoried, managed, and protected. Protection and management of archeological resources would be informed by an Archeological Overview and Assessment (Braje et al. 2010). The National Park Service would continue to encourage universities, museums, and other institutions to conduct additional archeological research.

Ethnographic Resources

Ethnographic resources would continue to be researched and managed as they currently are. Traditional uses by culturally associated Native Americans would continue to be encouraged. Additional ethnographic research on traditionally associated groups would be encouraged.

Museum Collection (including Archives and Research Library)

The National Park Service would seek to improve the park's curatorial facilities and capabilities and to increase access to its museum collection, archives, and research library.

MANAGEMENT ZONES

New management zones would be applied to each of the islands and the surrounding marine waters within the park boundary (see the management zone definitions in Table 1). These zones are described for each island later in this section, and can be found on the alternative 2 maps for the islands.

Approximately 80% of the park's marine waters would be included within the "marine stewardship" zone. Those areas created by the State of California in 2003 as marine reserves or marine conservation areas, constituting about 20% of the park's marine waters, would be in the "marine protected" management zone. The Park Service would seek an agreement with the State of California and NOAA to maintain access and ensure cooperative management of the park waters within these zones.

WILDERNESS PROPOSAL

Under alternative 2, 66,576 acres (approximately 53% of the land area of the park) would be proposed for wilderness designation. The area proposed for wilderness would include all of West and Middle Anacapa Island; most of the NPS lands on Santa Cruz Island; most of Santa Rosa Island; almost all of Santa Barbara Island; and all islets, islands, and rocks offshore of the main islands, with the exception of Prince Island. (See the island zoning maps and the following island-specific sections for more details.)

VISITOR ACCESS

Air Transportation

Public air transportation for day use visitors and campers would continue to be available year-round to Santa Rosa Island (Bechers Bay) via a park concessioner. The airstrip would continue to be maintained. General aviation aircraft would continue to not be permitted to land on parklands due to concerns regarding disturbance of sensitive coastal resources and visitors, potential safety issues regarding landing on a primitive airstrip, the lack of supplies and fuel if the need arises, and the lack of space to park aircraft.

Public Boat Transportation

Public boat transportation for day use and multiday visitors would continue to be available year-round to all five of the park islands by a park concessioner. The park would maintain a pier or dock facility at each of the current locations except San Miguel, where no pier or dock facility will be provided. Existing piers and docks would continue to be maintained. The points of departure would include Ventura, Santa Barbara, and Channel Islands (Oxnard) harbors, but would not be limited to these locations. It is important that the concession operation be co-located within the same harbor of the park headquarters to facilitate effective and efficient park operations.

Private Boat Transportation

Private boaters could continue to access any of the five NPS-managed islands/lands. It would not be the intention of the Park Service to require landing permits on any of the islands. However, if measures need to be taken to provide for a quality visitor experience and/or prevent impacts on park resources in the future, a permit system might be necessary. If and until such time, no landing permits would be required except for those lands administered by TNC (western Santa Cruz Island). Landings would continue to not be permitted on rocks, islets, or at selected dry sea caves on or near any of the islands. All landing beaches would continue to be subject to seasonal closures. Specific landing information is given for each island later in this section.

On-Island Transportation

Most destinations on each of the islands would continue to be accessible by foot within a few minutes to a few hours. Limited commercial ground transportation would be considered only for Santa Rosa Island (described later in this section). Of the 67 miles of road maintained on Santa Rosa Island, 21 miles would be maintained to provide public access via commercial ground transportation. No other public vehicular transportation would be provided on any of the other islands. Before any roads are restored to natural conditions they would be evaluated as trail corridors in a future parkwide backcountry management plan.

Horse use would not be permitted on any of the islands.

VISITOR USES, OVERNIGHT ACCOMMODATIONS, AND USER CAPACITY

As in alternative 1, a variety of visitor uses would continue to be permitted on the islands. Opportunities for hiking, overnight camping, swimming, snorkeling, diving, kayaking, scenery and wildlife viewing, and other activities would continue to be available on the islands. All island uses also would be subject to periodic closures to protect wildlife.

OVERNIGHT ACCOMMODATIONS

Reservations would continue to be required for all frontcountry camping, and permits

would continue to be required for backcountry camping.

Frontcountry camping would remain available year-round in established campgrounds on all of the five park islands. The capacity for each island campground would be as follows:

Santa Barbara Island – 30 campers
Anacapa Island – 16 campers
Santa Cruz Island
– Scorpion: 240 campers
– Smugglers Cove: 16 to 20 campers
– Del Norte: 16 campers
Santa Rosa Island – 110 campers
San Miguel Island – 30 campers

Thus, up to 462 camper nights would be available in the park's campgrounds, an increase of 57 camper nights over current conditions. In addition, up to 10 campers may be permitted at a new temporary camp on San Miguel Island.

Camping conditions would continue to be primitive. Picnic tables would remain at each campsite. Drinking water would continue to be provided only on Santa Rosa and Santa Cruz Islands — there would continue to be no potable water on Anacapa, San Miguel, or Santa Barbara Island. All camping supplies must be hand carried from the dock/beach to the campgrounds and back. There would continue to be no trash receptacles on any of the islands; thus, visitors must remove all personal trash items from the islands. Vault toilets would be available at each of the campgrounds, with the exception of the Del Norte campground (which has a pit toilet).

Backcountry camping would continue on Santa Rosa and Santa Cruz Islands, and expanded backcountry camping might be available on these islands once the parkwide backcountry management plan is completed.

Rustic economy-scale lodging opportunities would be provided in the historic ranch complex on Santa Rosa Island (see details later in this section).

USER CAPACITY

Under alternative 2, the existing limits on day visitation would continue on all islands (see Table 16 at the end of the chapter). Indicators and standards would be developed for key resources that are sensitive to changes in visitor use and would be monitored to ensure that unacceptable changes are not occurring (see the discussion of user capacity at the beginning of the chapter for more details).

Under alternative 2, the number of campers that would be permitted on East Anacapa and Santa Rosa Islands would change, which in turn would alter the islands' overnight use levels. New backcountry campsites also may be proposed in the future on Santa Cruz and Santa Rosa Islands (and a temporary camp on San Miguel Island).The future parkwide backcountry management plan would determine the location of these sites and set appropriate use limits.

VISITOR ORIENTATION, INTERPRETATION, AND EDUCATION

A comprehensive interpretive plan would be developed to guide interpretation throughout the islands and would include minimal interpretive wayside exhibits on some of the islands. Supplemental compliance might be necessary to implement aspects of the comprehensive interpretive plan.

Mainland Facilities and Interpretive Services

The Robert J. Lagomarsino Visitor Center in Ventura Harbor would be expanded to accommodate a new larger auditorium to meet the demands of live interactive programs, enlarge the exhibit area, and modify the existing auditorium to accommodate classroom and conference meeting space.

On-Island Orientation/ Interpretive Services and Facilities

Island orientation would be similar to that found in alternative 1. NPS personnel and volunteers would continue to provide interpretive and educational services on the islands to further engage visitors in protecting park resources. The mainland information, orientation, educational, and interpretive services would continue to be essential in preparing visitors for their island experience, including considerations for minimal impact recreation.

Interpretive programs on the islands would be the same as described in alternative 1 and would be designed to give visitors the opportunity to experience the islands in their remote natural settings. Visitor appreciation of park resources would be enhanced through nonpersonal interpretive services including wayside exhibits, websites, webcams, publications, and other educational media.

Interpretive programs and media would foster an understanding of the natural and cultural resources of the islands and the marine environment through evening and live interactive video programs. Live interactive video programs, such as the Channel Islands Live terrestrial and underwater programs on Anacapa Island, would be expanded to other islands as feasible.

Under this alternative, an education/ volunteers camp for school groups would be built in Scorpion Valley if it is not possible to locate the camp in the preferred location in the Prisoners Harbor area.

Other Visitor Contact Stations

To provide additional opportunities for the public to learn about the park and its resources, other locations along the southern California coastline would be sought for visitor contact stations (e.g., Oxnard). The National Park Service would seek to lease/share space for these offices with other federal and state land/water management agencies where possible.

COMMERCIAL SERVICES

Based on a commercial services analysis, Table 7 lists the commercial services that would be provided under alternative 2 for visitors on Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands.

TABLE 7. COMMERCIAL SERVICES PROVIDED FOR VISITORS IN CHANNEL ISLANDS NATIONAL PARK UNDER ALTERNATIVE 2

Area	Service
Anacapa Island	ferry access to East and West Anacapa Islands, and to water-based activities off of Middle Anacapa Island
East Santa Cruz Island – Scorpion Valley	ferry access to Scorpion Valley kayak and snorkeling rentals at Scorpion Valley
East Santa Cruz Island – Prisoners Harbor	ferry access to Prisoners Harbor
Santa Rosa Island	ferry access to Bechers Bay lodging and food services for visitors at Bechers Bay airplane access to Bechers Bay limited ground transportation of visitors on the island's roads
San Miguel Island	guided multiday trips would be established to see pinnipeds at Point Bennett

PARK OPERATIONS AND FACILITIES

Mainland Operations

The Park Service would work with the Ventura Harbor management to consolidate all maintenance uses within a common footprint in the industrial portion of the harbor.

Also under this alternative the Park Service would seek to consolidate its rented office space in Ventura Harbor to improve the effectiveness and efficiency of park operations and reduce costs. The Park Service would seek to acquire or lease property adjacent to the existing visitor center or an equivalent property in the harbor. In the interim, park operations would continue to be housed in the visitor center and the leased auxiliary office buildings in the Ventura Harbor area.

Park Roads

Under alternative 2 the road segments on Santa Rosa and Santa Cruz Islands that have unacceptable impacts on resources or that are not essential for park operations would be removed and the landscape would be restored or the roads would be converted to hiking trails if appropriate. (For more details, see the island descriptions below.) All roads may be realigned to remove safety hazards and to deal with erosion and landslide problems.

Field Research Station

Under alternative 2 park staff would facilitate research. A field station would be developed on Santa Rosa Island to primarily support research, but could also support education and volunteer programs.

Other Infrastructure and Facilities

Table 8 shows the changes in facilities and infrastructure in alternative 2 compared to alternative 1. Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained in alternative 2. The items shown with asterisks may be built pending additional study. In this alternative both new administrative and visitor facilities would be built in the park. Although there would be several new facilities, many would be cared for and maintained by concessioners and other partners.

Under alternative 2 several new administrative facilities would be built in Scorpion Valley and Prisoners Harbor on Santa Cruz Island, and at Bechers Bay on Santa Rosa Island (see details on the islands later in this section).

TABLE 8. CHANGES IN INFRASTRUCTURE AND FACILITIES IN CHANNEL ISLANDS NATIONAL PARK UNDER ALTERNATIVE 2

Area	Facilities and Infrastructure
Mainland	expansion of the Robert J. Lagomarsino Visitor Center and administrative office complex establishment of a visitor contact station in Oxnard
Santa Barbara Island	no changes
Anacapa Island	opening of the lighthouse and new exhibits reduction in campsites from 30 to 16 campers/night new employee housing unit elimination of the efficiency apartment in the historic generator building new small equipment storage building replacement of the crane

Area	Facilities and Infrastructure
East Santa Cruz Island	possible removal of some road segments or conversion to trails*
East Santa Cruz Island – Scorpion Valley and Smugglers Cove	adaptive reuse of the historic bunkhouse at Scorpion new barn structure for interpretive exhibits and programs at the current corral location new kayaking-snorkeling storage facility additional restroom with a changing area at Scorpion relocation of maintenance operations in the corral area reconfiguration of the Scorpion campground and new restroom facilities if necessary replacement of six temporary housing units with permanent structures and provision of office space new concession housing west of the lower campground for up to 18 employees
East Santa Cruz Island – Prisoners Harbor and Rancho Del Norte	adaptive reuse of part of the warehouse as a visitor contact and orientation center; part of the warehouse would continue to be used for storage of supplies and equipment new restrooms near the warehouse possible new education/volunteers camp in partnership with TNC new storage structure and parking spaces NPS housing co-located with TNC or developed on NPS lands east of Cañada del Puerto
Santa Cruz Island	15.9 miles of roads maintained for administrative purposes (includes TNC easement road)
Santa Rosa Island	new field station for research/education adaptive reuse of one or more historic structures at Bechers Bay and/or construction of a new compatible building as a visitor contact station adaptive reuse of structures in the historic ranch complex for concession-operated economy-scale lodging* adaptive reuse of ranch structures or compatible new construction for a ranger station two new employee bunkhouses new maintenance facility and maintenance storage area for visitor transport vehicles NPS concession transportation staging area adaptive use of historic generator barn to support concessions/park operations adaptive reuse of historic horse barn for visitor services and concession operations decrease number of campers at Water Canyon campground from 75 to 50 campers/night possible removal of some road segments or conversion to trails* new 60-person group campground at Bechers Bay new day use facilities and backcountry ranger station at Johnsons Lee
San Miguel Island	new small equipment storage building new temporary camp at west end of island

*These new facilities may be built or roads removed pending the results of additional studies.

Park Staffing

Under alternative 2, park staffing levels would increase by 17 full-time equivalent (FTE) staff. (One FTE is one person working 40 hours per week for one year, or the equivalent.) Additional staff would be needed to provide visitor services at the mainland visitor center and on the islands, manage concession operations, maintain facilities, and monitor and manage visitors and resources on the islands. Table 9 shows the changes in staffing levels from alternative 1. Only changes are shown. The facility management, resource management, visitor and resource protection, and interpretation divisions would all increase. As in alternative 1, position management planning would be used to distribute staff expertise and specialties. Concession staff, volunteers, and other partners also would be more relied on than under alternative 1 to help manage visitors, facilities, and resources.

TABLE 9. CHANGES IN PERMANENT PARK STAFFING LEVELS FROM CURRENT MANAGEMENT (IN FTEs)

Title	Number of FTEs
Administration	1
Interpretation	4
Visitor and Resource Protection	4
Natural Resources	2
Cultural Resources	2
Maintenance	4
Transportation	0
TOTAL	17

Alternative 2

Estimated Costs

This section explains the rationale, cost estimates, prioritization, and phasing for alternative 2 of the general management plan. Park operations are uniquely costly at Channel Islands National Park as a result of managing five islands spread over large distances, plus mainland functions. Operational support is expensive due to high ocean transport costs and highly variable weather and ocean conditions. Providing critical infrastructure and services on the islands (e.g., service cranes, piers, and docks) has higher costs than most parks.

Project costs have been carefully developed and proposals have been prioritized given fiscal constraints. The prioritization and phasing of projects in the general management plan emphasizes maintaining existing high-priority facilities, including recently acquired facilities and historic assets. Proposed facilities are limited to those considered essential to fulfilling the park's purpose. Full implementation of alternative 2 may take 20 to 40 years and has an estimated total cost of $65.4 million. Costs are split into "essential" and "desired" cost categories, totaling $21.6 million and $43.8 million, respectively. Essential costs are for projects that are critical to preserve fundamental resources and values, maintain existing high-priority assets, ensure visitor and employee health and safety, and would likely require federal funding. Projects in the essential cost category have been further prioritized into four phases that represent a general sequencing for project implementation. Desired projects are important for full implementation of alternative 2 but could be accomplished with nonfederal funds or may be completed many years into the future. Examples of essential and desired projects are included in the "Project Phasing" explanation.

Project Phasing

Projects in the essential and desired cost categories are included in the overall phasing to fully implement the general management plan. If funding becomes available for projects in the later phases or within the desired projects category, or if park priorities change throughout the lifespan of the general management plan, the park may implement projects within cost categories as needed. Project phasing also takes into account the following considerations:

(1) Actions that if not taken will impact visitor and employee health and safety
(2) Actions that are driven by law or policy and are required for compliance
(3) Actions that if not taken would result in adverse impacts on either cultural or natural resources
(4) Actions that would be taken without an approved GMP for improving and maintaining existing high-priority assets and increasing operational efficiency and effectiveness

Essential costs would be separated into four phases, with phase 1 at $5.1 million, phase 2 at $6.3 million, phase 3 at $4.4 million, and phase 4 at $5.8 million.

Essential Projects – Phase 1. These projects would be located on the Scorpion Valley side of Santa Cruz Island, which is 24 miles from the mainland and receives the highest amount of island visitation. Housing for park staff and concession employees, including site work and infrastructure improvements, would be part of phase 1. These projects would greatly enhance the efficiency and long-term NPS management on Santa Cruz Island.

Essential Projects – Phase 2. Dispersed among several of the islands, these projects would focus on improving infrastructure critical to visitor use, health, and safety. The projects would include replacing a service crane, building restroom facilities, and providing essential utilities such as electric, water, and wastewater systems.

Essential Projects – Phase 3. These projects would be located on several islands and would primarily provide for adaptive reuse of various existing and historic structures for park operations. These improvements are needed to improve the condition of existing and historic facilities while supporting critical park operations and visitor needs. The projects would include reusing a warehouse at Prisoners Harbor on Santa Cruz Island to serve as a visitor contact and orientation center, as well as reusing a historic barn on Santa Rosa Island to support visitor services and concessions operations. Stabilizing a ranch house on Santa Rosa Island to preserve the historic structure and provide overnight accommodations for visitors is also proposed in this phase.

Essential Projects – Phase 4. Located on several islands, these projects would provide for additional visitor opportunities and the operational facilities and housing needed to support them. Some of the projects in this phase would include building maintenance facilities on Santa Cruz and Santa Rosa islands, building a visitor contact station and concessions facilities on Santa Rosa Island, and providing employee housing and associated utilities on several islands.

Desired Projects

Desired projects would be located on several islands and the mainland and would include projects that could be accomplished with nonfederal funds or may be completed many years into the future. The projects would include mainland visitor facilities improvements, such as an expanded visitor center in Ventura Harbor. Other mainland projects would include relocating operation and maintenance functions, relocating administrative space to a new location, and providing boat dock facilities within the

harbor. Island projects would include research and education field station proposals on Santa Cruz and Santa Rosa Islands, various park staff and concession housing improvements, lodging accommodations, a kayak-snorkeling storage facility at Scorpion Valley on Santa Cruz Island, day use and campground facilities, and utilities needed to support these uses.

Annual Costs

This alternative would be implemented with the current staffing levels plus 17 FTE staff for administration, maintenance, resource management, resource protection, and interpretation (Table 10). Staffing costs would total approximately $1.6 million annually. In addition, the park's operating budget would need to increase by approximately $2.2 million if the alternative is fully implemented, of which approximately $500,000 would be dedicated to operating new facilities. The total cost to operate the park under this alterative would be $14.1 million per year (in 2011 dollars). These positions would also be phased in over the implementation of the plan.

Other Cost Considerations

Associated with project proposals in the general management plan, approximately 61% of the park's current deferred maintenance, a total of $6.8 million of $11.2 million, is addressed by projects included in alternative 2. Given the costly pattern of allowing park assets to deteriorate, which leads to increased deferred maintenance costs, Channel Islands National Park would benefit from prioritizing funding for critical facilities in the near term as repair and replacement costs will increase in the long term.

In addition, implementation of the approved plan would depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Full implementation of the actions in the approved general management plan could be many years into the future and some projects may never be implemented.

Alternative 2 proposes a range of actions to protect park resources, improve visitors' experiences, and enhance access to the area. However, the park is in a region where floods and sea level rise are projected to occur. For this reason, the Park Service would integrate relevant information, including data related to climate change, into future planning and decision-making processes. For example, proposed facility investments prior to project approvals would be evaluated to ensure the long-term sustainability of these investments. These evaluations would include analysis of the best scientific information available. If the evaluations show that the financial investment would be at risk, the Park Service could either modify the action to increase sustainability of the project or, if no alternatives exist, terminate the action.

TABLE 10. COST AND PHASING FOR ALTERNATIVE 2

Category	Phase 1	Phase 2	Phase 3	Phase 4	Desired	Total
Total Improvement Costs (in million $)	$5.1	$6.3	$4.4	$5.8	$43.8	$65.4
Deferred Maintenance Offset (in million $)	$0.0	$1.4	$3.1	$0.4	$1.9	$6.8
FTEs	2.7	1	3	1	9.3	17

Note: In 2011 dollars.

ALTERNATIVE 2 — THE MAINLAND

VISITOR CENTER

Making the park relevant to a growing and diverse neighboring population and visiting public is essential. Because most park visitors do not travel to the islands, the Robert J. Lagomarsino Visitor Center in Ventura Harbor plays a key role in reaching the public. Although the park headquarters/visitor center would remain in Ventura Harbor and serve as the primary location for the dissemination of park information, under alternative 2 the mainland visitor center would take on an expanded role in connecting the park to the public. This would be accomplished by increasing opportunities for visitors on the mainland to indirectly experience and learn about the park resources.

To accomplish these goals, the visitor center would be expanded to provide for a broad-spectrum, multicultural education program about the natural and cultural resources preserved within Channel Islands National Park. The enlarged facility would accommodate a larger auditorium; provide more space for exhibits; and provide classroom, laboratory, and conference meeting space. A larger auditorium is needed to support the park lecture series, show the park film, and meet the current demands for distance learning presentations broadcast live from the island to the mainland such as the Channel Islands Live dive program.

Ultimately the visitor center, using a multidisciplinary approach, would serve as a premier location in southern California for education about the marine and terrestrial natural systems and rich cultural history of this coastal area. Programs/classes would be offered on a diversity of topics to an array of visitor and student groups. All education programs are aligned to the curriculum content standards of the State of California.

All mainland facilities would be fully handicapped accessible. By using the most up-to-date remote broadcast video and audio capabilities, cellular communications, and other communications technology; and sensory, interactive exhibits, many of the island and ocean resources would be available to students and the public to experience virtually on the mainland.

OTHER VISITOR CONTACT STATIONS

In this alternative the Park Service would continue to operate the existing visitor contact station in the City of Santa Barbara. In addition, under this alternative the Park Service would seek to establish a visitor contact station at Channel Islands Harbor (Oxnard) and possibly at other harbors to further expand the park's connections with the public. Partnerships with other federal agencies (such as the sanctuary), maritime museums, and aquariums also would be sought to facilitate outreach opportunities.

PARK OPERATIONS AND FACILITIES

The Park Service would continue to lease office space in Ventura Harbor and would seek to acquire property adjacent to the existing visitor center or an equivalent property in the harbor to consolidate office space. (Under PL 93-477 [Title IV, section 401], the Park Service is authorized by Congress to accept the donation of up to 5 acres of land and submerged land within the Ventura Marina for administrative and visitor facilities. There are now facilities on 2 to 3 acres. Thus, acquiring additional land for the new facility could be authorized without seeking a boundary adjustment.)

North
0
50
100 Feet
Channel Islands National Park
National Park Service • U.S. Department of the Interior
DSC January 2015
Expand Park Visitor Center at current location and relocate office space to new location preferably within harbor area
Operations and Maintenance
Docks
Channel Islands National Park Headquarters and Visitor Center
Pacific Ocean
Harbor Cove Beach
Spinnaker Drive
Santa Barbara
SANTA BARBARA CHANNEL
Ventura
Park Headquarters
Oxnard
San Miguel Island
Santa Cruz Island
Anacapa Island
Santa Rosa Island
Santa Barbara Island
PACIFIC OCEAN
Map 12
Park Headquarters – Alternative 2

ALTERNATIVE 2 — ANACAPA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

As in all of the alternatives, historically significant archeological resources, historic buildings and structures, and cultural landscapes on Anacapa Island would continue to be protected and preserved. Historic structures in the Anacapa Island Light Station Historic District on East Anacapa Island would continue to be used for park housing, park administrative uses, and visitor services. One residential structure that is compatible in design with the historic district's structures would be built on the historic footprint of a structure that was previously razed. An archeological assessment of the proposed project area would be undertaken before construction of any new structures.

The lighthouse would be maintained and opened to the public with accompanying exhibits.

Like alternative 1, within cultural landscapes the management of native and nonnative plants would be evaluated on a case-by-case basis.

MANAGEMENT ZONES

Most of East Anacapa Island would be zoned as frontcountry to provide opportunities for outdoor activities in diverse natural settings (map 13). The historic light station, extending from the landing area to the lighthouse and fog signal building and westward to the water catchment, would be in the cultural landscapes management zone. The cliff faces and beaches surrounding the island would be in the backcountry management zone to protect nesting seabirds and haul-out areas for seals and sea lions. The marine environment at the landing cove on East Anacapa Island would be in the marine developed access zone to maintain a pier that facilitates visitor and operational access.

Middle Anacapa Island would be in the backcountry management zone.

Most of West Anacapa would be in the backcountry management zone to protect a large colony of nesting California brown pelicans and would continue to be managed as a Research Natural Area. Frenchy's Cove and the south side of West Anacapa Island would be in the backcountry management zone to provide opportunities for outdoor activities in diverse natural settings.

WILDERNESS PROPOSAL

Under alternative 2 all of West and Middle Anacapa islets would be proposed for wilderness designation (620 acres; map 13).

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

East Anacapa

East Anacapa would continue to be an ideal place for hiking (2 miles of trails); short camping trips; and swimming, snorkeling, diving, kayaking, and spectacular scenery and wildlife viewing opportunities (seabirds, seals, sea lions, and tidepool organisms). Access

would continue to be only at the landing cove and only for loading and unloading passengers. There would continue to be no anchoring in the cove.

The small visitor contact station with exhibits (in the historic storage building) in the Anacapa Island Light Station Historic District would remain. The historic lighthouse would be opened to the public with accompanying exhibits.

Middle Anacapa

There would continue to be no public trails on Middle Anacapa. Access to water-based activities would continue to be via concessioner boats or private boats, and the island would continue to be closed to all landings unless accompanied by an NPS-approved escort.

West Anacapa

A limited number of mostly concessioner-led tide-pooling trips to Frenchy's Cove would continue to be offered throughout the year. Access to West Anacapa would continue to be from the water only and would be limited to Frenchy's Cove. There would continue to be no public trails on West Anacapa.

USER CAPACITIES (DAY USE AND OVERNIGHT)

On East Anacapa the overall user capacity would continue to be no more than 100 visitors per day. Included in the 100-person capacity would be 16 campers per night, reduced from 30 campers in alternative 1. The current campground location would be used; however, with fewer campers, each site could be dispersed to provide higher quality experiences.

Visitor capacity would continue to be managed on Middle Anacapa by requiring that visitors be accompanied by an NPS-approved escort. Camping would continue to not be permitted.

On West Anacapa at Frenchy's Cove, no more than 75 visitors at one time would be allowed and no more than 600 visitors per month. All groups of 30 or more must be supervised in an NPS-led or NPS-approved group. Camping would continue to not be permitted.

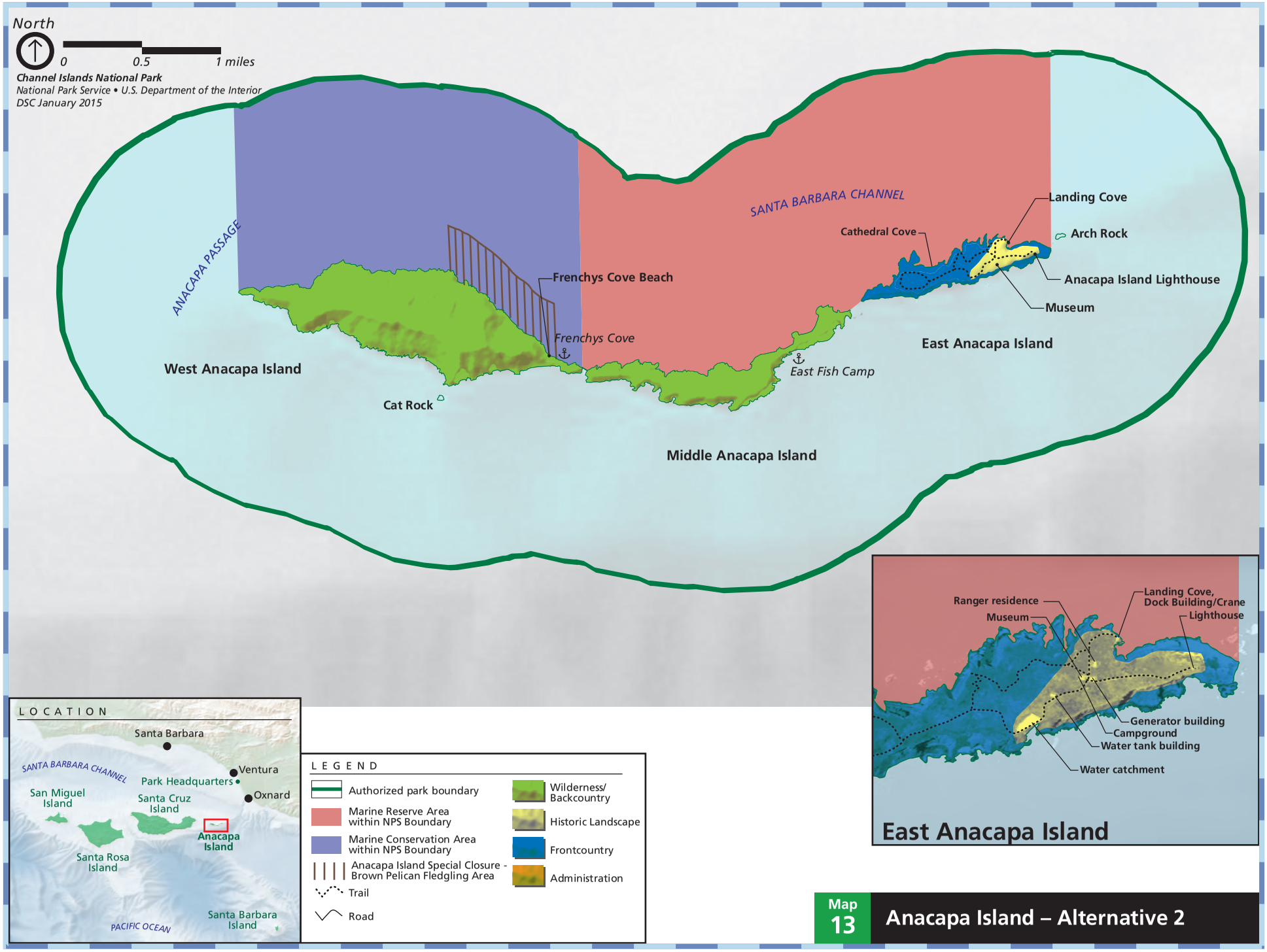
PARK OPERATIONS AND FACILITIES

On East Anacapa Island all housing would remain in the Anacapa Island Light Station Historic District. The single-family residence (in the assistant lightkeeper's house) would be retained. Under alternative 2 a new housing unit would be constructed, in a design that is compatible with the Spanish Revival style of the light station. The new housing unit would be built on the site of a previous light station residence to replace the efficiency apartment in the historic generator building. The bunkhouse in the historic storage building would be retained.

No water wells are on Anacapa Island. Water would continue to be shipped and transported to the island until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).

The crane at the landing cove would be replaced.

A small equipment storage building would be constructed in the historic district to support park operations.



Map 13 Anacapa Island – Alternative 2

ALTERNATIVE 2 — SANTA CRUZ ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

The floodplains at Scorpion Valley and Prisoners Harbor would be managed to restore natural conditions to the extent possible while ensuring access and protecting cultural resources and visitor facilities.

At Scorpion Valley, several actions would be taken to begin restoring natural conditions of the Scorpion Creek floodplain. The secondary road that crosses through the wetland near the mouth of the creek would be removed and the area regraded to restore the riverine wetland channel. Native vegetation would also be planted in the wetland area as appropriate. The road between the upper and lower campgrounds would be relocated. A study also would be conducted on the feasibility of restoring the small wetland at the mouth of the creek.

Sediment in the flood channel would be periodically excavated to protect the historic district. An estimated 8,000 cubic yards of material would need to be periodically removed from the west end of the lower campground or across from the well to the start of the rock wall at the beach (about 2,000 feet long). Dredged material would be temporarily stockpiled on the south side of the stream, above the upper road crossing to the west and would be used for road fill.

CULTURAL RESOURCES

Scorpion Valley

The historic ranch would be preserved and protected. The historic masonry building would continue as a visitor contact station with exhibit and office space.

The historic bunkhouse would be used to support park operations. (Note: The historic bunkhouse is under a 25-year retained rights agreement with the previous owner.) The other historic ranch structures and associated sheds, fences, and gates would be preserved or rehabilitated for operational uses and to interpret the island's historic ranching story.

Because all of the ranch buildings are within the 100-year floodplain, nonreplaceable or nonexpendable items would be moved seasonally. Periodic flooding may cause deterioration of the historic buildings over time.

A barn structure would be built in the current location of the corral for interpretive exhibits and programs. This structure would be constructed in a manner that is compatible with the height, style, scale, architectural character, and materials of the contributing cultural landscape features. Any new development would be sensitively located to preserve historic landscape character and new structures would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing cultural landscape features.

Prisoners Harbor

A portion of the historic warehouse building would be rehabilitated to serve as a visitor contact and orientation center. The part of the warehouse used by TNC would continue to be used for storage of supplies and equipment.

NATURAL–CULTURAL RESOURCES

Dry-laid rock walls constructed on NPS lands to slow or divert water from flowing naturally would be evaluated to determine if the structures are having an adverse impact on streamflow. Walls and structures that are acting to protect park facilities would be maintained. Other structures having an adverse impact on streamflow would be evaluated for removal.

Landscape vegetation on NPS lands on Santa Cruz Island would be managed in a manner that would not perpetuate the spread of nonnative plants. Nonnative plants in cultural landscapes and historic districts would be managed on a case-by-case basis to prevent ecological impacts and limit the spread of these plants. Nonnative trees including, but not limited to, pepper trees, olive trees, eucalyptus, and stone pine, would be controlled to prevent them from spreading as much as possible both within the cultural landscapes zone and throughout the rest of the island. If it was not possible to control the spread of these nonnative trees, the trees would be removed and may be replaced with native or noninvasive species, including the cultural landscapes zone. In addition, individual trees could be removed if they were a hazard to human safety.

Scorpion Valley

Nonnative plants in the Scorpion Valley would be managed the same way as described in alternative 1, with the exception of eucalyptus groves in the campground. To prevent injuries due to hazards associated with eucalyptus limbs, the historic eucalyptus groves in the campground would be managed in a manner to prevent injury to visitors while preserving the cultural landscape. If this cannot be accomplished, then the stand of eucalyptus trees in the area would be replaced with a less hazardous tree species that provides shade for campground users.

Delphine's Grove, the Monterey Cypress plantings, and other nonnative, noninvasive tree species would continue to be preserved. Specimen eucalyptus, small stands of eucalyptus, and the long row of eucalyptus trees between the upper and lower Scorpion campground loops would be contained to prevent their spread.

The Townsend's big-eared bat, a rare species, uses the former ranch house bakery seasonally as a maternity roost. This causes some conflicts with preservation and interpretive use of the bakery. However, park staff would protect the colony in the building until another suitable location for the maternity colony can be established.

Smugglers Cove

The historic olive grove would be maintained in a manner that perpetuates the grove as a cultural landscape feature but prevents the olive trees from spreading, as much as possible. The park would develop an olive orchard management plan that addresses the preservation of the orchard while preventing the spread of olive trees beyond the cultural landscape.

MANAGEMENT ZONES

Map 14 shows how Santa Cruz Island would be zoned under alternative 2. Most of this island would be in the backcountry management zone to provide opportunities for outdoor activities in diverse natural settings.

Scorpion Valley (including the historic buildings, tree plantings, and dry-laid rock structures) would be in a frontcountry zone. A small area north of the frontcountry zone would be in an administrative zone to support operational needs (housing and maintenance). The road leading from Scorpion Valley to Smugglers Cove would be in an administrative zone to support operational needs in

maintaining the cove area. Delphine's Grove would be in a cultural landscape zone. The marine environment at Scorpion would be in a marine developed access zone to maintain a pier to facilitate visitor and operational access.

The Smugglers Cove drainage would be in a cultural landscape zone to emphasize the management of the historic buildings, structures, and groves/orchards.

The marine environment at Prisoners Harbor would be in a marine developed access zone to maintain a pier that facilitates visitor and operational access. The current "Navy Road" from Prisoners Harbor and ending with a small trail segment to a radio-repeater site would be in an administrative zone due to a preexisting easement. The Prisoners Harbor area, which contains elements of the historic ranching era, would be in a frontcountry zone. A small area east of the mouth of the creek and south of the Navy Road would be in an administrative zone to support operational needs.

The historic Rancho Del Norte site would be in a cultural landscapes zone and managed to support operational needs (housing). The trail/unimproved road leading to Rancho Del Norte from the Navy Road would be in an administrative zone.

WILDERNESS PROPOSAL

Under alternative 2 most of the NPS lands eligible for wilderness designation on Santa Cruz Island (a total of 14,476 acres) would be proposed for wilderness designation (map 14).

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

NPS lands on Santa Cruz Island would continue to offer many opportunities for hiking, swimming, snorkeling, diving, kayaking, one-day trips, short or long overnight camping trips, and opportunities for seeing wildlife. Beach access would continue primarily at Scorpion Valley, Smugglers Cove, and Prisoners Harbor. Private boaters would continue to use the piers at Scorpion Valley and Prisoners Harbor only for loading and unloading passengers.

The trail system in the NPS portion of eastern Santa Cruz Island, a combination of unmaintained trails and unimproved administrative roads, would change under this alternative. Additional trails would be provided on NPS lands. Specific trail alignments as well as campsite locations, would be determined in the future parkwide backcountry management plan.

Under this alternative drinking water would continue to be provided, if conditions allow, at Scorpion Valley. In addition, if feasible, potable water would be provided at Smugglers Cove, Prisoners Harbor, and Rancho Del Norte. Vault toilets would be installed at other visitor destinations/trailheads.

Scorpion Valley

The existing Scorpion pier would be maintained. Except for the concessioner tour boat, no private boats would be allowed to tie up at the pier.

Commercial recreational services management would be switched from commercial use authorizations (CUAs) to an on-island concessions contract. The existing informal kayak guide camping area at the well house in the lower campground loop would be formalized with 12 to 15 permanent housing units for concession staff. (Some additional housing also may be provided for concession staff at the NPS housing area.) A central pavilion for common gathering, food preparation, and dining with restrooms and showers would be provided.

The Park Service would manage kayaking and snorkeling through an on-island concessions contract. To support island-based kayaking

and snorkeling, a day use facility would be constructed near the beach. Another facility may be needed within the ranch area to support kayak storage and maintenance. An expanded vault toilet with a changing area would be constructed near the beach. These facilities would be built to be compatible with the cultural landscape and would be built so they could be moved if necessary.

The historic masonry structure at Scorpion Valley would continue to serve as the primary visitor contact station with exhibit and office space. The existing orientation station, consisting of an open-air shelter, exhibits, changing rooms, and vault toilets, would continue to be maintained, with additional vault toilets provided in this vicinity if needed.

The bunkhouse would be rehabilitated to accommodate a small concessioner office, a small camp store, and an area for NPS administrative use. The adjacent kitchen building could be used for special events and storage.

A new barn structure within the current corral (nonhistoric) area would be constructed for interpretive exhibits and programs. This area would serve as a meeting place for interpretive talks, walks, and hikes.

Picnicking would be provided throughout the valley including at the Ranch House.

The existing campground would continue to be maintained with a capacity of 240 campers per night. The upper and lower campgrounds would be reconfigured to accommodate both individual and group sites. To ensure visitor safety camping would be limited in the winter to 10 campsites that are out of flood danger. Additional restrooms could be constructed if necessary.

Smugglers Cove

The future parkwide backcountry management plan would determine the location of primitive campsites at Smugglers Cove, which would be seasonal, small capacity (16 to 20 campers), and available only when a camp host is provided. Until that plan is completed, no campsites would be provided in this area.

Prisoners Harbor

A portion of the historic warehouse building at Prisoners Harbor would be rehabilitated to serve as a visitor contact station with exhibits and for operational needs (e.g., equipment storage, fire cache, and search-and-rescue cache). Part of the warehouse would continue to be used for storage of supplies and equipment. Additional restrooms would be added near the historic warehouse outside the floodplain.

If possible, a new education/volunteers camp for students and work school groups would be built in the Prisoners Harbor area. The camp would include tent platforms; a pavilion-like facility with a designated cooking, eating, and gathering area; and group restrooms. If the camp cannot be built in the Prisoners Harbor area, it would be built in Scorpion Valley within or adjacent to the campground, outside the floodplain.

Rancho Del Norte

Limited backcountry camping (16 campers) would continue near Rancho Del Norte until such time as the park completes the parkwide backcountry management plan.

USER CAPACITIES (DAY USE AND OVERNIGHT)

Under alternative 2 the user capacity of Scorpion Valley would be maintained at its current level. Up to a maximum of 200 visitors per day would be permitted in Scorpion Valley (not including campers). In the campground, 240 campers per night would

continue to be permitted. As in alternative 1, the campground would remain in the floodplain. Visitor safety would be facilitated by limiting camping in the winter to 10 campsites that were out of flood danger.

At Smugglers Cove, there would be no limit on private boaters. Camping would be permitted for 16 to 20 campers after the parkwide backcountry management plan is completed.

At Prisoners Harbor, no more than 100 visitors per day would be allowed. There would continue to be no campground at Prisoners Harbor.

The parkwide backcountry management plan would define the locations of primitive backcountry campsites on the Santa Cruz Island isthmus.

Alternative 2 calls for the development of a parkwide backcountry management plan, which could lead to increased opportunities for hiking and backcountry camping on Santa Cruz Island. Specific campsite locations, overnight use limits, and suitable trail alignments would be determined through the development of this plan. Day use limits might be established, if warranted, based on monitoring of resource and visitor experience conditions.

PARK OPERATIONS AND FACILITIES

Roads

Approximately 20.2 miles of roads would continue to be maintained on NPS lands on Santa Cruz Island. The road from Scorpion Valley to Smugglers Cove would continue to be maintained for park operations. The road from Prisoners Harbor to the U.S. Navy leased site (which TNC owns a 10.6-mile easement) also would be maintained.

Scorpion Valley

The six temporary staff housing units would be removed and replaced with permanent structures at the current location. The larger area needed for permanent structures would expand to the south into the hillside. The additional area would also allow for expansion in the future should additional employees be needed to accommodate increased visitation or operational needs. The historic bunkhouse would be used to support park operations. Office space would be provided for resource and interpretative staff in a new facility in the housing area. Concession housing would be constructed just west of the lower campground to house up to 18 employees.

To support this additional demand for water, wastewater disposal, and electrical, the following would be needed—water storage capacity would have to be increased from 8,000 gallons to approximately 30,000 gallons; and no expansion of the infiltrator-designed leach field would be necessary to handle the increase in wastewater.

Maintenance operations would be moved out of the housing area to an area at the rear of and behind the current corral. A small structure would be constructed to provide bays for a variety of functions (a shop for vehicle maintenance and maintenance office, natural and cultural resource equipment, and a fire cache). The maintenance structure would be as small as practical and should be compatible with the cultural landscape. The structure would be located to provide space for the vehicle maintenance and storage needs, but screen other maintenance and park operations that would be located outside and behind the structure, such as fuel and hazardous material storage and large equipment storage. In addition, the area would accommodate the plant nursery. This location would be out of the 100-year floodplain and would not require crossing Scorpion Creek to access visitor, cultural, or park operation areas. Fuel storage and

hazardous materials would be stored in a new facility outside the 500-year floodplain.

Smugglers Cove

The historic masonry building would be rehabilitated for use as housing for seasonal employees, work teams, and volunteers.

Prisoners Harbor

New NPS housing would be built in the Prisoners Harbor area on the east side of Cañada del Puerto. Housing would be provided for at least two year-round employees and two seasonal personnel. If possible, the new facilities would be built on NPS lands outside of the floodplain. If this option is not feasible, NPS staff would work with TNC to determine if staff housing can be located on TNC lands.

A small maintenance/storage structure and a few parking spaces for NPS / administrative vehicles would be located in a disturbed area out of the floodplain near the intersection of the Navy Road and the water well service road. This development would be screened from visitors by vegetation. Emergency medical supplies and search-and-rescue equipment would be kept inside the storage facility. This development might require the use of lands managed by TNC, which would require their consent.

Rancho Del Norte

The seasonal employee housing unit would be retained. Facility upgrades such as potable water are being done.

Other Infrastructure and Facilities

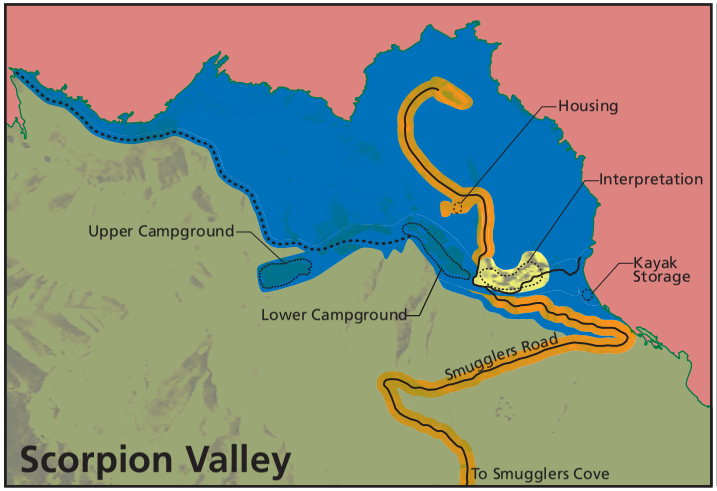
Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained in alternative 2. The items shown would require additional technical feasibility studies.

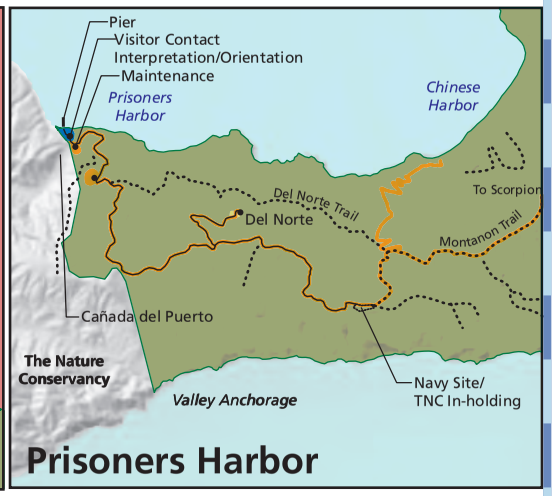
- Water/Wastewater Needs
    - Addition of a new well at Scorpion Harbor and additional treated water storage of approximately 30,000 gallons
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water at Scorpion Harbor
    - Addition of a new well at Prisoners Harbor and additional treated water storage of approximately 10,000 gallons
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water at Prisoners Harbor

- Addition of a 25kW solar photovoltaic system at Scorpion Valley.

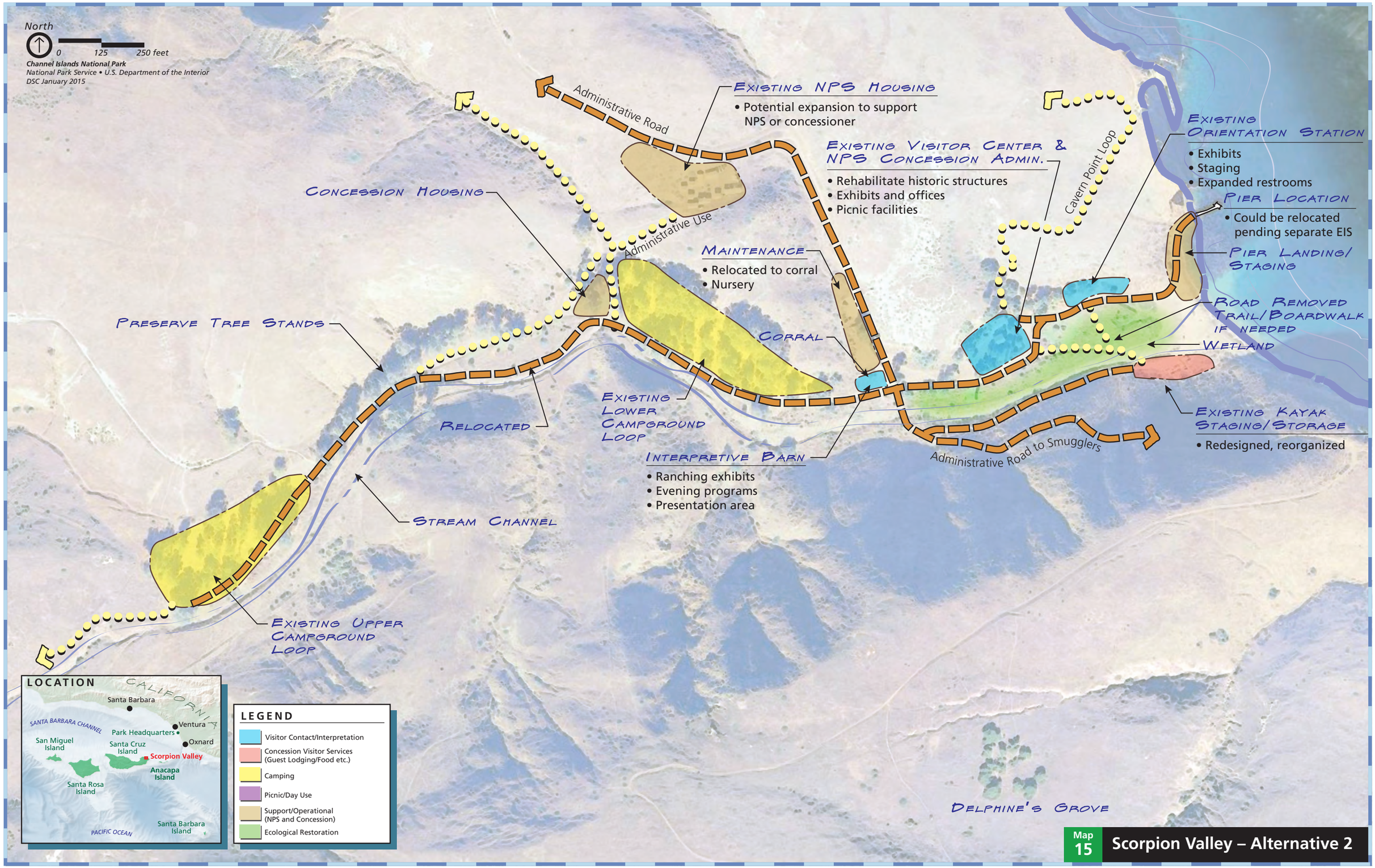
LEGEND

- Authorized park boundary
- Marine Reserve Area within NPS Boundary
- State Marine Conservation Area
- Marine Stewardship Area within NPS Boundary
- Trail
- Road
- Potential Wilderness/ Backcountry
- Historic Landscape
- Frontcountry
- Administration

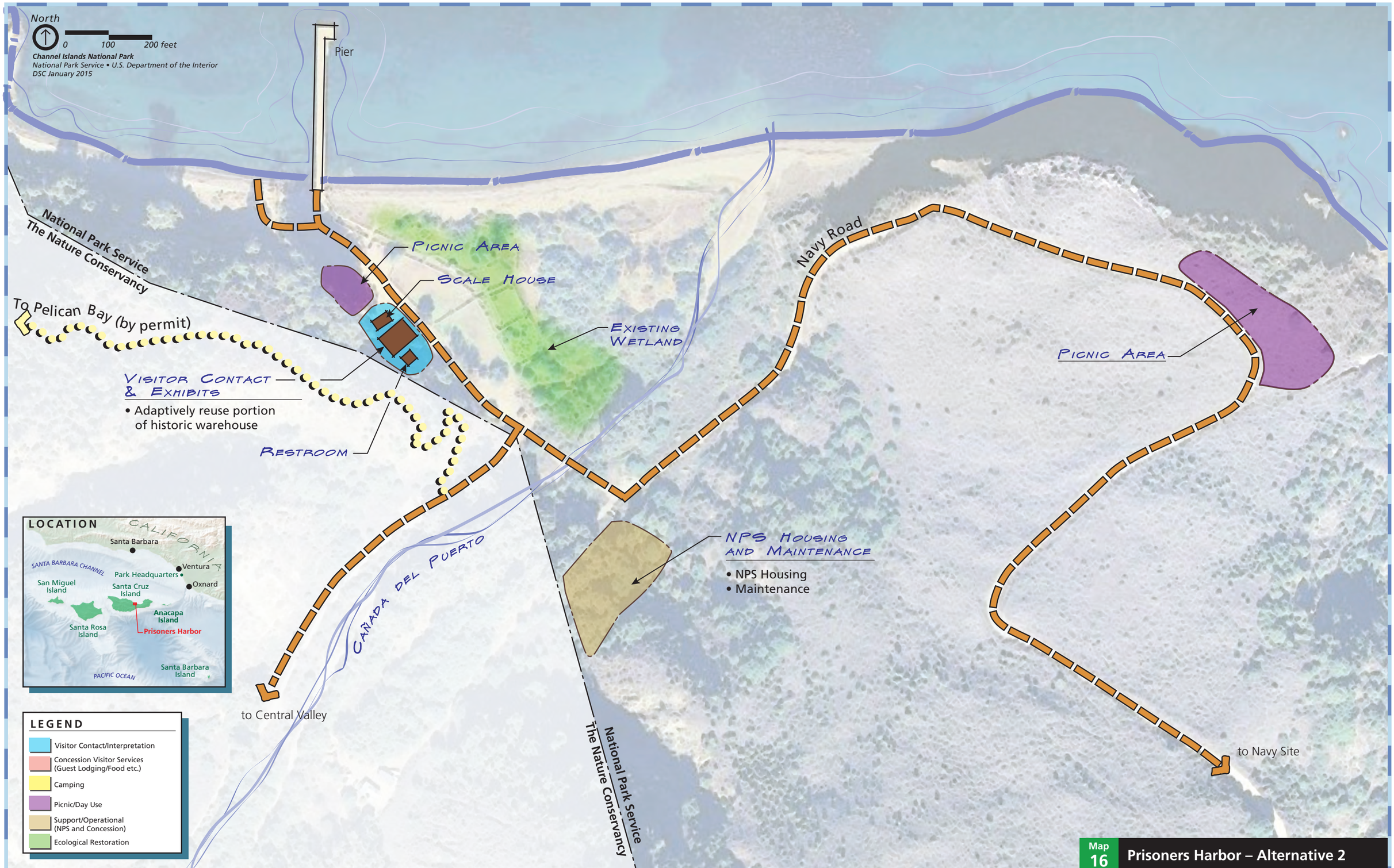




Map 14 Santa Cruz Island – Alternative 2



Map 15 Scorpion Valley – Alternative 2



Map 16 Prisoners Harbor – Alternative 2

ALTERNATIVE 2 — SANTA ROSA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

The entire ranch complex at Bechers Bay would be preserved to interpret the ranching history of the island. One or more of the historic structures would be rehabilitated to serve as a visitor contact station. Other historic structures would be rehabilitated for use as visitor accommodations, interpretation, and a research/education field station.

MANAGEMENT ZONES

Map 17 shows how Santa Rosa would be zoned under alternative 2. Almost the entire island would be in backcountry zones, with a few minor exceptions to provide opportunities for outdoor activities in diverse natural settings. Most of the coastline would be in a backcountry management zone to protect nesting shorebirds and haul-out areas for seals and sea lions. The marine environment at Bechers Bay would be in a marine developed access zone to maintain a pier to facilitate visitor and operational access. The area east of the historic ranch to the ocean and south encompassing Water Canyon would be in a frontcountry zone to support a public campground. At Bechers Bay the airstrip would be in the administrative management zone to support public air access. Other areas in administrative zones would include the NPS housing and maintenance areas. The road corridor leading from the historic ranch to the base of the Torrey Pines and to the Lobo Canyon trailhead also would be in an administrative zone to provide a small on-island transportation concession operation. The historic ranch area would be in a frontcountry management zone because higher levels of visitation can be expected in this area with the future development proposed in this area and because the ferry concessioner is increasing trips to this area.

WILDERNESS PROPOSAL

Under alternative 2, the entire Santa Rosa Island, except for the Bechers Bay area, Johnsons Lee, and several road corridors, would be proposed for wilderness designation (a total of 50,802 acres; map 18).

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Santa Rosa Island would continue to offer many opportunities for hiking, beach walking, camping, and wildlife viewing. Numerous hiking options on the unimproved administrative road system and one-day trips and short or long overnight camping trips would remain available. No unimproved roads are currently slated for removal or for incorporation into the trail system; however, this could change pending the outcome of the parkwide backcountry management plan that integrates trails and backcountry camping. Beach access would continue at Bechers Bay. Private boaters would use the pier at Bechers Bay only for loading and unloading passengers. Beaches around Sandy Point would continue to be closed year-round to landings, and the beaches between Skunk Point and East Point would remain closed seasonally. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking

would continue to be limited and recommended for the experienced visitor.

The beaches between Carrington Point and East Point and the beaches surrounding Sandy Point would continue to be closed year-round to camping.

A visitor contact station with exhibits would be established through the reuse of one of the historic structures in the historic ranch complex at Bechers Bay and/or construction of a new compatible building. Nonhistoric structures within the historic district may be replaced. All replacement structures must be compatible with the historic district such that new structures would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing features of the historic district.

A concession-run, economy-scale lodging operation, such as a hostel, and food service would be provided through the rehabilitation of the historic ranch structures. Lodging would be limited to about 40 visitors. Concession administrative support facilities, including employee housing, would be incorporated within the existing ranch complex. Some buildings might have to be modified internally to accommodate the lodging functions. Some nonhistoric structures also may be replaced with compatible structures to support lodging and concession housing, such as the bunkhouse. The historic generator barn would be rehabilitated to support concession and park storage and operational needs. The historic horse barn would be rehabilitated to support concession operations and park interpretive exhibits.

Water Canyon campground would be reduced from a 75-person to a 50-person campground. In addition, a new group campground for up to 60 people would be located on the Bechers Bay marine terrace (within the ranch complex).

The Park Service would permit a small concession-operated vehicle transport system on Santa Rosa Island to provide visitors with access to various day use areas and help disperse visitors and prevent crowding in the historic ranch area. Of the 72 miles of road maintained on Santa Rosa Island, about 16 miles would be maintained to provide public access via commercial vehicles to Johnsons Lee, the Torrey Pines, and Lobo Canyon trailhead, and possibly other destinations (map 19). A maintenance facility for the visitor transport vehicles would be developed in the Bechers Bay area.

A field station would be established at Bechers Bay in the historic district to support research and provide a venue for education and volunteer opportunities. The facility would support 30 to 40 people, including volunteer groups, and would include accommodations for visiting researchers and students. It would include a single-family housing unit for staff to administer the field station. Some buildings might have to be modified or replaced to accommodate the field station.

Historic line camps, used during the ranching days of the island, would serve as primitive campsites. Each camp would be rustic in design and equipped with a small corral, a toilet, and a cooking/eating shelter. (Details on the design of the line camps and trail system would be developed in the future parkwide backcountry management plan. Campsite design would ensure that contributing features of the historic line camps would not be impacted by future use.)

The Park Service would continue to work with the private sector to provide year-round public air transportation via a concessioner for day use visitors and campers. The airstrip would continue to be maintained.

Restroom facilities would be added at various visitor destinations/trailheads.

A small day use area, group shelter, and picnic area would be developed at Johnsons Lee.

Potable water would not be provided at Johnsons Lee.

USER CAPACITIES (DAY USE AND OVERNIGHT)

The 1995 *Development Concept Plan for Santa Rosa* set an upper limit of 500 people per day. The user capacity at Bechers Bay would not exceed 500 visitors per day, including 110 campers and about 40 visitors at the economy-scale lodge.

No overnight camping would be allowed at the Johnsons Lee day use area under alternative 2.

Alternative 2 calls for the development of a parkwide backcountry management plan. Among other topics, this plan would identify overnight user capacities on Santa Rosa Island, including backcountry camping near beaches. Specific campsite locations, overnight use limits, and suitable trail alignments would be determined through the development of this plan. Day use limits might be established, if warranted, based on monitoring of resource and visitor experience conditions.

PARK OPERATIONS AND FACILITIES

Roads

The historic circulation systems (roads) of Santa Rosa Island would be thoroughly evaluated in the parkwide backcountry management plan. As determined appropriate, some road segments would be converted to hiking trails or maintained for visitor access. Suitable trail alignments would be selected through the parkwide backcountry management plan. Preference would be given to trail alignments that use existing roads. Road segments that have unacceptable impacts on resources and that are not determined to be essential to performing park operations or facilitating visitor access by conversion to hiking trails would be removed and the landscape restored.

Of the 139 miles of roads on Santa Rosa Island, 72 miles would continue to be maintained, including about 16 miles for visitor transportation; 48% of the roads would be removed or converted to hiking trails.

To facilitate the effective and efficient transfer of cargo for the concessioner and park operations, a screened staging area would be established near the pier.

Administrative Housing

The park housing complex (two 2-bedroom duplexes, two 1-bedroom duplexes, and two garages) in Cherry Canyon would remain. Two 8-person bunkhouses would be built in the same location to accommodate seasonal and transient staff and visiting scientists. Each unit would include bathroom, kitchen, and communal living spaces.

A ranger station and an administrative and concession operations support facility would be accommodated in the ranch complex.

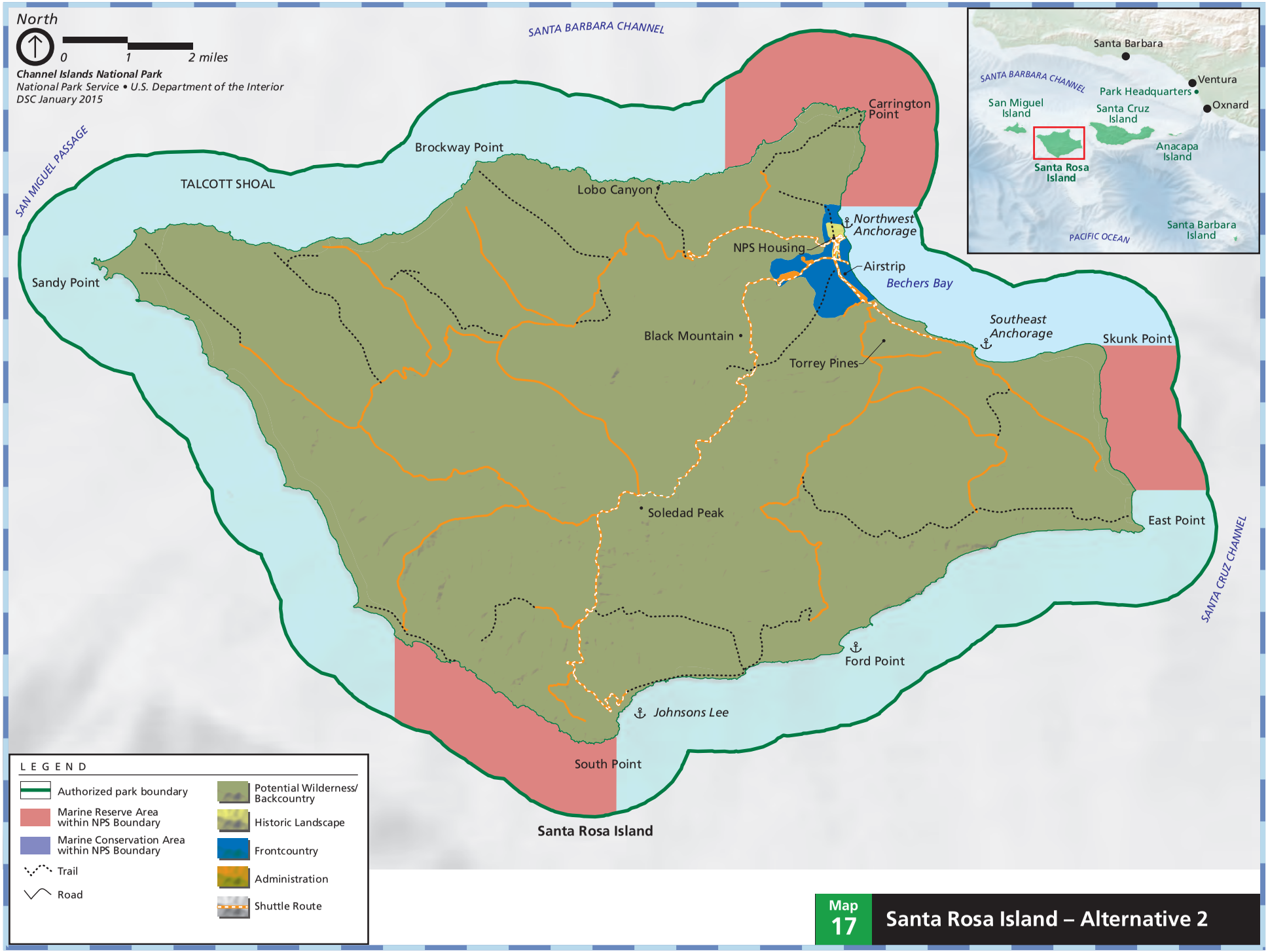
Johnsons Lee

Johnsons Lee would be used to support operations on the south and west portions of Santa Rosa Island. A backcountry ranger station would be developed. Restroom facilities and water would be provided to support operations. All utilities would be supported by renewable energy.

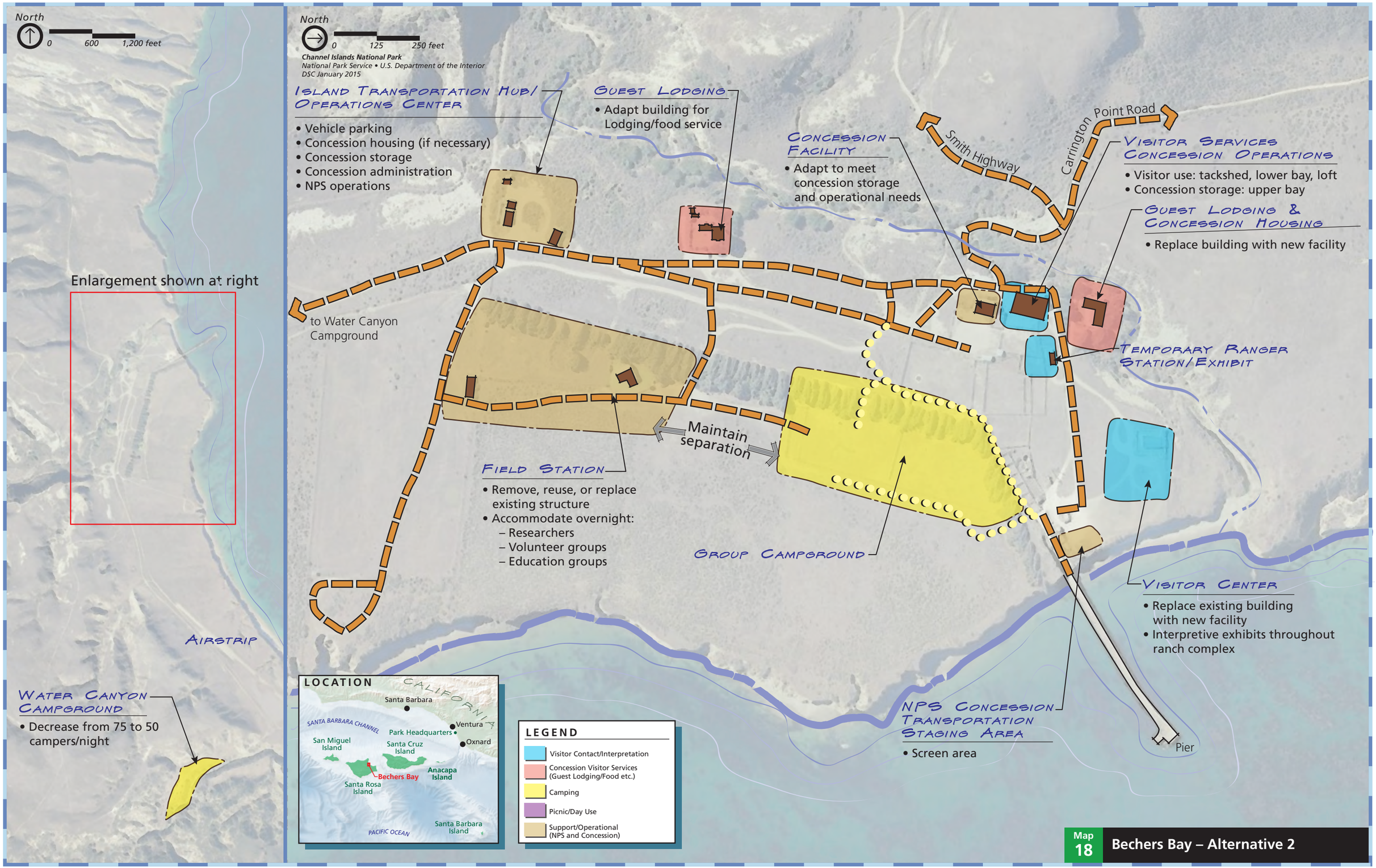
Other Infrastructure and Facilities

Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained in alternative 2. The items shown would require additional technical feasibility studies.

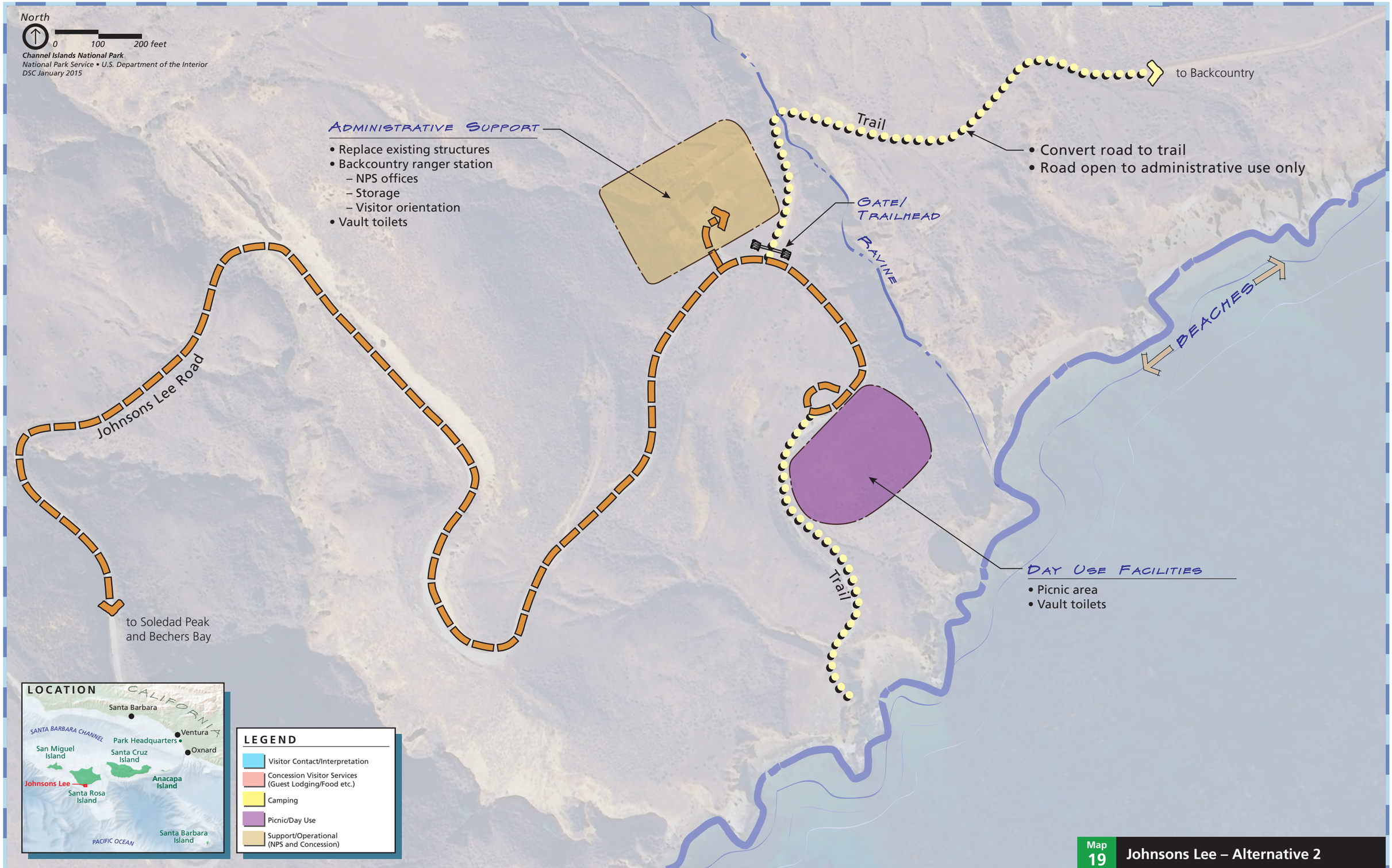
- Water/wastewater needs
    - Addition of a new well at Bechers Bay, in tandem with increased wastewater amounts removed from the island or improved wastewater discharge facilities
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water
- Addition of a 25kW solar photovoltaic system.



Map 17 Santa Rosa Island – Alternative 2



Map 18 Bechers Bay – Alternative 2


North
0 100 200 feet
Channel Islands National Park
National Park Service • U.S. Department of the Interior
DSC January 2015
to Backcountry
Trail
• Convert road to trail
• Road open to administrative use only
Administrative Support
• Replace existing structures
• Backcountry ranger station
– NPS offices
– Storage
– Visitor orientation
• Vault toilets
Gate/ Trailhead
Ravine
Beaches
Johnsons Lee Road
to Soledad Peak and Bechers Bay
Trail
Day Use Facilities
• Picnic area
• Vault toilets
LOCATION
California
Santa Barbara
Santa Barbara Channel
Ventura
Park Headquarters
Oxnard
San Miguel Island
Santa Cruz Island
Johnsons Lee
Santa Rosa Island
Anacapa Island
Santa Barbara Island
Pacific Ocean
LEGEND
Visitor Contact/Interpretation
Concession Visitor Services (Guest Lodging/Food etc.)
Camping
Picnic/Day Use
Support/Operational (NPS and Concession)
Map 19
Johnsons Lee – Alternative 2

ALTERNATIVE 2 — SAN MIGUEL ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

MANAGEMENT ZONES

Map 20 displays the alternative 2 management zoning for San Miguel Island. Most of the interior of island would be in the backcountry management zone to provide opportunities for outdoor activities in diverse natural settings. The entire coastline (with the exception of a small area within Cuyler Harbor) and cliffs would be in the backcountry management zone due to the prevalence of seal and sea lion haul-outs, rookeries, and seabird rookeries. In addition to the coastline, the caliche forest would be in the backcountry management zone. About the middle third of the Cuyler Harbor coastline would be in the administrative zone to provide public access and park operations. The trail leading from Cuyler Harbor to the old ranch complex airstrip and ranger station would be in the administrative zone to support operations and public air access. The trail leading from the airstrip at the dry lake bed to the research station at Point Bennett would also be in the administrative zone to support research station operations.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

This island would continue to be an ideal place for seeing native vegetation, the unique caliche forest, seals and sea lions (with ranger escort), scenic Cuyler Harbor beach; to do limited hiking (2 miles to the Cuyler Harbor beach and 0.75 mile to the ranger station); and to take day and overnight trips. To see other parts of the island, specifically the pinnipeds at Point Bennett and Cardwell Point, visitors must continue to be escorted by a ranger. (Boating visitors must contact the park in advance to coordinate this one-day activity.) Visitors would continue to come ashore only at Cuyler Harbor. Overnight anchorages would be restricted to Cuyler Harbor and Tyler Bight. All boating and landings would remain restricted seasonally around Point Bennett. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking would continue to be limited and recommended for the experienced visitor.

The visitor contact station would remain in the NPS ranger station / housing complex.

In this alternative the Park Service would permit guided multiday trips (not to exceed four days) by a limited number of park visitors (not to exceed 10 individuals) to see large concentrations of pinnipeds at Point Bennett. The escorted groups would hike to a temporary camp at or near the dry lake bed at the island's western end. The exact location of the temporary camp would be determined in the parkwide backcountry plan. The temporary camp would be moveable and would be taken down when not in use. Guided trips (full-time accompaniment by an NPS representative or a commercial guide service) would be self-contained and employ minimum impact practices. Minimal facilities to protect resources would be provided (e.g., toilet, food storage, and tent pads). Although this would be a new opportunity, the ability to participate on the trip would require the permittee to be in good physical condition and be experienced in remote wilderness-type camping. A user fee would be established.

Existing trails would continue to be used.

USER CAPACITIES (DAY USE AND OVERNIGHT)

At the ranch complex, the user capacity would not exceed 75 visitors per day (not including campers) and 30 campers, which would include the campers at the temporary camp. The campground would remain in its current location.

On the western part of the island, day use would be limited to ranger-guided hikes. If NPS- or commercial-guided multiday trips were to be offered to Point Bennett, the groups could not exceed 10 individuals and could not camp for more than four days at the temporary camp at the west end of the island near the dry lake bed. The camp could include a toilet and tent platforms.

On the remainder of the island, day use would be limited to ranger-guided hikes and no camping would be permitted.

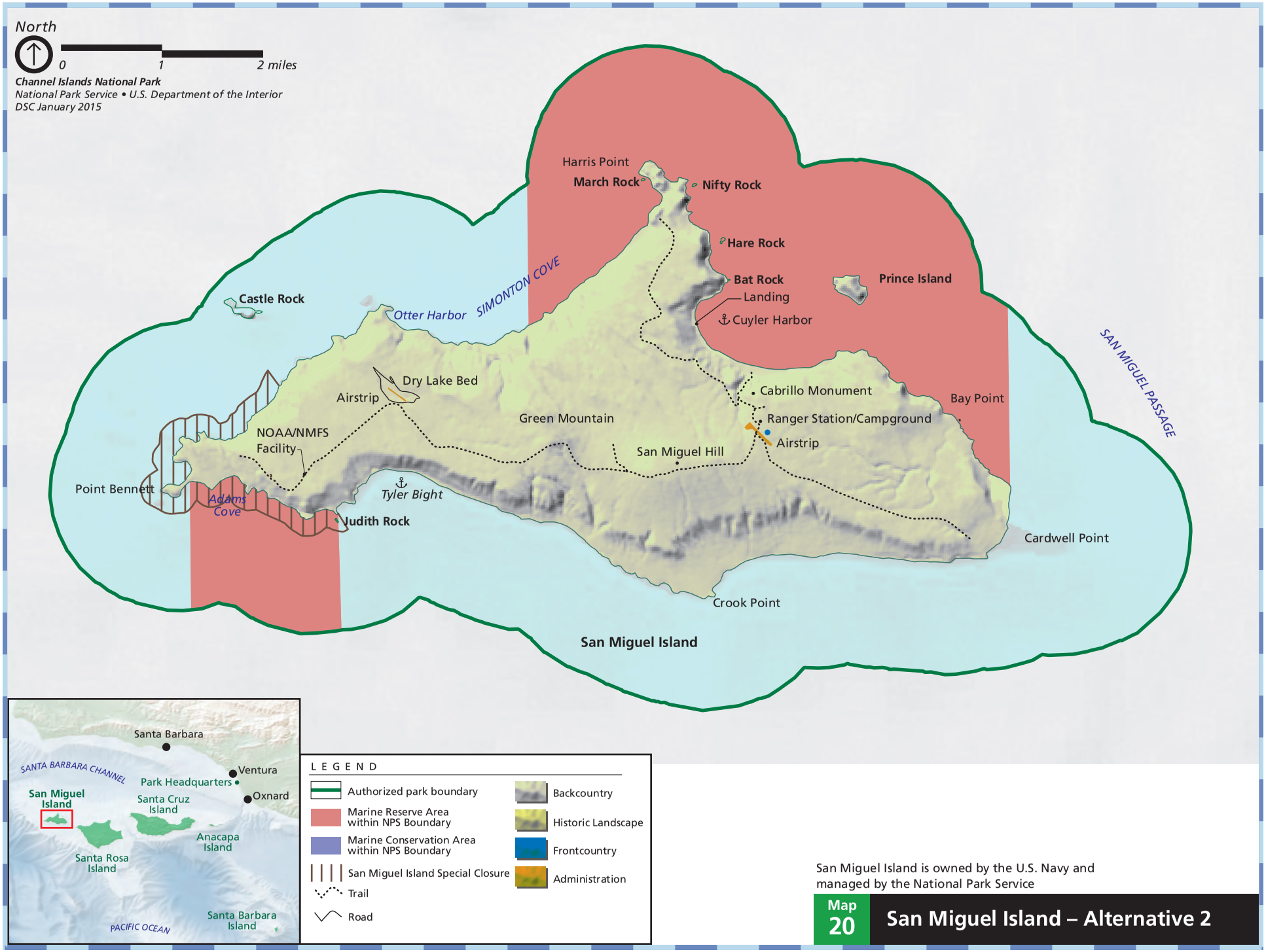
The parkwide backcountry management plan would consider if additional trails should be provided on the island.

PARK OPERATIONS AND FACILITIES

No housing changes would be proposed. The two 1-bedroom units and one bunkhouse would remain in use.

One low-volume water well is on San Miguel Island. Water would continue to be drawn from this well until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).

A small equipment storage building would be constructed to support park operations.



San Miguel Island is owned by the U.S. Navy and managed by the National Park Service

Map 20 **San Miguel Island – Alternative 2**

ALTERNATIVE 2 — SANTA BARBARA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

MANAGEMENT ZONES

Santa Barbara Island would be zoned under alternative 2 as shown in map 21. The landing cove up to the ranger station would be in the administrative zone to facilitate public access and support operational needs (access, housing, and maintenance). The area south of the administrative area would be a small frontcountry zone that would support the current campground. All areas in the interior of the trail system, including the trails, would be in the backcountry zone to provide opportunities for outdoor activities in diverse natural settings. All areas between the trail system and the ocean would be in the backcountry management zone to protect nesting seabirds and haul-out areas for seals and sea lions. The marine environment at the landing cove would be in the marine developed access zone to maintain a pier that facilitates visitor and operational access.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Exceptional island coastal views; ideal places for swimming, snorkeling, diving, kayaking, seeing wildlife (seabirds, seals, and sea lions); hiking 6 miles of scenic trails; and day and overnight camping would continue to be available. Trails would continue to be closed seasonally to protect nesting California brown pelicans. Access to the water would continue to be only at the landing cove for loading and unloading passengers. Beaches would remain closed to aquatic activities to protect wildlife. There would continue to be no landing on beaches.

The visitor contact station on Santa Barbara Island would remain unchanged and small exhibit areas would be maintained on Santa Barbara Island.

WILDERNESS PROPOSAL

Under alternative 2 the entire Santa Barbara Island, except for the dock, ranger station, and campground, would be proposed for wilderness designation (639 acres; map 21).

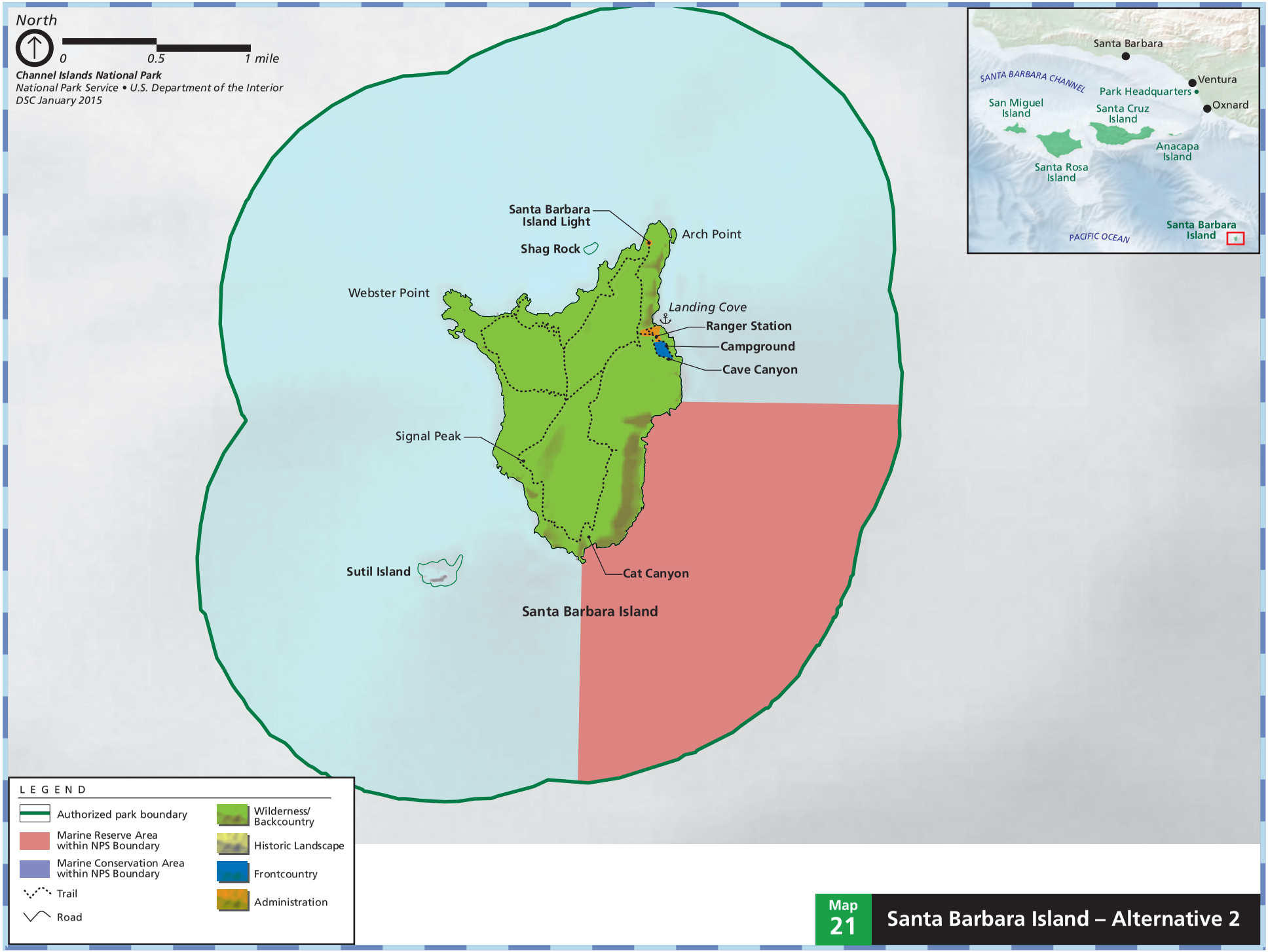
USER CAPACITIES (DAY USE AND OVERNIGHT)

The user capacity would not exceed 100 visitors per day (campers not included) and 30 campers per night. The campground would continue to be maintained as it is presently.

PARK OPERATIONS AND FACILITIES

No housing changes would be proposed. The visitor contact station / housing complex with one 1-bedroom unit and one bunkhouse would remain in use.

No water wells are on Santa Barbara Island. Water would continue to be shipped and transported to the island until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).



Map 21 Santa Barbara Island – Alternative 2

ALTERNATIVE 3 (PREFERRED) — PARKWIDE

CONCEPT

As in all of the alternatives, alternative 3 is intended to emphasize resource stewardship, including ecosystem preservation and restoration and preservation of natural landscapes, the protection of archeological resources, and the preservation and rehabilitation, as appropriate, of historic structures and cultural landscapes. At the same time, the Park Service recognizes in this alternative that additional opportunities could be provided for the public to learn about, protect, and enjoy the park's special resources.

Under alternative 3, as in all of the alternatives, the park would provide a diversity of opportunities for visitors with different needs and desires. The National Park Service would continue to maintain opportunities for visitors to access all of the islands. But alternative 3, more than any other alternative, would expand recreational opportunities and accommodations to provide more diverse visitor experiences. Provided that unacceptable impacts do not occur, visitors would have more means available to see and experience the islands. Consequently, visitors who have not visited the park before might be encouraged to come to the islands. Visitor levels would be carefully managed to provide quality visitor experiences while minimizing impacts on park resources as much as possible.

Under alternative 3 there would be expanded opportunities to bring the park to the people through additional facilities and activities, including an expanded visitor center in Ventura Harbor, and expansion of distance learning programs and video telecasts. Increased efforts would be made to provide education programs that focus on all grade levels and adults throughout the adjacent mainland communities as well as throughout the nation through interactive distance learning programs.

Although many roads might be removed or converted into trails on Santa Cruz and Santa Rosa Islands, selected roads would continue to be maintained for visitors to see Santa Rosa Island and to administer and protect resources on both Santa Rosa and Santa Cruz Islands.

Under alternative 3, 66,576 acres of the park would be proposed for wilderness designation, primarily on Santa Rosa and Santa Cruz Islands.

Existing facilities would be maintained and limited new facilities might be built, or existing facilities might be maintained or rehabilitated, on Anacapa, Santa Cruz, and Santa Rosa Islands for specific resource protection, management, and visitor services. There would be few changes in the transportation methods used to reach the islands or travel on the islands.

Partnerships would be expanded with governmental agencies, educational institutions, and others to bring the island experience to the public and facilitate educational opportunities, resource stewardship, and research. New concessions and other commercial uses might be permitted to expand visitor experiences on the islands. These businesses could include such things as lodging with food service and vehicle tours (both on Santa Rosa Island), rentals (snorkel and kayak gear), guided camping, pinniped viewing on San Miguel Island, and environmental education throughout the park.

Identified below are general actions called for under this alternative. Most island-specific actions are identified later in this section.

Primary Differences of Alternative 3 From Alternative 1

In alternative 3:

- sediment in the flood channel in Scorpion Valley on Santa Cruz Island would be periodically excavated
- kayaking and snorkeling at Scorpion Valley would be managed through a concessioner
- the existing Scorpion campground would be reconfigured to accommodate groups
- an education/volunteers camp would be established if possible at Prisoners Harbor on Santa Cruz Island
- small primitive campgrounds would be established at Smugglers Cove and Prisoners Harbor on Santa Cruz Island
- ground transportation for visitors would be provided to two destinations on Santa Rosa Island via a concessioner
- a concessioner would provide visitor lodging and food service at Bechers Bay on Santa Rosa Island
- the Water Canyon campground on Santa Rosa Island would be reduced, while a new campground would be provided at Bechers Bay
- a primitive campground and ranger station would be provided at Johnsons Lee on Santa Rosa Island
- a field station to support research and education would be established at Bechers Bay
- guided multiday trips would be established to see pinnipeds at Point Bennett on San Miguel Island
- a commercial operator would provide limited fixed-winged air access to San Miguel Island on a trial basis
- the mainland visitor center would be expanded and some administrative and maintenance operations would be relocated in Ventura Harbor
- park staff would develop and monitor key user capacity indicators and standards
- approximately 53% of the land portion of the park would be proposed for wilderness designation

NATURAL RESOURCES

Terrestrial Ecosystems/ Ecological Restoration

The conservation of biological diversity and the management of naturally functioning ecosystems would continue to be a core value in carrying out the preservation of Channel Islands National Park.

The restoration of terrestrial ecosystems would continue to be emphasized in alternative 3. The guiding philosophy of park restoration efforts would continue to be the protection and recovery of native island species and ecosystems from the most devastating human-caused impacts. The park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. Best management practices and appropriate technology would be used to control nonnative species, including helicopters, mechanized equipment, and integrated pest management practices, while minimizing impacts on the wilderness character as much as possible. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts. Some nonnative plants contribute to cultural landscapes. Within the proposed cultural landscape zones, the management of nonnative plants would be evaluated on a case-by-case basis. Actions would continue to be taken to control invasive nonnative plants that can have severe ecological impacts.

Floodplains and Wetlands

No new permanent facilities would be built on floodplains. (For island-specific information, see the description under the "Natural Resources" and "Park Operations and

Facilities" sections for Santa Cruz Island below.)

CULTURAL RESOURCES

This alternative would continue to preserve historic buildings and structures, and landscape features that are listed in or eligible for the national register. Archeological and ethnographic resources would continue to be protected, and traditional uses by culturally associated Native Americans would continue to be encouraged.

Cultural resources are an integral component of the wilderness area being proposed in the park (see below). These cultural resources, such as the historic line camps on Santa Rosa Island, would be protected and maintained according to the pertinent laws and policies governing cultural resources and using methods that are consistent with the preservation of wilderness character and values.

Historic Buildings and Structures

Historic buildings and structures would be preserved and rehabilitated for administrative and/or interpretive purposes as appropriate.

Cultural Landscape Resources

Under this alternative the significant features and patterns of cultural landscapes would be preserved and protected. Significant cultural landscape features and patterns, such as buildings, structures, small-scale features, spatial organization, circulation patterns, natural features, and vegetation, would be preserved and protected or rehabilitated as appropriate. However, nonnative plants in cultural landscape zones that have unacceptable ecological impacts or invade natural areas could be removed and replaced with noninvasive species.

Archeological Resources

Archeological resources would continue to be inventoried, managed, and protected. Protection and management of archeological resources would be informed by an Archeological Overview and Assessment (Braje et al. 2010). Universities, museums, and other institutions would continue to be encouraged to conduct archeological research in the park.

Ethnographic Resources

Ethnographic resources would continue to be researched and managed. Ethnographic research on traditionally associated groups would be encouraged. Traditional uses by culturally associated Native Americans would continue to be encouraged.

Museum Collection (including Archives and Research Library)

The National Park Service would seek to improve the park's curatorial facilities and capabilities and to increase the use of its museum collection, archives, and research library.

MANAGEMENT ZONES

New management zones would be applied to each of the islands and the surrounding marine waters within the park boundary (see the management zone definitions in Table 1). These zones are described for each island later in this section, and can be found on the alternative 3 maps for the islands.

All of the marine waters in the park would be within the marine stewardship zone. Those areas created by the State of California in 2003 as marine reserves, constituting about 20% of the park's marine waters, would be in the marine protected management zone. The Park Service would seek an agreement with the

State of California and NOAA to ensure cooperative management of the park's waters within these zones.

The land zones are described for each island later in this section and can be found with the marine zones on the alternative 3 maps for the islands.

WILDERNESS PROPOSAL

Under alternative 3, 66,576 acres (approximately 53% of the land area of the park) would be proposed for wilderness designation. The area proposed for wilderness would include all of West and Middle Anacapa Islands; most of the NPS lands on Santa Cruz Island; most of Santa Rosa Island; almost all of Santa Barbara Island; and all islets, islands, and rocks offshore of the main islands, with the exception of Prince Island. However, the lands on Santa Cruz and Santa Rosa Islands would be proposed as potential wilderness due to temporary nonconforming activities and developments. (See the island zoning maps and the following island-specific sections for more details.)

VISITOR ACCESS

Air Transportation

Public air transportation for day use visitors and campers would continue to be available year-round only to Santa Rosa Island (Bechers Bay) via a park concessioner. Also, on a trial basis, a limited number of a concessioner's fixed-wing aircraft would be permitted to use the San Miguel Island airstrip at the ranch. None of the other islands would be accessible by air transportation. The airstrip would continue to be maintained. General aviation aircraft would continue to not be permitted to land on parklands due to concerns regarding disturbance of sensitive coastal resources and visitors, potential safety issues regarding landing on a primitive airstrip, the lack of supplies and fuel if the need arises, and the lack of space to park aircraft.

Public Boat Transportation

Public boat transportation for day use and multiday visitors would continue to be available year-round to all five of the park islands by a park concessioner. The park would maintain a pier or dock facility at each of the current locations except San Miguel Island, where no pier or dock facility will be provided. Existing piers and docks would continue to be maintained. The points of departure would include Ventura, Santa Barbara, and Channel Islands (Oxnard) harbors, but would not be limited to these locations. It is important that the concession operation be co-located within the same harbor of the park headquarters to facilitate effective and efficient park operations.

Private Boat Transportation

Private boaters could continue to access any of the five NPS-managed islands/lands. It would not be the intention of the Park Service to require landing permits on any of the islands. However, if measures need to be taken to provide for a quality visitor experience and/or prevent impacts on park resources in the future, a permit system might be necessary. If and until such time, no landing permits would be required except for those lands administered by TNC (western Santa Cruz Island). Landings would continue to not be permitted on rocks, islets, or at sea caves on or near any of the islands. All landing beaches would continue to be subject to seasonal closures. Specific landing information is given for each island later in this section.

On-Island Vehicle Transportation

Most destinations on each of the islands would continue to be accessible by foot within

a few minutes to a few hours. Limited commercial ground transportation would be considered only for Santa Rosa Island (as described later in this section). Of the 72 miles of road maintained on Santa Rosa Island in this alternative, about 16 miles would be maintained to provide public access via commercial ground transportation. No other public vehicular transportation would be provided on any of the other islands. Before any roads are restored to natural conditions, they would be evaluated as trail corridors in the future parkwide backcountry management plan.

Horse use would not be permitted in Channel Islands National Park.

VISITOR USES, OVERNIGHT ACCOMMODATIONS, AND USER CAPACITY

Like the other alternatives, a variety of visitor uses would continue to be permitted on the islands in alternative 3. Opportunities for hiking, overnight camping, swimming, snorkeling, diving, kayaking, scenery and wildlife viewing, and other educational and recreational activities would continue to be available on the islands. Hiking would be restricted to existing trails unless otherwise noted or permitted. All island uses would be subject to periodic closures to protect sensitive plant and wildlife populations, cultural resources, and for visitor safety.

OVERNIGHT ACCOMMODATIONS

Reservations would continue to be required for all frontcountry camping, and permits would continue to be required for backcountry camping.

Frontcountry camping would remain available year-round in established campgrounds on all of the five park islands. The capacity for each island campground would be as follows:

Santa Barbara Island – 30 campers
Anacapa Island – 30 campers
Santa Cruz Island
- Scorpion – 240 campers
- Del Norte – 16 campers
- Smugglers Cove – 16 to 20 campers
- Prisoners Harbor – 24 campers

Santa Rosa Island
- Bechers Bay – 125 campers
- Johnsons Lee – 30 campers

San Miguel Island – 30 campers

The total of up to 545 camper nights are available, an increase of 140 camper nights. Camping conditions would continue to be primitive. Picnic tables would remain at each campsite. Drinking water would continue to be provided only on Santa Rosa and Santa Cruz Islands — there would continue to be no potable water on Anacapa, San Miguel, or Santa Barbara Island. All camping supplies must be hand carried from the dock/beach to the campground and back. There would continue to be no trash receptacles on any of the islands. Thus, all personal trash items must be removed from the islands. Toilets would be available at each of the campgrounds.

Backcountry camping would continue on Santa Rosa and Santa Cruz Islands, and expanded backcountry camping might be available on these islands once the parkwide backcountry management plan is completed.

Economy rustic lodging opportunities would be provided through adaptive use of the historic ranch complex structure(s) on Santa Rosa Island (see details later in this section).

User Capacity

Visitor use and resource condition monitoring would be instituted before visitor use opportunities would be expanded in the preferred alternative. Indicators and standards would be developed for key resources that are sensitive to changes in visitor use and monitored to ensure that unacceptable changes are not occurring (see

the discussion of user capacity at the beginning of the chapter for more details).

Under alternative 3 the existing day use limits on visitation would continue on all of the islands.

The number of campers that would be permitted on Santa Rosa and Santa Cruz Islands would change under alternative 3, compared with alternative 1, which in turn would alter the islands' overnight use levels. However, the proposed new campsites would be located in areas where there would be minimal impacts on park resources. New backcountry campsites may be proposed in the future on Santa Cruz and Santa Rosa Islands (and a temporary camp on San Miguel Island), but these campsites would be carefully located to minimize resource impacts. A future parkwide backcountry management plan would determine the location of these sites and appropriate use limits.

VISITOR ORIENTATION, INTERPRETATION, AND EDUCATION

A comprehensive interpretive plan would be developed to guide interpretation throughout the islands and would include minimal interpretive wayside exhibits on some of the islands. Supplemental compliance might be necessary to implement aspects of the comprehensive interpretive plan.

On-Island Orientation / Interpretive Facilities / Programs

Island orientation would be similar to that found in alternative 1. NPS personnel and volunteers would continue to provide interpretive and educational services on the islands to further engage visitors in protecting park resources. The mainland information, orientation, educational, and interpretive services would continue to be essential in preparing visitors for their island experiences, including considerations for minimal impact recreation. All visitors to the islands would receive an orientation that would include information about the sensitivity of the natural and cultural resources of the islands, the threats posed by invasive species and pathogens, and the possible impacts of fire on the islands' resources.

Interpretive and educational programs on the islands would be the same as described in alternative 1, designed to give visitors the opportunity to experience the islands in their remote natural settings. Visitor appreciation of park resources would be enhanced through nonpersonal interpretive services including wayside exhibits, websites, webcams, publications, and other educational media.

Interpretive programs and media would foster an understanding of the natural and cultural resources of the islands and marine environment. Live interactive distance learning programs broadcast from the islands to the mainland, such as the Channel Islands Live dive program on Anacapa Island, would be expanded to other islands as feasible.

The Park Service would work with TNC to build an education/volunteers camp for school groups near Prisoners Harbor under this alternative.

Mainland Visitor Center

The National Park Service would modify the current visitor center / headquarters and maintenance facility to accommodate an expanded visitor/education center. (See "The Mainland" section for more details.)

Other Contact Stations

To provide additional opportunities for the public to learn about the park and its resources, other locations along the southern California coastline would be sought for visitor contact stations (e.g., Oxnard). The

National Park Service would seek to lease/share space for these offices with other federal and state land / water management agencies where possible.

COMMERCIAL SERVICES

Based on a commercial services analysis, Table 11 lists the commercial services that would be provided under alternative 3 for visitors on Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands.

TABLE 11. COMMERCIAL SERVICES PROVIDED FOR VISITORS IN CHANNEL ISLANDS NATIONAL PARK UNDER ALTERNATIVE 3

Area	Service
Anacapa Island	ferry access to East and West Anacapa Islands, and to water-based activities off of Middle Anacapa Island
East Santa Cruz Island – Scorpion Valley	ferry access to Scorpion Valley kayak and snorkeling rentals at Scorpion Valley
East Santa Cruz Island – Prisoners Harbor	ferry access to Prisoners Harbor
Santa Rosa Island	ferry access to Bechers Bay lodging and food services for visitors at Bechers Bay airplane access to Bechers Bay limited ground transportation of visitors on the island's roads
San Miguel Island	limited fixed-winged air access on a trial basis guided multiday trips would be established to see pinnipeds at Point Bennett

PARK OPERATIONS AND FACILITIES

Mainland Operations

To improve the operational efficiency of mainland operations for all transportation functions, maintenance would be relocated in Ventura Harbor. The original headquarters would be modified to meet all NPS visitor, educational, and administrative needs. (See "The Mainland" section for more details.) In the interim, park operations would continue to be housed in the visitor center/headquarters complex and the leased auxiliary office buildings in the Ventura Harbor area.

Park Roads

Under alternative 3, the road segments on Santa Rosa and Santa Cruz Islands that have unacceptable impacts on resources or that are not essential for park operations would be removed and the landscape would either be restored or the roads would be converted to hiking trails if appropriate. (For more details, see the island descriptions below.) All roads may be realigned to remove safety hazards and deal with erosion and landslide problems.

Education/Research Facilities

Like alternative 2, in alternative 3 the park staff would facilitate research and monitoring that supports conservation of natural systems, preservation of cultural resources, and place-based learning and conservation strategies. A research/education field station would be developed on Santa Rosa Island to support park education and research field work.

Other Infrastructure and Facilities

Table 12 shows the changes in infrastructure and facilities compared to alternative 1. Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained in this alternative. The items shown with asterisks may be built pending additional studies. Under alternative 3 both new administrative and visitor facilities would be built in the park. Although there would be several new facilities, many would be occupied and maintained by concessioners and other partners.

Under alternative 3 several new administrative facilities would be built at Scorpion Valley and Prisoners Harbor on Santa Cruz Island, and at Bechers Bay on Santa Rosa Island (see details on the islands later in this section).

TABLE 12. CHANGES IN INFRASTRUCTURE AND FACILITIES IN CHANNEL ISLANDS NATIONAL PARK UNDER ALTERNATIVE 3

Area	Facilities and Infrastructure
Mainland	modify the existing visitor/education center and headquarters to accommodate expanded visitor services consolidate transportation and maintenance functions in Ventura Harbor maintain a visitor contact station in Santa Barbara
Santa Barbara Island	no changes
Anacapa Island	public access to the lighthouse and new exhibits one new employee housing unit elimination of the efficiency apartment in the historic generator building replacement of the crane at the landing cove
East Santa Cruz Island	possible removal of some road segments or conversion to trails*
East Santa Cruz Island – Scorpion Valley and	adaptive reuse of the historic bunkhouse at Scorpion

Area	Facilities and Infrastructure
Smugglers Cove	new barn structure for interpretive exhibits and programs at the current corral location new kayak storage facility additional restrooms with a changing area at Scorpion reconfiguration of the Scorpion campground and new restrooms if necessary presentation area between upper and lower campgrounds new concession permanent and temporary housing west of the lower campground for 1 or 2 permanent employees and 10 temporary employees replacement of six temporary housing units with permanent structures and provision for office space relocation of maintenance operations in the corral area
East Santa Cruz Island – Prisoners Harbor and Rancho Del Norte	adaptive reuse of the warehouse as a visitor contact and orientation center; part of the warehouse would continue to be used for storage of supplies and equipment new restrooms near the warehouse new 24-person campground near Prisoners Harbor new storage facility and parking spaces establishment of a new education/volunteers camp near Prisoners Harbor new NPS housing east of Cañada del Puerto
Santa Cruz Island	15.9 miles of roads maintained for administrative purposes (includes TNC easement road)
Santa Rosa Island	new 75-person campground at Bechers Bay new campground, day use facilities, and ranger station at Johnsons Lee new field station for research/education new visitor contact station at the pier adaptive reuse and possible new construction of structures in the historic ranch complex as lodging* adaptive reuse of ranch structures as a ranger station two new employee bunkhouses new maintenance facility and maintenance storage area for visitor transport vehicles NPS concession transportation staging area adaptive use of historic generator barn to support concession/interpretation/park operations adaptive reuse of historic horse barn for visitor services, interpretation, and concession operations decrease number of campers at Water Canyon campground from 75 to 50 campers/night possible removal of some road segments or conversion to trails
San Miguel Island	new temporary camp limited number of concession-operated fixed-wing aircraft would be permitted to use the existing airstrip at the ranch complex (on a trial basis)

*These new facilities may be built or roads removed pending the results of additional studies.

Park Staffing

Under alternative 3, park staffing levels would increase by 17 with full implementation of the plan. Additional staff would be needed to provide visitor services at the mainland visitor center and on the islands, manage concession operations, maintain new facilities, and monitor and manage visitors and resources on the islands. Table 13 shows the changes in staffing levels from alternative 1. Only changes are shown. (Facility management, resource management, visitor and resource protection, and interpretation divisions would all increase.) As in alternative 1, position management planning would be used to distribute staff expertise and specialties. (Concession staff, volunteers, and other partners also would be more relied on to help manage visitors, facilities, and resources than under alternative 1.) Staffing changes would be phased in over the implementation of the plan.

TABLE 13. CHANGES IN PERMANENT PARK STAFFING LEVELS FROM CURRENT MANAGEMENT (IN FTES)

Title	Number of FTEs
Administration	1
Interpretation	4
Visitor and Resource Protection	4
Natural Resources	2
Cultural Resources	2
Maintenance	4
Transportation	0
TOTAL	17

Alternative 3

Estimated Costs

This section explains the rationale, cost estimates, prioritization, and phasing for the preferred alternative of the general management plan. Park operations are uniquely costly at Channel Islands National Park as a result of managing five islands spread over large distances, plus mainland functions. Operational support is expensive due to high ocean transport costs and highly variable weather and ocean conditions. Providing critical infrastructure and services on the islands (e.g., service cranes, piers, and docks) has higher costs than most parks.

Project costs have been carefully developed and proposals have been prioritized given fiscal constraints. The prioritization and phasing of projects in the general management plan emphasizes maintaining existing high-priority facilities, including recently acquired facilities and historic assets. Proposed facilities are limited to those considered essential to fulfilling the park's purpose. Full implementation of the preferred alternative may take 20 to 40 years and has an estimated total cost of $62.4 million. Costs are split into "essential" and "desired" cost categories, totaling $21.5 million and $40.9 million, respectively. Essential costs are for projects that are critical to preserve fundamental resources and values, maintain existing high-priority assets, ensure visitor and employee health and safety, and would likely require federal funding. Projects in the essential cost category have been further prioritized into four phases that represent a general sequencing for project implementation. Desired projects are important for full implementation of the preferred alternative but could be accomplished with nonfederal funds or may be completed many years into the future. Examples of essential and desired projects are included in the "project phasing" explanation.

The implementation of the approved plan would depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan would be forthcoming. Full implementation of the actions in the approved general management plan could be many years into the future and some may never be implemented.

Project Phasing

Projects in the essential and desired cost categories are included in the overall phasing to fully implement the general management plan. If funding becomes available for projects in the later phases or within the desired projects category, or if park priorities change throughout the lifespan of the general management plan, the park may implement projects within cost categories as needed. Project phasing also takes into account the following considerations:

(1) Actions that if not taken will impact visitor and employee health and safety
(2) Actions that are driven by law or policy and are required for compliance
(3) Actions that if not taken would result in adverse impacts on either cultural or natural resources
(4) Actions that would be taken without an approved GMP for improving and maintaining existing high-priority assets and increasing operational efficiency and effectiveness

Essential costs would be separated into four phases, with phase 1 at $4.8 million, phase 2 at $6.4 million, phase 3 at $4.4 million, and phase 4 at $5.6 million.

Essential Projects – Phase 1. These projects would be located on the Scorpion Valley side of Santa Cruz Island, which is 24 miles from the mainland and receives the highest amount of island visitation. Housing for park staff and concession employees, including site work and infrastructure improvements, is proposed in phase 1. These projects would greatly enhance the efficiency and long-term NPS management on Santa Cruz Island.

Essential Projects – Phase 2. Dispersed among several of the islands, these projects would focus on improving infrastructure critical to visitor use, health, and safety. The projects would include replacing a service crane, building restroom facilities, and providing essential utilities such as electric, water, and wastewater systems.

Essential Projects – Phase 3. These projects would be located on several islands and would primarily provide for adaptive reuse of various existing and historic structures for park operations. These improvements are needed to improve the condition of existing and historic facilities while supporting critical park operations and visitor needs. The projects would include reusing a warehouse at Prisoners Harbor on Santa Cruz Island to serve as a visitor contact and orientation center, as well as reusing a historic barn on Santa Rosa Island to support visitor services and concessions operations. Stabilizing a ranch house on Santa Rosa Island to preserve the historic structure and provide overnight accommodations for visitors is also proposed in this phase.

Essential Projects – Phase 4. Located on several islands, these projects would provide for additional visitor opportunities and the operational facilities and housing needed to support them. Some of the projects in this phase would include building maintenance facilities on Santa Cruz and Santa Rosa Islands, building a visitor contact station and concessions facilities on Santa Rosa Island, and providing employee housing and associated utilities on several islands.

Desired Projects

Desired projects would be located on several islands and the mainland and would include projects that could be accomplished with

nonfederal funds or may be completed many years into the future. The projects would include mainland visitor facilities improvements, such as an expanded visitor center in Ventura Harbor. Other mainland projects would include relocating operation and maintenance functions and providing boat dock facilities within the harbor. Island projects would include research and education field station proposals on Santa Cruz and Santa Rosa Islands, various park staff and concession housing improvements, lodging accommodations, a kayak-snorkeling storage facility at Scorpion Valley on Santa Cruz Island, a temporary camp on San Miguel Island, day use and campground facilities on Santa Cruz and Santa Rosa Islands, and utilities needed to support these uses.

Annual Costs

Similar to alternative 2, the preferred alternative would be implemented with current staffing levels plus 17 FTEs for administration, maintenance, resource management, resource protection, and interpretation (Table 14). Staffing costs would total approximately $1.6 million annually. In addition, the park's operating budget would need to be increased by approximately $2.2 million if the alternative is fully implemented, of which approximately $600,000 would be dedicated to operating new facilities. The total cost to operate the park under this alterative would be $14.1 million per year (in 2011 dollars). These positions would also be phased in over the implementation of the plan.

Other Cost Considerations

Associated with project proposals in the general management plan, approximately 61% of the park's current deferred maintenance, a total of $6.8 of $11.2 million, is addressed by projects included in the preferred alternative. Given the costly pattern of allowing park assets to deteriorate, which leads to increased deferred maintenance costs, Channel Islands National Park could benefit from both a financial and resource protection standpoint to prioritize funding for critical facilities in the near term as repair and replacement costs will increase in the long term. The approval of a general management plan does not guarantee that funding and staffing needed to implement the plan will be forthcoming. Full implementation of the plan could be many years into the future.

Alternative 3 proposes a range of actions to protect park resources, improve visitors' experiences, and enhance access to the area. However, the park is in a region where floods and sea level rise are projected to occur. For this reason, the Park Service would integrate relevant information, including data related to climate change, into future planning and decision-making processes. For example, proposed facility investments prior to project approvals would be evaluated to ensure the long-term sustainability of these investments. These evaluations would include analysis of the best scientific information available. If the evaluations show that the financial investment would be at risk, the Park Service could either modify the action to increase sustainability of the project or, if no alternatives exist, terminate the action.

TABLE 14. COST AND PHASING FOR ALTERNATIVE 3

Category	Phase 1	Phase 2	Phase 3	Phase 4	Desired	Total
Total Improvement Costs (in million $)	$4.8	$6.4	$4.4	$5.6	$40.9	$62.1
Deferred Maintenance Offset (in million $)	$0.0	$1.4	$3.1	$0.4	$1.9	$6.8
FTEs	2.7	1	3	1	9.3	17

Note: In 2011 dollars.

ALTERNATIVE 3 (PREFERRED)— THE MAINLAND

Making the park relevant to a growing and diverse neighboring population and visiting public is essential. Because many park visitors do not travel to the islands, the Robert J. Lagomarsino Visitor Center in Ventura Harbor plays a key role in reaching the public. Although the park headquarters/visitor center would remain in Ventura Harbor and serve as the primary location for the dissemination of park information, under alternative 3 the mainland visitor center would take on an expanded role in connecting the park to the people. It would serve as a hub for distance learning to increase opportunities for visitors to indirectly experience and learn about the park resources on the mainland. The visitor center would also provide for a broad-spectrum, multicultural education program about the natural and cultural resources preserved in Channel Islands National Park

To accomplish these goals, the National Park Service would separate the park's operational and visitor functions. This would be achieved through consolidating some mainland administrative and maintenance operations and relocating them in Ventura Harbor, enabling the current Visitor Center/ Headquarters and Maintenance buildings to be redesigned to meet expanded visitor services. The expanded center would still maintain the park headquarters. In addition it would house a large auditorium to show the park film and to host Channel Islands Live – the live interactive distance learning programs broadcast from the terrestrial and underwater habitats on the islands to the mainland – as well as other resource programs broadcast from the islands. The redesigned center would also have classrooms and lab facilities, a sea life exhibit, and office space for education and science staff. Relocating the maintenance operation would allow the docks to serve visitor needs by providing visiting boaters a temporary place to dock and dock space for the harbor water taxi to deliver visitors directly to the visitor center.

Ultimately, the visitor/education center, using an interdisciplinary approach, would serve as a premier location in southern California for education about the marine and terrestrial natural systems and the rich cultural history of this coastal area. Programs/classes would be offered on a diversity of topics to an array of visitor and student groups. All education programs would be aligned with the state educational curriculum. All mainland facilities would be universally accessible. By using the most up-to-date remote broadcast video and audio capabilities, cellular communications, other communications technology, and sensory interactive exhibits, many of the island and ocean resources would be available to students on the mainland to experience indirectly.

The National Park Service would work with the Harbor District to consolidate mainland administrative and maintenance operations, including NPS transportation into a common area in the industrial/business portion of the harbor.

Under PL 93-477 [Title IV, section 401], the National Park Service is authorized by Congress to accept the donation of up to 5 acres of land and submerged land within the Ventura Marina for administrative and visitor facilities. Currently, facilities are on 2 to 3 acres, and acquiring additional land is authorized without seeking a boundary adjustment.

Until such time that the National Park Service feels that it is necessary to relocate mainland administrative and maintenance operations outside of the harbor, all functions would remain in Ventura Harbor. If it becomes necessary to relocate facilities outside the harbor, the National Park Service would work with other federal and state agencies to co-locate harbor and maintenance facilities within Ventura County.

OTHER VISITOR CONTACT STATIONS

In addition to the Ventura facilities, the National Park Service would continue to seek to operate visitor contact stations in neighboring communities.

To further expand the park's connections with the public, under this alternative the National Park Service would continue to maintain a visitor contact station in Santa Barbara Harbor and would seek to establish a visitor contact station at Channel Islands Harbor (Oxnard) and possibly at other harbors. Partnerships with other federal agencies such as the sanctuary, maritime museums, and aquariums also would be sought to facilitate outreach opportunities.

Map 22 Park Headquarters – Alternative 3

ALTERNATIVE 3 (PREFERRED)— ANACAPA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

As in all of the alternatives, historically significant archeological resources, historic buildings and structures, and landscape features on Anacapa Island would continue to be protected and preserved. Historic structures in the Anacapa Island Light Station Historic District on East Anacapa Island would continue to be used for park housing, park administrative uses, and visitor services. One residential structure that is compatible in design with the historic district's structures would be built on the historic footprint of structures that were previously razed. This new structure would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing features of the historic district.

The lighthouse would be maintained and opened to the public with accompanying exhibits.

Like alternative 1, within cultural landscapes, the management of nonnative plants would be evaluated on a case-by-case basis.

MANAGEMENT ZONES

Map 23 shows the management zones for Anacapa Island under alternative 3. Most of East Anacapa would be in the frontcountry management zone to provide opportunities for outdoor activities in diverse natural settings. The entire historic district, including the landing cove, would be zoned as frontcountry. The cliff faces and beaches surrounding the island would be in the backcountry management zone to protect nesting seabirds and haul-out areas for seals and sea lions. The marine environment at the landing cove on East Anacapa would be in the marine developed access zone to maintain a pier to facilitate visitor and operational access. (The primary difference between alternatives 2 and 3 for East Anacapa would be that the cultural landscapes management zone in alternative 2 is changed to the frontcountry zone in alternative 3. The historic light station structures including the housing area, visitor contact structure, water catchment basin, and lighthouse would continue to be managed as cultural resources.)

Middle Anacapa Island would be in the backcountry management zone.

Most of West Anacapa Island would be managed under the backcountry management zone to protect the large colony of nesting California brown pelicans. Frenchy's Cove and the south side of West Anacapa Island would be in the backcountry management zone to provide opportunities for outdoor activities in diverse natural settings.

WILDERNESS PROPOSAL

Under alternative 3 all of West and Middle Anacapa islets would be proposed for wilderness designation (620 acres; map 23).

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

East Anacapa

East Anacapa would continue to be a good place for hiking (2 miles of trails); short overnight camping trips; and for spectacular scenery and wildlife viewing opportunities (seabirds, seals, sea lions, and tidepool organisms). Except in developed areas, visitors would be required to stay on established trails unless otherwise noted or permitted. Opportunities also would continue to be available at the landing cove for swimming, snorkeling, diving, and kayaking. Access would continue to be only at the landing cove and only for loading and unloading passengers. There would continue to be no anchoring in the cove.

The small visitor contact station with minimal exhibits (in the historic storage building) in the Anacapa Island Light Station Historic District would remain. The historic lighthouse would be opened to the public with accompanying exhibits. The existing dock building would be maintained.

Middle Anacapa

There would continue to be no public maintained trails on Middle Anacapa. Access to water-based activities would continue to be via concessioner boats or private boats, and the island would continue to be closed to all landings unless accompanied by an NPS-approved escort.

West Anacapa

A limited number of mostly concessioner-led tide-pooling trips to Frenchy's Cove would continue to be offered throughout the year. Access to West Anacapa would continue to be from the water only and limited to Frenchy's Cove. There would continue to be no public maintained trails on West Anacapa.

USER CAPACITIES (DAY USE AND OVERNIGHT)

On East Anacapa user capacity would not exceed 100 visitors at one time by concessioner boat plus private boaters and no more than 200 people per day. Included in the 100-person total would be 30 campers per night.

Visitor capacity would continue to be managed on Middle Anacapa by requiring that visitors be accompanied by a NPS-approved escort. Camping would continue to not be permitted.

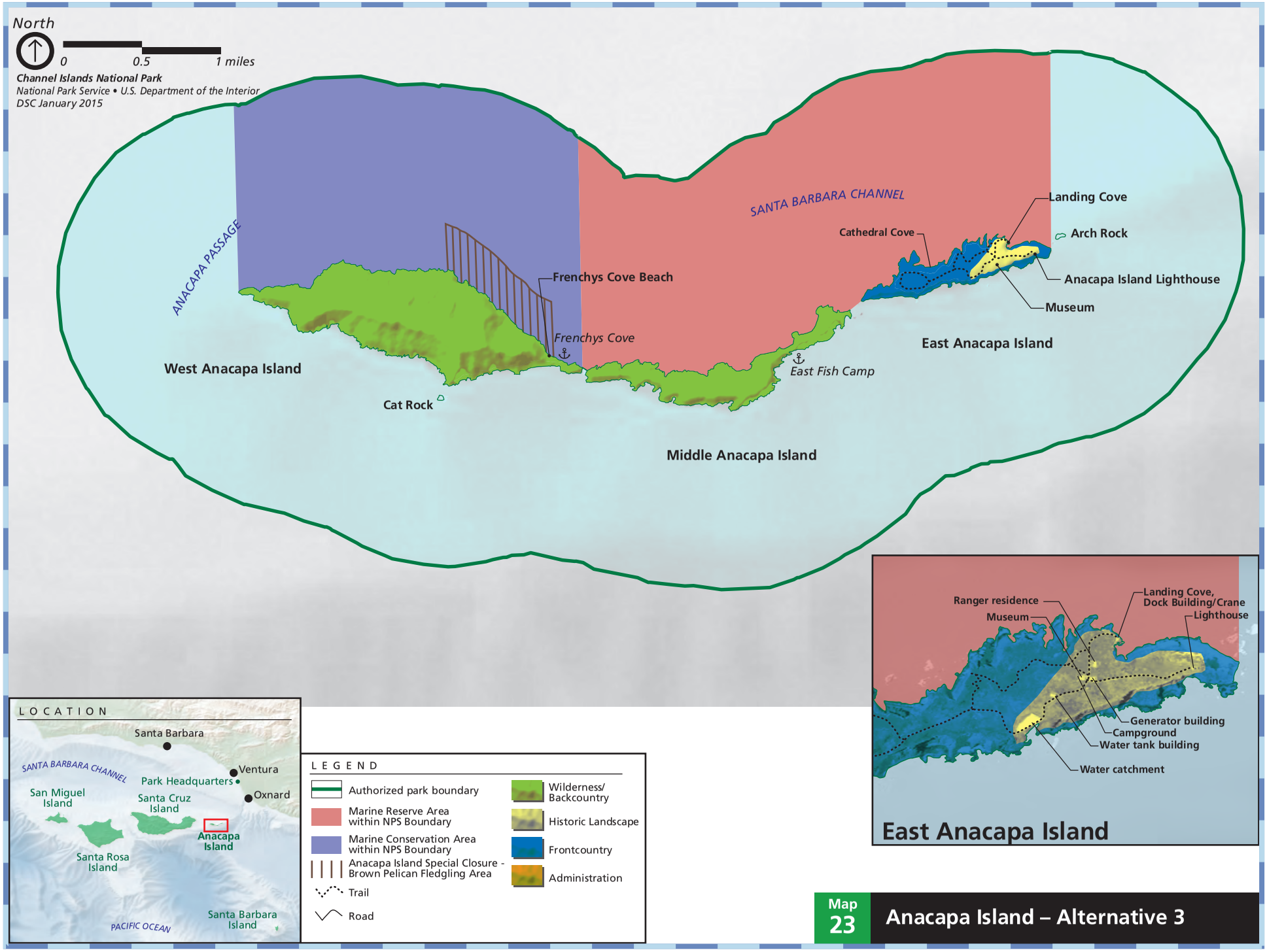
On West Anacapa at Frenchy's Cove, no more than 75 visitors at one time and no more than 600 visitors per month would be allowed. All groups of 30 or more must be supervised in a NPS-led or approved group. Camping would continue to not be permitted.

PARK OPERATIONS AND FACILITIES

On East Anacapa Island housing would remain in the Anacapa Island Light Station Historic District — one single-family residence (in the assistant lightkeeper's house) and one bunkhouse (in the historic storage building). To provide adequate island-based housing, an additional housing unit would be added, designed in a style that is compatible with the Spanish Revival style. The housing unit would be constructed on the location of the historic dwellings to replace the efficiency apartment in the historic generator building.

No water wells are on Anacapa Island. Water would continue to be shipped and transported to the island until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).

The crane at the landing cove would be replaced.



Map 23 Anacapa Island – Alternative 3

ALTERNATIVE 3 (PREFERRED)— SANTA CRUZ ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

The floodplains at Scorpion Valley and Prisoners Harbor would be managed to restore natural conditions to the extent possible while ensuring access and protecting cultural resources and visitor facilities.

At Scorpion Valley, several actions would be taken to begin restoring natural conditions of the Scorpion Creek floodplain. The secondary road that crosses through the wetland near the mouth of the creek would be removed and the area regraded to restore the riverine wetland channel. Native vegetation would also be planted in the wetland area as appropriate. The road between the upper and lower campgrounds would be relocated. A study also would be conducted on the feasibility of restoring the small wetland at the mouth of the creek.

Sediment in the stream channel would be periodically excavated to protect the historic structures, associated archeological resources, and visitor facilities. An estimated 8,000 cubic yards of material would need to be periodically removed from the west end of the lower campground or across from the well to the start of the rock wall at the beach (about 2,000 feet long). Dredged material would be temporarily stockpiled on the south side of the stream, above the upper road crossing to the west, and would be used for road fill.

CULTURAL RESOURCES

Scorpion Valley

The historic ranch would be preserved and protected. The historic masonry building would continue as a visitor contact station with exhibit and office space. The historic bunkhouse would be used to support park operations. (Note: The historic bunkhouse is under a 25-year retained rights agreement with the previous owner.) The other historic ranch structures and associated landscape features would be preserved to interpret the island's historic ranching story.

Because all of the ranch buildings are within the 100-year floodplain, nonreplaceable or nonexpendable items would be moved seasonally. Periodic flooding may cause deterioration of the historic buildings over time.

A barn structure would be built near the current corral location to support interpretive exhibits and protect historic ranch equipment from the elements. This structure would be designed in a manner that is compatible with the cultural landscape such that the height, style, scale, architectural character, and materials would have a minimal impact on the landscape. New structures would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing cultural landscape features.

Prisoners Harbor

A portion of the historic warehouse building would be rehabilitated to serve as a visitor contact and orientation center. Part of the warehouse used by TNC would continue to be used for storage of supplies and equipment.

NATURAL–CULTURAL RESOURCES

Dry-laid rock walls constructed on NPS lands to slow or divert water from flowing naturally would be evaluated to determine if the structures are having an adverse impact on streamflow. Walls and structures that are acting to protect park facilities would be maintained. Other structures having an adverse impact on streamflow would be evaluated for removal.

Landscape vegetation on Santa Cruz Island would be managed in a manner that would not perpetuate the spread of nonnative plants. Nonnative plants in cultural landscapes and historic districts would be managed on a case-by-case basis to prevent ecological impacts and limit the spread of these plants. Stone pine would be eradicated from NPS lands, while pepper trees would be managed for one gender (male), which would prevent their spread. Other nonnative trees, including, but not limited to, olive trees and eucalyptus, would be controlled to prevent them from spreading as much as possible both within cultural landscapes zones and throughout the rest of the island. If it was not possible to control the spread of these nonnative trees, the trees would be removed and replaced with noninvasive species. In addition, individual trees could be removed if they were a hazard to human safety.

Scorpion Valley

Nonnative plants in the Scorpion Valley would be managed the same way as described in alternative 1, with the exception of eucalyptus groves in the campground. To prevent injuries due to hazards associated with eucalyptus limbs, the historic eucalyptus groves in the campground would be managed in a manner to prevent injury to visitors while preserving the cultural landscape. If this cannot be accomplished, then the stand of eucalyptus trees in the area would be replaced with a less hazardous tree species that provides shade for campground users. Delphine's Grove, the Monterey Cypress plantings, and other nonnative, noninvasive tree species would continue to be preserved. The specimen eucalyptus, the small stands of eucalyptus, and the long row of eucalyptus trees between the upper and lower Scorpion campground loops would be contained to prevent their spread.

The Townsend's big-eared bat, a rare species, uses the former bakery seasonally as a maternity roost. This causes some conflicts with use of the building. However, park staff would protect the bats in the building. As in alternative 1, visitors and staff would continue to be restricted from the area around the bakery in Scorpion Valley during the period that the maternity colony is present in the building (generally April through August). Park managers would continue to work with bat biologists to determine administrative activities or uses that may be causing impacts on the maternity colony. Additional adaptive management actions may need to be taken if the bats continue to experience reproductive failure, such as placing additional access restrictions for visitors, concessioners, and NPS staff in the area around the bakery, and further restrictions on lights and electronics in the interpretive displays during the maternity roost season.

Smugglers Cove

The historic olive grove would be maintained in a manner that perpetuates the grove as a cultural landscape feature but prevents the olive trees from spreading, as much as possible, throughout the island. If it is not possible to control the spread of olives from birds, a portion of the grove, consisting of the trees that are largest olive producers, would be removed and replaced with an appropriate substitute, such as nonfruiting olive trees. This reduction would be minimal enough to ensure that the integrity of the historic olive grove as a historic landscape is retained and would also help control the spread of olives to other parts of the island. The grove may be maintained

through a historic lease or cooperator and the lessee/cooperator may use the part of the rehabilitated Smugglers ranch house to support grove operations. Large established eucalyptus tree plantings would be contained in the area to prevent their spread; seedlings would be removed.

MANAGEMENT ZONES

Most of this island would be in backcountry management zones to provide opportunities for outdoor activities in diverse natural settings (map 24).

Scorpion Valley (including the historic buildings, tree plantings, and dry-laid rock structures) would be in a frontcountry management zone. A small area north of the frontcountry zone would be in an administrative zone to support operational needs (housing and maintenance). The road leading from Scorpion Valley to Smugglers Cove would be in an administrative zone to support operational needs in maintaining the Smugglers Cove area. The marine environment at Scorpion would be in a marine developed access zone to maintain a pier to facilitate visitor and operational access.

The land area at Smugglers Cove would be in a cultural landscapes zone to emphasize the management of the historic buildings, artifacts, and groves/orchards.

A road originating from Prisoners Harbor and ending with a small trail segment to a radio repeater site would be in an administrative zone due to a preexisting easement. The Prisoners Harbor area would be in a frontcountry zone. A small area east of the mouth of the creek would be in an administrative zone south of the Navy Road to support operational needs (housing and maintenance) and in the frontcountry zone north of the road to provide a camping opportunity in proximity to the beach at Prisoners Harbor. If all operational needs can be met at the location south of the Navy Road along the creek at Prisoners Harbor, this area would convert to a backcountry zone. The marine environment at Prisoners Harbor would be in a marine developed access zone to maintain a pier to facilitate visitor and operational access.

The historic Rancho Del Norte site would be in a cultural landscapes zone and managed to support operational needs (housing). The trail/unimproved road leading to Rancho Del Norte from the Navy Road would be in an administrative zone.

WILDERNESS PROPOSAL

Under alternative 3 most of the NPS lands eligible for wilderness designation on Santa Cruz Island would be proposed for potential wilderness designation (14,476 acres; map 24). Potential wilderness would be proposed due to the need to use the existing roads for ecosystem restoration efforts and for mechanized equipment to remove roads and restore the landscape. There are also several Nature Conservancy parcels and communication corridors with outstanding 25-year rights of use and occupancy, which will expire in 2025. When all of these temporary nonconforming uses and developments cease, the area would be designated as wilderness, assuming Congress authorizes this designation.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

NPS lands on Santa Cruz Island would continue to offer many opportunities for hiking, swimming, snorkeling, diving, kayaking, one-day trips, short or long overnight camping trips, and opportunities for seeing wildlife. Beach access would continue at Scorpion Valley, Smugglers Cove, and Prisoners Harbor. The park would continue to provide pier access at Scorpion Valley and Prisoners Harbor. Private boaters would continue to use the piers at Scorpion Valley

and Prisoners Harbor for loading and unloading passengers only.

The trail system in the NPS portion of eastern Santa Cruz Island, a combination of unmaintained trails and unimproved administrative roads, would change under this alternative. Additional trails would be provided on NPS lands, following completion of the parkwide backcountry management plan. Specific trail alignments as well as campsite locations, would be determined in the future parkwide backcountry management plan. Except in developed areas, visitors would be required to stay on established trails unless otherwise noted or permitted.

As in alternative 2, drinking water would continue to be provided, if conditions allow, at Scorpion Valley in this alternative. In addition, if feasible, potable water would be provided at Smugglers Cove, Prisoners Harbor, and Rancho Del Norte. Toilets would be installed at other visitor destinations/ trailheads if needed.

Scorpion Valley

As in all of the alternatives, the existing Scorpion pier would continue to be maintained. Except for the concessioner tour boat, no private boats would be allowed to tie up at the pier.

Under alternative 3, the commercial recreational services management would be switched from commercial use authorizations (CUAs) to an on-island concessions contract. The existing informal kayak guide area at the well house in the lower campground loop would be formalized with temporary and permanent housing units for concession staff in the vicinity of the lower campground loop. (Some additional housing also may be provided for concession staff at the NPS housing area.) A central pavilion for common gathering, food preparation, and dining, with restrooms and showers would be provided.

The Park Service would manage kayaking and snorkeling through an on-island concessions contract. To support island-based kayaking and snorkeling, a day use storage facility would be constructed near the beach. Another facility may be needed within the ranch area to support kayak storage and maintenance. An expanded vault toilet with a changing area would be constructed near the beach. These facilities would be built to be compatible with the cultural landscape and would be built so they could be moved if necessary. The Park Service would allow for the Scorpion Valley on-island contract to expand to Prisoners Harbor as a satellite operation. This would enable greater opportunities for visitors to kayak between the two harbors. A changing area could be incorporated when additional restrooms are constructed near the historic Prisoners warehouse. Kayak storage would occur on the east side of Cañada del Puerto within the proposed housing area.

The historic masonry structure at Scorpion Valley would continue to serve as the primary visitor contact station with exhibit and office space. The existing orientation station, consisting of an open-air shelter, exhibits, changing rooms, and vault toilets, would continue to be maintained, with additional toilets provided in this vicinity if needed.

The bunkhouse would be rehabilitated to accommodate a small concessioner office, a small camp store and an area for NPS administrative use. The adjacent kitchen building could be used for special events and storage.

A new barn structure would be constructed in the current corral area for interpretive exhibits and programs. This area would serve as a meeting place for interpretive talks, walks, and hikes. (If this location is not feasible, then the area would be located between the lower and upper campgrounds. The current road would be relocated to the south along the creek to prevent the area from being bisected.)

Picnicking would be provided throughout the valley including at the ranch house.

The existing campground would continue to be maintained with a capacity of 240 campers per night. The upper and lower campgrounds would be reconfigured to accommodate both individual and group sites. To ensure visitor safety, camping would be limited in the winter to 10 campsites that are out of flood danger. Additional restrooms could be constructed if necessary.

Prisoners Harbor

As in alternative 2, a portion of the historic warehouse building at Prisoners Harbor would be rehabilitated to serve as a visitor contact station with exhibits (and for operational needs). Part of the warehouse would continue to be used for storage of supplies and equipment. Additional restrooms would be added near the historic warehouse outside the floodplain.

In this alternative a 24-person campground would be built above Prisoners Harbor.

Also in alternative 3, the Park Service would work with TNC to build an education/ volunteers camp for school groups in an area near Prisoners Harbor. The camp would include tent platforms; a pavilion-like facility with a designated cooking, eating, and gathering area; and group restrooms. If this camp cannot be built at Prisoners Harbor, then it would be located in Scorpion Valley, within or adjacent to the campground, outside the floodplain.

Smugglers Cove

A small primitive campground would be established (16 to 20 person capacity) in the Smugglers Cove vicinity for the public and volunteer group use. This backcountry campground would be managed by an on-site camp host and occupied seasonally.

Rancho Del Norte

Limited backcountry camping would continue near Rancho Del Norte until a parkwide backcountry management plan can be completed, which would define camping locations on East Santa Cruz Island.

USER CAPACITIES (DAY USE AND OVERNIGHT)

Under alternative 3 the user capacity of Scorpion Valley would be maintained at its current level. Up to a maximum of 250 visitors per day would be permitted in Scorpion Valley (not including campers). In the campground, 240 campers per night would continue to be permitted. As in alternative 1, the campground would remain in the floodplain. Visitor safety would be facilitated by limiting camping in the winter to 10 campsites that were out of flood danger.

At Smugglers Cove, there would be no limit on private boaters. A small (16- to 20-person) primitive campground would be established.

No more than 100 day visitors at one time (not including campers or Nature Conservancy visitors) would be allowed at Prisoners Harbor. A new 24-person primitive campground would be provided to the east of Prisoners Harbor to accommodate visitors wanting to stay overnight and explore this portion of the island.

Up to 16 people would continue to be permitted to camp near Rancho Del Norte until a parkwide backcountry management plan can be completed, which would define camping locations on East Santa Cruz Island.

Alternative 3 calls for the development of a parkwide backcountry management plan, which could lead to increased opportunities for hiking and backcountry camping on Santa Cruz Island. Specific campsite locations, overnight use limits, and suitable trail alignments would be determined through the

development of this plan. Day use limits might be established if warranted based on monitoring of resource and visitor experience conditions.

PARK OPERATIONS AND FACILITIES

Roads

Approximately 20.2 miles of roads would continue to be maintained on NPS lands on Santa Cruz Island, and about 12 miles of roads would be removed and the landscape restored or converted to trails. The road from Scorpion Valley to Smugglers Cove would continue to be maintained for park operations. The road from Prisoners Harbor to the U.S. Navy leased site (which TNC has a 10.6-mile easement) also would be maintained.

Scorpion Valley

The six temporary housing units would be removed and replaced with permanent structures at the current location. The larger area needed for permanent structures would expand to the south into the hillside. The additional area would also allow for expansion in the future should additional employees be needed to accommodate increased visitation or operational needs. The historic bunkhouse would be rehabilitated to support park operations. Office space would be provided in the bunkhouse. Concession housing would be constructed just west of the lower campground to house 1 or 2 employees in permanent structures and 10 employees in temporary structures that could be removed after the primary use season ends.

Maintenance operations would be moved out of the housing area to an area behind the interpretive barn at the north end of the existing corral. A small structure would be constructed to provide bays for a variety of functions (a shop for vehicle maintenance and maintenance office, natural and cultural resource equipment, and a fire cache). The maintenance structure would be as small as practical and should be compatible with the cultural landscape. The structure would be located to provide space for the vehicle maintenance and storage needs, but screen other maintenance and park operations that could remain outside, such as fuel and hazardous material storage, and large equipment storage. In addition, the area would accommodate the plant nursery. This location would be outside of the 100-year floodplain and would not require crossing Scorpion Creek to access visitor, cultural, or park operation areas. Fuel storage and hazardous materials would be stored in a new facility outside the 500-year floodplain.

Smugglers Cove

The historic masonry building would be rehabilitated and maintained as housing for seasonal employees and volunteers.

Prisoners Harbor

NPS housing would be built in the Prisoners Harbor area on the east side of Cañada del Puerto. Housing would be provided for at least two year-round employees and two seasonal personnel. If possible, the new facilities would be built on NPS lands outside of the floodplain. If this option is not feasible, NPS staff would work with TNC to determine if staff housing can be located on TNC lands.

A small maintenance/storage structure and limited parking for NPS/administrative vehicles would be built in a disturbed area, outside of the floodplain near the intersection of the Navy Road and water well service road. This development would be screened from visitors by vegetation. Emergency medical supplies and search-and-rescue equipment storage would be stored next to the warehouse. This development might require the use of TNC-managed lands, which would require their consent.

Rancho Del Norte

The historic residence would remain part of the NPS housing inventory. The unit may be used and maintained by a nonprofit organization through a historic lease, a contract, or a cooperative agreement.

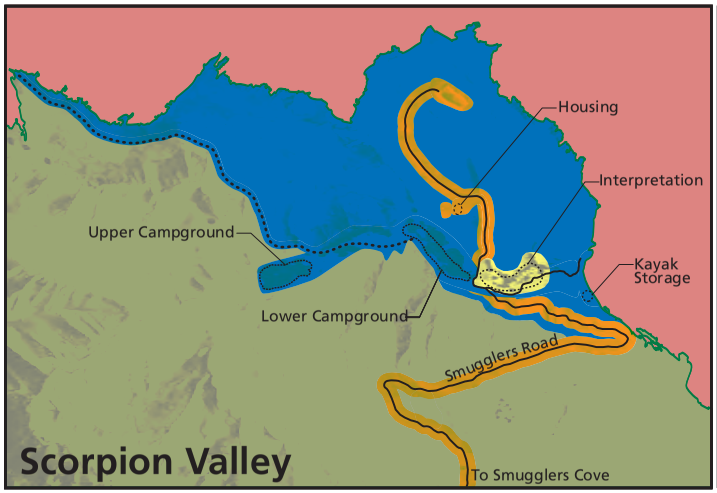
Other Infrastructure and Facilities

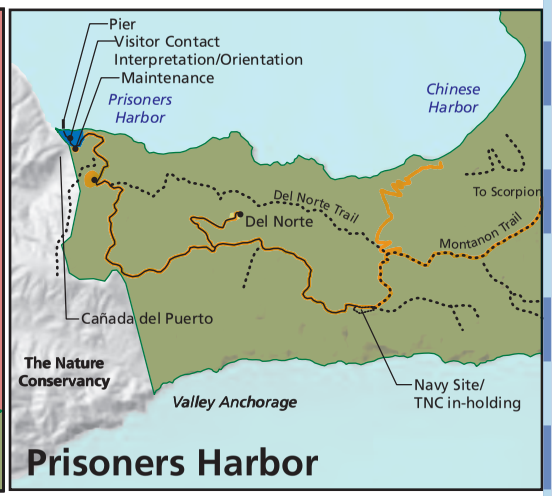
Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained in this alternative 3. The items shown would require additional technical feasibility studies.

- Water/Wastewater Needs
    - Addition of a new well at Scorpion Harbor and additional treated water storage of approximately 30,000 gallons
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water at Scorpion Harbor
    - Addition of a new well at Prisoners Harbor and additional treated water storage of approximately 30,000 gallons (the structure would be hidden from view from the historic warehouse)
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water at Prisoners Harbor
- Addition of a 25kW solar photovoltaic system at Scorpion Valley.

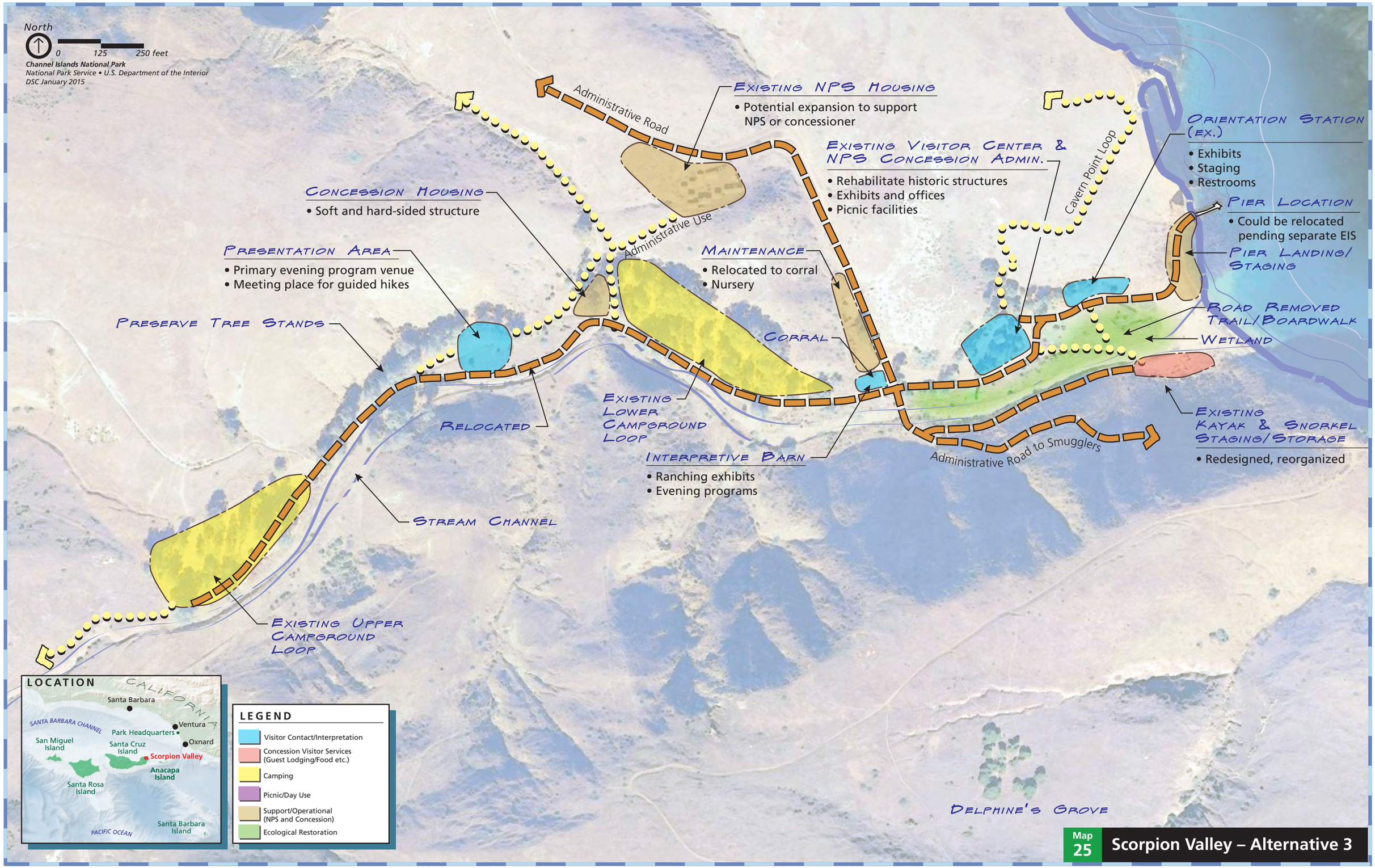
LEGEND

- Authorized park boundary
- Marine Reserve Area within NPS Boundary
- State Marine Conservation Area
- Marine Stewardship Area within NPS Boundary
- Trail
- Road
- Potential Wilderness/ Backcountry
- Historic Landscape
- Frontcountry
- Administration

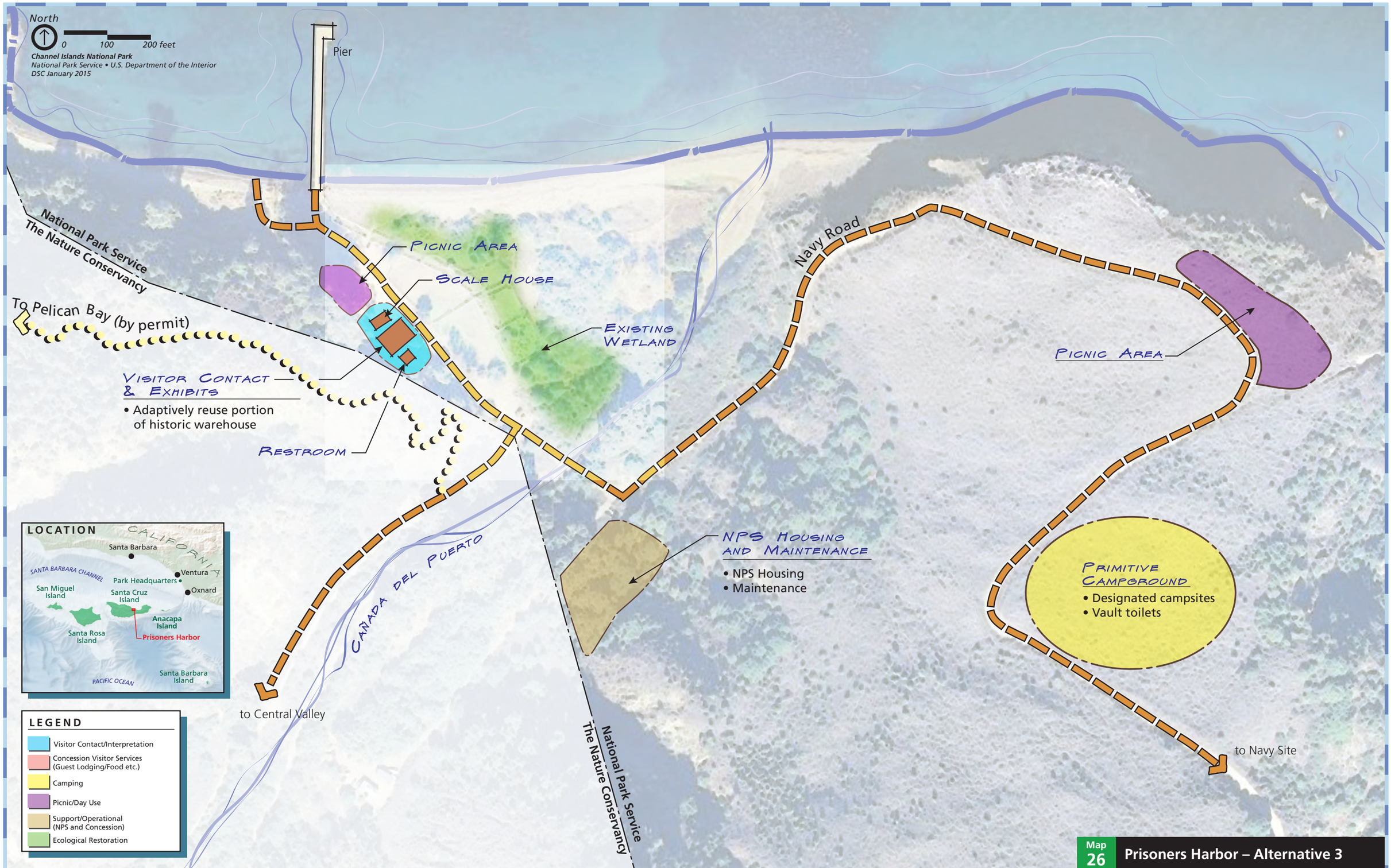




Map 24 Santa Cruz Island – Alternative 3



Map 25 Scorpion Valley – Alternative 3



Map 26 Prisoners Harbor – Alternative 3

ALTERNATIVE 3 (PREFERRED)— SANTA ROSA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

CULTURAL RESOURCES

The entire ranch complex at Bechers Bay would be preserved to interpret the ranching history of the island. The historic structures would be adaptively used for visitor lodging, concession operations, interpretation, and park administrative needs. New structures would be designed to be compatible with the height, style, scale, architectural character, and materials of the contributing cultural landscape features.

MANAGEMENT ZONES

Almost the entire Santa Rosa Island would be in backcountry management zones, with a few minor exceptions to provide opportunities for outdoor activities in diverse natural settings (map 27). Most of the coastline would be in a backcountry management zone to protect nesting shorebirds and haul-out areas for seals and sea lions. The marine environment at Bechers Bay would be in a marine stewardship zone to maintain a pier to facilitate visitor and operational access. The historic ranch area would be in a cultural landscape management zone.

The historic ranch at Bechers Bay would be in a frontcountry management zone. The area east of the historic ranch to the ocean and south encompassing Water Canyon would be in a frontcountry zone to support a public campground. Within this area is an airstrip, which would be in an administrative management zone to support public air access. Other administrative zone areas would include the NPS housing and maintenance areas. The road corridor leading from the historic ranch to the base of Torrey Pines, to the Lobo Canyon trailhead, and traversing the island to Johnsons Lee would be in an administrative zone to provide for the possibility of a small on-island transportation concession operation. An area in the administrative zone would be necessary to support housing and personnel to manage the south side of the island.

WILDERNESS PROPOSAL

Under alternative 3 the entire Santa Rosa Island, except for the Bechers Bay area, Johnsons Lee, and several road corridors (50,802 acres), would be proposed for potential wilderness designation (map 27). Potential wilderness would be proposed due to the need to use the existing roads for ecosystem restoration efforts and for mechanized equipment to remove roads and restore the landscape. When these temporary nonconforming uses are completed, the area would be designated as wilderness, assuming Congress authorizes this designation.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Santa Rosa Island would continue to offer many opportunities for hiking, beach walking, camping, and wildlife viewing. Numerous hiking options on the unimproved administrative road system and one-day trips and short or long overnight camping trips would remain available. Many unimproved roads might be slated for removal or

incorporation into a trail system, pending the outcome of the parkwide backcountry management plan that integrates trails and backcountry camping. Except in developed areas, visitors would be required to stay on established trails unless otherwise noted or permitted. Beach access would continue at Bechers Bay. Private boaters would use the pier at Bechers Bay only for loading and unloading passengers. Beaches around Sandy Point would continue to be closed year-round to landings, and the beaches between Skunk Point and East Point would remain closed seasonally for wildlife protection. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking would continue to be limited and recommended for the experienced visitor.

The beaches between Carrington Point and East Point and the beaches surrounding Sandy Point would continue to be closed year-round to camping. On other beaches, the future parkwide backcountry management plan would determine if nearshore campsites would be provided.

Additional activities that would be accommodated in the ranch complex facilities could include concessioner support facilities and interpretive exhibits. Nonhistoric structures within the historic district may be replaced. All replacement structures must be compatible with the historic district.

A small visitor contact facility would be built near the pier, which would provide visitor orientation /information, exhibits, restrooms, staging for boat arrivals/departures, and a ranger station. To accommodate this new facility, the nonhistoric foreman's house would be removed. Interpretive exhibits would be located in the new visitor contact station and throughout the historic ranch complex.

A rustic, economy-scale lodging opportunity would be provided by a concessioner through the rehabilitation of the historic ranch structures. Lodging would be limited to about 40 overnight guests. Concession administrative support facilities, including employee housing, would be incorporated within the existing ranch complex. Some buildings might have to be modified internally to accommodate the lodging functions. Some facilities could be constructed as long as they were compatible with the historic district. Some nonhistoric structures also may be replaced with compatible structures to support lodging and concession housing, such as the bunkhouse. The historic generator barn would be rehabilitated to support concession and park storage and operational needs. The historic horse barn would be rehabilitated to support concession operations and park interpretive exhibits. Food and beverage services could be available to all visitors, even those not staying overnight in the concession lodging.

The Water Canyon campground would be reduced from a 75-person to a 50-person campground. In addition, a new 75-person campground, including group and individual sites, would be located on the marine terrace within the ranch complex. Vegetation would be used to screen the new campground and reduce its visual impact.

A field station would be established at Bechers Bay to support research and education work and to provide a venue for formal educational opportunities. The facility would support 30 to 40 people, including volunteer groups, and would include accommodations for visiting researchers and classes. The facility would include a single-family housing unit for staff to administer the field station. This facility could be located in one of three locations: Water Canyon, north Carrington pasture, or in the historic ranch area. (If the field station were to be located in the ranch, there is the possibility it could be co-located with the visitor lodging facility.) Vegetation would be used to screen the visual impact of the facility if it were to be located outside of the ranch. In the interim, structures in and around the historic ranch area could be used to support a field station until a concession operation is established.

The Park Service would permit a commercially operated vehicle transportation system to provide visitors with opportunities to enjoy a couple of day use areas and backcountry hiking. Visitors would be transported to Lobo Canyon, Torrey Pines, and Johnsons Lee (map 29). Of the 72 miles of road maintained on Santa Rosa Island in this alternative, about 16 miles would be maintained to support commercial ground transportation. An initial limit of no more than 10 shuttle trips per day would be allowed. This initial limit would be monitored and subject to change depending on the level of interest and impacts on resources and visitors. To support this operation, a maintenance facility for the visitor transport vehicles would be developed in the Bechers Bay area.

Historic line camps, used during the ranching days of the island, could serve as primitive campgrounds. Each camp would be rustic in design and equipped with a small corral, a toilet, and a cooking/eating shelter. (Details on the line camps and trail system would be developed in the future parkwide backcountry management plan.)

The Park Service would continue to work with the private sector to provide year-round public air transportation via a concessioner for day use visitors and campers. The airstrip would continue to be maintained.

Restroom facilities would be added at various visitor destinations/trailheads.

A small primitive campground (up to 30 campers per night) would be developed at Johnsons Lee to support backcountry use. Wind shelters may be constructed to provide protection to campers. Day use facilities also would be developed. The day use facilities would include a group shelter, picnic tables, a toilet, and interpretive information.

USER CAPACITIES (DAY USE AND OVERNIGHT)

The 1995 *Development Concept Plan for Santa Rosa* set an upper limit of 500 people per day. The user capacity for Santa Rosa Island would not exceed 500 visitors per day, including 125 campers and about 40 visitors at the lodge. The existing campground at Water Canyon would remain, but would be reduced to support 50 campers. To provide campsites closer to the beach, a new 75-person campground, with group sites, would be developed on the marine terrace within the ranch complex.

Alternative 3 calls for the development of a parkwide backcountry management plan. Among other topics, this plan would identify specific campsite locations, overnight use limits, and suitable trail alignments on Santa Rosa Island. Day use limits might be established if warranted based on monitoring of resource and visitor experience conditions.

PARK OPERATIONS AND FACILITIES

Roads

The historic circulation systems (roads) of Santa Rosa Island would be thoroughly evaluated in the future parkwide backcountry management plan. As determined appropriate, some road segments would be converted to hiking trails or maintained for visitor access. Suitable trail alignments would be selected through the parkwide backcountry management plan. Preference would be given to trail alignments that use existing roads. Road segments that have unacceptable impacts on resources and that are not determined to be essential to performing park operations or facilitating visitor access by conversion to hiking trails would be removed and the landscape restored.

To facilitate the effective and efficient transfer of cargo for the concessioner and park operations, a storage area would be

established near the pier. The staging area would be screened.

Administrative Housing

The park housing complex (two 2-bedroom duplexes, two 1-bedroom duplexes, and two garages) in Cherry Canyon would remain. Two 8-person bunkhouses would be built in the same location to accommodate seasonal and transient staff and visiting scientists. Each unit would include bathroom, kitchen, and communal living spaces.

A ranger station, maintenance storage, and an administrative and concession operations support facility would be accommodated in the ranch complex.

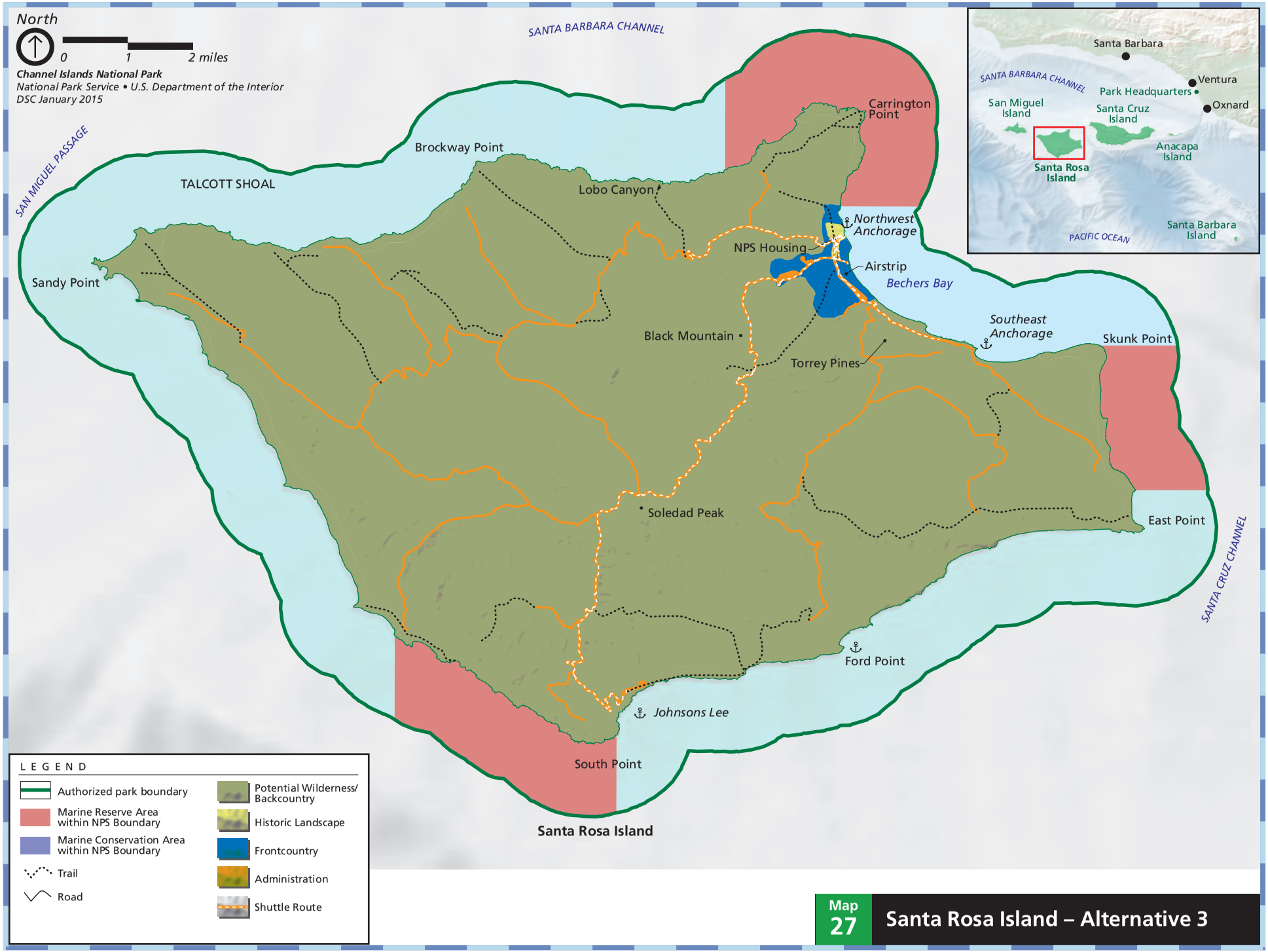
Johnsons Lee

Johnsons Lee would be used to support outlying operations. A new ranger station would be developed on the site of the existing structure. The ranger station would support programs and projects on the south side of the island. Restroom facilities and water would be provided to support the operation. All utilities would be supported by renewable energy.

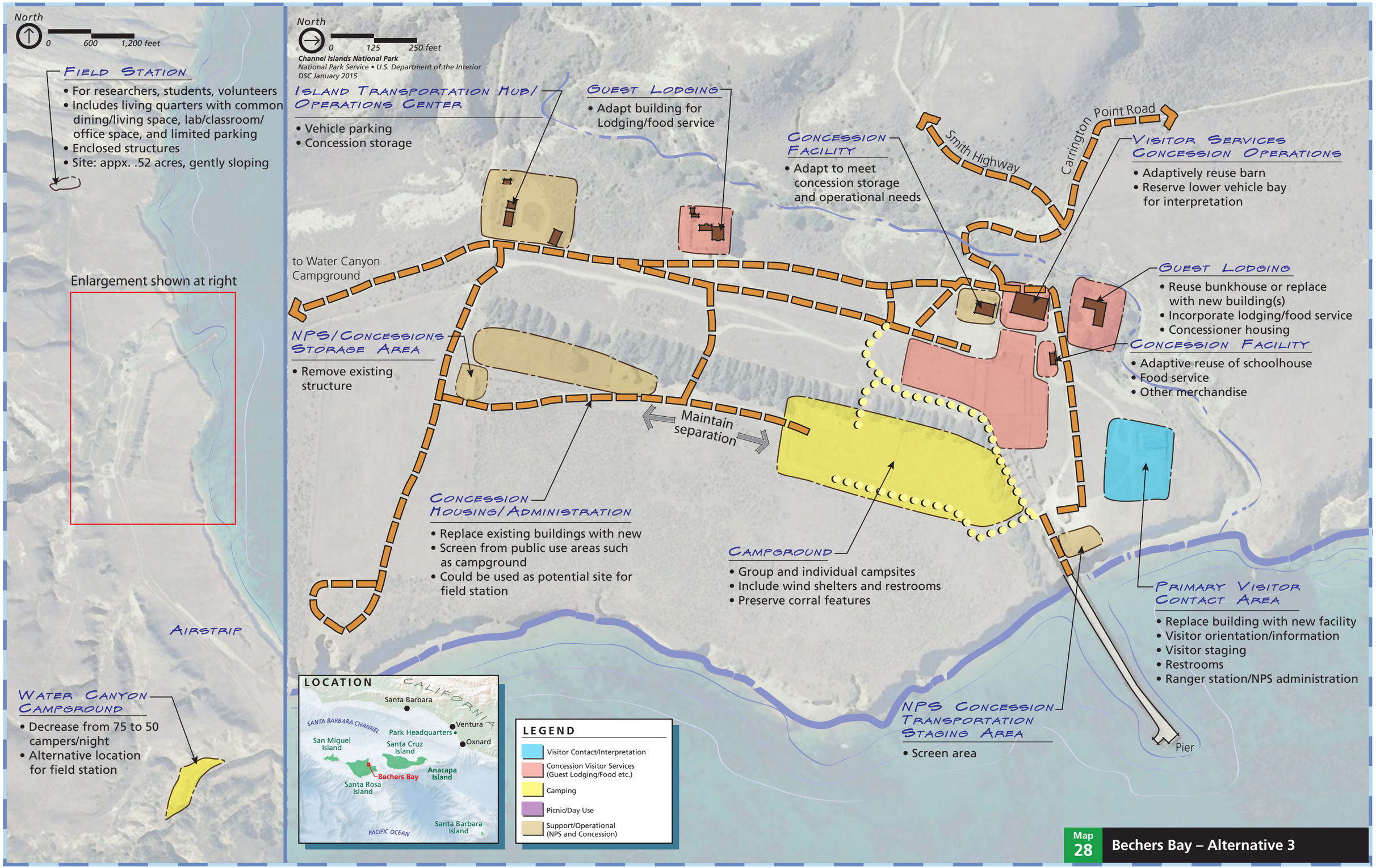
Other Infrastructure and Facilities

Unless otherwise indicated, all facilities and infrastructure identified under alternative 1 would continue to be maintained under alternative 3. The items shown would require additional technical feasibility studies.

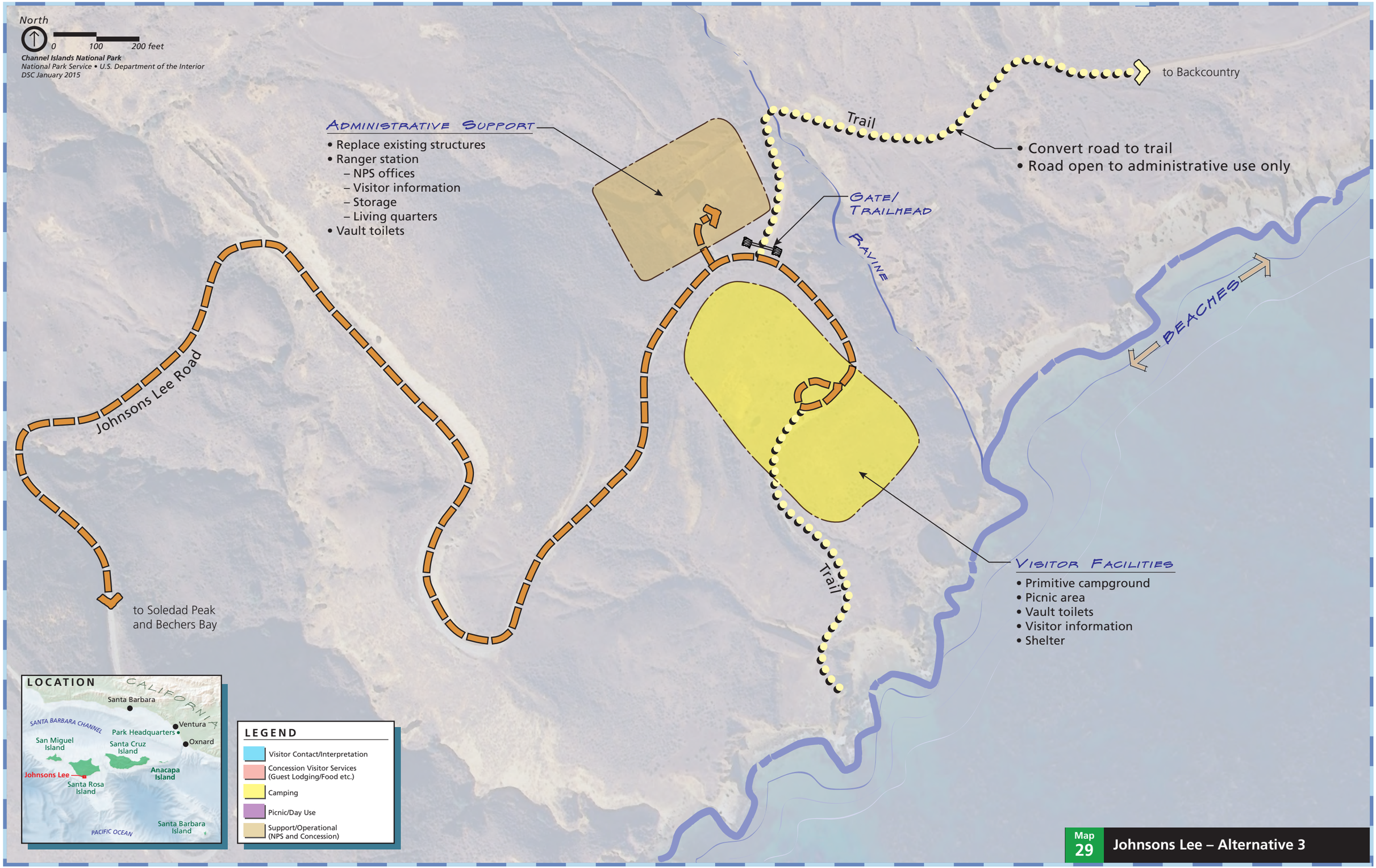
- Water/Wastewater Needs
    - Addition of a new well at Bechers Bay, in tandem with increased wastewater amounts removed from the island or improved wastewater discharge facilities.
    - Individual wastewater treatment units or rainwater collection units to recycle and reuse gray water.
- Addition of a 25kW solar photovoltaic system.



Map 27 Santa Rosa Island – Alternative 3



Map 28 Bechers Bay – Alternative 3


North
0
100
200 feet
Channel Islands National Park
National Park Service • U.S. Department of the Interior
DSC January 2015
to Backcountry
Trail
• Convert road to trail
• Road open to administrative use only
Administrative Support
• Replace existing structures
• Ranger station
– NPS offices
– Visitor information
– Storage
– Living quarters
• Vault toilets
Gate/
Trailhead
Ravine
Beaches
Johnsons Lee Road
Trail
Visitor Facilities
• Primitive campground
• Picnic area
• Vault toilets
• Visitor information
• Shelter
to Soledad Peak
and Bechers Bay
LOCATION
California
Santa Barbara
Santa Barbara Channel
Ventura
Park Headquarters
Oxnard
San Miguel Island
Santa Cruz Island
Anacapa Island
Johnsons Lee
Santa Rosa Island
Santa Barbara Island
Pacific Ocean
LEGEND
Visitor Contact/Interpretation
Concession Visitor Services (Guest Lodging/Food etc.)
Camping
Picnic/Day Use
Support/Operational (NPS and Concession)
Map 29
Johnsons Lee – Alternative 3

ALTERNATIVE 3 (PREFERRED)— SAN MIGUEL ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

MANAGEMENT ZONES

As shown in map 30, most of the interior of San Miguel Island would be in the backcountry management zone to provide opportunities for outdoor activities in diverse natural settings. The entire coastline and cliffs would be in the backcountry management zone due to the prevalence of seal and sea lion haul-outs, rookeries, and seabird rookeries. In addition to the coastline, the caliche forest would be in the backcountry management zone. About the middle third of the Cuyler Harbor coastline would be zoned administrative to provide public access and provide for park operations. The trail leading from Cuyler Harbor to the old ranch complex airstrip and ranger station would be in the administrative zone to support park operations. The trail leading from the airstrip at the dry lake bed to the research station at Point Bennett would also be in the administrative zone to support research station operations. The marine environment at the landing cove would be in the marine developed access zone to facilitate visitor and operational access.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

This island would continue to be an ideal place to see native vegetation, the unique caliche forest, seals and sea lions (with ranger escort), the scenic Cuyler Harbor beach; to do limited hiking (2 miles to the Cuyler Harbor beach and 0.75 mile to the ranger station). To see other parts of the island, specifically the pinnipeds at Point Bennett and Cardwell Point, visitors must continue to be escorted by a ranger. (Visitors must contact the park in advance to coordinate this one-day activity.) Visitors would continue to come ashore only at Cuyler Harbor. Overnight anchorages would continue to be restricted to Cuyler Harbor and Tyler Bight. All boating and landings would remain restricted seasonally around Point Bennett. Due to frequent strong winds, swimming, snorkeling, diving, and kayaking would continue to be limited and recommended for the experienced visitor.

The visitor contact station would remain in the NPS ranger station/housing complex.

The Park Service would permit guided multiday trips (not to exceed four days) by a limited number of park visitors (not to exceed 10 individuals) to see large concentrations of pinnipeds at Point Bennett. The escorted groups would hike to a temporary camp at or near the dry lake bed at the island's western end. The exact location of the temporary camp would be determined through a separate backcountry planning process. Guided trips (full-time accompaniment by a NPS representative or a commercial guide service) would be self-contained and employ minimum impact practices. The temporary camp would be moveable and could be taken down when not in use. Minimal facilities to protect resources would be provided (e.g., toilet, food storage, and tent platforms). Although this would be a new opportunity, the ability to participate in this opportunity would require the permittee to be in good physical condition and be experienced in remote wilderness-type camping. A user fee would be established.

Existing trails would continue to be used. Except in developed areas, visitors would be required to stay on established trails unless otherwise noted or permitted.

To enable more people to visit San Miguel Island, on a trial basis, limited concession-operated fixed-winged aircraft would be permitted to land on the island airstrip. Before this occurs, park staff would work with staff from the Channel Islands National Marine Sanctuary to write provisions in the concessioner's contract to avoid wildlife disturbance from aircraft flying near sensitive seabird and marine mammal sites.

USER CAPACITIES (DAY USE AND OVERNIGHT)

At the ranch complex, user capacity would not exceed 75 visitors per day (not including campers) and 30 campers, which would include the campers at the temporary camp (described below). The campground would remain in its current location.

On the western part of the island, day use would be limited to ranger-guided hikes. If NPS- or commercial-guided multiday trips were to be offered to Point Bennett, the groups could not exceed 10 individuals and could not camp for more than four days at the temporary camp at the west end of the island near the dry lakebed. The camp could include a toilet and tent platforms.

On the remainder of the island, day use would be limited to ranger-guided hikes, and no camping would be permitted.

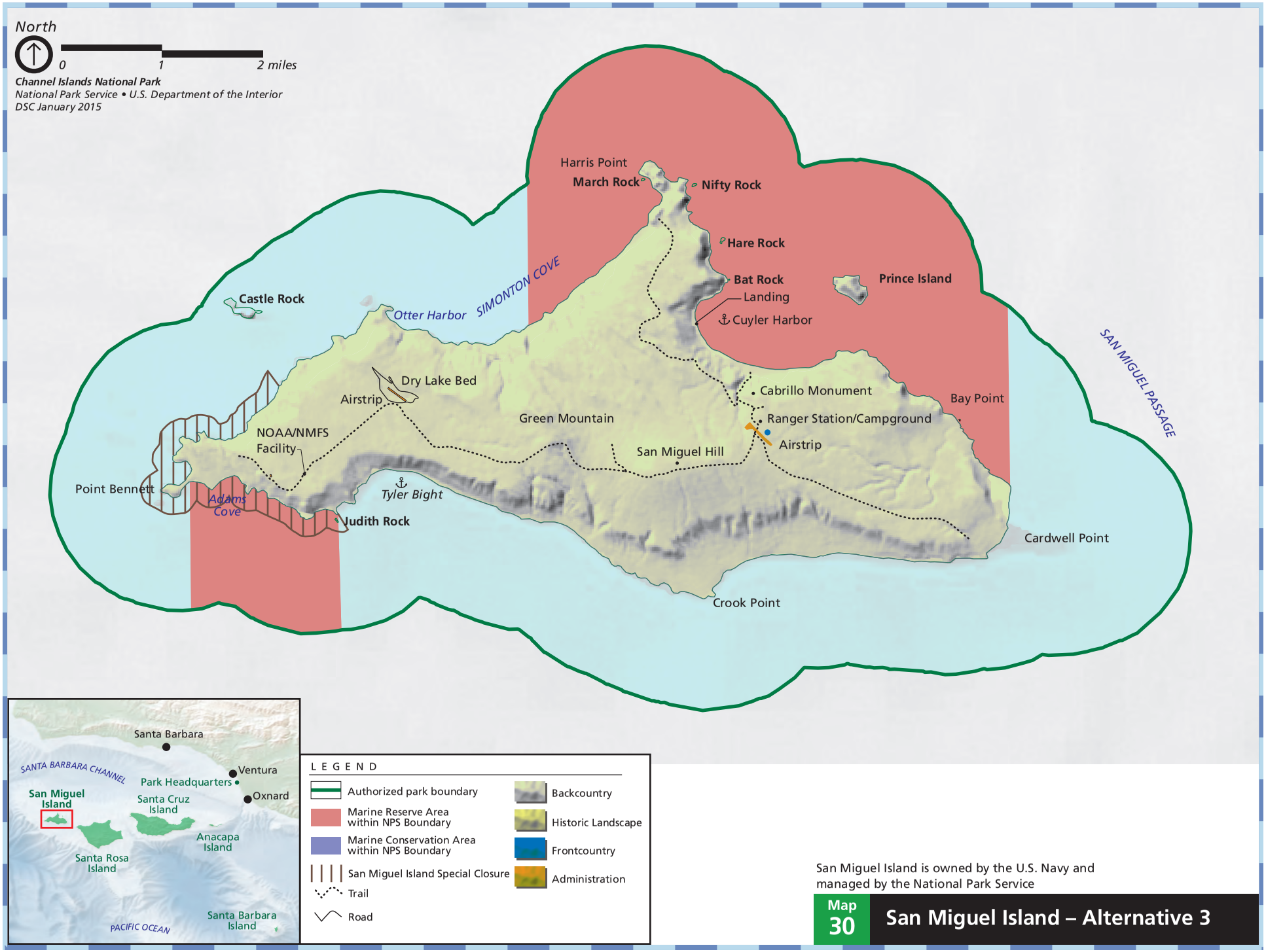
The parkwide backcountry management plan would consider if additional trails should be provided on the island in the future.

EMPLOYEE HOUSING AND PARK OPERATIONS

No housing changes would be proposed. The two 1-bedroom units and one bunkhouse would remain in use.

One low-volume water well is on San Miguel Island. Water would continue to be drawn from this well until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).

On a trial basis, a limited number of concession-operated fixed-wing aircraft would be permitted to use the existing airstrip at the ranch complex on San Miguel Island to transport day use visitors and campers.



San Miguel Island is owned by the U.S. Navy and managed by the National Park Service

Map 30 San Miguel Island – Alternative 3

ALTERNATIVE 3 (PREFERRED)— SANTA BARBARA ISLAND

NATURAL RESOURCES

The restoration of terrestrial ecosystems would continue to be emphasized. Park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands. The NPS's highest priority would be managing those species that are highly invasive or have unacceptable ecological impacts.

MANAGEMENT ZONES

Map 31 shows how Santa Barbara Island would be zoned under alternative 3. The landing cove up to the ranger station would be in the administrative management zone to facilitate visitor access and to support operational needs (access, housing, and maintenance). The area immediately south of the administrative zone would be a small frontcountry area that would support the current campground. All areas in the interior of the trail system, including the trails, would be in the backcountry zone to provide opportunities for outdoor activities in diverse natural settings. All areas exterior to the trail system to the ocean would be in the backcountry management zone to protect nesting seabirds and haul-out areas for seals and sea lions.

VISITOR USES, ACCESS, FACILITIES, AND SERVICES

Exceptional island coastal views and ideal places for swimming; snorkeling; diving; kayaking; seeing wildlife (seabirds, seals, and sea lions); hiking on 6 miles of scenic trails; and day and overnight camping would continue to be available. Trails would continue to be closed seasonally to protect nesting California brown pelicans. Except in developed areas, visitors would be required to stay on established trails unless otherwise noted or permitted. Access to the water would continue to be only at the landing cove for loading and unloading passengers. Beaches would remain closed to aquatic activities to protect wildlife. There would continue to be no landing on beaches.

The visitor contact station on Santa Barbara Island would remain unchanged and small exhibit areas would be maintained on Santa Barbara Island.

WILDERNESS PROPOSAL

Under alternative 3 the entire Santa Barbara Island, except for the dock, ranger station, and campground, would be proposed for wilderness designation (639 acres; map 31).

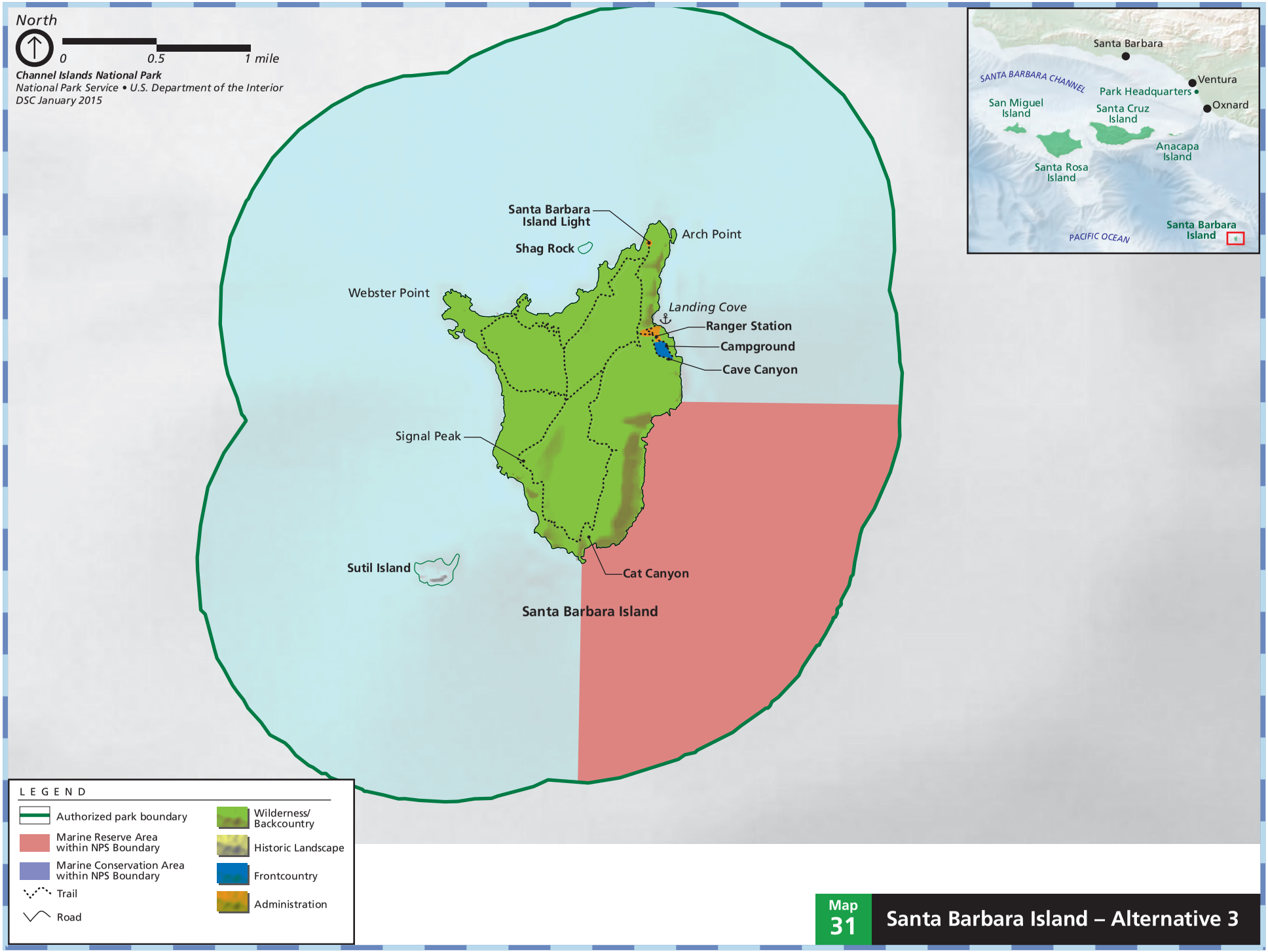
USER CAPACITIES (DAY USE AND OVERNIGHT)

User capacity would not exceed 100 visitors per day (not including campers) and 30 campers per night. The 30-person campground would continue to be maintained as it is presently.

PARK OPERATIONS AND FACILITIES

No changes would be proposed. The visitor contact station/housing complex with one 1-bedroom unit and one bunkhouse would remain in use.

No water wells are on Santa Barbara Island. Water would continue to be shipped and transported to the island until such time it is necessary and appropriate to implement some other means to provide freshwater (e.g., desalination).



Map 31 Santa Barbara Island – Alternative 3

MITIGATIVE MEASURES

The following mitigative measures would be applied under all of the alternatives by NPS staff to avoid or minimize potential impacts on natural and cultural resources from construction activity, visitor use, and park operations.

NATURAL RESOURCES

General

- Park resources, including air, water, soils, vegetation, and wildlife, would be inventoried and monitored to avoid or minimize impacts of human activities and facilities on the islands.
- New facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible.
- Site-specific surveys would be conducted before any ground disturbance takes place to make sure fossils were not present and would not be affected. If important paleontological resources were identified, the Park Service would attempt to reroute, relocate, or otherwise mitigate impacts from the actions being taken.
- New facilities would be built on soils that are suitable for development. Soil erosion would be minimized by limiting the time that soil is left exposed and by the use of various erosion control measures, such as erosion matting or silt fencing. Once work is completed, construction areas would be revegetated with native plants in a timely manner.
- Interpretive displays and programs, ranger patrols, and regulations on use levels would be used to minimize impacts from visitors.
- Areas used by visitors (e.g., trails) would be monitored for signs of native vegetation disturbance. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used to control potential impacts on plants from trail erosion or social trails.
- Visitors would be required to stay on established trails unless otherwise noted or permitted to protect natural and cultural resources and provide for visitor safety.
- Construction materials and supplies for island operations would be stored, transported, and inspected in a manner to minimize the potential for transporting nonnative plants or animals to or between islands.

Water Resources

- Best management practices, such as the use of silt fences, would be followed to ensure that construction-related soil erosion and loss was minimal and to prevent long-term impacts on water quality, wetlands, and aquatic species.
- Absorbent pads and booms would be kept close at hand and be readily available to clean up spills.
- Equipment would be regularly inspected for leakage of petroleum and other chemicals.
- Construction staging areas would be well away from surface water features if feasible. Likewise, no vehicle maintenance or refueling would occur within 100 feet of streams or the shoreline.
- Areas would be designated where refueling or construction vehicle and equipment maintenance would be performed, and containment devices or structures, such as temporary earth berms, would be placed around these areas.
- Revegetation plans would be developed for areas impacted by construction activities and would include the use of

native species, as well as salvaging plants and topsoil.

- Any activities involving dredging or placing fill material below the ordinary high water line of streams, such as Scorpion Creek, or below the mean high tide line would comply with requirements of sections 404 and 401 of the Clean Water Act and with other applicable state permit programs. Impacts from any potential fill or dredge activities would be assessed further and specific mitigation measures identified as part of an environmental compliance document that would be prepared in conjunction with the permit process.
- For new facilities, and to the extent practicable for existing facilities, stormwater management measures would be implemented to reduce nonpoint source pollution discharge from roads and other impervious surfaces. Such actions could include oil/sediment separators, infiltration beds, and use of permeable surfaces and vegetated or natural filters to trap or filter stormwater runoff.

Floodplains and Wetlands

- Wetlands would be delineated by qualified NPS staff or certified wetland specialists and marked if construction of new facilities were to occur near them.
- New developments would not be built in wetlands, if feasible. If avoiding wetlands was not feasible, other actions would be taken to comply with EO 11990, "Protection of Wetlands," the Clean Water Act, and DO-77-1: *Wetland Protection*.
- Special precautions would be taken to protect wetlands from damage caused by construction equipment, erosion, siltation, and other activities with the potential to affect wetlands (e.g., delineation of construction site limits and placement of silt fences). Construction materials would be kept in work areas, especially if the construction takes place near natural drainages.
- If possible, new structures, other than water-related developments such as boat docks, would be located outside of 100-year floodplains. Fuel storage facilities and storage or toxic or hazardous materials would be located outside of the 500-year floodplains.
- As noted in the "Affected Environment" section, all of the park facilities in the Scorpion Valley are in the floodplain (flood channel). No new permanent facilities would be built in the flood channel. Continued use of the existing facilities would require the continued periodic excavation of sediment from the channel to keep the stream in the active channel away from park facilities, although even with channel excavation it can be expected that floodwaters would continue to periodically damage the masonry and nearby structures (NPS 2003b). This excavation would occur approximately from a point 300 feet downstream from the windmill to a point somewhat upstream of the confluence of the horse corral tributary; and the dimensions excavated would be about 20 to 25 feet wide by 4 to 5 feet deep (NPS 1998). Construction equipment would be required to stay on the creek bed in the area where sediments were being removed, instead of being driven along the banks of the creek, which would damage vegetation.

The following mitigation measures apply only to alternatives 2 and 3.

- Because the Scorpion masonry building and other ranch structures would continue to be vulnerable to damage and loss during large floods, even with the above measures, no irreplaceable records, archaeological artifacts, or museum collections would be placed in the buildings. Signs also would be placed in the masonry building informing visitors

and staff of the flood risk and suggested actions in the event of flooding (e.g., an evacuation route).

- In the Prisoners Harbor area, because floods would not be expected to occur frequently, managers could elect to simply clean up and repair the building after future flood events. To protect the warehouse, low-rolling berms may be contoured in the vicinity of the structure to redirect flows back toward the stream channel if it floods. Alternatively, the Park Service would work with TNC to maintain the levee upstream of the well house area (which is outside the park) to provide additional flood protection to structures in the Prisoners Harbor area. Also, if new structures are built in this area, elevating the structures above the existing ground surface by about 2 feet would also protect the structures from floods.

Native Vegetation and Wildlife

- Facilities would be designed and sited to use previously disturbed sites to the extent practicable. Other individual management actions to avoid or minimize the extent and severity of impacts would also be implemented, such as localized area or seasonal use restrictions and confining or directing use through the use of barriers, trails, and designated campsites.
- Restoration of native vegetative communities would rely on natural regeneration and succession, as well as active measures. The main goal is to assist natural regeneration in reestablishing a sustainable native plant community. Rehabilitation of road corridors would include removal of the existing road surface and recontouring, supplemented with soil salvage, removal of nonnative plant species, scarification, mulching, seeding, and/or planting with native species.
- Visitors would be informed about the special nature of Channel Islands' ecosystems and the potential for spreading nonnative species on the islands before they come to the islands. Boot scrapers, brushes, and other means would be provided to visitors to reduce the likelihood of accidentally introducing species on the islands.
- Visitor use areas would be monitored for signs of native vegetation and wildlife disturbance, and the introduction of nonnative species. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used to control potential impacts from visitors along roads, trails, or social trails.
- A variety of techniques would be employed to minimize or avoid impacts on native vegetation and wildlife, including visitor education programs; ranger patrols; and use restrictions (permitted activities, locations, and times) in areas with rare plants, vegetative communities, and/or sensitive wildlife populations and habitats.
- The fenced area of the ranch complex would be adaptively managed to ensure persistence of the Townsend's big-eared bat maternity colony on Santa Cruz Island. Access and the use of machinery would be restricted in the vicinity of the bakery during the maternity season (generally April through August) and access for the bats into the bakery would be maintained.
- Park staff would periodically inspect and clean NPS boats to avoid the transport of nonnative species, require concessioners to follow similar procedures for their boats, and work with the State of California to educate private boaters about the need to inspect and clean their boats.

Special Status Species (Threatened and Endangered Species, Pinnipeds, Endemics)

Surveys would be conducted for special status species before implementing any action that might cause harm. Facilities would be

designed and sited to avoid adverse impacts. In consultation with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service, and California Department of Fish and Wildlife, measures would be taken to protect any sensitive species and their habitat. Areas proposed for new developments would be surveyed for the presence of threatened and endangered species prior to construction.

To minimize or avoid impacts of campers on island foxes, the following measures would be taken at all new campgrounds:

- Visitors would be required to use food storage boxes provided at the campgrounds.
- Signs would be erected regarding the presence of island foxes and the need to store food in the storage boxes.
- Campgrounds would be patrolled and regulations enforced against feeding island foxes.

Management practices to protect western snowy plover and California brown pelican nesting areas and pelican roosting areas would continue to be implemented, such as closing beaches to visitor use, prohibiting camping on beaches during nesting periods, prohibiting pets on the islands, monitoring the nesting areas throughout the breeding season, and minimizing trash along the beach that attracts predators. The nesting areas that are more vulnerable to visitor disturbance because of their accessibility would continue to be more intensively monitored to protect the birds. The Park Service would continue to work cooperatively with the Fish and Wildlife Service to identify and implement appropriate mitigation measures to protect plover and pelican nesting and roosting areas within the park.

Where visitor use near listed or rare plant populations would occur, such as Lobo Canyon, and there is the likelihood of disturbance to plants, visitors would be alerted about the need to stay on trails. If necessary, plant populations would be protected by placement of signs and fencing. New developments, including trails, would be sited to avoid disturbing or providing access to sensitive endemic plant populations.

Fire is a special concern on Santa Rosa and Santa Cruz Islands. A wildfire could extirpate several federally listed plant species. To address this potential threat, NPS staff would take the following actions.

- Educate visitors and NPS staff about the potential wildfire threat, why campfires are not permitted, and the need for care when using camp stoves in the backcountry.
- Close areas when there is a high fire danger.
- Establish seed collections of listed plant species, which can be used to replant areas if a wildfire occurs.

CULTURAL RESOURCES

The National Environmental Policy Act requires a discussion of the "appropriateness" of mitigation and an analysis of the effectiveness of mitigation. A reduction in the intensity of an impact from mitigation is an estimate of the effectiveness of this mitigation under the National Environmental Policy Act. It does not suggest that the level of effect, as defined by implementing regulations for Section 106 of the National Historic Preservation Act, is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effects remain adverse.

Adverse impacts on properties listed in, or determined eligible for listing in, the national register would be avoided if possible. If adverse impacts could not be avoided, these impacts would be mitigated through a consultation process with all interested parties.

Mitigation includes the avoidance of adverse effects on cultural resources. Avoidance strategies may include the application of the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* or design methodologies recommended in DO-28: *Cultural Resource Management Guideline*; NPS *Management Policies 2006,* Chapter 5; DO-28A: Archeology, 36 CFR 79 (with guidelines for curating archeological collections); and the *Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, National Conference of State Historic Preservation Officers for Compliance with Section 106 of the National Historic Preservation Act* (2008). Presented below is a description of typical mitigation measures.

Archeological Resources (Including Submerged Maritime Resources)

Wherever possible, projects and facilities would be located in previously disturbed or existing developed areas. Any undertakings under alternative 2 would include substantial testing during the planning phase to avoid impacts on archeological resources. The park would make every effort to avoid archeological resources in siting its development projects and avoidance of ground disturbance. Facilities would be designed to avoid known or suspected archeological resources. If avoidance of archeological resources was not possible, mitigation strategies would be developed in consultation with all interested parties to recover information that makes sites eligible for inclusion in the national register.

Archeologists would monitor ground-disturbing construction in areas where subsurface remains might be present. If previously unknown archeological resources were discovered during construction, work in the immediate vicinity of the discovery would be halted until the resources could be identified, evaluated, and documented, and an appropriate mitigation strategy was developed, if necessary, in consultation with the California state historic preservation office. Mitigation work involving submerged maritime resources would be undertaken in cooperation with the State of California and Channel Islands National Marine Sanctuary as necessary. In the unlikely event that human remains, funerary objects, or objects of cultural patrimony were discovered during construction, applicable provisions of the Native American Graves Protection and Repatriation Act would be implemented.

Historic Structures/Buildings

All project work relating to historic structures / buildings would be conducted in accordance with the guidelines and recommendations of the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings*. Typical mitigation measures for historic structures / buildings include measures to avoid impacts, such as rehabilitation and adaptive reuse, designing new development to be compatible with surrounding historic properties, and screening new development from surrounding historic resources to minimize impacts on cultural landscapes and ethnographic resources.

Cultural Landscapes

All project work relating to cultural landscapes would be conducted in accordance with the guidelines and recommendations of the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Typical mitigation measures for cultural landscapes include measures to avoid impacts, such as designing new development to be compatible with surrounding historic properties and screening new development from surrounding cultural landscapes to minimize impacts on those landscapes. Cultural landscape reports would be prepared

prior to projects with potential for impacts on contributing features of cultural landscapes to ensure that adverse impacts on cultural landscapes are avoided or minimized.

Ethnographic Resources

The Park Service would continue to consult with culturally associated American Indian tribes and other traditionally associated groups to develop appropriate strategies to mitigate impacts on ethnographic resources. Such strategies could include identification of and assistance in providing access to alternative resource gathering areas, continuing to provide access to traditional use or spiritual areas, and screening new development from traditional use areas to minimize impacts on ethnographic resources.

Scenic Resources

Mitigation measures are designed to minimize visual intrusions. These include the following:

- Where appropriate, use facilities such as boardwalks and fences to route people away from sensitive natural and cultural resources, while still permitting access to important viewpoints.
- Design, site, and construct facilities to avoid or minimize visual intrusion into the natural landscape.
- Provide vegetative screening, where appropriate.

SUSTAINABLE DESIGN AND AESTHETICS

The following measures would be followed:

- Projects would avoid or minimize adverse impacts on natural and cultural resources.
- Development projects (e.g., buildings, facilities, utilities, roads, bridges, and trails) or reconstruction projects (e.g., road reconstruction, building rehabilitation, and utility upgrades) would be designed to work in harmony with the surroundings, particularly in historic districts.
- Projects would reduce, minimize, or eliminate air and water nonpoint source pollution.
- Projects would be sustainable whenever practicable by recycling and reusing materials, by minimizing materials, by minimizing energy consumption during the project, and by minimizing energy consumption throughout the lifespan of the project.

DEVELOPMENT OF COST ESTIMATES OF THE ALTERNATIVES

NPS decision makers and the public must consider an overall picture of the complete costs and advantages of various alternatives, including the no action alternative, to make wise planning and management decisions for Channel Islands National Park.

In estimating costs of the alternatives, different types of costs need to be taken into account, including one-time costs and annual operating costs.

Initial one-time costs include:

- new development (including NPS infrastructure costs)
- major rehabilitation or restoration of existing facilities
- interpretive media (e.g., audiovisual materials, exhibits, waysides, and publications)

Examples of recurring annual costs include:

- annual park operating costs (e.g., staff salary and benefits, maintenance, utilities, monitoring, and contract services)
- ongoing repair and rehabilitation of facilities (i.e., the projection of past trends and known future needs into an annual estimate)

The following cost estimates are intended to provide a relative comparison of the costs of the alternatives. The derivation of the cost and staffing information in Table 15 below can be found in the "Estimated Costs" sections of each alternative. These figures are not intended to be used for budgetary purposes or to implement funding requests. The implementation of the approved plan will depend on future funding. The approval of this plan does not guarantee that the funding and staffing needed to implement the plan will be forthcoming. Full implementation of the actions in the approved *General Management Plan* could be many years into the future.

Alternatives 2 and 3 propose a range of actions to protect park resources, improve visitors' experiences, and enhance access to the area. However, the park is in a region where floods and sea level rise are projected to occur. For this reason, the Park Service would integrate relevant information, including data related to climate change, into future planning and decision-making processes. For example, proposed facility investments prior to project approvals would be evaluated to ensure the long-term sustainability of these investments. These evaluations would include analysis of the best scientific information available. If the evaluations show that the financial investment would be at risk, the Park Service could either modify the action to increase sustainability of the project or, if no alternatives exist, terminate the action.

TABLE 15. COST ESTIMATES AND STAFFING FOR FULL IMPLEMENTATION OF THE ACTION ALTERNATIVES

Cost Type	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Staffing (FTEs)	59	76	76
One-time facility costs	$0	$65.4 million	$62.1 million
Annual operating costs	$11.9 million	$12.4 million	$12.5 million
Deferred maintenance offset	$0	$6.8 million	$6.8 million

Note: In 2011 dollars.

FUTURE PLANS AND STUDIES NEEDED

Park managers would prepare several studies and implementation plans upon completion of the plan. These more detailed studies and implementation plans would describe how the Park Service would achieve the desired conditions outlined in the plan by describing specific actions park managers intend to take in the park to ensure that resources are protected and visitors have opportunities for high quality experiences. The Park Service would seek public input in preparing the plans and would prepare additional environmental documentation as needed to comply with the National Environmental Policy Act.

The following studies are examples of what would be prepared under one or both of the action alternatives:

- nominations of the Santa Rosa Island Archeological District, East Santa Cruz Island Archeological District, and shipwrecks to the national register
- nomination of the Santa Rosa Historic Ranching District to the national register
- nomination of Santa Cruz Ranching District to the national register
- updated national register nominations for the San Miguel, Santa Barbara, and Anacapa Islands archeological districts
- cultural landscape treatment plans for the Anacapa Light Station and ranch complexes on Santa Cruz and Santa Rosa Islands
- museum management plan update
- collection condition survey
- ethnographic studies

Other studies that are needed include:

- conduct unexploded ordnance surveys as needed to assure public safety
- research the cause of disturbance of the Townsend's big-eared bats on Santa Cruz Island, and what can be done to avoid or minimize disturbance of the bats
- research the slender salamander to understand its distribution and preferred habitat on Santa Cruz Island
- assess the amount of area in park waters that is eel grass, and the impacts of boats anchoring in these areas
- study the possibility of restoring island song sparrows on Santa Barbara Island, including evaluating habitat suitability, identifying an appropriate source population of song sparrows, and analyzing any impacts of reintroduction
- conduct a geologic hazard study on the Johnsons Lee Road
- conduct a study on the size and sustainability of the Santa Rosa Island groundwater table to determine how much water can be withdrawn with a new well
- update the 1993 detailed survey of park visitors
- work with the Channel Islands National Marine Sanctuary, State of California, and private marina operators to determine how many private (noncommercial) boaters are visiting the park and landing on the islands, and develop a methodology to monitor private boater use in the park

Additional NEPA analysis would be done for several actions in the action alternatives, including:

- construction or adaptive reuse of an existing structure for a research/education field station on Santa Rosa Island
- NPS housing in the Prisoners Harbor area on Santa Cruz Island
- construction of an education/volunteers camp on Santa Cruz Island
- the periodic excavation of sediments from the Scorpion channel on Santa Cruz Island

The following implementation plans would also be prepared under both of the action alternatives:

- comprehensive interpretive plan
- natural resources condition assessment
- ecological restoration actions for selected park resources
- wilderness stewardship/ backcountry management plan focusing on Santa Cruz, Santa Rosa, and San Miguel Islands (covering roads, trails, and camping, and protecting wilderness character for areas proposed for wilderness designation)
- user capacity monitoring plans
- plan for elimination of rats from San Miguel Island
- cultural landscape management plans for landscapes eligible for listing on the national register at Santa Cruz, Santa Rosa, and Anacapa Islands
- treatment plans for significant park buildings (e.g., those in the Santa Rosa Ranch District and the Anacapa Island Light Station Historic District)
- olive orchard management plan for Smugglers Cove on Santa Cruz Island
- housing management plans and needs assessment
- museum collection storage plan
- cooperative agreement with the State of California to participate in fishery management plans

The existing island wildfire plans would be updated, with the Santa Cruz Island plan updated in coordination with TNC. These updates would address concerns about the potential for wildfire ignitions. The updated plans would identify sensitive natural and cultural resources and note exclusion areas around these resources where fire response activities such as retardant drops, and staging areas would not be appropriate.

In addition to the above plans and studies, a commercial services strategy and a resource stewardship strategy would be prepared. The resource stewardship strategy would provide a strategic approach for long-range management of the park's natural and cultural resources. The resource strategy would translate the conceptual information in the plan into specific desired conditions and management actions to achieve those conditions.

For example, the strategy would set forth specific approaches for managing vegetation within the cultural landscapes zone as a whole and more specifically within historic developed areas and isolated orchards/groves.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The National Park Service is required to identify an environmentally preferable alternative in its NEPA documents for public review and comment. Guidance from the Council on Environmental Quality states that the environmentally preferable alternative is the alternative that "causes the least damage to the biological and physical environment"; it also means the alternative which "best protects, preserves, and enhances historic, cultural, and natural resources" (Question 6(a) from "NEPA's Forty Most Asked Questions"). An alternative or alternatives may be identified as the environmentally preferable alternative.

Both alternatives 2 and 3 would have fewer impacts on the park's natural resources than alternative 1. Most park natural resources would not be affected by the two action alternatives. Although the two action alternatives would have different impacts on the environment due to their different emphases on visitor use and education activities, the adverse impacts from both alternatives on biological or physical resources, such as vegetation and wildlife, would be fairly small and localized.

With regard to cultural resource impacts, alternative 1 would have the fewest impacts of the three alternatives. Alternatives 2 and 3 would have long-term minor beneficial impacts and long-term negligible to minor adverse impacts on ethnographic resources, and would have permanent negligible to minor adverse impacts on historic structures due to potential increases in visitor levels. Alternatives 2 and 3 would result in minor to moderate adverse impacts from ground-disturbing activities on archeological resources and changes in features of the cultural landscapes. However, these adverse impacts would be mitigated such that the national register eligibility of such resources would not be jeopardized, and thus the Section 106 determination for both alternatives 2 and 3 would be *no adverse effect*. Both alternatives would also have beneficial impacts on archeological resources due to increased control of visitor access, site monitoring, and increased public education for resource stewardship. The adverse cultural landscape impacts would be localized and mostly minor. Although both alternatives 2 and 3 would have adverse impacts on cultural resources, the park's fundamental cultural resources would not be adversely impacted.

Overall, both action alternatives would provide environmental benefits over the no action alternative through the use of management zoning, closures of existing roads on Santa Rosa Island, proposing wilderness designation, and establishing and monitoring user capacity indicators and standards. There is little difference between the two alternatives because both action alternatives are strongly grounded in the provisions of laws and NPS policies for protection of resources from damage. There is little difference between the two action alternatives in the ways they would protect, preserve, and enhance historic, cultural, and natural resources. Therefore, both action alternatives have been identified as environmentally preferable.

CONSISTENCY OF THE ALTERNATIVES WITH THE PURPOSES OF THE NATIONAL ENVIRONMENTAL POLICY ACT

CEQ regulations (40 CFR 1502.2(d)) require a determination of how each alternative being analyzed in detail would or would not achieve the policies of section 101(b) of the National Environmental Policy Act. The policies in section 101(b) are to:

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
2. assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings
3. attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences
4. preserve important historic, cultural, and natural aspects of our national heritage, and, wherever possible, maintain an environment that supports diversity and variety of individual choice
5. achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

All of the alternatives considered would be consistent with these policies. They would provide a high level of preservation of natural and cultural resources while concurrently integrating resource protection with an appropriate range of visitor uses. A diversity of opportunities would be provided in all of the alternatives for visitors to learn and enjoy the park with minimal adverse impacts, while preserving and enhancing the understanding of the park's natural and cultural resources and fulfilling NPS responsibilities as trustee of the environment.

PLANNING ACTIONS/ALTERNATIVES CONSIDERED BUT NOT ANALYZED FURTHER

The mission of the National Park Service is stated in the Organic Act of 1916, which established the agency. The act establishes a mission of preservation for the enjoyment of present and future generations. Foremost in this mission is the preservation of the natural and cultural features and systems that contribute to a park's significance, that is, its reason for being set aside as a national park. To enjoy these resources, the public must also have the opportunity to experience them firsthand. Thus, to fulfill its mission, the Park Service must provide for both long-term preservation and the visitor use that can be accommodated within the context of preservation. While actions/alternatives were considered that would allow for full restoration and full accommodation of visitor access and use, these elements were dismissed from further consideration due to their inability to fulfill the complex mission of both preservation and enjoyment.

Closing the East Anacapa Campground. In one of the preliminary alternatives, there was a plan to remove the campground. There was a lot of public support for retaining camping on East Anacapa Island. After receiving comments and further analysis, it was determined that the campground would remain, but it would be redeveloped to reduce resource impacts and improve the visitor experience.

Camping at Frenchy's Cove – West Anacapa Island. This action called for establishing camping in an area where camping does not currently exist. After further investigation and additional information during public comment, it was determined that camping at Frenchy's Cove would not be feasible because there is not enough land to develop campsites or a campground at this location, nor was there enough area to develop essential camper needs such as water and human waste facilities.

Pier at Smugglers Cove. This action called for the development of a pier at Smugglers Cove on East Santa Cruz Island to provide additional access to a visitor destination. It was determined that direct access to Smugglers Cove is not needed since it is accessible from Scorpion Harbor and it would be managed as a backcountry destination. East Santa Cruz Island already has reliable boat service via Scorpion Harbor; therefore, there is no need to provide additional piers to access other destinations on this end of the island. In addition, current visitor needs are being met at Scorpion Harbor.

Reestablish the Airstrip at Smugglers Cove. This action called for the redevelopment of an airstrip at Smugglers Cove on East Santa Cruz Island to provide additional access to a visitor destination and to provide access to visitors with limited mobility. Prior to the acquisition of East Santa Cruz Island by the Park Service, the private landowner developed an airstrip. Once the Park Service assumed management, it was determined that the airstrip was not necessary and it was removed from service and has deteriorated. Carrying capacities for East Santa Cruz Island are being met, thus an additional means of access is not needed. Santa Cruz Island already has reliable boat service via Scorpion Harbor; therefore, there is no real need to provide airplane access. This action would require additional NPS staff to oversee and administer.

Biking on Santa Rosa Island. Biking has been suggested as a possible use in the park, particularly on Santa Rosa Island. However,

the planning team has determined it would not be appropriate to include biking as a possible use in the alternatives being considered for the plan because of the park's enabling legislation and the potential for resource impacts and visitor conflicts.

The enabling legislation for the park stipulates that "visitor use within the park be limited to assure negligible adverse impact on the park resources" and that "the park shall be administered on a low-intensity, limited-entry basis." This legislation constrains the types of recreation that are appropriate in the park. The park contains many sensitive resources, including archeological resources; highly erodible soils; and endemic, threatened, and endangered plants. With off-road travel being very easy in the open vegetation of Santa Rosa Island, there is the potential for appreciable impacts on these resources from biking.

Dinghy Docks. This action called for the establishment of dinghy docks to facilitate landings by private boaters within the park. These docks were considered as part of the alternatives but were dismissed due to the maintenance and operation of dinghy docks in open ocean conditions.

Horse Use on Santa Rosa Island. During the preparation of this *General Management Plan* a commercial services feasibility analysis was prepared. During this analysis it was determined that the potential for operating a commercial horse operation on Santa Rosa Island was infeasible due to a lack of demand, a lack of economic feasibility, and the remoteness of the facility. Therefore, horse use was not carried through any alternative.

TABLE 16. ISLAND USE LIMITS (DAY USE AND OVERNIGHT)

	Alternative 1 (No Action)		Alternative 2		Alternative 3 (Preferred Alternative)	
Island	**Day Use**	**Overnight Use**	**Day Use**	**Overnight Use**	**Day Use**	**Overnight Use**
ANACAPA ISLAND						
East Anacapa[1]	No more than 100 visitors at one time by concession boat plus private boaters (including campers)	30 campers per night	No more than 100 visitors at one time by concession boat plus private boaters (including campers)	16 campers per night	No more than 100 visitors at one time by concession boat plus private boaters (including campers)	30 campers per night
Middle Anacapa[1]	No use limits have been set; however, small groups must be under NPS escort	No use permitted	Same as alternative 1	No use permitted	Same as alternative 1	No use permitted
West Anacapa[1]	Frenchy's Cove — 75 day visitors at one time; more than 30 must be supervised in a NPS-led or NPS-approved group	No use permitted	Same as alternative 1	No use permitted	Same as alternative 1	No use permitted
SANTA CRUZ						
East Santa Cruz Island, including Scorpion Harbor and Smugglers Cove[2]	200 day visitors per day; no limit on private boaters (does not include campers)	240 campers per night at Scorpion Harbor; no camping permitted elsewhere	No more than 200 day visitors per day time at East Santa Cruz (does not include campers)	No more than 240 campers at Scorpion Harbor and 16 to 20 campers at Smugglers Cove per night pending development of a parkwide backcountry management plan	No more than 250 day visitors at one time at Scorpion Harbor (does not include campers)	No more than 240 campers per night at Scorpion Harbor, and 16 to 20 campers at Smugglers Cove pending development of a parkwide backcountry management plan
Prisoners Harbor and Rancho Del Norte	No more than 100 day park visitors at one time	No camping permitted except for 16 campers in the vicinity of Rancho del Norte by permit only	No more than 100 day park visitors at one time (including students at the education/ volunteers camp; does not include campers)	No camping permitted except for 16 campers in the vicinity of Rancho del Norte by permit only	No more than 100 day park visitors at one time (including students at the education/ volunteers camp; does not include campers)	24 campers per night in the Prisoners Harbor area, and 16 campers in the vicinity of Rancho Del Norte by permit only

	Alternative 1 (No Action)		Alternative 2		Alternative 3 (Preferred Alternative)	
Island	Day Use	Overnight Use	Day Use	Overnight Use	Day Use	Overnight Use
SANTA ROSA[3]						
Island wide (including Bechers Bay)	100 people per day (including campers) with a potential of up to 500 people per day[3]	75 campers at Bechers Bay	No more than 500 visitors per day (including campers and academic classes; individual researchers are not included)	Up to 110 campers per night plus up to 40 ranch guests at Bechers Bay; overnight use limits for backcountry camping along island beaches and at campsites, could be established in a parkwide backcountry management plan	No more than 500 visitors per day (including campers and academic classes; individual researchers are not included)	125 campers per night plus up to 40 ranch guests at Bechers Bay; up to 30 campers at Johnsons Lee; overnight use limits for backcountry camping along beaches and at campsites, could be established in a parkwide backcountry management plan
SAN MIGUEL[4]						
Ranch Complex	75 visitors per day (does not include campers)	30 campers per night	75 visitors per day (would not include campers)	30 campers per night	75 visitors per day (would not include campers)	30 campers per night
Western Part of Island	Use limited to ranger-guided hikes only	No use	Use limited to ranger-guided hikes only	NPS or commercial guided multiday trips (not to exceed four days) and 10 individuals at one time)	Use limited to ranger-guided hikes only	Guided multiday trips (not to exceed four days) and 10 individuals at one time)
SANTA BARBARA[1]						
	100 visitors per day (not including campers)	30 campers per night	100 visitors per day (not including campers)	30 campers per night	100 visitors per day (not including campers)	30 campers per night

1 *Source*: 1980 *General Management Plan / Environmental Impact Statement.*
2 *Source*: 1984 *Draft General Management Plan Supplement / Environmental Assessment.*
3 *Source*: 1995 *Development Concept Plan / Environmental Impact Statement, Santa Rosa Island* states that the outer limit is 500 per day with a realistic estimate of 100 per day in the summer. The *Superintendent's Compendium* states 100 per day (May 10, 2004).
4 The 1984 *Draft General Management Plan Supplement / Environmental Assessment* originally set an experimental user capacity at the San Miguel ranch complex of 15 campers at one time, under NPS supervision. However, in 1991 the overnight user capacity was increased to nine campsites and a maximum of 30 campers.

TABLE 17. SUMMARY OF ALTERNATIVES

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
CONCEPT	This alternative provides a baseline for evaluating changes in the other alternatives. There would be no major change in the management direction of the islands. All facilities and resource programs would continue as they are.	Under this alternative ecosystem preservation, restoration, and the preservation of large expanses in relatively pristine resource conditions would be emphasized. Resource stewardship including ecosystem preservation and restoration, and preservation of natural landscapes, cultural landscapes, archeological resources, and historic structures would continue to be emphasized. Under this alternative there would be minor changes to recreational activities. Increased wilderness and dispersed visitor use opportunities would be provided on Santa Rosa Island.	As in all of the alternatives, alternative 3 is intended to emphasize resource stewardship, including ecosystem preservation and restoration, and preservation of natural landscapes, cultural landscapes, archeological resources, and historic structures. Alternative 3 would place more attention than the other alternatives on expanding education and recreational opportunities and accommodations to provide diverse visitor experiences on the islands. Visitors would have more opportunities to see and experience the islands.
PARKWIDE			
Visitor Access			
Air Transportation	Public air transportation for day use visitors and campers would continue to be available year-round only to Santa Rosa Island (Bechers Bay) via a park concessioner.	Same as alternative 1.	Same as alternative 1 plus on a trial basis, a limited number of concession-operated fixed-wing aircraft would be permitted to use the existing San Miguel Island airstrip at the ranch complex.
On-Island Vehicle Transportation	NPS staff would continue to provide limited ground transportation to Torrey Pines and Lobo Canyon for visitors on Santa Rosa Island. No public vehicular transportation would be provided on any of the islands.	Limited ground transportation would be permitted on Santa Rosa Island via a concessioner. No public vehicular transportation would be provided on the other islands.	Same as alternative 2 except fewer roads would be open to concessioner vehicles on Santa Rosa Island.
Visitor Uses and Facilities			
Visitor Uses	Opportunities for hiking, overnight camping, swimming, snorkeling, diving, kayaking, and scenery and wildlife viewing, and other activities would continue to be available on each of the islands.	Same as alternative 1.	Same as alternative 1.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Visitor Facilities — Frontcountry Camping and Lodging	No new facilities would be provided. Frontcountry camping would continue to be available year-round within established campgrounds on all five park islands. Camping conditions would continue to be primitive. There would be no changes in campground capacities.	Same as alternative 1, except overnight use levels at East Anacapa would be reduced, and overnight use levels at Santa Rosa Island (Bechers Bay) would be increased with the addition of a concession-run lodge.	Same as alternative 1, except overnight use levels at Santa Cruz Island (Scorpion Valley and Prisoners Harbor) would be increased through the expansion and addition of new campsites, and overnight use levels at Santa Rosa Island would be increased through the addition of a campground and concession-run lodge at Bechers Bay and a small campground at Johnsons Lee.
Wilderness Proposal			
Wilderness Proposal	None of the park would be proposed for wilderness designation.	66,576 acres (approximately 53% of the land portion of the park) would be proposed for wilderness designation.	66,576 acres (approximately 53% of the land portion of the park) would be proposed for wilderness designation. Lands on Santa Cruz and Santa Rosa Islands would be proposed as potential wilderness.
MAINLAND			
Visitor Center (Ventura)	The visitor center in Ventura Harbor would remain the primary location for interpretation, orientation, dissemination of parkwide information, and the hub for visitor services/activities.	Same as alternative 1, except the existing visitor center would be expanded.	Same as alternative 1, except the existing visitor / education center would be expanded.
Park Operations	Park headquarters operations and leased auxiliary office buildings would remain in the Ventura Harbor area with no proposed changes.	The Park Service would continue to lease office space within the harbor and would seek to acquire or lease property in the harbor to consolidate office space. If and when this happens, all office space would be moved from the current park headquarters to the new space.	The original headquarters / visitor center would be modified to meet all administrative and operational office space requirements. The Park Service would work with harbor management to consolidate all maintenance / industry uses within a common footprint.
ANACAPA ISLAND			
Wilderness Proposal			
	No wilderness proposed.	All of West and Middle Anacapa would be proposed for wilderness designation (620 acres).	Same as alternative 2.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Visitor Uses, Access, Facilities and Services			
East Anacapa	The lighthouse would continue to be closed to the public. The 30-person campground would continue to be available for use.	The lighthouse would be opened with accompanying exhibits to the public. The campground would be reduced in size to support up to 16 visitors per night.	Same as alternative 2. Same as alternative 1.
Park Operations, Roads, and Administrative Facilities			
	No new facilities would be provided.	A new housing unit would be constructed in the Anacapa Island Light Station Historic District on the site of the previous light station residence.	Same as alternative 2.
		SANTA CRUZ ISLAND	
Natural and Cultural Resources			
Scorpion Valley – Floodplain and Wetlands	No changes to management of the area. No action taken to remove sediment from the flood channel.	The floodplains at the mouth of Scorpion Creek would be managed to restore natural conditions, to the extent possible, while ensuring access to and from the pier and protecting cultural resources. Sediment in the flood channel would be periodically excavated to protect the historic district and visitor facilities.	Same as alternative 2. Same as alternative 2.
Wilderness Proposal			
	No wilderness proposed.	The entire isthmus (NPS lands), excluding the developed areas and roads, would be proposed for wilderness designation (14,476 acres).	The entire isthmus (NPS lands), excluding the developed areas and roads, would be proposed for potential wilderness designation (14,476 acres).
Visitor Uses, Access, Facilities, and Services			
Commercial Services and Facilities – Kayaking and Snorkeling	No new commercial services provided.	The Park Service would seek to manage kayaking and snorkeling at Scorpion through an on-island concessions contract. If a concession operation was approved, a moveable support facility (e.g., storage facility), compatible with the cultural landscape, would be built in the ranch.	Same as alternative 2. Same as alternative 2.
Visitor Access – Piers and Docks	Boaters would continue to use the piers at Scorpion Valley and Prisoners Harbor for loading and unloading passengers only.	Same as alternative 1.	Same as alternative 1.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Scorpion Valley – Camping and Other Visitor Facilities	The existing campground would continue to be maintained with a capacity of 240 campers per night.	The existing campground would continue to be maintained but the campground would be reconfigured to accommodate both individual and group sites. To ensure visitor safety camping would be limited in the winter to 10 campsites that are out of flood danger.	Same as alternative 2.
	No new visitor facilities proposed.	A new barn structure would be built at the current corral location for interpretive exhibits and programs.	Same as alternative 2 except a presentation area would be sited between the upper and lower campgrounds to accommodate evening programs and serve as a meeting place for guided activities.
Prisoners Harbor – Visitor Facilities	No visitor facilities provided. (Part of the existing historic warehouse would continue to be used for storage of supplies and equipment.)	Part of the historic warehouse building would be rehabilitated to serve as a visitor contact station with exhibits. Additional restrooms would be added near the historic warehouse.	Same as alternative 2.
Camping	No campsites provided.	No campsites provided.	A small primitive campground would be provided to the east of Prisoners Harbor on NPS lands.
Park Operations, Roads, and Administrative Facilities			
Scorpion Valley Administrative Facilities	The six temporary housing units would remain.	The six temporary housing structures would be removed and replaced with permanent structures at the current location. Office space would be provided for resource and interpretation staff in a new facility in the area.	Same as alternative 2.
	Maintenance would continue at the current Scorpion Valley temporary housing site.	Maintenance operations would be moved from the housing area to near the corral. A structure would be constructed to provide bays for a variety of functions.	Same as alternative 2.
	No new facilities would be built.	The historic bunkhouse would be rehabilitated to support park and concession operations.	Same as alternative 2.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Prisoners Harbor	No facilities would be provided for housing. Maintenance would continue at various locations.	The Park Service would work with TNC to determine if housing can be co-located on TNC land. If this is not possible, new administrative facilities for housing, operations, and maintenance would be built in the area (e.g., outside the drainage floodplain). Housing would be provided for at least two year-round employees and two seasonal personnel. An education/volunteers camp would be built if possible in the Prisoners Harbor area; otherwise, it would be located in the Scorpion Valley area.	Same as alternative 2. The Park Service would also work with TNC to identify appropriate land for use as an education/volunteers camp.
Rancho Del Norte	The housing unit would continue to be maintained but would not be improved.	The housing unit would be retained.	The historic residence would continue as part of the NPS housing inventory or be available for use by a nonprofit group through a lease, cooperative agreement, or concession contract.
SANTA ROSA ISLAND			
Wilderness Proposal			
	No wilderness proposed.	The entire island, except for the Bechers Bay and Johnsons Lee areas and several road corridors, would be proposed for wilderness designation (50,802 acres).	The entire island, except for the Bechers Bay and Johnsons Lee areas and several road corridors, would be proposed for potential wilderness designation (50,802 acres).
Visitor Uses, Access, and Facilities			
Ground Vehicle Transportation for Visitors	Limited ground transportation on the island would continue to be provided by NPS vehicles.	A commercial operator would be permitted to use passenger vehicles to transport visitors to various day use areas and help disperse visitors and prevent crowding in the historic ranch area. Commercial vehicle operations would be confined to the roads that lead from Bechers Bay to the base of Torrey Pines, to Lobo Canyon trailhead, and to Johnsons Lee. An island transportation hub and operations center would be established in the Bechers Bay area to accommodate vehicle parking, concession housing, storage and administration, and NPS operations.	Same as alternative 2. In addition, an initial limit would be established of no more than 10 shuttle trips per day. Same as alternative 2.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Lodging (Bechers Bay)	No lodging opportunities exist.	A commercial operator(s) would provide lodging and food service at the Bechers Bay ranch complex. Economy lodging/hostel opportunities would be provided through the adaptive use of the historic ranch structures. Lodging would be limited up to about 40 visitors. The historic ranch structures would be rehabilitated (where possible), and some new facilities may be constructed as long as they were compatible with the historic district. Concession support, including employee housing, would be incorporated within the existing ranch complex.	Same as alternative 2.
Other Visitor Facilities	No new facilities would be provided. The 75-person campground at Water Canyon would continue to be maintained.	A visitor contact station with exhibits would be established through the adaptive reuse of one or more of the historic structures in the Bechers Bay ranch complex and/or construction of a new building. All replacement structures must be compatible with the historic district. The Water Canyon campground would be reduced to a 50-person group campground. In addition, a new 60-person campground, including group sites, would be provided on the Bechers Bay marine terrace (within the ranch complex). Day use facility provided at Johnsons Lee.	Additional activities/functions would be accommodated in the Bechers Bay ranch complex facilities, including interpretive exhibits. A small visitor contact facility would be built near the pier. The Water Canyon campground would be reduced to a 50-person campground, and a new 75-person campground, including group sites, would be developed on the marine terrace within the Bechers Bay ranch complex. A small primitive campground and day use facility would be established at Johnsons Lee.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Park Operations, Roads, and Administrative Facilities			
Roads (Administrative and Visitor Transportation)	Roads on the island would continue to be removed and the landscape restored on a case-by-case basis. (Currently the island has 139 miles of roads.)	Road segments that have unacceptable impacts on resources and/or that are not determined to be essential to performing park operations or facilitating visitor access by conversion to hiking trails, would be removed and the landscape restored. Of the 139 miles of road, 72 miles would continue to be maintained, including ~16 miles for visitor transportation.	Same as alternative 2 except 72 miles of roads would continue to be maintained, of which ~16 miles would be used for visitor transportation.
Employee Housing and Other Facilities	Two 2-bedroom duplexes and two 1-bedroom duplexes would remain on the island. No other new facilities would be developed.	Same as alternative 1, plus two 8-person bunkhouses would be built in the same location to accommodate seasonal and transient staff and visiting scientists. A ranger station and concession operations support facility would be accommodated in the ranch complex. A backcountry ranger station would be provided at Johnsons Lee.	Same as alternative 2. Same as alternative 2. Same as alternative 2.
Field Station	No facility provided.	A field station to support research and education would be developed within the historic district at Bechers Bay. The facility would include accommodations for visiting researchers and classes, and could be associated with the lodge/hostel facilities.	A field station to support education and research would be established in the Bechers Bay area at one of three possible locations: Water Canyon, north of the ranch, or within the historic ranch area.
		SAN MIGUEL ISLAND	
Wilderness Proposal			
	No wilderness proposed.	Same as alternative 1.	Same as alternative 1.
Visitor Uses, Access, and Facilities			
Visitor Access to the Island	Visitors would continue to only use boats to access the island, coming ashore at Cuyler Harbor. No aircraft access by visitors would be permitted.	Same as alternative 1.	Boat access would continue. In addition, on a trial basis, a commercial operator would provide limited fixed-winged aircraft access.

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Commercial Services – Wildlife Viewing Opportunity	No opportunities provided.	Permit guided multiday trips (not to exceed four days) by a limited number of visitors (not to exceed 10 individuals) to see pinnipeds at Point Bennett. Guided trips would be self-contained and employ minimum impact practices. A temporary camp would be designated at the island's western end, near the dry lake bed, for guided groups going to Point Bennett. Minimal facilities to protect resources would be provided (e.g., toilet, food storage, and tent pads to better define the area).	Same as alternative 2.
Camping and Other Facilities	No new facilities would be provided. The existing 30-person campground would continue to be maintained. No other camping would be permitted on the island.	The parkwide backcountry management plan would examine other facilities on the island. The existing 30-person campground would continue to be maintained, Except for the temporary camp for guided groups, no other camping would be permitted on the island (not to exceed a total of 30 campers on the island).	Same as alternative 2. Same as alternative 2.
SANTA BARBARA ISLAND			
Wilderness Proposal			
	No wilderness proposed.	The entire island, except for the dock, ranger station, and campground, would be proposed for wilderness designation (639 acres).	Same as alternative 2.
Visitor and Administrative Facilities			
Visitor and Administrative Facilities	No change to facilities. The visitor contact station/housing structure and campground would continue to be maintained.	Same as alternative 1.	Same as alternative 1.

TABLE 18. SUMMARY OF THE WILDERNESS STUDY

Lands Eligible for Wilderness Designation:

Anacapa Island:	620 acres
Santa Cruz Island:	14,476 acres
Santa Rosa Island:	50,802acres
Santa Barbara Island:	639 acres
Islets and Rocks:	39 acres
TOTAL:	66,576 acres

	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Wilderness Proposal	0 acres	Anacapa Island: 620 acres Santa Cruz Island: 14,476 acres Santa Rosa Island: 50,802 acres Santa Barbara Island: 639 acres Islets and Rocks: 39 acres TOTAL: 66,576 acres	Anacapa Island: 620 acres Santa Cruz Island:14,476 acres* Santa Rosa Island:50,802 acres* Santa Barbara Island: 639 acres Islets and Rocks: 39 acres TOTAL: 66,576 acres

*These lands would be proposed as potential wilderness.

TABLE 19. SUMMARY OF KEY IMPACTS

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Soils	Under alternative 1 soil erosion would result in some localized long-term minor to moderate adverse impacts due to visitor use. Alternative 1 would have a parkwide long-term minor adverse impact on soils. There would be the potential for a long-term moderate to major beneficial cumulative impact when the effects of alternative 1 are added to present and future actions including revegetation and soil control efforts (although alternative 1 would add a small negative increment to this impact).	Most of the park's soils would not be affected by alternative 2. Soil impacts would largely be limited to Santa Cruz and Santa Rosa Islands, and the alternative would have both beneficial and adverse impacts. No impacts due to changes in visitor uses under alternative 2 would result in greater than a negligible impact when considered from a parkwide perspective. Although alternative 2 would result in long-term minor adverse impacts to approximately 15 acres of soils (primarily due to the construction of new facilities in localized areas), when compared to alternative 1, alternative 2 would result in a long-term moderate beneficial impact, primarily due to the removal of roads and consequent decrease in erosion on Santa Rosa and Santa Cruz Islands.	Same as alternative 2, except alternative 3 would result in long-term minor adverse impacts to approximately 21 acres of soils.
Paleontological Resources	Alternative 1 could have a long-term minor adverse impact on the park's paleontological resources from expected slight increases in use in the backcountry in the future. No cumulative impacts to park resources or values would occur due to human activities.	Alternative 2 could have long-term minor adverse impacts on the park's paleontological resources due to increased backcountry use and possible illegal collecting of fossils. No cumulative impacts would occur.	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Water Quality	Continuing visitor use would likely result in a negligible adverse impact to freshwater quality on the islands in alternative 1. There would be a continuing long-term minor adverse impact on marine water quality due to boat discharges in park waters and the disposal of human waste on Santa Rosa Island beaches, with possible localized long-term minor to moderate adverse impacts. There would be a long-term minor to moderate cumulative impact on the park's freshwater quality when the negligible adverse impacts of visitor use in alternative 1 are added to continuing ecosystem restoration efforts. There would be a long-term minor to moderate beneficial cumulative impact on water quality when the effects of alternative 1 are added to ongoing erosion-control efforts (although alternative 1 would add a small negative increment to this impact). A long-term minor to moderate adverse cumulative impact on the park's marine water quality in local areas would occur when nonpark water pollution sources are added to the minor adverse impacts of discharges from more visitor boats in alternative 1 (although the increment contributed by alternative 1 would be very small).	Freshwater quality on most of the islands would not be affected by alternative 2. Overall alternative 2 would result in a long-term minor to moderate beneficial impact on freshwater quality, primarily due to the closure and rehabilitation of roads on Santa Rosa Island, and localized long-term minor adverse impacts on marine water quality primarily due to discharges from visitors' boats. There could also be a long-term minor to moderate beneficial cumulative impact on freshwater quality in local areas and a long-term minor to moderate adverse cumulative impact on the park's marine water quality in local areas (although the increment contributed by alternative 2 would be small).	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Floodplain Values and Flooding at Scorpion Valley on Santa Cruz Island	Alternative 1 would have a negligible long-term impact on the Scorpion Valley floodplain and flooding. However, there would continue to be a potential long-term moderate impact on human life and/or property due to possible flooding. No cumulative impacts would occur.	Alternative 2 would have a long-term moderate beneficial impact on natural floodplain values in the Scorpion Valley due to restoration of the small estuarine wetland at the mouth of the creek, and also long-term moderate adverse impacts due to the periodic removal of sediment from the Scorpion drainage. Actions in the Prisoners Harbor floodplain would not affect floodplain values. From a flood risk standpoint, the actions at Scorpion Valley would have a long-term minor to moderate beneficial impact on reducing flood risks, reducing the risk to human life and property in these areas (although there would continue to be a risk of damage or loss of structures from a future flood in the Scorpion area). No cumulative impacts would occur.	Same as alternative 2.
Wetlands (Scorpion Valley)	Alternative 1 would have no effect on the Scorpion Valley and Prisoners Harbor wetlands. No cumulative impacts would occur.	Alternative 2 would have a long-term moderate beneficial impact on the wetland at the mouth of Scorpion Valley due to the floodplain restoration activities that would take place. There also would be a long-term negligible to minor adverse impact on riverine wetlands in Scorpion Valley due to periodic dredging operations. No cumulative impacts would occur.	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Terrestrial Plant Communities and Vegetation	Alternative 1 would have a long-term minor adverse impact on the park's vegetation, although localized long-term moderate adverse impacts could occur primarily due to the continuing spread of nonnative species like the stone pine and pepper trees on Santa Cruz Island, the potential for additional introductions of nonnative plants by people, and an expected slight increase in backcountry visitation levels. The adverse effects of alternative 1 plus the effects of other actions occurring independent of the alternative would likely result in a long-term moderate to major beneficial cumulative impact (although alternative 1 would add a very small adverse increment to both of these overall cumulative impacts).	Most of the park's vegetation would not be directly affected. Alternative 2 would result in localized long-term negligible to minor adverse impacts to vegetation on the islands due to increases in backcountry use and new administrative and visitor facilities. About 1.5 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands. Alternative 2 would have a long-term moderate beneficial impact, primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands, the restoration of the Scorpion estuarine wetland, the replacement of the eucalyptus trees with native trees in the Scorpion campground, management of the Smugglers olive grove, and additional controls of invasive nonnative plants that contribute to cultural landscapes on Santa Cruz Island. There also would be a moderate beneficial cumulative impact on vegetation when actions in the alternative are added to other actions that would occur independently of the plan (although alternative 2 would add a small increment to this overall cumulative impact).	Most of the park's vegetation would not be directly affected. Alternative 3 would result in localized long-term minor adverse impacts on Santa Rosa and Santa Cruz Islands, primarily due to the clearing of vegetation for new administrative and visitor facilities and an increase in backcountry use. About 2 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands. Alternative 3 would have a long-term moderate beneficial impact primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands, and additional actions taken to control the spread of invasive nonnative species on Santa Cruz Island. There also would be a moderate beneficial cumulative impact on vegetation when the actions in the alternative are added to other actions that would occur independently of the plan (although alternative 3 would add a small adverse increment to this overall cumulative impact).

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Terrestrial and Marine Wildlife	Negligible to minor adverse impacts would be expected to most of the park's wildlife populations as a result of alternative 1, assuming that use levels do not substantially increase in backcountry areas. There would be a potential for localized minor to moderate adverse impacts on marine and terrestrial wildlife populations on Santa Rosa and Santa Cruz Islands primarily due to increased use by boaters on beaches. When the effects of alternative 1 are added to the effects of ecosystem restoration efforts in the park, there could be a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife populations (although alternative 1 would add a minor negative increment to this impact). There could also be a long-term beneficial cumulative impact on seabirds and pinnipeds of unknown magnitude when the effects of the non-NPS actions in park waters, such as the marine protected areas, are added to the effects of visitor use under alternative 1 (although alternative 1 would add a very minor negative increment to this overall beneficial cumulative impact).	Most wildlife populations would not be affected by alternative 2. There would be some localized short- and long-term negligible to minor adverse impacts to wildlife habitat due to construction of new small visitor and administrative developments and long-term negligible to minor adverse impacts due to increased visitors in backcountry areas on Santa Rosa and Santa Cruz Islands. Alternative 2 also would have a long-term minor beneficial impact due to increased monitoring and research and closure of roads on Santa Rosa and Santa Cruz Islands. When combined with continuing restoration efforts, alternative 2 could have a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife (although the alternative would add a minor beneficial increment to these impacts). There could also be a long-term beneficial cumulative impact on the park's seabirds and pinnipeds of unknown magnitude when the effects of non-NPS actions in park waters, such as the marine protected areas, are added to the beneficial and adverse effects of alternative 2 (although alternative 2 would add very minor beneficial and negative increments to these overall beneficial cumulative impacts).	Most wildlife populations would not be affected by alternative 3. There would be long-term negligible to minor adverse impacts on wildlife habitat due to construction of new small visitor and administrative developments, and long-term negligible to minor adverse impacts due to increased visitors in backcountry areas on Santa Rosa and Santa Cruz Islands. Alternative 3 also would result in localized long-term minor beneficial impacts due to the closure of roads and other restoration actions and increased monitoring and research. When combined with continuing restoration efforts, alternative 3 could have a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife (although the alternative would add a small beneficial increment to these impacts). There could also be a long-term beneficial cumulative impact on the park's seabirds and pinnipeds of unknown magnitude when the effects of non-NPS actions in park waters, such as the marine protected areas, are added to the beneficial and adverse effects of alternative 3.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Threatened and Endangered Species	No new developments or substantial changes in visitor use or island management would occur under alternative 1 that would affect the threatened and endangered plant and animal species being analyzed. Expected slight increases in visitor use levels on the islands under the alternative may affect, but would not likely adversely affect, the island fox, snowy plover, Hoffmann's slender-flowered gilia, Santa Cruz Island chicory, island rush-rose, island barberry, and Hoffmann's rock-cress populations. Likewise, actions in alternative 1 may affect, but would not likely adversely affect, the Santa Rosa Island manzanita. No measurable cumulative impacts would be expected as a result of the alternative on most of the species. However, there could be a long-term moderate beneficial cumulative impact on western snowy plovers when the effects of actions independent of this plan are added to alternative 1 (although alternative 1 would only slightly detract from these beneficial impacts).	No new developments or changes in visitor use or island management would occur under alternative 2 that would adversely affect the eight threatened and endangered animal and plant species being analyzed. Expected visitor use levels on the islands under alternative 2 would likely result in a negligible to minor adverse effect, which may affect, but would not likely adversely affect, the island fox, snowy plover, Santa Cruz Island chicory, island rush-rose, Santa Rosa manzanita, Hoffmann's rock-cress, or island barberry populations. There could be a long-term minor beneficial impact to the Hoffmann's slender-flowered gilia. Alternative 2 would result in no cumulative impacts to the listed plant species, and there would be the potential for the same long-term minor beneficial cumulative impacts to the snowy plover and island fox as alternative 1.	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Soundscape	In most of the park, alternative 1 would have no effect on the soundscape. In localized areas, particularly at popular entry points and attractions on the islands, there would continue to be a long-term moderate adverse noise impact due to concentrations of visitors, boats, and park operations. A long-term minor adverse cumulative impact would occur when the noises resulting from this alternative are added to other noise sources, such as high flying aircraft and ships offshore of the islands, with localized long-term minor to moderate cumulative adverse impacts on Santa Rosa and Santa Cruz Islands.	In most of the park, alternative 2 would have no effect on the natural soundscape. In localized areas, particularly at entry points to the islands, there would continue to be a long-term minor to moderate adverse noise impact due to concentrations of visitors, boats, and park operations. From a parkwide perspective, visitor use, new developments, and management actions in alternative 2 would result in a long-term minor adverse impact. However, changes in natural sound ambient conditions from construction and use of new visitor and administrative facilities in several developed areas, including parts of Bechers Bay, Prisoners Harbor, and Johnsons Lee, would result in a short- and long-term minor to moderate adverse impact to the soundscape. When the effects of alternative 2 are added to other actions occurring independently of the alternative, there would also be the potential for localized long-term minor to moderate cumulative adverse impacts on the park's natural soundscape.	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Archeological (including Submerged Maritime) Resources	Archeological investigations would be undertaken before development to ensure that such resources were understood and that they would not be damaged or lost as a result of NPS actions. However, there would be continuing long-term or permanent minor adverse impacts on an unknown number of archeological resources in the park under this alternative as a result of human activities and natural causes. The Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on archeological resources.	Under alternative 2 adverse impacts due to the loss or destruction of archeological resources in the park would be minimized as a result of more controlled visitor access, more emphasis on preservation treatment and site monitoring, and increased public education for resource stewardship. Thus, alternative 2 would result in minor to moderate adverse impacts on a discrete number of archeological resources, with long-term minor beneficial impacts on archeological resources due the protection afforded by wilderness designation. The Park Service concludes the proposed undertakings outlined in alternative 2 would have *no adverse effect*, as defined by section 106.	Increasing numbers of island visitors, development of new facilities for visitor use, and provision for an expanded diversity of visitor experiences and opportunities in alternative 3 would be expected to result in some long-term to permanent minor to moderate adverse impacts on an unknown number of archeological resources because of inadvertent and intentional ground disturbance. Wilderness designation in alternative 3 would result in long-term minor beneficial impacts on archeological resources. The Park Service concludes the proposed undertakings outlined in alternative 3 would have *no adverse effect*, as defined by section 106.
Ethnographic Resources	Alternative 1 would generally have long-term minor beneficial impacts on ethnographic resources in the park because the Park Service would continue ongoing consultation and coordination with Chumash groups and individuals to address matters of mutual concern on the Channel Islands and to allow access to and/or accommodate traditional practices and beliefs. The Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on ethnographic resources.	Under alternative 2, a slight increase in the number of visitors and an expanded diversity of visitor experiences on the islands could be expected to have some long-term negligible to minor adverse impacts on ethnographic resources. Wilderness designation and research on groups with traditional associations would have long-term minor beneficial impacts. The Park Service concludes the proposed undertakings outlined in alternative 2 would be a *no adverse effect* on ethnographic resources.	Alternative 3 would have slightly greater adverse impacts on ethnographic resources as those listed under alternative 2. Increasing numbers of visitors and an expanded diversity of visitor experiences on the islands under alternative 3 could be expected to have some long-term negligible to minor adverse impacts on ethnographic resources. Wilderness designation and research on groups with traditional associations would have long-term minor beneficial impacts. The Park Service concludes the proposed undertakings outlined in alternative 3 would be a *no adverse effect* on ethnographic resources.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Historic Structures/ Buildings	Alternative 1 would generally have long-term minor beneficial impacts on historic structures and buildings in the park because they would continue to be surveyed and evaluated for their eligibility for listing in the national register, and listed or determined eligible structures would be managed to preserve their documented values. The Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on historic structures and buildings.	Alternative 2 would generally have greater impacts on historic structures and buildings than those listed under alternative 1. An increase in visitor use levels and preservation treatments would result in long-term minor to moderate impacts on historic structures and buildings, while survey and research would have a long-term minor beneficial impact. The section 106 determination would be a *no adverse effect*.	Alternative 3 would have greater impacts on historic structures and buildings than alternative 1. An increase in visitation levels and rehabilitation of historic structures and buildings on Santa Rosa and Santa Cruz Islands would have long-term minor to moderate adverse impacts on historic structures and buildings. The section 106 determination would be *no adverse effect*.
Cultural Landscapes	Alternative 1 would generally have long-term minor to moderate adverse impacts on cultural landscapes due to the potential for historic vegetation removal. Overall, the known cultural landscapes would be preserved in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. The Park Service concludes the proposed undertakings outlined in alternative 1 would have minor to moderate adverse impacts on cultural landscapes. The section 106 determination would be *no adverse effect*.	Alternative 2 would have greater impacts on cultural landscapes than alternative 1 due to more actions involving cultural landscape features. Potential removal and replacement of approximately one-fifth of the historic olive grove at Smuggler's Cove and removal of contributing eucalyptus trees would result in a long-term moderate adverse impact due to mitigating actions. The Park Service concludes the proposed undertakings outlined in alternative 2 would have minor to moderate adverse impacts on cultural landscapes. The section 106 determination would be *no adverse effect*.	Same as alternative 2.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Visitor Experience, Interpretation, and Education	Under alternative 1, no change would occur with respect to visitor experience, education, and interpretation opportunities in the park as a whole. Recreational opportunities would remain unchanged on the islands and would continue to be a long-term minor to moderate beneficial impact on visitor use and enjoyment of the park. The variety of experiences available on the islands, coupled with interpretive and educational media and programs on the mainland, would enable visitors to understand and appreciate park resources and elements of the primary interpretive themes. On-island visitors would continue to find limited interpretive and educational media and programs, and limited personal interpretive services to help them better understand aspects of the park stories. With use levels to the mainland visitor center expected to increase, crowding could detract from the visitor experience, resulting in a long-term minor to moderate adverse impact on visitor use. There would be no cumulative impacts on recreational opportunities.	Visitor experiences, including recreational opportunities as well as interpretation and educational opportunities, would increase in much of the park under alternative 2. Alternative 2 would have a long-term moderate beneficial impact on opportunities for visitor experiences, largely due to the increase in recreational opportunities on Santa Cruz and Santa Rosa Islands that would allow visitors a greater diversity of experiences on the islands. The expansion of the visitor center in Ventura, the new research/education field station on Santa Rosa Island, and the guided multiday trips on San Miguel Island would all contribute to this impact. On-island interpretation would also increase with new visitor contact stations (in adaptively used structures) on Santa Cruz and Santa Rosa Islands, resulting in long-term minor to moderate beneficial impacts on visitor experience opportunities. On the other hand, with more people visiting Santa Rosa Island, there could be long-term minor to moderate adverse impacts on the visitor experience at Bechers Bay due to perceived crowding. There could be a long-term minor to moderate beneficial cumulative impact on recreational opportunities on Santa Rosa Island when the additional recreational opportunities available under alternative 2 are combined with the reductions in recreational opportunities due to restoration and other administrative activities.	The diversity of visitor experiences, including recreational opportunities, as well as interpretation and educational opportunities, would increase in much of the park under alternative 3. Alternative 3 would have a long-term moderate beneficial impact on visitor experience opportunities, largely due to the increase in recreational opportunities on Santa Cruz and Santa Rosa Islands that would allow visitors a greater diversity of experiences on the islands. The expanded visitor center in Ventura, the new education/volunteers camp on Santa Crux Island, new campgrounds on Santa Rosa Island, the new campgrounds on Santa Cruz and Santa Rosa Islands, and the guided multiday trips on San Miguel Island would all contribute to this impact. On-island interpretation would also increase with new visitor contact stations on Santa Cruz and Santa Rosa Islands, resulting in long-term minor to moderate beneficial impacts on visitor experience opportunities. On the other hand, with more people visiting Santa Rosa Island, there could be long-term minor to moderate adverse impacts on the visitor experience at Bechers Bay due to perceived crowding. There could be a long-term minor to moderate beneficial cumulative impact on recreational opportunities on Santa Rosa Island when the additional recreational opportunities available under alternative 3 are combined with the reductions in recreational opportunities due to restoration and other administrative activities.

Impact Topic	Alternative 1 (No Action)	Alternative 2	Alternative 3 (Preferred Alternative)
Wilderness Character	With use levels likely to slightly increase in the future, and no new developments, alternative 1 would have a long-term negligible to minor adverse impact on the wilderness character of the lands eligible for wilderness. Alternative 1 would result in no cumulative impacts on wilderness character.	Alternative 2 would have a long-term major beneficial impact on wilderness character primarily due to the designation of much of the park as wilderness and the closure/restoration of roads on Santa Rosa and Santa Cruz Islands. When other NPS management actions independent of the plan, such as revegetation efforts, are added to the effects of alternative 2, there would be the potential for a long-term major beneficial cumulative impact.	Same as alternative 2.
Park Operations	Alternative 1 would continue to result in a long-term moderate adverse impact on NPS operations at the park, primarily due to inadequate funding and staffing in a large, spread-out marine and terrestrial park. When the effects of the alternative 1 are combined with other ongoing and likely future projects, there would be the potential for a long-term moderate adverse cumulative impact on park operations. Alternative 1 would contribute a substantial amount to this overall adverse cumulative impact.	Alternative 2 would have both beneficial and adverse impacts on park operations. Adverse effects would be due to changes in facilities and new management actions, including concession management, new interpretive efforts, and increased monitoring of the park. Assuming careful phasing of new developments and management actions, alternative 2 would be expected to have a long-term minor to moderate beneficial impact. This would be primarily due to increased staff and funding, new staff/administrative facilities, and reductions in some facilities (e.g., roads on Santa Rosa Island). When the effects of alternative 2 are combined with other ongoing and likely future projects, there would be the potential for a long-term moderate adverse cumulative impact on park operations. Alternative 2 would slightly reduce the overall adverse cumulative impact.	Same as alternative 2.

Channel Islands National Park

Chapter 3: Affected Environment

INTRODUCTION

This chapter describes the existing environment of Channel Islands National Park. The focus of this part is on key park resources, uses, and facilities that have the potential to be affected by the alternatives should they be implemented. Some features, such as threatened and endangered species, are discussed because they provide context and/or must be considered in environmental impact statements.

This section is not a complete description of the park's terrestrial and marine environments. Rather, it provides an overview of resource conditions and trends that may be affected by the alternatives. For additional information on the Channel Islands' natural and human environment, see the Channel Islands National Park home page (http://www.nps.gov/chis) and natural resource information web page (http://www.nps.gov/chis/rm/Index.htm). Other sources of information include:

Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary. Final Environmental Document (CDF&G 2002).

Santa Cruz Island Primary Restoration Plan. Final Environmental Impact Statement (NPS 2002a).

Anacapa Island Restoration Project. Final Environmental Impact Statement (NPS 2000).

"Recovery Strategy for Island Foxes (*Urocyon littoralis*) on the Northern Channel Islands" (NPS 2003a).

"Thirteen Plant Taxa from the Northern Channel Islands Recovery Plan" (USFWS 2000).

Proceedings of the 7th Annual California Islands Symposium, Oxnard, California. February 5-8, 2008. Edited by C.C. Damiani and D.K. Garcelon. Institute for Wildlife Studies. Arcata, CA. CD-ROM. 414 pp.

"Natural Resources Study of the Channel Islands National Monument, California" (Santa Barbara Natural History Museum 1979).

Channel Islands National Park. Southwest Parks and Monuments Association, Tucson, AZ (Lamb 2000).

Draft Historic Resource Study by D.S. Livingston (NPS 2006a).

To focus the environmental impact analysis, and to ensure that the alternatives were evaluated against relevant topics, the planning team selected specific impact topics for further analysis and eliminated others from evaluation. The impact topics, listed below, were based on public and other agency concerns identified during scooping; federal laws, regulations, and orders; and NPS *Management Policies 2006* (NPS 2006b). Table 20 contains a brief rationale for selecting or dismissing each impact topic.

TABLE 20. IMPACT TOPICS RETAINED OR DISMISSED

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
NATURAL RESOURCE IMPACT TOPICS			
Soils	Retained	The Organic Act and NPS *Management Policies 2006* (NPS 2006b) both require the Park Service to protect and conserve geologic resources, including soils that could be affected by visitors and staff. The park's soils are a critical element that help determine what vegetation and wildlife occur in the park, and affect the park's productivity, drainage patterns, and erosion. Soils generally take thousands of years to develop. Proposed developments, the presence of nonnative animals, and changes to the road systems in the alternatives would affect the park's soils. Any impacts that would adversely affect these resources would be of concern to park managers and the public.	Organic Act; NPS *Management Policies 2006*
Paleontological Resources	Retained	Paleontological resources are another geologic resource that the Organic Act and NPS *Management Policies 2006* mandate be protected. The Channel Islands' paleontological record is one of the resources that contributes to the park's distinctiveness. Some of the actions in the alternatives could increase the potential for impacts to paleontological resources. Any changes to this resource caused by visitors or new facilities would affect the park's scientific values – one of the park's purposes – and would be of concern to scientists, park managers, and the public.	NPS *Management Policies 2006*
Water Quality	Retained	Changes in marine and fresh water quality can affect wildlife populations and visitors. Past activities in the park (e.g., grazing) have polluted stream waters. The road networks on Santa Rosa and Santa Cruz Islands have caused soil erosion and contributed to water quality degradation. The alternatives could result in increased development and increased use, as well as increased soil erosion, all of which could affect freshwater and marine water quality in local areas. This would be of concern to visitors and park managers.	Clean Water Act; National Marine Sanctuary Act; 15 CFR §922.72; EO 12088; NPS *Management Policies 2006*
Wetlands (Scorpion Valley and Prisoners Harbor)	Retained	The larger islands in Channel Islands National Park have small wetlands along permanent and intermittent streams, and in the vicinity of seeps and springs, vernal pools, and small marshes at the estuaries of several canyons. Most of these wetlands would not be affected by the alternatives being considered in this document and thus are not examined here (see below). However, one wetland area on Santa Cruz Island would be affected under some alternatives. Wetlands are protected and managed in accordance with EO 11990, "Protection of Wetlands" and NPS DO-77-1 and accompanying handbook. This guidance requires the Park Service to protect and enhance natural wetland values, and requires the examination of impacts on wetlands.	Clean Water Act; National Marine Sanctuary Act; 15 CFR §922.72; NPS *Management Policies 2006;* EO 11990; DO-77-1: *Wetland Protection*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Floodplain Values and Flooding in Scorpion Valley and Cañada del Puerto	Retained	Existing developments at Prisoners Harbor and in Scorpion Valley are on level ground in otherwise steep terrain, and are in or adjacent to floodplains. Although the alternatives being considered do not propose new developments in floodplains, several existing facilities would remain in floodplains. Floods (debris flows) in the past have damaged structures and posed safety risks to visitors in Scorpion Valley, and likely would do so again. The alternatives in this plan propose actions that would affect the management and use of these floodplains. EO 11988 and DO-77-2 require the examination of the impacts on floodplains.	DO-77-2: *Floodplain Management;* EO 11988; NPS *Management Policies 2006*
Terrestrial Vegetation	Retained	One of Channel Islands' primary natural resources is its vegetative communities. The park supports some of the finest examples of California's coastal ecosystems as well as many endemic and rare plants. The Organic Act and NPS *Management Policies 2006* (NPS 2006b) both require the Park Service to protect and conserve native plants and vegetative communities that could be affected by visitors, managers, and external sources. Actions in the alternatives could beneficially or adversely affect these resources, which would be of concern to many people as well as park managers. The spread of nonnative species also is a major concern in the park: some species have replaced thousands of acres of native grasslands and shrublands.	NPS Organic Act; NPS *Management Policies 2006*
Terrestrial Wildlife	Retained	Channel Islands National Park supports a highly diverse terrestrial wildlife population including seabirds, shorebirds, reptiles, and amphibians. Many subspecies are endemic to the islands. The park's wildlife populations are an important park resource and one of the attractions that adds to the quality of the visitor experience in the park. As with the above resources, the Organic Act and NPS *Management Policies 2006* (NPS 2006b) both require the Park Service to protect and conserve native wildlife populations that could be affected by visitors, managers, and external sources. Changes in wildlife habitat or in wildlife populations due to the alternatives would be of concern to visitors, the public, and park managers.	NPS Organic Act; enabling legislation; NPS *Management Policies 2006*
Pinnipeds (Seals and Sea Lions)	Retained	One of the purposes of the park is to protect the pinnipeds that breed and pup on the islands. The park's pinnipeds are one of the park's major attractions. Five species of pinnipeds are found in the park, which are protected under the Marine Mammal Protection Act. (Another species, the Steller sea lion, probably occurs only in small numbers, if at all, in the park.) The islands provide many areas where the seals and sea lions haul out. Point Bennett on San Miguel Island is world renowned for its high numbers of animals. Other important pinniped haul-out areas are on Santa Rosa, Santa Cruz, and Santa Barbara Islands. Visitors to the islands could impact pinniped populations by causing animals in haul-out areas to flush into the sea or abandon these key sites.	NPS Organic Act; Marine Mammal Protection Act; National Marine Sanctuary Act; 15 CFR §922.72; NPS *Management Policies 2006;* enabling legislation;

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Selected Federal and State Threatened and Endangered Species	Retained	The ESA of 1973, as amended, requires an examination of impacts on all federally listed threatened or endangered plant and animal species. NPS *Management Policies 2006* repeat this requirement and add the further stipulation that the analysis examine impacts on state-listed endangered, threatened, or rare species, and federal species proposed for listing. Channel Islands National Park supports 30 federally listed threatened and endangered species (see appendix D, eight of these species are also state-listed threatened and endangered species). Most of these species would not be affected by the alternatives being considered in this document and thus are not examined in detail (see below). However, two federally threatened and endangered wildlife species (western snowy plover, and island fox) and six federally threatened and endangered plant species (Hoffmann's slender-flowered gilia, Santa Cruz Island chicory, island rush-rose, Hoffmann's rock-cress, Santa Rosa Island manzanita, and island barberry) potentially could be affected by the GMP alternatives and thus are considered herein.	ESA; National Marine Sanctuary Act; 15 CFR §922.72; NPS *Management Policies 2006*
Soundscape	Retained	NPS *Management Policies 2006* and DO-47: *Soundscape Preservation and Noise Management* recognize that natural soundscapes are a park resource and call for the Park Service to preserve, to the greatest extent possible, the natural soundscapes of parks. The policies and director's order further state that the Park Service would restore degraded soundscapes to the natural condition whenever possible, and would protect natural soundscapes from degradation due to noise (undesirable human-caused sound). The Channel Islands' natural soundscape (sometimes called "natural quiet") is one of the resources that makes this park a special place. Noise can adversely affect, directly and indirectly, the natural soundscape and other park resources. It can also adversely impact the visitor experience. Presently, park visitors have the opportunity to experience solitude and tranquility in an environment of natural sounds. Actions in the alternatives that could potentially increase noise levels in parts of the islands, such as increased aircraft overflights and landings, would be of concern to some visitors, the public, and park managers.	NPS *Management Policies 2006;* DO-47: *Soundscape Preservation and Noise Management*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Air Quality	Dismissed	Channel Islands is a Class II air quality area. Air quality impacts have occurred in the park due primarily to external sources, and are a concern. Normally, sea breezes push air pollutants from the mainland away and keep air pollutants at low levels on the Channel Islands. However, strong east winds, referred to locally as "Santa Anas," can carry pollutants several hundred miles offshore and have the potential to greatly affect air quality on the islands. Shipping tankers passing by the islands emit some air pollutants. Other atmospheric patterns, such as "Catalina eddies" and eastern Pacific high pressure systems, also can introduce air pollutants from the Los Angeles basin onto the islands. Nothing being proposed in the alternatives for this plan would affect the park's air quality compared to all sources of air pollutants in southern California – all of the actions proposed in the alternatives would have a negligible impact on the airshed.	Clean Air Act; NPS *Management Policies 2006*
Carbon Footprint	Dismissed	For the purpose of this planning effort, "carbon footprint" is defined as the sum of all emissions of carbon dioxide and other greenhouse gases (e.g., methane and ozone) that would result from implementation of either of the action alternatives. Understanding the carbon footprint of each alternative is important for determining its contribution to climate change. This impact topic was dismissed from detailed analysis for several reasons. First, operation of the park generates very low levels of greenhouse gases. In 2007, greenhouse gas emissions associated with the park totaled an estimated 1,297 metric tons of carbon dioxide equivalent — roughly equivalent to the emissions from the electricity use of 118 households each year (NPS 2011) Other reasons for dismissing this impact topic are that (1) the alternatives would not be expected to result in a substantial increase in island visitation since the user capacity limits would not change; (2) few changes would occur in the way visitors reach the islands, and no substantial increases in vehicular traffic on the islands is proposed under the alternatives; and (3) there would be minimal new developments built on the islands, and newer sustainable building practices should help limit additional greenhouse gas emissions. Under the action alternatives there would be a minor increase in greenhouse gases compared to the present due to some increases in boat, motor vehicle, and aircraft traffic and due to construction activities in the park (although this would be a negligible amount of greenhouse gases compared to the greenhouse gases emitted along the southern California coast). However, the National Park Service would still be able to meet its goal of a 10% reduction in total 2007 park greenhouse gas emissions, including concessioners, by 2016 even with the increases in greenhouse gas emissions in the alternatives In addition, it should be noted that similar increases in emissions in the action alternatives also could occur under the no action alternative — visitors traveling to the park could increase with or without NPS action. Under all	NPS Environmental Quality Division's "Draft Interim Guidance: Considering Climate Change in NEPA Analysis"

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
		alternatives the National Park Service would continue to encourage energy efficiency in its operations and in concession operations (e.g., using low emission biodiesel fuels to power boats and motor vehicles) to minimize the emission of greenhouse gases. Because of the small increases in the amount of greenhouse gas emissions that would result from each alternative, a quantitative measurement of their carbon footprint was determined by the planning team not to be practicable.	
Prime and Unique Agricultural Lands	Dismissed	There are no data on prime and unique farmlands in Channel Islands National Park. However, it is believed that there are very little, if any, prime or unique farmlands in the park because of the steep terrain found throughout the park. If such lands do occur, they are probably limited to valley bottoms with slopes of less than 2%. The Natural Resource Conservation Service, U.S. Department of Agriculture, has recently completed a soil survey for the park (2007). The Park Service would work with the Natural Resource Conservation Service to determine if prime and unique agricultural lands occur in areas that are proposed for development in this plan. If such soils would be affected by developments, the Park Service would relocate the developments to avoid or minimize the loss of these soils.	CEQ 1980 memorandum
Water Quantity	Dismissed	**Water Quantity (including groundwater)**. Surface freshwater is scarce in the Channel Islands. Most streams in the park flow intermittently. Most water used in park facilities is obtained from groundwater or transported from the mainland to the park. None of the alternatives being considered would be expected to substantially change either surface or ground water flows in the park, or affect the park's water supply. Visitor use levels would slightly increase under the action alternatives, but water consumption would not be expected to increase to the point where there would be a noticeable impact on surface or groundwater water flows.	Clean Water Act; EO 12088; NPS *Management Policies 2006*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Wetlands (other than Scorpion Valley)	Dismissed	Santa Cruz, Santa Rosa, and San Miguel Islands all support wetlands. These wetlands consist primarily of river drainages (riverine wetlands) and estuarine/intertidal/emergent wetlands near the interface between island drainages and the ocean. Additionally, vernal pools and man-made ponds occur on Santa Rosa, San Miguel, and Santa Cruz Islands. All wetlands in national park units are protected and managed in accordance with EO 11990, "Protection of Wetlands," NPS DO-77-1 and its accompanying handbook, and NPS *Management Policies 2006* (§ 4.6.5). This guidance requires the Park Service to protect and enhance natural wetland values, and requires the examination of impacts on wetlands. It is NPS policy to avoid affecting wetlands and to minimize impacts when they are unavoidable. Under all of the alternatives in this plan, facilities proposed for development would be sited to avoid wetlands. With the exception of Scorpion Valley, no developments or other management actions in the alternatives would be proposed in areas known to contain wetlands. Areas that may have wetlands would be mapped and delineated before construction of developments to ensure that these areas are avoided.	EO 11990, "Protection of Wetlands"; NPS DO-77-1 and accompanying handbook; and NPS *Management Policies 2006*
Floodplain Values and Flooding (other than Scorpion Valley)	Dismissed	Floodplains exist on Santa Cruz, Santa Rosa, and San Miguel Islands where there are perennial and intermittent streams. Floodplains in national park units are protected and managed in accordance with EO 11988, "Floodplain Management"; NPS DO-77-2: *Floodplain Management;* and NPS *Management Policies* (§ 4.6.4). This guidance requires the Park Service to protect, preserve, and restore floodplain values; and requires the examination of impacts on floodplains. It is NPS policy to avoid affecting floodplains and to minimize impacts when they are unavoidable. Under all of the alternatives in this plan, new developments would be sited to avoid impacts to floodplains. With the exception of Scorpion Valley on Santa Cruz Island, no new major developments would be proposed in floodplains in the alternatives. Although new restrooms would be built near the warehouse in the floodplain at Prisoners Harbor, this would have a minor adverse impact on floodplain values.	EO 11988, "Floodplain Management"; NPS DO-77-2: *Floodplain Management*; and NPS *Management Policies 2006*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Intertidal and Marine Nearshore Vegetation	Dismissed	The Channel Islands support a diverse flora of benthic macroalgae and seagrass, as well as beds of giant kelp, surfgrass, and eelgrass. These marine plants provide food and shelter for many plant and animal species. Kelp beds have been disappearing in parts of the Channel Islands over the past two decades, due at least in part to overgrazing by sea urchins. However, none of the actions being proposed in the alternatives in this plan would have measurable impacts on the park's marine nearshore vegetation. Although recreational/educational marine uses (e.g., diving, snorkeling, kayaking) may increase under some of the alternatives, these uses would not result in the loss of nearshore marine vegetation. Although there may be increased administrative vessel use with increased visitation in the alternatives, NPS boats have holding tanks for wastewater and primarily use NPS-maintained moorings at the regular landing areas to minimize disturbance to the sea floor whenever possible — any impacts on nearshore and subshore resources would be expected to be negligible in a few localized areas. No actions are being proposed to construct facilities in the nearshore waters that would affect plants. It is also expected that with careful attention and application of appropriate mitigation measures to prevent increased runoff, any negative impacts from construction of facilities in the alternatives would have a negligible, localized impact on nearshore vegetation.	Organic Act; NPS *Management Policies 2006*
Marine Invertebrates	Dismissed	The waters in Channel Islands National Park support a rich diversity and abundance of marine invertebrates including corals, sponges, feather stars, anemones, mussels, scallops, several species of abalone, prawns, urchins, sea cucumber, lobster, and crabs. More than 150 species of shellfish occur in the area (NPS 1984). Some invertebrate populations have dramatically decreased in recent years, particularly white and black abalone. However, none of the alternatives in this plan would adversely affect the park's marine invertebrate populations. Marine recreational use (e.g., diving and snorkeling) may slightly increase in some alternatives, which may result in some illegal take of animals, or disturbance of animals (e.g., picking up animals in a tidepool). But with continued education/outreach efforts and vigilant monitoring, park visitors are not expected to measurably affect the park's invertebrate populations.	Organic Act; NPS *Management Policies 2006*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Marine Fish	Dismissed	An abundance of different species of marine fish use the park's waters. Some 200 species of finfish occur in the area (NPS 1984) including rockfish, halibut, sculpin, sea bass, surfperch, lingcod, sardine, mackerel, herring, tuna, and northern anchovie. Many of the park's fish are sought by sport and commercial fishermen. None of the actions proposed in the alternatives would adversely affect fish populations found in the park, including impacts to water quality that would be large enough to adversely affect fish populations. Increased sport fishing may occur with slightly increased recreational use in some areas under the alternatives, but it is expected that NPS monitoring and the California Department of Fish and Wildlife's regulation of the fisheries would prevent adverse impacts to the park's fish populations.	Organic Act, NPS *Management Policies 2006*
Essential Fish Habitat (ESF)	Dismissed	Essential fish habitat covers waters and substrates necessary for spawning, breeding, feeding, or growth to maturity. Essential fish habitat has been designated along the West Coast, including the park, for Pacific Coast groundfish (e.g., rockfish, sablefish, and flatfish). The Park Service is required to consult with the National Marine Fisheries Service regarding any action it authorizes, funds, or undertakes that may adversely affect this habitat. However, the GMP alternatives primarily focus on the terrestrial lands in the park. No changes in management actions or uses are being proposed in the alternatives that would adversely affect the groundfish essential fish habitat in the park.	Magnuson-Stevens Fishery Conservation and Management Act
Marine Mammals (excluding sea lions and seals)	Dismissed	Channel Island National Park's waters support a great diversity of marine mammals. At least 26 types of whales and porpoises can be found at times in the waters of the park (NPS 1999). Seven endangered whale species occur in park waters (see appendix D). Southern sea otters, listed as a threatened species under the ESA, currently only occur occasionally in small numbers in park waters. All of these species are protected under the Marine Mammal Protection Act of 1972, and several are provided additional protection as threatened or endangered species under the federal and state ESA. None of the alternatives being considered in this document would adversely affect the sea otter populations. It is expected that whale watching would not increase substantially over current levels under any of the alternatives. Some inadvertent disturbance of whales could occur, but continuing education/outreach efforts and close monitoring of both whales and boaters should keep adverse impacts to a negligible level.	NPS Organic Act; NPS *Management Policies 2006;* enabling legislation; Marine Mammal Protection Act

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Threatened and Endangered Species (other than snowy plover, island fox, Hoffmann's slender-flowered gilia, Santa Cruz Island chicory, island rush rose, Santa Rosa Island manzanita, Hoffmann's rock-cress, and island barberry	Dismissed	This document does not analyze in detail the environmental effects that the alternatives might have on several federal- and state-listed threatened and endangered species. No impacts have been identified on the following species as a result of implementing any of the alternatives considered in this document. However, site-specific surveys would be conducted before any ground disturbance took place to be sure they would not be affected. If any of these species are present, the park staff would reschedule, reroute, relocate, or otherwise mitigate impacts from the actions being taken.	ESA; NPS *Management Policies 2006*
Fish	Dismissed	It is possible that some federally and state endangered chinook salmon, from the Sacramento River Winter Run Evolutionarily Significant Unit, the threatened southern distinct population segment of the North American green sturgeon, and bocaccio (a fish on the National Marine Fisheries Service's candidate species list) occasionally pass through park waters. But these fish are not known to be very common. No actions are being taken in the alternatives that would directly affect the fish or the water quality of the park waters that the fish likely pass through. Increased sport fishing may occur with slightly increased recreational use in some areas under the alternatives, but it is highly unlikely that these fish would be caught, given the few fish that use the park waters. Thus, any impacts from the alternatives on the Chinook, green sturgeon, and bocaccio fish populations in the area would not likely adversely affect the populations.	
Plants	Dismissed	Fourteen federally threatened and endangered plant species occur in the park, eight of which are not being considered in detail in this environmental impact statement. The federally endangered plant species not being analyzed in this document are: Santa Barbara live-forever *(Dudleya traskiae,* also listed by the state as endangered); soft-leaved paintbrush (*Castilleja mollis*); island bedstraw (*Galium buxifolium*); Santa Cruz Island bushmallow (*Malacothamnus fasciculatus* var. *nesioticus,* also a state endangered species); island malacothrix (*Malacothrix squalida*); island phacelia (*Phacelia insularis* ssp. *insularis*); and Santa Cruz Island fringepod (*Thysanocarpus conchuliferus*). One federally threatened species, Santa Cruz Island dudleya (*Dudleya nesiotica*), also is present in the park. All of these species are endemic and occur in isolated, small populations. They are all threatened by one or more causes, including habitat alteration, trampling, and grazing/browsing by nonnative mammals; soil loss; habitat alteration by native seabirds; competition with nonnative plants; and randomly naturally occurring events (USFWS 2000). None of these species would likely be affected by the alternatives being considered in this document. The species tend to be in remote, largely inaccessible, areas	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
		away from trails, roads, and beaches used by visitors; increased use would not likely affect the future existence of these species. No new developments are being proposed in locations where the plants are known to occur, and site surveys would be done before construction to ensure that the species are not present. None of these species would be expected to be at high risk from a wildfire on the islands (Kathryn McEachern, USGS, pers. comm. February 8, 2005). Under all of the alternatives the recovery plan for these species would continue to be followed (USFWS 2000). Populations would continue to be monitored, and large-scale weed control projects and ecosystem restoration projects would be undertaken as funding and personnel permit. Efforts would continue to protect or augment existing populations, such as what has occurred for the Santa Barbara Island liveforever. In the past, plants in the only known island phacelia population on Santa Rosa were crushed and lost due to vehicles driving off a spur road on the Carrington Point Road when it was wet and muddy. However, this spur road has been closed to protect the plant. These are all actions that are independent of this plan.	
California red-legged frog (*Rana aurora draytonii*)	Dismissed	This species was introduced to Santa Cruz Island, in the vicinity of Pelican Bay, from the San Francisco Bay area in the 1930s. However, Pelican Bay is on TNC lands, not NPS lands. There are no records of the species occurring on NPS lands, and the species is not believed to be present on the island. In addition, no actions are being taken in the vicinity of Pelican Bay in the alternatives being considered that would have the potential to affect the frog. Thus, the plan would not affect the California red-legged frog.	
Invertebrates	Dismissed	The federally endangered black and white abalone once were fairly abundant in park waters, but due to overfishing are now very rare (CDF&G 2002). The entire fishery has been closed since 1993. No actions are being taken in the GMP alternatives that would affect the abalone or the waters it occurs in. (See also the above discussion of marine invertebrates.) Consequently, no impacts are anticipated.	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Scripp's Murrelet	Dismissed	All of the islands in the park provide habitat for the state threatened Scripp's murrelet (*S. scrippsi*). The species' only breeding ground in the United States is in the park. The reasons for the decline in murrelet numbers are unknown. Some factors that may have contributed to the decline of the species include predation by rats on Anacapa Island, degradation of habitat (particularly by rabbits on Santa Barbara Island), vegetation changes on the islands that have altered predator-prey relationships, and artificial lighting and noise from boating activities. (Artificial lighting decreases the cover provided by night and can expose the murrelets to increased predation.) However, no actions are being proposed in this plan that would detrimentally affect the murrelet or its habitat. Although human use on the islands may increase under the alternatives, this use would not be expected to occur in areas where the murrelets are nesting. Consequently, no adverse impacts are anticipated as a result of actions proposed in the plan.	
Sea Turtles	Dismissed	Four species of federally listed sea turtles may occasionally swim through park waters (see appendix D). However, sea turtles occur very rarely in the park and are mostly either sick animals or animals that were affected by El Niño. None of these species are known to build nests in the park. No actions are being taken in the alternatives that would directly affect the turtles. Although the water quality of nearshore marine waters could be affected in a few areas by the alternatives, it is highly unlikely that these changes would affect the waters the turtles use. Although there may be increased visitor use of marine waters in some of the alternatives, it is considered highly unlikely that visitors would encounter turtles, given the very few turtles that are found in park waters at any given time.	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Guadalupe Fur Seal	Dismissed	The Guadalupe fur seal (*Arctocephalus townsendii*) is both a federally and state-listed threatened species. These fur seals are very rarely seen around the Channel Islands, which are at the limit of the species range. A few nonbreeding individuals have been observed on San Miguel Island each year during the breeding season, and a pup was born on the island in 1997. But the park is not known to provide rookery or feeding sites that are essential to the conservation of the species. It is unlikely that the fur seals would be disturbed by visitors on San Miguel Island under the alternatives being considered. The areas the seals haul out on are isolated on the west end of the island, and very steep cliffs would keep visitors away from these areas. Aircraft landing at the east end of the island would not disturb the animals. Also, under all alternatives, entry to all pinniped haul-out areas would continue to be restricted to all but those persons conducting authorized research or for activities essential to the Park Service's mission. Only visitors in guided, supervised groups would be permitted to be in the general vicinity of the Point Bennett haul-out area in the preferred alternative. There is no reason to expect that these groups would disturb or otherwise affect the few fur seals that use the park. Thus, it is anticipated that none of the alternatives would have impacts on the Guadalupe fur seal.	
Other Marine Mammals	Dismissed	A number of federally listed marine mammal species, including whales and California sea otters, occur in park waters. None of the alternatives would affect these species. (See also the text above under the "Marine Mammal" heading.)	
Night Sky	Dismissed	NPS *Management Policies* (2001) state that the Park Service would preserve, to the greatest extent possible, the natural lightscapes of parks, including natural darkness. The Park Service strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding necessary lights when possible, and using minimal impact lighting techniques. The actions proposed in the alternatives could result in new facilities on several of the islands, some of which could necessitate some night-time lighting. However, the effects of this lighting would be localized, and minimized by the mitigation techniques described above. Only a small area would be affected by the facilities. It is expected that these few developments would have a negligible impact on the night sky.	NPS *Management Policies 2006*
Natural or Depletable Resource Requirements and Conservation Potential	Dismissed	None of the alternatives being considered would result in the extraction of resources from the park. It is possible that additional groundwater may need to be withdrawn to support some increased use in the alternatives, but only a relatively small additional amount would likely be needed, and water conservation measures would be employed to minimize this use. Under all of the alternatives, ecological principles would be applied to ensure that the park's natural resources were maintained and not impaired.	

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Energy Requirements and Conservation Potential	Dismissed	A few more facilities may be built on the islands under the alternatives. The Park Service would pursue sustainable practices whenever possible in all decisions regarding park operations, facilities management, and developments in Channel Islands National Park. Whenever possible, the Park Service would use energy conservation technologies and renewable energy sources. Thus, it is expected that none of the alternatives would result in an appreciable change in energy consumption compared to current conditions.	NPS *Management Policies 2006*; CEQ Regulations
CULTURAL RESOURCE IMPACT TOPICS			
Archeological Resources	Retained	Archeological resources are identified in the park's enabling legislation as a major reason for the park's significance. The park manages approximately 2,500 documented archeological resources, and it is estimated there are an additional 7,500 undocumented sites within the park. The park's archeological resources have national and international research value. Four of the park's islands are listed on the national register as archeological districts, and the fifth island is considered eligible for listing. In addition, the park's submerged cultural resources are considered eligible for listing on the national register.	Section 106 of the National Historic Preservation Act as amended; National Marine Sanctuary Act; 15 CFR §922.72; DO-28; *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*; NPS *Management Policies 2006*, National Environmental Policy Act
Historic Structures/ Buildings	Retained	The park contains historically significant buildings, structures, and complexes from the ranching and military eras. Many of these resources contribute to historic districts that are listed on or eligible for listing on the national register.	Section 106 of the National Historic Preservation Act as amended; DO-28; NPS *Management Policies 2006; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes;* National Environmental Policy Act
Cultural Landscapes	Retained	The park contains rural cultural landscapes, which are landscapes that evolved through use by the people whose activities and occupancy shaped that landscape, particularly in the ranching and military eras. These landscapes reflect the land use patterns and cultural traditions of the historic island occupants.	National Historic Preservation Act of 1966, as amended (16 USC 470); Advisory Council on Historic Preservation's (ACHP) implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996); NPS *Management Policies 2006*; NPS *Cultural Resources Management Guideline* (DO-28, 1996)

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Ethnographic Resources	Retained	Some anthropological sources and contemporary Chumash identify the Channel Islands as significant to the Chumash culture as their ancestral homeland. The islands themselves, as well as the archeological resources, artifacts, and burials associated with island Chumash occupation, are considered ethnographic resources. A study tracing the lineal descendants of Chumash peoples who inhabited the northern Channel Islands has identified living descendants of the island Chumash. The park likely has other groups that are traditionally associated with the islands, but have not yet been well investigated.	Section 106 of the National Historic Preservation Act, as amended; EO 13007; DO-28; NPS *Management Policies 2006;* National Environmental Policy Act
Museum Collections	Dismissed	Museum collections were not addressed as an impact topic in this plan / EIS because all of the alternatives, including the no action alternative, would address museum collection management needs and facility improvements to meet desired conditions under servicewide law and policy. Nearly all of the park's museum collections are stored in other institutions, many of which have reached their capacity for storage. The park also needs increased storage capacity for its on-site archives. These deficiencies would result in a negligible to minor adverse impact under all alternatives, including the no action alternative. Also under all alternatives, these impacts would be mitigated by the park's ongoing efforts to improve the cataloging and storage of its museum collections. Under law and policy, the park would research, document, and catalogue its collections to provide the public and park staff with optimum interpretive and resource management opportunities. Museum objects and archival materials would be conserved, protected, and preserved to NPS and professional standards. A museum management plan would be prepared and implemented according to NPS standards to guide protection, conservation, and use of objects in the park's museum collections. The park would also seek strategies to address the park's needs for more storage capacity and improved collections facilities. Inventorying and cataloging all of the national park's museum collections would be in accordance with professional standards as outlined in the *NPS Museum Handbook*. Combined, these strategies would result in a minor beneficial impact on museum collections. Please refer to Appendix B: Desired Conditions and Strategies for Channel Islands National Park: Museum Collections. Museum collections are not expected to increase at a steady rate as a result of research or investigations stemming from the actions of this plan and, therefore, would not be impacted beyond the negligible to minor range.	National Historic Preservation Act; American Religious Freedom Act; Archeo-logical and Historic Preservation Act; Archeological Resources Protection Act; Native American Graves Protection and Repatriation Act; NPS *Management Policies 2006; NPS Museum Handbook;* Department of the Interior Manual on Museum Property Management 411 DM; DO-24: *NPS Museum Collections Management*; DO-28: *Cultural Resource Management Guideline;* NPS Special Directives 80-1 and 87-3; 36 CFR 79: Curation of Federally Owned Archeological Collections; National Environmental Policy Act

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
WILDERNESS CHARACTER			
Natural, Undeveloped, Untrammeled, Opportunities for Solitude or Primitive and Unconfined Recreation, Other Features of Value	Retained	Wilderness character is important to many of the park's wildlife species and to many visitors who come, or want to come, to the park. DO-41 and NPS *Management Policies 2006* require that no actions be taken that would diminish the wilderness eligibility of an area possessing wilderness character until the legislative process of wilderness designation has been completed. Any increases in the level of development or control of the environment; or decreases in natural character, opportunities for solitude, or opportunities for primitive, unconfined recreation (which would affect lands potentially eligible for wilderness designation). The alternatives also propose lands for wilderness designation. These actions would be of concern to some visitors, managers, and the public.	The Wilderness Act; DO-41: *Wilderness Preservation*; NPS *Management Policies 2006*
VISITOR USE, INTERPRETATION, AND EDUCATION TOPICS			
Visitor Use, (Terrestrial) Interpretation, and Education	Retained	The planning team identified visitor experience as an important issue that could be appreciably affected under the alternatives. The Organic Act and NPS *Management Policies 2006* (NPS 2006b) both direct the Park Service to provide enjoyment opportunities for visitors that are uniquely suited and appropriate to the superlative resources found within the park. Three different aspects of visitation and enjoyment are evaluated: visitor experience, interpretation, and education. Terrestrial recreational opportunities include camping, hiking, and wildlife viewing. The two action alternatives could impact these opportunities. Therefore, the impacts of these actions were evaluated.	Organic Act; NPS *Management Policies 2006*
Visitor Use (Marine)	**Dismissed**	Recreational marine opportunities in the park include boating, fishing, kayaking, swimming, snorkeling, and diving. These activities are regulated by the State of California, the NOAA, and the Park Service. None of the action alternatives considered by the planning team would change how these activities are managed or visitor opportunities to participate in these activities. Therefore, impacts on marine recreation were not evaluated.	Organic Act; NPS *Management Policies 2006*
Public Health and Safety	**Dismissed**	No actions are proposed in the alternatives that would result in identifiable adverse impacts on public health or safety. Although the alternatives would increase the access opportunities into the islands, information is already available to visitors about the potential risks of traveling in these areas (e.g., bad weather). Several actions would be taken to improve visitor safety, such as replacement of the eucalyptus groves in the Scorpion campground and closure of campsites during the winter to avoid flooding. Thus, this topic was not analyzed in this plan / EIS. Because both Prince and San Miguel Islands have been closed to public access by the U.S. Navy for safety issues, it is not necessary to analyze this topic. Independent of this plan, the U.S. Navy has restricted public access until a risk assessment has been completed and approved.	NPS *Management Policies 2006*, DO-58C: *Public Risk Management Program*, and DO-83: *Public Health*

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
SOCIOECONOMIC IMPACT TOPICS			
Regional Socioeconomics	Dismissed	Channel Islands National Park affects the socioeconomics of nearby communities, including residents and businesses within the region. However, the park has a negligible impact on the economy of the Los Angeles region and on the gateway communities of Ventura and Santa Barbara. Nothing being proposed in the GMP alternatives would noticeably affect the regional socioeconomics compared to all of the socioeconomic factors independent of the park (e.g., transportation, urban development, population growth, and energy prices). All of the actions proposed in the alternatives would have a negligible impact on regional socioeconomics.	National Environmental Policy Act
Conformity with Local Land Use Plans	Dismissed	The basic land use of the park is in conformance with local land use plans, and because the proposed management zones under all of the alternatives would not change these basic uses, there are no anticipated conflicts with local land use planning. The creation of additional recreation and visitor service opportunities in the park, as proposed under certain of the alternatives, are not inconsistent with existing park land uses or local land use plans. Therefore, there is no need to analyze in detail the conformity of the alternatives with local land use plans.	CEQ regulations
OTHER TOPICS			
Environmental Justice	Dismissed	EO 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. No alternative would have health or environmental effects on minorities (including American Indian tribes) or low-income populations or communities as defined in the EPA's *Environmental Justice Guidance* (1998). Environmental Justice has been dismissed as an impact topic in this document.	EO 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"
Indian Trust Resources	Dismissed	The lands comprising Channel Islands National Park are not held in trust by the secretary of the interior for the benefit of Indians due to their status as Indians.	Secretarial Order 3175

NATURAL RESOURCES

SOILS

Published information on park soils is limited to a study by Johnson (1979), who conducted a cursory investigation of soils, geology, and erosion problems on Santa Barbara, Anacapa, and San Miguel Islands and the National Resources Conservation Service map of the park's soils as part of the NPS Soils Inventory and Monitoring Program. In general, the larger islands have more diverse soils. Soils range from fine sandy loams to clay. Some are highly erodible. Cyanobacterial soil crusts are common on all of the islands. Surveys done by Belnap (1994) indicate that cyanobacterial crusts should cover the soil surfaces in most of the vegetation types found in the Channel Islands. These crusts are important for increased soil stability, water infiltration, and fertility of soils. They are also very susceptible to surface disturbance, such as through grazing, hooved animal and human foot traffic, and off-road vehicles. The absence of crusts can lead to increased erosion and disruptions of nutrient cycles. Recovery of the soil crusts is extremely slow, taking hundreds of years to fully recover (NPS 1999).

Soils on Anacapa and Santa Barbara Islands are thin, clayey, and of low permeability (NPS 1980b). Three major soil types have been identified on Anacapa Island: soils found on moderately steep to steep recent erosional slopes (lithic xerothents); clayey soils that have shrink-swell characteristics, found on gentle to moderate slopes (typic chromoxererts); and clayey, organic matter-rich soils that also have shrink-swell characteristics, occurring on the most level portions of the islets (vertic argixerolls). The same major soil types also occur on Santa Barbara Island (Johnson 1979).

Soils on Santa Cruz Island predominately range from shallow to deep to bedrock, and are loamy to clayey in texture (argixerolls). Heavy clay soils with high shrink/swell characteristics (vertisols) also occur on the island. On the east end, vertisols develop on those portions of the Monterey formation that are chalky, being composed mostly of calcium carbonate. When occurring on slopes greater than 15%, vertisols are very prone to piping and slumping, with some occurrences of sinkholes. The majority of the Monterey shale on Santa Cruz Island is of siliceous mineralogy, and weathers into loamy soils lacking high shrink/swell characteristics. A soil of particular interest occurs under the oak groves on the isthmus. The extra moisture trapped by the oaks from the foggy conditions has caused those soils to develop a highly leached layer of soil overlying a less permeable clay layer (alfic argixerolls). The soils immediately outside the drip line of the oaks do not have the leached layer. (There is also a small area of the same soil on Santa Rosa Island on the southeastern flank of Black Mountain.) (Daniel Johnson, Natural Resource Conservation Service, pers. comm. September 26, 2002).

Santa Rosa Island soils tend to be shallowest on steep slopes greater than 35% and have low organic matter content. They are moderately deep to very deep on more level landforms, such as alluvial plains and coastal terraces, with corresponding higher organic matter content. The soils generally range in texture from fine sandy loam to clay. Soils with extremely high organic content occur in the marsh on the east end of the island and may be considered histosols. Sandy soils are associated with the dunes of both the east and west ends of the island. On the far western end of Santa Rosa, a layer of caliche (a calcium carbonate hardpan) exists (NPS 1995a). This also occurs to a lesser extent on the east end. Clayey soils with high shrink/swell (vertisols) have developed from the volcanic bedrock on the south side of the main fault and on the northwestern quarter of the island where the sandstone and shale bedrock is finer grained than that of the northeastern quarter. The

high shrink-swell soils (vertisols) are predominately on slopes less than 35%, and in the concave portions of the landform.

Soils on much of San Miguel Island are sandy (the western two-thirds of the island are covered by sand dunes), very deep, and permeable. Soils were mapped as deep, old soils, with abundant iron-rich nodules (typic palexerolls); and soils underlain by caliche, commonly buried under sands (typic calcixerolls); thin, shallow soils on moderately steep to steep recent erosional slopes (lithic xerorthents); thin soils formed on very recent sand dunes (typic xeropsamments); and clayey soils that can shrink and swell (typic pelloxerets and typic chromoxerts). The palexerolls, given the general name Green Mountain soil, have been identified as one of the most unusual and interesting soils in the United States due to their thick ironstone concretions (Johnson 1979). This soil is also found extensively on Santa Rosa Island extending from Carrington Point to the base of Black Mountain.

Soil Disturbance and Erosion

Many of the soils on the Channel Islands have been disturbed and altered. Soil erosion has occurred throughout all of the islands due to a combination of factors including naturally erodible soils, erosion-prone sedimentary geologic formations, rugged topography with steep slopes, wave action, changes in vegetation, grazing by nonnative animals, road building, and cultivation practices.

All three islets of Anacapa Island were grazed primarily by sheep in the early 1900s, with grazing occurring on the Middle and West Islets up until 1937 (NPS 2000). It is believed that the soils were significantly affected during this period. The last sheep were removed from West Anacapa as late as the 1960s. Soils were also affected by vegetation stripping and excavation and leveling of much of the surface of East Anacapa for construction of Coast Guard facilities. Erosion due to human activities has subsequently been reduced, although trampling and disturbance of soil crusts by people is still likely increasing erosion in areas on East Anacapa. Expansion of gull colonies is increasing the amount of bare ground in nesting areas. Sea cliff erosion also is occurring, although not to the same degree as Santa Barbara Island. In particular, the south-facing cliffs on the eastern end of West Anacapa have been eroding.

On Santa Cruz Island heavy past livestock grazing, pig rooting, massive stripping of vegetation, and the presence of weakly cemented sedimentary formations has led to major erosion of soils in localized areas. Most of the steep slopes show large and small soil slumps that have resulted in high erosion and sedimentation in the valleys. Incised gullies are common throughout the drainages, and slope failures of all sizes are evident in many watersheds. The removal of cattle and sheep and subsequent recovery of native vegetation have helped reduce soil erosion and slope failures (Pinter and Vestal 2005). However, gully and sheet erosion are still actively occurring throughout the island, particularly in the sedimentary Monterey formations found on the island's isthmus and east end. The Scorpion watershed in particular is extremely vulnerable to erosion due to past heavy sheep grazing, pig rooting, steep landforms, and the presence of the erosion-prone Monterey geologic formation (NPS 2002a).

Soil erosion also continues to occur on Santa Rosa Island. On much of the far western end of the island the ground is so windswept that most of the soil has been removed, exposing impermeable caliche (a calcium carbonate hardpan). On many of the ridges, soil has been stripped away by water and wind, after stripping of vegetation by grazing and browsing animals. Within the canyons, particularly on the south and west portions of the island, deep gullies have developed and continue to expand. Extensive sheep and cattle grazing; and browsing and rooting of vegetation by elk, mule deer, and feral pigs all

have accelerated soil erosion on the island. Erosion is also still continuing due to the proliferation and use of unimproved roads that developed or were constructed to support past ranching activities, oil exploration, archeological excavations, and military developments.

Several areas of severe erosion on Santa Rosa Island are of particular concern. The south upper slope of Soledad Peak, the island's highest point, continues to suffer severe erosion due to past sheep grazing and browsing, cattle grazing, and browsing and trails made by nonnative deer and elk. Construction and use of a U.S. Air Force defense monitoring facility, and supporting road development, have had major impacts on the rate and magnitude of erosion in this area. Stripping vegetation and disruption of the contours of the top of the peak caused massive surface erosion, the development of gullies, and desertification of the area, threatening groves of rare endemic Island Oak. Another area of severe erosion is along the Smith Highway, which follows the northern coastal terrace of the island. The steep gradient of the road, greater than 25% in places, combined with fine-grained surface soils, resulted in sections of the road eroding deeply into the surrounding topography until the sections became impassible gully networks. New roads were then established alongside these segments. A 0.25-mile stretch of the road where this has occurred, close to the mouth of Cherry and Windmill canyons, has resulted in gullies that now cause large amounts of sediment to run into the coastal waters. The Park Service has completed rehabilitation of these sites by installing erosion-control matting and revegetating the areas. Work also was done in the 1990s to rehabilitate the area occupied by an abandoned U.S. Air Force station at Johnsons Lee. Buildings were removed, contours were reestablished, and straw mulch and erosion-control blankets were installed after seeding with a sterile wheatgrass/native shrub seed mix.

In the past, erosion was especially severe on San Miguel Island. The island's vegetation and soils were stripped and eroded by overgrazing of livestock, primarily sheep, and by various cultivation practices over time. These conditions plus drought led to severe erosion that left two-thirds of the island covered by drifting soil and sand. Topsoils were largely stripped, the periphery of the island was gullied, and large unstabilized sand dunes developed. The island chaparral community once present on the island was also extirpated. With the removal of all of the sheep in the 1960s, and removal of feral burros in the 1970s, plants have reestablished and stabilized the sandy soil surface, which has markedly reduced erosion. However, in some areas, severe gullying and erosion is still occurring (NPS 1980b).

On Santa Barbara Island, the near-vertical sea cliffs on the southwest and north sides of the island are actively eroding due to wave action, and are very unstable. Soils on the island naturally tend to have high clay contents (Halvorson et al. 1988; Fenn and Allardice 1988). A higher degree of erosion can occur on steeper slopes where surface runoff is greater. Vegetation and soils have been greatly disturbed due to past livestock grazing and browsing (sheep, goats, and pigs); farming; extensive burning and plowing; and the introduction of rabbits in the middle of the 20th century. These disturbed soils are easily compacted. Compacted soils allow for increased water runoff and limit oxygen exchange with plant roots, leading to reduced plant growth. In addition, two widespread annual crystalline iceplant species on the island have affected sodium concentration in the soils where they have grown. Increased soil sodium destroys the normal soil structure of clay particles in the affected areas, making soils highly erodible.

Although the current grassland vegetation and the ongoing expansion of native shrubs help prevent erosion, there is a 12-acre area of severe erosion (the "badlands") on one of the east terraces of Santa Barbara Island. This area

consists of bare soils networked with gullies and small patches of grass vegetation. Based on aerial photographs, the badlands developed sometime between 1943 and 1957, a period when rabbit populations on the island peaked and vegetation was especially heavily grazed. It is believed that a combination of rabbit grazing, an increase in crystalline iceplant colonization, and drought caused the badlands to develop, and they have been expanding at the rate of about 1% per year since then. Expanding gull colonies are exacerbating this problem. Studies of the site show that the topsoil is gone, leaving dense clayey subsoil that is still eroding at the rate of about 6 inches per year. The Park Service completed a project in 1995–1997, laying down erosion-control matting over about 2 acres and encouraging vegetation establishment so that soil can redevelop and native species can reestablish.

PALEONTOLOGICAL RESOURCES

The Channel Islands (particularly San Miguel, Santa Rosa, and Santa Cruz) contain numerous plant and animal fossils that illuminate the past natural history of the California coastal region. This fossil record offers the opportunity to study fauna speciation and evolution, the development of plant and animal communities and their adaptations to varying climate conditions, and the effects of human colonization on the fauna. As a result, the Channel Islands are of special interest to researchers, and a number of paleontological studies have been done on the islands.

Research indicates that the Pleistocene fauna of the Channel Islands is unique in several respects. First, it contains several extinct species including pygmy mammoth (Agenbroad et al. 1999); an owl; a flightless goose; a puffin; and a vampire bat (Guthrie 1980, 1993, 1998; Guthrie et al. 2000); and two species of giant mouse (White 1966; Wilson 1936). The park also contains the best representation of Pleistocene marine avifauna on the Pacific coast, with more than 70 species having been discovered on San Miguel Island (NPS 1999; Guthrie 1992; Guthrie et al. 2000).

The most notable animal fossils, and the best studied aspect of island paleontology, are the pygmy mammoth (*Mammuthus exilis*). Remains of this species have been known on the Channel Islands since 1856 when they were discovered by a coast and geodetic survey. In 1994 a nearly complete adult skeleton was discovered and excavated on Santa Rosa Island (Agenbroad 1998). Pygmy mammoths descended from full-sized Columbia mammoths that swam across the Santa Barbara Channel to the islands during the Pleistocene. It is believed that during that period, the northern Channel Islands were connected into one large island because of the lowered sea levels. Apparently, pygmy mammoths died off at about the end of the Pleistocene (12,000 years ago). Pygmy mammoth fossil bones have been found on more than 140 sites on San Miguel, Santa Rosa, and Santa Cruz. These are the only known remains in the world (Agenbroad 2002). On Santa Rosa, fossils are often exposed in sands, silts, and gravels of Pleistocene age anywhere on the island. Most specimens have been found in the sediments comprising the coastal terraces of the island. Due to the numerous questions about many aspects of this species' evolution and development, any fossil may potentially be of crucial importance in answering important research questions.

Another important paleontological resource is the caliche fossil forests, or rhizoconcretions, on San Miguel. Three major caliche forests are found on the island. These fossils are calcium carbonate-encrusted casts of vegetation buried by sand dunes more than 14,000 years ago. They provide evidence that the island once supported large trees and shrubs. These caliche casts are fragile and easily broken.

The Channel Islands are a continuation of the Santa Monica Mountains on the mainland, although they were never connected above sea

level, and are comprised of many of the same Tertiary marine formations. As such, they also have many of the same marine invertebrate fossils. Although there are studies on the invertebrate paleontology of these formations in the Santa Monica Mountains, research has not been done on their counterparts on the islands. There have been some studies of the Pleistocene invertebrate fauna of the islands (Valentine and Lipps 1963), but as is the case of the invertebrates from the Tertiary marine sediments, much remains to be done.

Although researchers have learned quite a bit about some of the park's fossils, such as the pygmy mammoth, paleontological resources on the Channel Islands have not been very well studied. Fossil localities containing smaller terrestrial species of Pleistocene age and invertebrate fossils embedded in the Miocene strata of the islands remain unstudied. In addition, natural and human-induced erosion probably has degraded or destroyed fossil sites; unless collected properly and promptly, bones that are exposed by erosion may be scattered and lost.

WATER QUALITY

Freshwater Quality

In general, the freshwater quality of Channel Islands National Park is relatively good, although conditions vary among the islands. Also, all of the islands tend to have a high mineral content, particularly calcium and sodium, due to the marine sediments found here.

Fresh surface water is not available on Anacapa or Santa Barbara except for a few small seeps on cliff faces or deep, narrow canyons. The surfaces of these two islands are small and relatively impermeable and, therefore, no aquifers exist. Most rainwater runs into the ocean during and immediately after storms.

Most of the drainages on Santa Cruz are intermittent, although the larger watersheds have perennial flows in normal precipitation years. There are also many freshwater seeps and springs throughout the island. Water quality data have been collected on NPS lands on Santa Cruz. In the past, livestock and pigs likely were attracted to springs and streams and probably negatively affected water quality through the addition of wastes and sediments. Sheep, pigs, and cattle have been removed from the island; however, the associated changes in conditions that have led to sedimentation above natural rates are still a concern for water quality (NPS 2002a).

Santa Rosa has 20 major watersheds, most of which have year-round springs and seeps and, therefore, pools of water for most of the year. Most of the drainages are deeply incised and are similar to large arroyo systems that are common in the southwestern United States. Greater than 99% of the water flow in Santa Rosa's streams may occur during major storms (NPS 1995b). In an average year, nine drainages have flowing water through the dry season. In addition to the drainages, scattered around the island are ephemeral ponds, both human-made stock ponds and natural vernal pools. In 1993, 1994, and 2002 the Park Service monitored water quality at a number of sites on the island. Past grazing by sheep and cattle, and by nonnative deer and elk, has substantially affected water quality. Feral and managed livestock eliminated or drastically reduced both upland and riparian vegetation, which in turn leads to increased sediment loads in streams. Total suspended sediment levels were recorded at thousands of times above baseline levels during moderate storms. In addition, animals deposit feces and urine in or near streams, resulting in high coliform levels and indicating a serious pollution problem; in 1993 and 1994 measurements in two canyons (Water and Quemanda) indicated that fecal coliform levels were six or seven times the state water quality standards for body-contact recreation (NPS 1995b). Sedimentation from improperly sited and

unmaintained roads also has affected the water quality of island streams.

In 1995, the California Central Coast Regional Water Quality Control Board (board) issued a Clean Up or Abatement Order for discharging unlawful concentrations of bacteria and sediments. The order was still in effect in 2014. The board ordered the Park Service to develop and submit a plan to abate pollution from rangeland and road management practices. It is expected that with the removal of cattle in 1998 and the removal of deer and elk in 2011, the islandwide recovery of native vegetation, the planting of native vegetation, and the efforts underway to control erosion on roads, the island's water quality conditions would improve. This expectation is supported by measured improvements in water quality and riparian habitats.

San Miguel Island has many small seeps and springs because of its porous sand blanket and a relatively large groundwater recharge area. However, most of these areas are highly mineralized and often contain high levels of sodium. There are no known major water quality problems on San Miguel. Preliminary testing of several springs done in the late 1970s indicated that the water quality appeared safe when compared with the federal Safe Drinking Water Act maximum contaminant levels for noncommunity water systems. However, the water quality of the springs fell short of EPA- and state-suggested (but not required) standards for secondary contaminant levels. Salts and total suspended solids were high in these island waters (Power 1980a; NPS 1980b). Thus, if new wells are drilled on San Miguel, there is a high potential for poor tasting, although technically safe, water. The only sizable spring of drinkable water is in a remote area of the west end of the island, far from existing NPS facilities.

Marine Water Quality

The Park Service has little data on water quality conditions for the marine waters in and surrounding the park. Generally, it is believed that water quality conditions are good, given the distance of the islands from the mainland, the volume of the ocean, and the shelves and basins near the mainland where many pollutants from the Los Angeles basin and other coastal regions settle (NPS 1980b). However, there are many potential water pollution sources that likely have affected the park's water quality in the past and may affect conditions in the future. More than a billion gallons of urban waste is discharged daily into the southern California Bight (NPS 1999). Agricultural and urban runoff from the mainland, including debris, sediments, nutrients such as fertilizers, herbicides and insecticides, toxic chemicals, heavy metals, and other industrial effluents, and potentially harmful bacteria, can easily reach the islands during storms.

Petroleum pollution can occur due to many sources, including natural oil seeps, boat groundings, oil and tar from nonpoint sources, and oil spills and leaks from the many oil production platforms in the area. The California Department of Fish and Wildlife (CDF&G Marine Resources Division 2002) noted there are a variety of pollutant discharges associated with oil and gas developments, including drill cuttings and mud, sewage, and trash; formation waters; and marine corrosion products. The discharge of polycyclic aromatic hydrocarbons (PAHs), which are persistent and can accumulate in the aquatic food chain, was of particular concern.

Past ocean dumping in the area may lead to transport of materials into park waters. Heavy metals and organochlorine pesticides due to dumping persist in ocean waters in the vicinity of the park. This resulted in reproductive failure of California brown pelicans, bald eagles, cormorants, and peregrine falcons, and caused problems for seals and sea lions (NPS 1999).

Increased island runoff of sediments due to grazing on the islands (particularly Santa Cruz,

Santa Rosa, and San Miguel) also affected offshore water quality in the past. Although livestock have been removed from the islands, no studies have been completed to determine if there has been a reduction in sediment levels offshore of the islands.

Other potentially serious water pollution sources that could affect marine water quality include discharges from ships, sewage disposal, and thermal pollution and effluents from power plants, although none of these sources are known to have affected the islands (NPS 1999).

Changes in marine water quality due to the above pollution sources can result in a variety of impacts on the park's marine ecosystem including lowered photosynthesis and oxygen levels; introduction of disease; disturbance of spawning and nursery areas; loss of food sources and habitats; chemical disturbances; interference with filter feeding and respiratory functions of marine organisms; reproductive failures (such as what happened to California brown pelicans, bald eagles, cormorants, and peregrine falcons); other physiological and behavioral changes; injuries and deaths of benthic and other marine organisms; and changes in population levels and species distributions (CDF&G Marine Resources Division 2002).

FLOODPLAINS (SCORPION VALLEY AND LOWER REACH OF CAÑADA DEL PUERTO)

Floodplains on Santa Cruz, Santa Rosa, and San Miguel Islands exist where there are perennial and intermittent streams. Some of the floodplains are quite extensive, such as along Scorpion Creek or in the lower reaches of Cañada del Puerto. But in most cases, the floodplains are fairly confined and are in the lower reaches of the streams, in low gradient coastal areas. With the exception of Scorpion Valley and Prisoners Harbor area (mouth of Cañada del Puerto) on Santa Cruz, none of the Channel Islands floodplains have been mapped.

The Scorpion Creek floodplain on Santa Cruz is of particular concern to park managers. The floodplain for this creek is the entire lower valley, from canyon wall to wall. On December 5, 1997, a large flood occurred, which transported and deposited massive amounts of sediment and damaged facilities along the creek. Based on a subsequent study, it was determined that all of the park facilities, including historic structures and the campground, are in the active stream channel or the floodplain (NPS 1998, 2003). It was noted that this is a situation in which extremely active sedimentation processes interact with streamflows to cause frequent realignments of the channel throughout the entire width of the lower valley. Former occupants of the site addressed the flood threat by lowering and enlarging a selected channel by grading. In recent years the Park Service has twice excavated a portion of the channel to restore some flow capacity to the channel following flood events. Continued use and occupancy of this site would benefit from periodic excavation of sediment from the channel. However, any excavated channel is subject to additional deposition and filling of sediment. Consequently, the facilities along Scorpion Creek would always be vulnerable to large floods. (For more information on the floodplain and flood risk, see the Statement of Findings in appendix E.)

The Cañada del Puerto floodplain in Prisoners Harbor, Santa Cruz Island, shares similar characteristics with the Scorpion Creek floodplain, although there is a far lower threat to people and NPS structures due to flooding. The floodplain for Cañada del Puerto covers much of Prisoners Harbor, and the historic warehouse is in the 100-year floodplain. Like Scorpion Valley, Cañada del Puerto is an intermittent drainage that is often dry. The creek emerges from a relatively steep canyon just upstream of the coast. The hillsides upstream of the Prisoners Harbor area are erodible and are significant source areas for

sediments. Thus, this drainage can carry a heavy sediment load. These heavy sediment loads can be deposited in flat areas in the Prisoners Harbor area and can exacerbate flooding, changing the local path of streamflows and frequencies of inundation. Near the well house (near the park boundary), levees have been constructed and channel excavation has been performed by ranchers to protect the well and other local infrastructure from floods. (For more information on the floodplain and flood risk, see the Statement of Findings in appendix E.)

WETLANDS (SCORPION VALLEY AND PRISONERS HARBOR)

Although most of the wetlands of Channel Islands National Park have not been delineated, Santa Cruz, Santa Rosa, and San Miguel Islands all have wetlands. Wetlands were delineated by NPS staff at the lower end of Scorpion Valley and at Prisoners Harbor in May 2003 (NPS 2003b). Although these areas may not appear to be wetlands, they have wetland characteristics (soil, vegetation, and hydrology) and are readily apparent on the ground and on aerial photographs. They are thus considered to be jurisdictional wetlands by the Park Service and are under the Corps of Engineers' jurisdiction.

Toward the mouth of Scorpion Creek three classes of wetlands are above the low tide limit of Scorpion Cove. All three areas are contiguous. Under the USFWS's wetlands classification system (USFWS 1979), the rocky shoreline area is classified as marine/ intertidal/rocky shore. Above the shoreline the habitat is estuarine/intertidal/ emergent. The remaining wetland area (i.e., the stream channel defined by side slopes and a channel bottom) is classified as riverine /lower perennial/rock bottom.

The marine/intertidal/rocky shore and the riverine/lower perennial/rock bottom wetlands have little or no vegetation. The riverine/lower perennial/rock bottom wetlands are scoured frequently, receive sand and gravel from upstream sources during storms, and have little or no vegetation.

The estuarine/intertidal/emergent wetland area is irregularly flooded. Common native species include saltgrass (*Distichlis spicata*), alkali weed (*Cressa truxillensis)*, Frankenia (*Frankenia salina*), sea-blite (*Suaeda taxifolia*), California saltbush (*Atriplex californica*), Coulter's saltbush (*A. coulteri*), Brewer's saltbush (*A. lentiformis*), sandy-spurry (*Spergularia macrotheca*), and *S. marina*. Nonnative plants include foxtail (*Hordeum murinum*), rabbitsfoot grass (*Polypogon monspeliensis),* yellow sweet clover *(Melilotus indica*), sicklegrass (*Parapholis incurva*), Kikuyu grass (*Pennisetum clandestinum*), Australian saltbush (*Atriplex semibaccata*), sea rocket (*Cakile maritima*), goosefoot (*Chenopodium murale*), and Boccone's sandspurry (*Spergularia bocconii)*.

The currents along the shore and intertidal exchange have created and maintain a cobble berm along the shoreline and at the base of the stream channel before it empties into the cove. The berm disrupts intertidal exchange in the wetland area — it prevents saltwater from entering the estuarine/ intertidal/emergent wetland. Streamflow collects behind the berm until it overtops the berm. On occasion (primarily in the winter) tides overtop the berm and saltwater gets trapped behind the berm. During the rest of the year the wetland area surface water evaporates and the source hydrology becomes primarily ground water. The trapped saltwater and the long, dry summers create habitat conditions that support a unique assemblage of plants and animals. A common plant species in this area, which is rare elsewhere on the island and in California, is alkali weed (*Cressa truxillensis*). This community lives around two small channels that were formed primarily by intertidal flows.

Some of the estuarine/intertidal/emergent areas, and the uplands surrounding the wetland, have upland native plants including

California sagebrush (*Artemesia californica*), island buckwheat (*Eriogonum grande* ssp. *grande*), Santa Cruz Island buckwheat (*Eriogonum arborescens*), and toyon (*Heteromeles arbutifolia*). Nonnative plants encountered include foxtail, wild oats (*Avena* spp.), Kikuyu grass, smilo grass (*Piptatherum miliaceum*), black mustard (*Brassica nigra*), fennel (*Foeniculum vulgare*), and milk thistle (*Silybum marinum*).

As noted above, the condition of the Scorpion mouth wetlands is affected by the tides and the duration of tidal flooding. However, deposits of spoils from grading of the stream channel also substantially raised soil levels throughout the area and buried wetland soils. Since sheep were removed from the island, vegetative cover has begun to increase dramatically. Because of this, infiltration of precipitation can be expected to increase, and storm flow amplitudes would be buffered. The frequency and duration of wetland inundation and depth of standing water might also be expected to gradually increase. Even in the short period since sheep were removed, the duration of flooding and the depth of standing water have increased dramatically (NPS 2002a). Also, if the population of nonnative bluegum trees in lower Scorpion Valley is reduced, further rises in the water table can be expected.

The wetlands at the mouth of Scorpion Creek have been affected by various human activities. The lower end of the Scorpion Creek riverine wetland channel, including part of the estuarine wetland, has been dramatically altered by dredging over the past 100 years. In addition, field investigations and a cursory review of historic photographs and documents suggest that about 75% of the lower floodplain riparian and wetland areas have been graded and/or filled to create pasture (NPS 2003b).

In the Prisoners Harbor area three classes of wetlands are above the low tide limit. All three areas are contiguous. The rocky shoreline area is classified as marine/intertidal/rocky shore. Above the shoreline the habitat is palustrine/emergent/persistent, palustrine/scrub-shrub/broad-leaved deciduous, and palustrine/forested/broad-leaved deciduous. The remaining wetland area (i.e., the stream channel defined by side slopes and a channel bottom) is classified as riverine/lower perennial/rock bottom.

The marine/intertidal/rocky shore and the riverine/lower perennial/rock bottom wetlands have little or no vegetation. The riverine/lower perennial/rock bottom wetlands are scoured frequently and receive sand and gravel from upstream sources during storms. The riverine/lower perennial/rock bottom wetlands also have little or no vegetation.

The different types of palustrine wetlands are dominated by willow (*Salix* spp.), bulrush (*Scirpus californicus*), and cattail (*Typha domingensis*). Associated native species include sticky baccharis (*Baccharis douglasii*), saltgrass (*Distichlis spicata*), arroyo willow (*Salix lasiolepsis*), mulefat (*B. salicifolia*), arrowweed (*Pluchea odorata*), and water parsnip (*Berula erecta*). Nonnative plants include Kikuyu grass, yerba mansa (*Anemopsis california*), brass buttons (*Cotula coronopifolia*), weedy cudweed (*Gnaphalium luteo-album*), loosestrife (*Lythrum hyssopifolium*), English plantain (*Plantago major*), *P. lanceolata*, and curly dock (*Rumex crispus*). Upstream of this wetland are extensive stands of nonnative eucalyptus (*Eucalyptus* spp.) and acacia (*Acacia melanoxylon, Albizia lophanta*). If these nonnative tree stands are reduced, the water table can be expected to gradually rise, and streamflow would continue throughout most of the year, providing more water to this wetland.

The Prisoners wetland complex has been dramatically altered by filling and dredging during the past 100 years. About 60% of the original wetland area has been filled or dredged. The presettlement wetland area probably extended over the entire floodplain

west of the existing stream channel and northeast of the dock access road (about 4 acres). In recent years a new wetland has been created (about 3 acres) and the new interpretive corrals have been relocated.

TERRESTRIAL VEGETATIVE COMMUNITIES AND FLORA

Channel Islands National Park supports a diverse terrestrial flora, including many rare, relict, and endemic species, as well as many nonnative species (see below). Numerous plants are rare on the islands but have a wider distribution on the mainland. On the other hand, due to environmental conditions and isolation from the mainland, many of the plants that are native on the California mainland do not grow in the park. About 790 plant taxa, including species, subspecies, varieties, and forms, have been identified in the park, of which about 578 are native and 205 are nonnative. Seven additional species occur on the island that have some uncertainty as to whether they are native. Table 21 lists the number of vascular plant taxa, both native and nonnative, that were identified on the five Channel Islands by Junak et al. (1995) and Junak et al. (1997). (A few additional plants have been added to the park's plant species list since then.)

TABLE 21. NUMBER OF VASCULAR PLANT TAXA ON THE CHANNEL ISLANDS

	Native (Nonendemic)[2]	Native (Endemic)[2]	Nonnative[2]	Total Taxa[3]
Anacapa	188 (71%)	22 (8%)	72 (26%)	263
Santa Cruz[1]	480 (73%)	42 (6%)	170 (26%)	657
Santa Rosa	393 (77%)	39 (8%)	115 (23%)	511
San Miguel	201 (72%)	12 (4%)	75 (27%)	279
Santa Barbara	84 (67%)	13 (10%)	38 (30%)	126

Source: Adapted from S. Junak, S. Chaney, R. Philbrick, and R. Clark. 1997. "A Checklist of Vascular Plants of Channel Islands National Park, 1997."

[1] Taxa numbers are for the entire island, including both NPS and TNC lands.

[2] The numbers in parentheses are percentages for native, endemic, and nonnative plants based on the total number of species for each island. The percentages for native and nonnative species do not add up to 100% because for some species there are questions concerning their origin. Endemic refers to plant taxa that grow only in Channel Islands National Park and the greater Channel Islands.

[3] The number of native (nonendemic), native, and nonnative taxa do not add up to the totals shown for the islands because there are several additional taxa (not listed in the table) where there is uncertainty as to whether they are native. Three of these taxa occur on Anacapa, seven occur on Santa Cruz, three occur on Santa Rosa, and four occur on Santa Barbara.

Each island supports a unique assemblage of vegetative communities, which differ due to climate, microhabitats, topography, geology, soils, plant colonization history, isolation, and land use history. Many of the islands' native vegetative communities have been greatly altered by people and the introduction of nonnative species, and are in various stages of recovery (see below). The major vegetative community types on the islands include coastal dune, coastal bluff, coastal sage scrub, grasslands, chaparral, island oak woodlands, mixed hardwood woodlands, pine stands, and riparian areas. Currently, the most extensive vegetation communities on the islands are grassland and coastal sage scrub with significant areas of chaparral on Santa Cruz Island, and to a lesser degree, on Santa Rosa Island. Various phases of coastal bluff scrub constitute the next largest category. Mixed broadleaf woodland stands, oak woodlands, and pine stands are scattered throughout the island on sheltered slopes and canyons, or on ridges exposed to frequent moist fogs. Smaller but no less significant vegetation communities include coastal dune, baccharis scrub, caliche scrub, and wetlands.

Anacapa Island

About 190 species of native plants have been documented on Anacapa. The differences in topography and exposure have resulted in a more varied assemblage of plant communities than would be expected for the size of this island. Grasslands, shrub communities, and woodlands of limited distribution are found on Anacapa. Middle and West Anacapa support more native species than East Anacapa because they have more topographic variation and have not been extensively developed, as was East Anacapa. These two islets are rich in native perennial bunchgrasses and have extensive stands of coreopsis scrub, where giant coreopsis (*Coreopsis gigantea*) and island liveforever (*Dudleya caespitosa*) grow. Many consider the large stands of bright-flowering giant coreopsis one of the park's outstanding vegetation features. Deep, moist canyons on north-facing slopes of West Anacapa contain small oak woodlands and stands of island chaparral. All three islets have sea cliff scrub on their northern slopes and coastal sage scrub or cactus scrub on their southern slopes. These communities are well developed on West Anacapa, moderately developed on Middle Anacapa, and marginally developed on East Anacapa.

Mixed annual and perennial grasslands are well distributed on East Anacapa and Middle Anacapa, but are patchier on West Anacapa. Large areas of East Anacapa are also covered by nonnative perennial iceplant, primarily red-flowered iceplant (*Malephora crocea*). Iceplant is currently very limited in extent on the other two islets. Although East Anacapa has been considerably altered, the rate and extent of the natural recovery of disturbed areas has been remarkable. The islet's inaccessible bluffs still support undisturbed communities.

East End of Santa Cruz Island

Only the vegetative communities on NPS lands, the eastern quarter of the island, are discussed. About 480 native vascular plant species are known to grow on Santa Cruz, many of which are on NPS lands. Large portions of the east end of Santa Cruz are currently grassland dominated, with remnant areas of coastal bluff scrub; chaparral; coastal sage scrub; coyote-brush scrub; woodlands; and wetlands (riparian, coastal marshes and estuaries, and vernal pools discussed earlier). Grasslands grow mostly on the coastal terraces and broad plateaus at the east end and extend up the broader ridges into the steep rocky slopes to the west. The more prevalent nonnative annual grasses include rip-gut brome (*Bromus diandrus*), soft-chess (*B. hordeacous*), red brome (*B. madritensis* ssp. *rubens*), wild oats (*Avena fatua*, *A. barbata*), ryegrass (*Lolium multiflorum*), and foxtail barley (*Hordeum murinum*). Perennial native grasses such as purple needlegrass (*Nassella pulchra*) and California barley (*Hordeum brachyantherum* ssp. *californicum*) are becoming more extensive as natural recovery from sheep grazing. Also scattered throughout the grasslands are solitary shrubs such as lemonade berry (*Rhus integrifolia*), manzanita (*Arctostaphylos* spp.), and island wild lilac (*Ceanothus* spp.); seedlings of these shrubs are increasing rapidly. It is believed that with the absence of grazing, these native shrubs would continue to expand and change what is now annual grassland back to native shrub communities, such as coastal sage scrub and island chaparral (NPS 2002a).

Another widespread vegetation community found at elevations below 500 feet on moderate slopes and flats is coyote-brush scrub. It intergrades with coastal sage scrub on rocky slopes. This shrubland primarily grows on deep, unstable soils that are continually disturbed by natural forces. Many species found in the community are weedy nonnatives, particularly annual grasses and fennel (*Foeniculum vulgare*). Some areas of annual grassland/Baccharis scrub, such as those in the Rancho Del Norte area on the isthmus, are dominated by tall stands of fennel, particularly on intrinsically unstable clay soils that cover much of the area.

Coastal sage scrub grows on dry, rocky slopes throughout the island, but particularly on south-facing slopes. It intergrades with grasslands on gentle slopes with deeper soils, and with island chaparral on rocky north-facing slopes. Much of this community has been altered by browsing and grazing, and it is currently dominated by nonnative annual grasses. However, some intact areas are on the slopes east of Valley Anchorage on the isthmus. In these areas, nearly impenetrable 3- to 4-foot-tall thickets of shrubs grow. The dominant species in this community include California sagebrush (*Artemisia californica*), island paintbrush (*Castilleja lanata* ssp. h*ololeuca*), Santa Cruz Island buckwheat (*Eriogonum arborescens*), California brittlebush (*Encelia californica*), sawtooth goldenbush (*Hazardia squarrosa*), coastal pricklypear (*Opuntia littoralis*), lemonade berry, and black sage (*Salvia mellifera*). Coastal sage shrub has recovered significantly since the removal of sheep from the island.

Coastal bluff scrub grows on the steep coastal cliffs and slopes that surround much of the island. Due to their inaccessibility, this plant community has been a refugium for some plant species. With the elimination of grazing, many plant species formerly confined to these coastal bluffs are spreading out into other areas of the island. Common plant species found in this community include common yarrow (*Achillea millefolium*), morning glory (*Calystegia macrostegia* ssp. *macrostegia)*, giant coreopsis, Greene's Dudleya (*Dudleya greenei*), island hazardia (*Hazardia detonsa*), and island buckwheat (*Eriogonum grande* var. *grande*).

Island chaparral and oak woodlands are the dominant woody vegetation communities on the isthmus. The island chaparral community differs somewhat from mainland chaparral. Structurally, the dominant island chaparral species can be more arborescent, resulting in a more open woodland appearance, which may be a result of the island's grazing history. Island scrub oak (*Querus pacifica*) tends to dominate the island chaparral community on the isthmus. Other common species include a prostrate variety of chamise (*Adenostoma fasciculatum* var. *prostratum*), McMinn's manzanita (*Arctostaphylos viridissima*), and toyon (*Heteromeles arbutifolia*). The southern coastal oak woodland community is dominated by coast live oak (*Quercus agrifolia*). This community also grows in a small area on the east end of the island.

Several other vegetative communities grow on the east end of Santa Cruz. The island woodland community grows on north-facing slopes, ravines, and canyons. This community intergrades with island chaparral on dry, rocky slopes while turning into savannas on the deeper soils of the flats and more gentle slopes. The island woodland community is usually dominated by one or two species of trees or tree-like species. Overstory species can vary from a mixture of island endemics such as island ironwood (*Lyonothamnus floribundus* ssp. *aspleniifolius*) and island cherry (*Prunus ilicifolia* ssp. *lyonii*) to pure or mixed stands of oak (*Quercus* spp.). Other important species include toyon, lemonade berry, sugarbush (*Rhus ovata*), and island redberry (*Rhamus pirifolia*). A large but scattered Bishop pine (*Pinus muricata*) woodland is found south of China Harbor on the isthmus. A number of small areas of southern beach and dune community also grow along the perimeter of the island. Plant species found in these areas include sticky-sand verbena (*Abronia maritima*), silver beach-bur (*Ambrosia chamissonis*), sea rocket (*Cakile maritima*), beach evening-primrose (*Camissonia cheiranthifolia* spp. *cheiranthifolia*), salt grass (*Distichlis spicata*), California saltbush (*Atriplex californica*), and Australian saltbush (*Atriplex semibaccata*). In the more dune-stable areas prostate coastal goldenbush (*Isocoma menziesii* var. *sedoides*), pink sand verbena (*Abronia umbellata*), and silver lupine (*Lupinus albifrons* ssp. *douglasii*) also grow.

Santa Rosa Island

The vegetation of Santa Rosa is diverse because of the island's relatively large size and elevation range. A total of 387 native plant species have been recorded on the island. As with the other islands, many native species are now only found primarily in refuges on inaccessible steep sea bluffs and interior canyon walls. Grassland, sometimes dominated primarily by nonnative annual species but with an increasing cover of native perennial grasses, currently covers about two-thirds of the island's area. Native perennial grasses grow in various areas and dominate large portions of the island. This group of native grasses includes at least four species of ryegrasses (*Leymus* spp., *Elymus* spp.), three species of needlegrass (*Nasella* spp.), and saltgrass (*Distichlis spicata*).

Coastal sage scrub and baccharis scrub are two of the more common native plant communities. As on the other islands, coastal sage scrub grows on steep slopes; but unlike the other islands, it is not so strictly confined to southern exposures. Baccharis scrub grows on the east end of the island and also throughout grassland areas, particularly on deep, unstable soils on the moist, north-facing slopes and terraces of the island. Baccharis scrub is dominated by coyotebrush (*Baccharis pilularis*).

Island chaparral is found in three distinct areas of the island: the largest extent is on the north- and east-facing slopes of Black Mountain; a smaller area is on northwest-facing slopes on South Point; the third area is on short, north-facing slopes on the eastern end of the island. Island scrub oak, prostrate chamise, three endemic taxa of manzanita (including the endemic Santa Rosa Island manzanita [*Arctostaphylos confertiflora]*), summer-holly (*Comarostaphylos diversifolia* ssp. *planifolia*), evergreen huckleberry (*Vaccinium ovatum*), and island monkey flower (*Mimulus flemingii*) dominate this community.

Less than 1% of Santa Rosa is covered by woodlands, which grow mostly in or intermixed with island chaparral. Upland woodlands are dominated by pines, oaks, or other mixed hardwoods (i.e., oak, cherry, and ironwood). Native trees (eight species are present on the island) usually grow in discrete groves rather than being widely distributed across the landscape. With the exception of the Torrey pines, and recently the Bishop pines, establishment and survival of the individuals of these species has been minimal in most stands.

Mixed woodlands grow primarily in the larger canyons in the northeast portion of the island. Tree species in this area include coast live oak (*Quercus agrifolia*), island oak (*Q. tomentella*), and island cherry (*Prunus ilicifolia* ssp. *lyonii*). The island has a few small groves of Santa Cruz Island pines (*Pinus muricata forma remorata*) and ironwood (*Lyonothamnus floribundus* ssp. a*spleniifolius*), with the pine community being most developed on the north side of Black Mountain. Oak woodland, dominated by the endemic island oak, grows in groves mainly on Soledad Peak and Black Mountain. The grove on Black Mountain has recovered enough since grazing stopped that oak seedlings have successfully established around the grove. Extensive erosion is probably the main reason for the lack of seedling establishment in other groves, notably those near Soledad Peak.

The island also supports the entire population of Santa Rosa Island Torrey pine (*Pinus torreyana* ssp. *insularis*) woodlands, in a single (occasionally discontinuous) grove on the east end of the island, near Bechers Bay. This is one of two subspecies of Torrey pines in the world; the other (*P. t.* ssp. *torreyana*) grows on the mainland north of San Diego. The Santa Rosa population is fairly small, covering about 40 acres, but appears to be in good condition. Many seedlings have successfully established around the grove in recent years and, therefore, the grove is expanding.

A number of other vegetative communities occur on Santa Rosa, usually in limited and discontinuous areas. Caliche scrub occurs on the west end of the island just as on San Miguel Island. Prostrate goldenbush (*Isocoma meziesii* var. *sedoides*) is the most common shrub in this community, with San Miguel locoweed (*Astragalus miguelensis*) also occurring frequently. Coastal bluff scrub has vegetation similar to caliche scrub, notably goldenbush and San Miguel locoweed, but also contains giant coreopsis, island liveforever, bedstraw (*Galium* spp.), and the island endemic Santa Rosa Island soft-leaved paintbrush (*Castilleja mollis*). This community is primarily found on the northern and western coastal bluffs.

Lupine scrub is dominated by two species of bush lupine (*Lupinus albifrons* var. *douglasii* and *L. arboreus*). This community is found on stabilized (sometimes Pleistocene relict) dunes on the northeast part of the island (Carrington Point), the eastern end of the island (Skunk Point), and the south side of the island (China Camp area).

Coastal strand, which is very similar to the coastal dune community on San Miguel Island, grows on unconsolidated dunes near beaches and coastal rocks. Several wetland communities (riparian herbaceous, riparian woodland, and coastal marsh) are scattered throughout the island (see the earlier discussion of wetlands).

San Miguel Island

Almost 200 native plant species are known to occur on San Miguel. Grassland and isocoma scrub are the island's two most common vegetative communities. The dominant vegetation community is grassland, which occurs on all parts of the island and is estimated to cover between 33% and 50% of the island. The predominant species are nonnative annual wild oats and bromes. Perennial native bunchgrasses, such as purple needlegrass, grow in small areas toward the eastern end of the island. Some grassland areas are being invaded by low shrubby vegetation, in particular coyotebrush. Isocoma scrub, the second most abundant plant community, also grows throughout the island, on poorly developed thin, rocky, or sandy soils. Goldenbush dominates this community. It is thought that this community is widespread because of the extent of past habitat disturbance.

San Miguel is the only island in the park with extensive beach and coastal dunes. Two dune communities have been identified growing on beach and coastal dunes—southern beach and dune scrub. Dunes closest to the coast support little vegetation beyond sand verbena (*Abronia maritima*) and sea rocket (*Cakile maritima*), a nonnative species. Farther inland, away from salt spray, other species grow on stabilized sandy areas, including beachbur (*Ambrosia chamissonis*) and beach primrose (*Camissonia cheiranthifolia* ssp. *cheiranthifolia*). Inland dunes that are becoming moderately stabilized frequently support lush lupine scrub. Silver bush lupine (*Luinus albifrons* var. *douglasii*) and yellow bush lupine (*Lupinus arboreus*) commonly grow in the inland dune areas.

Other vegetative communities on San Miguel include shrub communities, coastal bluff communities, and riparian woodland (previously discussed in the "Wetlands" section). Besides isocoma scrub, two other shrub communities are found on the island. Coastal sage scrub covers 5% to 10% of the island and is most extensive on southwest-facing bluff slopes above the coastal terraces east and west of Crook Point, where it is frequently intermixed with coastal bluff scrub. It also is found on some south-facing canyon walls, occasionally forming impenetrable thickets. California sagebrush is the dominant species, with other less prominent species being island paintbrush and goldenbush.

Caliche scrub is extensive on the west end of the island; it also occurs in the central portion of the island north of San Miguel Hill. San

Miguel Island locoweed and goldenbush are the dominant plant species in caliche. Two coastal bluff communities are found on the island. Coastal bluff scrub grows on steep, rocky cliffs and bluffs where it is exposed to severe winds and salt spray. It primarily grows in limited, inaccessible areas southwest of Harris Point and at Hoffman Point. The vegetation is generally low and prostrate. Nonnative crystalline iceplant has invaded large areas of this habitat. Coreopsis scrub grows in a few sites on the northern and eastern bluffs. In particular, dense populations of giant coreopsis grow on Harris Point, above Cuyler Harbor, and at the tops of Hoffman and Bay points. Smaller dense populations grow on the sides of shallow canyons north of Green Mountain. This community also has been invaded by crystalline iceplant species.

Santa Barbara Island

About 88 native plant species have been recorded on Santa Barbara. This small island is dominated by a nonnative grassland, although native shrubs are increasing and spreading. More than half the island is covered by nonnative grasses – mainly oats (*Avena* spp.), soft chess (*Bromus hordaceous*), and barley (*Hordeum*). The low-growing nonnative sub-shrub Australian saltbush (*Atriplex semibaccata*) is a significant component of the grassland in some areas. Scattered coyote brush (*Baccharis pilularis*) occurs in the grasslands and may represent a future succession stage in those areas. A variety of shrub communities also grow on the island, including boxthorn scrub, cactus scrub, Coreopsis scrub, sea cliff scrub, coastal sage scrub, and seabite scrub. California sagebrush (*Artemesia californica*) and southern island sagebrush (*A. nesiotica*) are recolonizing the south and east sides of the island. The cactus scrub community grows on warm south-facing slopes of canyons and sea cliffs. Disturbed areas and open sites on the island are also often dominated by the nonnative annual crystalline iceplant (*Mesembryanthemum crystallinum*). However, Santa Barbara's nearly vertical sea cliffs have provided a refuge for native plants that have been eliminated or reduced in more accessible areas; from these seed source areas plants are steadily recolonizing the terrace-top grasslands.

Endemic and Rare Plants

A relatively large number of the Channel Islands' plant species are endemic to the islands. Most of these island endemics are relicts and represent species that once occurred on the mainland but for one reason or another, perhaps climatic change, are now found only on one or more of the Channel Islands. Island oak (*Quercus tomentella*) and ironwood (*Lyonothamnus floribundus* ssp.) are examples of this type of endemism. Evidence for these species having once grown on the mainland comes from an abundant fossil record. For a number of island endemics, however, there is no mainland fossil record and it is presumed that these species have evolved from a mainland ancestor that successfully established on the islands in the past. A list of all of the endemic plant species known in the park and on which islands they are known to grow is included in appendix D. Of the approximately 778 plant taxa known to grow in the park, 64 species, subspecies, or varieties are endemic to the park; 23 of the 64 endemics are found on only one island; and 41 of the endemics are found on more than one island. Each of the islands has endemic species, ranging between 4% and 10% of the total taxa on each island.

Most of the islands' endemic species are considered rare and 14 are federally listed as threatened or endangered.

The coastal bluff, chaparral, coastal sage scrub, and mixed woodland communities support the most rare plant taxa (NPS 1999). These communities occupy sites with unusual soils and microclimates, and they tend to support species found nowhere else on the islands. Coastal bluffs are also fairly

inaccessible and may have retained certain rare taxa that have since been lost from other more accessible communities.

Nonnative Plants

Islands generally are vulnerable to invasion of nonnative plants. In the case of Channel Islands National Park, many nonnative species have successfully established and spread rapidly on the islands during the past 150 years. The primary factors responsible for their spread were the introduction and proliferation of feral sheep and pigs, uncontrolled grazing, and browsing by cattle and nonnative deer and elk, and the resulting destruction of most of the native vegetation cover by these animals. (At least 56 of the nonnative plants on Santa Cruz are documented as being particularly dependent on the disturbance caused by the island's feral pigs, ranching and farming activities, and the arrival and spread of aggressive nonnative plants (NPS 2002a).

It is estimated that nonnative species comprise about 25% of Channel Islands National Park's flora (NPS 1999). About 197 taxa not known to be native to California have been introduced into the park since European contact. Thirteen species are native to the California mainland but have been accidentally or deliberately introduced to the islands. As indicated in Table 22, all of the islands have nonnative species, ranging from 38 species on Santa Barbara (30% of the total flora on the island) to about 170 species on Santa Cruz (about 26% of the total flora). Eleven of Santa Cruz Island's 88 plant families and 82 of its 348 plant genera are represented exclusively by nonnative taxa (NPS 2002a).

These nonnative species have changed the overall composition and ground cover of many of the park's vegetation communities; it is estimated that nonnative species cover two-thirds of the park's land surface (NPS 1999). Many of these species have become naturalized and persist tenaciously as part of the local flora. Annual grasses have spread over all of the islands and are probably the most widespread nonnatives. Between 35% and 75% of each island is covered by nonnative grasslands dominated by Mediterranean annual grasses, primarily brome (*Bromus*), barley (*Hordeum*), fescue (*Vulpia*), and oats (*Avena*) (McEachern 2004). Much of Santa Barbara, Santa Rosa, and San Miguel are covered by nonnative grasses. On Santa Barbara, more than half of the island is covered by nonnative annual oats (*Avena),* brome (*Bromus*), and barley (*Hordeum*) species. In addition, other nonnative species may be poised for a rapid expansion phase in the park, such as European olive and Italian stone pine on Santa Cruz.

Fennel (*Foeniculum vulgare*), a perennial herb, was introduced on Santa Cruz Island in the late 1800s. After the removal of cattle and sheep, this nonnative plant flourished in much of the island's open, disturbed areas. Dense to patchy fennel stands now cover more than 10% of the island, primarily on the isthmus (1,800 acres), but including other parts of the island as well. With the removal of feral pigs, fennel is now mostly spread along roads, trails, and other disturbed areas. This allows for the spread of fennel into mostly undisturbed coastal sage scrub and annual grassland. Although there appears to be distinctly separate large stands of fennel across the island, roads and pig trails are obvious corridors of invasion connecting these fennel populations. Eradicating feral pigs from the island removed a primary vector for this plant's dispersal and would facilitate fennel control throughout the island (NPS 2002a).

Five species of perennial iceplant (*Carpobrotus edulis*, *C. chilense*, *Malephora crocea*, *Mesesmbryanthemum crystallinum,* and *M. nodiflorum*) are common nonnative species. These species have occupied large areas of Santa Barbara, East Anacapa, and to a lesser degree San Miguel, in carpetlike mats. Two of the iceplant species are very successful weeds because they accumulate salts in their

tissue. When they die, the salts are released into the soil, creating salt levels that exceed the tolerance of most plants, effectively eliminating them.

Several opportunistic species of concern grow on the islands that have the potential to rapidly colonize available habitat and dominate plant communities. These species include bull thistle (*Cirsium vulgare*), Russian thistle (*Salsola iberica*), and spiny cocklebur (*Xanthium spinosum*). Spread by the wind and animals, populations of these species are all increasing in size, number, and range. Bull thistle, milk thistle, and spiny cocklebur occur widely as scattered individuals and in large patches. All of these species could form dense monotypic stands, completely excluding native island species.

Several slow-spreading weed species also grow on the islands, including lavatera (*Lavatera cretica*), black mustard (*Brassica nigra*), tamarisk (*Tamarix aphylla*), kikuyu grass (*Pennisetum clandestinum*), rice grass (*Piptatherum miliacea*), tall fescue (*Festuca arundinacea*), and Bermuda grass (*Cynodon dactylon*). These species are very persistent once they become established and can form dense populations. Their seeds are spread through animal feces, mud on vehicle tires, or animals' feet. Kikuyu grass is particularly aggressive and has taken over large areas of wetlands and riparian banks on Santa Cruz (NPS 2003b).

A number of stands of nonnative trees grow on NPS lands on Santa Cruz. A grove of olive trees and cypress trees are present in the Smugglers Cove area. In Cañada del Puerto, a significant percentage of the southern riparian woodland has been invaded by eucalyptus. Several eucalyptus stands are established in the lower drainages of Smugglers Cove and Scorpion Canyon. Stone pine (*Pinus pinea*) also is present on Santa Cruz, particularly near Prisoners Harbor.

The Park Service has taken several actions to control or limit the spread of nonnative plants in the park. There is a concentrated effort to remove perennial iceplant from East Anacapa. Fennel and yellow star thistle have been controlled in the past on Santa Rosa Island, but continue to persist at low levels. Efforts continue to eliminate these species. Twelve acres of Red gum eucalyptus in the Prisoners Harbor wetland were cut. Efforts have been made to eliminate fennel from the Scorpion anchorage area and thousands of olive saplings have been eliminated from the backcountry of Santa Cruz Island. Many young stone pines were eliminated from the Prisoners Harbor area. The park staff plans to remove the historic stone pine tree at the base of Prisoners Harbor and replace it with a suitable noninvasive tree species. A program also is under development to educate visitors to the dangers of invasive nonnative plants.

In spite of these efforts, Channel Islands National Park would always be subject to the risk of colonization and recolonization by nonnative plants because of transport of materials and vehicles to the islands, travel to the islands by visitors, and natural processes that transport nonnative plant seeds from the mainland to the islands.

Vegetation and People

Throughout their entire history of occupation on the Channel Islands, people have impacted the islands' vegetation. Possibly the first inhabitants affected vegetation through food-gathering activities. They also may have set fires to encourage certain plants or to enhance access; cut down trees or shrubs for shelter, fuel, or making baskets; and deliberately or inadvertently introduced new plants to the islands.

However, it probably was not until the arrival of Europeans and the establishment of ranching or farming that the islands' vegetation was substantially altered. Before the early 1800s, the islands were most likely covered by a mosaic of upland native scrub, riparian woodland, and coastal bluff and dune

scrub interspersed with small native grass openings and grassland vegetation (NPS 1999; McEachern 2004). The uplands were largely shrublands. After Europeans settled on the islands, throughout the first half of the 19th century the vegetation of all of the islands changed due to clearing, burning, plowing, and the introduction of livestock, game animals, and nonnative plant species.

Ranching was the predominant land use of the islands beginning in the 1830s. Santa Barbara Island was grazed by livestock for at least 130 years. Rabbits were also introduced, which foraged on island plants. Middle and West Anacapa had sheep ranching. On Santa Cruz, sheep were first introduced around 1853. By 1875 an estimated 60,000 sheep were on the island, only half of which could be rounded up for shearing annually. From the 1920s to the early 1980s Santa Cruz supported the largest single population of feral sheep in the world (Van Vuren and Coblentz 1989 as cited in Pinter and Vestal 2005). By the 1970s, more than 263,000 sheep from the island had been captured and sent to market or slaughtered. Severe overgrazing resulted from this large population (NPS 2002a). In addition, domestic pigs were introduced, which subsequently escaped and became feral. On Santa Rosa ranching began during the 1840s. Sheep, feral pigs, cattle, horses, elk, and deer were introduced and grazed over much of the island. As many as 75,000 to 125,000 sheep once grazed the island in the 1800s and early 1900s. It appears that the loss of vegetation due to sheep grazing was at least partially responsible for the development of major dune systems (NPS 1984). On San Miguel livestock ranching also occurred. The island was extensively overgrazed during the late 1800s and in the early part of the 20th century.

Ranching caused rapid and pervasive vegetation changes on all of the park islands. Land use practices during the ranching era resulted in the widespread conversion of native shrublands to grasslands, dominated by nonnative annual grasses, reduction in the extent of woody and succulent plant communities, loss of native plant understories in woodlands, weed invasion, increased rates of soil compaction and soil loss, and a decline or extirpation of populations of plant species due to the nonnative herbivores. Periodic drought exacerbated the effects of livestock on the island ecosystems (NPS 1999). On Santa Cruz Island, the severe grazing pressure that occurred over 150 years adversely affected most of the island's plant communities, altering their population structure, the natural size and stature of dominant species, and species diversity and composition. In some areas sheep trails stripped the vegetation from up to 7% of the landscape (Van Vuren and Coblentz 1989 as cited in Pinter and Vestal 2005). Grazing of selected plant species reduced the range of many native species (e.g., giant coreopsis, Northern island hazardia *[Hazardia detonsa]*, lupine [*Lupinus albifrons]*, Island monkeyflower [*Mimulus flemingii]*), Bishop pine [*Pinus muricata*]) and increased the range and abundance of spiny and other grazing-resistant plants (e.g., turkey mullein [*Eremocarpus setigerus],* prickly-pear cactus [*Opuntia littoralis, O. oricola],* and threadleaf groundsel [*Senecio flaccidus]*) (NPS 2002a; Pinter and Vestal 2005).

Several other human activities affected the islands' vegetation. Some cultivation of crops took place on Santa Rosa, Santa Cruz, Santa Barbara, and San Miguel. Vegetation on East Anacapa was altered by a Coast Guard station and the introduction of iceplant for erosion control. Extensive road systems were built on Santa Rosa, San Miguel, and Santa Cruz. In addition, the vegetation of parts of Santa Rosa, San Miguel, and Santa Cruz was affected by military activities, including the construction of facilities on the islands and bombing practice/military exercises on San Miguel.

On Santa Rosa, the phased removal of nonnative ungulates is resulting in slow but steady recovery of island vegetation, improved water quality, and reduced soil erosion. Nonnative deer and elk, introduced for hunting, continue to alter the island's

vegetation, particularly in the woodland and chaparral communities. The physical condition of the remnant chaparral habitats has been modified by grazing that has altered understory species composition, and by browsing that has pruned shrubs into unnatural, tree-like shapes, and all but eliminated the establishment and survival of new plants. In particular, deer have intensively browsed and affected the flowering and seed production of the Santa Rosa Island manzanita (D. Rodriguez, Channel Islands National Park, pers. comm. 2011). The continued browsing by deer and elk on Santa Rosa Island has created an open "skeleton" community, crossed by game trails, resulting in herbivore access to nearly 100% of the habitat (Hochberg et al. 1980; Tim Thomas, USFWS, pers. obs. 1993, both cited in NPS 1999). In contrast, historic reports on the conditions of the islands relate that the brushlands were impenetrable (Hochberg et al. 1980 cited in NPS 1999). Island woodlands also have been heavily affected by grazing, browsing, and rooting animals seeking summer shelter and food (Clark et al. 1990; Halvorson 1993, both cited in NPS 1999). Several researchers (Clark et al. 1990; Bartolome 1991; Veirs 1991, all cited in NPS 1999) report that Bishop pine forests on Santa Rosa have been affected by grazing. Clark et al. (1990) noted that the pine forests subjected to grazing lack the protective nutrient layer of ground litter and exhibit no reproduction. Veirs believed that the effect of browsing on regeneration, combined with the high natural mortality of *P. muricata*, placed the Bishop pine community at risk. Deer browse has been observed to reduce most of the shrubs in the Carrington Point stand to stem tissue (C. Lombardo, pers. comm. 1995, as cited in NPS 1999).

As a result of human actions, livestock overgrazing, and the spread of nonnative species, many changes have occurred to the native vegetative communities (NPS 1999; USFWS 2000; McEachern 2004). Many of the shrubland species that occurred on the uplands were confined to the steep, inaccessible bluffs. The grasslands have greatly expanded at the expense of most other habitat types, and are mostly comprised of nonnative annual species. Intensive grazing and ranching practices reduced the build-up of fuels for fires. However, the removal of grazing in the grass-dominated landscapes; increased human activities (including illegal campfires, smoking, and park maintenance activities); and changes in fuel conditions now pose fire hazard conditions that were never previously present on the islands.

Much woody vegetation has been lost from the islands during the last 100 years. There has been very little evidence of reproduction of native tree species due mostly to past livestock grazing and browsing, and to a lesser extent, rooting by feral pigs. The original extent of coastal sage scrub, which has soft-stemmed plants that are palatable to browsers and grazers, was reduced so much by overgrazing that up until recently it persisted only in inaccessible locations, such as bluffs and canyon walls on some islands. Riparian communities were heavily grazed. Wetlands were altered by efforts to channel streams, create uplands for buildings, and control flooding in coastal areas. In many areas the native riparian plant species were locally extirpated and replaced by nonnative weedy plants and grasses or were denuded of vegetation. The distribution, size, and physical condition of chaparral habitats have been modified; grazing has changed the understory composition, and browsing has pruned shrubs into unnatural arborescent or tree-like shapes. Island woodlands have been heavily affected by grazing, browsing, and rooting animals seeking shelter and food.

The only communities that have largely escaped human and livestock disturbance and still appear relatively undisturbed are those in inaccessible areas, such as steep slopes and coastal bluffs. Coastal beach and associated dune habitats also appear to be relatively undisturbed compared to their counterparts on the mainland, where development and recreation have largely eliminated them.

Since the Park Service (and TNC on Santa Cruz) began managing the islands' resources by removing nonnative herbivores, rehabilitating eroded areas, planting native vegetation, and taking action to control nonnative species, several plant communities are recovering. In particular, with the removal of nonnative grazers on Anacapa and San Miguel Islands, the coastal sage scrub habitat has increased in extent. On San Miguel Island, much of the native vegetation has recovered dramatically since all introduced herbivores were removed in 1977. On Santa Cruz Island, dramatic increases in both the variety and density of vegetation have occurred since sheep were removed (Pinter and Vestal 2005). On both Santa Cruz and Santa Rosa Islands, it is believed in the absence of grazing that native shrub communities, such as coastal sage scrub and island chaparral, would recolonize much of the areas now dominated by annual grasses.

Climate Change and Terrestrial Vegetation

Climate change is likely affecting, and would continue to affect, the islands' vegetation, although the rate and magnitude of specific vegetation changes are not known. Climate change is expected to cause increased air temperatures, alteration of precipitation patterns, alteration of fog regimes, a rise in sea level, changes in marine currents, altered species distributions and phenology, and alteration in the recurrence and intensity of storms— all of which can affect the park's terrestrial vegetation.

Changes in temperature and precipitation are two environmental factors that directly affect plants, including distribution, growth, and reproduction. Global climate models indicate temperatures are going to increase and total annual precipitation is going to decrease in the northern Channel Islands by the end of the century (TNC 2009). Future July maximum temperatures are projected to be greater than 99 of the 100 years in the 20th century, while future total annual precipitation in the northern Channel Islands is projected to be less than 54 out of the 100 years in the 20th century. These changes are likely to result in moderate drought stress and high heat stress, which in turn can directly and indirectly affect plant survival (e.g., increase some plants' vulnerability to pests). Increased temperatures can also result in the spread of more heat-tolerant nonnative species, such as grasses, which typically have a higher tolerance for a wide range of environmental conditions than native species (Largier et al. 2010).

Other changes associated with climate that could affect the islands' plants include:

- potential for timing disruptions between pollinators and plants
- increased potential for wildfires due to vegetation drying out and increased flammability
- potential for changes in fog regimes, which in turn can affect plant growth and establishment
- rise in sea levels, affecting vegetation on dunes, beaches, and rocky habitats
- changes in precipitation and salt spray may modify soil salinity and thus affect the composition of beach and dune plant communities
- increased erosion of cliffs and hillsides due to larger waves from winter storms and higher water levels, affecting the physical habitat of plants (all of the Channel Islands have been classified as moderately vulnerable to shoreline erosion or accretion (U.S. Geological Survey (USGS) 2005)
- potential for floods due to more intensive storms

(California Natural Resources Agency 2009; Wilkinson 2002; Largier et al. 2010; McEachern et al. 2009).

Many Channel Islands species are at their northern or southern range limits, and any of the above changes may be enough to extirpate them on the islands. In addition, endemic

species on the islands have limited distributions and have no place else to go in response to changes in climate. In other words, climate change could result in major changes to the park's flora due to the lack of connectivity and endemic nature of many of the park's plants.

TERRESTRIAL WILDLIFE, SEABIRDS, AND PINNIPEDS

Native Terrestrial Animals

Because of their isolation and remote nature, the Channel Islands support fewer native animal species than similar habitats on the mainland. Species that reached the islands could fly, such as birds and bats, or rafted across the water on debris and other material. Over time some vertebrate species evolved into distinct subspecies on the islands. For example, the deer mouse and island fox are recognized as distinct subspecies on their respective islands. A total of 23 endemic terrestrial animals have been identified in the park, including 11 landbirds, that are Channel Island subspecies or races (see tables D-2 and D-3 in appendix D).

A small amount of data exists on terrestrial invertebrate fauna populations on the islands. Miller (1979) reported the results of a preliminary survey of dominant insects on Anacapa, San Miguel, and Santa Barbara Islands. A total of 97 insect species and relatives were included on a provisional list for Anacapa Island, 183 for San Miguel Island, and 123 for Santa Barbara Island. Hochberg (1979) reported that the three islands supported eight species of land snails. A 1989 survey reported 137 species of insects and other arthropods on Anacapa Island (NPS 2000). Three hundred and five arthropod species (not including moths, butterflies, and beetles) have been identified on Santa Cruz Island through a compilation of invertebrate collection records and in a recent arthropod inventory by Naughton et al. (in process). In addition, *Orthoptera* (grasshoppers, crickets, and katydids); *Lepidoptera*; and *Apoidea* (bees and certain wasps) also have been documented systematically across the islands (Rentz and Weissman 1982; Rust et al. 1985; Powell 1994).

A total of 68 native terrestrial vertebrate species have been recorded in the park, including 3 amphibian, 6 reptile, 2 rodent, 2 carnivore, 11 bat, and 46 breeding landbird species (see appendix D for a list of terrestrial vertebrate and landbird species). (This number does not include nonnative species or migratory birds.)

Landbird populations and species compositions on the islands can change from year to year, depending on mainland species that reach the islands, changes in habitats, competitors or predators that arrive or leave the islands, or areas that are disturbed by people. Most of the bird species probably have experienced a loss of preferred food and shelter due to the alteration of the islands' scrub habitats (NPS 1980a).

Although not all listed in table D-3 in appendix D, many shorebirds use the park; 30 species have been recorded (NPS 2000). The park's islands, Santa Rosa Island in particular, are an important wintering area and stopover point. Common wintering shorebirds include willet (*Catoptrophorus semipalmatus*), wandering tattler (*Heteroscelus incanus*), whimbrel (*Numenius phaeopus*), black turnstone (*Arenaria melanocephala*), and sanderling (*Calidris alba*).

Nine raptor species live in the park and are primarily seen on Santa Cruz and Santa Rosa Islands. Hawks and owls also occur intermittently on Anacapa, San Miguel, and Santa Barbara Islands, which have limited habitat to support these birds.

Several bird species disappeared from the park during the 20th century. An endemic subspecies of song sparrow (*Melospiza melodia graminea*) on Santa Barbara was driven to extinction due to habitat destruction

by introduced rabbits, direct predation by feral cats, and a fire in 1959 that destroyed much of its habitat. Bald eagles (*Haliaeetus leucocephalus*) and peregrine falcons (*Falco peregrinus anatum*) also formerly bred on the islands, but largely disappeared due to harassment, shooting, egg stealing, and reproductive failure caused by organochlorine pesticides, such as DDT. However, both of these species have come back due to reintroduction efforts. Peregrines were reintroduced on the islands in the 1980s, and in 2014 there were 41 active territories on the islands with more than 56 known chicks. Bald eagles were reintroduced on Santa Cruz Island beginning in 2002 (MSRP) and as of 2014 were nesting on Anacapa (one nest), Santa Cruz (six nests), and Santa Rosa Islands (two nests).

Golden eagles were live captured and removed from the park because golden eagle predation was responsible for the massive island fox decline from 1994 to 2000. Until recently, golden eagles never bred on the Channel Islands. The golden eagles were able to exist in the park because of feral pigs on Santa Cruz Island, and because bald eagles were not present to deter them (NPS 2002a, 2002b). Golden eagles were discovered in the winter of 2002–2003 to also be nesting on Santa Rosa. Since the elimination of feral pigs from Santa Cruz Island in 2006, the level of predation of golden eagles on island foxes has dropped dramatically. The last known pair of nesting golden eagles was removed from the islands in 2006. Transient golden eagles still occasionally fly over the islands. The park staff closely monitor island foxes for mortality to ensure early detection of golden eagles.

Bats are the largest group of native mammals on the islands, with 11 species recorded just on Santa Cruz Island. Four bat species have been found on both Santa Rosa and Santa Barbara Islands, and none on Anacapa or San Miguel Island (see table D-2 in appendix D). Two additional bat species, hoary and Mexican free-tailed bats, were recorded during a September 2003 survey, although they were thought to be migrating through the area (Lisa Gelczis, research assistant, Southwest Biological Science Center, pers. comm. January 2004). Of the 11 species recorded from park islands, three are breeding, year-round residents—Townsend's big-eared bat, pallid bat, and California myotis.

Although they have not been well studied in the park, in part due to their reclusive nature, bats play important roles as insectivores. The Townsend's big-eared bat colony on Santa Cruz Island is one of the few remaining breeding colonies of this species in southern California, where it has suffered serious declines (Charles Drost, USGS, pers. comm. March 4, 2004). It is possible that several additional bat species occur on the islands, such as several species of myotis and free-tailed bats (*Tadarida brasilensis*) (Brown 1980; von Bloeker 1967).

Almost all of the native habitats on the islands have been altered to some degree by human land use practices, a situation that in turn affects native wildlife that evolved in the absence of these impacts. Areas that closely resemble native habitat are therefore especially important for terrestrial animals. Riparian, coastal scrub, oak woodland, and chaparral habitats in particular support representative populations of landbirds, salamanders, snakes, lizards, and bats.

Anacapa Island. Anacapa is a small island and consequently supports relatively few natural terrestrial animal species. However, the island supports a number of endemics, including one snail species, 18 arthropod species, one salamander subspecies, and one deer mouse subspecies. Seven landbird taxa also are recognized as endemic subspecies, occurring only on Anacapa and one or more of the other Channel Islands (NPS 2000).

Studies of invertebrates conducted in 1989 identified 2 snail species, 130 insect species, and 7 other arthropod species, for a total of 139 species (NPS 2000). The trends for these invertebrate populations are not known.

One native amphibian, the Pacific slender salamander (*Batrachoseps pacificus pacificus*), and two native lizards, the side-blotched lizard (*Uta stansburiana*) and the southern alligator lizard (*Elgaria multicarinatus*), live on Anacapa Island.

Eighteen landbird species are known to breed on Anacapa, including peregrine falcons on West Anacapa. Common species found there include orange-crowned warbler and rock wren. West Anacapa provides the best landbird habitat of the three Anacapa islets due to its greater topography and more extensive stands of native shrub vegetation, including coastal sage scrub and coreopsis scrub.

One native mammal species occurs on Anacapa, an endemic subspecies of deer mouse (*Peromyscus maniculatus anacapae*). Like Santa Barbara, this species is an abundant generalist, the population of which fluctuates from season to season and year to year. Between 1993 and 1999, the average deer mouse density was 27 mice per hectare in the spring and 200 mice per hectare in the fall (NPS 2001b). The application of rodenticide in 2001 on East Anacapa and in 2002 on Middle and West Anacapa to eliminate black rats from the island had major short-term impacts on the mouse populations on those islets. However, the mitigation measures ensured protection of the subspecies (Howald et al. 2005). Ongoing monitoring of deer mouse populations endemic to the Anacapa island chain indicate that numbers have been fully restored to pre-rat eradication levels.

Santa Cruz Island. Santa Cruz is the largest island in the park, and consistent with the theory of island biogeography, supports more terrestrial wildlife species than the other islands. In addition to its area, Santa Cruz Island displays the greatest diversity of vegetation and topography of all of the park islands. The island harbors several species that are endemic to the island or the Channel Islands, including 1 amphibian, 2 reptile, 4 mammal, and 10 landbird species (see tables D-2 and D-3 in appendix D).

Distinctions have not been made between species that inhabit NPS lands and those that live on lands owned and managed by TNC. Wildlife surveys also have not been conducted for the isthmus, although an ongoing herpetological inventory (reptiles and amphibians) includes this area. All of the native vertebrate species on Santa Cruz Island are known across the island.

Like all of the Channel Islands, the invertebrate fauna of Santa Cruz Island is not well studied. Of about 750 species of lepidopterans (butterflies and moths) known on the Channel Islands, about 550 of species were reported on Santa Cruz. Fourteen of these species were endemic to one or more of the Channel Islands. The native bee fauna is more diverse on this island than on the other Channel Islands due to the island's size, elevations, topographical diversity, and habitat variability (NPS 2002a).

Five reptile and three amphibian species have been recorded on Santa Cruz Island. The Channel Islands slender salamander (*Batrachoseps pacificus pacificus*) and the island fence lizard (*Sceloorus occidentalis beckii*) are endemic to the Channel Islands. The Santa Cruz gopher snake (*Pituophis catenifer pumilus*) and Pacific tree frog occur only on Santa Cruz and Santa Rosa. The yellow-bellied racer and the black-belly slender salamander only occur on Santa Cruz. These animals occur in scattered areas and in limited numbers on the islands. The salamanders should be found in most habitats. Very little is known about the snake — additional research is needed to understand its distribution and preferred habitat.

Forty-four native landbird species are known to breed on Santa Cruz Island. Being the most topographically and ecologically diverse of the park islands, Santa Cruz has a greater diversity of breeding landbirds than the other islands. Extensive riparian areas, oak woodlands,

chaparral, and pine forests provide habitat for acorn woodpeckers, red-breasted nuthatches, northern flickers, and the endemic island scrub-jay, as well as pacific-slope flycatchers, black phoebes, and spotted towhees. Introduced stands of eucalyptus also provide breeding habitat for northern saw-whet owls. Eight subspecies are endemic to Santa Cruz Island and one or more of the other northern Channel Islands, while the island scrub-jay (*Aphelocoma insularis*) lives only on Santa Cruz Island. Three of the endemic subspecies (horned lark, rufous-crowned sparrow, and loggerhead shrike) exist at low population levels. Several pairs of peregrine falcons breed annually on the island (NPS 2002a).

Fifteen mammal species are known to live on the island, giving this island the distinction of being the richest island in wildlife diversity of the northern Channel Islands. The relatively large size of the island and the diversity of habitats it supports allow for a relative abundance of terrestrial wildlife species to thrive on Santa Cruz Island. The deer mouse is the most common mammal species. Bat surveys conducted on the Channel Islands have detected the presence of 11 species of bats in the park (von Bloeker 1967; Brown 1980; Brown et al. 1994; Drost 2003). All of the species currently recorded from the park occur on Santa Cruz Island, suggesting the presence of much suitable habitat for bats on that island.

The historic masonry building (former bakery) at Scorpion Valley on Santa Cruz Island supports one of the few remaining known maternity colonies for Townsend's big-eared bats (*Corynorhinus townsendii*) in California, and the only know colony on the islands. The colony has roosted in the rafters of the bakery since at least 1991. This species, which is recognized as a species of special concern and is proposed as threatened by the State of California, is becoming increasingly rare as historic roosts and maternity colony sites are lost to development and disturbance. The only known big-eared bat colonies along the California coast are in human-built structures. (A roosting site at Prisoners Harbor was torn down in the mid-1960s.) Townsend's big-eared bat maternity roosts are extremely sensitive to disturbance, and breeding females abandoned the Scorpion roost during the 2010, 2011, and 2012 breeding seasons. Consequently, reproduction of the bat population has been in decline. Although the reason(s) for the abandonments is unknown, they occurred after a visitor center was established in the building in 2009. It is therefore likely that human disturbance is responsible for the decline. If the colony continues to abandon its use of the bakery, and alternative appropriate sites are not provided, the species will likely be lost from the islands. This would also impact the species' viability in the state.

Three mammal subspecies occur only on Santa Cruz Island—Santa Cruz deer mouse, Santa Cruz Island harvest mouse, and Santa Cruz island fox. Widespread small mammal monitoring has not been conducted on Santa Cruz Island, although endemic deer mice (*Peromyscus maniculatus santacruzae*) would predictably be found in all habitat types on the island.

The island spotted skunk is only present on Santa Cruz and Santa Rosa Islands. (It once occurred on San Miguel Island, but was extirpated from that island.) The skunks are nocturnal carnivores, preferring ravines, and to a lesser extent chaparral and grasslands. A direct competitor of the island fox, the endemic spotted skunk is a nocturnal species and is rarely seen on Santa Cruz Island.

Santa Rosa Island. Like Santa Cruz, Santa Rosa Island has a rich diversity of terrestrial wildlife due to its large size, topographic variety, and diversity of vegetative communities. However, the native animals of this island have been less studied than on most of the other islands. Two amphibian, three reptile, and four mammal species reside on Santa Rosa Island (table D-2 in appendix D). Like all of the islands, mice are the most common mammals found on Santa Rosa

Island. Two subspecies, the Santa Rosa deer mouse and Santa Rosa Island fox, are endemic to this island, while the Channel Islands slender salamander, island fence lizard, Santa Cruz gopher snake, and island spotted skunk are endemic to Santa Rosa Island and one or more other Channel Islands. The population dynamics and distribution of deer mice have never been quantified for Santa Rosa Island, but research on other islands and observations strongly suggest that mice are widespread on the island.

The spotted skunk, a direct competitor of the island fox, has always been a common species on Santa Rosa Island. Spotted skunks inhabit brush and woodland areas, and also have been found in association with buildings. Gopher snakes are found in low numbers in a variety of habitats. Western fence lizards are found in scattered areas throughout the island. Pacific tree frogs are found in all canyons that have standing pools or slow-moving streams, and Pacific slender salamanders are most commonly found in moist canyon settings. Bat surveys conducted in fall 2003 on Santa Rosa Island recorded four species of bat (hoary, Mexican free-tailed, Townsend's big-eared, and California myotis). It is likely that California myotis bats roost in buildings on the island and in natural crevices of steep slopes and canyon walls, with other bat species most likely being detected during their annual migration (Lisa Gelczis, research assistant, Southwest Biological Science Center, pers. comm. January 2004).

Santa Rosa Island supports a relatively diverse landbird population. The island is an important wintering ground and migration stopover for many birds. A total of 57 species were recorded from 1993 to 2000 on the island (NPS 2001a). Thirty species have been observed to breed on the island, including peregrine falcons, bald eagles, and western snowy plovers. None of these birds are endemic just to Santa Rosa Island; however, eight subspecies occur only here and on one or more of the other Channel Islands (table D-3 in appendix D). The island scrub-jay (*Aphelocoma insularis*) is known to have gone extinct on this island (Collins 2009), although it is not known when this occurred. Riparian habitats on the island generally are richer in bird abundance and diversity. Areas of special concern for landbirds (and other animals) include all island woodlands, all riparian areas, the estuary area, and the thick scrub and mixed woodland areas of the island canyons, particularly Cherry Canyon, Water Canyon, Lobo Canyon, and Windmill Canyon (NPS 1995a).

San Miguel Island. In a report by the U.S. Navy (2002), 1 land snail and 24 species of arthropods and insects were reported to reside on San Miguel Island, all of which are endemic either to San Miguel or the Channel Islands. However, this list is incomplete. Other invertebrates that have been documented on the island include the California blunt top snail (*Vertigo californica longa*) and 162 species of lepidoptera (butterflies and moths) (I. Williams, NPS park ranger, pers. comm. December 6, 2002). In a 1978–79 survey of insects and relatives, Miller (1979) reported more than 180 species on San Miguel Island. Additional species almost certainly exist on the island but have not yet been identified.

One native amphibian, two reptile, and two mammal species occur on San Miguel Island. (There are probably also some bat populations, although they are undocumented (I. Williams, pers. comm. December 6, 2002). With the exception of the southern alligator lizard, all of these animals are endemic to the Channel Islands. The San Miguel deer mouse and San Miguel island fox only occur on this island. Deer mice are found in all habitats on San Miguel Island, and are particularly dense in lupine scrub habitat. The other terrestrial animals generally are believed to occur in scattered small populations on the island.

A total of 48 species of landbirds were recorded from 1993 to 2000 on San Miguel Island (NPS 2001a). Eighteen species of native landbirds are known to be breeding on San

Miguel Island. Common breeding species include Allen's hummingbird, San Miguel song sparrow, house finch, horned lark, orange-crowned warbler, western meadowlark, and lesser goldfinch. Less common breeders include red-tailed hawk, American kestrel, peregrine falcon, barn swallow, black phoebe, rock wren, and barn owl. The island scrub-jay is known to have gone extinct on San Miguel Island (Collins 2009), although it is not known when this occurred. The San Miguel song sparrow only occurs on this island, while four other subspecies are endemic to San Miguel Island and one or more other Channel Islands (table D-3 in appendix D). The song sparrow generally is found in coastal sage scrub on windswept slopes and in brushy ravines. It is estimated that the island population is in the order of 7,000 to 15,000 individuals (U.S. Navy 2002).

Riparian areas on San Miguel Island are important habitats for providing shelter from the wind, and in many cases, sources of fresh water. Habitat areas that are more reminiscent of native island vegetation, such as the Cuyler Bluffs area, Harris Point, and Nidever Canyon, are also important. The rocky cliffs along the shoreline provide habitat for peregrine falcon nests and roosts. Certain beaches are also important for wildlife, such as western snowy plover.

Santa Barbara Island. Relatively few native terrestrial animal species occur on Santa Barbara Island. Endemic species that occur here include the island night lizard (*Xantusia riversiana*) and a subspecies of deer mouse (*Peromyscus maniculatus elusus*). The island night lizard, which was listed as threatened in 1977, has recovered and was removed from the Federal List of Threatened and Endangered Species in April 2014.

The island supports a high diversity of land mollusks, with six snail species. They are found only where there is adequate shelter (vegetation, soils, and rocks); a source of calcium for shell building; and moisture, which triggers activity following the onset of winter rains.

A total of 50 species of landbirds were recorded on Santa Barbara Island between 1993 and 2000, of which 7 to 23 species were observed in the spring and 15 to 26 in the fall (NPS 2001a). Eleven species have been observed breeding, including peregrine falcons and burrowing owls (*Athene cunicularia*). Common species include orange-crowned warblers (frequently found in coreopsis in the canyons), rock wrens (on cliffs), and western meadowlarks (in grasslands). These species numbers are probably increasing on the island as the vegetation generally recovers. Santa Barbara Island also is well known for its landbird migrations in the spring and fall. One endemic species, the Channel Islands song sparrow (*Melospiza melodia graminea*), is known to have gone extinct on the island.

The island's only terrestrial mammal is a subspecies of deer mouse. Indeed, this species may be more dense here than anywhere else in the world (Drost and Fellers 1991; NPS 2001b). The Santa Barbara Island mouse population experiences large fluctuations in population levels likely related to annual rainfall, predation pressure, and season (Drost and Fellers 1991). Mice play a major role in the Santa Barbara Island ecosystem, both as prey for resident birds of prey and as plant predators, and several ongoing studies would further define the impacts of mice on seabirds and vegetation.

The hoary bat (*Lasiurus cinereus*) is the only other native mammal on the island.

Seabirds

Channel Islands National Park is recognized as an important breeding and resting area for a variety of seabirds. The rich marine food sources and isolated islands support numerous colonies of seabirds. The park's colonies and surrounding waters that are used

for foraging are vital for the survival of several seabird species. Although the mainland may provide roosting areas, in most cases, seabirds depend on the park islands for breeding and nesting. Collectively, the islands constitute a major seabird breeding area in the eastern north Pacific, the largest such area in the United States south of the Farallon Islands (NPS 1980b). For example, 50% of the world's population of ashy storm-petrels and western gulls, 95% of the U.S. breeding population of Scripp's murrelets (33.5% of the world's population and the only breeding ground north of Mexico), and the only major breeding population of California brown pelicans in the U.S. occur in the park (CDF&G Marine Resources Division 2002; NPS 1999). Hunt et al. (1980) called these islands the most important seabird colonies in southern California. Jones et al. (1989) noted that the particular association of northern and southern species found here is not duplicated anywhere else in the world.

Thirteen species are known to breed in Channel Islands National Park (table D-4 in appendix D), but many more species use the islands and/or park waters during migrations and in the winter. Western gulls are the most abundant breeding seabird in the park, with a population estimated at more than 15,000 pairs, followed by Cassin's auklet (approximately 12,600 pairs), brown pelican (more than 7,000 pairs), Brandt's cormorant (approximately 4,200 pairs), and Scripp's murrelet (850 to 2,450 pairs). About 3,100 pairs of Ashy storm-petrels, 3,200 pairs of pigeon guillemont, 2,700 pairs of pelagic cormorants, and 640 pairs of double-crested cormorants are estimated to breed on the islands. Five species have breeding populations of roughly 300 pairs or less—Leach's and black storm-petrels, double-crested cormorants, rhinoceros auklet, and tufted puffin (P. Martin, NPS seabird biologist, pers. comm. November 26, 2002; M. Naughton, USFWS, seabird biologist, pers. comm. March 31, 2004; Carter et al. 2004; Carter et al. 1992; Burkett et al. 2003). Common murres bred on Prince Island in 2011.

Certain traditional areas on the islands are used by the birds for nesting and roosting, but there is some annual variation in the exact areas used. Roosting occurs throughout the year, while breeding generally occurs from March to August, often in areas traditionally used as roosting sites. Some species (Scripp's murrelet, the storm-petrels, Cassin's auklet) come ashore only to breed, remaining at sea the remainder of the year. Generally, most seabirds nest in densely crowded colonies. The colonies on the Channel Islands tend to be in areas relatively free from disturbance, often inaccessible bluffs and cliffs, and ledges in dry sea caves. However, species have differing tolerances to disturbance. Western gulls, for instance, can habituate to visitors and nest near heavily used trails and facilities.

Factors contributing to the selection of traditionally used roosting and breeding areas include absence of terrestrial predators, freedom from human disturbance, exposure to cooling northwest winds, presence of suitable nesting substrate, and availability of preferred prey species. Cormorants nest on hard ground on steep vegetated slopes or on cliffs. Scripp's murrelets nest primarily in natural rock crevices along steep edges around the periphery of islands. Auklets and murrelets nest in rocky crevices and burrows dug into rocky soil. Murrelets also nest under bushes and in sea caves, along the walls. Nests that are monitored are those concentrated in canyons that contain rocky substrate and *Eriophyllum* bushes, although there are many nests on vertical cliffs as well. Nests may also be under buildings and other human artifacts that offer sufficient cover. Cassin's auklets usually nest in dense colonies in rock crevices and in burrows they dig in rocky compacted soil. All of the other petrels and alcids (black-and-white, short-necked, web-footed diving birds of the northern seas that come to land only to nest in colonies) nest in natural crevices. Ashy storm-petrels use crevices and ledges in large sea caves for nesting. Black

storm-petrels nest in natural crannies and recesses but seem to prefer burrows excavated by Cassin's auklets or other storm-petrels. Rhinoceros auklets and tufted puffins also breed in crevices in the park. Western gull colonies are usually found on the exposed north and northwest sides of islands on rocky cliffs or headlands and are almost always associated with vegetation. California brown pelicans nest sites are on steep, rocky slopes and bluff edges. Pigeon guillemots breed colonially or solitarily in caverns or damp northern exposure sea cliffs and slopes.

The nesting birds now found at the park in some cases are remnants of much larger populations. Many of these species are extremely sensitive to human disturbance, including Ashy storm-petrels, Cassin's auklets, and Scripp's murrelets. Disturbance can result in nest desertion and increased mortality. When adults are disturbed, they may knock eggs and chicks off their nests or leave them vulnerable to predators. For example, a single disturbance can flush a cormorant colony from their nests, resulting in a total reproductive failure (NPS 1980b). Fishing operations also can affect seabirds. Alcids (puffins, auklets, murrelets) and storm-petrels may be affected by ancillary fishing activities, such as the presence of vessels, generators, lights, and noise, near rookeries and nesting sites. In 1999 a large increase in nighttime squid fishery boat activity on park waters during the breeding season was believed responsible for increased mortality rates of Scripp's murrelets and likely other alcids and Ashy and black storm-petrels. The bright lights of the vessels increase predation of the seabirds and may disorient the birds and cause them to crash into the vessels, injuring or killing them (CDF&G Marine Resources Division 2005). But it also should be noted that some of the park's seabird populations have increased due to the removal of predators such as black rats and cats and the banning of DDT.

Each of the park's islands supports seabird colonies, with various species using different islands. However, Anacapa, San Miguel and its two small islets (Prince Island and Castle Rock), and Santa Barbara Islands are especially important breeding areas for seabirds.

Anacapa Island. Carter et al. (1992) reported that 11,107 pairs of seabirds were on Anacapa Island in 1991. West Anacapa supports the largest California brown pelican nesting colony in the western United States (some 6,000 pairs; P. Martin, pers. comm. November 26, 2002). One of the largest western gull colonies in the Channel Islands is on Middle Anacapa. Other seabirds that breed on Anacapa's three islets include Scripp's murrelet; Cassin's auklet; pigeon guillemot; and Brandt's, double-crested, and pelagic cormorants (table D-4 in appendix D). The presence of black rats likely resulted in substantial mortality to nesting seabirds. With the recent eradication of black rats on the island, it is expected that the island's seabird populations would increase, and crevice and burrow nesters such as Scripp's murrelets, Cassin's auklets, and storm-petrel species may make more use of the island. There is no historical evidence of Ashy storm-petrels nesting on Anacapa Island; however, nests can be difficult to locate if they occur in deep crevices, cliffs, and steep bluffs (McChesney et al. 2000). Ashy storm-petrels have been detected in previous nocturnal mist-netting surveys on the island (B. McIver, USFWS, pers. comm. April 6, 2004). Fifty Scripp's murrelet nests were recorded on the island and in sea caves in 2009 with a hatching success rate of 89%. Nesting activity and success has increased substantially since the rat eradication.

Santa Cruz and Santa Rosa Islands. Although both of these islands do not support seabird colonies as big as Anacapa, San Miguel, and Santa Barbara Islands, they do support a number of colonies. Most of the colonies either are on bluffs on the islands, in sea caves, or on rocks offshore of the islands. Carter et al. (1992) reported there were 3,752 pairs of seabirds on Santa Cruz Island and

3,149 pairs on Santa Rosa Island in 1991. Santa Cruz Island supports seven nesting seabird species, including California brown pelican and Scripp's murrelet, while Santa Rosa Island has four nesting species. Santa Cruz Island sustains one of the most important breeding colonies of Ashy storm-petrels in southern California. Large numbers of these birds nest in sea caves and are likely more vulnerable to human disturbance from visitors than at any other nesting location (B. McIver, USFWS, pers. comm. April 16, 2004). Santa Cruz Island also has several small cormorant colonies and a small gull colony on Gull Rock just off the island. In addition, there are auklets breeding on some of the rocks offshore of Santa Cruz Island, and murrelets have been found in the dry sea caves.

San Miguel Island. San Miguel Island, and more importantly its two small offshore islets (Prince Island and Castle Rock), support the largest and most diverse seabird colonies in the Channel Islands. Sixty percent of the seabirds nesting in the Channel Islands and 11 of the 13 species that breed in the park occur on San Miguel Island and its islets (table D-4 in appendix D). Hunt et al. (1980) observed that San Miguel Island and its islets (particularly Prince Island and Castle Rock) support by far the largest and one of the most diverse seabird colonies in southern California. They further noted that 7 of the 11 species that breed in the Southern California Bight have their most important colonies here (Leach's and Ashy storm-petrel; Brandt's, double-crested, and pelagic cormorant; pigeon guillemot; and Cassin's auklet). (Recent observations indicate that the Brandt cormorant colonies on San Miguel Island are not quite as numerous as on Santa Barbara (P. Martin, pers. comm. March 31, 2004.) Four species that breed on the island are listed as species of special concern by the California Department of Fish and Wildlife—Ashy storm-petrel, double-crested cormorant, Scripp's murrelet, rhinoceros auklet (whose population is believed to be increasing due to an expansion of their breeding range), and tufted puffin. The Scripp's murrelet is listed as a threatened species by the California Department of Fish and Wildlife.

Carter et al. (1992) reported 16,625 pairs of seabirds were present on San Miguel Island and its islets in 1991. An absence of terrestrial predators, a minimum of human disturbance, and nearby rich marine foraging areas enable large numbers of seabirds to successfully breed on Prince Island and Castle Rock. Steep cliffs, rocky soil (for burrowing), and isolated vegetated areas also provide a variety of preferred nesting habitats on San Miguel Island, although the presence of island foxes probably limited extensive seabird nesting in the past.

Santa Barbara Island. Santa Barbara Island with its offshore islets (Sutil Island and Shag Rock) is the second most important seabird nesting island in the park. The island supports 11 species of breeding seabirds (table D-4 in appendix D). Carter et al. (1992) reported 7,432 pairs of seabirds. Santa Barbara Island has the largest Scripp's murrelet colony in the world. Based on 1991–2002 survey data, Santa Barbara Island supported between 500 and 1,250 pairs of Scripp's murrelets (Burkett et al. 2003). This species was listed as a threatened species by the State of California on December 22, 2004, and has been petitioned for federal listing.

Santa Barbara Island also supports probably the only U.S. colony of black storm-petrels (another California species of special concern). The population was estimated at 274 individuals in the early 1990s (CDF&G Marine Resources Division 2002). Brown pelicans (state endangered) roost and nest on the north side of Santa Barbara Island. This is the only place known where nesting brown pelicans coexist with people. A large colony of western gulls (approximately 7,000 pairs) is on the island. During the nesting season pelican and gull nests can cover many acres of land. Other seabirds that nest on Santa Barbara Island include Ashy storm-petrels (a California species of special concern); Brandt's, double-breasted, and pelagic

cormorants; Cassin's auklet; and pigeon guillemot. However, the Cassin's auklet breeding population has been decreasing—only a few of these birds bred on the island in 2002.

California Brown Pelican

As one of the species listed in the park's enabling legislation, the California subspecies of the brown pelican (*Pelecanus occidentalis californicus*) is of particular interest. This bird was classified as federally endangered in 1970 and as endangered by the State of California in 1971, but was delisted as a federally and state listed species in 2009. Channel Islands National Park provides essential habitat for this species. The only breeding colonies of brown pelicans in the western United States are on West Anacapa and Santa Barbara Islands. The Channel Islands also provide roosting habitat for the birds, with major roosting areas occurring on Scorpion Rock off of Santa Cruz Island and near the lighthouse on East Anacapa (USFWS 1983).

Pelicans breed in nesting colonies on islands without mammalian predators and permanent human habitation. They typically build a nest on the ground and on low shrubs. On West Anacapa and Santa Barbara Islands pelicans generally nest on inaccessible slopes, canyons, and high bluff tops and edges. Brown pelicans are asynchronous nesters. The nesting season can extend from January through October. The normal clutch size is three eggs. The peak of egg laying is usually March or April; however, eggs are often laid through June. Pelican breeding success is largely determined by the availability of their primary prey items, northern anchovies (*Engraulis mordax*) and Pacific sardines (*Sagax sarinops*), which during the breeding season comprises nearly their whole diet (F. Gress, biologist, pers. comm. December 17, 2002).

In the 1970s, the park's colonies almost disappeared due to eggshell thinning and consequent reproductive failure (Gress 1995). Pelicans are extremely sensitive to bioaccumulation of the organochlorine contaminants in the marine environment, particularly DDT and its metabolites, and polychlorinated biphenyls (PCBs). DDT has been shown to alter the birds' calcium metabolism, resulting in egg-shell thinning.

The park's breeding populations have steadily increased since 1980, although they are now believed to be fairly stable. An estimated 6,000 pairs were found on West Anacapa in 2002, although this was an unusually high number. Between 1979 and 2001 the colony produced a mean of about 3,600 nests per year. An estimated 1,200 pairs are on Santa Barbara Island. Pelicans were not known to nest on Santa Barbara Island in recent times until 1980; the first significant nesting occurred in 1985. From 1985 to 2001 the colony produced a mean of about 770 nests per year. Starting in 2000 the pelicans started moving their nesting area around on the island. Santa Barbara Island is unusual in that it is the only island known along the Pacific Coast where both nesting pelicans and humans cohabit (F. Gress, pers. comm. December 17, 2002).

Park visitor access is restricted on West Anacapa. A no-entry closure from January 1 through October 31 also keeps boats well offshore to protect fledglings in the vicinity of the nesting colony and provides a buffer zone to nesting pelicans. On Santa Barbara Island the pelican nesting area is closed to visitors and trails are closed when birds nest or show initial nesting behavior.

Pinnipeds (Seals and Sea Lions)

Channel Islands National Park supports a larger and more varied population of seals and sea lions than any other area in the world that is close to a major human population center (NPS 1980b). In southern California, seals and sea lions breed and pup almost exclusively on the Channel Islands (NPS 1984). Large populations of pinnipeds seasonally still live in the park because they are protected from

human disturbance in productive marine waters. These marine mammals represent a major scientific resource and a significant wildlife watching opportunity.

Four species of pinnipeds breed on the islands, while a fifth, the Guadalupe fur seal, hauls out but does not regularly breed in the park (table D-5 in appendix D); however, a pup was born on San Miguel Island in 1997 (Melin and De Long 1999; CDF&G Marine Resources Division 2002). The California sea lion is the most common species and has established breeding colonies or haul-outs on all of the islands. Northern elephant seals are the second most common species and breed or haul out on all of the islands. Harbor seals are also fairly common and breed on all of the islands. Northern fur seals are less commonly seen in the park. The Guadalupe fur seal, a federal- and state-threatened species, occurs in very small numbers, usually from one to three individuals (CDF&G Marine Resources Division 2002). The Steller sea lion formerly bred on San Miguel and Santa Rosa Islands, and possibly Santa Cruz Island, but due to a general population decline, now occurs only in small numbers, if at all, in park waters. With the exception of Steller sea lions and Guadalupe fur seals, all of these species' overall populations continue to increase annually, except during El Niño events (Forney et al. 2000)

California sea lions and northern fur seals breed between June and August, while northern elephant seals breed from December through February and harbor seals breed from February through May. Haul-out and rookery sites for pinnipeds include both beaches and rocks. The availability of food, exposure to cooling wind, freedom from human disturbance, substrate composition, and the preferences of the animals are all factors in determining which specific sites are used. Different species of pinnipeds may haul out on the same site, although population numbers and the proportion of adults, juveniles, and pups, and male and female animals vary through the year. Northern elephant seal pups are born in January and February, harbor seals pup from February through May, California sea lion pups are born in late May to June, and northern fur seals pup in July and August. Unlike the other pinnipeds, harbor seals usually avoid areas inhabited by other seals and sea lions. They are much more wary than other pinnipeds and generally haul out only on the most secluded beaches, rocks, and mud flats available.

On land, all of the park's pinnipeds are sensitive to human disturbance. In particular, at the sight of a human or in response to auditory stimuli (e.g., sonic booms or overflights), California sea lions may panic and attempt to reach the water. Depending on the intensity of disturbance, they may startle to the point of a massive stampede, which can result in the crushing and/or abandonment of newborn pups as well as injuries to other animals. Frightened fur seals may suffer heat prostration, due to their dense fur, if immediate access to water is not available. Female harbor seals that are disturbed would often abandon their young, returning to their pups after the disturbance has ceased.

Anacapa Island. Limited habitat (most beaches are almost completely submerged during high tides) and heavy human visitation combine to make Anacapa Island somewhat less desirable than the other islands for stable pinniped populations (NPS 1980b). Harbor seals breed on the island, predominately on inaccessible areas of the southern shores of the three islets. While pups have been on West Anacapa, the role of the island as a hauling and breeding ground is unclear (NPS 2000). California sea lions and northern elephant seals also haul out on Anacapa Island.

Santa Cruz and Santa Rosa Islands. Both of these islands support large breeding populations of harbor seals. Animals that use the NPS lands on Santa Cruz Island tend to be on the north side of the island. Santa Rosa Island is becoming increasingly important for northern elephant seals. Both northern elephant seals and harbor seals use several

beaches around the island for breeding, while California sea lions haul out on the island in a limited number of places.

San Miguel Island. San Miguel Island is the most important island in the park for pinnipeds. Northern fur seals, northern elephant seals, California sea lions, and harbor seals all breed there. This is also the only island where Guadalupe fur seals and northern fur seals haul out. When Steller sea lions used the island in the past, San Miguel Island was the only island where six pinniped species were found together — more species than were found in any other single location in the world. Cool weather, proximity to abundant fish, low sandy beaches, and most importantly, the absence of human disturbance, all make San Miguel Island ideal pinniped habitat. The island is estimated to support about 60,000 northern elephant seals, about 80,000 California sea lions, more than 12,000 northern fur seals, and about 1,000 harbor seals (D. Richards, NPS marine biologist, pers. comm. November 26, 2002; S. Melin, NMFS marine biologist, pers. comm. March 15, 2004). The species alternate breeding and haul-out periods on the island in a way that results in a continuous concentration of pinnipeds at preferred sites. Only limited areas are completely vacant throughout the year; most beaches and rocky areas have at least some pinniped use throughout varying times of the year. The Point Bennett area in particular has a very large population, and is one of the world's most outstanding wildlife displays. The broad sand flats area is the largest rookery pupping ground and haul-out area of California sea lions and northern elephant seals in their range, as well as a major (and the southernmost) pupping ground for northern fur seals. Point Bennett also is the only location in the United States (and the northernmost area) where the Guadalupe fur seal is found. The south side of San Miguel Island, from Tyler Bight to Cardwell Point, is a pupping ground and haul-out area for northern elephant seals and harbor seals in the winter and spring; juvenile California sea lions haul out in Tyler Bight during the summer breeding season. Harbor seals use smaller secluded beaches all around the island. Castle Rock, near the west end of the island, is a pupping ground and haul-out area for California sea lions and northern fur seals (NPS 1980b).

Santa Barbara Island. Although it is the smallest island in the park, Santa Barbara Island is important for pinnipeds. Because this island is approximately in the middle of the California Channel Islands group, a continuous stream of animals passes by, hauls out, and stops to breed. Most areas along the shoreline are used by pinnipeds, including Landing Cove where California sea lions haul out. California sea lions, northern elephant seals, and harbor seals all have breeding and pupping grounds and haul-outs on Santa Barbara Island.

Nonnative Animal Species

Beginning in the 19th century, humans purposefully introduced a variety of nonnative species to the islands in the park including rabbits, cats, burros, horses, goats, pigs, sheep, and cattle. Other species may have stowed away on ships and escaped onto the islands, such as black rats. These species dominated the islands' fauna and had a major impact on the natural vegetative communities and on soils (see "Vegetation and People"). They also caused the disappearance of several native species, as well as the reduction in numbers of other native animals. For instance, black rats are thought largely responsible for the long-term decline and lack of breeding success of Scripp's murrelets and Ashy storm-petrel on Anacapa Island (NPS 2001a). In the past 20 years most of the nonnative animals have been removed from the islands. Table 22 lists the nonnative animals that still occur in the park. Three nonnative bird species (European starlings, house sparrows, and brown-headed cowbirds) are present on almost all of the islands (the house sparrow does not occur on Anacapa Island). The effect of these birds on the islands' native birds is unknown.

TABLE 22. NONNATIVE VERTEBRATES AT CHANNEL ISLANDS NATIONAL PARK

Common Name	*Scientific Name*	Island[1]				
		A	SC	SR	SM	SB
Black rat	*Rattus rattus*				SM	
Catalina quail	*Callipepla californica catalinensis*		SC	SR		
European starling	*Sturnus vulgaris*	A	SC	SR	SM	SB
Brown-headed cowbird	*Molothrus ater*	A	SC	SR	SM	SB
House sparrow	*Passer domesticus*		SC	SR	SM	SB

1 Island: A = Anacapa, SC = Santa Cruz, SR = Santa Rosa, SM = San Miguel, SB = Santa Barbara.

Anacapa Island. Nonnative animals that lived on Anacapa Island included cats, black rats, and sheep. Sheep were raised on East Anacapa between 1902 and 1937, and may have persisted until as late as the 1960s. Cats and rabbits have been successfully eradicated from the island. The Park Service carried out a project to eradicate rats between 2000 and 2002. The eradication of black rats has been successful. Native animals on Anacapa Island responded positively and rapidly to the removal of rats.

Santa Cruz Island. A variety of nonnative animals were introduced onto Santa Cruz Island including cattle, sheep, wild turkey, and Catalina quail. These animals were introduced for ranching and hunting purposes. Cattle, sheep, turkeys, and pigs were subsequently removed, but four nonnative bird species persist on the island. Pigs were present on Santa Cruz Island from the 1850s. They were found in all locations and habitat types on the island. Annual estimates of the island's pig population ranged from 500 to more than 4,000 (NPS 2002a). The population fluctuated greatly from year to year depending on the availability of food. The pigs directly impacted the island's vegetation, including threatened and endangered plants, wildlife, and archeological resources; and indirectly affected island foxes (supporting golden eagles, which also fed on the foxes). In addition, through alteration of habitat and direct competition, the pigs likely influenced the composition and abundance of the island's wildlife species. The Park Service, in collaboration with TNC, successfully eradicated pigs from Santa Cruz Island by 2006.

Santa Rosa Island. Sheep, cattle, pigs, horses, mule deer, elk, and Catalina quail are all nonnative species that were introduced on Santa Rosa Island for ranching and hunting purposes. Pigs, sheep, and cattle have all subsequently been removed, with pigs eliminated by 1993, sheep removed by 2001, cattle removed by 1998, elk removed by 2011, and deer removed by 2013. An estimated 100 Roosevelt elk and 100 Kaibab mule deer still range throughout the island, along with about two dozen former ranch horses. The elk and deer have likely influenced the composition and abundance of other wildlife species through alteration of habitat.

San Miguel Island. Sheep, cattle, pigs, horses, burros, and black rats were among the nonnative animals that were introduced on San Miguel Island at differing times in the 19th and 20th centuries. With the exception of black rats, all of these animals were subsequently removed from the island. Black rats are a continuing problem, although island foxes appear to be controlling their numbers and extent. They occur primarily on the coastal beaches and bluffs of the island. In addition to preying on seabird adults, eggs, and chicks, black rats may be responsible for the reduction of populations such as land mollusks and intertidal invertebrates, may outcompete the native deer mice, and are carriers of diseases harmful to animals (NPS 1980b; U.S. Navy 2002). Burrowing by black rats has negatively impacted the integrity of archeological resources.

Santa Barbara Island. Santa Barbara Island once had sheep, goats, feral cats, and rabbits, all of which were particularly devastating to

the island's fauna. With the exception of European starlings, house sparrows, and brown-headed cowbirds, all of these nonnative species have been removed from Santa Barbara Island.

Climate Change and Wildlife

Like vegetation, climate change probably is affecting, and would continue to affect, the islands' wildlife, although the rate and magnitude of specific changes are not known. Increased air temperatures; drought; alteration of precipitation patterns; a rise in sea level; altered marine water temperatures, currents, and acidity; and alteration in recurrence and intensity of storms all can affect the park's plant and animal populations. In addition, changes in the composition and distribution of terrestrial vegetation due to climate change would indirectly affect wildlife populations.

Over the past century the sea level along California's coast has risen almost 8 inches. Computer model projections indicate future sea level rise along the California coast could be 1.0 to 1.4 meters (39 to 55 inches) by the year 2100 (Cayan et al. 2009). The U.S. Geological Survey mapped the relative vulnerability of the coastline of Channel Islands National Park to future sea level rise (USGS 2005). The areas within the park that are likely to be most vulnerable to sea level rise are areas of unconsolidated sediment where regional coastal slope is low and wave energy is high. Of the 250 miles of coastline evaluated, 25% was determined to have a very high vulnerability, 28% had high vulnerability, 19% had moderate vulnerability, and 28% had low vulnerability. The largest stretches of very high vulnerability are on San Miguel and Santa Rosa Islands. Species that use sandy beaches and dune habitats in these areas, including pinnipeds and shorebirds, likely would experience habitat loss, fragmentation, and alteration due to sea level rise and more intensive storms (increasing coastal erosion) associated with climate change. Flooding would eliminate or shrink the areas where seals and sea lions haul out, and areas where seabirds nest and breed. This is a particular concern in the Farallon Islands off the northern California coast (Largier et al. 2010), and likely would also apply to Channel Islands National Park.

Increased sea levels can also flood island sea caves where some seabirds nest. For example, the sea caves that Ashy storm-petrels and murrelets use on the islands may no longer be usable with a rise in the sea level.

Another potential change regarding wildlife, and pinnipeds and seabirds in particular, is an increase in air temperature. Increases in extreme temperatures or increases in average temperatures can stress wildlife species; affect food and water supplies; and affect interactions with competitors, predators, and invasive species (California Natural Resources Agency 2009). On the northern Channel Islands many of the wildlife species are adapted to cold and windy conditions, and can become stressed with high temperatures. During unusually warm conditions, seabirds may abandon their nests, neglect offspring, and die of heat stress (Warzybok and Bradley 2008 as cited in Largier et al. 2010). Likewise, seals and sea lions would likely spend less time hauled out and could abandon their young if conditions become too warm (Largier et al. 2010).

Increased temperatures can also increase the potential for the spread of diseases, which in turn can affect the islands' native wildlife populations. For example, warmer conditions may favor the spread of West Nile virus, which could infect island bird populations. Other invasive species could affect the diversity or abundance of native island species through competition for resources, predation, parasitism, and interbreeding with native species, or by causing physical or chemical changes to the native species' habitats (California Natural Resources Agency 2009).

Phenological life cycle events, such as blooming, migration, insect emergence, fruit ripening, and breeding, also may be affected by climate change. As individual species react differently to warming, species interactions may change.

Several of the effects of climate change listed previously for plants could affect the islands' wildlife including:

- increased erosion of cliffs and hillsides due to intensified winter precipitation, and larger waves from winter storms and higher water levels, affecting the frequency of rockslides and degrading nesting habitat, particularly for species that use rock crevices such as auklets and storm-petrels (Largier et al. 2010)
- potential for floods due to more intensive storms
- increased potential for drought
- increased potential for wildfires

Changes in the marine environment due to climate change also would likely affect wildlife populations on the islands. In particular, changes that affect fish and other marine populations would in turn affect island seabird and pinniped populations. For instance, if northern anchovy or Pacific sardine populations were to change due to an increase in water temperature or changes in upwellings, it would affect the brown pelicans that nest on the islands. Changes in ocean temperatures, currents, and upwellings can also affect the composition, distribution, and availability of phytoplankton and zooplankton, while ocean acidification can affect shell-building plankton, sea urchins, mussels, oysters, abalone, and crabs. This in turn can affect wildlife migration patterns (e.g., seabird and marine mammal migrations), abundance, timing of breeding, reproductive success, and behavior (Largier et al. 2010; Office of National Marine Sanctuaries 2009; Wilkinson 2002; California Natural Resources Agency 2009). If the frequency and intensity of the El Niño Southern Oscillation event were to change, it would impact Channel Islands wildlife populations.

Warming of ocean waters is expected to result in a range extension of warm water species and a contraction of cooler water species. Guadalupe fur seals are being seen more frequently in the park, perhaps due to the effects of climate change. On the other hand, the range for Steller sea lions has contracted and they no longer breed in the park, perhaps due to a reduction in their prey species (S. Allen, pers. comm. July 22, 2010).

All of the above effects associated with climate change would be expected to result in wildlife species adapting, changing their behavior (e.g., changing their breeding periods), persisting in suboptimal conditions with potentially major physiological costs, moving, or dying out. Wildlife populations that are unable to adapt or move may be extirpated or decline to extinction. And as noted previously for plants, many of the park's wildlife species are endemic to the islands, with limited distributions, and would have no place else to go in response to changes in climate.

FEDERALLY AND STATE LISTED THREATENED AND ENDANGERED SPECIES

This section addresses two federally threatened or endangered animals and six listed plant species. (Many of these species are also listed as threatened or endangered by the state.) Channel Islands National Park supports many other federally and listed species, but the alternatives being considered would not affect those species and they are not discussed here. (Another formerly listed species, the island night lizard, was removed from the List of Federal Threatened and Endangered Species in April 2014 due to successful habitat conservation and restoration actions.)

Western Snowy Plover

Western snowy plovers (*Charadrius alexandrinus nivosus*) breed from Washington State to Baja, California, and winter in coastal areas from southern Washington to Central America. Most western snowy plovers return to the same site in subsequent breeding seasons. They breed primarily above the mean high tide line. Their preferred coastal nesting habitats are sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths. Their nests typically are shallow scrapes or depressions on the ground on flat, open areas with sandy or saline substrates, where vegetation and driftwood is sparse or absent. The nesting season extends from early March through September, with peak nesting occurring from mid-April through mid-August. Chicks reach fledging age about one month after hatching. Adults forage on invertebrates primarily along the water's edge. On the Channel Islands they forage in the wet sand and amidst surf-cast kelp in the intertidal zone and in dry, sandy areas above the high tide. In winter, snowy plovers are found on many of the beaches used for nesting as well as on beaches where they do not nest, and on estuarine sand and mud flats.

The Pacific coast population of the western snowy plover was listed as threatened by the Fish and Wildlife Service on March 5, 1993. The population has declined due to many factors. Recreational and other human disturbance, loss of habitat to urban development, introduction of beachgrass (*Ammophila* spp.) and other nonnative species, and expanding predator populations have all contributed to a decline in active nesting areas and in the size of the breeding and wintering populations. It is estimated that about 2,000 snowy plovers may breed along the U.S. Pacific Coast and that there are 157 current or historical snowy plover breeding or wintering locations along the U.S. Pacific Coast (USFWS 2001).

Channel Islands National Park is one of the few locations in southern California that still supports breeding and wintering populations of western snowy plovers. In the 1990s Santa Rosa and San Miguel Islands had both breeding and wintering populations, but numbers have declined precipitously. A few birds also lived on TNC portion of Santa Cruz Island. On Santa Rosa Island the birds inhabited about 16 miles of coastline, while on San Miguel Island they were present on about 10 miles of shoreline (USFWS 2001). The Skunk Point area on Santa Rosa Island is an important nesting area and foraging area for juvenile and migrating plovers. Forty to fifty percent of the nests in this area have been found on rocky outcrops in the back dunes, about 490 to 980 feet (150 to 300 meters) from the shoreline (USFWS 1995).

Nesting snowy plovers are sensitive to disturbance. Activities that are detrimental to nesting birds include walking, jogging, unleashed dogs, and beachraking, among other uses (USFWS 1995). Recreationists can inadvertently step on eggs and chicks, destroying them (USFWS 2001). In addition, adults would stay away from a nest while people are present. Birds generally flush from nests when people come within 328 feet (100 meters) (USFWS 1995). Separation of plover adults from their eggs or chicks may result in increasing mortality due to overheating in the sun, cold, blowing sand, or predators such as gulls or ravens. Trash left on a beach also may attract predators. People may cause broods of snowy plovers to run away from favored feeding areas.

To avoid disturbance of the birds, several of the beaches where snowy plovers currently nest are closed to recreational use. Specifically, all of the shoreline of San Miguel Island, primarily to protect pinnipeds, is closed to public landing or entry with the exception of Cuyler Harbor. On Santa Rosa Island the coastline from and including Skunk Point to just north of East Point is closed to visitors, including landing or hiking, from March 1 to September 15. However, some

people occasionally land or hike on these beaches during the nesting season. From South Point to Sandy Point and from Sandy Point to Carrington Point, camping also is permitted on the beaches only from September 1 through December 31. Camping and landing are prohibited year-round at the beaches around Sandy Point.

In the park, population numbers have declined on both Santa Rosa and San Miguel Islands, concurrently with an overall decline in the breeding population in southern California. On Santa Rosa Island it is estimated that less than 30 breeding pairs were on the island in 2002 (most recent survey), down from 60 pairs in 1993. An estimated 200 birds still winter on the island's beaches. On San Miguel Island, snowy plovers are sometimes sighted on beaches during the breeding season, but they are no longer known to breed on the island. An unknown number of birds also winter here.

Different factors may be responsible for these declines on the islands. On San Miguel Island human disturbance of plovers has not been documented, nor have data been collected on the impacts of people on the Cuyler Harbor beach — the only beach visitors are permitted to use and what was once an important nesting area (USFWS 1995). It is believed that the decline in the breeding population on San Miguel Island may be due to a large increase in the number of northern elephant seals and California sea lions that have occupied snowy plover nesting habitat. This increase occurred simultaneously with the western snowy plover decline.

Several factors may be responsible for the decline of western snowy plovers on Santa Rosa Island. In the past, ranch activities affected the plovers, including cattle and horses trampling nests and flushing birds from nests. Ungulate carcasses may have attracted predators such as ravens. Raven numbers are thought to be unnaturally high on Santa Rosa Island, which may be resulting in an increase in predation by ravens on plover eggs. Accumulations of trash also may have attracted predators. In the past, visitors, including hikers, surfers, and kayakers, affected the plovers at Skunk Point (USFWS 1995). But with the beach closures these impacts are happening less frequently on the beaches. High winds and predators are still a frequent cause of nest loss. In the past winds accounted for 28% to 34% of all nest losses, while predators (e.g., ravens and Santa Rosa Island spotted skunks) accounted for another 26% to 44% of losses (USFWS 1995). Both Santa Rosa and San Miguel Islands have 20- to 30-knot winds on a regular basis through the plover nesting season, which can cause eggs to be sandblasted or blown out of the nest when the adult steps off the nest. It is also possible that ravens, which eat plover eggs and chicks, live on the island and may be more numerous than once thought due to the presence of ungulate carcasses. In addition, increasing numbers of elephant seals hauling out on the south beaches of Santa Rosa Island could be reducing nesting habitat.

Island Fox

The island fox (*Urocyon littoralis*), a relative of the mainland gray fox, is the largest native land mammal that lives in Channel Islands National Park. Three subspecies live in the park—the San Miguel Island fox (*U. l. littoralis*), Santa Rosa Island fox (*U. l. santarosae*), and Santa Cruz Island fox (*U. l. santacruzae*). On March 4, 2004, the three subspecies, along with the subspecies on Santa Catalina Island, were listed as endangered by the Fish and Wildlife Service. The State of California also lists the entire species as threatened.

Island foxes occur in virtually every habitat on the three islands. Their home range size varies by habitat type, season, and sex of the animal. Island foxes eat a wide variety of plants and animals, with their principal foods including mice, ground-nesting birds, arthropods, and fruits. Island foxes are territorial, generally monogamous (mating for life), and breed only

once a year. Although they can breed at the end of their first year, most breeding involves older animals. Pairs are seen together more frequently beginning in January, with mating taking place in late February and early March. The gestation period is thought to be similar to the gray fox (about 52 days). Island foxes give birth in dens, which they usually do not dig themselves. Pups are born from late April through early May with litter size ranging from one to as many as five pups; two or three is considered to be average. It is believed that the pups undergo a period of extended parental care during their first summer.

Island foxes are relatively inquisitive and docile. They generally show little fear of humans. The foxes are primarily nocturnal, but they are also active during daylight hours, with peaks occurring at dusk and dawn.

Beginning in 1994 the three island fox subspecies underwent major declines in numbers. On San Miguel Island, the island fox population fell from 450 in 1994 to 15 in 1999. On Santa Rosa Island the fox population fell from more than 1,500 to 15 animals in 2000. On Santa Cruz Island the population declined from about 1,000 to 2,000 animals in 1994 to less than an estimated 100 adults in 2001 (NPS 2001c, 2002a, 2002b; NOAA et al. 2002). Although the Santa Cruz Island population had increased by 2003, fewer than 100 foxes were estimated to be living in the wild.

The primary cause of these declines was attributed to predation by golden eagles (NPS 2001c, 2002a) (see also the discussion above of golden eagles under "Native Terrestrial Animals"). The absence of bald eagles, whose presence may have kept golden eagles away, and the conversion of predominant vegetation from shrub to nonnative grasslands, which offer much less cover from aerial predators, are contributing factors to the increase in golden eagle predation.

In 1999, the Park Service established an island fox captive breeding program in the park to restore wild populations to viable levels. Breeding pens were built on San Miguel Island in 1999, and 14 of the 15 remaining wild island foxes were brought into captivity. In 2000, pens were built on Santa Rosa Island, and the 14 island foxes remaining on that island were captured. On Santa Cruz Island, where the fox population declined to 50 to 60 animals by 2001, captive breeding began in 2002 as a joint project between the Park Service and TNC.

All three northern island fox subspecies increased in captivity and reached the target captive breeding population size that allowed for releases to the wild. Releases began in 2002, 2003, and 2004 on Santa Cruz, Santa Rosa, and San Miguel Islands, respectively. Captive breeding was terminated on Santa Cruz and San Miguel Islands in 2007 and on Santa Rosa Island in 2008 due to the high survival and reproductive success in released foxes.

The number of island foxes has been increasing on all three islands, and the fox population overall is at or approaching biological recovery. The total population in 2013 was estimated at more than 2,500 individuals, with excellent reproduction and survival of more than 90% of the foxes (NPS in process). The estimated population on San Miguel Island was 550 animals, which exceeded pre-decline levels. On Santa Rosa and Santa Cruz Islands, the populations are nearing pre-decline numbers, with an estimated 900 and 1,100 foxes, respectively.

The three island fox subspecies face a number of threats. Island foxes are vulnerable to canine diseases, such as canine distemper virus, which can be transmitted to wildlife by domestic dogs. (Dogs occasionally come ashore on the islands, despite the prohibition on pets, and "ranch dogs" are brought to Santa Rosa Island.) The introduction of such a disease would greatly increase the risk of extinction for these small populations of foxes. If domestic cats were to be introduced to the islands, they could negatively affect the foxes through aggression, predation, disease, and competition for food (Laughrin 1978;

Roelke-Parker et al. 1996, as cited in the *Federal Register* 69(44):10347). Feral cats have been found to displace island foxes from habitats on San Nicolas Island in the southern Channel Islands (Kovach and Dow 1985, as cited in the *Federal Register* 69(44):10347). In 2012, a feral cat was trapped on Santa Rosa Island, which may have been brought to the island with construction equipment. However, the cat did not have noticeable impacts on the fox population.

Vehicle collisions on the roads could kill or injure animals. (This is the largest known source of mortality on San Nicolas and San Clemente Islands [NPS 2001c].) Due to their large population declines, a lack of genetic variability could increase the island foxes' susceptibility to disease and parasites. Finally, the small island fox populations are also more vulnerable to extinction from random, natural events, such as droughts or wildfires (NPS 2002b).

Hoffmann's Slender-flowered Gilia

Hoffmann's slender-flowered gilia (*Gilia tenuiflora* ssp. *hoffmannii*) was listed as a federally threatened plant on July 31, 1997. It is an endemic, small, annual herb in the phlox (Polemoniaceae) family. It is a component of dune and lupine scrub vegetation. Plant density tends to be low in areas where grass cover is high. The gilia is known in only three locations on Santa Rosa Island. The largest population, comprised of about 3,000 to 3,500 plants in 1994, is at Skunk Point. About 2,000 plants in 1994 were present near East Point, and a small population of 88 individuals was observed growing in an arroyo between the ranch and Carrington Point (USFWS 2000).

The plant's numbers were reduced due to decades of grazing by sheep, horses, cattle, elk, and deer, and by competition with nonnative grasses, which invaded the available habitat. Competition from nonnative grasses still poses a threat. Deer, elk, and horses also still pose a trampling and soil destabilization threat. A sandy service road used by the Park Service and former owners goes through the oceanward edge of the East Point population. In the past when the road was wet or soft, vehicles may have driven off the road and may have crushed plants. However, seasonal closures of the road at the intersection of the old ranch road and Sierra Pablo Road have eliminated this impact. The species is also threatened by random naturally occurring events due to its limited distribution (USFWS 2000).

Santa Rosa Island Manzanita

Santa Rosa Island manzanita (*Arctostaphylos confertiflora*) is endemic to Santa Rosa Island. It is a perennial shrub in the heath (Ericaceae) family that grows 4 inches to 6.5 feet (0.1 to 2 meters) high. The shrub occurs in prostate and upright forms. Santa Rosa Island manzanita reproduces or spreads only by seeds (obligate seeder) and requires fire for regeneration (USFWS 2000). The plant grows in mixed chaparral, mixed woodland, Torrey pine woodland, and island pine woodland communities. It generally grows on sediments derived from San Miguel volcanics.

Surveys for the Santa Rosa Island manzanita have reported the plant growing in three areas on Santa Rosa Island—the northeast side of Black Mountain (less than 300 plants) combined with the Torrey Pine vicinity (less than 100 plants), the canyons on the southeast side of the island (less than 1,000 plants), and in the vicinity of South Point (about 100 plants) (USFWS 2000).

The Fish and Wildlife Service listed the Santa Rosa Island manzanita as endangered on July 31, 1997. Since nonnative herbivores were introduced to Santa Rosa Island, most of the island's vegetation, including rare plant species, has been severely impacted by grazing. This has led to fragmentation of populations into small isolated units, diminished or nonexistent reproduction and recruitment, extensive soil loss, and loss of an

adequate seed bank and seed bed for regeneration. The manzanita is still threatened by altered fuel characteristics, soil loss, and low reproductive success (USFWS 2000).

Grazing and fire is a particular concern for this species. As a species this manzanita relies on the formation and maintenance of an adequate seed bank to perpetuate itself following a major event such as a fire. Observed shrubs have had recent twig growth (flowers and fruit) browsed off by deer, and no seedlings or young plants have been observed (USFWS 2000; D. Rodriquez, NPS botanist, pers. comm. February 17, 2005). Preliminary evidence suggests that the current seed bank in browsed areas is negligible to nonexistent. It is not known how long-lived the adults are or the age of the established adults. The die-off of adult plants has been observed. However, it would take many decades to adequately replenish the manzanita seed bank. Should the adult plants begin to be lost any time soon there would be no established seed bank to perpetuate that species in that local chaparral community.

Obligate seeding manzanita species recruitment also depends on a seed bank that responds to fire stimulus for germination. Currently the seed bank is either absent or so depleted as a result of soil loss that a fire could eliminate the species.

Santa Cruz Island Chicory

Santa Cruz Island chicory (*Malacothrix indecora*) is another federally threatened plant species that is endemic to the park. It is a mat-like annual herb in the aster (Asteraceae) family. It occurs along the edge of vegetated habitat along coast bluffs, often on midden soils. The plant is known to occur on San Miguel, Santa Rosa, and Santa Cruz Islands. On San Miguel Island the chicory is restricted to soils derived from igneous rocks. A scattered population of about 14,000 plants in five sites was identified in 1998 on the northeast-facing bluffs near Bay Point. On Santa Rosa Island the plant grows on sedimentary coastal bluffs and it grows at the mouth of Lobo Canyon. Surveys in 1998 documented more than 13,000 plants in 10 small pockets from Lobo Canyon to about 0.6 mile (1 kilometer) west of Cow Canyon. On Santa Cruz Island the plant was identified at Black Point (on TNC lands) with fewer than 100 individuals observed in 1996 (USFWS 2000).

This species was affected by cattle grazing, trampling, and feral pig rooting. It is threatened by soil loss due to erosion, habitat alteration, and seabird nesting, which has altered the plant's historical habitat on San Miguel Island and Prince Island. Trampling by hikers is another potential threat; on Santa Rosa Island a relatively popular trail goes to Lobo Canyon, and NPS rangers lead hikes there. Although no impacts on the population are known to be occurring, if hikers wander off the trail, they could inadvertently trample plants. The species is also threatened by random naturally occurring events due to its limited distribution (USFWS 2000).

Hoffmann's Rock-cress

Hoffmann's rock-cress (*Boechera hoffmannii*), a member of the mustard (*Brassicaceae*) family, is a slender herb that lives for several years, flowers, and then dies. Although it once grew on Anacapa and Santa Rosa Islands, it now is only known to grow on Santa Cruz Island. Although Hoffmann's rock-cress does not appear to be dependent upon pollinators and individual plants may produce as many as 3,000 to 4,000 seeds, the small sizes of natural populations indicate that establishment success of new plants is low (USFWS 2000).

The species is known to grow in four small populations on Santa Cruz Island, which collectively cover less than 1 acre (0.4 hectare) and total fewer than 200 plants. All of the populations are on TNC lands within the park boundary. One of the four populations, totaling about 40 plants, was discovered in

2004 in the Mt. Diablo region (K. McEachern, USGS, pers. comm. February 8, 2005). It is thought that the plant has a poor establishment success because of a lack of favorable seed germination sites, a high rate of seedling mortality, or a combination of these factors (Wilken 1996, as cited in USFWS 2000). Efforts have been underway since 2004 to grow additional plants and augment the existing populations.

The major threats to Hoffmann's rock-cress are loss of soil, loss of shrub canopy cover, trampling of potential seed germination sites by nonnative ungulates, and competition with annual plants (data suggest that this plant cannot tolerate competition with a high cover of annual species; USFWS 2000). The species is also threatened by fire and random naturally occurring events due to its limited distribution.

Island Barberry

Listed by both the Fish and Wildlife Service and California Department of Fish and Wildlife as endangered, island barberry (*Berberis pinnata* ssp. i*nsularis*) is a perennial shrub in the barberry family (*Berberidaceae*). It has spreading stems that reach 5 to 25 feet (2 to 8 meters) high. This plant can reproduce via seeds and can also spread from underground stems (rhizomes). Thus, many stems may actually represent one genetic clone. Once known to grow on Anacapa and Santa Rosa Islands, island barberry now is known to only grow on Santa Cruz Island. It is found on north-facing slopes in chaparral, oak woodlands, and pine forests (Junak et al. 1995, as cited in USFWS 2000).

Three populations of island barberry are known to grow on Santa Cruz Island, all of which are on TNC lands within the park boundary. The populations, which total a handful of individual plants, grow on north-facing, rocky slopes in chaparral, oak woodlands, and pine forests. One population, which may represent one or several clone individuals, is in the Diablo Peak area. Another population is near Cañada Christy, and one population (a single plant) was found at Hazard's Canyon (USFWS 2000).

Island barberry is threatened by soil loss and habitat alteration caused by feral pig rooting, lack of sexual reproduction (no new plants), and random naturally occurring events due to its limited distribution (USFWS 2000).

Island Rush-Rose

Helianthemum greenei or island rush-rose is a small shrub in the rock-rose (Cistaceae) family. It can grow up to 18 inches tall and has alternate leaves covered with star-shaped hairs. The plant grows in open, exposed areas in chaparral, coastal sage scrub, and island pine forest. The Fish and Wildlife Service listed this species as threatened in 1997.

Island rush-rose has been reported from four islands—San Miguel, Santa Rosa, Santa Cruz, and Santa Catalina. Both McMinn (1951) and Thorne (1967) reported seeing island rush-rose on San Miguel Island, but no collections from the island exist nor are there known extant occurrences. On Santa Rosa Island, the plant was recorded in April 1999 when two plants were found in a constructed elk and deer exclosure. In 2002, two additional occurrences of island rush-rose were found on Santa Rosa Island, consisting of one and two individuals.

There are 34 known occurrences of island rush-rose on Santa Cruz Island. In 1994 and 1995 the plant was found growing at 14 sites, 10 of which had an average of 9 plants. The remaining 4 occurrences ranged between 500 and 1,000 individuals with an average of 663 (McEachern et al. 1997). It was subsequently determined the number of individuals in the latter four occurrences was related to recent fires that had occurred on the island. This observation of increased numbers after fires suggests the species is a "fire follower" and that an integral part of its life history is spent

as seed stored in the soil between fire episodes. In 2002 six more populations were discovered on the eastern end of Santa Cruz island, and in 2003 one more occurrence was found on the eastern end. The largest population contained 25 individuals, the next largest contained 9 plants, and the rest were comprised of 1 or 2 individuals. In 2004, 13 more populations were discovered, scattered in chaparral habitat around the island (K. McEachern, USGS, pers. comm. February 8, 2005). In addition, in 1999 and 2000–2001 about 10 plants were discovered in three locations on Santa Rosa Island (D. Rodriquez, NPS botanist, pers. comm. February 17, 2005). By 2012, many of the plants observed on the east end of Santa Cruz Island (following the removal of sheep) had completed their life cycle and the seeds they produced had become part of the soil seed bank. This was confirmed when a helicopter survey conducted in 2012 identified *H. greenei* habitat on Santa Cruz and Santa Rosa Islands but failed to locate or relocate *H. greenei* occurrences. Individual plants are still observed, however, on both islands, usually in open rocky areas. Additionally, in the same year as the helicopter surveys, seeds were collected from individual plants on Santa Rosa Island for possible future restoration activities.

Island rush-rose is vulnerable to soil loss, reduced fire frequencies, and rooting by feral pigs (USFWS 2000). Island rush-rose may also be potentially impacted by hiking. The current Montanon Trail, connecting the east end of Santa Cruz Island with the isthmus and Prisoners Harbor, cuts through one of the larger island rush-rose occurrences on the east end of the island, although the plants at this location have also completed their life cycle and are no longer present except as seed stored in the soil.

Climate Change and Threatened and Endangered Species

All of the above species could experience habitat and population changes as a result of climate change. These potential changes were described previously in the "Terrestrial Vegetation" and "Wildlife" sections. For example, if sea levels were to rise, the beaches where western snowy plovers forage and nest could be affected.

Climate change is also probably affecting the islands' threatened and endangered plants. For example, climate change is already suspected to be affecting the endangered soft-leaved paintbrush, endemic to Santa Rosa Island. McEachern et al. (2009) have found a steady decline in the abundance of this species since 2003, which appears to be due to higher mean growing season temperatures. McEachern et al. (2009) noted that climate change could increasingly affect and counteract management actions targeted at addressing other environmental problems.

SOUNDSCAPE

An important resource at Channel Islands National Park is the natural soundscape. Sometimes referred to as "natural quiet" and "natural ambient sounds," the natural soundscape includes not only the quiet but the entire symphony of natural sounds found in the park, including silence; the crash of waves on the coast; the buzz of insects; the calls of landbirds, gulls, and California brown pelicans; the barking of sea lions hauled out on beaches; the rustle of the wind blowing in the trees; and the underwater songs of whales and dolphins.

No scientific studies have been conducted on the terrestrial soundscape of Channel Islands. However, the park is generally considered a relatively quiet place that is rich in natural sounds. Very little noise is caused by people in most of the park. One of the primary sources of human-caused noise is boat traffic

motoring by the islands, and boats that are landing and picking up passengers, such as at the landing cove on Anacapa, the docks at Scorpion and Prisoners Harbor on Santa Cruz, and at Bechers Bay on Santa Rosa. Developed landing areas also have noise generated due to machinery (e.g., cranes, pumps, and generators); vehicles; and the actions of people. On East Anacapa a fog horn is a regular noise source. There are military, government, private, and commercial plane and helicopter flights over all of the islands. Noise is occasionally heard in the park from helicopter flights related to TNC operations on Santa Cruz Island. Occasional commercial and government aircraft land and take off on the airstrip at Santa Rosa, and NMFS- and NPS-chartered aircraft take off and land at the San Miguel airstrips, generating substantial noise for short periods of time. NPS administrative facilities, such as the housing areas at Scorpion, East Anacapa, and Bechers Bay, generate noise due to machinery, heavy equipment, generators, and people's voices. In areas where there are concentrations of people, such as campgrounds, the actions of people can be a noise source. (In a very low ambient level natural soundscape, these noises sometimes can have greater impacts than in areas of higher ambient level soundscapes, such as urban environments.) Commercial and recreational boats anchored off the coast of the islands can generate noise on park waters and the islands due to the use of engines, compressors, and generators. Military activities occasionally generate sonic booms at the islands.

Away from the coastlines and developed areas on the islands, there are very few disruptions of the natural soundscape. Among the noise sources that occasionally can be heard are motor vehicles on the roads of Santa Cruz and Santa Rosa, the voices of visitors, park administrative operations (e.g., running weedeaters and mowers on trails and around campsites and administrative facilities), and NPS- and NMFS-chartered aircraft landing and taking off on San Miguel. (About 100 administrative flights per year go to San Miguel.) Although sanctuary regulations prohibit aircraft overflights below 1,000 feet over the waters within 1 nautical mile of the park islands, observed violations occur an average of once each week (NPS 1999).

Private single-engine airplanes periodically circle the islands, particularly on weekends. Occasionally noise is heard on San Miguel from low and medium level flights of military aircraft and helicopters, Coast Guard helicopters, and missile launches from Vandenberg.

In the marine environment Santa Barbara Channel, well known for its high concentrations and diversity of marine mammals, is also one of the noisiest areas in the ocean with an average of one ship per hour passing through (McKenna et al. 2012). The combination of abundant marine life and high levels of shipping noise in this region has raised questions concerning the effect of sound on marine mammals (M. McDonald et al. 2006; McKenna et al. 2009; J. Hildebrand, Scripps Institute of Oceanography, pers. comm. 2008).

CULTURAL RESOURCES

The cultural resources of the Channel Islands are associated with the prehistory and history of what is today southern California. The archeological record is rich and extensive, providing a wealth of data on human adaption and cultural change dating from 13,000 years ago to the present era. Beginning in the 16th century, the history of the islands embraces activities such as European exploration; and in the late 18th and into the 19th centuries fur trading, fishing, and seal hunting; leading to 19th and 20th centuries ranching, maritime, and military activities, as well as conservation in the 20th century. Thus the islands' history and associated historic properties reflect a long, complex, and varied relationship between humans and their island environment. The islands' history began as the home of some of the earliest immigrants into North America; to a storehouse of resources to be exploited for a market economy (first by Europeans and later by Americans); to a place critical to maritime navigation and conducting military training and national security during World War II; and finally as a place valued for its unique island ecosystems, flora and fauna, and heritage worthy of preservation as a national park.

HISTORICAL OVERVIEW

Prehistory

Archeological resources within the park have an unusually high level of significance in terms of criteria for inclusion on the national register. In fact, the resources may be considered among the most valuable in North America. They relate to a rich heritage of island occupation over a period that may have begun as early as 13,000 years ago, and because of their abundance and high degree of preservation, they have the potential to inform on aspects of prehistory and history that cannot be adequately revealed through archeological research on the mainland. Below are considered the specific factors that contribute to the significance of prehistoric and historic archeological resources.

First, an unusual number of prehistoric sites on Santa Rosa and San Miguel Islands date more than 9,000 years ago. In fact, nowhere else in North America is there as large a concentration of sites known to be of this antiquity. Second, dated site deposits are well distributed throughout the rest of prehistory, making the park's archeological record ideal for studying processes of cultural change and evolution. Third, the park's prehistoric sites contain evidence for the development of maritime adaptations, particularly with regard to implications of new or improved technology in such realms as watercraft and fishing and relationship to population growth or decline. Fourth, existing records of environmental change, in particular a high-resolution record of sea surface temperature fluctuation over the last 12,000 years, allow investigation of human responses to food-resource fluctuation. Fifth, environmental characteristics of the islands foster excellent preservation of prehistoric cultural remains. The combination of a semiarid environment and basic soils foster preservation of faunal remains, and the lack of gophers and ground squirrels has resulted in less breakage of faunal and floral remains than is the case on the adjacent mainland. Finally, the minimal amount of land development and the access to large tracts of land for study — virtually whole islands — opens the possibility of studying settlement systems in their entirety as well as their landscape contexts.

The date of the arrival of the first humans on the Channel Islands is not known, but the earliest concrete evidence of human habitation has been radiocarbon dated at ca. 12,000 to 13,000 years BP (before present). Current research indicates that the northern Channel Islands were settled about the same time as the southern California mainland and

somewhat earlier than the southern Channel Islands. This evidence consists of a few human bones discovered on northwestern Santa Rosa Island and habitation debris on San Miguel Island. The natural abundance of the surrounding sea, together with the terrestrial plants, provided subsistence and met most of the needs of the early island residents. An extensive trade network with the mainland peoples supplemented island provisions.

Over the millennia, island inhabitants left innumerable traces of their occupation. These archeological resources and artifacts reveal much of what is known about some 12,000 years of cultural adaptation as well as the ebb and flow of island populations. The diet of these early people consisted mostly of intertidal shellfish and other marine life, supplemented by seasonal berries, nuts, roots, bulbs, and plants.

There is evidence that for extended periods ocean temperatures rose, causing a change in the dynamics of marine and terrestrial resources. When the availability of certain resources declined, island populations responded by concentrating on different species. Changes in resources resulted in fluctuations in island population numbers, and it is believed that these changes also contributed to the development of a complex social organization by AD 1150.

By the time of European contact, the four northern Channel Islands were occupied by the people known as the Chumash. Santa Barbara Island and the other southern Channel Islands were occupied by the Tongva people, also referred to as the Gabrielino.

Canonized as a "tribe" in A.L. Kroeber's *Handbook of California Indians* (1925), the "Chumash" are commonly misunderstood to consist of a single, sovereign group. The label "Chumash" used today is derived from the name of an American Indian linguistic family in south-central California. The Chumash people lived in an area that extended from San Luis Obispo to Malibu, including the northern Channel Islands. At least three mutually unintelligible Chumashan languages were spoken within the Chumash territory.

The islanders differed from the people on the mainland in many ways, in addition to the language they spoke. They depended more on the resources of the sea than on those of the land, although they probably burned portions of the islands to encourage the growth of certain plants, carefully tended patches of sedges and rushes for weaving baskets, and possibly cultivated plants for food and other uses. At the time the European explorers encountered the island Chumash, the Chumash controlled a money-based economy by making drills from Santa Cruz Island chert to manufacture olivella shells into beads. Shell beads were used as currency among themselves and with mainland Indians in their wide-ranging trade network, which stretched into the Central Valley of California and beyond. European colonization of Chumash lands disrupted the Chumash economy and settlements and trading networks, and introduced new diseases. These events led to the decline of the Chumash population and social structure and the eventual removal of the Chumash from the islands to the mainland Spanish missions.

The picture emerging from archeological research shows the Chumash to have been a resourceful people coping with an abundant, but often capricious, environment. The Chumash clearly learned to exploit their environment with increasing effectiveness over the centuries, developing a unique watercraft, the tomol (see following paragraph), to fish offshore, and facilitate trade between the islands and mainland.

By 1350 the Chumash had become one of the most numerous of California's native cultures, trading extensively and crossing the Santa Barbara Channel in redwood tomols—double-ended plank canoes built by lashing rough planks of driftwood together to form a hull and sealing the seams with a mixture of pine pitch and asphaltum. The

Tongva/Gabrielino on the southern Channel Islands used a similar vessel, known as a ti'at. The *tomol's* enhanced seaworthiness sparked increased trade across the Santa Barbara Channel and increased offshore fishing and more intensive hunting of seals and sea lions.

Steatite or soapstone cooking implements and decorative items, probably from Catalina Island, were common on the Channel Islands as were ground stone vessels. Island chert, found in outcrops along the Montanon region of Santa Cruz Island and in scattered locations on the other islands, has specific properties advantageous to tool-making. Island chert is well suited to making precise tools such as bead drills, and this material was highly prized. Basketry impressions on asphaltum are found on the islands, but the woven material itself is rare, fragmentary, and unadorned. Some vessels were made from terrestrial plants such as willow and cattails, and many examples of woven material are of sea grass. A sea grass sandal fragment from a site on San Miguel Island is estimated to be more than 9,000 years old—the oldest woven textile known from the Pacific Coast.

The Chumash developed a thriving complex culture characterized by the emergence of a socially stratified society and craft specialization, particularly well demonstrated in bead making. Chumash society featured an upper class of chiefs, shamans, boat builders, and artisans. Each village had its chief, or *wot*, and 13 shamans, or *antap*, who were responsible for keeping the forces of the universe in harmony. Local chiefs independently controlled one or more villages, contending with others for control as alliances shifted. Chumash society also consisted of a middle class of workers, fishermen, and hunters, as well as a lower class of poor people and outcasts.

Island resources and the food and commodities obtained from coastal trading partners supported many villages, some having hundreds of inhabitants. Generally concentrated along the coastline, the villages consisted of circular thatched huts up to 30 feet or more in diameter.

Other typical village structures included the chief's house, sweat lodges, food storage facilities, and a temporary hut where infants were born. Nearby were places for games, a cemetery, and an area for rituals to accommodate the increasing complexity of Chumash ceremonial life.

Between 3,000 and 10,000 Chumash live in California today, and many individuals trace their ancestry to the islands. The Park Service, working with the Santa Barbara Museum of Natural History, completed a detailed study of mission records and other census data to identify lineal descendants from the historical villages in the national park.

The archeological resources of Santa Barbara, Anacapa, Santa Cruz, and San Miguel Islands are listed on the national register as archeological districts. A nomination for the resources on Santa Rosa Island will be prepared following further survey of the island. A significant site on San Miguel Island has been proposed for national historic landmark designation.

European-American Explorers

In 1542, Juan Rodriguez Cabrillo sailed north into the Santa Barbara Channel from Mexico with two ships — *San Salvador* and *La Victoria*. The first European to land on the islands, Cabrillo was a seasoned Portuguese navigator who accepted the offer of Antonio de Mendoza, the viceroy of New Spain, to explore the northwest coast of New Spain and search for the so-called Northwest Passage, a legendary route to shorten trade routes between Europe and Asia. On October 18, 1542, the Cabrillo expedition discovered and named the present-day islands of San Miguel and Santa Rosa the "Islas de San Lucas." The native people his expedition encountered along the mainland coast and on the islands were hospitable for the most part, but his

ships struggled against strong winds from the north and the powerful California Current, and the local people began to resist the Spanish presence.

Cabrillo wintered on one of the Channel Islands (possibly Cuyler Harbor on San Miguel Island or possibly on Santa Rosa Island) where he was badly injured in a fall on shore. His expedition resumed the journey northward but turned back at Point Conception, apparently returning to one of the Channel Islands where Cabrillo died from an infection of the broken limb. Although he may have been buried on one of the islands, his grave has never been found. The fleet again attempted to sail north under a new captain, Bartolome Ferrer, but north of Mendocino the expedition's ships turned back for the last time, having explored some 1,200 miles of the California coastline that was claimed for Spain. In 1937, the Cabrillo Civic Clubs of California, a statewide Portuguese organization, placed a monument to Cabrillo on a knoll overlooking Cuyler Harbor.

Although Sebastian Rodriguez Cermeno visited some of the Channel Islands aboard the ship *San Agustin* in 1595, the next explorer to leave his mark on the islands was Sebastian Vizcaino, who traversed along and mapped the coast of California as far north as Point Reyes, also looking for the elusive Northwest Passage and seeking a suitable harbor for the trading ships that sailed from Manila to Mexico. Landing on one of the southern Channel Islands on the feast day of Santa Barbara (December 4, 1602), Vizcaino named it for the patron saint of navigators. Vizcaino also named the other southernmost Channel Islands — San Clemente, Santa Catalina, and San Nicolas. These names would survive, although those he chose for the northern islands would not.

Coastal California attracted little attention from Europeans until the 18th century. Eventually Spanish authorities decided to establish a presence on the coast, partly in reaction to increasing Russian, English, and Dutch interest. In 1769 a large expedition under Gaspar de Portola moved north through Chumash country by land and sea en route to Monterey Bay, which had been noted earlier by Vizcaino as a possible port. The seagoing part of the expedition examined several of the Channel Islands, including San Clemente and Santa Cruz, the latter being given its present day name.

The Franciscan missionary Father Junipero Serra began establishing missions up the California coast, starting in San Diego in 1769. Between 1772 and 1804, six Spanish missions were established in or adjacent to territories occupied by people speaking several different Chumash languages. From north to south, these missions were San Luis Obispo, La Purisima Concepcion, Santa Ines, Santa Barbara, San Buenaventura, and San Fernando.

Sailing under British colors, Captain George Vancouver swept down the California coast in 1793, hoping to establish claims for England while gathering information on the expanding Spanish settlements. After studying the old charts of the region, he settled on the island names for Santa Rosa, San Miguel, and Anacapa and standardized and finalized the present names of the eight Channel Islands on nautical charts.

The arrival of the Europeans began the devastation of Chumash culture. Epidemics of measles and other European diseases wiped out entire Chumash villages. By the late 1820s, the few remaining island Chumash had been removed from their villages and placed into the Spanish missions.

Fur Traders and Sealers

Beginning in the late 18th century and continuing through the mid-19th century, Russian, British, and American fur hunters and traders searched the Channel Islands' coves and shorelines for sea otter. Kanakas from Hawaii and Aleut natives from Alaska,

brought by Russian, English, and American ships, established camps on the islands and paddled in their waters in kayaks — called *baidarkas* by the Aleuts — hunting the sea otter, whose fur coats were highly prized in Europe and Asia.

Soon the government of New Spain joined in the slaughter, encouraging the Indians to hunt sea otter along the California coast and among the islands and to bring the pelts to the missions. Once in the hands of the Spaniards, the furs were traded for quicksilver in the China trade. Quicksilver, used in the process of extracting gold from crushed ore, was vital to the development of the Spanish mining interests in Mexico. Moreover, by harvesting the otter, the Spaniards hoped to keep other Europeans out of their lands.

Mexico won independence from Spain in 1821, and the new government quickly opened its trade markets to boost its economy. European nations, including Russia, England, France, and Portugal, were allowed to hunt in the Channel Islands, provided they paid duties to Mexico. The new government had no vessels for patrolling the islands, however, so the fur traders, whose vessels were large and heavily armed, simply took what they wanted.

Hunters expanded their quarry to include whales, fur seals, elephant seals, and sea lions, which they slaughtered for oil, bone, baleen hides, fur, and even whiskers with which to clean tobacco pipes in the United States and opium pipes in China. By the late 1800s, the sea otter was virtually extinct in the Channel Islands, along with the Guadaloupe fur seal, northern fur seal, northern elephant seal, and sea lion.

The Chumash and Gabrielino people also suffered as a result of the competitive fur hunting. Aleuts raided their villages, shooting and raising general havoc among them. To secure the area for Spain against the Russian and Aleut fur traders and at the same time gain more converts for the church, the Spanish began to transport the Chumash to the coastal missions on the mainland. Between 1813 and 1817 most Chumash islanders migrated to the missions, settling primarily in and around Santa Barbara and San Buenaventura, where their way of life was submerged beneath the introduced religion and routine of mission work that they were compelled to follow. By the time of the secularization of the missions in 1833–1834, Chumash populations, further decimated by infectious diseases against which they held no natural immunity, had been reduced to about 15% of their estimated levels at the beginning of Spanish colonization.

Settlers and Ranchers

After Mexico declared its independence from Spain, the Mexican government granted three of the Channel Islands — Santa Rosa, Santa Cruz, and Santa Catalina — to settlers during the period of Mexican rule from 1821 to 1848. Ranching began on Santa Cruz in 1839 with a land grant to Andres Castillero. In 1843, Jose Antonio Carrillo and Carlos Carrillo secured a grant to Santa Rosa Island, but the men soon assigned their rights to Carlos' two daughters. Although the Channel Islands were not specifically mentioned in the Treaty of Guadalupe Hidalgo that ended the Mexican-American War in 1848, they were ceded, along with the rest of California, to the United States. Titles to the three privately owned islands (Santa Rosa, Santa Cruz, and Santa Catalina) were confirmed by the United States, but the remaining five islands became the property of the U.S. government.

The period of Mexican rule was also characterized by transient settlement of the islands. The fur hunters occasionally established temporary camps on the islands, while others, mostly vagabonds, drifted in and out. Prisoners' Harbor on Santa Cruz Island reputedly was used as a convict colony for a few months during spring 1830, when prisoners from Mexico were transported to

the island along with supplies, livestock, and grain.

During the early 1860s, when California began to boom, some Chinese immigrants, who had come to the United States to labor in the gold fields and construct the nation's expanding railroads, discovered their own bonanza in the tidepools of the islands and the mainland. Populations of abalone — huge, flattened marine snails with heavy, bowl-like shells and subtly flavored meat — were increasing in the Channel Islands, because their traditional predators — the sea otter and Indians — had all but disappeared.

Working out of makeshift fishing camps, particularly along the southwest coast of Santa Rosa Island, the Chinese exploited the abalone, moving from one abalone-rich cove to another. Abalone meat was dried and shipped to San Francisco and then transported to China and also sold to the large local Chinese community in San Francisco. By 1879 more than 4 million pounds of abalone meat a year were being exported, while the abalone shells were sent to markets in the United States, France, and Germany for use in the manufacture of jewelry and buttons.

By the mid-1880s, Americans, Portuguese, Slavs, Japanese, Italians, and Swedes had moved to the California coast to develop an extensive fishing industry that took advantage of the rich marine resources of the area. Fishermen rented space on island shorelines or squatted as trespassers living in makeshift shacks while conducting their fishing operations. The fishermen were often subsidized by businesses, such as the Larco Fish Company or the Castagnola Brothers who made frequent pick-ups of lobsters, crabs, and fish from the island fishermen for sale on the mainland.

Some of the fishermen of this era have become part of island lore. During the 1890s and early 1900s, for instance, Heaman Bayfield Webster, a Ventura businessman, lived part time on Santa Barbara Island as a fisherman and seal hunter. During 1907–17, Webster leased Anacapa Island and contracted with the government to run sheep and operate a fishing concession. He and his family lived on Middle Anacapa at Sheep Camp, the location of the main headquarters for the sheep operation. Raymond "Frenchy" LeDreau, a Frenchman who lived as a hermit from the late 1920s to the mid-1950s on West Anacapa at the spot now known as Frenchy's Cove, made money during prohibition by helping bootleggers and rumrunners. Along with his wife and two daughters, Herbert S. Lester, the legendary king of San Miguel, lived on that remote island from 1930 to 1942.

The ranchers who arrived in the Channel Islands during the 19th century cleared parts of the islands by burning and cutting the vegetation. Next they planted crops in the open, plowed fields. The seeds they brought inevitably contained weeds, mostly foxtails and mustard, although some of the seeds may have arrived on the clothing, tools, supplies, livestock, and pets of the settlers. The crops were fast-growing Mediterranean grains, such as oats and barley, which often choked out the native vegetation entirely. The settlers also introduced exotic species, such as eucalyptus trees, which still grow on parts of Anacapa, Santa Cruz, and Santa Rosa Islands.

Ranching probably began on San Miguel sometime during the 1850s, and in 1863 Captain George Nidever, a frontiersman and trapper, bought some 6,000 sheep, 125 cattle, and 25 horses, as well as an undivided one-half interest in the island at a sheriff's sale. Nidever constructed an adobe above Cuyler Harbor, the remains of which are barely visible today. In the early days, the sheep were often allowed to roam and reproduce freely. Consequently large natural areas were ravaged. Native plants were cropped to the roots, and some plant species unique to the island may have perished as a result.

Not until the 20th century was Santa Barbara Island settled to any extent. During the 1910s and early 1920s, Hyder family members leased

the island from the U.S. government, living on the island; planting potatoes, barley, and hay; and raising sheep, chickens, turkeys, geese, pigs, goats, and rabbits. Intentional burning by island residents and the introduction of rabbits, which proved to be more devastating than sheep, severely damaged the native vegetation. Originally brought to the island to provide extra food for island residents, the rabbits multiplied at a tremendous rate, denuding the island's vegetation and plant life. In 1954 a rabbit-control program was initiated to check the wholesale onslaught upon the native vegetation, and today the plant life is recovering.

In 1853, Dr. James Barron Shaw, acting as agent for Castillero and Santa Cruz Island's subsequent owners, the Barron and Forbes Company, began stocking the island with sheep, horses, cattle, and hogs. The island ranching system developed by Shaw included the main ranch and satellite ranches at the east and west ends of the island and at La Playa (Prisoners Harbor). Shaw managed the island rancho until 1869, developing several ranch outposts and the infrastructure that linked them. In 1869, 10 San Francisco investors purchased the island and formed the Santa Cruz Island Company. Justinian Caire, a Frenchman who had come to California as part of the gold rush and was one of the 10 investors, acquired the majority of the shares in the company during an economic downturn in the 1870s and became sole owner of the island by the end of the 1880s or early 1890s.

After moving to the island, Caire established an extensive, self-sufficient sheep and cattle ranch and winery, employing more than 100 French, Italian, Hispanic, and Native American permanent and seasonal laborers, thus reflecting his French origins, his wife's Italian heritage, and the local population. Employees included a blacksmith, carpenters, painters, team drivers, dairymen, cooks, stone cutters and masons, gardeners, vintners, grape pickers, sheep shearers, wagon and saddle makers, a cobbler, a butcher, a baker, and a sea captain and sailors. Caire based his operations at headquarters in the central valley that included a residence, bunkhouses for winemakers, shepherds, and vaqueros; barns; winery buildings; a dining hall; a bakery; a laundry, a kitchen, shops for wagon makers, blacksmiths, and tool and saddle makers; and a chapel. Agricultural operations included fruit and nut orchards, vineyards, vegetables, olives, hay, and other crops. Plantings of eucalyptus, Monterey cypress, pepper tree, and other ornamental species, dating primarily to the Caire era, are found at the ranch sites and elsewhere on the island.

Most of the earliest buildings constructed under Shaw's superintendency were of adobe or wood, and most have disappeared. During the Caire era, much of the permanent construction was of stone masonry or brick. The design of the extant buildings with their whitewashed stucco surfaces, large corner quoins, and cobble walkways exhibit the Mediterranean heritage of their owners. Many of the construction materials were gleaned from the island; bricks for construction and lime for mortar and plaster were produced in island kilns.

Most of the island's road system dates to the Caire development period, although the Ridge Road or "Camino Viejo" predated Caire. The central valley roads lined with eucalyptus trees form grand avenues near the main ranch. The Stanton family developed many dirt ranch roads during the 1940s to 1960s, especially on the isthmus.

Dry stone structures, built in the late 19th century by Italian masons and laborers, are found throughout Santa Cruz Island. Structures include stone-lined wells, rock retaining walls along stream channels and roads, and more than 200 check dams on the east end alone, built to control water flow and slow erosion. Large rock piles, created when the fields were cleared for cultivation, dot the east end of the island.

Caire continued to use the ranches that had been developed by Shaw and established additional outranches and camps at other locations on the island. The main ranch and the outranches at Prisoners' Harbor, Scorpion Valley, and Smugglers Cove on the east end of the island, and Christy on the west end of the central valley, remained the primary ranches through the Caire period, although five other smaller outranches were developed on the island, including Rancho Punta West, Rancho Nuevo, Buena Vista, Portezuela, and Rancho Sur. The island's sheep population reached 40,000 to 50,000 head under Caire, the wool and meat being shipped to market from Scorpion and Prisoners Harbor.

When Caire died in 1897, an unequal distribution of his estate among his heirs led to prolonged litigation. Ultimately, the dispute was settled by a court-ordered partition of the island in 1925, which divided the island into parcels, the western 90% of the island going to Caire's widow and four of their children and the eastern 10% going to the two married Caire daughters. The Caire family maintained the western portion of the island until 1937 when the land was sold to Los Angeles businessman Edwin L. Stanton. After unsuccessfully attempting to revive the island's sheep business, which had declined dramatically after Caire's death, Stanton switched to cattle ranching. Although the 19th century fence lines and features on the eastern end of the island remain relatively unchanged since their construction, the ones on the western part of the island were altered to accommodate Stanton's cattle operations. A Stanton-period outranch was built at Del Norte in 1952–53.

Edwin Stanton's son and heir, Dr. Carey Stanton, continued the cattle ranching operations after his father's death in 1963. In 1978 the Santa Cruz Island Company (the Stanton holdings), recognizing the importance of keeping the island intact for the future and needing to pay his nephew for his share in the Santa Cruz Island Company, entered into a conservation agreement with TNC, a private, nonprofit organization dedicated to land preservation, research, and educational use of unique natural habitats worldwide. Dr. Stanton and his nephew received remuneration for shares in the Santa Cruz Island Company and Dr. Stanton retained control of the island until his death in 1987, at which time the remainder of Dr. Stanton's interest in the property passed to TNC.

The east end of the island remained in the hands of the Caire descendants, consolidated under the ownership of Ambrose and Maria Gherini. They continued the sheep ranching operation, with headquarters at Scorpion Valley. The ranch operations were overseen by a series of superintendents and caretakers until the island was converted to a private hunting, camping, and recreational venture in the early 1980s. The Park Service purchased a three-quarter interest in the Gherini property in 1989 and 1992. In 1997 the Park Service acquired the remaining quarter interest through a legislative taking.

The Thompson family operated a ranch on Santa Rosa Island from 1844 to 1860, and by 1857 it was reported that there were 8,000 cattle and 2,000 sheep on Santa Rosa Island. During the More family tenure on the island (1860 to 1901) it was used primarily as a sheep ranch and became one of the major wool producers in southern California. At one point, more than 100,000 sheep were said to be on the island. The early sheep operation on the island gave way to cattle after 1901 when Walter L. Vail and J.V. Vickers established the Vail & Vickers Company and purchased the island. Thereafter, the company operated an extensive cattle ranch on the island under the management of three generations of the Vail family until 1998. At various times, deer, elk, and feral pigs were introduced on the island for food and sport hunting.

Various other activities have also been conducted on the Channel Islands during the 20th century. These include hunting clubs, Hollywood filmmaking, oil exploration, and many forms of recreation. Ira and Margaret

Eaton's rustic resort at Pelican Bay on Santa Cruz Island attracted hundreds of visitors during its heyday from 1910 to 1937. Bootleggers and rumrunners found the islands' isolation to be beneficial during Prohibition.

The Park Service has completed determinations of eligibility for the national register for two historic island ranching districts. The proposed Santa Cruz Island Ranching District is a 14,000-acre vernacular ranching landscape on the NPS-managed portion of the island. The ranching district is locally significant. The district is comprised of four distinct developed areas — Prisoners Harbor, Scorpion Valley, Smugglers Ranch, and Rancho Del Norte. The ranching district also includes linear features such as fence lines, roads, and isolated features such as dry-laid rock structures and landscape plantings.

The Santa Rosa Island Historic Ranching District is a 53,000-acre rural vernacular landscape. The ranching district has statewide significance. The district includes the main ranch development area at Bechers Bay, as well as linear features such as fence lines and roads, isolated features such as constructed water features and line camps, and landscape plantings.

AIDS TO NAVIGATION

Shortly after the 1853 wreck of the *Winfield Scott* off Middle Anacapa, the U.S. Coast Survey pointed out the need for a permanent lighthouse facility on the island. During the next 58 years, many shipwrecks would occur in waters around the Channel Islands, more than a dozen of which were off Anacapa. Finally in 1911, the U.S. Lighthouse Service (later replaced by the Coast Guard in 1939) erected the first navigational aid — a whistling buoy anchored five-eighths of a mile from the east end of East Anacapa. In 1932, the acetylene light was replaced by a 600,000-candlepower lighthouse (and ancillary building complex) — the last major lighthouse to be constructed on the West Coast of the United States; it was fully automated in 1968. The wreck of the *Winfield Scott* and the Anacapa Island Light Station Historic District are both listed on the national register.

Although Santa Barbara Island was reserved for lighthouse purposes in 1905, it was not until 1929 that an acetylene lantern navigational light was installed on the northwest corner of the island. In 1986 a solar-powered battery-operated light replaced this system. A second light tower was constructed at the south end of the island in 1934. This light was destroyed in the 1959 fire that swept two-thirds of the island. Thereafter, the Coast Guard discontinued that light, leaving only one functioning unmanned light on the island. By 1979 the light tower was in poor condition and was removed and replaced by a modern steel tower with a solar-powered beacon.

Other aids to navigation on the islands include a lighthouse that operated at Crook Point on the south side of San Miguel Island from 1943 to 1955 and the South Point Light Station that operated on Santa Rosa Island from 1925 until the 1980s.

MILITARY ACTIVITIES

During World War II, the Coastal Lookout Organization was established to provide surveillance along the California coastline from Point Arguello to the Mexican border. Lookout stations were established — three on San Clemente Island and one on each of the other Channel Islands — for the purpose of reporting enemy airplanes and vessels, and patrol vessels cruised the islands' waters. Station personnel were trained in night surveillance and vessel recognition, and each station was supplied with binoculars and arms. On July 1, 1945, as the threat of enemy attack subsided toward the end of the war, the Coastal Lookout Organization was abolished.

In 1943, the U.S. Army established a radar station on the south side of Santa Rosa Island. During the early 1950s, the U.S. Air Force leased and developed approximately 10 acres on the only harbor — Johnsons Lee — on the south side of the island, operating it as an Air Control and Warning Station. Facilities associated with the station were also constructed atop Soledad Peak, the island's highest promontory, and two smaller units were built to the southeast and northwest of Johnsons Lee. The station was manned from 1951 to 1963 (at its peak, about 300 men were stationed there), but it was officially abandoned in 1965.

Beginning in 1948 the U.S. Navy used San Miguel Island as a bombing range and tactical target for both airplanes and ships. In 1963 the U.S. Navy transferred partial responsibility for the island to the commander of the Pacific Missile Range. Radar guidance systems were tested and major fleet exercises were conducted around the island.

During the early 1960s, the U.S. Navy established a photo-tracking station on Santa Barbara Island.

ERA OF CONSERVATION — EVOLUTION OF THE NATIONAL PARK

As early as 1932 the NPS considered the Channel Islands for national park status. On April 26, 1938, President Franklin D. Roosevelt issued an executive order proclaiming Santa Barbara and Anacapa Islands as a national monument to preserve mammoth fossils and other notable scientific features. On June 10, 1949, President Harry S Truman added the submerged lands within 1 nautical mile of the two islands to the monument. In 1974 the two islands were opened for public visitation, and in 1976 the Park Service and the U.S. Navy signed an agreement allowing supervised public visitation of San Miguel Island as well.

On March 5, 1980, President Jimmy Carter signed a bill establishing Channel Islands National Park, the country's 40th national park. The boundaries of the new park included the four northern islands (Anacapa, San Miguel, Santa Cruz, and Santa Rosa) and Santa Barbara Island, as well as the waters extending 1 nautical mile from each. Later that year, protection of the park area was augmented by designation of the sanctuary (an entity administered by the NOAA) that extends 6 miles out from the high tide line of each of the islands to cover a total of 1,658 square miles. The same boundaries constitute one of the reserves included in the International Man and the Biosphere Program — the Channel Islands Biosphere Reserve — that had been designated in 1976. The international program was designed to conserve representative samples of the Earth's ecosystems and genetic diversity, and thus provide an environmental baseline for research and resource monitoring throughout the world.

The State of California retains ownership of the seabed and all the marine resources in the water column within 3 miles of the Channel Islands. California has designated Areas of Special Biological Significance around the islands to protect special biological communities by prohibiting discharges of waste to the 300-foot isobath.

In 2002, the California Fish and Game Commission established a network of MPAs within 3 miles of the park islands. NOAA expanded the MPA network into the federal waters in 2006 and 2007.

The entire MPA network consists of 11 marine reserves where all take and harvest is prohibited, and two marine conservation areas that allow limited take of lobster and pelagic fish. This MPA network encompasses 241 square nautical miles (or 318 square miles), making it the largest network off of the continental United States.

In addition, the State Lands Commission manages and protects cultural resources, including shipwrecks, from mean high tide to 3 nautical miles offshore. Although marine mammals are protected under the federal Marine Mammal Act, the State of California manages all other plants and animals in the water portion of the national park, which includes several commercial and sport fisheries.

PROPERTIES LISTED IN, OR POTENTIALLY ELIGIBLE FOR LISTING IN, THE NATIONAL REGISTER OF HISTORIC PLACES

Anacapa, Santa Barbara, and San Miguel Islands were listed in the national register on September 12, 1979 as archeological districts that have a regional level of significance. The portion of Santa Cruz Island (about 90% of the island) owned by TNC was also listed in the national register as an archeological district on January 30, 1980, and the Park Service is updating the national register documentation to include the entire island. There is no question that the archeology of the eastern portion of the island is at least as significant as the current archeological district, particularly since it contains most of the chert quarries exploited by island Chumash. Santa Rosa Island, which contains some of the most significant archeological resources in the park, is not yet listed in the national register, although it also is considered by the Park Service to be eligible for listing as an archeological district.

According to the Society for American Archeology, several archeological resources on the islands may be eligible for designation as national historic landmarks. These include Daisy Cave on San Miguel Island and Arlington Canyon on Santa Rosa Island.

The 1853 wreck of the *Winfield Scott*, off Middle Anacapa Island, and the Anacapa Island Light Station were listed in the national register on September 12, 1988 and September 3, 1991, respectively. The Anacapa Island Light Station historic property includes 13 structures that are listed as contributing resources—light house tower, fog signal building, keeper's residence, power house, oil house, general service building, tank house, rain shed, derrick building, upper derrick landing, lower landing, landing stairway, and flagpole. The Park Service is planning to amend the Anacapa Island Light Station national register form to include elements of the installation's cultural landscape such as roads and circulation patterns, walkways, landscaping, and the water catchment basin.

Taken as a general entity, the islands and adjacent waters of the national park represent a gallery of shipwrecks and maritime history. An NPS *Submerged Cultural Resources Assessment* in 1996 outlined maritime trade in the Channel Islands area, described individual shipwrecks according to vessel type, and made recommendations for further study. The document, however, did not address a national register historic district. Although one shipwreck (the *Winfield Scott*) has been listed, the islands' shipwrecks, according to some, may be eligible as a maritime archeological district. A draft national register nomination form has been prepared for the *Golden Horn*, a shipwreck off the coast of Santa Rosa Island.

Cultural landscape inventories of Santa Cruz and Santa Rosa Islands resulted in determinations that the island ranching districts are eligible for listing in the national register.

DESCRIPTION OF PARK'S CULTURAL RESOURCES

Overview

The park's significance with respect to cultural resources lies in its long and varied prehistoric and historic occupation and use. Evidence of the islands' prehistoric occupation is found in the archeological

remains of villages, campsites, quarries, and cemeteries. Some of the earliest sites in California and on the Pacific Coast of North America are in the park. The absence of burrowing animals and limited human access have contributed greatly to the preservation of archeological resources and surrounding areas in a relatively undisturbed state. Remnants of early European exploration and exploitation of the islands, the functioning 1930s-era light station on Anacapa Island, and the cattle and sheep ranching complexes on Santa Rosa and Santa Cruz Islands, elements of which date back to the 19th century, illustrate the islands' principal historic periods of use.

Channel Islands National Park contains a record of more than 12,000 years of human use and occupation. This record is contained in some 2,500 recorded archeological resources both on the islands and beneath park waters, and in the historic structures and landscape features associated with European exploration and settlement of the islands. At least 100 more sites have been identified by archeologists but remain unrecorded. The number of archeological resources on the islands is estimated to be more than three times the number of recorded and known sites.

A human presence on the islands had most likely been established by the end of the Pleistocene era. The park contains the oldest dated archeological site on the North American West Coast (radiocarbon dated at 11000 to 13000 BP) at Daisy Cave on San Miguel Island. In addition to this cave, the dating of "Arlington Man," a partial skeleton excavated on Santa Rosa Island in 1961 that dates to about 13000 BP, relates to the earliest known human occupation in the region.

Although artifact collection and site vandalism have occurred on all of the islands, many sites retain enormous research potential. With the rapid destruction of sites on the mainland, the record of human occupation in the park is becoming the best remaining resource base for understanding not only island prehistory, but also the development of Chumash and Gabrielino-Tongva cultures. The northern Channel Islands retain Chumash material; and Santa Barbara Island, primarily occupied by the Gabrielino-Tongva but often visited by the Chumash, should be studied in coordination with research undertaken on Santa Catalina, San Clemente, and San Nicholas Islands, as well as that of the northern islands.

The prehistoric period ended as Europeans reached the Channel Islands area, spearheaded by Juan Rodriguez Cabrillo's explorations in 1542. While Cabrillo is traditionally said to have been buried on San Miguel Island, his remains have not been located, and it is some believe that they might be on Santa Rosa, Santa Catalina, or one of the other Channel Islands.

After the removal of Chumash populations to mainland missions during the early 1800s and a period of intensive sea otter hunting, Santa Cruz and Santa Rosa Islands became land grants and were subsequently developed as livestock ranches that operated nearly to the present day. Historic buildings and objects on both islands, while different in character, remain as elements of the islands' ranching legacy. San Miguel Island, never a formal land grant, was leased to various ranchers over the years; its buildings and ranching features are now archeological ruins. Santa Barbara and Anacapa Islands were also leased for sheep grazing operations. Ranching on the islands chronicles a period of resource use and exploitation that often resulted in negative impacts on the islands' natural ecosystems.

Other examples of occupation of the islands have occurred during the 20th century. The Anacapa Island Light Station, constructed in 1932, became an automated station in 1968 with the Park Service taking over use of the station's support buildings. Ruins of a small U.S. Air Force installation on Santa Rosa Island demonstrates an increasing military presence on the islands beginning with the lead up to World War II. Santa Cruz and Santa

Rosa Islands contain remains of oil exploration, exemplifying early technology in petroleum exploration.

As a consequence of long human occupation, rising sea levels in geologically recent times, and centuries of prehistoric sea travel, prehistoric sites are potentially present in park waters. Some artifacts have been recovered by scuba divers. Park waters and beaches also contain at least 50 historic shipwrecks representing a wide variety of significant maritime trades; of this number, 20 have been found and identified. Shipwrecks in the park boundaries are known to include the

- *Winfield Scott*, a California gold-rush-era passenger steamship
- *Golden Horn* and *Aggi*, large 19th century sailing vessels
- the lumber schooners Comet, Dora, Bluhm, J.M. Colman, Jane L. Stanford, Watson A. West, and G.W. Prescott
- sealing ships NB, Kate and Anna, Surprise, and Ella G.
- 19th century steamships *Crown of England* and *Cuba*
- early purse seiners, *Labor*, *Adriatic*, and *Balboa*

The wrecks of these vessels, not all of which have been located, identified, and documented, do not constitute a comprehensive inventory of all shipwrecks in the park.

Archeological Resources

Background. Archeological survey data have been integrated into the park's geographic information system (GIS), greatly improving the park's planning capabilities. A predictive model for erosion on and near Santa Rosa Island archeological resources was developed in 2003, which also produced a workable site prediction model for this island. About 25% of the park has been surveyed for archeological resources. Sites on Anacapa and Santa Barbara Islands have been identified, and both islands are listed as archeological districts on the national register. San Miguel is also listed on the national register as an archeological district, although archeological investigations on the islands continue to locate previously unknown sites and produce updates to existing site records. About 25% of the park lands on Santa Cruz Island and 15% of Santa Rosa Island have been surveyed. The resulting data indicate that Santa Rosa Island is eligible for listing on the national register as an archeological district, and that the east end of Santa Cruz Island should be included in an expanded national register archeological district encompassing the island. All of the park's archeological resource records have been entered into the NPS Automated Site Management Information System (ASMIS), with condition assessments for approximately 54%. Less than 1% of all sites in the park have been radiocarbon dated, and of those, more than 50% have associated dates that should be reanalyzed in light of improved dating techniques. Research goals are to investigate unsurveyed areas of Santa Cruz and Santa Rosa Islands and document newly discovered sites, relocate recorded sites and upgrade documentation and assessments, update the radiocarbon database with new analysis on selected sites, obtain radiocarbon dates from specific sites not yet tested, develop erosion and site prediction models for Santa Cruz and San Miguel Islands, stabilize eroding sites, and integrate a program of ground-truthing existing site location data and data editing for the park's geographic information system.

Very little is known about submerged prehistoric cultural resources in the park. What is known is that Pleistocene shorelines are now inundated, and it is reasonable to assume that occupation sites exist from 12,000 to 13,000 years ago. It is also reasonable to assume that at least some of the watercraft used by the islands' prehistoric occupants should have wrecked and sunk and may now lie unnoticed on the ocean floor. It is believed that these resources could be identified given

the right conditions, technology, and expertise.

A total of 94 vessels are known to have wrecked in the park and an undetermined number of generally smaller undocumented vessels remain unrecorded. These were both transient and local vessels engaged in commerce, the lumber trade, fishing, sealing, military, or purely leisure activities. A gold-rush-era side-wheel passenger steamer, the *Winfield Scott*, was wrecked off Anacapa Island in 1853, and was entered into the national register in 1988. Two Grumman airplanes are also known to have wrecked in park waters.

Formal archeological investigations of shipwrecks began in the early 1980s, with much of the work being accomplished by volunteers. Documentation and monitoring of select submerged resources is a long-term project in partnership with the Park Service, the National Ocean and Atmospheric Administration, and the Coastal Maritime Archeological Resources (CMAR), an avocational organization.

Surveys and Inventories. Although investigators have conducted archeological surveys and studies on the Channel Islands for more than 100 years, about 85% of the land area of the park lacks basic inventory. Nevertheless, the park's archeological resources are assuming increasing importance as mainland sites are impacted ever more severely by urban development. Although the largest Chumash populations lived along the mainland coast, most of these sites have been destroyed or covered over by recent development, leaving the island resources as the best preserved Chumash sites for new and innovative research techniques.

Anacapa, Santa Barbara, and San Miguel Islands have been surveyed for archeological resources to a level adequate to establish their significance and list them on the national register as archeological districts. Recent surveys of selected areas of Santa Rosa Island project the existence of 2,000 to 3,000 sites, including many caves and rock shelters that may have research potential. During the 1970s, TNC property on Santa Cruz Island was surveyed by Albert Spalding and Michael Glassow with the University of California, Santa Barbara, who projected the existence of 3,000 sites from the 10% of the island that was thoroughly covered. Thus, TNC portion of the island was listed in the national register as an archeological district. Before public acquisition in 1997, no archeological research had occurred on East Santa Cruz Island since 1928. Fieldwork during recent years has located more than 70 additional sites with more than a dozen radiocarbon dates, indicating occupation some 6,000 years ago (at least six of these sites are on NPS-administered lands). Habitation and task-specific sites occur throughout the island from sea level to an elevation of 1,700 feet.

Archeologists from the park and the Santa Barbara Museum of Natural History obtained radiocarbon dates from the femur, known as Arlington Man, which was first excavated in 1961 in Arlington Canyon on Santa Rosa Island. They concluded these are the oldest securely dated human remains in North America — some 13,000 years old.

Excavations at Daisy Cave on San Miguel Island have revealed shell midden deposits, fragments of basketry, and seagrass cordage dating to about 9,000 years ago. A chert flake and bone fragment may date earlier than 13,000 years.

These discoveries have changed the way scientists look at this little understood period in human history. Although roving bands of big game hunters had been thought to be the first arrivals in North America, it now appears they had local neighbors. This early period of human history may have had a greater diversity of ancient lifestyles and cultures than previously thought.

The Channel Islands are the focus of much of the current Pacific Rim archeological

research, and continue to produce solid evidence of early coastal migration and some of the earliest human occupation of North America.

The absence of some burrowing animals, such as gophers and squirrels, removes a major impact on the archeological record; such animals have affected nearly all mainland sites by massive disturbance of underground deposits. Clear and detailed stratigraphy is common in the middens of island sites. Frequently these middens are 1 meter or more thick and contain a wide variety of items in the matrix of mussel and abalone that dominate the deposits.

Archeological investigations of Chumash cultural sequence show the development of an extremely complex culture from relatively simple beginnings, all sustained on a hunting and gathering subsistence base without the development of agriculture. Through time, a growing population, accompanied by more intensive resource use, more elaborate technology, widespread trade networks, and an increasingly complex society, made more effective and efficient use of the natural environment, with relatively minor impact on natural conditions. The Chumash experience stands in stark contrast to the historic period in the park, which saw increasingly heavy and disruptive use of the island's ecosystems.

The early beginnings of the Chumash cultural sequence are found at Daisy Cave on San Miguel Island and Arlington Canyon on Santa Rosa Island. Several more sites on San Miguel and Santa Rosa date from 7000 BP, which marks the beginning of the Early Phase of the Chumash cultural sequence. Sites associated with this period are along the northern coast of Santa Rosa Island where they are often found with red abalone middens and calichified sand strata; they are probably present throughout the island.

Sites of the Middle Phase (2600 to 800 BP) are relatively common on the islands, although few have been definitively dated. This period had an expanding island population along with increasing exploitation of fish and pinnipeds. The development of the *tomol* occurred during this period, greatly aiding transportation and fishing in the Channel Islands region.

The transition from the Middle to the Late Phase is associated with the emergence of a socially stratified society and craft specialization, particularly well demonstrated in bead making. Presumably ceremonial life also became more elaborate during this time.

The Late Phase, essentially the society that the Spanish under Cabrillo encountered, brought the rise of an elaborate trade system in the Santa Barbara Channel and efforts to control access to critical natural resources, such as the chert quarries on Santa Cruz Island that were necessary for bead manufacture.

Archeological resources on the Channel Islands have been receiving increasing attention from archeologists because of the relatively long and undisturbed record remaining on the islands. The dominant use of the islands for grazing has preserved the vistas and open space associated with prehistoric times, although grazing has altered prehistoric ecosystems substantially. Cattle and sheep have trampled and ground the surface strata of many accessible sites into dust, but the most notable impacts on archeological resources on Santa Cruz Island have resulted from the rooting activities of feral pigs. Archeological resources have also been impacted by pothunters, coastal erosion, and large-scale early "excavations" that recovered many artifacts while destroying much data. Prominent artifacts, such as stone bowls, tend to be more scarce on the islands today than was the case 100 years ago, judging from the notes of early excavators.

Well-designed sampling surveys covered roughly 10% of TNC property on Santa Cruz Island during the early 1970s. The surveys were augmented during the 1980s by Larry Wilcoxon and Dr. Jeanne Arnold with the

University of California, Los Angeles. Wilcoxon concentrated on the habitation sites on the west end of the island, while Arnold focused on the use of chert quarries along the eastern boundary line of TNC property. About 20% of the island is now considered intensively surveyed. Surveys of East Santa Cruz Island have recorded many large chert quarries as well as several habitation sites and rock shelters; however, historic materials such as rock piles, abandoned buildings, subsurface foundations, aboveground ruins, trash dumps, privies, check dams, old roads and trails, shipwreck debris, and fishing camps on the island have not been recorded in a comprehensive manner. In addition, site records are deficient for several ethnographically documented Chumash villages. Other types of sites exist but have not been recorded, such as a complex of red abalone middens near the Christy Ranch on the west end of the island. Recent reconnaissance and examination of aerial photographs of the eastern end of the island under NPS administration have located additional rock shelters, including two sea caves containing cultural resources, as well as numerous surface middens in this area. There are already more than 200 recorded archeological resources on NPS lands.

Santa Cruz Island seems to have supported a large human population during most of prehistory. Recent archeological research on Santa Cruz Island shows evidence of human occupation 8,900 years ago, and the potential for even older material exists. Like Santa Rosa and San Miguel Islands, deposits on the west end containing pygmy mammoth remains could also contain evidence of older human occupation. Eleven historic villages are known for Santa Cruz Island, equal to the total number recognized for both Santa Rosa and San Miguel Islands. Earlier sites, ranging from only a few meters square to extensive shell mounds covering hundreds of square meters, are found along the coastline and in the interior. Some of these mounds contain distinctive layers of red abalone shell, indicative of occupation about 5,000 to 8,000 years ago. In addition to shell mounds, prehistoric sites include chert quarries and workshop sites, rock shelters, and rock platforms identified as shrines. One of the rock shelters contains rock art of a style quite distinct from that known on the mainland. Formal cemeteries are found close to many villages, especially at later sites, and isolated human burials have been recorded on the island at seemingly random locations. The potential number of burials ranges into the tens of thousands.

Although only some 20% of Santa Cruz Island has been surveyed intensively for archeological resources, 750 archeological sites have been recorded (NPS and TNC lands combined). It is estimated that the entire island probably contains about 3,000 archeological resources.

Although the islands of San Miguel, Anacapa, and Santa Barbara have been relatively well surveyed for archeological resources, Santa Rosa Island was last surveyed in the 1950s in a manner considered to be inconsistent with current professional standards. From the 1940s through 1963, Philip C. Orr with the Santa Barbara Museum of Natural History recorded 182 "site areas," representing perhaps 220 sites as they would be defined today. However, a recent study in Wreck Canyon recorded 34 sites where Orr had recorded one. At Bechers Bay, the largest site in the area, if not on the island, was missed, although it had been discussed in an earlier publication. Recent reconnaissance in this area reveals a much more diverse site assemblage, including historic shipwreck scatters, smaller prehistoric sites representing specialized activities, and Chinese abalone camps of the late historic period.

Nonetheless, Santa Rosa Island contains an estimated 2,000 to 3,000 prehistoric sites, including some of the earliest known occupation of the islands. Survey efforts to date on Santa Rosa Island have recorded 640 sites while covering only about 25% of the island. According to these surveys, prehistoric

settlement was concentrated along the coast, although inland rock shelters in favorable locations show regular use as well. Systematic use of maritime products clearly occurred, although the degree to which island plants and other terrestrial products may have been used remains to be documented by properly designed research projects. Considerable opportunity exists for understanding trade relationships through analysis of the distribution of the often uniquely occurring trade items such as the bead drills from the chert deposits on Santa Cruz Island.

In addition to the Chumash record, extensive historic archeological opportunities are centered on the islands where ranches and coastal fishing, recreational camps, and lighthouse installations developed. In addition, there are remnants of shipwrecks, settlement activities, oil exploration endeavors, and abandoned military facilities.

Submerged Archeological Resources. Since the first attempt at mapping the *Winfield Scott* in 1983, 19 more wreck scatters, including two Grumman military aircraft, have been documented in the park. Remains of shipwrecks in the park area are associated with the gold rush era, maritime commerce during the period from the 1870s to the present, and the evolution of merchant shipping since the 1870s. The maritime lumber trade is particularly well represented, with six such vessels wrecked around the islands. Other shipwrecks relate to historic exploitation of the maritime resources in the islands' surrounding waters, particularly seals and sea otters. Also present are the remains of three vessels that supported the islands' cattle and sheep ranching activities. The Anacapa lighthouse and its supporting structures — the last lighthouse complex to be constructed along the Pacific coast — illustrate the theme of navigational aid development to facilitate maritime transportation. An unstudied series of small shipwrecks and fishing camps, which are now historic archeological resources, contain data relating to the development of commercial fishing in the islands' waters. The shipwreck scatters reflect the rise of Los Angeles as a major ocean port, the increasing harvest of the islands' maritime resources, and the integration of the Channel Islands into the growing global economy.

Shipwrecks are the best known component of the submerged cultural resources of Channel Islands National Park, although recovery of stone artifacts by scuba divers indicates the existence of prehistoric artifacts, if not entire archeological resources, beneath park waters. As the study of these materials proceeds, it is increasingly clear that many wrecks, especially of wooden vessels, lie on or near the high tide line and, therefore, contain "unsubmerged" elements. Even entirely submerged wrecks may relate to terrestrial manifestations. For instance, the *Golden Horn* wreck off the southwest coast of Santa Rosa Island contributed its cargo of coal to the local tidepools where Chinese abalone fishermen collected it in piles seen today at various sites on the island. The documented remains of some wooden wrecks, such as the *Comet* and the *Jane L. Stanford*, are above the high tide line and probably contain submerged elements. The ownership of resources such as this wreck, which spans the boundary of the mean high tide line, may be split between the California State Lands Commission and the Park Service. However, the distinction between "submerged" and "terrestrial" resources at Channel Islands is a highly artificial distinction in most cases, relating most meaningfully only to the logistics of access to the resource for research and documentation.

Conditions and Threats. Archeological resources in the park are subject to erosion, especially those on Santa Cruz, San Miguel, and Santa Rosa Islands. Accelerated plant growth since the end of grazing is retarding erosion for many of these sites, but coastal erosion would continue to damage many important localities, particularly in dune environments. At least 1,000 cubic meters of midden are lost each year from Santa Rosa Island from coastal erosion. In the future,

climate change could also increase threats to the park's archeological resources due to a rise in sea level and increased coastal erosion. In addition, other sources of erosion in inland locations are destroying an unknown amount of archeological resources. Grazing, feral pig rooting, and associated activities also have degraded the resource.

Looters and vandals have targeted cultural and historic sites at coastal sites and in submerged and intertidal areas of the park. Submerged sites in areas of high visitation are also susceptible to damage from boat anchors and other related activities.

Vandalism and pothunting continue to occur in the park despite the protection afforded by the isolation of the islands. Several instances of vandalism have occurred during the past few years, and some of these, including one felony, have been successfully prosecuted. It is anticipated that increasing visitor access to the islands would result in increased amounts of intentional pilfering, as well as higher levels of unintentional disturbance, to both historic and prehistoric resources. Although removing artifacts from shipwrecks is against both state and federal law, artifacts associated with shipwrecks in the park boundaries are particularly vulnerable to pilfering — especially highly prized brass and bronze objects that are found in most shipwrecks.

In the absence of national register nominations and other studies that evaluate the significance of the park's prehistoric and historic resources, particularly for Santa Cruz and Santa Rosa Islands, actions may be taken that would affect the integrity of those resources. Although cultural resources are protected to a high degree by isolation and somewhat difficult and expensive access, monitoring would become increasingly necessary as visitation increases and visitors travel more independently.

Historic Structures / Buildings

Background. A historic resource study describes the historic use and occupation of all of the park islands and identifies the historic resources on the islands (NPS 2006a). The study provides the historic context for the national register nominations and determinations of eligibility for the historic resources of Santa Cruz and Santa Rosa Islands. For a structure or building to be listed in the national register, it must meet one or more of the following criteria of significance: (A) associated with events that have made a significant contribution to the broad patterns of American history; (B) associated with the lives of persons significant in our past; (C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; (D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the structure or building must possess integrity of location, design, setting, materials, workmanship, feeling, or association (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*).

Most of the park's historic buildings and structures are included in the NPS List of Classified Structures. Historic structure reports, which provide detailed information about the history of the buildings and recommendations for preservation treatments, have been completed for three masonry buildings on Santa Cruz Island and the main ranch house and barns on Santa Rosa Island. Condition assessments of the Del Norte ranch house on Santa Cruz Island and the Anacapa Island Light Station buildings are needed to identify needed repairs and preservation measures.

The Channel Islands contain the remains of stock ranches dating back to Mexican land grants circa 1840. Buildings on both Santa

Cruz and Santa Rosa Islands represent the span of ranching development from that time to the present. The ranch structures represent a wide variety of types and styles, from plastered adobe and rubble masonry buildings on Santa Cruz Island to large frame structures on Santa Rosa Island. Included are residences, barns, corrals, storage sheds, bunkhouses, assorted utilitarian structures, and historic agricultural equipment associated with the cattle and sheep ranches.

Other historic resources on the islands include the Anacapa Island Light Station complex and military sites and structures associated with World War II and the Cold War periods. Santa Cruz and Santa Rosa Islands contain remains of oil well drilling rigs, illustrating early technology in petroleum exploration.

Currently, 69 structures are listed in the park's List of Classified Structures (see appendix F for a list of structures). The list is a computerized, evaluated inventory of all prehistoric and historic structures having historical, architectural, or engineering significance in which the Park Service has or plans to acquire any legal interest. Included in the list are structures that individually meet the evaluation criteria of the national register or are contributing resources of sites and districts that meet national register evaluation criteria. Also included are other structures — moved, reconstructed, and commemorative structures as well as structures achieving significance within the last 50 years — that are managed as cultural resources because of management decisions that have been made pursuant to park planning processes.

Conditions and Threats. Historic buildings and structures are deteriorating and require repairs, seismic retrofit, and rehabilitation to ensure their long-term preservation. The historic buildings and complexes are vulnerable to destruction by flood, fire, earthquake, other natural disasters, and extreme local weather and climatic conditions. Climate change could exacerbate these impacts with increased storms and a higher potential for wildfires.

Cultural Landscapes

According to the NPS *Cultural Resource Management Guideline* (DO-28), a cultural landscape is

> . . .a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

The NPS Cultural Landscape Inventory database identifies three national register-eligible or listed cultural landscapes, one of which has three component landscapes – Santa Cruz Island Ranching District (Smugglers Cove Ranch, Caire-Gherini Ranch Historic District, and Rancho Del Norte); Santa Rosa Island Ranching District; and Anacapa Island Light Station. The inventories provide information about the contributing buildings, structures, clusters, small-scale elements, vegetation, circulation patterns, and other resources that form the cultural landscape. For a cultural landscape to be listed in the national register, it must meet one or more of the following criteria of significance: (A) associated with events that have made a significant contribution to the broad patterns of American history; (B) associated with the lives of persons significant in our past; (C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; (D) have yielded, or may be likely to yield, information

important in prehistory or history (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). The landscape must also have integrity of those patterns and features — spatial organization and landforms; topography; vegetation; circulation networks; water features; and structures / buildings, site furnishings, or objects — necessary to convey its significance (*Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*).

The Anacapa Island Light Station, listed in the national register, is predominantly a designed cultural landscape. Other cultural landscapes that are eligible for inclusion in the national register as rural cultural landscapes include the Santa Rosa Island ranching district, the east end of Santa Cruz Island, and the Del Norte ranch and Prisoners Harbor on Santa Cruz Island. It is conceivable that all or most of the terrain of the islands could be incorporated into a prehistoric vernacular landscape, particularly because the archeological resources and ethno-historically documented Chumash villages in the park are in a relatively unspoiled, natural setting.

Ethnographic Resources

According to the Park Service, ethnographic resources are any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (DO-28: *Cultural Resource Management Guideline*, 181). Ethnographic resources are associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community's history or is important in maintaining its cultural identity and development as an ethnically distinctive people.

Chumash people populated the California coast from around San Luis Obispo to Malibu for thousands of years. The earliest inhabitants of the Northern Channel Islands arrived some 13,000 years ago. The Chumash occupied the islands until the 1810s, when the remaining island populations were removed to the mainland missions. Ethnographic resources associated with the Chumash include historic island village sites; archeological resources and artifacts; museum collections; stories and songs that have survived through descendants; information such as linguistics, ceremonies, dances, songs, customs, and other data captured by ethnographers; and traditional activities that continue to be practiced. A Chumash story holds that the islands were the birthplace of the Chumash people, and Chumash groups continue to carry out activities on the islands, such as crossing the Santa Barbara Channel in a *tomol*, the traditional Chumash watercraft. A NPS ethnographic study completed in 1999 identified descendants of island populations, which assists the park in consulting with appropriate Chumash parties under the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, and other laws and NPS policies. Tribal representatives and island Chumash descendants have carried out reburial and treatment of ancestral Chumash remains that have eroded out of island burials in areas likely to be frequented by park visitors.

Other groups, such as fishermen or vaqueros, that have traditionally used or occupied the islands for several generations also have ethnographic ties to the islands. These groups require additional investigation as to their identity and associated resources.

Places of traditional cultural use may be found on the islands. Some of these areas may be eligible for inclusion in the national register as traditional cultural properties because of their association with cultural practices or beliefs of a living community that are (a) rooted in that community's history and (b) important in maintaining the continuing cultural identity of

the community (*National Register Bulletin, Guidelines for Evaluating and Documenting Traditional Cultural Properties*).

VISITOR USE, INTERPRETATION, AND EDUCATION

CURRENT VISITOR USE

Table 23 shows the recreation visits to the islands in 2013. In 2013, Channel Islands National Park reported approximately 212,000 visitors. Of this number, about 148,000 people stopped at the visitor center in Ventura. Most people who come to the mainland visitor center never actually visit the park.

Although visitation varies from year to year it has generally increased over time. Visitation is expected to continue to increase as the regional population and tourism increases.

The five islands receive use year-round, although the greatest number of visitors come between March and October. In recent years winter use has been increasing on the islands.

Very little visitor profile information has been collected on the visitors who actually go out to the islands. The last comprehensive survey of visitors was conducted in August 1993 and covered visitors at the Ventura visitor center and visitors in boats anchored offshore of the islands. It should be stressed however, that these data are more than 20 years old and represent a limited sample both in the visitors that were surveyed (e.g., no concessioner passengers were surveyed) and in the area and season of use. The 1993 survey revealed the following:

- Most visitors to the islands are residents of the three gateway counties—Santa Barbara, Ventura, and Los Angeles.
- Visitors were most often in family groups (56%).
- More than half (54%) had made previous visits to the park.
- Most U.S. visitors (75%) came from California.
- Visitors from foreign countries comprised 5% of the visitation.
- Fifty-two percent of visitors reported staying two hours or less at the Ventura visitor center.
- Thirty-six percent of visitors spent two days at the park; another 36% of the visitors spent five days or more.
- Visitors most often used previous visits (50%), advice from friends and relatives (40%), and a travel guide/tour book (30%) as sources of information about the park before their visit.

TABLE 23. VISITOR DATA 2013

Island	2013 Visitors
Anacapa	8,667
Santa Cruz	63,649
Santa Rosa	13,056
San Miguel	2,975
Santa Barbara	6,150

A 2013 survey found that 53% of park visitors were over 50 years old, and 31% were between 30 and 50, and 14% were below 30 (University of Idaho n.d.).

VISITOR ACCESS

The Ventura visitor center is near the 101 Freeway and is accessible by both private vehicles and public transportation. (However, there is no space for boaters to tie up and enter the visitor center.) The Santa Barbara

Harbor visitor contact station is also accessible by both private and public transportation.

Visitors can access the islands in the park using both private and concession-operated boats. Private boats can land in designated areas on all five of the park islands; some areas are subject to seasonal closures to avoid disturbance of wildlife. Two park concessioners (one boat and one air service) bring visitors to the islands for both one and multiday trips. Public air transport is available via a concessioner to Santa Rosa Island. The concession operators can transport a defined number of visitors to the islands each day. The number of visitors varies for each island and is determined in part by the size of the island, the natural and cultural resources, and the infrastructure available to visitors.

Visitor access to some areas of the islands varies by season. Areas are most commonly closed to visitors to avoid disturbance to wildlife or for safety reasons. When venturing on Anacapa, Santa Barbara, and San Miguel Islands, visitors must stay on trails at all times for their own safety and to protect vegetation and nesting seabirds. Once on Santa Cruz and Santa Rosa Islands, visitors can explore the islands on foot using both trails and roads. With the exception of Santa Rosa Island, there is no motorized transport available on the park's islands. (On Santa Rosa there is limited motorized transportation available for visitors, which is provided by the park staff.)

Although all of Santa Cruz Island is within the Channel Island National Park's boundary, much of the island is a private inholding, owned by TNC. Visitor access is restricted on this portion of the island.

PRINCIPAL VISITOR RECREATIONAL ACTIVITIES

In August 1993, visitors were asked what activities they participated in when they visited Channel Islands National Park. The most common visitor activities were marine mammal watching (45%), birdwatching (34%), photography (33%), and hiking (27%). Other activities engaged in included nature study (25%), attending interpretive programs (23%), recreational fishing (22%), power boating (20%), diving (17%), sailing (16%), kayaking (6%), and camping (4%). Since this survey was done, kayaking has substantially increased in popularity.

All of the islands have hiking opportunities, although there are no trails on Middle and West Anacapa and access is restricted. Visitors to San Miguel Island must be accompanied by a ranger when hiking beyond the ranger station. Some trails also are closed seasonally to protect wildlife and for safety reasons. The trails on the islands range from relatively flat and well maintained on East Anacapa to the more rugged and mountainous trails on Santa Rosa and Santa Cruz Islands. Santa Rosa and Santa Cruz Islands offer the greatest variety of hiking opportunities in the park. The trails allow visitors to explore and experience the islands outside of the developed areas at their own pace.

Visitors may camp on East Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara in designated campgrounds. Backcountry camping opportunities are available on both Santa Cruz and Santa Rosa Islands. On Santa Rosa Island all backcountry camping is limited to certain beaches and is closed seasonally. The only backcountry campground in the park is near Rancho Del Norte on Santa Cruz Island. Camping on the islands allows visitors to have a wider range of experiences than might be available when visiting for the day.

Beach exploration is another popular activity on all of the islands. Some island beaches on Santa Rosa and San Miguel Islands are closed or are only open seasonally. Most beaches can be accessed from the water and some are accessible from trails on the islands as well. Water-based recreational activities that could begin from the beaches include swimming,

surfing, tidepooling, snorkeling, diving, and kayaking. Because of extremely windy conditions on Santa Rosa and San Miguel Islands, kayaking is not recommended for novice kayakers or anyone who is not properly trained, conditioned, or equipped.

The islands offer superlative opportunities for birdwatching, photography, and wildlife viewing. Marine mammals can be seen from the islands as well as the water. Visitors also have an opportunity to see wildlife that is endemic to the islands during their visit such as the island scrub jay, which is found only on Santa Cruz Island.

As noted in chapter 1, climate change could affect visitor use and experiences on Channel Islands National Park in the future. If weather was to become more unstable and storms were to increase, it would affect opportunities for visitors to reach the islands. Likewise, if climate change were to affect wildlife populations such as the park's marine mammal and bird populations, it would in turn affect wildlife viewing opportunities on the islands. A loss of beaches would affect opportunities for exploring beaches and tidepools, fishing, surfing, diving, and kayaking.

INTERPRETATION AND EDUCATION

The park visitor center in Ventura offers visitors an introduction to the islands and information about some of the special marine and terrestrial resources in the park. In addition to maps and interpretive displays, the park film is shown in the theatre. A virtual visit to the park is provided during live interactive underwater and terrestrial programs broadcast from Anacapa and Santa Cruz Islands to the mainland via microwave, videoconferencing, and the Internet. Most park visitors do not venture to the islands so these programs, especially Channel Islands Live dives and hikes, offer views of the park that most visitors would never see otherwise. The Santa Barbara Harbor contact station includes orientation materials on the islands. Volunteers staff the contact station.

Channel Islands National Park has an extensive outreach/education program. Interest in these outreach and education programs is high, and the programs target local schools in the neighboring communities and classrooms throughout the country via distance learning. The park partnership with the Ventura County Office of Education delivers Channel Islands Live programs, and curricula to students and the public. Some school groups are able to visit the islands on concession boats; East Anacapa, Scorpion, and Frenchy's Cove are popular destinations. For the school groups that are unable to visit the islands, the Ventura visitor center is the primary interface with park resources. Parks as classroom educational programs are provided at school sites in the neighboring counties. However, the visitor center is too small and not designed to accommodate the growing education program. Current interpretive themes include a focus on ecosystem management and the fragile interrelationship of all park resources. The park does not have adequate space or resources to expand the interpretive themes to include a more in-depth treatment of the history of ranching on the islands or the Chumash Indians.

Interpretive and educational services on the islands vary by island. On-island interpretation includes guided interpretive programs and live interactive dives and hikes provided by both park staff and trained volunteers. Interpretive rangers are assigned to support on-island visitor services, but no interpretive rangers are stationed on any of the islands. Park staff also provide training to concession and tour boat staff. Wayside and visitor center exhibits and interpretive publications on the islands also help visitors become oriented and learn more about island resources. There are unstaffed visitor contact stations on Anacapa, Santa Cruz, and Santa Barbara Islands, but no facilities on San Miguel and Santa Rosa Islands.

WILDERNESS CHARACTER

Wilderness character is the fundamental concept in the Wilderness Act of 1964 and is broadly defined in section 2(c) of the act. The Wilderness Act speaks of wilderness as a resource in itself. A wilderness, in contrast to those areas where humans dominate the landscape, is defined by the qualities comprising its wilderness character. Wilderness character encompasses a combination of biophysical, experiential, and symbolic elements as described by four principal qualities—natural, undeveloped, untrammeled, and having outstanding opportunities for solitude or a primitive and unconfined type of recreation. A fifth quality—other features of value—also may apply and is unique to individual areas. These five qualities are of equal importance and can be defined in the following ways.

Note: The following section applies to lands found eligible for wilderness designation in the park. The text also applies only to the terrestrial portion of the park. The park's marine waters share many of the same qualities as the islands, and the Park Service strives to preserve these qualities; however, these marine water qualities are not described in this section. It should be stressed that although the eligible lands being described have wilderness character qualities, and the National Park Service is required to manage these lands to ensure the qualities that make them eligible are not degraded (per NPS *Management Policies 2006* § 6.3.1), these lands are not "wilderness" until Congress takes action.

NATURAL

The term "natural" refers to ecological systems that are substantially free from the effects of modern civilization. It also refers to maintenance of natural ecological relationships and processes, and continued existence of native wildlife and plants in largely natural conditions. This quality can be degraded by intended or unintended effects of modern people on the ecological systems (Landres et al. 2008). Naturalness can be degraded by such actions as large groups of people, mechanization, evidence of human manipulation, unnatural noises, signs, and other modern artifacts.

To most visitors, Channel Islands National Park appears to be "natural," covered largely by natural-looking vegetation. Although the islands within the park were at various times inhabited by the Chumash and Gabrielino peoples and were used for military and maritime activities, ranching, cultivation of crops, and hunting, they retain a sense of naturalness because of the distance from the mainland, the small footprints of development, the ruggedness of the terrain, and the climate. On the larger islands, such as Santa Cruz and Santa Rosa, the variable terrain, including steep cliffs, deep valleys, and rolling hills and mountains, dwarf the development on the islands and give the islands an overall sense of naturalness.

As described earlier in the "Vegetation" section, much of the islands' native vegetation and wildlife has been altered directly and indirectly by past human activities, including the spread of nonnative plants. For example, much of the woody vegetation that was once on the islands no longer exists. Also, climate change would likely alter the islands' ecosystems in the future.

Since the park was established in 1980, and for considerably longer on some islands, the majority of the islands have been left to the forces of nature. Today, the signs of obvious past human activity are generally no longer visible.

UNDEVELOPED

Undeveloped refers to areas without permanent improvements or modern human habitation.

Although Channel Islands National Park has been occupied by people for thousands of years, permanent human habitation today is limited to only a few small areas. The majority of the islands are undeveloped. There is some development on all of the islands in the park, but it is generally concentrated around the historic structures and landscapes such as the ranch house at Scorpion Valley on Santa Cruz Island, the former Coast Guard facilities on East Anacapa Island, and the Bechers Bay ranch complex on Santa Rosa Island.

There is little variation in the terrain across East Anacapa's 117 acres. Development includes NPS and former Coast Guard facilities, a small primitive campground, and a dock. Visitor facilities are limited to vault toilets, and there is no potable water for visitors on the island. Outside the developed area there are 2 miles of trails around the island. The former Coast Guard facilities are visible from all areas of the island.

There is no development on Middle and West Anacapa islets.

Of the 14,476 acres of NPS land on Santa Cruz Island, 97% is undeveloped. Developed areas on NPS lands include the historic Scorpion Valley area, the Smugglers Ranch area, and the Rancho Del Norte area. Other development includes a U.S. Navy facility on the ridge. Some backcountry camping sites are present near Rancho Del Norte. In addition to hiking trails, there are a number of unimproved gravel roads.

Of Santa Rosa Island's approximately 51,000 acres 99% is undeveloped. Development on Santa Rosa Island is concentrated in Bechers Bay. Two campgrounds are on the island near Bechers Bay and in the Torrey Pines area. Visitor facilities are limited to vault toilets. There is an airstrip used by a park concessioner to bring in visitors. Although there are two-track roads throughout the island, these roads are unimproved gravel roads.

Because the U.S. Navy used San Miguel Island for many years as a bombing range, there is very limited development on the island's 9,376 acres. Development is limited to the Cabrillo Monument and ranch complex areas. Visitor facilities are limited to vault toilets in the campground.

Of Santa Barbara Island's 640 acres, 99% is undeveloped. Development on the island consists of an NPS administrative cabin, Coast Guard navigation aids, a primitive public campground, and a dock. Outside the developed area are 6 miles of trails. Visitor facilities are limited to vault toilets. Typically the NPS and Coast Guard structures are not visible once visitors leave the developed area.

UNTRAMMELED

Untrammeled refers to an area essentially unhindered and free from modern human control or manipulation, including landscape restoration activities. This quality can be degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems (Landres et al. 2008). Even if actions may be taken to restore natural conditions, these actions degrade the untrammeled quality of wilderness character.

The majority of the Channel Islands National Park is untrammeled today. On most of the islands, most of the year there is no evidence of efforts to control or manage the landscape, including vegetation and wildlife. However, large-scale trammeling activities have occurred in the past (e.g., ranching). NPS habitat restoration activities also have occurred on all of the islands. These management activities continue to occur on parts of the islands, including erosion-control

efforts, control/eradication of nonnative plant and wildlife species, reintroductions of native species, restoration of wetlands, and removal of hazardous fuels. Restoration work is occurring throughout the islands, including in areas proposed for wilderness or potential wilderness. From a parkwide perspective, a relatively small percentage of the islands is being actively trammeled at any given time.

OPPORTUNITIES FOR SOLITUDE AND PRIMITIVE AND UNCONFINED RECREATION AND OPPORTUNITIES

Solitude refers to opportunities to be alone, remote, or separated from other people and the sounds and sights of civilization. Opportunities for solitude often relate to the likelihood of encountering other people; if the likelihood of encountering other people is low, there are greater opportunities for solitude. Primitive recreational opportunities refer to nonmotorized recreational activities. In the park these activities include marine mammal observation, bird watching, camping, photography, and hiking. Primitive unconfined recreation refers to opportunities for people to travel by nonmotorized and nonmechanized means, and to rely on personal skills rather than relying on facilities or outside help, free of societal or managerial controls. It refers to freedom to explore and the ability to be spontaneous. It means self-sufficiency without support facilities or motorized transportation, and experiencing weather, terrain, and other aspects of the natural world with minimal shelter or assistance from devices of modern civilization. This quality can be degraded by elements that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management of or restriction on visitor behavior (Landres et al. 2008). For example, some would consider the requirement that all visitors camp in designated areas an adverse impact on their opportunity for unconfined recreation.

Channel Islands National Park has many opportunities for solitude. The park is relatively quiet, with natural sounds dominating the soundscape for much of the year (with the exception of noise from motorized watercraft going to the islands and occasional aircraft landing on Santa Rosa Island and a few aircraft on San Miguel Island). Relatively few people visit the islands—and most of those who do visit them do not go into the interior of the islands or do not spend much time there. The islands are logistically challenging to reach. Several of the islands' shorelines are steep or rocky, making access difficult or impossible in many areas. There are a few developed areas where relatively large groups of people (10 to 30 or more) gather at one time, particularly on weekends and holidays.

Among the islands, opportunities for solitude vary depending on factors such as distance from the mainland, size of the island, topography, level of development, weather, and level of use. For example, the number of visitors who journey to East Anacapa frequently reaches the capacity set for concession tours, and the small size of the islet limits opportunities for solitude at times. On the other hand, Santa Barbara Island, one of the smaller islands, still has many opportunities for solitude because visitation is so low and the development footprint is small. In general, the larger islands (e.g., Santa Rosa and Santa Cruz) provide more opportunities for solitude than the smaller islands. On these islands, outside of the developed areas, it is possible to walk for miles without encountering another visitor. The islands farther from the mainland (e.g., San Miguel and Santa Barbara) also provide more opportunities for solitude than the islands closer to the mainland.

Because of the limited amount of development on the islands, there are many opportunities for primitive recreation. The opportunities vary at each island according to size, current level of development and use, presence of sensitive resources, and

topography. With the exception of Santa Rosa Island, once visitors are on the islands, no recreational activities involve motorized vehicles and, therefore, are considered primitive.

Recreational use in the park is both confined and unconfined. Once visitors are on the islands, there are many areas people can visit, and access is largely unregulated. On the other hand, the number of people allowed on the islands is limited because of the sensitivity of the resources, potential for visitor impacts on resources, and lack of visitor support infrastructure. Likewise, various areas are closed to visitors at different times because of the sensitivity of the resources. The presence of wildlife at the access points sometimes can limit visitors from going on an island. All visitors camping on the islands also are required to obtain permits.

Anacapa Island

The opportunity for primitive, unconfined recreation or solitude is limited on East Anacapa by the high number of people who visit the island annually and the size of the islet. East Anacapa is one of two locations in the park where the number of visitors routinely reaches the established user capacity. The island has only 2 miles of trails. The opportunities for solitude for some visitors are limited by the size of the island, and the relative openness of the terrain. On the other hand, people who stay overnight at the campground after the day users depart have excellent opportunities to experience solitude.

Visitation on Middle Anacapa is highly confined. No visitors are allowed on the islet without an NPS-approved guide. However, for those able to visit the island, opportunities for solitude and primitive, unconfined recreation are plentiful.

Access on West Anacapa is limited to Frenchy's Cove, which limits the opportunities for unconfined recreation as well as opportunities for solitude and primitive recreation on the island. Recreational opportunities in the cove vary by season. In the winter when the tide is low, visitors typically come to the area to see the tidepools. Fewer visitors venture into the cove in the summer when the tide is higher and visitation shifts to the beach area. Frenchy's Cove is a popular destination, and opportunities for solitude vary with the seasons; typically more visitors venture to the cove in the winter; therefore, the opportunity for solitude is less during this season than in other less popular or more remote destinations.

Santa Cruz Island

Santa Cruz Island has the greatest number of visitors of any island in the park. However, because the island is large, it is possible to quickly walk away from Scorpion Valley, Smugglers Cove, and Prisoners Harbor and find many opportunities for solitude and outstanding primitive, unconfined recreational activities. The terrain outside the developed area is varied and, as with any backcountry experience, visitors assume some level of risk.

Santa Rosa Island

Santa Rosa Island has few visitors and most of the island is undeveloped; therefore, the opportunities for solitude are generally high. There are also many opportunities for primitive, unconfined recreation for hikers outside of Bechers Bay. However, parts of the island are closed seasonally or throughout the year to protect wildlife (e.g., nesting plovers on beaches). These closures also limit the opportunities for unconfined primitive recreation.

San Miguel Island

Because San Miguel Island is relatively remote and weather conditions are highly unpredictable with strong winds, rain, and thick fog frequently occurring, the island receives the fewest number of visitors of the five islands. For safety reasons, a permit is required to hike beyond the ranch complex and visitors must be escorted by a ranger to explore the island beyond the ranger station. Because visitation is relatively low, there are opportunities for solitude even in the ranch area. Although few people venture across the island, it is not necessarily a solitary experience because they must travel with a NPS ranger. Similarly, although the island offers primitive recreational opportunities, the safety requirements restrict visitors to a few trails. The closures of much of the island to public entry due to the presence of marine mammals and other sensitive resources, as well as the potential for unexploded military ordnance, highly confine visitor recreational opportunities.

Santa Barbara Island

Although the island is small, 6 miles of trails on the island are available to visitors outside of the developed area. Because the island currently has so few visitors, there are plentiful opportunities for solitude and primitive unconfined recreation. However, some portions of the trail system are closed to visitors during the pelican nesting season, which limits opportunities for unconfined recreation.

OTHER FEATURES OF VALUE

This quality applies to those values and features that are not fully covered in the other four qualities, including features of scientific or cultural value. These features are unique to the proposed Channel Islands wilderness area.

Cultural resources are an important part of wilderness character. These resources teach about the history and special significance of people's relationship to the land. The islands have a history of occupation by people for about 13,000 years. Some of the earliest archeological resources in California and the Pacific Coast of North America, representing some of the earliest immigrants into North America, are in the proposed wilderness area. Archeological resources within the proposed wilderness area include artifacts, middens, quarries, habitation sites, and rock shelters. Other signs of historical features, representing ranching, hunting, military activities, and other human endeavors from a wide range of cultures and time periods, are also present, including structures such as fences, round-up corrals, and dry stone checkdams and retaining walls. The Chumash people of today have centuries of cultural connections with the islands. Chumash groups have a spiritual connection to the islands and the proposed wilderness area.

As noted in Chapter 1, the Channel Islands have long been recognized for their scientific values and are of great value to researchers. The proposed wilderness area is fairly undisturbed and provides many opportunities for scientific research. Many features of exceptional paleontological value are preserved because of their location in the proposed wilderness. Of particular note are the remains of the pygmy mammoth fossil bones (found on Santa Rosa and Santa Cruz Islands) — many of which were in wilderness. These are features of great scientific interest that help us understand evolutionary and geologic processes. The extensive archeological record, unique island ecosystems and taxa, and isolation from development all make the proposed wilderness area of interest to scientists. Decades of research, monitoring, and collections have occurred in the proposed wilderness area, which is expected to continue in the future.

PARK OPERATIONS

The superintendent is responsible for overall management and operation of the park. The park headquarters is in Ventura, California. All divisions are managed from park headquarters, overseeing operations on five of the eight Channel Islands. The park staff is operationally organized into seven divisions, each with a functional area of responsibility.

The Facility Management Division is responsible for buildings; grounds; roads; trails; docks; piers; airstrips; utilities (water, power, sewer, and solid waste); equipment maintenance; crane operation; and construction project management. Employees are stationed on three of the primarily visited islands.

The Division of Visitor and Resource Protection is responsible for resource protection; law enforcement; public safety; visitor use management and emergency services (emergency medical services, search and rescue, major incident management); structural and wilderness fire management; campground management; and special use permits. Legal matters involving tort, civil, and criminal proceedings; land acquisitions; easements and liaison with the Department of the Interior, Field Solicitor, U.S. Attorney's Office, and the District Court for the park are managed by the chief ranger. Concessions management is performed by the chief ranger. Park rangers are duty stationed on all five of the park islands.

The Natural Resource Management Division is organized as a parkwide function and is responsible for all natural resource management and research. This entails documenting and ensuring the well-being of natural resources, managing studies, and environmental compliance. The division is divided into marine and terrestrial resources. The division is primarily located at park headquarters.

The Division of Interpretation is organized and managed on a parkwide basis and is responsible for communication and information services, outreach education, interpretive services, and visitor center and field operations. The division is primarily based at park headquarters.

The Division of Cultural Resources Management is managed on a parkwide basis and is responsible for documenting and preserving archeological, historic architectural and landscape resources, curation of museum collections, and compliance.

The Division of Administration includes personnel, property and procurement, and fiscal management. The division reports directly to the office of the superintendent.

The Division of Transportation is managed to include parkwide dispatch, contract aircraft scheduling, housing reservations, marine operations and scheduling, and safety and information management.

Staff expertise and specialties are distributed throughout the divisions using position management planning (Table 24).

TABLE 24. EXISTING PARK STAFFING 2011

Title	Number of FTEs	Staff Levels
Superintendent	1	park manager (1)
Administration	6	HR specialist (1) IT specialist (1) contract specialist (1) budget analyst (1) fiscal assistant (1) administrative specialist (1)
Interpretation	9.8	supervisory park ranger – chief (1) supervisory park ranger – vc (1) interpretive park rangers – interpretive (5) (one of which is also the dive officer) volunteer coordinator assistant (.8) education coordinator (1) biological science technician (1)
Visitor and Resource Protection	10	supervisory park ranger — chief ranger (1) supervisory park rangers (2) park rangers – law enforcement (4) park rangers marine law enforcement (2) budget and financial support assistant (1)
Natural Resources	12	supervisory resource management specialist (1) supervisory natural resource managers (2) natural resource managers (1) wildlife biologist (1) ecologists (2) botanist (1) biologists (2) biological science technician (1) administrative support assistant (1)
Maintenance	11	facility manager (1) crane operator supervisors (2) crane operators (3) maintenance mechanics (2) maintenance workers (2) administrative support assistant (1)
Transportation	4.5	supervisory small craft operator (1) small craft operators (2.5) deckhand (1)
Cultural Resources	4.4	chief of cultural resources (1) archeologists (.8) exhibit specialist (1) preservation specialists (1.6)
TOTAL	58.7	

Terms: 12
Seasonals: 13.5

PARK ROADS

Santa Rosa Island has 139 miles of roads and Santa Cruz Island has 20.2 miles of roads. The existing road system in general emerged over time to meet access needs for previous landowners and the military. The roads for the most part are in poor to fair condition and are impassable during wet conditions. The majority of the roads require four-wheel drive

vehicles, even when dry. The park would continue to maintain all existing roads at minimum standards on Santa Rosa and Santa Cruz Islands and all roads are maintained solely to meet park operational needs. The only exception is on Santa Rosa Island where a concession ground transportation system is proposed.

OTHER INFRASTRUCTURE AND FACILITIES

Park facilities and infrastructure include:

Robert J. Lagomarsino Visitor Center and administrative office complex and three rented office facilities in the Ventura Harbor and the outdoor Santa Barbara contact station at the wharf in Santa Barbara. Park rangers provide visitor services on all islands. There are employee housing units for on-site protection, resource management, and park maintenance distributed over the five Channel Islands that comprise the national park.

East Anacapa Island has a public dock, a historic derrick crane, a lighthouse, a fog signal building, visitor contact station, 2 miles of hiking trails, plus a campground that accommodates 30 people. A single-family residence (in the assistant lightkeeper's house), an efficiency apartment (in the historic generator building), and a bunkhouse in the historic storage building (which also houses the visitor contact station) serve as employee housing.

On Santa Cruz Island, Scorpion Valley provides camping in a 240-person campground and a visitor center in the 1883 ranch house in the valley. This area features 5 miles of unpaved primitive road and 19 miles of hiking trails. Park housing consists of six temporary housing units, a bathhouse, and a community kitchen/dining area. There is also a public landing pier and three public comfort stations. Also on Santa Cruz Island, the Prisoners Harbor anchorage includes a 2,400-square-foot historic warehouse, a 374-foot timber pile pier, 15 miles of primitive road, 10 miles of hiking trails, and a vehicle fleet for park operations. A 16-person primitive backcountry campground is near Rancho Del Norte.

Santa Rosa Island offers backcountry hiking and beach camping in addition to a campground that accommodates 75 campers. The historic ranch at Bechers Bay includes 18 historic structures. There are 54 miles of primitive unpaved road, 12 miles of hiking trails, a public pier, a 2,250-foot administrative dirt airstrip, a park operations vehicle fleet, and two garages. NPS employee housing includes two 2-bedroom duplexes and two 1-bedroom duplexes.

San Miguel Island offers a campground that accommodates 30 campers, 14 miles of trails, and a combination ranger station / residences / bunkhouse. The island also has a research station and two dirt administrative airstrips.

Santa Barbara Island offers a visitor contact station, a campground that accommodates 30 campers, a public dock, and 6 miles of scenic trails. NPS employee housing includes a combination one-bedroom unit (in the visitor contact station) and bunkhouse.

Channel Islands National Park

Chapter 4: Environmental Consequences

INTRODUCTION

The National Environmental Policy Act mandates that environmental impact statements disclose the environmental effects of proposed federal actions. In this case, the proposed federal action would be the adoption of a general management plan for Channel Islands National Park. This "Environmental Consequences" chapter analyzes the potential effects of three management alternatives on natural resources, cultural resources, the visitor experience, and wilderness character of the park. By examining the environmental consequences of all alternatives on an equivalent basis, decision makers can decide which approach creates the most desirable combination of the greatest beneficial results with the fewest adverse effects on the park.

The alternatives in this plan provide broad management directions. Because of the general nature of the alternatives, the potential consequences of the alternatives are analyzed in similarly general terms using qualitative analyses. Thus, this environmental impact statement should be considered a programmatic analysis. For the purposes of analysis, in the environmental impact statement it is assumed that all of the specific actions proposed in the alternatives would occur during the life of the plan.

For several actions in the alternatives there is not detailed information on the proposed actions and their locations. These actions include the removal of roads and the possible construction of campsites, trails, and campgrounds on Santa Rosa Island; the development of a research/education field station on Santa Rosa Island; the possible development of an education/volunteers camp on Santa Cruz Island; the development of a NPS housing area in the Prisoners Harbor area; the possible development of campsites and trails on Santa Cruz Island; the periodic excavation of sediments from the Scorpion channel on Santa Cruz Island; and the possible construction of new trails on San Miguel Island. This general management plan generally analyzes these actions, but additional environmental analyses with appropriate NEPA documentation would be needed before they could be implemented.

The existing conditions for all of the impact topics that are analyzed here were identified in the "Affected Environment" chapter. All of the impact topics are assessed for each alternative. For each impact topic, there is a description of the positive (beneficial) and negative (adverse) effects of the alternative, a discussion of the cumulative effects when this project is considered in conjunction with other actions occurring in the region, and a brief conclusion.

The no action alternative (continue current management) analysis identifies what future conditions would be if no changes to facilities or park management occurred. The two action alternatives were then compared to the no action alternative to identify the incremental changes that would occur as a result of changes in park facilities and management. Impacts of recent decisions and approved plans, such as the Santa Cruz Island restoration effort, are not evaluated as part of this environmental analysis. Although these actions would occur during the life of the plan, they have been (or would be) evaluated in other environmental documents. Also, the impacts of the marine reserve areas and marine conservation areas within the park waters, which the State of California recently adopted, are not evaluated in this document (see CDF&G 2002 for the environmental impacts of these marine protected areas).

At the end of each alternative there is a brief discussion of energy requirements and conservation potential; unavoidable adverse impacts; irreversible and irretrievable commitments of resources; and the relationship of short-term uses of the

environment and the maintenance and enhancement of long-term productivity. Unavoidable adverse effects focus on long-term permanent effects on park resources. These are impacts that cannot be fully mitigated or avoided — they are residual impacts that would remain after mitigation was implemented. Irreversible and irretrievable commitments of resources explore long-term effects of an alternative and whether or not the productivity of park resources is being traded for the immediate use of land. The relationship of short-term uses of the environment and the maintenance and enhancement of long-term productivity explores long-term effects of an alternative and whether or not the productivity of park resources is being traded for the immediate use of land.

A brief summary of the impacts of each alternative is provided in Table 19 at the end of the "Alternatives, including the Preferred Alternative" chapter.

ASSUMPTIONS

For the purposes of this analysis several assumptions were made in analyzing impacts of the alternatives:

- All changes to park facilities are phased in over 20 to 40 years as described in the alternatives.
- Parkwide, visitor use levels and patterns do not substantially change from current levels and patterns, although there may be noticeable increases on individual islands. Most visitors, however, would continue to stay within developed areas.
- All facilities proposed in the alternatives are built.
- All proposed commercial services in the alternatives occur.
- Congress designates wilderness in the park as proposed in alternatives 2 and 3.
- The U.S. Navy and Park Service come to agreement on the use of San Miguel and Prince Islands, and the actions proposed in the alternatives are implemented.
- In alternative 3 it is assumed that visitors would be able to fly to San Miguel Island on a limited basis during the trial period.

CLIMATE CHANGE

The impacts of climate change on the park are not expected to differ among the alternatives, and the lack of qualitative and quantitative information about climate change effects adds to the difficulty of predicting how these impacts would be realized in the park. Additionally, management actions that are inherently part of each alternative, such as managing nonnative plants to prevent spreading, would not fundamentally change with the anticipated added effects of climate change. Also, the range of variability in the potential effects of climate change is large in comparison to what is known about the future under an altered climate regime in the park in particular, even if larger-scale climatic patterns have been predicted for the California Coast (California Natural Resources Agency 2009). Therefore, the potential effects of this dynamic climate on national park resources were included in "Chapter 3: Affected Environment." However, these effects are not analyzed in "Chapter 4: Environmental Consequences" in general with respect to each alternative because of the uncertainty and variability of outcomes, and because these outcomes or management are not expected to differ among the alternatives.

METHODOLOGY FOR ANALYZING IMPACTS

The planning team based the impact analysis and conclusions in this chapter largely on information provided by experts in the Park Service, park staff insights and professional judgments, and the review of existing literature and studies. The team's method of analyzing impacts is further explained below. It is important to remember that it is assumed in the analyses that the mitigation measures described in the alternatives chapter would be applied to minimize or avoid impacts. If these measures were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

The environmental consequences for each impact topic were defined based on impact type, intensity, context, and duration. Cumulative effects also were identified, but are discussed later in this section.

Effects can be either adverse or beneficial for the topic being analyzed. The effects also can be direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable.

Impact intensity refers to the degree or magnitude to which a resource would be positively or negatively affected. Each impact was identified as negligible, minor, moderate, or major in conformance with the criteria for these classifications provided below by impact topic. Because this is a programmatic document, the intensities were expressed qualitatively.

Context refers to the setting within which an impact is analyzed, such as the affected region or locality. In this document most impacts are either localized (site-specific) or parkwide. Cumulative impacts are either parkwide or regional (e.g., marine water quality impacts). For special status species, such as threatened and endangered species, the context is the species' range.

Impact duration refers to how long an impact would last. The planning horizon for this plan is approximately 20 to 40 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts:

> *Short term:* The impact would be temporary in nature, lasting five years or less, such as impacts associated with construction.
>
> *Long term:* The impact would last more than five years and can be permanent in nature, such as the loss of soil due to the construction of a new facility. (Although an impact may only occur for a short duration at one time, if it occurs regularly over time the impact may be considered long-term—e.g., the noise from a vehicle driving on a road would be heard for a short time and intermittently, but because vehicles would be driving the same road throughout the 20- to 40-year life of the plan, the impact on the natural soundscape would be considered long-term.)

NEGLIGIBLE IMPACT REQUIREMENT

The enabling legislation for the park mandates the intensity of impacts due to visitor use that can occur in the park. Section 204(b) of PL 96-199 states:

> In recognition of the special fragility and sensitivity of the park's resources, it is the intent of Congress that the visitor use within the park be limited to assure negligible adverse impact on the park resources.

The Park Service has interpreted this to mean that all visitor impacts on natural resources

(including impacts due to visitor numbers, visitor behavior, new visitor facilities, or administrative facilities that relate to visitors) in the GMP alternatives cannot exceed a **parkwide negligible adverse impact**. In other words, all visitor impacts in the GMP alternatives should be beneficial, or at worst, have a negligible impact on natural resources from a parkwide perspective. If an impact were to be more severe than negligible, then the visitor use, activity, or facility should not be permitted. The Park Service has further interpreted this provision to mean that an impact at a localized site could exceed a negligible impact on a natural resource so long as the overall parkwide impact is negligible or less.

As documented in this chapter, some of the visitor use impacts are greater than a negligible impact in localized areas. However, none of the natural resource impacts identified were greater than a negligible impact when viewed from a parkwide perspective. [This is noted under the conclusions for each of the natural resource impact topics.]

NATURAL RESOURCE METHODOLOGY AND DEFINITIONS

The natural resource impact topics analyzed in this document include soils, paleontological resources, fresh and marine water quality, floodplains and wetlands on Santa Cruz Island, terrestrial vegetation, terrestrial and marine wildlife (including seabirds and pinnipeds), federal- and state-listed threatened and endangered species, and soundscape. Information on known resources was compiled and compared with the locations of proposed developments and other actions. The impact analysis was based on the knowledge and best professional judgment of planners, resource specialists, data from park records, and studies of similar actions and impacts when applicable. The planning team qualitatively evaluated the impact intensities for all of the natural resource impact topics.

The following impact intensity definitions for **soils** were used:

- *Negligible Impact* — An impact that may result in a change in a soil, but the change would be at the lowest level of detection and highly localized. The effects on soil productivity would be slight.
- *Minor Impact* — An impact that would result in a detectable change, but the change would be slight and would be localized. Effects on soil productivity would be small. There could be changes in a soil's profile in a relatively small area, but the change would not noticeably increase the potential for erosion.
- *Moderate Impact* — An impact that would result in a clearly detectable change in the soil character and properties over a relatively wide area. The effect on soil productivity would be apparent. The potential for erosion to remove small quantities of additional soil would noticeably increase or decrease.
- *Major Impact* — An impact that would result in a substantial change in the soil character and soil productivity over a large area. There would be a strong likelihood that erosion would remove large quantities of additional soil or erosion would be substantially reduced.

For **paleontological** impacts, the following definitions were used:

- *Minor Impact* — A few fossils may be lost due to collecting, or there would be a low probability of impact due to a ground-disturbing activity because (1) the activity would occur in a geologic layer not known to contain extensive fossils and the volume of bedrock disturbance would be negligible, or (2) the activity would occur in a fossil-rich geologic layer, but the volume of bedrock disturbed would be nearly indiscernible. Monitoring would likely detect fossils and the loss of fossils and/or associated contextual information would be minimal.

- *Moderate Impact* — A number of fossils may be lost due to collecting, or a moderate probability of impact due to a ground-disturbing activity because (1) the activity would occur in a geologic layer not known to contain extensive fossils and the volume of bedrock disturbance would be large, or (2) the activity would occur in a fossil-rich area and the volume of bedrock disturbance would be small. Most fossils uncovered would likely be found by monitoring, but some fossils and/or associated contextual information may be lost.
- *Major Impact* — Many fossils may be lost due to collecting or there would be a high probability of impact due to a ground-disturbing activity because the activity would occur in a geologic layer of high fossil richness and the volume of bedrock disturbance would be large. Even with monitoring, many fossils and/or associated contextual information would likely be lost.

The following impact intensity definitions for **fresh** and **marine water quality** impacts were used:

- *Negligible Impact* — Changes would be either nondetectable or if detected, would have effects that would be considered slight and localized.
- *Minor Impact* — Changes in water quality would be measurable, although the changes would be small and the effects would be localized. The changes would be within historical or desired water quality conditions.
- *Moderate Impact* — Changes in water quality would be clearly measurable and relatively local. The changes may sometimes alter water quality from the historical baseline or desired conditions. The change potentially would affect a number of populations or natural ecological processes. Alternatively, the impact would be visible to some visitors.
- *Major Impact* — Changes in water quality would be readily measurable and would be noticed on a parkwide or regional scale. The changes would frequently alter water quality from the historical baseline or desired conditions. The change potentially would affect many populations or natural ecological processes. Alternatively, the impact would be easily visible to visitors.

For **floodplain values and flooding**, the following impact intensity definitions were used:

- *Negligible Impact* — Impacts would occur outside the regulatory floodplain, as defined by the "Floodplain Management Guideline" (NPS 1993; 100-year or 500-year floodplain, depending on the type of action), or there would be no measurable or perceptible change in the ability of the floodplain to function naturally. There would be essentially no risk to life or property.
- *Minor Impact* — Impacts within the regulatory floodplain would slightly degrade or improve natural floodplain values (e.g., river processes or aquatic habitat) in a localized area. There would be a slight increase or decrease in the risk of damage to property, but there would be little risk to life. Placement of a small-scale development on the margin of the regulatory floodplain might be an example of an action that would result in minor adverse impacts. Removing flood protection devices or small facilities would result in beneficial impacts.
- *Moderate Impact* — Impacts within the regulatory floodplain would interfere with or enhance natural floodplain values (e.g., river processes or aquatic habitat) in a substantial way or in a large area. There would be a noticeable increase or decrease in the risk to life or property. Examples of adverse moderate impacts would include substantial modification of streambanks to

protect roads in multiple locations, or to protect large compounds.

- *Major Impact* — An impact would permanently alter or improve natural floodplain values or significantly alter or improve natural river processes or aquatic habitat. There would be a substantial increase or decrease in the risk that severe damage to property would occur or people would be lost. An example might be placement of a new levee in a regulatory floodplain to protect a park development.

For **wetlands**, the following impact intensity definitions were used:

- *Negligible Impact* — Changes would be either nondetectable, or if detected, would have effects that would be considered slight and localized. There would be no measurable or perceptible changes in wetland size, integrity, or functions.
- *Minor Impact* — Changes would be measurable, although the changes would be relatively small in terms of area and the nature of the changes. Although there could be a small change in integrity or continuity, the overall viability and functions of the wetland would not be affected.
- *Moderate Impact* — The changes would be readily apparent in a relatively small, localized area. There could be a small change in the size, integrity, continuity, and a few functions of the wetland, including a small, but permanent, loss or gain in acreage.
- *Major Impact* — The effects would be readily apparent over a relatively large area, and would be highly noticeable. The change would permanently alter the size, integrity, continuity, and functions of the wetland, such as the permanent loss of large wetlands.

For **vegetation and wildlife** the following impact intensity definitions were used:

- *Negligible Impact* — An impact that might result in a change in vegetation or wildlife, but the change would be at the lowest level of detection. Ecological processes would not be affected.
- *Minor Impact* — An impact that would result in a detectable change, but the change would be slight and would have a localized effect on a population. This could include changes in the abundance or distribution of individuals in a localized area, but not changes that affect the viability of local populations. Changes to localized ecological processes would be minimal.
- *Moderate Impact* — An impact that would result in a clearly detectable change in a population and that could have an appreciable effect. This could include changes in the abundance or distribution of local populations, but not changes that affect the viability of regional populations. Changes to localized ecological processes would be of limited extent.
- *Major Impact* — An impact that would be severely adverse or exceptionally beneficial to a population. These impacts would be substantial, highly noticeable, and might result in widespread change and be permanent in nature. This could include changes in the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial). Significant ecological processes would be altered, and landscape-level changes would be expected.

For **federal- and state-listed species**, including proposed species, the following impact intensities apply. These definitions are consistent with the language used to determine effects on threatened and endangered species under the federal ESA:

- *Negligible Effect* —The action could result in a change to a population or individuals

of a species or designated critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural fluctuations. This impact intensity equates to a Fish and Wildlife Service "may affect, not likely to adversely affect" determination.

- *Minor Impact* — The action would result in a change to a population or individuals of a species or designated critical habitat. The change would be measurable, but small, and not outside the range of natural variability. This impact intensity equates to a Fish and Wildlife Service "may affect, not likely to adversely affect" or a "likely to adversely affect" determination.
- *Moderate Impact* — The action would result in a detectable change to a population or individuals of a species or designated critical habitat. Changes to the population or habitat might deviate from natural variability, but the changes would not threaten the continued existence of the species in the park. This impact intensity equates to a Fish and Wildlife Service "may affect, not likely to adversely affect" or a "likely to adversely affect" determination.
- *Major Impact* — The action would result in a noticeable effect on the viability of a population or individuals of a species or designated critical habitat. Considerable changes may occur during key time periods for a species. Changes to the population or habitat would substantially deviate from natural variability and threaten or help ensure the continued existence of the species in the park. A major adverse impact would be considered a "take" situation and would equate to a Fish and Wildlife Service "likely to adversely affect" determination.

For **soundscape** impacts, the following impact intensity definitions were used:

- *Negligible Impact* — For natural areas the alternative would rarely cause a change in the natural ambient sound conditions and/or there would be little or no change in periods of time between noise events. Natural sounds predominate. The amount of time that noise from the alternative is audible would cause changes so slight they would not be measurable or perceptible. For developed/frontcountry areas human-caused noise may be present much of the time during daylight hours, but it is concentrated at the sources and only travels short distances from the sources. Natural sounds still predominate in large portions of the frontcountry area. When noise is present, it is mostly at low levels.
- *Minor Impact* — For natural areas the alternative would occasionally cause a change in the natural ambient sound conditions, and/or there would be a small change in periods of time between noise events. The amount of time that noise is audible from the alternative would change a small amount from the natural ambient sound conditions. Sound sources would be identifiable. For developed/frontcountry areas human-caused noise may predominate during daylight hours, but for the majority of the time the noise is at low levels, is only rarely greater than medium levels, and does not travel more than medium distances throughout frontcountry areas.
- *Moderate Impact* — For natural areas the alternative would cause a change in natural ambient sound conditions for an intermediate amount of the day, and/or there would be an intermediate change in periods of time between noise events caused by the alternative. The amount of time that noise is audible would change an intermediate amount from natural ambient. Human-caused sounds would be readily apparent and identifiable. For developed/frontcountry areas human-caused noise may predominate, but it is at medium or lower levels a majority of the time. Localized areas may experience medium to high levels of human-caused noise during half of the daylight hours.

Noise travels medium distances throughout frontcountry areas.

- *Major Impact* — For natural areas the alternative would cause a change in natural ambient sound conditions for a large amount of the day, and/or there would be more than an intermediate change in periods of time between noise events caused by the alternative. The amount of time that noise is audible would be substantial and at a level that obscures or masks natural sounds. For developed/frontcountry areas human-caused noise predominates during daylight hours and is at greater than medium levels a majority of the time the noise is present. Large portions of the frontcountry area are affected by medium to high levels of noise during a majority of the daylight hours.

IMPACTS ON CULTURAL RESOURCES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

In this plan / EIS, impacts on archeological (including submerged maritime) resources, ethnographic resources, historic structures/buildings, and cultural landscapes are described in terms of type, context, duration, and intensity that is consistent with CEQ regulations and implement the provisions of NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the ACHP's regulations implementing Section 106 of the National Historic Preservation Act (36 CFR Part 800, *Protection of Historic Properties*), impacts on archeological (including submerged maritime) resources, ethnographic resources, historic structures/buildings, and cultural landscapes were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or determined eligible to be listed in the national register; (3) applying the criteria of adverse effect to affected cultural resources either listed in or determined eligible to be listed in the national register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the advisory council's regulations a determination of either adverse effect or no adverse effect must also be made for affected national register-eligible or -listed cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register (e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the national register.

CEQ regulations and the NPS *Conservation Planning, Environmental Impact Analysis and Decision-making* (DO-12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect, as defined by Section 106, is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections for archeological (including submerged maritime) resources, ethnographic resources, historic structures / buildings, and cultural landscapes. The

Section 106 summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criteria of effect and adverse effect found in the advisory council's regulations.

CULTURAL RESOURCE METHODOLOGY AND DEFINITIONS

Archeological Resources (Including Submerged Maritime Resources)

For purposes of analyzing impacts on **archeological resources** either listed in or eligible to be listed in the national register, the thresholds of change for intensity of an impact are defined below:

- *Negligible* — Impact is at the lowest levels of detection — Barely measurable with no perceptible consequences, either adverse or beneficial, on archeological resources. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Minor* — Adverse impact: Disturbance of a site(s) results in little, if any, loss of significance or integrity and the national register eligibility of the site(s) is unaffected. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Maintenance and preservation of a site(s). For purposes of Section 106, the determination of effect would be no adverse effect.
- *Moderate* — Adverse impact: Disturbance of a site(s) does not diminish the significance or integrity of the site(s) to the extent that its national register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Stabilization of a site(s). For purposes of Section 106, the determination of effect would be no adverse effect.
- *Major* — Adverse impact: Disturbance of a site(s) diminishes the significance and integrity of the site(s) to the extent that it is no longer eligible to be listed in the national register. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact: Active intervention to preserve a site(s). For purposes of Section 106, the determination of effect would be no adverse effect.

Ethnographic Resources

For purposes of analyzing potential impacts on ethnographic resources, the thresholds of change for the intensity of an impact are defined below.

- *Negligible* — Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect.
- *Minor* — Adverse impact: Impact(s) would be slight but noticeable, but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect. Beneficial impact: Would allow access to and/or accommodate a group's traditional practices or beliefs. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect.

- *Moderate* — Adverse impact: Impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect. Beneficial impact: Would facilitate traditional access and/or accommodate a group's practices or beliefs. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect.
- *Major* — Adverse impact: Impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs to the extent that the survival of a group's practices and/or beliefs would be jeopardized. For purposes of Section 106, the determination of effect on traditional cultural properties would be adverse effect. Beneficial impact: Would encourage traditional access and/or accommodate a group's practices or beliefs. For purposes of Section 106, the determination of effect on traditional cultural properties would be no adverse effect.

Historic Structures / Buildings

For purposes of analyzing potential impacts on historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

- *Negligible* — Impact(s) is at the lowest levels of detection — barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Minor* — Adverse impact: Impact would not affect the character-defining features of a national register-eligible or -listed structure or building. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Stabilization / preservation of character-defining features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.* For purposes of Section 106, the determination of effect would be no adverse effect.
- *Moderate* — Adverse impact: Impact would alter a character-defining feature(s) of the structure or building but would not diminish the integrity of the resource to the extent that its national register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Rehabilitation of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.* For purposes of Section 106, the determination of effect would be no adverse effect.
- *Major* — Adverse impact: Impact would alter a character-defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the national register. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact: Restoration of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be no adverse effect.

Cultural Landscapes

For purposes of analyzing potential impacts on cultural landscapes, the thresholds of

change for the intensity of an impact are defined as follows:

- *Negligible* — Impact(s) is at the lowest levels of detection — barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Minor* — Adverse impact: Impact(s) would not affect the character-defining patterns and features of a national register-eligible or -listed cultural landscape. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Preservation of character-defining patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Moderate* — Adverse impact: Impact(s) would alter a character-defining pattern(s) or feature(s) of the cultural landscape but would not diminish the integrity of the landscape to the extent that its national register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be no adverse effect. Beneficial impact: Rehabilitation of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be no adverse effect.
- *Major* — Adverse impact: Impact(s) would alter a character-defining pattern(s) or feature(s) of the cultural landscape, diminishing the integrity of the landscape to the extent that it is no longer eligible to be listed in the national register. For purposes of Section 106, the determination of effect would be adverse effect. Beneficial impact: Restoration of a landscape or its patterns and features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be no adverse effect.

VISITOR EXPERIENCE, INTERPRETATION, AND EDUCATION METHODOLOGY AND DEFINITIONS

The planning team identified visitor experience as an important issue that could be appreciably affected under the alternatives. The Organic Act and NPS *Management Policies 2006* (NPS 2006b) both direct the Park Service to provide visitor enjoyment opportunities that are uniquely suited and appropriate to the superlative resources found in the park. Two different aspects of visitation and enjoyment are evaluated in this chapter – visitor experience and interpretation / education. The visitor experience component evaluates the quality, characteristic, and diversity of the visitor experience in terms of the actions and management zones in the alternatives. The visitor experience component also evaluates the diversity of recreational opportunities on the islands and the ability of visitors to take advantage of these opportunities. Every visitor to the park brings unique expectations and, thus, each has a unique experience. As a result, the environmental impact statement identifies, where possible, how the quality of the experience would change the given application of actions and management zoning in each of the alternatives.

The interpretation and education component evaluates opportunities for and quality of visitor orientation, as well as interpretive and educational experiences. Impact analysis for this component was based on whether there would be a change in the access to, quality of, and diversity of media and programs and recreational opportunities throughout the park resulting from the actions and

management zones in the alternatives. This assessment focused on the intensity and duration of impacts that would result from the proposed actions relative to the aspects of visitor experience, interpretation, and education; and whether those impacts were considered beneficial or adverse. The assessment looked specifically at whether there were changes in the characteristics or the quality of the experience. This discussion was provided for context purposes only to facilitate the reader's understanding of the implications of an impact.

The visitor experience and interpretation and education impact intensity definitions are as follows:

- *Negligible Impact* — Negligible impacts were effects considered not detectable to the visitor and, therefore, were expected to have no discernible effect.
- *Minor Impact* — Minor impacts would be slightly detectable, though not expected to have an overall effect on the visitor experience.
- *Moderate Impact* — Moderate impacts would be clearly detectable to the visitor and could have an appreciable effect on the visitor experience.
- *Major Impact* — Major impacts would have a substantial, highly noticeable influence on the visitor experience and could permanently alter access to and availability of various aspects of the visitor experience.

WILDERNESS CHARACTER

This impact topic was analyzed by evaluating the effects of the alternatives on four characteristics of wilderness: natural; undeveloped; untrammeled; and opportunities for solitude or primitive and unconfined recreation (see chapter 3 for definitions of these four qualities.) The area analyzed was limited to the areas found eligible for wilderness designation. Thus, for example, San Miguel Island, which was found ineligible for wilderness designation, was not analyzed. As noted previously, for all but the no action alternative, this plan assumes that areas proposed for designated wilderness are ultimately designated as such by Congress. For the no action alternative, this assessment assumes continuation of the current management direction — the Park Service would continue to manage the areas to maintain their existing wilderness character until "Congress determines otherwise." In the action alternatives impacts were analyzed due to the wilderness proposal and due to other actions in the alternatives that could affect the wilderness character of the areas being proposed as wilderness. Because each of the action alternatives proposes wilderness in the park, and based on the Wilderness Act's mandate to preserve wilderness character, this impact topic focuses on the extent to which a particular wilderness proposal secures for the public the benefits of an enduring (permanent) resource of wilderness, including preservation of wilderness character.

The intensity of impacts on wilderness characteristics was determined using the following definitions:

- *Negligible* —The change would either be barely noticeable or highly localized and would have no discernible effect on wilderness character on a parkwide scale. Any changes in natural conditions due to human-caused actions would be confined to a very small area. Effects on opportunities for solitude or primitive and unconfined recreation would be small.
- *Minor* — The change to wilderness character would be slight but noticeable, affecting a small area. Changes in natural conditions due to human-caused actions (either beneficial or adverse) would be apparent but confined to small areas. Effects on opportunities for solitude or primitive and unconfined recreation would be slightly beneficial or adverse and confined to a limited area, such as along a single trail.

- *Moderate* — The change to wilderness character would be noticeable and spread over a number of locations in different areas. Changes in natural conditions due to human-caused actions (beneficial or adverse) would be apparent in several areas. Effects on opportunities for solitude or primitive and unconfined recreation (beneficial or adverse) would be apparent to many visitors in limited areas.
- *Major* — The change to wilderness character would be highly noticeable and widespread, affecting substantial areas, and could result in substantial changes that enhance or detract from the qualities of the wilderness character. Changes in natural conditions due to human-caused actions (beneficial or adverse) would be readily apparent in a large area. Effects on opportunities for solitude or primitive and unconfined recreation would be obvious to most visitors throughout the park.

PARK OPERATIONS

The impact analysis evaluated the effects of the alternatives on park operations, including staffing, infrastructure, maintenance, visitor facilities and services, and time required for park staff to get to and from various park sites requiring attention (e.g., research or monitoring campsites).

The analysis focused on how park operations and facilities might vary with the different management alternatives. It addresses the effectiveness and efficiency with which NPS staff perform their duties and responsibilities. The analysis is qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

The intensity of impacts on park operations was determined using the following definitions:

- *Negligible* — The effect would be at or below the lower levels of detection, and would not have an appreciable effect on park operations.
- *Minor* — The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations. The change would be noticeable to park staff but probably not to the public.
- *Moderate* — The effects would be readily apparent and would result in a change in park operations in a manner noticeable to staff and possibly to the public.
- *Major* — The effects would be readily apparent and would result in a substantial, widespread change in park operations in a manner highly noticeable to park staff and the public.

DURATION

Short-term impacts are those that would occur in a single year or during construction. Long-term impacts are those that would occur for longer than one year.

CUMULATIVE IMPACTS

The CEQ regulations implementing NEPA define a cumulative impact as the

> impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Each cumulative impact analysis is additive, considering the overall impact of the alternative when combined with effects of other actions (inside and outside the park) that have

occurred or would occur in the foreseeable future.

To determine potential cumulative impacts, projects in about a 50-mile area surrounding the park were identified. For pinnipeds and birds the area of influence covers the Southern California Bight, an area bounded by Point Conception in the north and Punta Banda, Mexico, in the south.

The primary projects and actions that could contribute to cumulative effects are summarized below. These include ongoing and planned actions and projects in the park, marine sanctuary and adjacent waters, and nearby communities.

Actions and Projects Inside the Park

Past, present, and future actions and projects inside the park independent of the plan include the following:

- Island fox captive breeding and reintroduction (San Miguel, Santa Rosa, and Santa Cruz Islands) (past action).
- Bald eagle restoration efforts (past action).
- Other approved ecosystem restoration efforts (e.g., nonnative vegetation removal on all islands, restoration of native plant communities).
- Possible establishment of new populations of listed plant species on the islands and seed collections.
- Removal of pigs, deer, elk, and horses from Santa Rosa Island. (This action has been completed.)
- Control/eradication of the nonnative Argentine ants on Santa Cruz Island.
- Replacement of the Bechers Bay and Scorpion Harbor piers.
- Management of fish populations and fisheries by the state and federal governments.
- Management of marine protected areas.
- Management/maintenance of roads and trails.
- Efforts would continue to be made to establish new populations of listed plant species on the islands and to establish seed collections.
- TNC would continue to manage resources on its lands on Santa Cruz Island.
- Harvest of marine resources would continue in most park waters with the exception of marine protected areas; harvest would include use of equipment such as traps, nets, lights, and hooks and lines.
- Restoration of native plant communities through removal of nonnative plants and planting of native plants.
- Restoration of the wetlands in the Prisoners Harbor area.
- Permitted scientific research and inventory and monitoring of natural and cultural resources would continue.
- Commercial and sport fishing in waters within the park boundary.
- Replace in-kind island infrastructures (e.g., piers, docks, cranes, housing, and utility systems).

Actions and Projects Outside the Park

- Drilling oil and gas and continuing exploration for oil and gas.
- Revision of the Channel Islands National Marine Sanctuary Plan (past action).
- Continuing the use of the Santa Barbara channel by large vessel north-south traffic.
- Continuing military use of the Santa Cruz U.S. Navy lease holding.
- Expanding testing and training operations at the Naval Air Warfare Center's Point Mugu Sea Range.
- Managing fish populations and fisheries by the federal and state governments.

The Channel Islands National Marine Sanctuary's revised 2009 management plan set priorities, described planned programs and

projects, contained regulations, guided the development of future activities, and set performance measures to gauge effectiveness. Modifications to existing sanctuary regulations (found at 15 CFR 922.71 through 922.74) were also promulgated. These sanctuary regulations included:

- prohibiting mineral exploration, production, and development
- continuing to prohibit oil and gas exploration, production, and development
- clarifying and strengthening the prohibition of discharges and deposits into sanctuary waters that are not incidental to vessel use
- prohibiting discharges beyond the boundary of the sanctuary that enter and damage the sanctuary's resources
- extending seabed disturbance prohibition into deeper waters of the sanctuary (while maintaining existing exemptions for anchoring and trawling)
- improving habitat protection by limiting or prohibiting activities that impact the sea floor
- clarifying and strengthening existing regulations requiring vessels carrying cargo, bulk carriers, barges, and tankers to stay 1 nautical mile from island shores to include other vessels exceeding a certain gross tonnage
- prohibiting take or possession of seabirds and marine mammals except when otherwise permitted under the Marine Mammals Protection Act, ESA, or Migratory Bird Treaty Act
- clarifying and strengthening existing regulations prohibiting damage or removal of historical or cultural resources
- prohibiting the release of exotic species
- continuing to prohibit disturbing marine mammals or seabirds by low-flying aircraft

IMPACTS OF ALTERNATIVE 1 (NO ACTION)

NATURAL RESOURCES

Soils

Analysis. Under alternative 1 there would be little change to soils on the islands. Assuming use levels do not substantially rise on Anacapa, San Miguel, and Santa Barbara Islands; and visitors largely stay at existing developed areas and hike on trails, impacts on soils due to erosion would be expected to continue to be long-term and negligible to minor. Some soils also would continue to be compacted and altered in local areas on Santa Cruz and Santa Rosa Islands due to hikers and backpackers walking cross-country or off trails. Informal social trails could be formed on the two islands over time, which would result in a long-term minor adverse impact. Erosion also would likely continue to be a problem at various spots along the roads on Santa Rosa and Santa Cruz Islands, resulting in a continuing localized long-term moderate adverse impact.

Overall, from a parkwide perspective, alternative 1 would have a long-term minor adverse impact on soils primarily due to continued visitor use eroding and compacting soils.

Cumulative Impacts. In the past, soil erosion was a major problem on parts of all of the islands. Santa Cruz, Santa Rosa, and San Miguel Islands in particular suffered severe soil erosion due to overgrazing by livestock, removing native vegetation, developing roads on Santa Rosa Island, and pig rooting on Santa Cruz Island, causing soil compaction and erosion. Also in the past, browsing by elk and deer, two nonnative species on Santa Rosa Island, resulted in the loss of vegetation and compaction of soils and erosion in areas.

The recent removal of deer and elk from Santa Rosa Island and the elimination of feral pigs on Santa Cruz Island would be expected to result in a localized long-term moderate beneficial impact on these islands.

Revegetation and soil erosion control efforts would continue on the islands, independent of this plan, such as efforts to rehabilitate eroding areas on the Smith Highway and Soledad Peak on Santa Rosa Island. These continuing restoration efforts should over time reduce the loss of soil in many problem areas, resulting in a continuing long-term moderate to major beneficial impact.

When the minor adverse impacts from continuing visitor use on soils under alternative 1 are added to the above beneficial impacts, they would slightly detract from the beneficial impacts, resulting in a long-term moderate to major beneficial cumulative impact on soils, primarily due to continuing revegetation and soil erosion control efforts (although alternative 1 would continue to add a minor adverse increment to this impact).

Conclusion. Under alternative 1 soil erosion would continue to be a problem in places on the islands and there would be some long-term minor to moderate adverse impacts due to visitor use in localized areas. From a parkwide perspective, alternative 1 would have a long-term minor adverse impact on park soils. There would be the potential for a long-term moderate to major beneficial cumulative impact when the effects of alternative 1 are added to present and future actions including revegetation and soil control efforts (although alternative 1 would add a minor adverse increment to this impact).

Paleontological Resources

Analysis. It is unknown if or how many fossils are illegally collected in the park. But with low numbers of visitors and the fossils not being apparent to most visitors or readily accessible on most of the islands, it is likely that only a

few, if any, resources are being lost. If use levels increase slightly in the future, there is the potential for some illegal fossil collecting to occur. However, there is no reason to expect that there would be a noticeable change in the numbers of fossils being illegally collected — most visitors would stay in developed areas and would not be in areas known to have fossils. On San Miguel Island, the requirement that all hikers be accompanied by a ranger should avoid impacts on paleontological resources. With only ranger-led hikes allowed through the caliche forest, minimal impacts would be expected on the island.

Because no new ground-disturbing construction would occur under alternative 1, no impacts on paleontological resources would occur.

Overall, from a parkwide perspective, alternative 1 would likely have a long-term minor adverse impact on paleontological resources.

Cumulative Impacts. None of the current or likely projects or actions inside or outside the park are believed to be affecting the park's paleontological resources. Thus, alternative 1 would not add an increment to other impacts that would result in a cumulative impact.

Conclusion. Overall, expected slight increases in use in the backcountry in the future under alternative 1 could have a long-term minor adverse impact on the park's paleontological resources. No cumulative impacts to park resources or values would occur due to human activities.

Water Quality

Analysis. Because no new facilities would be built and very small changes in visitor use levels would be expected on Anacapa, San Miguel, and Santa Barbara Islands, no changes to freshwater quality would be expected on these islands.

On Santa Rosa and Santa Cruz Islands no impacts on water quality would occur due to new facilities being built. Low numbers of visitors would continue to hike and camp in the backcountry on both islands, resulting in a continuing negligible adverse impact on freshwater quality.

Some marine water quality impacts would continue due to the disposal of waste by beach campers on Santa Rosa Island. However, these adverse impacts would be expected to be minor and long-term due to the relatively low use levels and the diluting effect of the ocean.

It is expected that boat use in waters around the islands would increase over time. Some boats might discharge wastes and fuel into park waters. The overall impact on marine water quality would probably be a minor adverse impact, given that there would still be relatively few boats scattered over a large area and the large volume of ocean. However, in areas where concentrations of boats occur, such as at Scorpion, Smugglers, and East Anacapa on weekends and holidays depending on weather and tides, there could continue to be a long-term minor to moderate adverse impact on water quality.

From a parkwide perspective, overall alternative 1 would be expected to result in a long-term negligible impact on the park's freshwater and a minor adverse impact on the park's water quality due primarily to pollution from boats.

Cumulative Impacts. In the past, sheep and cattle on the islands, deer and elk on Santa Rosa Island, and pigs on Santa Cruz Island added wastes and sediment to water drainages, resulting in long-term moderate adverse impacts. Erosion of soils along roads on Santa Rosa Island in the past, and likely continuing along some roads, would adversely affect freshwater quality of some drainages, increasing sediment and turbidity levels. Restoration activities on the islands would have a beneficial impact on freshwater quality. Past, continuing, and future revegetation

efforts and erosion control efforts on roads would reduce runoff, and would result in a localized long-term minor to moderate beneficial impact on water quality. Overall, the negligible adverse impacts of alternative 1 added to the impacts of past, present, and future revegetation and erosion control efforts, would result in a minor to moderate beneficial cumulative impact on freshwater quality (although alternative 1 would continue to add a very minor adverse increment to this impact).

With regard to marine waters, the replacement of the Bechers Bay pier would result in increased turbidity during the construction period (including the removal of the existing pier) and would likely result in short-term minor adverse impacts on water quality in this area. There are also many nonpark sources that have affected, and can affect, the park's water quality, such as discharges or spills from ships and oil and gas platforms, sewage disposal, agricultural and urban runoff from the mainland, and ocean dumping. The 2009 Channel Islands National Marine Sanctuary regulations addressed discharges of ships into marine waters, among other actions. Enforcement of these regulations and education of boaters and shipping companies would be expected to be a long-term beneficial impact, although the magnitude of this impact is not known — the impact would depend on the level of enforcement and public education efforts, how much of a deterrent the regulations would have, and other factors. When the above external pollution sources are added to minor water quality adverse impacts resulting from an increase in visitor boat use under alternative 1, there would be the potential for an adverse cumulative impact. Although the very large diluting volume of ocean would reduce the impact, a long-term minor to moderate adverse cumulative impact could occur to water quality in places around the islands. However, the increment added by visitor boat use under alternative 1 to the overall cumulative impact from nonpark sources would likely be minor.

Conclusion. Continuing visitor use would likely result in a negligible adverse impact to freshwater quality on the islands in alternative 1. There would be a continuing long-term minor adverse impact on marine water quality due to boat discharges in park waters and the disposal of human waste on Santa Rosa Island beaches, with possible localized long-term minor to moderate adverse impacts. There would be a long-term minor to moderate cumulative impact on the park's freshwater quality when the negligible adverse impacts of visitor use in alternative 1 are added to continuing ecosystem restoration efforts. There would be a reduction in sedimentation and wastes in localized areas. There would be a long-term minor to moderate beneficial cumulative impact on water quality when the effects of alternative 1 are added to ongoing erosion-control efforts (although alternative 1 would add a minor adverse increment to this impact). A long-term minor to moderate adverse cumulative impact on the park's marine water quality in local areas would occur when nonpark water pollution sources are added to the minor adverse impacts of discharges from more visitor boats in alternative 1 (although the increment contributed by actions in alternative 1 would be very minor).

Floodplain Values and Flooding at Scorpion Valley on Santa Cruz Island

Analysis. No new developments would occur in this alternative. Although structures would remain in the floodplain in Scorpion Valley, no new actions would be taken to address the threat of major future floods. The presence of several structures in the floodplain would continue to have a long-term negligible adverse impact on natural floodplain values because the structures occupy a very small portion of the floodplain. It can be expected that flooding would continue to periodically occur, and that floodwaters would damage the structures. Thus, alternative 1 would continue to have the potential for a long-term moderate

adverse impact due to flooding risk to human life and/or property in this area.

Cumulative Impacts. No other known actions or activities inside or outside the park would affect these floodplains. Thus, there would be no cumulative impacts due to alternative 1.

Conclusion. Overall, alternative 1 would have a negligible long-term impact on the Scorpion Valley floodplain and flooding. However, there would continue to be a potential long-term moderate impact on human life and/or property due to possible flooding. No cumulative impacts would occur.

Wetlands (Scorpion Valley)

Analysis. No new developments, uses, or other actions would occur under this alternative that would affect the wetlands at the mouth of Scorpion Valley. Thus, alternative 1 would have no effect on the park's wetlands.

Cumulative Impacts. The restoration of the Prisoners Harbor wetland would beneficially affect this area. However, no actions are being taken in alternative 1 that would affect wetlands. Thus, there would be no cumulative impacts due to alternative 1.

Conclusion. Alternative 1 would have no effect on the Scorpion Valley and Prisoners Harbor wetlands. No cumulative impacts would occur.

Terrestrial Plant Communities and Vegetation

Analysis. Under alternative 1, visitors and NPS staff would likely continue to accidentally introduce or spread nonnative plants to the islands over time. The impact of these introductions cannot be predicted, but could vary from long-term negligible to major adverse impacts depending on the species (e.g., how invasive they are) that is unintentionally introduced. Competition with nonnative and native plants could include changes in native plant distribution, numbers, structure, and ecological processes (e.g., recycling of nutrients and fire).

Under alternative 1 there would be no loss of vegetation due to new developments on the islands. On Anacapa, San Miguel, and Santa Barbara Islands no new actions are being taken in the alternative that would affect vegetation. No major changes in visitation patterns would occur. Most people would continue to stay in existing developed areas and stay on trails. As a result, it is expected that alternative 1 would have a negligible adverse impact on vegetation on these three islands.

Although most visitors would stay on trails and roads on the NPS portion of Santa Cruz Island and the backcountry of Santa Rosa Island, some trampling of vegetation could occur in local areas, destroying and damaging individual plants, if there is a slight increase in use levels. This would have a minor adverse impact on some plant populations. It is not expected that a slight increase in visitor use would affect the islands' rare endemic plant populations. Most visitors would continue to stay at developed areas, and visitors who hike along roads or trails to destinations such as beaches and overlooks would generally avoid areas where rare endemic plants are growing. Visitors are not known to currently be affecting these populations, and there is no reason to believe that this would change in the future. Most areas with endemic species, such as coastal sage scrub, chaparral, coastal dunes, and the faces of coastal bluffs, would remain inaccessible or their habitats would receive very little use by visitors.

The presence of visitors in alternative 1 would continue to present the risk of an accidental fire. The potential adverse consequences of fires have changed on the islands due to the widespread conversion of native plant communities to annual grasses, which burn

more easily than native vegetation. Also, many nonnative plants would spread following fire. Although there is little information on the abundance and viability of the native plant seed bank on Santa Rosa Island, given the history of grazing on the island and the level of soil erosion, there is likely a diminished seed bank. The effect of a wildfire is unknown, but the loss of native vegetation and loss of the seed bank could have a long-term moderate to major adverse effect on vegetation. However, the likelihood of such a wildfire being sparked by visitors is considered low, given the relatively few visitors that would be on the island and the prohibitions on open fires in the backcountry.

Biologists would continue to oversee a program to control or eliminate aggressive, nonnative plants under the no action alternative. However, no new actions would be taken in this alternative to eliminate the source plants for those invasive species that are considered important parts of the islands' cultural landscapes such as olive, stone pine, and pepper trees on Santa Cruz Island. Although NPS staff would continue efforts to control the spread of these plants outside of the cultural landscapes, the consequences of not removing the source plants would be continued invasion — and ultimately potential dominance — of native plant communities by the nonnative plants over time. Some native plants would likely be extirpated or reduced in numbers as a result of the spread of these nonnative species. This would have a long-term moderate to major adverse impact on plant communities on Santa Cruz Island.

Overall, from a parkwide perspective, alternative 1 would have a long-term minor adverse impact on the park's vegetation, although moderate adverse impacts could occur in localized areas (e.g., Santa Cruz Island).

Cumulative Impacts. As described in the "Affected Environment" chapter, people have substantially changed the vegetation of the Channel Islands in the past. Ranching in particular changed the natural landscape, resulting in widespread changes to native plants and vegetative communities on all of the islands. For example, past grazing of sheep and cattle on Santa Rosa Island resulted in major adverse impacts on the island's vegetation, including loss of seed banks and reductions in populations of native plants. With the removal of livestock and other actions taken after the Park Service began managing the islands, all nonnative animals have been eliminated from Anacapa and Santa Barbara Islands, and only black rats remain on San Miguel Island. As a result, although some areas continue to show continuing impacts from the era of sheep ranching or the presence of particularly deleterious nonnative plants, overall plant communities and native plant populations are recovering on the islands.

The elimination of the deer, elk, and pigs stopped browsing and soil impacts caused by these nonnative animal species. As a result of these efforts, native vegetation on Santa Cruz and Santa Rosa Islands is recovering, particularly native vegetation in riparian areas, as well as rare plant species on the islands. This would likely have a localized long-term moderate to major beneficial effect on native plants on the islands.

Other restoration activities would continue on Santa Rosa and Santa Cruz Islands, including revegetation efforts on the islands, efforts to control the introduction and spread of nonnative plant populations, efforts to control soil erosion, and planned control/eradication of the nonnative Argentine ant. The continued implementation and expansion of biosecurity measures also would reduce the risk of invasion of nonnative species. These efforts all would have a localized long-term moderate to major beneficial impact on vegetation.

Adding together the minor adverse impacts of alternative 1 to the other past, present, and future actions occurring independent of the alternative, there would be the potential for long-term moderate to major beneficial

cumulative impacts. The beneficial cumulative impact would be due to the continuing ecosystem restoration efforts. The no action alternative would add a very minor adverse increment to the overall beneficial cumulative impact.

Conclusion. Overall, alternative 1 would have a long-term minor adverse impact on the park's vegetation, although long-term moderate adverse impacts could occur in localized areas (e.g., Santa Cruz Island), primarily due to the continuing spread of nonnative species like the stone pine and pepper trees on Santa Cruz Island, the potential for additional introductions of nonnative plants by people, and an expected slight increase in backcountry visitation levels. The adverse effects of alternative 1 plus the effects of other actions occurring independent of the alternative would likely result in a long-term moderate to major beneficial cumulative impact (although alternative 1 would add a very minor adverse increment to both of these overall cumulative impacts).

Terrestrial and Marine Wildlife

Analysis. Most wildlife populations on the islands would not be affected by the actions proposed in alternative 1. Although some animals could be disturbed or displaced, visitor impacts would not be expected to adversely affect the park's overall populations or habitats. No new developments or substantial changes in visitation patterns would occur that would affect wildlife.

Under alternative 1 major seabird colonies and pinniped rookeries would continue to be protected. However, the number of kayakers and other boaters that would land and spend some time on beaches that are not closed to access would likely slightly increase on Santa Rosa and Santa Cruz Islands. If pinnipeds and seabirds are using these beaches, which can change from year to year, there would be a high potential for disturbance and/or displacement of animals. The extent of the impact would depend on the intensity, time, and frequency of disturbance, the species, and the number of animals using the beaches at the time people are present. Assuming visitor numbers do not substantially increase, that visitors do not enter areas with major colonies and rookeries, that there are adequate educational outreach programs, and that occasional NPS patrols continue, impacts on pinnipeds and seabirds would be localized, short-term, and minor.

A slight increase in use levels on the NPS portion of Santa Cruz Island and the backcountry of Santa Rosa Island might disturb some wildlife. Some animals might be temporarily displaced or they might alter their behavior, such as mice, songbirds, island jays, and island spotted skunks. However, once people have passed by, these animals probably would return. Some improper food storage and feeding of wildlife in the backcountry could attract some animals such as mice and ravens. These actions would have a localized negligible adverse impact on the park's wildlife populations.

Although visitors are restricted from the area around the bakery in Scorpion Harbor, possible increased noise from more visitors, use of electronics in the interpretive displays in the area, and administrative activities may continue to adversely affect the maternity colony of Townsend's big-eared bats to an unknown degree under this alternative.

From a parkwide perspective, alternative 1 would be expected to result in a long-term negligible adverse impact on the park's wildlife populations and habitat, with some localized minor adverse impacts due to disturbance of individual animals by visitors.

Cumulative Impacts. The replacement of the existing piers at Bechers Bay and Scorpion Harbor with new piers could adversely affect some marine mammals in the area. Noise from construction activities, including drilling and removing the existing pier, would likely harass pinnipeds in the area. However, these areas

are not known to be key marine mammal habitat or harbor large numbers of marine mammals. With the application of appropriate mitigative measures and consultations with the National Marine Fisheries Services once more details are known about the location, size, and design of the piers, it is anticipated that the adverse impact on marine mammals would be short-term and minor.

Many potential actions outside the park could substantially affect pinnipeds and seabird populations in the region, such as oil spills or an oil platform blowout, new diseases and nonnative species that spread through the area, U.S. Navy testing and training operations, or changes in fish populations due to global climate change or fishing. However, some of these impacts are considered unlikely (e.g., oil platform blowouts), and for others it is not possible to predict that these events would occur during the life of this plan. Although other actions can affect these animals (e.g., fishermen may shoot seabirds or pinnipeds, military training operations may disturb or harass animals, seabirds may get hooked or tangled in fishermen nets, introduced nonnative predators can devastate a seabird colony, or a pinniped may collide with a ship in the shipping lanes), most of these actions would affect individual or a few animals, not large populations.

There are indications of long-term decline of several species of seabirds in the park. The causes of the declines are not known, but are likely to be conditions in the marine environment. Some NPS restoration actions, such as the elimination of rats from Anacapa Island and restoration of vegetation, would positively impact seabird populations.

The state marine protected areas around the park have closed areas to commercial and sport fishing. The marine protected areas would be expected over time to have a long-term beneficial impact on seabirds and pinnipeds, possibly decreasing disturbance caused by boats in the area and increasing fish populations these species depend on. However, the state marine protected areas have been in place for only a short time; therefore, the magnitude of the impact is unknown.

The implementation of sanctuary regulations (including protecting the area's water quality and limiting or prohibiting activities that impact the sea floor) probably has had a beneficial impact on the park's marine wildlife populations by preventing pollution that could affect wildlife, although the magnitude of the impact is unknown and would vary depending on the level of enforcement and education efforts.

In April 2005, the State of California implemented regulations affecting squid fishing operations in the vicinity of the park. In addition, the state eliminated the emergency light restrictions that were in place to reduce nighttime disturbance by fishermen of breeding colonies of Scripp's murrelet (and probably other alcids and storm-petrels) on Santa Barbara and Anacapa Islands. There are documented impacts on seabirds that are nocturnal in colony or foraging habits from lighted fishing vessels in the Channel Islands including inflight strikes, increased predation, disorientation of fledgling birds, and disruptions in normal nesting activities (CDF&G Marine Resources Division 2005; USFWS 2005). As a result, it is likely that squid boats fishing in park waters during the seabird breeding season, even with shielded lights and wattage restrictions, would result in mortality of Scripp's murrelets, ashy storm-petrels, black storm-petrels, rhinoceros auklets, and Cassin's auklets. The California Department of Fish and Wildlife stated conservation efforts on the islands

> could be negatively countered by lost reproduction as a result of disturbance by large levels of artificial illumination from nearby vessels. . . . Given what we know about the effects of artificial night lighting and human disturbance of colonies for these seabird species . . . artificial night lighting associated with

> the market squid fishery could significantly impact recovery of these species if it occurs during the breeding season. (CDF&G Marine Resources Division 2005)

In another report on the Scripp's murrelet, the agency stated "Artificial light pollution is a threat to the survival of the Scripp's murrelet, particularly at breeding sites" (Burkett et al. 2003). It is uncertain what impacts the squid fishing is having on the park's seabirds since the location of the fleet varies from year to year, but it would be expected to result in some decreases in the abundance of local populations, resulting in a long-term unknown adverse impact. Also, squid fishing would likely affect pinnipeds feeding on squid. Squid are the primary prey of California sea lions and are eaten by most of the pinnipeds using the park. If squid harvest levels increase relative to past harvest levels, and/or if harvest levels continue at high levels over the life of this plan, there could be a long-term adverse impact of unknown magnitude on the pinniped populations using the park (Jeff Laake, NMFS, Alaska Fisheries Science Center, pers. comm. March 18, 2005).

When the above adverse impacts are added to the beneficial effects of the marine protected areas and marine sanctuary regulations, and the effects of alternative 1, there could be a long-term beneficial cumulative impact on pinnipeds and seabirds using the park. However, given the uncertainty and lack of data, it is not possible to determine the magnitude of such a beneficial cumulative impact. Alternative 1 would add a minor adverse increment to this cumulative impact due to the potential effects of increased numbers of kayakers and other recreational boaters visiting the park, which would not alter the overall intensity of the cumulative impact.

Past and ongoing restoration efforts on the islands (such as the rat eradication effort on Anacapa Island and the elimination of nonnative herbivores on Santa Rosa, Santa Cruz, and San Miguel Islands) have also beneficially affected the islands' native terrestrial fauna. Ecosystem restoration actions would continue independent of this plan, including the elimination of rats and vegetation restoration efforts. These actions would have a moderate to major beneficial effect on native wildlife populations, eliminating some sources of competition, providing more habitat, and generally increasing native wildlife populations including the side-blotched lizard, Channel Islands slender salamander, Santa Cruz gopher snake, mice, and landbirds such as the island scrub jay. The recovery of native vegetation due to these restoration efforts also would benefit native wildlife populations. Some negligible adverse impacts could occur to wildlife in local areas due to slight increases in use levels.

The future control/eradication of nonnative Argentine ants on Santa Cruz Island, removing nonnative predators and/or competitors to the native invertebrate community, also would likely result in a long-term moderate to major beneficial impact on native wildlife populations.

Overall, when the negligible to minor adverse visitor impacts associated with alternative 1 are added to the beneficial impacts of past, present, and future ecosystem restoration efforts, there could be a long-term moderate to major beneficial cumulative impact on the islands' native terrestrial wildlife populations, primarily due to continuing ecosystem restoration efforts. The negligible to minor adverse impacts of alternative 1 would not substantially detract from the overall beneficial cumulative impact. There could also be a long-term beneficial cumulative impact of unknown magnitude on seabirds and pinnipeds due to non-NPS actions in park waters, such as from the state marine protected areas and actions taken by the Channel Islands Marine Sanctuary.

Conclusion. Overall, negligible to minor adverse impacts would be expected to most of

the park's wildlife populations as a result of alternative 1, assuming that use levels do not substantially increase in backcountry areas. But there would be a potential for minor to moderate adverse impacts on marine and terrestrial wildlife populations in local areas on Santa Rosa and Santa Cruz Islands, primarily due to increased use by boaters on beaches. When the effects of alternative 1 are added to the effects of ecosystem restoration efforts in the park, there could be a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife populations (although alternative 1 would add a minor adverse increment to this impact). There could also be a long-term beneficial cumulative impact on seabirds and pinnipeds of unknown magnitude when the effects of the non-NPS actions in park waters, such as the marine protected areas, are added to the effects of visitor use under alternative 1 (although alternative 1 would add a very minor adverse increment to this overall beneficial cumulative impact).

Threatened and Endangered Species

Analysis. No new developments or uses would affect the snowy plover or island fox under alternative 1.

Snowy plover breeding numbers have been declining and may continue to decline on the islands due to several possible reasons, but no actions are being taken as part of alternative 1 that would contribute to this trend. Snowy plover habitat would continue to be protected under alternative 1. Visitor use patterns also would not likely appreciably change. All of San Miguel Island's and many of Santa Rosa Island's snowy plover breeding beaches would continue to be closed to public use during the nesting season. A few visitors would likely continue to land or hike on Santa Rosa Island's beaches that are open to use. Some plovers may be temporarily disturbed on these beaches. However, there is no information to indicate that this very low level of use is adversely affecting the populations. With the low numbers of plovers scattered around the islands, and the very low use of the beaches due to their remoteness, it is anticipated that visitor impacts would be infrequent. If visitor use impacts were identified in the future, park staff would consult with the Fish and Wildlife Service to identify and implement appropriate mitigation measures, such as signing or closing additional beaches to access. Consequently, it is believed that alternative 1 would have a long-term negligible to minor adverse impact, which may affect, but would not likely adversely affect, the park's snowy plover populations.

Visitors would often see the island foxes in the Scorpion Valley campground, and many visitors increasingly would see foxes in other locations on Santa Cruz, Santa Rosa, and San Miguel Islands due to the increased density of the recovering island fox populations. On rare occasions, these contacts may affect the behavior of some foxes. Even with tight management by park staff, with signs and personal contacts, some feeding of foxes may occasionally continue to occur, such as at the Scorpion Valley campground, with the result that some foxes may become habituated to humans and expect to be fed. However, this would not be expected to noticeably affect the health and size of the island fox populations — only a few foxes would be affected by the feeding, which would not affect the abundance of the population.

Vehicles used for administrative purposes on Santa Rosa and Santa Cruz Islands could run over and kill or injure foxes. However, this has not been known to happen on the islands in the recent past — the relatively few vehicles that drive on the roads, and the condition of the roads, which force slower vehicle speeds, all make collisions with foxes highly unlikely.

Thus, it is not likely that visitor or administrative activities would adversely affect the fox populations. Alternative 1 would have a long-term negligible adverse impact on the foxes, which may affect, but would not

likely adversely affect, the park's island fox populations.

No actions would occur under alternative 1 that would adversely affect the Hoffmann's slender-flowered gilia, island rush rose, or the Santa Cruz Island chicory. Slight increases in visitor use would not likely affect the islands' populations. There could be some trampling of chicory on the Lobo Canyon trail on Santa Rosa Island and island rush-rose on the Montanon Trail on Santa Cruz Island if hikers were to wander off the trails. However, with adequate warning given to visitors and ranger-led hikes, these impacts would not be expected. Overall, it is believed that alternative 1 would have a long-term minor adverse impact, which may affect, but would not likely adversely affect, the populations of these listed plant species.

The potential for the outbreak and spread of wildfires is a concern for several listed plants, but not for Hoffmann's slender-flowered gilia and Santa Cruz Island chicory. These species would be somewhat insulated from the impacts of fire by the locations and habitats where they occur. Hoffmann's slender-flowered gilia is found in dune and lupine scrub vegetation, while Santa Cruz Island chicory occurs in coastal bluff areas. Neither of these communities are known to support the spread of fire, although annual grasses have invaded the gilia habitat and increase the potential to carry fire. Another insulating factor is the life-form of these two species. As annual species, a particular year's generation would likely have set seed and senesced by the summer or fall — those periods when a fire is likely to spread.

Three other listed plants, Santa Rosa Island manzanita on Santa Rosa Island and Hoffmann's rock-cress and island barberry on Santa Cruz Island, all face a threat if a fire were to occur on the islands, accidentally sparked either by visitors or NPS staff. Fires, while infrequent, have occurred on the islands in the past (most recently Santa Rosa Island in 2002). The three listed plants all survive in small isolated populations. If a wildfire were to occur, it could quickly spread through the nonnative vegetation before a response could be organized and extirpate some or all of these populations. However, this risk has been present for many years and a fire could be caused by lightning as well as by people. Although no new actions are being proposed under alternative 1 that would directly or indirectly affect the Santa Rosa Island manzanita, Hoffmann's rock-cress, and island barberry, the risk of fire would always be present. Thus, it is believed alternative 1 would have a long-term negligible impact, and may continue to affect, but would not likely adversely affect, the Santa Rosa Island manzanita, Hoffmann's rock-cress, and island barberry.

Overall, from a parkwide perspective, the actions continuing in alternative 1 would be expected to have a long-term negligible to minor adverse impact on the park's listed species. Alternative 1 may affect, but would not likely adversely affect, these species.

Cumulative Impacts. The Park Service is continuing to protect the island fox on the islands independent of this plan. The past effort to remove pigs from Santa Cruz Island indirectly benefited the island fox by removing a primary prey source for the golden eagles, which also feed on the foxes — without the pigs, the island is not as attractive to the eagles and island fox mortality due to eagles has subsequently declined. However, no actions are being taken under alternative 1 that would affect the species. Consequently, alternative 1 would not result in a cumulative impact on the foxes.

Outside the park, the western snowy plover population has increased at several locations on the California mainland during the past few breeding seasons due to past and ongoing efforts to protect the birds. In particular, efforts to control predators, protect nesting areas from disturbance, and make people aware of the sensitivity of the birds have resulted in increasing numbers of fledglings

and nesting birds at several key breeding areas along the mainland coast (David Pereksta, USFWS, Ventura, pers. comm. March 26, 2003). If their productivity continues to increase, plovers may spread into new or historic breeding areas and eventually may recolonize parts of the park. When these positive impacts are added to the effects of occasional disturbance of plovers caused by visitors under alternative 1, there is the potential for a long-term minor to moderate beneficial cumulative impact, which may affect, but would not likely adversely affect, the species. Although alternative 1 would add a negative increment to this cumulative impact, the effect would be very minor and would not alter the overall intensity of the cumulative impact.

For the Hoffmann's rock-cress and island rush-rose, no additional NPS or other agency actions are occurring on or off the islands, nor are future actions expected, that would affect these species. Thus, no cumulative impacts would occur due to the additive effects of alternative 1 on these species.

In the case of the island barberry and Santa Cruz Island chicory, it is expected that the Park Service and U.S. Geological Survey would continue to research methods for establishing or expanding populations on the islands to assist their recovery. This action would occur independent of this plan. No additional NPS or other agency actions or activities are occurring on or off the islands that are known to be affecting the island barberry or Santa Cruz Island chicory. Thus, no cumulative impacts would occur due to additive effects of alternative 1 on these species.

The conversion of native vegetation to nonnative annual grasslands during the ranching era would be a continuing impact on Hoffmann's slender-flowered gilia on Santa Rosa Island. On the other hand, it is expected that research would continue on methods for establishing or expanding the Hoffmann's slender-flowered gilia, and efforts would likely continue to establish new populations or expand the boundaries of existing populations on the island. These actions, which would be taken independent of this planning effort, should help maintain the taxon. In the past there were impacts on one of the populations of the Hoffmann's slender-flowered gilia on Santa Rosa Island due to grading of the service road to East Point; however, this no longer occurs. No actions are occurring under alternative 1 that would affect this species. Thus, no cumulative impacts would occur to this plant as a result of implementing alternative 1.

With regard to the Santa Rosa Island manzanita, several impacts may occur in addition to the possibility of fire. Deer have browsed the manzanita in the past, affecting plant growth and reproduction. However, the recent removal of deer from the island likely has had a beneficial impact on the plant. The plant, which also grows along roadsides, could be affected by NPS maintenance activities. In addition, the Park Service and U.S. Geological Service plan to establish a seed collection, which would help ensure that the manzanita would not be extirpated on the island. However, the Park Service would be not be taking new actions under alternative 1 that would beneficially or adversely affect the plant. Thus, alternative 1 would have no cumulative effects on the Santa Rosa Island manzanita.

Conclusion. Overall, no new developments or substantial changes in visitor use or island management would occur under alternative 1 that would affect the nine threatened and endangered plant and animal species being analyzed. Expected slight increases in visitor use levels on the islands under the alternative may affect, but would not likely adversely affect, the island fox, snowy plover, Hoffmann's slender-flowered gilia, Santa Cruz Island chicory, island rush-rose, island barberry, and Hoffmann's rock-cress populations. Likewise, actions in alternative 1 may affect, but would not likely adversely affect, the Santa Rosa Island manzanita. No

measurable cumulative impacts would be expected as a result of the alternative on most of the species. However, there could be a long-term moderate beneficial cumulative impact on western snowy plovers when the effects of actions independent of this plan are added to alternative 1 (although alternative 1 would only slightly detract from these beneficial impacts).

Soundscape

Analysis. No new facilities or substantial increases in use would occur under alternative 1. Thus, no changes in noise levels would occur in most of the park. The primary sources of noise on the islands would continue to be from concentrations of visitors and boats, and the operation of machinery in localized areas, such as Bechers Bay, Smugglers, Prisoners, Scorpion, and East Anacapa Island. Human-caused sounds (noise) would be apparent, changing the distribution of sound frequencies and oftentimes masking natural sounds. Thus, there would continue to be a long-term moderate adverse impact of noise in these areas at varying times (e.g., holidays and weekends). A long-term moderate adverse noise impact would continue to occur when NPS and NMFS aircraft land and take off on Santa Rosa and San Miguel Islands. These impacts would be highly transitory, but would continue in the future. Noise from the occasional operation of NPS and TNC vehicles on the roads on Santa Cruz Island and NPS vehicles on Santa Rosa Island also would continue to have a long-term minor adverse impact on the soundscape.

From a parkwide perspective, visitor use and management actions in alternative 1 would occasionally change natural sound ambient conditions in localized areas, resulting in a long-term minor adverse impact to the soundscape, with long-term moderate adverse impacts in popular use areas.

Cumulative Impacts. Noise from high flying aircraft and from boats and ships not connected to park visitors or NPS or NMFS management would likely continue to be periodically heard on the islands. Noise due to ecosystem restoration efforts independent of the plan (e.g., vegetation/soil restoration efforts on the islands) also would be periodically heard on the islands. In addition, noise may be periodically heard due to maintenance of the roads on Santa Rosa and Santa Cruz Islands, boat and ship motors in waters within the park boundary, use of the Santa Cruz Island U.S. Navy lease holding, and testing and training operations in the Point Mugu Sea Range. Short-term noise would be heard when the Bechers Bay and Scorpion Harbor piers are replaced. When all of these noise impacts are added to the noise impacts of visitors and park operations in alternative 1, there would be potential for a long-term minor adverse cumulative impact on the park's soundscape, with localized long-term minor to moderate cumulative adverse impacts on Santa Rosa and Santa Cruz Islands.

Conclusion. In most of the park alternative 1 would have no effect on the soundscape. In localized areas, particularly at popular entry points and attractions on the islands, there would continue to be a long-term moderate adverse noise impact due to concentrations of visitors, boats, and park operations. A long-term minor adverse cumulative impact would occur when the noises resulting from actions proposed in this alternative are added to other noise sources, such as high flying aircraft and ships offshore of the islands, with localized long-term minor to moderate cumulative adverse impacts on Santa Rosa and Santa Cruz Islands.

CULTURAL RESOURCES

Archeological (including Submerged Maritime) Resources

Analysis. As staffing and funding permit, archeological resources would be surveyed,

inventoried, and evaluated under national register criteria of evaluation to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of such resources for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

Archeological surveys and substantial testing would precede any ground-disturbing activities, and significant archeological resources would be avoided during construction. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources could not be preserved *in situ*, an appropriate mitigation strategy developed in consultation with the California SHPO and representatives of associated American Indian tribes. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed. Any adverse impacts would be expected to be permanent and minor.

Although impacts on archeological resources would be monitored and efforts would be undertaken to minimize or mitigate potential impacts from human activity or natural causes, an unknown number of archeological resources would continue to be subject to long-term or permanent minor adverse impacts from erosion, especially those on Santa Cruz and Santa Rosa Islands. Although accelerated plant growth since the end of grazing is retarding erosion for many of these sites, coastal erosion would continue to degrade many other important localities. In addition, other sources of erosion in inland locations, including fire, wind, and other climatic conditions, would continue to destroy an unknown number of archeological resources. Increased sea levels resulting from climate change would increase impacts from erosion.

Archeological resources adjacent to, or easily accessible from, visitor use areas or trails would be vulnerable to inadvertent damage and vandalism. Inadvertent impacts would include picking up or otherwise displacing artifacts, the compaction of cultural deposits, and the creation of social trails (which can lead to erosion and destabilization of the original site architecture). Intentional vandalism includes removing artifacts and probing and digging sites. Inadvertent damage and vandalism would result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence. Such adverse impacts could be mitigated through additional stabilization of the site, the elimination of social trails to disturbed or vulnerable sites, and/or the systematic collection of surface artifacts for long-term curation. Continued ranger patrol and emphasis on visitor education regarding the significance and fragility of such resources and how visitors can reduce their impacts to archeological resources would help discourage vandalism and inadvertent impacts and minimize adverse impacts. Potential adverse impacts would be permanent and minor.

Although ongoing programs to expand monitoring and law enforcement in the marine protected areas would continue, looters and vandals would likely continue to target submerged maritime resources lying off the islands, and submerged sites in areas of high visitation would continue to be susceptible to damage from boat anchors and other related activities. Artifacts associated with shipwrecks in the park boundaries would continue to be vulnerable to pilfering, especially highly prized brass and bronze objects that are found in most shipwreck

scatters. Any adverse impacts would be expected to be permanent and minor.

Cumulative Impacts. The past action of eliminating cattle, deer, elk, and horses from Santa Rosa Island has resulted in archeological resources being better protected because they are not being disturbed or compacted by these animals. Impacts to archeological resources would be site-specific, long-term, beneficial, and minor.

The past action of revising the Channel Islands National Marine Sanctuary Management Plan (2009) to include the regulation of prohibiting damage or removal of cultural resources resulted in archeological resources being better protected from vandalism and looting. Impacts to archeological resources would be site-specific, long-term, negligible, and beneficial.

The past, present, and future action of restoring native plant communities through the removal of nonnative plants and planting native plants has resulted in, or has the potential to result in, the disturbance of unknown archeological resources. Impacts to archeological resources would be site-specific, long-term, minor, adverse, and permanent.

The past, present, future action of allowing researchers to study and inventory and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 1 would result in impacts that are permanent, minor, and adverse. These impacts, in combination with the long-term negligible adverse impacts of other past, present, and future actions, would result in long-term, minor, adverse cumulative impacts to archeological resources. The adverse impacts of alternative 1 would be a negligible component of the adverse cumulative impact.

Conclusion. Archeological investigations would be undertaken before development to ensure that such resources were understood and that they would not be damaged or lost as a result of NPS actions. However, there would be continuing long-term or permanent minor adverse impacts on an unknown number of archeological resources in the park under this alternative as a result of human activities and natural causes.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on archeological resources.

Ethnographic Resources

Analysis. The islands in the park hold a prominent place in the preservation and revitalization of Chumash culture and tradition, containing spiritual values and locations such as contact period village sites with direct historical significance. Actions under this alternative would generally have long-term minor beneficial impacts on ethnographic resources in the park because the Park Service would continue ongoing consultation and coordination with Chumash groups and individuals to address matters of mutual concern on the Channel Islands and encourage Chumash groups and individuals to participate in the preparation of programs, exhibits, replica artifacts, and literature to assist the park staff in accurately interpreting the cultural history of the early inhabitants of the islands. The Park Service would continue to allow access to and/or accommodate traditional practices and beliefs, and facilitate reburial of ancestral Chumash remains, both those exposed by natural weathering and those recovered from pothunters, under the provisions of the Native American Graves Protection and Repatriation Act. An ethnographic study prepared in December 1999 identified descendants of island populations to enable the Park Service to carry out consultations more effectively to

preserve and protect ethnographic resources in the park.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 1 would result in long-term minor beneficial impacts. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term minor beneficial cumulative impacts to ethnographic resources. The beneficial impacts of alternative 1 would be a slight component of the beneficial cumulative impact.

Conclusion. Actions under alternative 1 would generally have long-term minor beneficial impacts on ethnographic resources in the park because the Park Service would continue ongoing consultation and coordination with Chumash groups and individuals to address matters of mutual concern on the Channel Islands and to allow access to and/or accommodate traditional practices and beliefs.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on ethnographic resources.

Historic Structures/Buildings

Analysis. As staffing and funding permit, structures and buildings in the park would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of a structure, building, or historic district for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

To appropriately preserve and protect national register-listed or eligible structures and buildings, all stabilization, preservation, and rehabilitation efforts would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed during rehabilitation efforts would be evaluated to determine their value to be added to the park's museum collection and/or their comparative use in future preservation work at the site. Any adverse impacts would be long-term and negligible to minor due to the removal of historic materials (an unavoidable occurrence when materials are unrepairable due to deterioration).

The national register-listed Anacapa Island Light Station would continue to be used for maintenance, housing, visitor activities, and Coast Guard aids to navigation. Impacts to historic structures and buildings would be long-term, negligible, and beneficial.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 1 would result in impacts that are site-specific, long-term, minor, and beneficial. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term minor beneficial cumulative impacts to historic structures and buildings. The beneficial impacts of alternative 1 would be a minor component of the beneficial cumulative impact.

Conclusion. Actions under alternative 1 would generally have long-term minor beneficial impacts on historic structures and buildings in the park because they would continue to be surveyed and evaluated for their eligibility for listing in the national register, and listed or determined eligible structures would be managed to preserve their documented values.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on historic structures and buildings.

Cultural Landscapes

Analysis. As staffing and funding permit, landscapes and their features and patterns would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. Cultural landscape reports, including treatment plans, would be prepared for landscapes eligible for listing in the national register as a prerequisite for understanding the landscape's significance, as well as the basis of informed decision making in the future regarding how the landscape and its features and patterns should be managed. Such surveys, research, and the preparation of cultural landscape reports would have long-term minor beneficial impacts.

Under alternative 1, the historic olive grove at Smugglers Cove would continue to be maintained in a manner that perpetuates the grove as a contributing landscape feature. Small stands of eucalyptus and the long row of trees between the upper and lower Scorpion campgrounds would continue to be preserved as a remnant of the historic landscape tree plantings provided the spread of eucalyptus can be contained. Individual eucalyptus trees would continue to be removed on a case-by-case basis from the campground if the trees present a hazard to visitors. Adverse impacts from this continued maintenance and the potential for thinning or removal of contributing vegetation would be long-term and minor to moderate.

To appropriately preserve and protect national register-listed or eligible cultural landscapes, all stabilization and preservation efforts would be performed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Any adverse impacts would be long-term and negligible to minor.

Cumulative Impacts. The past, present, and future action of adding small-scale features to the landscape (antennas, solar array, weather station, and other equipment) and restoring native plant communities through the removal of nonnative plants and planting native plants has and would continue to result in impacts on significant landscape patterns and features (e.g., spatial organization, land use patterns, circulation systems, topography, structures and buildings, cluster arrangements, small-scale features, views and vistas, and archeological resources). Impacts to cultural landscapes would be site-specific, long-term, minor to moderate, and adverse.

The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 1 would result in site-specific long-term minor to moderate adverse impacts. These impacts, in combination with the long-term minor to moderate adverse impacts and the minor beneficial impacts of other past, present, and future actions, would result in long-term minor to moderate cumulative impacts to cultural landscapes. The adverse impacts of alternative 1 would be a small component of the beneficial cumulative impact.

Conclusion. Actions under alternative 1 would generally have long-term minor to moderate adverse impacts on cultural landscapes because of the removal of historic vegetation. Overall, the known cultural landscapes would be preserved in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 1 would be a *no adverse effect* on cultural landscapes.

VISITOR EXPERIENCE, INTERPRETATION, AND EDUCATION

Analysis

Under alternative 1, visitors would continue to engage in a variety of recreational activities, encounter low to moderate levels of visitation, and participate in group activities. Access to the park would remain unchanged. Most visitors would continue to travel to the islands via concessioner-operated boats. Access to all of the islands would continue to be available to private boats. Visitors would also continue to visit Santa Rosa Island through an air transport service operated by a concessioner. The number of visitors to the islands arriving by concession-related transportation is established in the contracts with the concessioners. Visitors could also continue to visit the islands via private boats. Although the level of visitation to the islands is expected to slightly increase over time, the increase is not expected to have an appreciable impact on much of the park.

Although opportunities to visit the islands would continue to be provided, some visitors would be unable to afford passage, or may find it difficult to reach the transportation providers. This would continue to have a long-term moderate adverse impact on those unable to travel to the islands.

The quality and diversity of recreational opportunities and visitor experiences on the islands would remain unchanged under alternative 1.

Parkwide

The park's education program would continue to be restricted primarily to the mainland Ventura visitor center and staff visits to area schools; however, the visitor center would remain too small to accommodate the number of school groups that would like to visit the facility. As visitation increases at the Ventura visitor center, visitors could experience more periods of crowding and might not be able to participate in activities because of inadequate capacity. This would be a long-term minor to moderate adverse impact on visitor experience in the park, particularly for groups who may not be able to experience the park at all because there is no availability at the visitor center or because the quality of the experience is poor because of crowding.

There would be no facility on any of the islands to accommodate educational groups who desired to visit. Education in parks is usually better when students can have direct experiences with tangible resources. Although education activities at the visitor center and in the schools can provide some level of experience, the lack of firsthand interaction with park resources would constitute a long-term moderate adverse impact on the visitor experience.

There would continue to be no dedicated interpretive staff stationed on any of the islands. Thus interpretation on the islands would continue to be limited primarily to minimal wayside exhibits and other nonpersonal means of communication. As a result, on-island interpretation of some of the

key park stories/themes would continue to be inadequate. For example, other than ranger-guided programs that reach a small percentage of island visitors, there would be little opportunity for visitors to learn about the Chumash Indians who lived on the islands and who continue to interact with island resources. The long history of ranching on the islands also would not be adequately told, leaving visitors to wonder about the many structures and other remnants of the ranching era. The lack of adequate interpretive media on the islands to give visitors a better understanding and appreciation of elements of the primary interpretive themes would continue to have a long-term minor to moderate adverse impact on the visitor experience. Resources of interest to the public, such as the lighthouse on East Anacapa Island, also would continue to be closed. This would continue to be a long-term negligible to minor adverse impact on interpretation and education on the islands.

Anacapa Island

The campground on East Anacapa Island would continue to be visually intrusive for some visitors. The potential for continued conflict between day use visitors walking the trails and campers also would continue. This would have a long-term minor to moderate adverse impact on the overall experience for some visitors.

Middle Anacapa Island would only be accessible to a limited number of people because these visitors must be accompanied by a NPS-approved guide. Given the uniqueness of the experience, this would be a long-term beneficial impact on the visitors who are able to see the island, but the impact would be negligible overall because so few visitors would be affected. Access would continue to be limited to Frenchy's Cove. The number of visitors to the cove has been limited based on resource protection and visitor experience considerations. This would continue to be a long-term beneficial impact on visitors to the cove. The impact is negligible in relation to the remainder of the park because of the relatively small number of visitors who would be affected.

Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara Islands

The recreational opportunities on Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara Islands would remain unchanged. Being able to take advantage of these recreational opportunities would continue to generally be a long-term minor to moderate beneficial impact for the visitors who reach the islands. However, due to their size, large portions of Santa Rosa and Santa Cruz Islands would remain inaccessible to many visitors, especially day use visitors, limiting opportunities for many to experience some of the islands' special resources. Only those visitors wishing to camp overnight on the islands would have opportunities to connect with these resources and learn more about the ranching history and other primary interpretive themes. However, no actions would be taken under alternative 1 that would either expand or constrain the current recreational opportunities on the islands.

Cumulative Impacts

There would be no actions occurring inside or outside the park, independent of alternative 1, that could result in cumulative visitor experience impacts.

Conclusion

Under the no action alternative, no change would occur with respect to visitor experience, education, and interpretation opportunities in the park as a whole. Recreational opportunities would remain unchanged on the islands and would continue to be a long-term minor to moderate beneficial impact on visitor use and enjoyment

of the park. The variety of experiences available on the islands, coupled with interpretive and educational media and programs on the mainland, would enable visitors to understand and appreciate park resources and elements of the primary interpretive themes. On-island visitors would continue to find limited interpretive and educational media and programs, and limited personal interpretive services to help them better understand aspects of the park stories. With use levels to the mainland visitor center expected to increase, crowding could detract from the visitor experience, resulting in a long-term minor to moderate adverse impact on visitor use. There would be no actions independent of alternative 1 that when added to the effects of the alternative would result in cumulative impacts.

WILDERNESS CHARACTER

Analysis

Per NPS *Management Policies* 2006, eligible lands in the park would continue to be managed to preserve the wilderness character and maintain potential eligibility for wilderness designation; however, lands in the park would not receive any special status or protection from wilderness designation. Under this alternative there would be no additional development on the islands; therefore, the areas that retained natural characteristics would remain unchanged. Most of the islands would continue to appear natural and undeveloped. Likewise, alternative 1 would have no effect on the "untrammeled" or uncontrolled quality of wilderness character.

Opportunities would continue for primitive unconfined recreation on all of the lands eligible for wilderness, as well as opportunities for solitude for visitors who venture away from the developed areas on each of the islands. In the long term, the number of visitors to the islands is expected to slightly increase, and most of this use would likely occur during the summer. This increase could adversely impact the opportunity for solitude because with more visitors on the islands, hikers might need to travel farther from the developed areas for a solitary experience. An increase in visitation would be more noticeable on Santa Barbara Island, resulting in a long-term minor adverse impact on this element of wilderness character. On Middle and West Anacapa Islands use levels would not be expected to change, and with use highly restricted there would be very limited opportunities for primitive, unconfined recreation, resulting in a continuing long-term minor adverse impact for this quality. Closures of certain beaches, either seasonally or year-round, on Santa Rosa Island for wildlife protection purposes also would result in a continuing long-term minor adverse impact on opportunities for primitive, unconfined recreation. On Santa Cruz and Santa Rosa Islands, increased use levels would largely affect the developed areas and the areas nearby, but most of the lands eligible for wilderness designation on these islands would still have many opportunities for solitude and primitive, unconfined recreation. Thus, the adverse impact on wilderness character on these islands would likely be long-term and negligible to minor.

With regard to the other features of value (the fifth quality of wilderness character), as stated earlier, alternative 1 would have a long-term minor adverse impact on paleontological resources and a negligible impact on ethnographic and archeological resources due to continuing human activities, which would affect scientific research opportunities and cultural resources in the area eligible for wilderness designation.

From a parkwide perspective, overall alternative 1 would have a long-term negligible to minor adverse impact on the character of lands eligible for wilderness, primarily affecting opportunities for solitude, primitive unconfined recreation, and other features of value in localized areas.

Cumulative Impacts

Several NPS projects would continue on the islands independent of alternative 1, including vegetative restoration efforts, threatened and endangered species recovery efforts, and control of nonnative species, which would continue to adversely affect opportunities for solitude. In addition, these ongoing NPS resource management activities on the islands would continue to improve the long-term naturalness of the lands eligible for wilderness. These management activities also would adversely affect the "untrammeled" or uncontrolled quality of wilderness character, although eventually they would be expected to end and the area would be more "natural" than it is currently. Because no changes would occur to opportunities for solitude or primitive unconfined recreation, the natural and undeveloped appearance of the island, or the untrammeled quality as a result of alternative 1, there would be no additive impact on wilderness character. Therefore, there would be no cumulative impacts associated with implementation of this alternative.

Conclusion

With use levels likely to slightly increase in the future, and no new developments, alternative 1 would have a long-term negligible to minor adverse impact on the wilderness character of the lands eligible for wilderness. Alternative 1 would result in no cumulative impacts on wilderness character.

PARK OPERATIONS

Analysis

Under the no action alternative (and all of the other alternatives as well), NPS operations would continue to be characterized by (1) a substantial number of facilities or assets (e.g., visitor contact stations, campsites, trails, and historic structures and landscapes) that must be maintained; (2) visitor-related operational demands (e.g., interpretive services, patrols, and campground maintenance) that are much greater in the busy summer visitor season than at other times of the year; and (3) island operations that command a disproportionate share of the park's annual operating budget due to the logistics of transporting equipment, materials, and staff to and from the islands.

With the park spread out over 1 million acres, the geography of the park's islands poses operational challenges. Staff, equipment, supplies, and facilities would continue to be spread out over various locations on the islands and mainland. Staff would continue to travel back and forth between the islands and mainland. Thus, the physical separation of the maintenance/operations facilities, staff, and the geography of the park would continue to result in some inefficiency for park operations and maintenance management, including staff and equipment mobilization and travel. Staff on the mainland would continue to operate in different buildings, with administrative/operational staff separated from maintenance and resource management staff. There also would continue to be the absence of a staff facility at Prisoners Harbor. All of these conditions adversely affect staff productivity and detract from the park staff's ability to effectively and efficiently protect park resources and meet visitor needs. As a result, all of the above conditions would continue to have a long-term moderate adverse impact on park operations.

Current funding levels have caused some positions to remain vacant, which has had an effect on the park's organizational capacity. All of the park's divisions have identified staffing shortages through business planning models, and the impact of staffing deficiencies would likely continue, resulting in a long-term moderate adverse effect on park operations.

Assuming current funding trends continue and staffing levels remain similar to the present, the Park Service would continue to be unable to fully achieve desired conditions in

program areas such as resource protection, visitor services, and cyclic maintenance; and the deferred maintenance backlog would continue to grow over time. Natural and cultural resource programs would also be adversely affected. The no action alternative would have continuing long-term moderate adverse impacts on NPS operations, but there would be no new impacts.

Cumulative Impacts

As described in the cumulative impacts scenario, a large number of ongoing and future actions independent of the plan would be expected, including maintenance and replacement of facilities, ecosystem restoration efforts, and other resource management activities. In addition, park staff would continue to be engaged in actions and projects independent of keeping the park functioning, and/or activities outside of the park that require staff time, such as issuing permits for scientific research and commercial services, and implementation and enforcement of the Channel Islands National Marine Sanctuary Management Plan (2009) and regulations. Many of these projects require intensive planning, coordination, and involvement from park staff, and represent a substantial operational burden on park staff. The impact of all of these actions on the park staff would be long-term, moderate, and adverse.

Overall, when the long-term moderate adverse impacts of alternative 1 are combined with the effects of other ongoing and planned projects, there would likely be a long-term moderate adverse cumulative impact on park operations. Alternative 1 would contribute a substantial increment to the overall adverse cumulative impact.

Conclusion

Alternative 1 would continue to result in a long-term moderate adverse impact on NPS operations at the park, primarily due to inadequate funding and staffing in a large, spread-out marine and terrestrial park. When the effects of the no action alternative are combined with other ongoing and likely future projects, there would be the potential for a long-term moderate adverse cumulative impact on park operations. The no action alternative would contribute a substantial amount to this overall adverse cumulative impact.

UNAVOIDABLE ADVERSE IMPACTS

The following paragraphs describe the more important (moderate and major intensity) adverse impacts that would result from implementing alternative 1. The negligible and minor impacts were described in the foregoing analysis.

Unavoidable moderate adverse impacts on some natural resources would continue to occur in localized areas in the park. Most of these unavoidable adverse impacts would be due to the presence of people and nonnative plants. Erosion would likely continue to be a long-term problem at various locations along the roads on Santa Rosa Island, such as the Smith Highway. Impacts on water quality could occur at times (depending on weather and tides) in areas where concentrations of boats occur, such as at East Anacapa Island, Scorpion, and Smugglers, on weekends and holidays. In localized areas, particularly at entry points to the islands, there would continue to be noise impacts due to concentrations of visitors, boats, and park operations and invasion of nonnative plants or animals. Fire risk would also be higher due to slightly increased visitor use. There would be potential for unavoidable minor to moderate adverse impacts on marine and terrestrial wildlife populations in local areas on Santa Rosa and Santa Cruz Islands, primarily due to increased use by boaters on beaches. The spread of nonnative vegetation also would continue to have the potential to result in an unavoidable moderate to major adverse

impact on the islands' natural vegetative communities under alternative 1.

There would be no unavoidable moderate or major adverse impacts on cultural resources.

Opportunities to visit the islands would continue to be provided, although some visitors would be unable to afford passage, or might find it difficult to reach the transportation providers. This would continue to have an unavoidable long-term moderate adverse impact on those unable to travel to the islands.

On-island visitors would continue to find limited interpretive and educational media and programs to help them better understand aspects of the park stories. This would continue to have an unavoidable long-term minor to moderate adverse impact on the overall visitor experience on the islands.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

No new actions would be taken that would either result in the consumption of nonrenewable natural or cultural resources or in the use of renewable resources that would preclude other uses for a period of time.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Under alternative 1 most of the park would continue to be protected in a natural state and would maintain its long-term productivity; the Park Service would manage the islands to maintain ecological processes and native biological communities. Most areas would be protected in their current state and would maintain their long-term productivity. No changes would occur in the developed areas of the park under alternative 1 that would affect ecological productivity. If use levels increase in the future, some vegetation and soils in localized areas may be adversely affected (e.g., trampling of vegetation), which would reduce the productivity of these areas. Maintaining facilities in the Scorpion Creek floodplain would cause long-term reduction in natural and beneficial values of the floodplain and prevent it from functioning naturally.

IMPACTS OF ALTERNATIVE 2

NATURAL RESOURCES

Soils

Analysis. Like alternative 1, alternative 2 would result in little change to soils on Santa Barbara, Anacapa, and San Miguel Islands. Assuming that use levels do not substantially change in alternative 2 and visitors largely stay at developed areas and do not hike off trails, the alternative would have a negligible adverse impact on soils due to erosion caused by visitors. The construction of a new housing unit and a small equipment storage building on East Anacapa Island would result in the loss/modification of soils but would have a long-term negligible to minor adverse impact on soils in this previously disturbed area. The closure and restoration of part of the campground on East Anacapa Island would result in people no longer disturbing these soils, resulting in a long-term negligible beneficial impact. The designation of an area for a temporary camp and building a new small storage facility on San Miguel Island would disturb some soils due to soil compaction and erosion, and would have a localized long-term minor impact on soils.

Most of the soil impacts under alternative 2 would continue to occur on Santa Cruz and Santa Rosa Islands. Alternative 2 would result in higher use levels on Santa Rosa and Santa Cruz Islands than in alternative 1, but use levels would still be expected to be relatively low. Although most people would remain in the developed areas, more people would hike and backpack in the backcountry of these islands, which would result in some soils being compacted and soil horizons altered in local areas due to people walking cross-country or off trails. Some informal trails could be formed. There also would likely be more use of the roads on Santa Rosa Island by vehicles transporting visitors, resulting in increased erosion of silty soils along the roads. However, given the size of the islands and relatively low use levels that would occur, the long-term adverse impact on soils would likely be localized and minor to moderate.

The new visitor developments on Santa Cruz Island would affect some areas. An orientation area at Scorpion and additional restrooms at Prisoners Harbor would be built in previously disturbed areas and would have a localized long-term minor adverse impact due to soils being lost from the site or soil properties being altered. Reconfiguring the Scorpion campground would occur in a previously disturbed area and would have a long-term negligible adverse effect on soils. The possible development and use of backcountry campsites and trails on the islands would cause some erosion and loss of soil from these areas and/or alteration of soil properties, resulting in a localized long-term negligible to minor adverse impact depending on the sites and use levels.

Several new administrative developments on Santa Cruz Island would affect soils. In the Scorpion area the construction of new office space, a new concessions housing area, expansion of the NPS housing area, relocation of the maintenance area, and construction of an interpretive barn by the corral would likely result in the erosion and loss of some soil from these sites and/or alteration of soil properties, affecting approximately 3 acres. Assuming the construction and facility footprints are kept small and best management practices are followed (e.g., use of silt fences and prompt revegetation), soil erosion and disturbance would be minimized and the adverse impacts would be localized, long-term, and minor.

The development of new administrative facilities in the Prisoners Harbor area would also affect soils. Soils would be lost and/or soil properties altered by the development and use of new housing and storage and maintenance facilities in the Prisoners Harbor area,

covering about 1.5 acres, which would result in a long-term minor adverse impact.

On Santa Rosa Island development of a new transportation/operations center and field station in the Bechers Bay area and the development of a new backcountry ranger station at Johnsons Lee would affect about 1.5 acres, resulting in a long-term minor adverse impact due to the loss and/or alteration of soil properties. The development of a new field station on the Bechers Bay marine terrace also would affect about 1 acre, resulting in a long-term minor adverse soils impact.

Under alternative 2 several visitor developments on Santa Rosa Island would affect soils. The restoration of part of the Water Canyon campground would have a long-term minor beneficial impact due to visitors no longer disturbing these soils. On the other hand, the construction of a new campground on the marine terrace within the ranch complex in Bechers Bay would affect approximately 4 acres, and the development of a new day use facility at Johnsons Lee would affect less than 2 acres. The loss of soil and/or alteration of soil properties would result in a localized long-term minor adverse impact. Rehabilitating the ranch complex facilities for other functions (e.g., lodging and visitor contact station) should have no impacts on soils because no additional soil disturbance would be expected.

Another action in alternative 2 that would affect soils is the periodic excavation of Scorpion Creek. The deposition of sediments on land due to the excavation of the creek would result in localized long-term moderate adverse impacts on soils due to construction equipment driving over an estimated 2,000-foot area and temporarily stockpiling the sediments on an area by the drainage. Although excavation activities would occur on an irregular basis and the sediments would only be temporarily stockpiled, the excavation of the creek would occur on a regular basis. Thus, these impacts are considered long-term.

The biggest difference between alternatives 1 and 2 would be due to the actions taken regarding the road systems on Santa Rosa and Santa Cruz Islands. The conversion of roads to trails and/or recontouring and revegetating approximately 12 miles on Santa Cruz Island and 67miles of roads on Santa Rosa Island, particularly those segments that are experiencing erosion problems, would substantially decrease soil erosion in these areas. As a result, alternative 2 could have a long-term moderate to major beneficial impact on the two islands. Even with these restoration efforts, erosion on several roads on Santa Rosa Island could still result in minor to moderate adverse soil impacts due to soil erosion in local areas.

The wilderness designation on several of the islands would provide permanent long-term protection to soils. This action would have a negligible beneficial effect as it would not result in noticeable changes in the islands' soils.

From a parkwide perspective, when compared to alternative 1, alternative 2 would have both long-term beneficial and adverse impacts. The construction of new visitor and administrative facilities on Santa Cruz and Santa Rosa Islands would affect a total of less than about 15 acres, resulting in localized long-term minor adverse soil impacts. Long-term moderate to major beneficial impacts would occur primarily due to the removal and restoration of roads on Santa Rosa Island. Overall, alternative 2 would have a long-term moderate beneficial impact on soils, primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts. As in alternative 1, soils in the park have been adversely affected by past actions, particularly due to overgrazing by livestock, the construction of roads, and pig rooting on Santa Cruz Island, causing soil compaction and erosion. Also like alternative 1, the recent removal of nonnative deer and elk from Santa Rosa Island and the elimination of feral pigs on Santa Cruz Island would be expected to result in a localized

long-term moderate beneficial impact on these islands. Revegetation and soil erosion control efforts also would continue on the islands, independent of this plan, such as efforts to rehabilitate eroding areas on the Smith Highway and Soledad Peak on Santa Rosa Island. These continuing restoration efforts should over time reduce the loss of soil in many problem areas, resulting in a continuing long-term moderate to major beneficial impact. When these impacts are added to the beneficial impacts on soils of closing roads and restoring the landscape on Santa Rosa Island under alternative 2, and the localized long-term minor adverse impacts due to construction of new facilities, there could be a long-term moderate beneficial cumulative impact on soils. Although adverse impacts due to visitor use on the islands and the development of administrative facilities on the islands would detract from this beneficial cumulative impact, the restoration actions due to the alternative (particularly the closure of roads on Santa Rosa and Santa Cruz Islands) and other NPS beneficial restoration efforts independent of the alternative would far outweigh the minor adverse impacts.

Conclusion. Most of the park's soils would not be affected by alternative 2. Soil impacts would largely be limited to Santa Cruz and Santa Rosa Islands, and the alternative would have both beneficial and adverse impacts. No impacts due to changes in visitor uses under alternative 2 would result in greater than a negligible impact when considered from a parkwide perspective. Although alternative 2 would result in some long-term minor adverse impacts to approximately 15 acres of soils (primarily due to the construction of new facilities in localized areas), when compared to alternative 1, alternative 2 would result in a long-term moderate beneficial impact, primarily due to the removal of roads and landscape restoration, and consequent decrease in erosion on Santa Rosa and Santa Cruz Islands.

Paleontological Resources

Analysis. Under alternative 2 backcountry use would increase on Santa Rosa and Santa Cruz Islands, which potentially could result in an increase in the number of fossils that are illegally collected. Any fossils that are illegally collected would be a permanent loss of the resource. Because it is not known how many fossils are currently being illegally collected on the islands, it is difficult to know what the additional impacts of increased visitor use would be in alternative 2. Compared to alternative 1, the change in backcountry visitor use could result in a long-term adverse impact on paleontological resources. However, it is expected that few fossils would be lost because the increase in use would be limited and the fossils would not be apparent or readily accessible to most visitors to the islands. The closure of roads and restoration of the landscape on both Santa Rosa and Santa Cruz Islands would help reduce areas where fossil collecting could occur. As in alternative 1, the requirement that all hikers must be escorted by a ranger should minimize impacts to paleontological resources on San Miguel Island. With ranger-led hikes negligible impacts would be expected to the caliche forest on the island. Thus, compared to alternative 1, it is likely the change in visitor use levels in alternative 2 could result in a long-term minor adverse impact on paleontological resources.

Most of the developments proposed under alternative 2 would occur in previously disturbed areas and, therefore, would not be expected to increase the level of disturbance to paleontological resources beyond what already has occurred. Surveys would be conducted prior to building new campgrounds, backcountry campsites, day use areas, and trails on Santa Rosa and Santa Cruz Islands, which should avoid impacts to areas likely to have fossils. It is not known if construction of administrative facilities near the Prisoners Harbor area would occur in a fossiliferous area. Assuming the area is surveyed for fossils before construction

begins, impacts should be largely avoided to this resource. However, even with surveys, some fossils could be lost, resulting in a long-term minor adverse impact in these areas.

Under alternative 2 expanded partnerships and more research would be expected to provide more information on the park's paleontological resources, and enable the park staff to better manage the park to avoid future impacts from visitor use. This would be expected to have a long-term minor to moderate beneficial impact.

The wilderness designation on several of the islands would provide permanent long-term protection to paleontological resources, precluding most potential developments that could adversely affect these resources. This action would have a negligible beneficial effect as it would not result in noticeable changes in the islands' paleontological resources.

Overall, from a parkwide viewpoint, alternative 2 would likely have a long-term minor adverse impact on paleontological resources when compared to alternative 1, primarily due to an increase in backcountry visitor use on Santa Cruz and Santa Rosa Islands and the resulting potential increase for loss of fossils.

Cumulative Impacts. Aside from the actions in alternative 2, no known actions or projects inside or outside the park are believed to be affecting the park's paleontological resources. Thus, alternative 2 would not have a cumulative impact on the park's paleontological resources.

Conclusion. Although it is very difficult to determine the intensity of impacts on paleontological resources due to a lack of information, compared to alternative 1, alternative 2 could have long-term minor adverse impacts due to increased backcountry use and possible illegal collecting of fossils. No cumulative impacts would occur.

Water Quality

Analysis. Like alternative 1, no changes would occur to freshwater quality on Santa Barbara and San Miguel Islands. With just a small storage facility proposed on San Miguel Island, no new facilities on Santa Barbara Island, very small changes expected in visitor use levels, and with adequate sanitation facilities being provided, no changes to freshwater quality would be expected on these islands.

On East Anacapa Island the construction of a new housing unit on the site of previous residences and a new storage facility would not be near freshwater sources and should not affect water quality. The new housing unit's sanitation system would dispose of human waste, resulting in no impacts to water quality.

Several administrative and visitor facilities would be built on Santa Cruz Island in the Prisoners Harbor area, and in and above Scorpion Valley under this alternative. Assuming best management practices are followed in the construction of these developments, few sediments would run off into nearby drainages that would affect water turbidity, resulting in short-term negligible to minor adverse impacts on freshwater quality. The development of new restrooms at Prisoners Harbor and a new orientation area with restrooms near the Scorpion beach should not adversely affect water quality, provided they are properly designed and maintained.

Because Scorpion Creek is often dry in the summer, the periodic excavation of sediment from the flood channel should occur when water is not flowing in the channel. Thus, this action should have no effect on water quality.

The construction of several visitor and administrative facilities on Santa Rosa Island, including a new campground and employee housing, would be built in previously disturbed areas and should not affect drainages — with proper design and

mitigation measures there should be no impact on water quality.

Although there would be higher levels of visitors in the backcountry on Santa Rosa and Santa Cruz Islands than under alternative 1, levels would still be relatively low. Some measurable water pollution would be expected from these visitors due to soil erosion from some informal trails and improper human waste disposal. This change would have a long-term negligible adverse impact on freshwater quality, provided that visitor use remains low.

The closure of roads and restoration of the landscape or conversion of roads to trails in this alternative would reduce runoff and erosion, which would have a localized long-term moderate beneficial impact on water quality compared to alternative 1. Some local water pollution would still occur due to sedimentation from roads that are maintained, affecting water turbidity of some drainages. It is expected that this would be a minor adverse water quality impact.

The wilderness designation on several of the islands would provide permanent long-term protection to water resources. This action would have a negligible beneficial effect as it would not result in noticeable changes in freshwater resources on the islands.

Alternative 2 would likely result in the same impacts on marine water quality due to boat use as described under alternative 1. It is expected that boat use in park waters would increase over time. Some boats would probably discharge wastes such as gray water and fuel into park waters. Long-term adverse impacts would be due to discharges of petroleum products from visitor boats using the pier. The overall impact of visitor boats on the park's marine water quality would probably be a minor adverse impact. But in areas where there are concentrations of boats, such as Scorpion, Smugglers Cove, and East Anacapa, there could be localized long-term minor to moderate adverse impacts on water quality due to the discharges of pollutants (e.g., petroleum products and human waste) over the life of this plan.

Under alternative 2 there would be expanded partnerships and more research, which could mean additional efforts to monitor water quality. With more information on status and trends for the park's water quality, it is expected that park managers would be able to better avoid water quality impacts due to visitors and administrative actions. This could have a long-term minor to moderate beneficial impact.

From a parkwide perspective, alternative 2 would have both beneficial and adverse impacts on water quality. Adverse water quality impacts would occur due to the construction and use of new visitor and administrative facilities and increased boat use in localized areas. However, overall, alternative 2 would have a long-term minor to moderate beneficial impact on freshwater quality, primarily due to the closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands, and a long-term minor adverse impact on marine water quality primarily due to discharges from visitors' boats.

Cumulative Impacts. As noted under alternative 1, ongoing restoration activities on Santa Rosa and Santa Cruz Islands would have a beneficial impact on freshwater quality. Less erosion of sediments would occur in these areas, decreasing turbidity and improving water quality.

Adding together the beneficial impacts of alternative 2 (due to the closure of roads on Santa Cruz and Santa Rosa Islands) and the negligible to minor adverse impacts (due to increased visitor use in the backcountry and construction of new facilities on Santa Cruz and Santa Rosa Islands) of alternative 2, with the impacts of continuing revegetation and erosion control efforts independent of the plan, overall there would be a minor to

moderate beneficial cumulative impact on freshwater quality in local areas.

With regard to marine waters, alternative 2 would have about the same potential for cumulative impacts as alternative 1. The replacement of the Bechers Bay and Scorpion Harbor piers would result in increases in turbidity during the construction period (including removal of the existing piers), resulting in a long-term minor adverse impact on water quality in these areas. Nonpark sources, such as discharges or spills from visitors' boats, ships, and oil and gas platforms; sewage disposal; and agricultural and urban runoff from the mainland have affected, and can affect, the park's water quality. Enforcement and education efforts regarding the 2009 Channel Islands National Marine Sanctuary regulations would be expected to help avoid discharges by boaters and shipping companies and, therefore, would likely have a long-term beneficial impact of unknown magnitude. Adding the adverse impacts of alternative 2 (increase in water pollution due to more boats) to the impacts of other nonpark pollution sources could result in an adverse cumulative impact. Although the very large diluting volume of ocean and the beneficial impacts of alternative 2 (increased monitoring and research) would reduce the additive impact of all of these pollution sources, a long-term minor to moderate adverse cumulative impact to water quality could occur in places around the islands. However, the negative increment added from visitor boat use under alternative 2 to the overall cumulative impact from nonpark sources would be inconsequential.

Conclusion. Like alternative 1, freshwater quality on most of the islands would not be affected by alternative 2. Compared to alternative 1, overall alternative 2 would result in a long-term minor to moderate beneficial impact on freshwater quality, primarily due to the closure of roads and restoration of the landscape on Santa Rosa Island, and localized long-term minor adverse impacts on marine water quality primarily due to discharges from visitors' boats. There could also be a long-term minor to moderate beneficial cumulative impact on freshwater quality in local areas and a long-term minor to moderate adverse cumulative impact on the park's marine water quality in local areas (although the increment contributed by alternative 2 would be minor).

Floodplain Values and Flooding in Scorpion Valley on Santa Cruz Island

Analysis. Under alternative 2 the Scorpion Valley maintenance area, including fuel and a hazardous materials storage area, a plant nursery, and storage structures, would be built adjacent to the corral, above the Scorpion Creek floodplain but near another small drainage. These facilities would be located here because the natural floodplain in this area has already been disturbed and there were no other suitable locations (see also appendix E). Building these administrative facilities would have a long-term minor adverse impact on the small drainage floodplain values, primarily due to the alteration of soils and vegetation. Building the facilities would pose a long-term minor adverse impact on human life and property due to flooding. Because the alternative calls for hazardous materials to be stored outside the 500-year floodplain, there should be no impact on floodplain values. Although floods could occur in the area, due to the time these facilities would be used (primarily during the summer), the risk is considered low that these facilities would be seriously damaged or people would be hurt during the life of this plan.

Under alternative 2 actions at the mouth of Scorpion Creek, including reestablishment of native vegetation and removal of the road that crosses through the wetland, would help restore floodplain values and functions, and would have a long-term moderate beneficial impact. On the other hand, sediment from the stream channel also would be periodically excavated to reduce the risk of future major floods. As noted in the alternative, an

estimated 8,000 cubic yards of material would be removed from the channel and temporarily stockpiled on the south side of the stream above the upper road crossing to the west. These actions would alter the path of natural streamflows, riparian soils, and vegetation, and could have a long-term minor to moderate adverse effect on this floodplain's values. The magnitude of the impact would depend on how often the excavation occurs, when and where it is done, how much sediment is removed, where it is deposited, and what mitigation measures are employed. This impact would be further evaluated in a future compliance document. In addition, permits from the Corps of Engineers and California Central Coast Regional Water Quality Control Board would need to be obtained before the actions could occur.

The wilderness designation would have no effect on the floodplain values and flooding in Scorpion Valley.

Alternative 2 also would have a long-term minor to moderate beneficial impact due to a reduced risk to human life and park facilities in the Scorpion Valley. The various measures noted above would decrease the likelihood of a flood occurring that would result in the loss of park facilities or pose a risk to people. However, these measures would not eliminate the risk — there would continue to be a risk of damage or loss of structures if a major flood occurred in this area.

Cumulative Impacts. No other known actions or activities inside or outside the park would affect the Scorpion Valley floodplain. Thus, there would be no cumulative impacts due to alternative 2.

Conclusion. Alternative 2 would have a long-term moderate beneficial impact on natural floodplain values in the Scorpion Valley due to restoration of the small estuarine wetland at the mouth of the creek, and also long-term moderate adverse impacts due to the periodic removal of sediment from the Scorpion drainage. Actions in the Prisoners Harbor floodplain would not affect floodplain values. From a flood risk standpoint, the actions at Scorpion Valley would have a long-term minor to moderate beneficial impact on reducing flood risks and reducing the risk to human life and property in these areas (although there would continue to be a risk of damage or loss of structures from a future flood in the Scorpion area). No cumulative impacts would occur as a result of the alternative.

Wetlands (Scorpion Valley)

Analysis. Under alternative 2 several actions would be taken that would affect wetlands at the mouth of Scorpion Valley. The actions taken to restore riverine channel habitat and plant native vegetation would enhance wetland values (e.g., vegetation and hydrology) in this area and would be expected to have a long-term moderate beneficial impact.

Periodically dredging the Scorpion Creek channel could adversely affect the riverine/lower perennial/rock bottom wetlands. However, this area has no vegetation, flooding periodically alters the channel, and the area has already been adversely affected by past human activities. Thus, the impact of dredging, assuming the equipment stays in the channel and operations are closely monitored, would be expected to have a long-term negligible to minor adverse impact on this wetland.

The wilderness designation would have no effect on the wetlands in Scorpion Valley.

Overall, alternative 2 would have a long-term minor to moderate beneficial impact on the Scorpion Creek wetland, primarily due to the floodplain restoration effort, when compared with alternative 1. Permits from the Corps of Engineers and California Central Coastal Regional Water Quality Control Board would need to be obtained before any of the above actions could occur.

Cumulative Impacts. No known actions or activities inside or outside the park would affect this wetland. Thus, there would be no cumulative impact on this wetland.

Conclusion. Alternative 2 would have a long-term moderate beneficial impact on the wetland at the mouth of Scorpion Valley due to the restoration activities that would take place in this alternative. There also would be a long-term negligible to minor adverse impact on riverine wetlands in Scorpion Valley due to periodic dredging operations. No cumulative impacts would occur as a result of the alternative.

Terrestrial Plant Communities and Vegetation

Analysis. As in alternative 1, from a parkwide standpoint visitors and NPS staff would likely continue to accidentally introduce or help spread nonnative plants on the islands. Although many nonnative species are already widespread in the park, additional people on the islands would increase the potential for the introduction and spread of nonnative species. The potential for the introduction of these species would be reduced with the continued implementation and expansion of biosecurity measures, including visitor education efforts and providing visitors with brushes and boot scrapers to rid their boots and clothing of nonnative plant seeds before they set foot on the islands. But in spite of these mitigative actions, nonnative plant species would still likely be introduced in the park. Competition between nonnative and native plants could include changes in native plant distribution, numbers, structure, and ecological processes (e.g., recycling of nutrients and fire). The impact of these introductions cannot be predicted, but could vary from long-term negligible to major adverse impacts depending on the characteristics of the nonnative plant species (e.g., how aggressive it is) that is unintentionally introduced.

Like alternative 1, under alternative 2 there would be no major changes in management or use of Santa Barbara, Anacapa, or San Miguel island. No new developments would be built on these islands, except for building a new housing unit and small equipment storage building on East Anacapa Island and a small storage facility on San Miguel Island. These sites would be located in previously disturbed areas and should have a long-term negligible adverse impact on native vegetation. Reducing the size of the East Anacapa campground and revegetating the abandoned campsites with native plants would have a long-term minor beneficial impact.

On San Miguel Island, there would likely be a small increase in use due to guided trips to the western end of the island. However, as long as visitors are required to be with a guide when they go hiking, the impact on native vegetation should be negligible. The designation of an area for a temporary camp would have a localized long-term minor adverse impact on vegetation due to trampling and resulting damage to plants in this area.

Increased dispersed backcountry use in alternative 2 would increase the potential for disturbance of vegetation in more areas on Santa Rosa and Santa Cruz Islands. Although most hikers probably would stay on trails or roads, some would wander off and inadvertently crush or trample vegetation, resulting in the loss of some plants. However, it is not expected that rare endemic plant populations would be adversely affected by more people hiking along roads or trails in the backcountry. Visitors are not known to currently affect these populations and there is no reason to believe that more people would affect the rare plants. Most areas with endemic species, such as coastal sage scrub, chaparral, coastal dunes, and the faces of coastal bluffs, would remain inaccessible or their habitats would receive very little use by visitors. Overall, it is expected that compared to alternative 1, visitor use in alternative 2 would have a long-term minor adverse impact on Santa Rosa and Santa Cruz Islands'

vegetation, provided the level of backcountry use does not substantially increase. (But if nonnative plants were to be introduced by visitors on the islands, depending on the plant species, the impact could increase to a long-term moderate to major adverse impact.)

Compared to alternative 1, increased visitor numbers in alternative 2 also may increase the risk of an accidental fire. The potential adverse consequences of fires on the islands have changed due to the widespread conversion of native plant communities to annual grasses. Additionally, the presence of invasive weed plants would exacerbate the negative effects of a wildfire. Many nonnative plants would spread following a fire. However, the likelihood of such a wildfire being sparked by a small increase in visitor numbers is considered low, given the relatively few visitors that would be on the islands and the prohibitions on open fires in the backcountry.

New developments on Santa Cruz and Santa Rosa Islands under alternative 2 would result in local impacts on vegetation. Some small developments would be built in previously disturbed areas or areas with little native vegetation. In Scorpion Valley on Santa Cruz Island, the development of a maintenance structure, an interpretive storage barn, a new orientation area near the beach, a concessions housing area near the campground, and the expansion of the existing NPS housing area would all occur in areas where native vegetation has already been altered. Similarly, the maintenance/storage structure and parking spaces at Prisoners Harbor would be built in areas where native vegetation has already been altered. Likewise, on Santa Rosa Island the expanded NPS housing area, new campground and field station, NPS concession/transportation staging area, visitor orientation area, island transportation hub/operations center at Bechers Bay, and the administrative support and day use areas at Johnsons Lee would be in areas where native vegetation has already been altered. As a result, although some vegetation would be lost due to the new developments, little native vegetation would be affected by these developments. Thus, these actions would be expected to have a long-term minor adverse impact on native vegetation provided construction equipment stays in the existing footprints and/or disturbed areas. Construction work involved in converting some of the existing ranch buildings at Bechers Bay to visitor and administrative facilities would be expected to have a short-term negligible impact on native vegetation because this area has lost much of its native plant cover.

The construction and use of new backcountry campsites and trails on Santa Cruz and Santa Rosa Islands also would result in vegetation being cleared and the loss and alteration of vegetation in localized areas, resulting in long-term minor adverse impacts.

Construction of an employee housing area in the Prisoners Harbor area would result in the loss and/or alteration of less than about 1 acre of vegetation. The loss of native vegetation in this area would result in a localized long-term minor adverse impact.

Periodic excavation of sediment in the Scorpion Creek on Santa Cruz Island and deposition of sediments on land could adversely affect vegetation along or near the stream channel, depending on where the sediment is placed. Construction equipment also could crush and smash vegetation by driving to the disposal site. However, the identified disposal site is an area that has been disturbed in the past and has little native vegetation. Assuming care is taken in this operation, there probably would be a long-term minor adverse impact on native vegetation in a limited area.

Under alternative 2 additional steps would be taken to control invasive nonnative plants, such as stone pine, eucalyptus, and pepper trees, which contribute to Santa Cruz Island's cultural landscapes. If it is not possible to control the spread of these trees, under the

alternative these trees could be removed. The containment and possible replacement of eucalyptus trees in the Scorpion campgrounds would also help prevent the spread of these nonnative trees. In addition, the Smugglers Cove's olive grove would be managed to substantially reduce the spread of olives throughout the island. All of the above actions would prevent the invasive nonnative plants from spreading across the island and outcompeting and displacing native plants. As a result, compared to alternative 1, alternative 2 would have a long-term moderate beneficial impact on island native vegetation.

Other actions in alternative 2 would have beneficial effects on vegetation. The closure/restoration or conversion to trails of about 67 miles of roads on Santa Rosa Island and about 12 miles on Santa Cruz Island would help eliminate the loss of vegetation due to erosion and increase natural vegetative cover. Depending on what efforts are taken to restore vegetation, the alternative could have a long-term moderate beneficial impact on those islands' vegetation. The restoration efforts in the Scorpion estuarine wetland, including the planting of native vegetation, would have a long-term minor to moderate beneficial impact on native vegetation growing in the area, increasing the distribution and cover of native plants in this area.

Expanded partnerships and more research and inventorying/monitoring would provide more information on status and trends for the park's vegetation. This would be expected to better enable managers to be aware of threats and avoid potential future impacts, which could result in a long-term minor to moderate beneficial impact.

The wilderness designation on several of the islands would provide permanent long-term protection to the park's natural resources, including terrestrial vegetation. This action would have a negligible beneficial effect. Precluding most future developments would benefit vegetation. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, the wilderness designation by itself would result in few noticeable changes in vegetation on the islands.

From a parkwide perspective, alternative 2 would have both beneficial and adverse impacts on the park's native vegetation. Overall, the alternative would be expected to have a long-term moderate beneficial effect on the islands' vegetation, primarily due to steps taken to control nonnative species on Santa Cruz Island and the closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands. However, long-term minor adverse impacts would occur in localized areas on the islands due to increased visitor use and construction of facilities — a total of about 1.5 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts. As described in the impacts of alternative 1, the vegetation of the park has been substantially altered by past human actions, although some native plant populations and vegetative communities are now recovering.

The elimination of deer, elk, and pigs stopped browsing and soil impacts caused by these nonnative animal species. As a result of these efforts, native vegetation on Santa Cruz and Santa Rosa Islands is recovering, particularly native vegetation in riparian areas as well as rare plant species on the islands. This would likely have a localized long-term moderate to major beneficial effect on native plants on the islands.

Also like alternative 1, other restoration activities would continue on Santa Rosa and Santa Cruz Islands, including revegetation efforts on the islands, efforts to control the introduction and spread of nonnative plant populations, soil erosion control efforts, and planned control/eradication of the nonnative

Argentine ant. The continued implementation and expansion of biosecurity measures also would reduce the risk of invasion of nonnative species. These efforts all would have a localized long-term moderate to major beneficial impact on vegetation due to an increase in the abundance and distribution of native plant species on the islands.

When the long-term moderate beneficial impacts of alternative 2 are added to the long-term moderate to major beneficial effects of other past, present, and future restoration actions occurring independently of this plan, there would be a long-term moderate beneficial cumulative impact primarily due to the restoration of natural vegetation in more areas of the park. Alternative 2 would add both a beneficial increment and a minor adverse increment to the overall cumulative impact.

Conclusion. Most of the park's vegetation would not be directly affected by alternative 2. Alternative 2 would result in some localized long-term negligible to minor adverse impacts to vegetation on the islands due to increases in backcountry use and a few new administrative and visitor facilities. A total of about 1.5 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands. But overall, compared to alternative 1, alternative 2 would have a long-term moderate beneficial impact, primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands, the restoration of the Scorpion estuarine wetland, the replacement of the eucalyptus trees with native trees in the Scorpion campground, management of the Smugglers olive grove, and additional controls of invasive nonnative plants that contribute to cultural landscapes on Santa Cruz Island. There also would be a moderate beneficial cumulative impact on vegetation when actions in the alternative are added to other actions that would occur independently of the plan (although alternative 2 would add a minor increment to this overall cumulative impact).

Terrestrial and Marine Wildlife

Analysis. Like alternative 1, most wildlife populations on the islands would not be affected by alternative 2. No new developments or substantial changes in visitation patterns would occur that would affect wildlife.

More people would likely visit San Miguel Island to participate in the guided multiday hikes to see pinnipeds, although use levels would not be expected to substantially increase. So long as visitors are required to be accompanied by a ranger while hiking on the island, long-term negligible adverse impacts would occur to pinnipeds and other wildlife. The designation of a temporary camp on San Miguel Island for the guided hikes would result in the temporary displacement or change in behavior of some wildlife, such as insects, mice, and landbirds, but the animals should return when the people leave, resulting in a long-term negligible adverse impact.

The construction and use of new backcountry campsites and trails on Santa Rosa and Santa Cruz Islands in alternative 2 would result in the loss of wildlife habitat in localized areas, but if the facilities are located to avoid important wildlife areas, they should have a negligible impact on island wildlife populations.

As in alternative 1, a small increase in backcountry use might temporarily disturb and/or displace or change the behavior of some animals such as mice, songbirds, island jay, and island spotted skunk due to the presence of people on Santa Rosa and Santa Cruz Islands. However, once the visitors have passed by, these animals probably would return. Any improper food storage and feeding of wildlife in the backcountry could attract some animals such as mice and ravens, which also would have the same local negligible impact as alternative 1. Thus, the increase in backcountry use in alternative 2 would be expected to have a localized long-term negligible to minor adverse impact.

Most of the new administrative and visitor facilities proposed under alternative 2 on East Anacapa Island, in the Scorpion Valley area and Prisoners Harbor on Santa Cruz Island, at Bechers Bay and Johnsons Lee on Santa Rosa Island, and on San Miguel Island, would occur in sites that have been previously disturbed.

New developments on Santa Cruz Island (e.g., the NPS housing area near Prisoners Harbor), on Santa Rosa Island (e.g., the developed visitor area at Johnsons Lee), and on San Miguel Island (the temporary camp) would result in the loss of vegetation and wildlife habitat. However, most wildlife populations in the above areas have been altered by past human actions and little habitat would be lost. No known habitats important for breeding, nesting, or foraging would be lost by the construction of these developments — animals that are displaced could find other habitat on the islands to use. Some localized short-term negligible adverse impacts would occur during the construction periods, with some wildlife being temporarily displaced. Use of these developments also would be expected to have a long-term negligible to minor adverse impact on native wildlife habitat and populations in localized areas.

The construction of new facilities and expansion of facilities and the number of people (e.g., personnel, cooperators, and visitors) would increase the risk of accidental introductions of nonnative animals. As an example, the field station at Bechers Bay on Santa Rosa Island would result in an increase in luggage, food, equipment, and trash, which would in turn increase the chance of an accidental transfer of nonnative animals onto an island. Although the continued implementation of biosecurity measures would reduce this risk, if nonnative species were to be introduced, the possible effect on native wildlife habitat and populations would vary considerably, depending on the species, and cannot be predicted.

Several management actions under this alternative would affect nonnative vegetation, including control of nonnative tree species on Santa Cruz Island. This could affect species such as hummingbirds that feed on the eucalyptus flowers, and on animals such as scrub jays and island spotted skunks that feed on olives. Because other food sources are present, additional efforts to control the spread of these trees would be expected to have a long-term negligible to minor adverse impact on some wildlife populations of the island.

The periodic removal of sediment from the Scorpion Creek channel would be in a previously disturbed area where people and facilities have been present. Thus, this action should result in a long-term negligible adverse impact to wildlife populations.

As in alternative 1, although visitors would continue to be restricted from the area around the bakery in Scorpion Harbor, possible increased noise from more visitors, use of electronics in the interpretive displays, and administrative activities in the area may continue to adversely affect the maternity colony of Townsend's big-eared bats to an unknown degree under alternative 2.

Alternative 2 would result in several beneficial impacts on wildlife habitat due to the revegetation/restoration of areas on Santa Cruz and Santa Rosa Islands. On Santa Cruz Island, the restoration actions in the estuarine wetland at Scorpion would have a long-term minor beneficial impact for species such as salamanders, waterfowl, and passerines such as the orange-crowned warbler and ruby-crowned kinglet.

The closure of some roads and restoration of the landscape on Santa Cruz and Santa Rosa Islands would result in areas where few, if any, people ventured. However, visitor disturbance of wildlife would be highly unlikely in many of these areas — few people would likely go into many of the remote areas even if the roads were present, given the time needed to reach the areas. Thus, the beneficial impact of closing the roads on native wildlife

populations such as landbirds and mammals probably would be minor.

Expanded partnerships to do more research and monitoring would provide more information on the status and trends for the park's wildlife, which should better enable managers to identify future threats and avoid impacts. This action would be expected to have a long-term minor to moderate beneficial impact.

The wilderness designation on the islands would provide permanent long-term protection to the park's terrestrial wildlife. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit wildlife. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, wilderness designation by itself would result in few noticeable changes in wildlife on the islands.

Although alternative 2 would have some localized negligible to minor adverse impacts, from a parkwide perspective, alternative 2 would have a long-term minor beneficial impact on the park's terrestrial and marine wildlife populations, primarily due to restoration actions included under the alternative.

Cumulative Impacts. The replacement of the existing piers at Bechers Bay and Scorpion Harbor with new piers could adversely affect some marine mammals in the area. Noise from construction activities, including drilling and removing the existing piers, would likely harass pinnipeds in the area. However, these areas are not known to be key marine mammal habitat or harbor large numbers of marine mammals. With the application of appropriate mitigative measures and consultations with the National Marine Fisheries Services once more details are known about the location, size, and design of the piers, it is anticipated that the adverse impact on marine mammals would be short-term and minor.

Like alternative 1, many potential actions outside the park could substantially affect pinnipeds and seabird populations in the region, such as oil spills, pollutants, or changes in fish populations due to harvests. However, these impacts are considered unlikely and/or it is not possible to predict that these events would occur during the life of this plan.

Also, as described under alternative 1, the state marine protected areas around the park would be expected over time to have a long-term beneficial impact on both seabirds and pinnipeds, possibly decrease disturbance caused by boats in the areas, and increase the fish populations these species feed on. However, the state marine protected areas have been in place for only a short time; therefore, the magnitude of the impact is unknown.

The implementation of the sanctuary regulations, including protecting the area's water quality and limiting or prohibiting activities that impact the sea floor, probably has had a beneficial impact on the park's marine wildlife populations, preventing pollution that could affect wildlife, although the magnitude of the impact is unknown and would vary depending on the level of enforcement and education efforts.

On the other hand, as described in alternative 1, it is likely that squid boats fishing in park waters during the seabird breeding season, even with shielded lights and wattage restrictions, would result in mortality of Scripp's murrelets, ashy storm-petrels, black storm-petrels, rhinoceros auklets, and Cassin's auklets. It is uncertain what impacts the squid fishing is having on the park's seabirds since the location of the fleet varies from year to year, but it would be expected to result in some decreases in the abundance of local populations, resulting in a long-term unknown adverse impact. Also, squid fishing would likely affect pinnipeds feeding on squid. Squid are the primary prey of California sea lions and are eaten by most of the pinnipeds using the park. If squid harvest

levels increase relative to past harvest levels, and/or if harvest levels continue at high levels over the life of this plan, there could be a long-term adverse impact of unknown magnitude on the pinniped populations using the park (Jeff Laake, NMFS, Alaska Fisheries Science Center, pers. comm. March 18, 2005).

When the above adverse impacts are added to the potential beneficial effects of the marine protected areas and marine sanctuary regulations, and the minor beneficial and adverse effects of alternative 2, there could be a long-term beneficial cumulative impact to pinnipeds and seabirds using the park. However, given the uncertainty and lack of data, it is not possible to determine the magnitude of such a beneficial cumulative impact. Alternative 2 would add a small beneficial increment to this overall cumulative impact due to the new backcountry management zones and a negative increment due to the potential effects of increased numbers of kayakers and other recreational boaters visiting the park. However, neither of these actions would substantially alter the overall intensity of the cumulative impact.

As stated under alternative 1, past and ongoing restoration efforts on the islands have had a major beneficial effect on the islands' native terrestrial fauna. Ecosystem restoration actions on Anacapa, Santa Rosa, and Santa Cruz Islands would continue independent of this plan, including revegetation efforts. These actions, particularly the elimination of nonnative wildlife, would have a substantial beneficial effect on native wildlife populations, eliminating sources of competition, providing more habitat, and generally increasing native wildlife populations including side-blotched lizard, Channel Islands slender salamander, island fox, Santa Cruz gopher snake, mice, and landbirds such as the island scrub jay. The recovery of native vegetation due to these restoration efforts also would benefit native wildlife populations.

Overall, when the beneficial actions in alternative 2 (e.g., increased monitoring and research, and the closure of roads) are added to the above continuing ecosystem restoration impacts, there could be a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife populations, although alternative 2 would likely add only a minor beneficial increment to this impact. The minor adverse impacts of alternative 2 due to increased backcountry use and a few new small developments would not substantially detract from the overall beneficial cumulative impact. There could also be a long-term beneficial cumulative impact of unknown magnitude on seabirds and pinnipeds due to non-NPS actions in park waters, such as from the state marine protected areas and actions taken by the Channel Islands Marine Sanctuary.

Conclusion. Overall, most wildlife populations would not be affected by the actions under alternative 2. Compared to alternative 1, there would be some localized short- and long-term negligible to minor adverse impacts to wildlife habitat due to the construction of a few new small visitor and administrative developments and long-term negligible to minor adverse impacts due to increased numbers of people in backcountry areas on Santa Rosa and Santa Cruz Islands. Alternative 2 also would have a long-term minor beneficial impact on wildlife populations due to increased monitoring and research and closure of roads on Santa Rosa and Santa Cruz Islands. When combined with continuing restoration efforts, alternative 2 could have a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife (although the alternative would add a minor beneficial increment to these impacts). There could also be a long-term beneficial cumulative impact on the park's seabirds and pinnipeds of unknown magnitude when the effects of non-NPS actions in park waters, such as the marine protected areas, are added to the beneficial and adverse effects of alternative 2 (although alternative 2 would add very minor beneficial

and negative increments to these overall beneficial cumulative impacts).

Threatened and Endangered Species

Analysis. No new developments or uses would likely affect the snowy plover or island fox under alternative 2.

Snowy plover breeding numbers have been declining and may continue to decline on the islands due to several possible reasons, but no actions are being taken as part of this alternative that would likely affect this trend. Snowy plover habitat would have the same level of protection under alternative 2 as under alternative 1 — in both alternatives all of San Miguel and Santa Rosa Islands' primary snowy plover beaches would be closed to public use or closed during the nesting season. Although more dispersed use would be encouraged in alternative 2, it is not likely that visitor use patterns would substantially change on the beaches used by the plovers due to their remoteness. A small number of plovers sometimes use these beaches and some birds may be temporarily disturbed by visitors who land or hike on the beaches. However, no information indicates that current low numbers of visitors are adversely affecting the island's population. Assuming visitor use of the beaches does not substantially increase, and with sufficient educational outreach efforts and periodic NPS patrols, any impacts would be expected to be infrequent due to the small number of plovers scattered on the beaches. If visitor use impacts were identified in the future, the park staff would consult with the Fish and Wildlife Service to identify and implement appropriate mitigation measures such as signs or closing beaches to access. Consequently, alternative 2 would have about the same effect as alternative 1 — a long-term negligible to minor adverse impact, which may affect, but would not likely adversely affect, the park's snowy plover populations.

Visitors would often see the island foxes in the Scorpion Valley campground, and increasingly would see foxes in other locations on Santa Cruz, Santa Rosa, and San Miguel Islands due to the increased density of the recovering island fox populations. On rare occasions, these contacts may affect the behavior of some foxes. Even with tight management by park staff, with signs and personal contacts, some feeding of foxes may occasionally occur, such as at the Scorpion Valley campground, with the result that some foxes may become habituated to humans and expect to be fed. However, this would not be expected to noticeably affect the health and size of the island fox populations — only a few foxes would be affected by the feeding, which would not affect the abundance of the population.

Visitor shuttles driving on roads on Santa Rosa Island could hit and kill or injure foxes. However, this would be a rare occurrence — relatively few vehicles would be using the roads, the condition of the roads forces slower vehicle speeds, and given the extensive road system, it would be highly unlikely that a fox would be crossing a road at the same time and place as a vehicle. Closing roads also would reduce this possible mortality factor. Thus, alternative 2 would likely have the same effect on the island fox as alternative 1 — a long-term negligible adverse impact on the foxes, which may affect, but would not likely adversely affect, the park's island fox populations.

The increase in backcountry use on Santa Rosa Island under alternative 2 should not occur in areas where the major populations of Hoffmann's slender-flowered gilia occur. In addition, the Skunk Point population would be protected by zoning as a backcountry management zone and would be closed to public use. As a result, the abundance of this population could experience a small increase. Thus, alternative 2 would have a minor beneficial impact on this species compared to alternative 1, and may affect, but would not likely adversely affect, the gilia.

As in alternative 1, under alternative 2 there could be some trampling of the Santa Cruz Island chicory off the Lobo Canyon trail on Santa Rosa Island and trampling of the island rush-rose off the Montanon Trail on Santa Cruz Island if hikers wander off the trails. Because visitor numbers would not substantially increase, the potential for impacts occurring under alternative 2 would not be expected to differ from alternative 1. In both alternatives, with adequate warning given to visitors and ranger-led hikes, adverse impacts would not be expected. If impacts were to occur to these plant populations, park staff would consult with the Fish and Wildlife Service on additional actions to take to protect these populations, such as increasing education efforts or closing areas to access. Overall, alternative 2 would likely have a negligible adverse impact and may affect, but would not likely adversely affect, the Santa Cruz Island chicory and the island rush-rose.

The future control/eradication of nonnative Argentine ants on Santa Cruz Island, removing nonnative predators and/or competitors to the native invertebrate community, also would likely result in a long-term moderate to major beneficial impact on native wildlife populations.

No actions in alternative 2 would directly affect the habitat or populations of the Santa Rosa Island manzanita or Hoffmann's rock-cress and island barberry on Santa Cruz Island. But under alternative 2, as in alternative 1, these plants would face a threat if a wildfire were to occur on the islands, accidentally sparked either by visitors or NPS staff. With the potential for increased visitor use, and backcountry use being encouraged, the potential also would increase for an accidental fire to start and spread on Santa Rosa and Santa Cruz Islands — although the probability of this occurring would be expected to be low, given user capacity limits and the relatively few additional people coming to the islands who would be near these plants' habitat. Nevertheless, if a human-caused wildfire were to occur, it could quickly spread through the vegetation before a response could be organized and extirpate some or all of these small isolated populations. Although there would be a slight increase in the risk of a wildfire affecting one or several of these three listed species, the mitigation actions being proposed (e.g., informing people about the risk of fire, closing areas with high fire danger, monitoring populations of the plants, and establishing seed collections) would reduce the risk of wildfire affecting the populations on the islands. The risk of wildfire would always be present, consequently, alternative 2 would have the same long-term negligible adverse impact as alternative 1 — the alternative may affect, but would not likely adversely affect, the Santa Rosa Island manzanita, Hoffmann's rock-cress, and island barberry.

The wilderness designation on the islands would provide permanent long-term protection to the park's listed species. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit the species. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, as well as the protection bestowed by the ESA, wilderness designation by itself would result in few noticeable changes in the threatened and endangered species on the islands.

Overall, from a parkwide perspective, alternative 2 would have the same effect on the listed animal and plant species as alternative 1 – a long-term negligible to minor adverse impact on the park's listed species, which may affect, but would not likely adversely affect, these species. There could be a long-term minor beneficial impact to the Hoffmann's slender-flowered gilia.

Cumulative Impacts. In the case of the island fox, the Park Service is continuing to protect this species on the islands independent of this plan. Alternative 2 would close roads on Santa Rosa and Santa Cruz Islands, which would reduce a possible mortality factor and permit a

visitor transportation system, which could increase the potential for road kills. When the effects of alternative 2 are added to the positive effects of continued protection efforts, there could be a long-term minor beneficial cumulative impact on the island foxes that may affect, but would not likely adversely affect, the species (although alternative 2 would add a minor increment to this impact).

As noted in alternative 1, the number of western snowy plovers has increased at several locations on the California mainland during the past few breeding seasons due primarily to past and ongoing efforts to control predators, protect nesting areas from disturbance, and make people aware of the sensitivity of the birds. If their productivity continues to increase, plovers may spread into more areas and eventually may recolonize parts of the park. When these positive impacts are added to the effects of occasional disturbance of plovers caused by visitors under alternative 2, there would be about the same potential for a cumulative effect as alternative 1 — there would be the potential for a long-term cumulative minor to moderate beneficial impact that would likely affect, but not adversely affect, the species. Although alternative 2 may add a negative increment to this cumulative impact, the effect would be very minor and would not alter the overall intensity of the cumulative impact.

For the island rush-rose, no additional NPS or other agency actions are occurring that would affect this species. Thus, no cumulative impacts would occur on this species due to the additive effects of alternative 2.

In the case of the Santa Cruz Island chicory, it is expected that the Park Service and U.S. Geological Survey would continue to research methods for establishing or expanding populations on the islands to assist their recovery. This action would occur independently of this plan. No additional NPS or other agency actions or activities are occurring on or off the islands that are known to be affecting the chicory. Therefore, no cumulative impacts would occur due to additive effects of alternative 2 on the Santa Cruz Island chicory.

As noted above, alternative 2 would pose a risk of fire affecting the island barberry and Hoffmann's rock-cress, although with the proposed mitigation measures it is believed the alternative may affect, but would not likely adversely affect, the species. However, the risk of wildfire would always be present regardless of the alternative. No actions are occurring in alternative 2 that would directly affect these species. Independent of this plan, it is expected that the Park Service and U.S. Geological Survey would continue to research methods for establishing or expanding populations of island barberry to assist in its recovery. Adding the effects of alternative 2 to the other action would not be expected to result in a cumulative effect on the island barberry or Hoffmann's rock-cress.

The conversion of native vegetation to nonnative annual grasslands during the ranching era would be a continuing impact to Hoffmann's slender-flowered gilia on Santa Rosa Island. On the other hand, it is expected that research would continue on methods for establishing or expanding the Hoffmann's slender-flowered gilia, and efforts would likely continue to establish new populations or expand the boundaries of existing populations on the island. These actions, which would be taken independent of this planning effort, should help maintain the taxon. Although in the past there were impacts on one of the populations of the Hoffmann's slender-flowered gilia on Santa Rosa Island due to grading of the service road to East Point, this no longer occurs. No actions are occurring under alternative 2 that would affect this species. Thus, there would be no cumulative impact of alternative 2 on the Hoffmann's slender-flowered gilia.

As noted above, alternative 2 would pose a risk of fire affecting the Santa Rosa Island manzanita, although with the proposed

mitigation measures it is believed the alternative may affect, but would not likely adversely affect, the species. In addition to the possibility of a wildfire, several other impacts may occur on the Santa Rosa Island manzanita. Deer have browsed the manzanita in the past, but the recent removal of deer likely has had a beneficial impact on the plant. The plant, which also grows along roadsides, could be affected by NPS maintenance activities. In addition, the Park Service and U.S. Geological Service plan to establish a seed collection, which would help ensure that the manzanita would not be extirpated on the island. However, the Park Service would be taking no new actions under alternative 2 that would beneficially or adversely affect the plant. Thus, alternative 2 would result in no cumulative impacts that may affect the Santa Rosa Island manzanita.

Conclusion. Overall, no new developments or changes in visitor use or island management would occur under alternative 2 that would adversely affect the eight threatened and endangered animal and plant species being analyzed. Expected visitor use levels on the islands under alternative 2, like alternative 1, would likely result in a negligible to minor adverse effect, which may affect, but would not likely adversely affect, the island fox, snowy plover, Santa Cruz Island chicory, island rush-rose, Santa Rosa manzanita, Hoffmann's rock-cress, or island barberry populations. There could be a long-term minor beneficial impact to the Hoffmann's slender-flowered gilia. Alternative 2 would result in no cumulative impacts to the listed plant species, and there would be the potential for the same long-term minor beneficial cumulative impacts to the snowy plover and island fox as alternative 1.

Soundscape

Analysis. No substantial increases in use would be expected under alternative 2. Thus, no changes in noise levels due to the presence of visitors would occur in most of the park. But like alternative 1, the primary sources of noise on the islands under alternative 2 would continue to be from concentrations of visitors and boats, and the operation of machinery in localized areas, such as East Anacapa, Scorpion Valley, Smugglers Cove, Prisoners Harbor, and Bechers Bay. As in alternative 1, there would be long-term minor to moderate adverse impacts on the natural soundscape in these areas at varying times (e.g., holidays and weekends). Human-caused sounds (noise) would be apparent, changing the distribution of sound frequencies and oftentimes masking natural sounds. A long-term moderate adverse noise impact would continue to occur when aircraft land and take off on Santa Rosa Island and much less frequently on San Miguel Island (due to NPS and NMFS aircraft landing and taking off).

As in alternative 1, the occasional operation of administrative motor vehicles on the roads on Santa Cruz and Santa Rosa Islands also would continue to have a long-term minor adverse impact on the natural soundscape. These impacts would be highly transitory, but would continue over the life of this plan. In addition, under alternative 2 there would be an increase in motor vehicles being used to transport visitors to Torrey Pines and the trailhead at Lobo Canyon on Santa Rosa Island. Compared to alternative 1, operating additional vehicles on the Santa Rosa Island roads would likely have a long-term minor adverse impact on the natural soundscape, depending on the number, type, and frequency of vehicles driving on the roads. On the other hand, the closure of roads on Santa Rosa and Santa Cruz Islands would reduce the areas where motor vehicle noise would be heard and would have a long-term minor beneficial impact.

The periodic excavation of the channel in the Scorpion Valley and restoration actions in the Scorpion wetland would result in localized short-term minor to moderate adverse impacts on the soundscape due to noise generated from the operation of machinery and equipment.

Short-term minor noise impacts would occur in alternative 2 due to the construction of several administrative and visitor facilities in the park on East Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands. Construction equipment and people would generate higher levels of noise, masking the natural soundscape at times during the construction period.

Most of the new facilities would be in areas that have other visitors and/or administrative facilities (e.g., construction of the new housing unit on East Anacapa). Thus, the use of most of these facilities would result in long-term minor noise impacts in these areas compared to alternative 1. However, more people would use the new campground, field station, lodging area, and island transportation hub/operations center at Bechers Bay compared to alternative 1, and thus would result in increased levels of noise and a long-term minor to moderate adverse impact on the natural soundscape in these areas.

Several new facilities would be built in areas that currently receive little, if any, use in alternative 2. The new housing area and field camp at Prisoners Harbor, the new facilities at Johnsons Lee, and the field station at Bechers Bay all would increase use of these areas, which in turn would result in higher noise levels from people and equipment in the area. This would result in a short-term moderate adverse impact during construction and long-term minor to moderate adverse impact, depending on the level of use that occurs in these areas.

The possible development and use of new backcountry campsites and trails on Santa Cruz and Santa Rosa Islands, and the establishment and use of a temporary camp on San Miguel Island would result in more people using parts of the islands that received very little use in the past. Noise due to people in these areas would be noticeable compared to the no action alternative, and would result in a long-term minor to moderate adverse impact on the natural soundscape in the areas.

The wilderness designation on several of the islands would provide permanent long-term protection to the park's natural resources, including the soundscape. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit the natural soundscape. Since Channel Islands is already a national park and the islands are being largely zoned to protect natural resources, and with few human sources of noise in these areas, wilderness designation by itself would result in few noticeable changes in the islands' soundscape.

From a parkwide perspective, visitor use, new developments, and management actions in alternative 2 would result in a long-term minor adverse impact compared to alternative 1. However, changes in natural sound ambient conditions in localized popular use areas would result in a short- and long-term minor to moderate adverse impact to the soundscape.

Cumulative Impacts. Noise from high flying aircraft and from offshore ships and boats that are not connected to park visitors or management would likely continue to be periodically heard on the islands. Noise due to ecosystem restoration efforts independent of this plan (e.g., vegetation restoration efforts on the islands) and maintenance work also would be periodically heard on the islands. In addition, noise may be periodically heard due to maintenance of roads on Santa Rosa and Santa Cruz Islands, use of the Santa Cruz Island U.S. Navy lease holding, and testing and training operations in the Point Mugu Sea Range. Short-term noise would be heard when the Bechers Bay and Scorpion Harbor piers are replaced. When the noise impacts of the above actions are added to the noise impacts of visitors and new facilities under alternative 2, the overall noise levels would increase, particularly on Santa Cruz and Santa Rosa Islands. Thus, there would be the potential for a localized long-term minor to moderate cumulative adverse impact on the park's natural soundscape.

Conclusion. Like alternative 1, in most of the park, alternative 2 would have no effect on the natural soundscape. In localized areas, particularly at entry points to the islands, there would continue to be a long-term minor to moderate adverse noise impact due to concentrations of visitors, boats, and park operations. From a parkwide perspective, visitor use, new developments, and management actions in alternative 2 would result in a long-term minor adverse impact compared to alternative 1. However, changes in natural sound ambient conditions from construction and use of new visitor and administrative facilities in several developed areas, including parts of Bechers Bay, Prisoners Harbor, and Johnsons Lee, would result in a short- and long-term minor to moderate adverse impact to the soundscape. When the effects of alternative 2 are added to other actions occurring independently of the alternative, there would also be the potential for localized long-term minor to moderate cumulative adverse impacts on the park's natural soundscape.

CULTURAL RESOURCES

Archeological (including Submerged Maritime) Resources

Analysis. As staffing and funding permit, archeological resources would be surveyed, inventoried, and evaluated under national register criteria of evaluation to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of such resources for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

Archeological surveys and testing would occur as part of project planning and would precede any ground-disturbing activities (e.g., developing additional backcountry camping on Santa Rosa and Santa Cruz Islands, constructing park housing and an access road on the Santa Cruz "isthmus," developing an environmental / research camp on Santa Rosa Island, and concession development on east Santa Cruz and Santa Rosa Islands). Development increases the potential of encountering archeological resources. Significant archeological resources would be avoided during planning and construction. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources could not be preserved *in situ*, an appropriate mitigation strategy would be developed in consultation with the California SHPO and representatives of associated American Indian tribes. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed. These actions would help ensure that ground-disturbing activities would not impact the integrity of the site to the extent that the national register eligibility would be jeopardized. Because these efforts would be made to avoid or reduce impacts on archeological resources during ground-disturbing undertakings, any impacts on archeological resources would be permanent, adverse, and would be kept in the minor to moderate range.

Wilderness designation in alternative 2 would have a permanent negligible to minor adverse impact on archeological resources due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 2 also would have a long-term minor beneficial impact on archeological resources due to the permanent protection bestowed by wilderness

designation. The impact would be minor because the designation would result in few noticeable changes to these resources.

Provisions for more wilderness-dispersed visitor use opportunities on the islands would occur under this alternative. Archeological resources would be vulnerable to inadvertent damage and vandalism. Inadvertent impacts would include picking up or otherwise displacing artifacts, compacting cultural deposits, and creating social trails (which can lead to erosion and destabilization of the original site architecture). Intentional vandalism includes removing artifacts and probing and digging sites. Inadvertent damage and vandalism would result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence. Such adverse impacts could be mitigated through additional stabilization of the site, elimination of social trails to disturbed or vulnerable sites, and/or the systematic collection of surface artifacts for long-term curation. Continued ranger patrol and emphasis on visitor education regarding the significance and fragility of such resources and how visitors can reduce their impacts to archeological resources would help discourage vandalism and inadvertent impacts and minimize adverse impacts. Potential adverse impacts would be permanent and minor.

More controlled visitor access to the waters surrounding the islands would better protect submerged maritime resources from boat anchors and artifact hunting, which would be a long-term minor beneficial impact.

Cumulative Impacts. The past action of eliminating cattle, deer, elk, and horses from Santa Rosa Island has resulted in archeological resources being better protected because they are not being disturbed or compacted by these animals. Impacts to archeological resources would be site-specific, long-term, minor, and beneficial.

The past, present, and future action of restoring native plant communities through the removal of nonnative plants and planting native plants has resulted in, or has the potential to result in, the disturbance of unknown archeological resources. Impacts to archeological resources would be site-specific, long-term, minor, adverse, and permanent.

The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 2 would result in permanent minor to moderate and adverse and long-term minor beneficial impacts. These impacts, in combination with the long-term minor adverse impacts of other past, present, and future actions, would result in long-term minor beneficial impacts and permanent minor to moderate adverse cumulative impacts on archeological resources. The adverse impacts of alternative 2 would be a minor component of the adverse cumulative impact.

Conclusion. Under alternative 2 adverse impacts due to the loss or destruction of archeological resources in the park would be minimized as a result of more controlled visitor access, more emphasis on preservation treatment and site monitoring, and increased public education for resource stewardship. Thus, alternative 2 would result in permanent minor to moderate adverse impacts to a discrete number of sites and long-term minor beneficial impacts on archeological resources.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 2 would most likely be *no adverse effect* on archeological resources.

Ethnographic Resources

Because alternative 2 would provide for a slight increase in the number of island visitors, construction of new facilities for visitor use, and an expanded diversity of visitor experiences in the park, actions under this alternative could be expected to have some long-term negligible to minor adverse impacts on ethnographic resources. However, consultations with the Chumash would be undertaken to minimize and mitigate such impacts; therefore, the impacts, although noticeable, would neither appreciably alter resource conditions nor alter the relationship between the resource and Chumash practices and beliefs.

Research regarding other traditionally associated groups, such as fishermen, vaqueros, and others, would increase the understanding of other ethnographic resources and values of the islands. This information would allow park staff to more adequately consult with these groups, interpret their history, and identify and protect associated resources. This would result in a long-term minor beneficial impact on ethnographic resources.

Wilderness designation in alternative 2 would have a long-term negligible to minor adverse impact on ethnographic resources due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 2 also would have a long-term minor beneficial impact on ethnographic resources due to the permanent protection bestowed by wilderness designation. The impact would be minor because the designation would result in few noticeable changes to these resources.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 2 would result in long-term negligible to minor adverse impacts and long-term minor beneficial impacts. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term minor beneficial cumulative impacts to ethnographic resources. The adverse impacts of alternative 2 would be a slight component of the cumulative impact.

Conclusion. Actions under alternative 2 would generally have long-term negligible to minor adverse impacts and long-term minor beneficial impacts on ethnographic resources.

Section 106 Summary. For purposes of Section 106, the determination of effect of actions under this alternative on ethnographic resources would be no adverse effect. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 2 would be a *no adverse effect* on ethnographic resources.

Historic Structures/Buildings

Analysis. As staffing and funding permit, structures and buildings in the park would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of a structure, building, or historic district for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

To appropriately preserve and protect national register-listed or eligible structures and buildings, all stabilization, preservation, and rehabilitation efforts, including the

rehabilitation of Prisoners warehouse on Santa Cruz Island for use as a visitor contact station and rehabilitation of ranch buildings on Santa Rosa Island for NPS or concessioner use would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (1995) and NPS Management Policies for cultural resources (section 5.3.5). Any materials removed during rehabilitation efforts would be evaluated to determine their value to be added to the park's museum collection and/or their comparative use in future preservation work at the site. Any adverse impacts would be long-term and minor to moderate depending on the nature and extent of the alterations to accommodate new uses and current codes.

Historic structures and buildings could suffer wear and tear from visitation, and unstaffed or minimally staffed structures and buildings could be more susceptible to vandalism. Continued ranger patrols and emphasis on visitor education regarding their significance and the fragility of such resources and how visitors can reduce their impacts to historic structures and buildings would discourage inadvertent impacts and vandalism, minimizing adverse impacts. Also, monitoring the carrying capacity of historic structures and buildings could occur, which would result in imposition of visitation levels or constraints that would contribute to the stability or integrity of the resources without unduly hindering interpretation for visitors. Any adverse impacts to historic structures and buildings from visitation would be long-term and negligible to minor.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 2 would result in site-specific long-term minor to moderate adverse impacts. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term minor adverse cumulative impacts on historic structures and buildings. The adverse impacts of alternative 2 would be a minor component of the adverse cumulative impact.

Conclusion. Actions under alternative 2 would generally have greater impacts on historic structures and buildings than those listed under alternative 1. Visitor use and preservation treatments would result in long-term minor to moderate impacts on historic structures and buildings, while survey and research would have a long-term minor beneficial impact.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 2 would be *no adverse effect* on historic structures and buildings.

Cultural Landscapes

Analysis. As staffing and funding permit, landscapes and their features and patterns would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of a landscape for listing in the national register are a prerequisite for understanding the landscape's significance, as well as the basis of informed decision making in the future regarding how the landscape and its features and patterns should be managed. Such surveys and research would have long-term minor beneficial impacts.

To appropriately preserve and protect national register-listed or eligible cultural landscapes, all stabilization and preservation efforts would be performed in accordance

with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* and with NPS *Management Policies for the Treatment of Cultural Landscapes* (section 5.3.5.2). Any adverse impacts would be long-term and negligible to minor.

A new housing unit would be constructed in the Anacapa Island Light Station Historic District. Careful design would ensure that the construction of the housing unit would minimally affect the scale and visual relationships among landscape features. The new construction would be similar in scale, style, size, and materials to existing structures and buildings, and the landscape's land use patterns, topography, patterns of vegetation, and circulation systems would be unaltered. Any adverse impacts would be long-term and minor.

Rehabilitation of the cultural landscapes at Rancho Del Norte and Scorpion Valley, and the rehabilitation and adaptive use of the facilities at the ranch to provide for lodging and food service would be done in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Introduction of new structures for concession operations at Scorpion Valley and the Bechers Bay Ranch could have minor to moderate adverse impacts, depending on the sensitivity of their design and location. Any adverse impacts would be long-term.

The introduction of a small concession-operated vehicle transport system on Santa Rosa Island would result in negligible impacts to cultural landscapes. Vehicles would use existing roads, and land use and circulation patterns would be unaltered.

The closure of unneeded roads and restoration of the landscape or conversion of such roads to trails on Santa Rosa and Santa Cruz Islands would alter the spatial organization, land use, and circulation patterns of the landscape. Any impacts would be long-term, moderate, and adverse.

The historic olive grove at Smugglers Ranch on Santa Cruz Island would be maintained in a manner that perpetuates the grove as a cultural landscape feature but prevents the olive trees from spreading, as much as possible. The park would develop an olive orchard management plan that addresses the preservation of the orchard while preventing the spread of olive trees beyond the cultural landscape. For example, if it is not possible to control the spread of olives, approximately one-fifth of the grove, consisting of the trees that are the largest olive producers, would be removed and replaced with an appropriate substitute, such as nonfruiting olive trees. This reduction would be minimal enough to ensure that the integrity of the historic olive grove as a historic landscape is retained, and the cultural landscape would continue to be eligible for listing in the national register. The remaining four-fifths of the grove would be maintained, thus preserving the physical character of the grove: the plantings, patterns, density, and grid lines of the trees. The impact from the tree reduction would be long-term, moderate, and adverse.

The eucalyptus trees at Scorpion Valley are contributing elements of the cultural landscape and, therefore, their possible replacement with less-hazardous native trees would affect character-defining features of the Scorpion Valley cultural landscape. However, the majority of the contributing landscape features would be retained, preserving the integrity of the cultural landscape such that it would continue to be eligible for listing in the national register. The impact from the tree removal would be long-term, moderate, and adverse.

Construction activities would temporarily introduce nonhistoric visual, audible, and atmospheric elements into affected cultural landscapes. Such intrusions would be short-term, lasting only as long as construction. Any

adverse impacts would be short-term and negligible to minor.

Cumulative Impacts. The past, present, and future actions of adding small-scale features to the landscape (antennas, solar array, weather station, and other equipment) and restoring native plant communities through the removal of nonnative plants and planting native plants has and would continue to result in impacts on significant landscape patterns and features (e.g., spatial organization, land use patterns, circulation systems, topography, structures and buildings, cluster arrangements, small-scale features, views and vistas, and archeological resources). Impacts on cultural landscapes would be site-specific, long-term, minor to moderate, and adverse.

The past, present, future action of allowing researchers to study and inventory and monitor cultural resources via a research permit would be beneficial, negligible and long-term.

As described above, implementation of alternative 2 would result in impacts that are adverse, minor to moderate, site-specific, and long-term. These impacts, in combination with the long-term minor to moderate impacts of other past, present, and future actions, would result in long-term, minor to moderate, adverse cumulative impacts to cultural landscapes. The adverse impacts of alternative 2 would be a minor component of the adverse cumulative impact.

Conclusion. Actions under alternative 2 would have greater impacts on cultural landscapes than those listed under alternative 1 due to more actions involving cultural landscape features.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 2 would be *no adverse effect* on cultural landscapes.

VISITOR EXPERIENCE, INTERPRETATION, AND EDUCATION

Analysis

Under alternative 2 visitors would continue to engage in a variety of recreational activities, encounter low to moderate levels of visitation on the islands, and participate in group activities. Existing opportunities to access the island would not change, but the origins of concession operations that provide access to the islands would no longer be limited to Oxnard and Santa Barbara. Some visitors would not have to drive as far to reach a concession boat to visit the islands. For these visitors this would be a long-term minor to moderate beneficial impact on their experience. Although opportunities to visit the islands would continue to be provided, some visitors would be unable to afford passage or may find it difficult to reach the transportation providers. This would continue to have a long-term moderate adverse impact on those unable to travel to the islands.

The visitor center on the mainland in Ventura Harbor would be expanded to provide new orientation, interpretation, and educational opportunities for a greater number of visitors. For the visitors who are able to participate this would be a long-term minor beneficial impact. The underwater video program would extend into the school year, allowing not only expanded viewing opportunities in the visitor center but ultimately to schools both locally and nationwide. This would be a long-term moderate beneficial impact on the educational experience of students who visit the visitor center as well as students in remote locations. With an expanded visitor center, visitors would also be able to explore the full array of interpretive themes of the park, including the history of ranching on the islands as well as of the Chumash Indians, two themes not currently explored in depth. This would be a long-term minor to moderate beneficial impact on interpretation in the park.

Under alternative 2 a core interpretive team would be established to support on-island visitor services and programs. This would be a long-term minor to moderate beneficial impact on the interpretation and educational services in the park.

The wilderness designation on the islands would permanently preserve opportunities for wilderness-related recreation and preclude activities and developments that could adversely affect these activities. Designating wilderness also would not preclude recreational activities that already occur. However, the islands are already remote and provide many opportunities for solitude and primitive, unconfined recreation. The park's enabling legislation also limits the level of visitor use. Thus, designating wilderness would not affect most visitors, and would have a long-term minor beneficial effect.

East Anacapa Island

The historic lighthouse and accompanying exhibits would be open to the public for the first time. This would be a long-term minor beneficial impact on visitor experiences in the park because it would open a landmark on one of the most popular destinations in the park to visitation. The number of sites in the campground would be reduced to 16 and the remaining sites would be dispersed within the existing campground. The decrease in campsite density would have both adverse and beneficial consequences. Some people who would want to camp on East Anacapa might not be able to do so when they want, which would be a long-term moderate adverse impact on some visitors' experiences. On the other hand, modifications to the campground could decrease the visual impact of the campground for some visitors who find it intrusive. There could also be reduced conflict between day use visitors walking the trails and campers when the campsites are dispersed across the campground away from the trail. This would be a long-term minor beneficial impact for these visitors. In both cases the overall impact of this action would be negligible because of the number of visitors who would be affected by the change.

Middle Anacapa Island

Visitor access would continue to be limited to groups with a NPS-approved guide and the visitor experience would not change. Thus, alternative 2 would have the same long-term minor beneficial impact on visitor experience as alternative 1.

West Anacapa Island

Access would continue to be limited to Frenchy's Cove, and the visitor experience in the cove would not change. Thus alternative 2 would have the same long-term minor beneficial impact on visitor experience opportunities on West Anacapa Island as alternative 1.

Santa Cruz Island

With the establishment of a visitor contact station at Prisoners Harbor, more interpretation opportunities would be available on the island. This would be a long-term minor to moderate beneficial impact on education and interpretation on the island, especially for those who are coming to the island for the first time. The establishment of an education/volunteers camp on the island would provide additional and in-depth opportunities for more education groups to experience and learn more about the park's terrestrial, marine, and cultural resources. This would be a long-term moderate beneficial impact. Once the backcountry management plan is completed, there might be more opportunities for visitors who want to camp and hike in the island's interior. This would be a long-term minor to moderate beneficial impact on the visitor experience because more areas of the island would be available for exploring.

All but 10 of the campsites in the campground in Scorpion would be closed during the winter because of the potential for flooding. This would have both beneficial and adverse effects. For those people who were able to camp in the winter, the closure would be a long-term minor beneficial impact because the risk from flooding would be reduced and because with fewer people the quality of the experience might improve for some. On the other hand, some visitors who wanted to winter camp might not be able to camp when they wanted to, which would result in a long-term minor to moderate adverse impact, depending on if they could find other suitable dates to camp.

For health and safety reasons most of the historic eucalyptus groves in the campground would be replaced with native or noninvasive varieties. The eucalyptus trees drop limbs and are a hazard for visitors. Small stands of the eucalyptus trees and the long row of trees between upper and lower Scorpion would remain to provide visitors with a sense of the historic ranching landscape. Because visitors' risk of injury as a result of the eucalyptus trees would be reduced, this would be a long-term beneficial impact on visitor experience in the park. However, until the new trees mature, the lack of shade would be perceived as detracting from the visitor experience. Thus, overall the removal of eucalyptus groves from the campground would be perceived as a long-term moderate adverse impact.

Santa Rosa Island

Formal educational opportunities on the island (and in the park as a whole) would be expanded through the development of a research/education field station. The research facility would provide additional and in-depth opportunity for more education groups, researchers, and others to experience and learn more about the park's terrestrial, marine, and cultural resources. Thus, the education facility would have a long-term moderate beneficial impact on the educational opportunities in the park. The development of a visitor contact station with exhibits in the ranch complex would create additional opportunities for visitors to become oriented, to gain a more in-depth understanding of the islands, and to make a stronger connection between the interpretive themes and the island's natural and cultural resources. A visitor contact station would be a long-term minor to moderate beneficial impact on visitor interpretation on the island.

The proposed concession lodging operation would allow visitors who do not want to camp, such as the elderly and families with young children, an opportunity to stay overnight on the island and give them additional opportunities to experience the island. The adaptive reuse of the ranch buildings for this use would be a long-term moderate beneficial impact for visitors on Santa Rosa Island.

The proposed concession island-based transport operation would increase the diversity of available island recreational experiences. With transportation, visitors would be able see more of the island outside of Bechers Bay. Day use visitors would be able to experience more of the island, and backpackers would also be able to venture further into the backcountry. These visitors would be beneficially affected by this new opportunity. The experience of some visitors who are walking on the roads and are passed by the shuttles may be slightly degraded, but this would occur infrequently due to the relatively few visitors who are hiking and the few shuttles driving on a couple of roads. Overall, the proposed transportation operation would be a long-term moderate to major beneficial impact for visitors to Santa Rosa Island.

Once the backcountry management plan is completed there may be more opportunities for visitors to camp and hike in the island's interior. This would be a long-term minor to moderate beneficial impact on visitors, depending on what the backcountry plan

proposes, because more areas of the island would likely be available for exploring.

With more opportunities to recreate, explore, and learn about Santa Rosa Island in alternative 2, more people would likely visit the island. Island user capacity limits and other constraints on the concessioners' operations (e.g., weather conditions, boat sizes, transit times, and fuel costs) would limit the number of people who actually come out to the island. Visitors would also be dispersing out to other locations from Bechers Bay. Nevertheless, larger numbers of people would likely be present at the Bechers Bay developed area in alternative 2 compared to alternative 1. This would have both beneficial and adverse impacts on visitors' experiences. Because more people could visit and enjoy this area there would be a long-term minor to moderate beneficial impact on many visitors' experiences. On the other hand, for some visitors (particularly people who have visited in the past) the area might be perceived as being more crowded, which could have a long-term minor to moderate adverse impact on these visitors' experiences.

San Miguel Island

If guided multiday trips on the island were provided, this would provide an experience not currently available on the island. (Most visitors cannot currently hike to Point Bennett to see the pinnipeds in the time they have available.) As people learned about the opportunity, more people would likely try to come to the island to take advantage of this experience. This would be a long-term major beneficial impact for visitors because of the uniqueness of the experience, even though only a relatively small number of visitors would be impacted.

Santa Barbara Island

No actions would be taken under this alternative that would affect visitor use on this island.

Cumulative Impacts

With a few exceptions, there would be no actions occurring inside or outside the park (independent of alternative 2) that could result in cumulative visitor experience impacts. Ongoing and future restoration and other management activities, particularly on Santa Rosa and Santa Cruz Islands, would result in temporary closures of areas for recreational use. This would have short- and long-term minor adverse effects on visitor experience opportunities, because although areas would be closed, there would usually be other opportunities for visitors to take advantage of their time on the islands.

When the adverse effects of NPS restoration and administrative activities are added to the additional recreational opportunities on Santa Rosa Island under alternative 2, there would be a long-term minor to moderate beneficial cumulative impact on visitor experience opportunities on Santa Rosa Island.

Conclusion

Visitor experiences, including recreational opportunities as well as interpretation and educational opportunities, would increase in much of the park under alternative 2, compared to alternative 1. Overall, alternative 2 would have a long-term moderate beneficial impact on opportunities for visitor experiences, largely due to the increase in recreational opportunities on Santa Cruz and Santa Rosa Islands that would allow visitors a greater diversity of experiences on the islands. The expansion of the visitor center in Ventura, the new research/education field station on Santa Rosa Island, and the guided multiday trips on San Miguel Island would all

contribute to this impact. On-island interpretation would also increase with new visitor contact stations (in adaptively used structures) on Santa Cruz and Santa Rosa Islands, resulting in long-term minor to moderate beneficial impacts on visitor experience opportunities. On the other hand, with more people visiting Santa Rosa Island, there could be long-term minor to moderate adverse impacts on the visitor experience at Bechers Bay due to perceived crowding. There could be a long-term minor to moderate beneficial cumulative impact on recreational opportunities on Santa Rosa Island when the additional recreational opportunities available under alternative 2 are combined with the reductions in recreational opportunities due to restoration and other management activities.

WILDERNESS CHARACTER

Analysis

Under alternative 2, 66,576 acres or approximately 53% of the land portion of the park would be proposed for wilderness designation. Assuming Congress approves the wilderness proposal, the wilderness resources of all of Middle and West Anacapa Islands, most of the NPS lands on Santa Cruz Island, almost all of Santa Rosa Island, and almost all of Santa Barbara Island would be permanently protected. The areas would be permanently undeveloped, and would be protected and managed to preserve their natural character. Visitors would be assured of outstanding opportunities for solitude and primitive, unconfined recreation. Because of the large area designated as wilderness, this would have a long-term major beneficial impact on wilderness character.

No other actions are being proposed in the alternative that would affect visitation or wilderness character on Santa Barbara Island. However, several other actions in the alternative would affect the qualities of wilderness character of the other islands. Although visitor use levels in alternative 2 would likely increase as more visitors come to the islands, compared to alternative 1, visitors should still be able to find opportunities for solitude and primitive unconfined recreation in the larger wilderness areas on Santa Rosa and Santa Cruz Islands. For example, more visitors may go out into the interior of Santa Rosa Island using the concession vehicles, but given the large area of the island, it is unlikely that visitors would often encounter other visitors. Although encounters would be of short duration, they would periodically occur over the life of the plan and are considered long-term impacts. Thus, any adverse impacts on wilderness character would be expected to be long-term and minor.

As in all of the alternatives, certain parts of the proposed wilderness area would be restricted or closed to visitor use seasonally or annually, including Middle and West Anacapa Islands, and certain beaches on Santa Rosa Island. These actions would affect opportunities for primitive, unconfined recreation. However, because there would be no change between alternative 2 and alternative 1, there would be no effect — alternative 2 would have the same long-term minor adverse impact as alternative 1.

Under alternative 2 about 67 miles of existing roads within the proposed wilderness area on Santa Rosa Island and about 12 miles of roads within the proposed wilderness area on Santa Cruz Island would be closed and either converted to trails or recontoured and revegetated. Although the application of wilderness minimum requirements would help minimize impacts of this restoration effort, in the short term, these actions would affect the untrammeled quality of the area, resulting in a moderate adverse impact to wilderness character in these areas. However in the long term, these actions would improve the natural quality of the landscape, resulting in a moderate to major beneficial impact.

None of the proposed developments in Scorpion Valley, Prisoners Harbor, Bechers

Bay, and Johnsons Lee would occur in areas that would be proposed for wilderness and, therefore, would have no effect on wilderness character.

The future backcountry management plan could also increase the opportunity for backcountry camping and trails on Santa Cruz and Santa Rosa Islands. An increase in backcountry sites would increase opportunities for both primitive and unconfined recreation on the island and would be a long-term minor beneficial impact. An increase in the number of backcountry camping sites and trails also could increase opportunities for solitude because more visitors would have the opportunity to camp and hike farther away from the developed areas. The increase in the number of visitors would be offset by the size of the area open to visitors, as well as increases in the areas open to hiking and camping. The campsites and trails also would adversely affect the natural quality of the islands. The magnitude of these beneficial and adverse impacts would depend on the number and location of backcountry campsites and trails, and cannot be determined in this impact assessment.

With regard to the other features of value (the fifth quality of wilderness character), as stated earlier, alternative 2 would have a long-term minor adverse impact on paleontological resources and a permanent long-term negligible to minor adverse impact on ethnographic and archeological resources. These impacts would be due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 2 also would have a long-term negligible to minor beneficial impact on paleontological and ethnographic and archeological resources due to the permanent protection bestowed by wilderness designation. The impact would be negligible to minor because the designation by itself would result in few noticeable changes to these resources.

From an overall parkwide perspective, alternative 2 would have a long-term major beneficial impact on wilderness character, primarily due to the designation of much of the park as wilderness and the closure/restoration of roads on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts

Several NPS projects would occur on the islands independent of alternative 2, including vegetative restoration efforts, threatened and endangered species recovery efforts, and control of nonnative species, which would adversely affect opportunities for solitude. These management activities also would adversely affect the "untrammeled" or uncontrolled quality of wilderness character in the short term (although the application of the wilderness minimum requirements process would help mitigate these impacts). On the other hand, these NPS resource management activities on the islands would improve the long-term naturalness of the lands proposed for wilderness. When these actions are added to the major beneficial impacts of the actions being proposed in alternative 2, there would be the potential for a long-term major beneficial cumulative impact primarily due to the proposal to designate much of the park as wilderness.

Conclusion

Overall alternative 2 would have a long-term major beneficial impact on wilderness character primarily due to the designation of much of the park as wilderness and the closure/restoration of roads on Santa Rosa and Santa Cruz Islands. When other NPS management actions independent of the plan, such as revegetation efforts, are added to the effects of alternative 2, there would be the potential for a long-term major beneficial cumulative impact.

PARK OPERATIONS

Analysis

As in all of the alternatives, the park's physical geography would pose an operational challenge. NPS operations would continue to be characterized in alternative 2 by (1) a substantial number of facilities or assets (e.g., visitor contact stations, campsites, trails, and historic structures and landscapes) that must be maintained; (2) visitor-related operational demands (e.g., interpretive services, patrols, and campground maintenance) that are much greater in the busy summer visitor season than at other times of the year; and (3) island operations that command a disproportionate share of the park's annual operating budget due to the logistics of transporting equipment, materials, and staff to and from the islands.

Alternative 2 would both beneficially and adversely affect park operations. The alternative calls for new facilities and management actions that would require new staff as well as investments to plan and implement. These new facilities and projects would add to the scope and complexity of park operations. Assuming the new facilities and projects are spread out over the 20- to 40-year life of the plan and that new staff and funding are also carefully planned for and integrated into existing park operations would help mitigate potential disruptions to and conflicting workload demands on park staff. Nevertheless, some adverse impacts would still occur, as noted below.

Alternative 2 would add 16 FTE employees, who would work on the various facilities and projects called for under the plan. These new employees would have a long-term moderate beneficial impact on the park's operational capabilities. However, this additional staff also would require office space and equipment, information technology and telecommunications, human resources, and other support. This would result in long-term minor adverse impacts on park operations by further straining park operational resources.

Alternative 2 would require additional managerial and contracting staff time to oversee the design and construction of new facilities both on the mainland (e.g., expansion of the existing visitor center) and on the islands (e.g., new campgrounds, a day use facility at Johnsons Lee, ranger stations, an education/volunteers camp, and a research/education field station). Rehabilitation/adaptive reuse of the Bechers Bay ranch complex would take substantial time to manage. Removal of facilities, such as roads on Santa Rosa Island and reductions in the campgrounds at Scorpion Valley and Anacapa Island, also would take staff time to oversee. Establishment of a concession program, covering lodging, food, and visitor transportation on Santa Rosa Island, would take substantial amount of time in the short term to start, but then would take less staff time to run. New interpretive efforts, such as at Oxnard and the enlargement/development of interpretive exhibits at the mainland visitor center and on the islands would take time. Additional effort would be needed to maintain all of the new facilities. Providing a new guided overnight visitor opportunity on San Miguel Island would require staff time. Additional effort also would be needed to monitor the user capacity indicators to ensure unacceptable conditions are not occurring. With the designation of wilderness, maintenance staff would be required to use the minimum requirements process to determine what kind of equipment would be needed to build and maintain trails. Visitor and resource protection and natural and cultural resource staff would be limited in their use of motorized vehicles in wilderness, which could reduce their effectiveness. Although the staff could continue to conduct natural resource management, surveys, patrols, and other day-to-day operations in the wilderness, it would likely be more time consuming and costly, which in turn would reduce the work that is completed. Even with phasing of the new developments and new staff and funding, all of these actions considered together would likely have short-term moderate to major adverse impacts and

long-term moderate adverse impacts on park operations.

Wilderness designation on the islands would avoid some potential developments and activities that might otherwise require park staff time. However, wilderness designation would require the staff to carefully consider its activities in these areas, completing minimum requirement analyses. Although the staff could continue to conduct surveys, patrols, and other day-to-day operations in the wilderness, it may be more time-consuming and costly. This change would be noticeable to the staff but not to visitors. Thus, wilderness designation would have a long-term minor adverse impact on park operations.

Alternative 2 also would result in several actions that would beneficially affect park operations. Providing new office space on the mainland, replacing temporary housing at Scorpion Valley with permanent housing and office space, moving maintenance operations to a new facility at Scorpion Valley, providing employee housing at Prisoners Harbor, providing new staff housing facilities at Bechers Bay and on Anacapa Island, substantially decreasing the number of roads to be maintained on Santa Rosa Island, and providing new ranger stations at Johnsons Lee and Bechers Bay all would beneficially affect park operations by improving staff productivity and efficiency in managing park resources and visitors. This would have a long-term moderate to major beneficial impact on park operations.

Overall, considering all of the direct potential impacts, over a 20- to 40-year timeframe, with additional staff and funding and adequate phasing of new developments and projects, compared to alternative 1, alternative 2 would be expected to have a long-term minor to moderate beneficial effect on park operations. Park staff would be more productive and efficient in managing resources and visitors, and achieving desired conditions in alternative 2 compared to alternative 1.

Cumulative Impacts

As described in the cumulative impacts scenario, a large number of past, ongoing, and future actions independent of the plan would be expected, including maintenance and replacement of existing facilities, issuing permits for scientific research and commercial services, ecosystem restoration efforts, and other resource management activities. In addition, park staff would continue to be engaged in actions and projects independent of keeping the park functioning, such as coordination/consultation activities on actions that could affect the park, environmental education outreach activities, and implementation and enforcement of the Channel Islands National Marine Sanctuary General Management Plan (2009) and regulations. Some of these projects require intensive planning, coordination, and involvement from park staff, and represent a substantial operational burden on park staff. All of these actions, taken together, would likely have a long-term moderate adverse impact on park staff.

Overall, when the long-term minor to moderate beneficial impacts of park operations associated with alternative 2 are combined with the effects other ongoing and planned projects, there would likely be a long-term moderate adverse cumulative impact on park operations. Alternative 2 would slightly reduce the overall adverse cumulative impact.

Conclusion

Alternative 2 would have both beneficial and adverse impacts on park operations. Adverse effects would be due to changes in facilities and new management actions, including concession management, new interpretive efforts, and increased monitoring of the park. Overall, however, assuming careful phasing of new developments and management actions, compared to alternative 1, alternative 2 would be expected to have a long-term minor to moderate beneficial impact. This would be

primarily due to increased staff and funding, new staff/administrative facilities, and reductions in some facilities (e.g., roads on Santa Rosa Island). When the effects of alternative 2 are combined with other ongoing and likely future projects, there would be the potential for a long-term moderate adverse cumulative impact on park operations. Alternative 2 would slightly reduce the overall adverse cumulative impact.

UNAVOIDABLE ADVERSE IMPACTS

The following paragraphs describe the more important (moderate and major intensity) adverse impacts that would result from implementing alternative 2. These are residual impacts that would remain after mitigation was implemented. The negligible and minor impacts are described in the preceding analysis.

Under alternative 2 unavoidable moderate adverse impacts on some natural resources would occur in localized areas in the park. Even with road restoration efforts, erosion on several roads on Santa Rosa Island could still result in localized minor to moderate adverse soil impacts. Periodic excavation of sediments from the Scorpion Creek channel to protect existing facilities would have a minor to moderate adverse effect on natural floodplain values. In localized areas, particularly at entry points to the islands such as East Anacapa, Scorpion Valley, Prisoners Harbor, Smugglers Cove, and Bechers Bay, there would continue to be minor to moderate noise impacts due to concentrations of visitors, boats, and park operations. As in alternative 1, long-term moderate adverse noise impacts would continue to occur when aircraft land and take off at the existing airstrip on Santa Rosa Island. Increased visitor and administrative uses under alternative 2 also would increase the risk of nonnative species introduction and wildfires, which in turn could adversely affect the islands' vegetation and native wildlife populations.

The lack of adequate interpretive media on the islands to give visitors a better understanding and appreciation of elements of the other primary interpretive themes and the lack of firsthand interaction with park resources would have an unavoidable long-term minor to moderate adverse impact on the visitor experience.

Opportunities to visit the islands would continue to be provided, although some visitors would be unable to afford passage or may find it difficult to reach the transportation providers. This would continue to have an unavoidable long-term moderate adverse impact on those unable to travel to the islands.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds expended on both labor and construction materials. The construction of new facilities would result in the irreversible loss of natural resources in localized areas.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Under alternative 2 most of the park would continue to be protected in a natural state and would maintain its long-term productivity — the Park Service would manage the islands to maintain ecological processes and native biological communities. Most areas would be protected in their current state and would maintain their long-term productivity. With increased use levels resulting from the alternative, some vegetation and soils in localized areas may be adversely affected (e.g., trampling of vegetation), which would reduce

the productivity of these areas. In developed areas (e.g., part of East Anacapa Island, Scorpion Valley, Prisoners Harbor, Bechers Bay, and Johnsons Lee) the primary short-term uses would be for recreational and education/ scientific use. Under alternative 2 there would be expanded development to support these uses and for park operations, resulting in some localized loss of ecological productivity in areas that had no previous development. Adverse impacts on the areas' vegetation and soils would reduce the long-term ecological productivity of these areas, although overall, only a relatively small reduction in the park's productivity would be expected. On the other hand, efforts to restore vegetation in a few sites (e.g., East Anacapa campground) and along the roads on Santa Rosa Island, would increase long-term productivity in these areas. As in all of the alternatives, maintaining facilities in the Scorpion Creek floodplain would continue a long-term reduction in natural and beneficial values of the floodplain and prevent it from functioning naturally.

IMPACTS OF ALTERNATIVE 3

NATURAL RESOURCES

Soils

Analysis. Alternative 3 would result in little change to soils on Anacapa, Santa Barbara, and San Miguel Islands. Assuming that use levels do not substantially change and visitors largely stay at developed areas and do not hike off trails, the alternative would have a negligible adverse impact on soils due to erosion caused by visitors. The construction of a new housing unit on East Anacapa Island would result in the loss/modification of soils, but would have a long-term negligible to minor adverse impact on soils in this previously disturbed area. The designation of an area for a temporary camp on San Miguel Island would result in the loss of some soil and/or alteration of soil properties on this site and would have a localized long-term minor impact on soils.

Alternative 3 would result in higher use levels on Santa Rosa and Santa Cruz Islands than in alternative 1, but use levels would still be expected to be relatively low. Although most people would remain in the developed areas, more people would hike and backpack in the backcountry of these islands, which would result in some soils being compacted and soil horizons altered in local areas due to people walking cross-country or off trails. Some informal trails could be formed. There also would likely be more use of a few roads on Santa Rosa Island by vehicles transporting visitors, resulting in increased erosion of silty soils along the roads. However, given the size of this island and relatively low use levels that would occur, the long-term adverse impact on soils would likely be minor to moderate in localized areas.

Like alternative 2, most of the soil impacts due to construction and use of new developments under alternative 3 would occur on Santa Cruz and Santa Rosa Islands. The new visitor developments on Santa Cruz (including a new orientation area at Scorpion, and additional restrooms at Prisoners Harbor, would be built in previously disturbed areas and would have a localized long-term minor adverse impact due to soils being lost from the sites and/or soil properties altered. Reconfiguring the Scorpion campground would occur in previously disturbed areas and would have a long-term negligible adverse effect on soils. Development and use of a new primitive campground near Prisoners Harbor would affect about a 4-acre area, resulting in a long-term minor adverse impact due to the loss and/or alteration of soils. The possible development and use of backcountry campsites and trails on Santa Cruz and Santa Rosa Islands would likely cause some erosion and/or changes in soil properties, resulting in a localized long-term minor adverse impact, depending on the sites and use levels.

Several new administrative developments on Santa Cruz Island would affect soils. In the Scorpion area the construction of new office space, a new concessions housing area, the expansion of the NPS housing area, the relocation of the maintenance area, and the construction of an interpretive barn by the corral would likely result in the erosion and loss of some soil from these sites and/or alteration of soil properties, affecting a total of approximately 3 acres. Assuming the construction and facility footprints are kept small and best management practices are followed (e.g., use of silt fences and prompt revegetation), soil erosion and disturbance would be minimized and the adverse impacts would be localized, long-term, and minor.

The development of new administrative facilities in the Prisoners Harbor area would also affect soils. Soils would be lost and/or soil properties altered by the development and use of new housing, storage, and maintenance facilities in the Prisoners Harbor area,

covering about 1.5 acres, resulting in a long-term minor adverse impact.

On Santa Rosa Island development of a new transportation maintenance facility in the Bechers Bay area and the development of a new backcountry ranger station at Johnsons Lee would affect a total of about 1.5 acres, resulting in a long-term minor adverse impact due to the loss and/or alteration of soil properties. The development of a new field station north of the Bechers Bay developed area or in the Water Canyon area also could affect about 0.5 acre, if one of these areas were selected, resulting in a long-term minor adverse impact on soils.

Several visitor developments on Santa Rosa Island in alternative 3 would affect soils. The restoration of part of the Water Canyon campground would have a long-term minor beneficial impact due to visitors no longer disturbing these soils. On the other hand, the construction of a new campground on the marine terrace within the ranch complex in Bechers Bay would affect approximately 4 acres, while the development of a new primitive campground/day use facility at Johnsons Lee would affect approximately 5 acres. The loss of soil and/or alteration of soil properties would result in a localized long-term minor adverse impact. Rehabilitating the ranch complex facilities for other functions (e.g., lodging, visitor contact station, and possibly the field station) should have no impacts on soils because no additional soil disturbance would be needed.

Like alternative 2, stockpiling sediments on land due to the periodic excavation of Scorpion Creek in alternative 3 would result in localized long-term minor to moderate adverse impacts on soils due to construction equipment driving over the area. Although excavation activities would occur on an irregular basis and the sediments would only be temporarily stockpiled, they are considered a long-term impact.

The biggest difference between alternatives 1 and 3 would be due to the actions taken regarding the road systems on Santa Rosa and Santa Cruz Islands. The conversion of roads to trails and/or recontouring and revegetating approximately 12 miles on Santa Cruz Island and 67 miles of roads on Santa Rosa Island, particularly those segments that are experiencing erosion problems, would substantially decrease soil erosion in these areas. As a result, compared to alternative 1, alternative 3 would likely have a long-term moderate to major beneficial impact on the two islands. However, even with these restoration efforts it is likely that localized minor to moderate adverse impacts on soils would continue due to erosion on several roads on Santa Rosa Island.

The wilderness designation on several of the islands would provide permanent long-term protection to soils. This action would have a negligible beneficial effect as it would not result in noticeable changes in the islands' soils.

From a parkwide perspective, when compared to alternative 1, alternative 3 would have both long-term beneficial and adverse impacts. The construction of new visitor and administrative facilities on Santa Cruz and Santa Rosa Islands would affect a total of about 21 acres, resulting in localized long-term minor adverse soil impacts. Long-term moderate to major beneficial impacts would occur primarily due to the removal and restoration of roads on Santa Rosa Island. Overall, alternative 3 would have a long-term moderate beneficial impact on soils, primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts. As noted in the previous alternatives, soils in the park have been adversely affected by past actions, particularly due to overgrazing by livestock, construction of roads, and pig rooting on Santa Cruz Island, causing soil compaction and erosion. Also like alternative 1, the recent removal of nonnative deer and elk from Santa Rosa Island and the elimination of feral pigs

on Santa Cruz Island would be expected to result in a localized long-term moderate beneficial impact on soils on these islands. Revegetation and soil erosion control efforts also would continue on the islands, independent of this plan, such as efforts to rehabilitate eroding areas on the Smith Highway and Soledad Peak on Santa Rosa Island. These continuing restoration efforts should over time reduce the loss of soil in many problem areas, resulting in a continuing long-term moderate to major beneficial impact. When these impacts are added to the beneficial impacts on soils of closing roads and restoration of the landscape on these islands under alternative 3, and the localized long-term minor adverse impacts due to construction of new facilities, there would be a long-term moderate beneficial cumulative impact on soils. Although adverse impacts due to visitor use on the islands and development and use of several new facilities on the islands would detract from this beneficial cumulative impact, the restoration actions due to the alternative (particularly the closure of roads on Santa Rosa and Santa Cruz Islands) and other NPS beneficial restoration efforts independent of this plan would far outweigh these minor adverse impacts.

Conclusion. Most of the park's soils would not be affected by alternative 3. Soil impacts would largely be limited to Santa Cruz and Santa Rosa Islands, and alternative 3 would have both beneficial and adverse impacts. No impacts due to changes in visitor uses under alternative 3 would result in greater than a negligible impact when considered from a parkwide perspective. Although alternative 3 would result in some long-term minor adverse impacts to approximately 21 acres of soils (primarily due to the construction of new facilities in localized areas), when compared to alternative 1, alternative 3 overall would result in a long-term moderate beneficial impact, primarily due to the removal of roads and consequent decrease in erosion on Santa Rosa and Santa Cruz Islands.

Paleontological Resources

Analysis. Alternative 3 probably would result in the highest use levels of the three alternatives, although these use levels would still be low. Most people would stay at the primary developed areas on Santa Cruz and Santa Rosa Islands. There probably would be an increase in backcountry use on Santa Cruz and Santa Rosa Islands, and to a much lesser degree on San Miguel Island, which potentially could result in an increase in the number of fossils that are illegally collected. Any fossils that are illegally collected would be a permanent loss of the resource. Because it is not known how many fossils are currently being collected illegally on the islands, it is difficult to know what the additional impacts of increased visitor use would be in alternative 3. However, it is expected that only a few, if any, fossils would be lost because the increase in use would be limited and the fossils would not be apparent or readily accessible to most visitors to the islands. With adequate visitor education efforts and ranger patrols, the risk of these potential impacts could be further reduced. The closure and rehabilitation of some roads on Santa Cruz and Santa Rosa Islands would help reduce areas where fossil collecting could occur. As in alternative 1, the requirement that all hikers must be accompanied by a ranger should minimize impacts on paleontological resources on San Miguel Island. With ranger-led hikes, negligible impacts would be expected to the caliche forest on the island. Overall, compared to alternative 1, the change in visitor use levels in alternative 3 could result in a long-term minor adverse impact on paleontological resources.

Most of the island developments proposed under alternative 3 would occur in areas that have been previously disturbed, including the new administrative and visitor facilities in the Scorpion Valley area, the new administrative and visitor facilities in the Prisoners Harbor area on Santa Cruz Island, and the new developments at Bechers Bay on Santa Rosa Island. Surveys would be conducted prior to

building new backcountry campsites and trails on Santa Rosa and Santa Cruz Islands, which should avoid impacts to areas likely to have fossils. It is not known if any of the proposed new facilities on Santa Cruz or Santa Rosa Island would increase access into fossiliferous areas that are currently inaccessible.

Under alternative 3 expanded partnerships and more research would be expected to provide more information on the park's paleontological resources, and enable park staff to better manage the park to avoid future impacts from visitor use. This would be expected to have a long-term minor to moderate beneficial impact.

The wilderness designation on several of the islands would provide permanent long-term protection to paleontological resources, precluding most potential developments that could adversely affect these resources. This action would have a negligible beneficial effect as it would not result in noticeable changes in the islands' paleontological resources.

Overall, from a parkwide viewpoint, alternative 3 would likely have a long-term minor adverse impact on paleontological resources when compared to alternative 1, primarily due to an increase in backcountry visitor use on Santa Cruz and Santa Rosa Islands and the resulting increased potential for loss of fossils.

Cumulative Impacts. Aside from the actions in alternative 3, no known actions or projects inside or outside the park are believed to be affecting the park's paleontological resources. Thus, alternative 3 would not have a cumulative impact on the park's paleontological resources.

Conclusion. Without adequate information on the presence and location of paleontological resources in the park, it is difficult to determine the intensity of impacts due to alternative 3. However, compared to alternative 1, alternative 3 could have long-term minor adverse impacts, primarily due to increased backcountry use and possible illegal collecting of fossils. No cumulative impacts would be expected to occur.

Water Quality

Analysis. Like alternative 1, no changes would occur to freshwater quality on Santa Barbara and San Miguel Islands. With only small increases expected in visitor use levels on both islands, and with adequate sanitation facilities being provided, no changes to freshwater quality would be expected on these islands.

On East Anacapa Island the construction of a new residence would not be near freshwater sources and should not affect water quality. Assuming the new residence would have sanitation systems to dispose of human waste, no impacts on water quality would occur.

Several administrative and visitor facilities would be built on Santa Cruz Island in the Prisoners Harbor area, and in and above Scorpion Valley under this alternative. Assuming best management practices are followed in the construction of these developments, few sediments would run off into nearby drainages, which would affect water turbidity, resulting in short-term negligible to minor adverse impacts on freshwater quality. The development of new restrooms at Prisoners Harbor and a new orientation area with restrooms near the Scorpion beach would not adversely affect water quality, provided they are properly designed and maintained.

The construction of several new visitor and administrative facilities on Santa Rosa Island, including a new campground and employee housing, would occur in previously disturbed areas and would not affect drainages — with proper design and mitigation measures there would be no impact on water quality.

Because Scorpion Creek is often dry in the summer, the periodic excavation of sediment

from the flood channel should occur when water is not flowing in the channel. Thus, this action should have no effect on water quality.

Although there would be higher levels of visitors in the backcountry on Santa Cruz and Santa Rosa Islands than in alternative 1, levels would still be relatively low. Some measurable water pollution would be expected from these visitors due to soil erosion from some informal trails and improper human waste disposal. This change would have a long-term negligible adverse impact on freshwater quality provided that visitor use remains low.

Roads on Santa Cruz and Santa Rosa Islands would be closed and the landscape restored or converted into trails in alternative 3, which would reduce runoff and erosion. This would have a localized long-term moderate beneficial impact on water quality compared to alternative 1. Some local water pollution would still occur due to sedimentation from roads that are maintained, affecting water turbidity of some drainages. It is expected that this would be a long-term minor adverse impact on water quality.

The wilderness designation on the islands would provide permanent long-term protection to water resources. This action would have a negligible beneficial effect as it would not result in noticeable changes in freshwater resources on the islands.

Alternative 3 would likely result in the same impacts on marine water quality due to boat use as alternatives 1 and 2. It is expected that boat use in park waters would increase over time compared to alternative 1, As in the other alternatives, some boats would probably discharge wastes such as gray water and fuel into park waters. Long-term adverse impacts would be due to discharges of petroleum products from visitor boats using the pier. The overall impact of visitor boats on the park's marine water quality would probably be a minor adverse impact. But like alternatives 1 and 2, in areas where there are concentrations of boats (such as Scorpion Harbor, Smugglers Cove, and East Anacapa Island), there could be a localized long-term minor to moderate adverse impact on water quality due to the discharges of pollutants (e.g., petroleum products and human waste) over the life of this plan.

Under alternative 3 there would be expanded partnerships and more research, which could mean additional efforts to monitor water quality. With more information on status and trends for the park's water quality, it is expected that park managers would be able to better avoid water quality impacts due to visitors and administrative actions. This could have a long-term minor to moderate beneficial impact.

From a parkwide perspective, alternative 3 would have both beneficial and adverse impacts on water quality. Adverse water quality impacts would occur due to the construction and use of new visitor and administrative facilities and increased boat use in localized areas. However, overall, alternative 3 would have a long-term minor to moderate beneficial impact on freshwater quality, primarily due to the closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands, and a long-term minor adverse impact on marine water quality primarily due to discharges from visitors' boats.

Cumulative Impacts. As in the previous alternatives, ongoing restoration activities on Santa Rosa and Santa Cruz Islands would have a beneficial impact on freshwater quality. Less erosion of sediments would occur in these areas, decreasing turbidity and improving water quality.

Adding together the beneficial impacts of alternative 3 (due to the closure of roads on Santa Cruz and Santa Rosa Islands) and the long-term negligible to minor adverse impacts (due to the construction of new developments and increased visitor use in the backcountry on Santa Cruz and Santa Rosa Islands) with the impacts of continuing revegetation and

erosion control efforts independent of the plan, overall there would be a localized minor to moderate beneficial cumulative impact on freshwater quality.

With regard to marine waters, alternative 3 would have about the same potential for a cumulative impact as alternative 1. The replacement of the Bechers Bay and Scorpion Harbor piers would result in increases in turbidity during the construction period (including removal of the existing piers), resulting in a long-term minor adverse impact on water quality in these areas. Nonpark sources, such as discharges or spills from visitors' boats, ships, and oil and gas platforms; sewage disposal; and agricultural and urban runoff from the mainland have affected, and can affect, the park's water quality. Enforcement and education efforts regarding the 2009 Channel Islands National Marine Sanctuary regulations would be expected to help avoid discharges by boaters and shipping companies and, therefore, would likely have a long-term beneficial impact of unknown magnitude. Adding the adverse impacts of alternative 3 (increase in water pollution due to more boats) and the impacts of other nonpark pollution sources could result in an adverse cumulative impact. Although the very large diluting volume of the ocean would reduce the additive impact of all of these pollution sources, a long-term minor to moderate adverse cumulative impact on water quality could occur in places around the islands. However, the increment added by visitor boat use and facility construction under alternative 3 to the overall cumulative impact from nonpark sources would be very small.

Conclusion. Freshwater quality on most of the islands would not be affected by implementing alternative 3. Compared to alternative 1, alternative 3 overall would result in a long-term minor to moderate beneficial impact, primarily due to the closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands and localized long-term minor adverse impacts on marine water quality primarily due to discharges from visitors' boats. Alternative 3 could also result in a localized long-term minor to moderate beneficial cumulative impact on freshwater quality, and a localized long-term minor to moderate adverse cumulative impact on the park's marine water quality (although the increment contributed by alternative 3 would be very small).

Floodplain Values and Flooding in Scorpion Valley on Santa Cruz Island

Analysis. Under alternative 3 a maintenance area (including fuel and hazardous material storage facilities, and plant nursery) and storage structures would be built adjacent to the corral, above the Scorpion Creek floodplain but near another small drainage. These facilities would be located here because the natural floodplain in this area has already been disturbed and there were no other suitable locations (see appendix E). Building these administrative facilities would have a long-term minor adverse impact on a small drainage and floodplain values (primarily due to the alteration of soils and vegetation). Building the facilities would result in a long-term minor adverse impact on human life and property due to flooding. Because the alternative calls for hazardous materials to be stored outside the 500-year floodplain, there should be no impact on floodplain values. Although floods could occur in the area, due to the time these facilities would be used (primarily during the summer), the risk is considered low that these facilities would be seriously damaged or people would be hurt during the life of this plan.

Like alternative 2, under alternative 3 restoration actions at the mouth of Scorpion Creek, including reestablishment of native vegetation and removal of the road that crosses through the wetland, would help restore floodplain values and functions, and would have a long-term moderate beneficial impact. On the other hand, sediment from the Scorpion stream channel would be

periodically excavated to reduce the risk of future major floods. As noted in the alternative, an estimated 8,000 cubic yards of material would be periodically removed from the channel and temporarily stockpiled on the south side of the stream, above the upper road crossing to the west. These actions would alter the path of natural streamflows, riparian soils, and vegetation, and could have a long-term minor to moderate adverse impact on the floodplain values. The magnitude of the impact would depend on how often the excavation occurs, when and where it is done, how much sediment is removed, where it is deposited, and what mitigation measures are employed. This impact would be further evaluated in a future compliance document. In addition, permits from the Army Corps of Engineers and California Central Coast Regional Water Quality Control Board would need to be obtained before the actions could occur.

The wilderness designation would have no effect on the floodplain values and flooding in Scorpion Valley.

Alternative 3 also would have a long-term minor to moderate beneficial impact due to a reduced risk to human life and park facilities in the Scorpion Valley area. The various measures noted above would decrease the likelihood of a flood occurring that would result in the loss of park facilities or pose a risk to people. However, these measures would not eliminate the risk — there would continue to be a risk of damage or loss of structures due to a future flood in this area under alternative 3.

Cumulative Impacts. No other known actions or activities inside or outside the park would affect the Scorpion Valley floodplain. Thus, there would be no cumulative impacts due to alternative 3.

Conclusion. Alternative 3 would have about the same effects as alternative 2. Restoration actions in the small estuarine wetland at the mouth of Scorpion Valley would have long-term moderate beneficial impacts on natural floodplain values, while there would be long-term moderate adverse impacts due to the periodic removal of sediment from the Scorpion drainage. From a flood risk standpoint, the actions at Scorpion Valley would have a long-term minor to moderate beneficial impact on reducing flood risks and reducing the risk to human life and property in these areas (although there would continue to be a risk of damage or loss of structures from a future flood in the Scorpion area).

Wetlands (Scorpion Valley)

Analysis. Alternative 3 would have the same effects on the Scorpion Valley wetlands as alternative 2. In Scorpion Valley the actions taken to restore riverine channel habitat and plant native vegetation would enhance wetland values (e.g., vegetation and hydrology) in this area and would be expected to have a long-term moderate beneficial impact. Periodically dredging the Scorpion Creek channel could adversely affect the riverine/ lower perennial/rock bottom wetlands. However, this area has no vegetation, flooding periodically alters the channel, and the area has already been adversely affected by past human activities. Thus, the impact of dredging, assuming the equipment stays in the channel and operations are closely monitored, would likely have a long-term negligible to minor adverse impact on this wetland.

The wilderness designation would have no impact on the wetlands in Scorpion Valley.

Cumulative Impacts. No known actions or activities inside or outside the park would affect this wetland. Thus, there would be no cumulative impact on the wetland at the mouth of the Scorpion Valley.

Conclusion. Alternative 3 would have a long-term moderate beneficial impact on the wetland at the mouth of Scorpion Valley due to the floodplain restoration activities that

would take place in this alternative. There also would be a long-term negligible to minor adverse impact on riverine wetlands in Scorpion Valley due to periodic dredging operations. No cumulative impacts would occur as a result of the alternative.

Terrestrial Plant Communities and Vegetation

Analysis. As in the previous alternatives, from a parkwide standpoint visitors and NPS staff would likely continue to accidentally introduce or spread nonnative plants to the islands. Although many nonnative species are already widespread on the islands, additional people on the islands would increase the potential for the introduction and spread of nonnative species. The potential for the introduction of these species would be reduced with continued implementation of biosecurity measures, including visitor education efforts and providing visitors with brushes and boot scrapers to rid their boots and clothing of nonnative plant seeds before they set foot on the islands. But in spite of these mitigative actions, nonnative plant species would still likely be introduced in the park. Competition between nonnative and native plants could result in changes in native plant distribution, numbers, structure, and ecological processes (e.g., recycling of nutrients and fire). The impact of these introductions cannot be predicted, but could vary from long-term negligible to major adverse impacts depending on the characteristics of the nonnative plant species (e.g., how aggressive it is) that is unintentionally introduced.

Like the other alternatives, there would be no major changes in management or use of Santa Barbara, Anacapa, or San Miguel Island under alternative 3. The new housing unit that would be built on East Anacapa Island would be located in a previously disturbed area and would have a negligible impact on native vegetation.

On San Miguel Island, there would likely be a small increase in use due to guided trips to the western end of the island; however, as long as visitors are required to be with a guide when they go hiking, the impact on native vegetation should be negligible. The designation of an area for a temporary camp would have a localized long-term minor adverse impact on vegetation due to trampling and resulting damage to vegetation.

As noted previously, use levels would increase in alternative 3 compared to alternative 1 (although use levels would still be relatively low). Most visitors would stay in the primary developed areas and would not affect native vegetation. However, backcountry use on Santa Rosa and Santa Cruz Islands would likely increase, which would increase the potential for disturbance of vegetation in more areas than in alternative 1. Providing commercial vehicle operations on Santa Rosa Island would mean that more of the island could be impacted by visitors. Most hikers would stay on trails or roads, but some would wander off, inadvertently crushing or trampling vegetation. It is not expected that rare endemic plant populations would be adversely affected by a small increase in people hiking along roads or trails in the backcountry. Visitors are not known to currently affect these populations, and there is no reason to believe that more people would affect the plants. Most areas with endemic species, such as areas with coastal sage scrub, chaparral, coastal dunes, and the faces of coastal bluffs, would remain inaccessible or their habitats would not be frequently used by visitors. Overall, compared to alternative 1 it is expected that visitor use in alternative 3 would likely have a long-term minor adverse impact on vegetation on Santa Rosa and Santa Cruz Islands, provided the level of backcountry use does not substantially increase. (However, if nonnative plants were to be introduced to the islands by visitors, depending on the plant species, the impact could increase to a long-term moderate to major adverse impact.)

Compared to alternative 1, increased visitor numbers in alternative 3 also might increase the risk of an accidental fire. The potential adverse consequences of fires have changed on the islands due to the widespread conversion of native plant communities to annual grasses. The presence of invasive weed plants would exacerbate the negative effects of a wildfire. Many nonnative plants would spread following a wildfire. However, the likelihood of such a wildfire being sparked by visitors, even with an increase in visitor numbers, is considered low, given the relatively few visitors that would be on the islands and the prohibitions on open fires in the backcountry

New developments on Santa Cruz and Santa Rosa Islands under alternative 3 would have local impacts on vegetation. Some small developments would be built in previously disturbed areas or areas with little native vegetation. In the Scorpion Valley, the development of a maintenance structure, an interpretive storage barn, a new orientation area near the beach, a concessions housing area near the campground, and the expansion of the existing NPS housing area would all be built in areas where native vegetation has already been altered. Similarly, the maintenance/storage structure and parking spaces at Prisoners Harbor would be built in areas where native vegetation has already been altered. Likewise, on Santa Rosa Island the expanded NPS housing area, new campground and field station, NPS concession/transportation staging area, visitor orientation area, and island transportation hub/operations center at Bechers Bay, and the administrative support and day use areas at Johnsons Lee would be in areas where native vegetation already has been altered. As a result, although some vegetation would be lost due to the above new developments, little native vegetation would be affected by these developments. Thus, all of the above actions would be expected to have a long-term minor adverse impact on native vegetation provided construction equipment stays in the existing footprints and/or disturbed areas.

Construction work involved in converting some of the existing ranch buildings to visitor and administrative facilities at Bechers Bay would be expected to have a negligible short-term impact on native vegetation because this area also has lost most of its native plant cover.

The construction and use of new backcountry campsites and trails on the Santa Cruz and Santa Rosa Islands also would result in vegetation being cleared and the loss and alteration of vegetation in localized areas, resulting in a long-term minor adverse impact.

Construction of an employee housing area in the Prisoners Harbor area would result in the loss and/or alteration of less than about 1 acre of vegetation. The loss of native vegetation in this area would be expected to result in a localized long-term minor adverse impact, although this impact would depend on where the housing area was located.

Like alternative 2, under alternative 3 periodic excavation of sediment in Scorpion Creek on Santa Cruz Island and deposition of sediments on land could adversely affect vegetation along or near the stream channel, depending on where the sediment is placed. Construction equipment also could crush vegetation on the way to the disposal site. However, the identified disposal site is an area that has been disturbed in the past and has little native vegetation. Assuming that care is taken in this operation, there likely would be a long-term minor adverse impact on native vegetation in a limited area.

Several actions in alternative 3 would have a beneficial impact on native vegetation. The closure and rehabilitation or conversion to trails of 67 miles of roads on Santa Rosa Island and 12 miles of roads on Santa Cruz Island would help eliminate the loss of vegetation due to erosion and increase natural vegetative cover. Depending on what efforts are taken to restore vegetation, the alternative could have a long-term moderate beneficial impact on the vegetation at those islands.

Under alternative 3 additional actions would be taken to control invasive nonnative plants, such as stone pine, eucalyptus, and pepper trees, which contribute to Santa Cruz Island's cultural landscapes. As noted in the alternative, the removal of the nonnative plants in cultural landscapes would only occur if the spread of the plants cannot be controlled. The containment and possible replacement of eucalyptus trees in the Scorpion campgrounds would also help prevent the spread of these nonnative trees. In addition, management of the Smugglers Cove's olive grove to substantially reduce the spread of olives throughout the island would have a long-term beneficial impact on island native vegetation. All of these actions would help prevent the invasive nonnative plants from spreading across the island and outcompeting and displacing native plants. As a result, compared to alternative 1, alternative 3 would have a long-term moderate beneficial impact on plant communities on Santa Cruz Island.

As in alternative 2, under alternative 3 expanded partnerships and more research and inventorying/monitoring would provide more information on status and trends for the park's vegetation. This would be expected to better enable managers to be aware of threats and avoid potential future impacts, which could result in a long-term minor to moderate beneficial impact.

The wilderness designation on several of the islands would provide permanent long-term protection to the park's terrestrial vegetation. This action would have a negligible beneficial effect. Precluding most future developments would benefit vegetation. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, the wilderness designation by itself would result in few noticeable changes in vegetation on the islands.

From a parkwide perspective, alternative 3 would have both beneficial and adverse impacts on the park's native vegetation.

Overall, the alternative would be expected to have a long-term moderate beneficial effect on the islands' vegetation, primarily due to steps taken to control nonnative species on Santa Cruz Island and the closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands. However, long-term minor adverse impacts would occur in localized areas on the islands due to increased visitor use and construction of facilities — a total of about 2 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts. As described in the impacts of alternative 1, the vegetation of the park has been substantially altered by past human actions, although some native plant populations and vegetative communities are recovering.

The elimination of deer, elk, and pigs stopped browsing and soil impacts caused by these nonnative animal species. As a result of these efforts, native vegetation on Santa Cruz and Santa Rosa Islands is recovering, particularly native vegetation in riparian areas, as well as rare plant species on the islands. This would likely have a localized long-term moderate to major beneficial effect on native plants on the islands.

Also like alternative 1, other restoration activities would continue on Santa Rosa and Santa Cruz Islands, independent of this plan, including revegetation efforts on the islands, efforts to control the introduction and spread of nonnative plant populations (e.g., eradication of stone pine trees and management of pepper trees on Santa Cruz Island), soil erosion control efforts, and planned control/eradication of the nonnative Argentine ant. The continued implementation and expansion of biosecurity measures also would reduce the risk of invasion of nonnative

species. These efforts all would have a localized long-term moderate to major beneficial impact on vegetation due to an increase the abundance and distribution of native plant species on the islands.

When the long-term moderate beneficial impacts of alternative 3 are added to the long-term moderate to major beneficial effects of other past, present, and future restoration actions occurring independently of this plan, there would be a long-term moderate beneficial cumulative impact primarily due to the restoration of natural vegetation in more areas of the park. Alternative 3 would add both a beneficial and a small adverse increment to this overall cumulative impact.

Conclusion. Like the previous alternatives, most of the park's vegetation would not be directly affected by alternative 3. The alternative would result in several long-term minor adverse impacts in local areas on Santa Rosa and Santa Cruz Islands, primarily due to the clearing of vegetation for a number of new administrative and visitor facilities and an increase in backcountry use. A total of about 2 acres of relatively natural vegetation would be lost or altered due to new developments on Santa Rosa and Santa Cruz Islands. Overall, compared to alternative 1, alternative 3 would have a long-term moderate beneficial impact primarily due to the closure of roads on Santa Rosa and Santa Cruz Islands, and additional actions taken to control the spread of invasive nonnative species on Santa Cruz Island. There also would be a moderate beneficial cumulative impact on vegetation when the actions in the alternative are added to other actions that would occur independently of the plan (although alternative 3 would add a small adverse increment to this overall cumulative impact).

Terrestrial and Marine Wildlife

Analysis. Like alternatives 1 and 2, most wildlife populations on the islands would not be affected by alternative 3. No major new developments or substantial changes in visitation patterns would occur that would likely affect wildlife.

More people would likely visit San Miguel Island to participate in the guided multiday hikes to see pinnipeds compared to alternative 1, although use levels would not be expected to substantially increase. So long as visitors are required to be accompanied by a ranger while hiking on the island, negligible impacts should occur to pinnipeds and other wildlife. The designation of a temporary camp on San Miguel Island for the guided hikes would also result in the temporary displacement or change in behavior of some wildlife, such as insects, mice, and landbirds, but the animals should return when the people leave, resulting in a long-term negligible adverse impact.

The construction and use of new backcountry campsites and trails on Santa Rosa and Santa Cruz Islands in alternative 3 would result in the loss of wildlife habitat in localized areas, but if the facilities are located to avoid important wildlife areas, they should have a long-term negligible adverse impact on island wildlife populations.

Alternative 3 would likely result in higher visitor levels on Santa Rosa and Santa Cruz Islands compared to alternative 1. However, most of these people would likely stay in the primary developed areas and would not affect wildlife. There likely would be a small increase in backcountry use on Santa Cruz and Santa Rosa Islands, which might temporarily disturb and/or displace or change the behavior of some animals, such as mice, songbirds, island jays, and island spotted skunks. However, once the visitors have passed by, these animals would return. Any improper food storage and feeding of wildlife in the backcountry could attract animals such as mice and ravens, which also would have the same impact as alternative 1 — a localized long-term negligible adverse impact. Thus, the increase in backcountry use in alternative 3 would be expected to have a localized long-term negligible to minor adverse impact.

Most of the new administrative and visitor facilities in alternative 3 on East Anacapa Island, in the Scorpion Valley area and Prisoners Harbor on Santa Cruz Island, at Bechers Bay and Johnsons Lee on Santa Rosa Island, and on San Miguel Island would be built in areas that have been disturbed by people and are not important wildlife habitat.

New developments on Santa Cruz Island (e.g., the NPS housing area near Prisoners Harbor) and on Santa Rosa Island (e.g., the field station near Bechers Bay and the developed visitor area at Johnsons Lee), and on San Miguel Island (the temporary camp) would result in the loss of vegetation and wildlife habitat. However, none of the facilities would be in key feeding, nesting, roosting, or breeding areas or migration routes. Some animals such as mice may be temporarily displaced during construction of the facilities, resulting in localized short-term negligible to minor adverse impacts. Use of these developments would be expected to have a localized long-term negligible to minor adverse impact on native wildlife habitat and populations.

Construction activities and the expansion of facilities and the number of people (personnel, cooperators, and visitors) would increase the risk of accidental introductions of nonnative animals. As an example, the Santa Rosa Island visitor lodging facility would result in an increase in luggage, food, equipment, and trash as a result of this operation, which in turn would increase the chance of an accidental transfer of nonnative animals onto an island. Although the continued implementation of biosecurity measures would reduce this risk, if nonnative species were to be introduced, the possible effect on native wildlife habitat and populations would vary considerably, depending on the species, and cannot be predicted.

Several management actions under this alternative would affect nonnative vegetation, including control of nonnative tree species on Santa Cruz Island. This could affect species, such as hummingbirds that feed on eucalyptus flowers, and animals such as scrub jays and island spotted skunks that feed on olives. Because other food sources are present, additional efforts to control the spread of these trees would be expected to have a long-term negligible to minor adverse impact on the wildlife populations of the island.

The periodic removal of sediment from the Scorpion Creek channel would be in a previously disturbed area where people and facilities have been present. Thus, this action should result in a long-term negligible adverse impact to wildlife populations.

In alternative 3, a number of restrictions would be implemented to maintain the Townsend's big-eared bat maternity colony in Scorpion Valley and minimize possible sources of disturbance. This could include further restricting access of visitors, concessioners, and NPS staff in the area around the bakery, and further restricting the use of lights and electronics in the interpretive displays during the maternity roost season. Although these actions may beneficially affect the bat compared with alternative 1, it is not known what level of effect they would have on the colony.

Alternative 3 would result in several beneficial impacts on wildlife habitat due to the revegetation/restoration of areas on Santa Cruz and Santa Rosa Islands. On Santa Cruz Island the restoration actions in the estuarine wetland at Scorpion Harbor would have a long-term minor beneficial impact on species such as salamanders, waterfowl, and passerines such as the orange-crowned warbler and ruby-crowned kinglet.

The closure of roads and restoration of the landscape on Santa Cruz and Santa Rosa Islands would result in areas where few, if any, people ventured. However, visitor disturbance of wildlife would be highly unlikely in many of these areas — few people would likely go into the remote areas even if the roads were present, given the time needed

to reach the areas. Thus, the beneficial impact of the road closures on wildlife populations likely would be minor.

As in alternative 2, alternative 3 expanded partnerships to do more research and monitoring would provide more information on status and trends for the park's wildlife, which should better enable managers to identify future threats and avoid impacts. This action would be expected to have a long-term minor to moderate beneficial impact.

The wilderness designation on the islands would provide permanent long-term protection to the park's terrestrial wildlife. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit wildlife. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, wilderness designation by itself would result in few noticeable changes in wildlife on the islands.

Although alternative 3 would have some localized negligible to minor adverse impacts, from a parkwide perspective, alternative 3 would have a long-term minor beneficial impact on the park's terrestrial and marine wildlife populations, primarily due to restoration actions included under the alternative.

Cumulative Impacts. The replacement of the Bechers Bay and Scorpion Harbor piers would result in increases in turbidity during the construction period (including removal of the existing piers), resulting in a long-term minor adverse impact on water quality in these areas.

As in alternative 2, alternative 3 would have the same potential for cumulative effects on seabird and pinniped populations in the region such as oil spills, pollutants, or changes in fish populations due to harvests. However, these impacts are considered unlikely and/or it is not possible to predict that these events would occur during the life of this plan.

As described under alternative 1, the marine protected areas around the park would be expected over time to have a beneficial impact on seabirds and pinnipeds, possibly decreasing disturbance caused by boats in the area and increasing fish populations these species feed on. However, the state marine protected areas have been in place for only a short time; therefore, the magnitude of the impact is unknown.

The implementation of the sanctuary regulations, including protecting the area's water quality and limiting or prohibiting activities that impact the sea floor, likely has had a beneficial impact on the park's marine wildlife populations, preventing pollution that could affect wildlife, although the magnitude of the impact is unknown and would vary depending on the level of enforcement and education efforts.

On the other hand, as described in alternative 1, it is likely that squid boats fishing in park waters during the seabird breeding season, even with shielded lights and wattage restrictions, would result in mortality of Scripp's murrelets, ashy storm-petrels, black storm-petrels, rhinoceros auklets, and Cassin's auklets. It is uncertain what impacts the squid fishing is having on the park's seabirds since the location of the fleet varies from year to year, but it would be expected to result in some decreases in the abundance of local populations, resulting in a long-term unknown adverse impact. Also, squid fishing would likely affect pinnipeds feeding on squid. Squid are the primary prey of California sea lions and are eaten by most of the pinnipeds using the park. If squid harvest levels increase relative to past harvest levels and/or if harvest levels continue at high levels over the life of this plan, there could be a long-term adverse impact of unknown magnitude on the pinniped populations using the park (Jeff Laake, NMFS, Alaska Fisheries Science Center, pers. comm. March 18, 2005).

When the above adverse impacts are added to the potential beneficial effects of the marine

protected areas and marine sanctuary regulations, and the minor beneficial and adverse effects of alternative 3, there could be a long-term beneficial cumulative impact to pinnipeds and seabirds that use the park. However, given the uncertainty and lack of data, it is not possible to determine the magnitude of such a beneficial cumulative impact. Alternative 3 would add a small beneficial increment to this overall cumulative impact due to the restoration actions, and a negative increment due to the potential effects of increased numbers of kayakers and other recreational boaters visiting the park. However, neither of these actions would substantially alter the overall intensity of the cumulative impact.

As stated under alternative 1, past and ongoing restoration efforts on the islands have had a major beneficial effect on the islands' native terrestrial fauna. As in all of the alternatives, ecosystem restoration efforts on Anacapa, Santa Cruz, and Santa Rosa Islands would continue independent of this plan, including revegetation efforts. These actions, particularly the elimination of nonnative wildlife, would have a substantial beneficial effect on native wildlife populations, eliminating sources of competition, providing more habitat, and generally increasing native wildlife populations, including the side-blotched lizard, Channel Islands slender salamander, island fox, Santa Cruz gopher snake, mice, and landbirds such as the island scrub jay. The recovery of native vegetation due to these restoration efforts also would benefit native wildlife populations. When the beneficial impacts of alternative 3 (e.g., the closure of some roads on Santa Rosa and Santa Cruz Islands, and increased monitoring and research) are added to the ongoing and future beneficial restoration actions occurring independently of this alternative, the result could be a long-term moderate to major beneficial impact on terrestrial wildlife populations such as salamanders, lizards, bats, and landbirds (although alternative 3 would likely add a small beneficial increment to this overall impact). The minor adverse impacts of alternative 3 due to increased backcountry use and new developments would not substantially detract from the overall beneficial cumulative impact.

Conclusion. Overall, most wildlife populations would not be affected by the actions under alternative 3. Compared to alternative 1, there would be long-term negligible to minor adverse impacts on wildlife habitat due to the construction of several new small visitor and administrative developments, and long-term negligible to minor adverse impacts due to increased numbers of people in backcountry areas on Santa Rosa and Santa Cruz Islands. Alternative 3 also would result in some localized long-term minor beneficial impacts due to the closure of roads and other restoration actions and increased monitoring and research. When combined with continuing restoration efforts, alternative 3 could have a long-term moderate to major beneficial cumulative impact on native terrestrial wildlife (although the alternative would add a small beneficial increment to these impacts). There could also be a long-term beneficial cumulative impact on the park's seabirds and pinnipeds of unknown magnitude when the effects of non-NPS actions in park waters, such as the marine protected areas, are added to the beneficial and adverse effects of alternative 3.

Threatened and Endangered Species

Analysis. As in the other alternatives, no new developments would likely affect the park's snowy plover or island fox populations under alternative 3.

Snowy plover breeding numbers have been declining and may continue to decline on the islands due to several possible reasons, but no actions are being taken as part of this alternative that would likely affect this trend. Snowy plover habitat would be provided the same level of protection under alternative 3 as under alternative 1 — in both alternatives all of San Miguel and Santa Rosa Islands' primary

snowy plover beaches would be closed to public use or closed during the nesting season. Although use levels would increase under alternative 3, these visitors would largely stay in developed areas and would not affect the birds. It is not likely that visitor use patterns would substantially change on the beaches used by the plovers. Some birds might be temporarily disturbed by visitors who land or hike on the beaches, but no information indicates that current low numbers of visitors are adversely affecting the island's population. Assuming visitor use of the beaches does not substantially increase, and with sufficient educational outreach efforts and periodic NPS patrols, any impacts would be expected to be infrequent due to the small number of plovers scattered on the beaches. If visitor use impacts were identified in the future, the park staff would consult with the Fish and Wildlife Service to identify and implement appropriate mitigation measures, such as signs or closing beaches to access. Consequently, alternative 3 would have about the same effect as alternative 1 — a long-term negligible to minor adverse impact, which may affect, but would not likely adversely affect, the park's snowy plover populations.

Visitors would often see the island foxes in the Scorpion Valley campground, and increasingly would see foxes in other locations on Santa Cruz, Santa Rosa, and San Miguel Islands due to the increased density of the recovering island fox populations. On rare occasions, these contacts may affect the behavior of some foxes. Even with tight management by park staff, with signs and personal contacts, some feeding of foxes may occasionally occur, such as at the Scorpion Valley campground and at the new campsites at Smugglers Cove, Prisoners Harbor, Johnsons Lee, and Bechers Bay, with the result that some foxes may become habituated to humans and expect to be fed. However, this would not be expected to noticeably affect the health and size of the island fox populations — only a few foxes would be affected by the feeding, which would not affect the abundance of the population.

Visitor shuttles driving on roads on Santa Rosa Island could hit and kill or injure foxes. However, this would be a very rare occurrence — relatively few vehicles would be using the roads, the condition of the roads forces slower vehicle speeds, and given the extensive road system it would be highly unlikely that a fox would be crossing a road at the same time and place as a vehicle. Closing some roads also would reduce this possible mortality factor. Thus, alternative 3 would likely have the same effect on the island fox as alternative 1 — a long-term negligible adverse impact on the foxes, which may affect, but would not likely adversely affect, the park's island fox populations.

Although visitor use would increase on Santa Rosa Island under this alternative, most visitors would not go into the backcountry. Visitors who do go into the backcountry should not affect the areas where the major populations of Hoffmann's slender-flowered gilia occur. Also, the Skunk Point population would be in an area that would be closed to public use and would be protected by zoning as a backcountry management zone. As a result, the abundance of this population could experience a small increase. Thus, alternative 3 would have a beneficial impact on this species compared to alternative 1 and may affect, but would not likely adversely affect, the gilia.

The future control/eradication of nonnative Argentine ants on Santa Cruz Island, removing nonnative predators and/or competitors to the native invertebrate community, also would likely result in a long-term moderate to major beneficial impact on native wildlife populations.

As in the other alternatives, there could be some trampling of Santa Cruz Island chicory off the Lobo Canyon trail on Santa Rosa Island and trampling of island rush-rose off the Montanon Trail on Santa Cruz Island if hikers wander off the trails. Because visitor numbers would not substantially increase, the potential for impacts occurring under

alternative 3 should not differ from alternative 1. In both alternatives, with adequate warning given to visitors and ranger-led hikes, adverse impacts would not be expected. If visitor impacts were to occur to the plant populations, the park staff would consult with the Fish and Wildlife Service on additional actions to take to protect these plants, such as increasing education efforts or closing areas to access. Overall, alternative 3 would have a negligible adverse impact and may affect, but would not likely adversely affect, the Santa Cruz Island chicory and the island rush-rose.

No actions in alternative 3 would directly affect the habitat or populations of the Santa Rosa Island manzanita or the Hoffmann's rock-cress and island barberry on Santa Cruz Island. But like alternative 2, under alternative 3 these three listed plants would face a threat if a wildfire were to occur on the islands, accidentally sparked by visitors or NPS staff. With the potential for increased visitor use, the potential also would increase for an accidental fire to start and spread on Santa Rosa and Santa Cruz Islands — although the probability of this occurring would still be expected to be low, given user capacity limits and the relatively few additional people coming to the islands who would be near these plants' habitat. Nevertheless, if a human-caused wildfire were to occur, it could quickly spread through the vegetation before a response could be organized and could extirpate some or all of these small isolated populations. Although there would be a slight increase in the risk of a fire affecting one or several of these three listed species, the mitigation actions being proposed (e.g., informing people about the risk of fire, closing areas with high fire danger, monitoring populations of the plants, and establishing seed collections) would reduce the risk of a wildfire affecting the populations on the islands. Thus, because the risk of fire would always be present, alternative 3 would have the same long-term negligible adverse impact as alternative 1 — the alternative may affect, but would not likely adversely affect, the Santa Rosa Island manzanita, Hoffmann's rock-cress, and island barberry.

The wilderness designation on the islands would provide permanent long-term protection to the park's listed species. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit the listed species. Since Channel Islands is already a national park and the islands are being largely zoned to protect native species and ecological processes, as well as the protection bestowed by the ESA, wilderness designation by itself would result in few noticeable changes in the threatened and endangered species on the islands.

Overall, from a parkwide perspective, alternative 3 would have the same effect on the listed animal and plant species as alternative 1 – a long-term negligible to minor adverse impact on the park's listed species, which may affect, but would not likely adversely affect, these species. There could be a long-term minor beneficial impact to the Hoffmann's slender-flowered gilia.

Cumulative Impacts. In the case of the island fox, the Park Service is working to continue to protect this species on the islands independent of this plan. Alternative 3 would close roads on Santa Rosa and Santa Cruz Islands, which would reduce a possible mortality factor, and permit visitor shuttles, which could increase the potential for road kills, although this is not likely. When the effects of alternative 3 are added to the positive effects of the recovery and ecosystem restoration efforts independent of this plan, there could be a long-term minor beneficial cumulative impact on the island foxes, which may affect but would not adversely affect, the island foxes (although alternative 3 would add a minor increment to this impact).

As noted in alternative 1, the number of western snowy plovers has increased at several locations on the California mainland during the past few breeding seasons due

primarily to past and ongoing efforts to control predators, protect nesting areas from disturbance, and make people aware of the sensitivity of the birds. If their productivity continues to increase, plovers may spread into more areas and eventually may recolonize parts of the park. When these positive impacts are added to the effects of occasional disturbance of plovers caused by visitors under alternative 3, there would be about the same potential for a cumulative effect as alternative 1 — there would be the potential for a long-term minor to moderate beneficial cumulative impact, which likely would affect, but would not adversely affect, the species. Although alternative 3 may add an adverse increment to this cumulative impact, the effect would be very minor and would not alter the overall intensity of the cumulative impact.

For the island rush-rose, no additional NPS or other agency actions are occurring that would affect this species, no additional NPS or other agency actions are occurring on or off the islands, and no future actions are expected that would affect the plant. Thus, no cumulative impacts would occur due to the additive effects of alternative 3 on this species.

In the case of the Santa Cruz Island chicory, it is expected that the Park Service and U.S. Geological Survey would continue to research methods for establishing or expanding populations on the islands to assist their recovery. This action would occur independently of this plan. No additional NPS or other agency actions or activities are occurring on or off the islands that are known to be affecting the chicory. Thus, no cumulative impacts would occur due to additive effects of alternative 3 on the Santa Cruz Island chicory.

As noted above, alternative 3 would pose a risk of fire affecting the island barberry and Hoffmann's rock-cress, although with the proposed mitigation measures it is believed that the alternative may affect, but would not likely adversely affect, the species. However, the risk of wildfire would always be present, regardless of the alternative. No actions are occurring in alternative 3 that would directly affect these species. Independent of this plan, it is expected that the Park Service and U.S. Geological Survey would continue to research methods for establishing or expanding populations of island barberry to assist in its recovery. Adding the effects of alternative 3 to this other action would not be expected to result in a cumulative effect on the island barberry or the Hoffmann's rock-cress.

The conversion of native vegetation to nonnative annual grasslands during the ranching era would be a continuing impact on the Hoffmann's slender-flowered gilia on Santa Rosa Island. On the other hand, it is expected that research would continue on methods for establishing or expanding the Hoffmann's slender-flowered gilia, and efforts would likely continue to establish new populations or expand the boundaries of existing populations on the island. These actions, which would be taken independent of this planning effort, should help maintain the taxon. Although in the past there were impacts on one of the populations of the Hoffmann's slender-flowered gilia on Santa Rosa Island due to grading of the service road to East Point, this no longer occurs. No actions are occurring under alternative 3 that would affect this species. Thus, there would be no cumulative impact of alternative 3 on the Hoffmann's slender-flowered gilia.

Alternative 3 also would pose a risk of fire affecting the Santa Rosa Island manzanita, although again, with the proposed mitigation measures, the alternative may affect, but would not likely adversely affect, the manzanita. In addition to the possibility of a wildfire, several other impacts may occur on the Santa Rosa Island manzanita. Deer have browsed the manzanita in the past, but the recent removal of deer likely has had a beneficial impact on the plant. In addition, the Park Service and U.S. Geological Service plan to establish a seed collection, which would help ensure that the manzanita would not be extirpated on the island. However, the Park

Service would be taking no new actions under alternative 3 that would beneficially or adversely affect the plant. Thus, alternative 3 would result in no cumulative impacts that may affect the Santa Rosa Island manzanita.

Conclusion. Overall, no new developments or changes in visitor use or island management would occur under alternative 3 that would adversely affect the eight threatened and endangered animal and plant species being analyzed. Expected visitor use levels on the islands under alternative 3, like alternative 1, would likely result in a negligible to minor adverse effect, which may affect, but would not likely adversely affect, the island fox, snowy plover, Santa Cruz Island chicory, island rush-rose, Santa Rosa manzanita, Hoffmann's rock-cress, and island barberry populations. There could be a long-term minor beneficial impact to the Hoffmann's slender-flowered gilia. Alternative 3 would result in no cumulative impacts to the listed plant species, and there would be the potential for the same long-term minor beneficial cumulative impacts to the snowy plover and island fox as alternative 1.

Soundscape

Analysis. No substantial increases in visitor use would be expected under alternative 3. As in alternative 1, the primary sources of noise on the islands would continue to be from concentrations of visitors and boats, and the operation of machinery in localized areas, such as East Anacapa Island, Bechers Bay, Scorpion, Smugglers Cove, and Prisoners Harbor. There would be long-term minor to moderate adverse impacts on the natural soundscape in these areas at varying times (e.g., holidays and weekends). Human-caused sounds (noise) would be apparent, changing the distribution of sound frequencies and oftentimes masking natural sounds. A long-term moderate adverse noise impact would continue to occur when aircraft land and take off on Santa Rosa Island, and much less frequently on San Miguel Island.

As in alternative 1, the occasional operation of administrative motor vehicles on the roads on Santa Cruz and Santa Rosa Islands also would continue to have a long-term minor adverse impact on the natural soundscape. In addition, under alternative 3 there would be an increase in motor vehicles (compared to alternative 1) being used to transport visitors to Lobo Canyon and Johnsons Lee on Santa Rosa Island. Compared to alternative 1 driving additional vehicles on the Santa Rosa Island roads would likely have a long-term minor adverse impact on the natural soundscape, depending on the number, type, and frequency of vehicles driving on the roads. On the other hand, the closure of roads on Santa Rosa and Santa Cruz Islands would reduce the areas where motor vehicle noise would be heard and would have a long-term minor beneficial impact.

The periodic excavation of the channel in Scorpion Valley and restoration actions in the Scorpion estuarine wetland would result in localized short-term minor to moderate adverse impacts on the soundscape due to noise generated by the operation of machinery and equipment.

Short-term minor noise impacts would occur in alternative 3 due to the construction of several administrative and visitor facilities in the park on East Anacapa, Santa Cruz, Santa Rosa, and San Miguel Islands. Construction equipment and people would generate higher levels of noise, masking the natural soundscape at times.

Most of the new facilities would be in areas that have other visitors and/or administrative facilities. Thus, the use of most of these facilities would result in long-term minor noise impacts in these areas compared to alternative 1. However, more people would use the ranch area at Bechers Bay compared to alternative 1 and, therefore, would result in increased levels of noise and a long-term minor to moderate adverse impact on the natural soundscape in this area.

Under alternative 3 several new facilities would be built in areas that currently receive little, if any, use. The new housing area, campground, and field camp at Prisoners Harbor, the new facilities at Johnsons Lee, the Smugglers Cove campground, and possibly the field station at Bechers Bay all would increase use of these areas, which in turn would result in higher noise levels from people and equipment in the area. This would result in a short-term moderate adverse impact during construction and long-term minor to moderate adverse impact, depending on the level of use that occurs in these areas.

As in alternative 2, the possible development and use of new backcountry campsites and trails on Santa Cruz and Santa Rosa Islands and the establishment and use of a temporary camp on San Miguel Island under alternative 3 would result in more people using parts of the islands that received very little use in the past. Noise due to people in this area would be noticeable, compared to alternative 1, and would result in a long-term minor to moderate adverse impact on the natural soundscape in these areas.

The wilderness designation on several of the islands would provide permanent long-term protection to the park's natural soundscape. This action would have a negligible to minor beneficial effect. Precluding most future developments would benefit the natural soundscape. Since Channel Islands is already a national park and the islands are being largely zoned to protect natural resources, and with few human sources of noise in these areas, wilderness designation by itself would result in few noticeable changes in the islands' soundscape.

From a parkwide perspective, visitor use, new developments, and management actions in alternative 3 would result in a long-term minor adverse impact compared to alternative 1. However, changes in natural sound ambient conditions in popular use areas would result in localized short- and long-term minor to moderate adverse impact to the soundscape.

Cumulative Impacts. Noise from high flying aircraft and from offshore ships and boats that are not connected to park visitors or management would likely continue to be periodically heard on the islands. Noise due to ecosystem restoration efforts independent of this plan (e.g., vegetation restoration efforts on the islands) also would be periodically heard on the islands. In addition, noise may be periodically heard due to maintenance of roads on Santa Rosa and Santa Cruz Islands, use of the Santa Cruz Island U.S. Navy lease holding and testing and training operations in the Point Mugu Sea Range. Short-term noise would be heard when the Bechers Bay and Scorpion Harbor piers are replaced. When the noise impacts of the above actions are added to the noise impacts of the new developments, visitors, and park operations under alternative 3, there would be the potential for a long-term minor to moderate cumulative adverse impact on the park's natural soundscape in localized areas.

Conclusion. Like alternative 1, alternative 3 would have no effect on the soundscape in most of the park. In localized areas, particularly at entry points to the islands, there would continue to be a long-term minor to moderate adverse noise impact due to concentrations of visitors, boats, and park operations. From a parkwide perspective, visitor use, new developments, and management actions in alternative 3 would result in a long-term minor adverse impact compared to alternative 1. However, changes in natural sound ambient conditions from construction and use of new visitor and administrative facilities in several developed areas, including parts of Bechers Bay, Prisoners Harbor, and Johnsons Lee, would result in short- and long-term minor to moderate adverse impacts to the soundscape. When the effects of alternative 3 are added to other actions occurring independently of the alternative, there would also be the potential for localized long-term minor to moderate cumulative adverse impacts on the park's natural soundscape.

CULTURAL RESOURCES

Archeological (including Submerged Maritime) Resources

Analysis. As staffing and funding permit, archeological resources would be surveyed, inventoried, and evaluated under national register criteria of evaluation to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of such resources for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

Archeological surveys would occur as part of project planning and would precede any ground-disturbing activities (e.g., developing additional backcountry camping on Santa Rosa and Santa Cruz Islands, building concession facilities at Scorpion, constructing park housing on the Santa Cruz "isthmus," developing concession facilities and an environmental / research camp on Santa Rosa Island, and offering guided walks to pinniped rookeries on San Miguel Island). Significant archeological resources would be avoided during construction. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources could not be preserved *in situ*, an appropriate mitigation strategy developed in consultation with the California SHPO and representatives of associated American Indian tribes. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed. These actions would help ensure that ground-disturbing activities would not impact the integrity of the site to the extent that the national register eligibility would be jeopardized. Because of these efforts to avoid or reduce adverse impacts on archeological resources, any adverse impacts would be expected to be site-specific, permanent, and kept in the minor to moderate range.

Wilderness designation in alternative 3 would have a permanent negligible to minor adverse impact on archeological resources due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 3 also would have a long-term minor beneficial impact on archeological resources due to the permanent protection bestowed by wilderness designation. The impact would be minor because the designation would result in few noticeable changes to these resources.

Increasing numbers of island visitors, additional backcountry camping, and an expanded diversity of visitor experiences and opportunities in the park would occur under this alternative. Archeological resources would be vulnerable to inadvertent damage and vandalism. Inadvertent impacts would include picking up or otherwise displacing artifacts, compacting cultural deposits, and creating social trails (which can lead to erosion and destabilization of the original site architecture). Intentional vandalism includes removing artifacts and probing and digging sites. Inadvertent damage and vandalism would result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence. Such adverse impacts could be mitigated through additional stabilization of the site, the elimination of social trails to disturbed or vulnerable sites, and/or the systematic collection of surface artifacts for long-term curation. Continued ranger patrol and emphasis on visitor education regarding the significance and fragility of such resources and how visitors can reduce their impacts to archeological resources would help

discourage vandalism and inadvertent impacts and minimize adverse impacts. Potential adverse impacts would be permanent and minor.

Cumulative Impacts. The past action of eliminating cattle, deer, elk, and horses from Santa Rosa Island has resulted in archeological resources being better protected because they are not being disturbed or compacted by these animals. Impacts to archeological resources would be site-specific, long term, minor and beneficial.

The past, present, and future action of restoring native plant communities through the removal of nonnative plants and planting native plants has resulted in, or has the potential to result in, the disturbance of unknown archeological resources. Impacts to archeological resources would be site-specific, long-term, minor, adverse, and permanent.

The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 3 would result in permanent minor to moderate adverse impacts and long-term minor beneficial impacts. These impacts, in combination with the long-term negligible adverse impacts of other past, present, and future actions, would result in long-term minor to moderate adverse cumulative impacts on archeological resources. The adverse impacts of alternative 3 would be a minor component of the adverse cumulative impact.

Conclusion. Increasing numbers of island visitors, development of new facilities for visitor use, and provision for an expanded diversity of visitor experiences and opportunities in alternative 3 would be expected to result in some long-term to permanent minor to moderate adverse impacts on an unknown number of archeological resources because of inadvertent and intentional ground disturbance. Alternative 3 would also result in long-term minor beneficial impacts on archeological resource due to the protection bestowed by wilderness designation.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 3 would most likely be *no adverse effect* on archeological resources. The adverse effect determination would result from ground-disturbing activities.

Ethnographic Resources

Analysis. Actions under alternative 3 would generally have slighter greater impacts on ethnographic resources as those listed under alternative 2. Because this alternative would provide for increasing numbers of island visitors, construction of new facilities for visitor use, and an expanded diversity of visitor experiences in the park, actions under this alternative could be expected to have some long-term negligible to minor adverse impacts on ethnographic resources. However, consultations with the Chumash would be undertaken to minimize and mitigate such impacts; therefore, the impacts, although noticeable, would neither appreciably alter resource conditions nor alter the relationship between the resource and Chumash practices and beliefs.

Research regarding other traditionally associated groups, such as fishermen, vaqueros, and others, would increase the understanding of other ethnographic resources and values of the islands. This information would allow park staff to more adequately consult with these groups, interpret their history, and identify and protect associated resources. This would result in a long-term minor beneficial impact on ethnographic resources.

Wilderness designation in alternative 3 would have a long term negligible to minor adverse impact on ethnographic resources due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 3 also would have a long-term minor beneficial impact on ethnographic resources due to the permanent protection bestowed by wilderness designation. The impact would be minor because the designation would result in few noticeable changes to these resources.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 3 would result in long-term negligible to minor adverse impacts and long-term minor beneficial impacts. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term negligible adverse cumulative impacts to ethnographic resources. The adverse impacts of alternative 3 would be a slight component of the adverse cumulative impact.

Conclusion. Actions under alternative 3 would have the same adverse impacts on ethnographic resources as those listed under alternative 2. Increasing numbers of visitors and an expanded diversity of visitor experiences on the islands under this alternative could be expected to have some long-term negligible to minor adverse impacts plus long-term minor beneficial impacts on ethnographic resources.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 3 would be a *no adverse effect* on ethnographic resources.

Historic Structures/Buildings

Analysis. As staffing and funding permit, structures and buildings in the park would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of a structure, building, or historic district for listing in the national register are a prerequisite for understanding the resources' significance, as well as the basis of informed decision making in the future regarding how the resources should be managed. Such surveys and research would have long-term minor beneficial impacts.

To appropriately preserve and protect national register-listed or eligible structures and buildings, all stabilization, preservation, and rehabilitation efforts (including the rehabilitation of historic structures and buildings at Scorpion and Smugglers ranches, Prisoners Harbor, and Bechers Bay) would be undertaken in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995). Any materials removed during rehabilitation efforts would be evaluated to determine their value to be added to the park's museum collection and/or their comparative use in future preservation work at the site. Any adverse impacts would be long-term and minor to moderate depending on the nature and extent of the alterations to accommodate new uses and current codes.

Increasing numbers of island visitors would be expected under this alternative. Historic structures and buildings could suffer wear and tear from visitation, and unstaffed or minimally staffed structures and buildings could be more susceptible to vandalism. Continued ranger patrols and emphasis on visitor education regarding the significance and fragility of such resources and how

visitors can reduce their impacts to historic structures and buildings would discourage inadvertent impacts and vandalism, minimizing adverse impacts. Also, monitoring the user capacity of historic structures and buildings could occur, which would result in imposition of visitation levels or constraints that would contribute to the stability or integrity of the resources without unduly hindering interpretation for visitors. Any adverse impacts to historic structures and buildings from visitation would be long-term and negligible to minor.

Cumulative Impacts. The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 3 would result in site-specific long-term minor to moderate adverse impacts. These impacts, in combination with the long-term negligible beneficial impacts of other past, present, and future actions, would result in long-term minor adverse cumulative impacts to historic structures and buildings. The adverse impacts of alternative 3 would be a minor component of the adverse cumulative impact.

Conclusion. Actions under alternative 3 would have greater impacts on historic structures and buildings than those listed under alternative 1. Increased visitor use and rehabilitation efforts of historic structures and buildings on Santa Rosa and Santa Cruz Islands would have a long-term minor to moderate adverse impact.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 3 would be a *no adverse effect* on historic structures and buildings.

Cultural Landscapes

Analysis. As staffing and funding permit, landscapes and their features and patterns would be surveyed, inventoried, and evaluated to determine their eligibility for listing in the national register. The surveys and research necessary to determine the eligibility of a landscape for listing in the national register are a prerequisite for understanding the landscape's significance, as well as the basis of informed decision making in the future regarding how the landscape and its features and patterns should be managed. Such surveys and research would have long-term minor beneficial impacts.

To appropriately preserve and protect national register-listed or eligible cultural landscapes, all stabilization and preservation efforts would be performed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Any adverse impacts would be long-term and negligible to minor.

One new housing unit would be constructed in the Anacapa Island Light Station Historic District; concession facilities would be added at Scorpion Valley; and a new campground, visitor and concession facilities, and possibly a research station would be built in the historic ranch complex at Bechers Bay. Careful design would ensure that new construction would minimally affect the scale and visual relationships among landscape features, patterns of vegetation, and circulation systems and, as appropriate, new construction would be similar in style, scale, size, and materials to existing structures and buildings. Any adverse impacts would be long-term and minor.

The introduction of a small concession-operated vehicle transport system on Santa Rosa Island would result in negligible impacts to cultural landscapes. Vehicles would use existing roads, and land use and circulation patterns would be unaltered.

The historic olive grove would be maintained in a manner that perpetuates the grove as a cultural landscape feature but prevents the olive trees from spreading, as much as possible, throughout the island. If it is not possible to control the spread of olives from birds, approximately one-fifth of the grove, consisting of the trees that are the largest olive producers, would be removed and replaced with an appropriate substitute, such as nonfruiting olive trees. This reduction would be minimal enough to ensure that the integrity of the historic olive grove as a historic landscape is retained, and the cultural landscape would continue to be eligible for listing in the national register. The remaining four-fifths of the grove would be maintained, thus preserving the physical character of the grove: the plantings, patterns, density, and grid lines of the trees. The impact from the tree removal would be long-term, moderate, and adverse.

The eucalyptus trees at Scorpion Valley are contributing elements of the cultural landscape, and therefore their possible replacement with less-hazardous, native trees would affect character-defining features of the Scorpion Valley cultural landscape. However, the majority of the contributing landscape features would be retained, preserving the integrity of the cultural landscape such that it would continue to be eligible for listing in the national register. The impact from the tree removal would be long-term, moderate, and adverse.

The closure of unneeded roads and restoration of the landscape or conversion of such roads to trails on Santa Rosa and Santa Cruz Islands would alter the spatial organization, land use, and circulation patterns of the landscape. Any impacts would be long-term, moderate, and adverse.

Cumulative Impacts. The past, present, and future action of restoring native plant communities through the removal of nonnative plants and planting native plants has and would continue to alter the historic character of the ranches. Impacts on cultural landscapes would be site-specific, long-term, minor to moderate, and adverse.

The past, present, and future action of allowing researchers to study, inventory, and monitor cultural resources via a research permit would be long-term, negligible, and beneficial.

As described above, implementation of alternative 3 would result in site-specific long-term minor to moderate adverse impacts. These impacts, in combination with the long-term minor to moderate adverse impacts of other past, present, and future actions, would result in long-term minor to moderate adverse cumulative impacts on cultural landscapes. The adverse impacts of alternative 3 would be a small component of the adverse cumulative impact.

Conclusion. Actions under alternative 3 would have greater impacts on cultural landscapes than those listed under alternative 1 due to more actions involving cultural landscape features.

Section 106 Summary. After applying the advisory council's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the Park Service concludes the proposed undertakings outlined in alternative 3 would be *no adverse effect* on cultural landscapes.

VISITOR EXPERIENCE, INTERPRETATION, AND EDUCATION

Analysis

Under alternative 3 visitors would continue to engage in a variety of recreational activities, encounter low to moderate levels of visitation, and participate in group activities. Existing opportunities to access the island would not change, but the origins of concession operations that provide access to the islands would no longer be limited to Oxnard and

Santa Barbara. Some visitors would not have to drive as far to reach a concession boat to visit the islands. For these visitors, this would be a long-term minor to moderate beneficial impact on their experience. Although opportunities to visit the islands would continue to be provided, some visitors would be unable to afford passage or may find it difficult to reach the transportation providers. This would continue to have a long-term moderate adverse impact on those unable to travel to the islands.

The visitor center on the mainland in Ventura Harbor would be expanded to provide additional orientation, interpretation, and educational opportunities for more visitors. For the visitors who are able to participate, this would be a long-term minor beneficial impact on visitors. The underwater video program would extend into the fall, thus allowing not only expanded viewing opportunities in the visitor center but ultimately to schools both locally and nationwide. This would be a long-term moderate beneficial impact on the educational experience of students who visit the visitor center as well as students in remote locations. With an expanded visitor center, visitors would also be able to explore the full array of interpretive themes of the park, including the history of ranching on the islands as well as of the Chumash Indians, two themes not currently explored in depth. This would be a long-term minor to moderate beneficial impact on interpretation and visitor experiences in the park.

As in alternative 2, a core interpretive team would be established to support on-island visitor services and programs. This would be a long-term minor to moderate beneficial impact on interpretation and educational services and, thus, visitor experiences in the park.

The wilderness designation on the islands would permanently preserve opportunities for wilderness-related recreation and preclude activities and developments that could adversely affect these activities. Designating wilderness also would not preclude recreational activities that already occur. However, the islands are already remote and provide many opportunities for solitude and primitive, unconfined recreation. The park's enabling legislation also limits the level of visitor use. Thus, designating wilderness would not affect most visitors and would have a long-term minor beneficial effect.

East Anacapa Island

The historic lighthouse and accompanying exhibits would be open to the public for the first time. This would be a long-term minor beneficial impact on visitor experiences in the park because it would open a landmark on one of the most popular destinations in the park.

Middle Anacapa Island

Alternative 3 would have the same impact on visitor experience opportunities on Middle Anacapa Island as alternatives 1 and 2. Visitor access would continue to be limited to groups with a NPS-approved guide, and the visitor experience would not change. Thus, alternative 3 would have a long-term minor beneficial impact on visitor experience opportunities.

West Anacapa Island

Access would continue to be limited to Frenchy's Cove and the visitor experience in the cove would not change. Thus, alternative 3 would have the same long-term minor beneficial impact on visitor experience opportunities on West Anacapa Island as alternatives 1 and 2.

Santa Cruz Island

The impacts of alternative 3 on visitor experience opportunities on Santa Cruz Island would be the same as those described for alternative 2. The establishment of an education/volunteers camp on the island would provide additional and in-depth opportunities for more education groups to experience and learn more about the park's terrestrial, marine, and cultural resources. This would be a long-term moderate beneficial impact. With the establishment of a visitor contact station at Prisoners Harbor, more interpretation opportunities would be available on the island. This would be a long-term minor to moderate beneficial impact on education and interpretation on the island, especially for those who are coming to the island for the first time. Once the backcountry management plan is completed, there might be more opportunities for visitors who want to hike and camp in the island's interior. This would be a long-term minor to moderate beneficial impact on visitors because more areas of the island would be available for exploring. A new 24-camper campground also would be provided in the Prisoners Harbor area, which would be a long-term moderate benefit for visitors who want to camp and enjoy increased recreational opportunities available on this part of the island.

All but 10 of the campsites in the campground in Scorpion would be closed during the winter because of the potential for flooding. As with alternative 2, this would have both beneficial and adverse effects. For those people who were able to camp in the winter, the closure would be a long-term minor beneficial impact because the risk from flooding would be reduced and because with fewer people, the quality of the experience might improve for some. On the other hand, some visitors who wanted to winter camp might not be able to camp when they wanted, which would result in a long-term minor to moderate adverse impact, depending on if they could find other suitable dates to camp.

For health and safety reasons, most of the historic eucalyptus groves in the campground would be replaced with native or noninvasive tree varieties. The eucalyptus trees drop limbs and are a hazard for visitors. Small stands of the eucalyptus trees and the long row of trees between upper and lower Scorpion would remain to provide visitors with a sense of the historic ranching landscape. As in alternative 2, the risk of injury to visitors as a result of the eucalyptus trees would be reduced, which would be a long-term beneficial impact on visitor experience in the park. However, until the new trees mature, the lack of shade would be perceived as detracting from the visitor experience. Thus overall, the removal of eucalyptus groves from the campground would be perceived as a long-term moderate adverse impact.

Santa Rosa Island

Alternative 3 would have many of the same effects on visitor recreation and interpretation/education opportunities on Santa Rosa as alternative 2. However, unlike alternative 2, under alternative 3 a new campground with individual and group sites would be developed at the eastern edge of the historic ranching complex at Bechers Bay. This would be a long-term moderate benefit for visitors to the island because it would increase opportunities for people to stay overnight on the island as well as make group camping available.

Formal educational opportunities on the island (and in the park as a whole) would be expanded in alternative 3 through the development of a research/education field station that includes a classroom facility. The research station would provide additional and in-depth opportunity for more education groups, researchers, and others to experience and learn more about the park's terrestrial, marine, and cultural resources. Thus, the research/education field station would have a long-term moderate beneficial impact on the educational opportunities in the park.

Development of a visitor contact station with exhibits would create additional opportunities for visitors to get oriented, gain a more in-depth understanding about the islands, and make a stronger connection between the interpretive themes and the island's natural and cultural resources. A visitor contact station would be a long-term minor to moderate beneficial impact on visitor interpretation on the island.

The proposed concession lodging operation would allow visitors who do not want to camp an opportunity to stay overnight on the island, such as the elderly and families with young children, and give them additional opportunities to experience the island. The impacts associated with new lodging opportunities would be the same as alternative 2 — a long-term moderate beneficial impact for visitors to Santa Rosa Island.

The proposed concession island-based transport operation would increase the diversity of recreational experiences available to visitors on Santa Rosa Island. With transportation, visitors would be able see more of the island outside of Bechers Bay. Day use visitors would be able to experience more of the island and backpackers would also be able to venture farther into the backcountry. These visitors would be beneficially affected by this new opportunity. The experience of some visitors who are walking on the roads and are passed by the shuttles may be slightly degraded, but this would occur infrequently due to the relatively few visitors who are hiking and the few shuttles driving on a couple of roads. Overall, the impacts would be the same as alternative 2 — a long-term moderate to major beneficial impact on visitors to Santa Rosa Island.

Like alternative 2, once the backcountry management plan is completed, there might be more opportunities for visitors who want to hike and camp in the island's interior. This would be a long-term minor to moderate beneficial impact on visitors, depending on what the backcountry management plan proposes, because more areas of the island would likely be available for exploring.

With more opportunities to recreate, explore, and learn about Santa Rosa Island in alternative 3, more people would likely visit the island. Island user capacity limits and other constraints on the concessioners' operations (e.g., weather conditions, boat sizes, transit times, and fuel costs) would limit the number of people that actually come to the island. Visitors would also be dispersing out to other locations from Bechers Bay. Nevertheless, larger numbers of people would likely be present at the Bechers Bay developed area in alternative 3 compared to alternative 1. This would have both beneficial and adverse impacts on the visitor experience. Because more people could visit and enjoy this area, there would be a long-term minor to moderate beneficial impact on many visitors' experiences. On the other hand, for some visitors (particularly people who have visited in the past), the area might be perceived as being more crowded, which could have a long-term minor to moderate adverse impact on those visitors' experiences.

San Miguel Island

Alternative 3 would have the same impact on visitor experience opportunities on San Miguel Island as alternative 2. If guided multiday trips were provided, this would provide an experience not currently available on the island. (Most visitors cannot currently hike to Point Bennett to see the pinnipeds in the time they have available.) As people learned about the opportunity, more people would likely try to come to the island to take advantage of this experience. As with alternative 2, this would be a long-term major beneficial impact for visitors because of the uniqueness of the experience, even though only a relatively small number of visitors would be impacted.

Santa Barbara Island

No actions would be taken under alternative 3 that would affect visitors on Santa Barbara Island.

Cumulative Impacts

With a few exceptions, no actions would occur inside or outside the park, independent of alternative 3, which could result in cumulative visitor experience impacts. Ongoing and future restoration and management activities and construction activities, particularly on Santa Rosa and Santa Cruz Islands, would result in temporary closures of areas for recreational use. This would have short- and long-term minor adverse effects on visitor experience opportunities, because although areas would be closed, there would usually be other opportunities for visitors to take advantage of their time on the islands.

When the adverse effects of NPS restoration and administrative activities on recreational opportunities are added to the additional recreational opportunities on Santa Rosa Island under alternative 3, there would be a long-term minor to moderate beneficial cumulative impact on visitor experience opportunities.

Conclusion

The diversity of visitor experiences, including recreational opportunities, as well as interpretation and educational opportunities, would increase in much of the park under alternative 3 compared to alternative 1. Overall, alternative 3 would have a long-term moderate beneficial impact on visitor experience opportunities, largely due to the increase in recreational opportunities on Santa Cruz and Santa Rosa Islands that would allow visitors a greater diversity of experiences on the islands. The expanded visitor center in Ventura, the new education/volunteers camp on Santa Cruz Island, new campgrounds on Santa Rosa and Santa Cruz Islands, the new research/education field station on Santa Rosa Island, and the guided multiday trips on San Miguel Island would all contribute to this impact. On-island interpretation would also increase with new visitor contact stations (in adaptively used structures) on Santa Cruz and Santa Rosa Islands, resulting in long-term minor to moderate beneficial impacts on visitor experience opportunities. On the other hand, with more people visiting Santa Rosa Island, there could be long-term minor to moderate adverse impacts on the visitor experience at Bechers Bay due to perceived crowding. There could be a long-term minor to moderate beneficial cumulative impact on recreational opportunities on Santa Rosa Island when the additional recreational opportunities available under alternative 3 are combined with the reductions in recreational opportunities due to restoration and other management activities.

WILDERNESS CHARACTER

Analysis

Under alternative 3, 66,576 acres or approximately 53% of the land portion of the park would be proposed for wilderness designation, with the lands on Santa Cruz and Santa Rosa Islands being proposed as potential wilderness. Assuming Congress approves the wilderness proposal, the wilderness resources of all of Middle and West Anacapa Islands, most of the NPS lands on Santa Cruz Island, almost all of Santa Rosa Island, and almost all of Santa Barbara Island would be permanently protected. The areas would be permanently undeveloped, and would be protected and managed to preserve their natural character. Visitors would be assured of outstanding opportunities for solitude and primitive, unconfined recreation. Because of the large area designated as wilderness, this would have a long-term,

major beneficial impact on wilderness character.

No other actions are being proposed in the alternative that would affect visitation or wilderness character on Santa Barbara Island. However, several other actions in the alternative would affect the qualities of wilderness character of the other islands. Although visitor use levels in alternative 3 would likely increase as more visitors come to the islands, compared to alternative 1, visitors should still be able to find opportunities for solitude and primitive unconfined recreation in the larger wilderness areas on Santa Rosa and Santa Cruz Islands. For example, more visitors may go into the interior of Santa Rosa Island using concession vehicles, but given the large area of the island, it is unlikely that visitors would often encounter other visitors. Although encounters would be of short duration, they would periodically occur over the life of the plan and are considered long-term impacts. Thus, any adverse impacts on wilderness character would be expected to be long-term and minor.

As in all of the alternatives, certain parts of the proposed wilderness area would be restricted or closed to visitor use seasonally or annually, including Middle and West Anacapa Islands, and certain beaches on Santa Rosa Island. These actions would affect opportunities for primitive, unconfined recreation. However, because there would be no change between alternative 3 and alternative 1, there would be no effect — alternative 3 would have the same long-term minor adverse impact as alternative 1.

Under alternative 3, ecosystem restoration efforts on Santa Cruz and Santa Rosa Islands, including the use of motorized equipment, would adversely affect the untrammeled and undeveloped qualities of wilderness character for an unknown period of time. In addition, about 67 miles of existing roads within the proposed potential wilderness area on Santa Rosa Island and about 12 miles of roads within the proposed potential wilderness area on Santa Cruz Island would be closed and either converted to trails or recontoured and revegetated. Although the application of wilderness minimum requirements would help minimize impacts of this restoration effort, in the short term these actions would affect the untrammeled and undeveloped qualities of the areas, resulting in a moderate adverse impact on wilderness character in these areas. However, in the long term, these actions would improve the natural quality of the landscape, resulting in a moderate to major beneficial impact.

None of the proposed developments in Scorpion Valley, Prisoners Harbor, Bechers Bay, and Johnsons Lee would occur in areas that would be proposed for wilderness and, therefore, would have no effect on wilderness character.

The future backcountry management plan could also increase the opportunity for backcountry camping and trails on Santa Cruz and Santa Rosa Islands. An increase in backcountry sites would increase opportunities for both primitive and unconfined recreation on the island, and would be a long-term minor beneficial impact. An increase in the number of backcountry camping sites and trails also could increase opportunities for solitude because more visitors would have the opportunity to camp and hike farther away from the developed areas. The increase in the number of visitors would be offset by the size of the area open to visitors, as well as increases in the areas open to hiking and camping. The campsites and trails also would adversely affect the natural quality of the islands. The magnitude of these beneficial and adverse impacts would depend on the number and location of backcountry campsites and trails, and cannot be determined in this impact assessment.

With regard to the other features of value (the fifth quality of wilderness character), as stated earlier, alternative 3 would have a long-term minor adverse impact on paleontological resources, a long-term negligible to minor

adverse impact on ethnographic resources, and a permanent negligible to minor adverse impact on archeological resources due to increased human activities in the backcountry, which would affect scientific research opportunities and cultural resources in the area proposed for wilderness designation. However, alternative 3 also would have a long-term minor beneficial impact on paleontological, ethnographic, and archeological resources due to the permanent protection bestowed by wilderness designation. The impact would be minor because the designation would result in few noticeable changes to these resources.

From an overall parkwide perspective, alternative 3 would have a long-term major beneficial impact on wilderness character, primarily due to the designation of much of the park as wilderness and the closure/restoration of roads on Santa Rosa and Santa Cruz Islands.

Cumulative Impacts

Alternative 3 would have the same potential for cumulative impacts as alternative 2. Several NPS projects would occur on the islands independent of alternative 3, including vegetative restoration efforts, threatened and endangered species recovery efforts, and control of nonnative species, which would adversely affect opportunities for solitude. These management activities also would adversely affect the "untrammeled" or uncontrolled quality of wilderness character in the short term (although the application of the wilderness minimum requirements process would help mitigate these impacts). On the other hand, these NPS resource management activities on the islands would improve the long-term naturalness of the lands proposed for wilderness. When these actions are added to the major beneficial impacts of the actions being proposed in alternative 3, there would be the potential for a long-term major beneficial cumulative impact, primarily due to the proposal to designate much of the park as wilderness.

Conclusion

Overall, alternative 3 would have a long-term major beneficial impact on wilderness character, primarily due to the designation of much of the park as wilderness and the closure/restoration of roads on Santa Rosa and Santa Cruz Islands. When other NPS management actions independent of this plan, such as revegetation efforts, are added to the effects of alternative 3, there would be the potential for a long-term major beneficial cumulative impact.

PARK OPERATIONS

Analysis

Like the previous alternatives, the park's physical geography would pose an operational challenge in alternative 3. NPS operations would continue to be characterized in the alternative by (1) a substantial number of facilities or assets (e.g., visitor contact stations, campsites, trails, and historic structures and landscapes) that must be maintained; (2) visitor-related operational demands (e.g., interpretive services, patrols, and campground maintenance) that are much greater in the busy summer visitor season than at other times of the year; and (3) island operations that command a disproportionate share of the park's annual operating budget due to the logistics of transporting equipment, materials, and staff to and from the islands.

Alternative 3 would have many of the same beneficial and adverse effects as alternative 2 on park operations. Alternative 3 calls for new facilities and management actions that would require new staff as well as investments to plan and implement. These new facilities and projects would add to the scope and complexity of park operations. Assuming the new facilities and projects are spread out over

the 20- to 40-year life of the plan and that new staff and funding are also carefully planned for and integrated into existing park operations would help mitigate potential disruptions to and conflicting workload demands on park staff. Nevertheless, some adverse impacts would still occur, as noted below.

Alternative 3 would add 17 FTE employees, who would work on the various facilities and projects called for under the plan. These new employees would have a long-term moderate beneficial impact on the park's operational capabilities. However, this additional staff also would require office space and equipment, information technology and telecommunications, human resources, and other support. This would result in long-term minor adverse impacts on park operations by further straining park operational resources.

Alternative 3 would require additional managerial and contracting staff time to oversee the design and construction of new facilities both on the mainland (e.g., expansion of the visitor center) and on the islands (e.g., new campgrounds, ranger stations, an education/volunteers camp, and a research/education field station). Rehabilitation/adaptive reuse of the Bechers Bay ranch complex would take substantial time to manage. Removal of facilities, such as roads on Santa Rosa Island and reductions in the campgrounds at Scorpion Valley and Anacapa Island, would take some staff time to oversee. Establishment of a concession program covering lodging, food, and visitor transportation on Santa Rosa Island would take a substantial amount of time in the short term to start, but then would take less staff time to run. New interpretive efforts, such as the development of new interpretive exhibits at the mainland visitor center and on the islands, would take time. Additional effort would be needed to maintain all of the new facilities. Providing a new guided overnight visitor opportunity on San Miguel Island and overseeing additional visitors arriving on concession aircraft would require staff time. Additional effort would be needed to monitor the user capacity indicators to ensure unacceptable conditions are not occurring. With the designation of wilderness, maintenance staff would be required to use the minimum requirements process to determine what kind of equipment would be needed to build and maintain trails. Visitor and resource protection and natural and cultural resource staff would be limited in their use of motorized vehicles in wilderness, which could reduce their effectiveness. Although the staff could continue to conduct natural resource management, surveys, patrols, and other day-to-day operations in the wilderness, it would likely be more time consuming and costly, which in turn would reduce the work that is completed. Even with phasing of the new developments and new staff and funding, all of these actions considered together would likely have short-term moderate to major adverse impacts and long-term moderate adverse impacts on park operations.

Wilderness designation the islands would avoid some potential developments and activities that might otherwise require park staff time. However, wilderness designation would require the staff to carefully consider activities in these areas, completing minimum requirement analyses. Although the staff could continue to conduct surveys, patrols, and other day-to-day operations in the wilderness, it may be more time consuming and costly. This change would be noticeable to the staff but not to visitors. Thus, wilderness designation would have a long-term minor adverse impact on park operations.

Alternative 3 also would result in several actions that would beneficially affect park operations. Providing new office space on the mainland, replacing temporary housing at Scorpion Valley with permanent housing and office space, moving maintenance operations to a new facility at Scorpion Valley, providing employee housing at Prisoners Harbor, providing new staff housing facilities at

Bechers Bay and on Anacapa Island, substantially decreasing the number of roads to be maintained on Santa Rosa Island, and providing new ranger stations at Johnsons Lee and Bechers Bay all would beneficially affect park operations, improving staff productivity and efficiency in managing park resources and visitors. This would have a long-term moderate to major beneficial impact on park operations.

Overall, considering all of the direct potential impacts, over a 20- to 40-year timeframe, with additional staff and funding and adequate phasing of new developments and projects, compared to alternative 1, alternative 3 would be expected to have a long-term minor to moderate beneficial effect on park operations. Park staff would be more productive and efficient in managing resources and visitors and achieving desired conditions in alternative 3 compared to alternative 1.

Cumulative Impacts

As described in the cumulative impacts scenario, a large number of ongoing and future actions independent of the plan would be expected, including maintenance and replacement of facilities, issuing permits for scientific research and commercial services, ecosystem restoration efforts, and other resource management activities. In addition, park staff would continue to be engaged in actions and projects independent of keeping the park functioning, such as general coordination/consultation activities on actions that could affect the park and activities outside of the park that require staff time (e.g., implementation and enforcement of the Channel Islands National Marine Sanctuary General Management Plan (2009) and regulations). Some of these projects require intensive planning, coordination, and involvement from park staff, and represent a substantial operational burden on park staff. All of these actions, taken together, would likely have a long-term moderate adverse impact on park staff.

Overall, when the long-term minor to moderate beneficial impacts of park operations associated with alternative 3 are combined with the effects of other ongoing and planned projects, there would likely be a long-term moderate adverse cumulative impact on park operations. Alternative 3 would slightly reduce the overall adverse cumulative impact.

Conclusion

Like alternative 2, alternative 3 would have both beneficial and adverse effects on park operations. Adverse effects would be due to changes in facilities and new management actions, including concession management, new interpretive efforts, and increased monitoring of the park. Overall, however, assuming careful phasing of new developments and management actions, compared to alternative 1, alternative 3 would be expected to have a long-term minor to moderate beneficial impact. This would be primarily due to increased staff and funding, new staff/administrative facilities, and reductions in some facilities (e.g., roads on Santa Rosa Island). When the effects of alternative 3 are combined with other ongoing and likely future projects, there would be the potential for a long-term moderate adverse cumulative impact on park operations. Alternative 3 would slightly reduce the overall adverse cumulative impact.

UNAVOIDABLE ADVERSE IMPACTS

The following paragraphs describe the more important (moderate and major intensity) adverse impacts that would result from implementing alternative 3. These are residual impacts that would remain after mitigation was implemented. The negligible and minor impacts are described in the foregoing analysis.

Unavoidable moderate adverse impacts on some natural resources would occur in

localized areas within the park as a result of implementing alternative 3. Even with road closure/restoration efforts, erosion on several roads on Santa Rosa Island could still result in adverse soil impacts in local areas. Periodic excavation of sediments from the Scorpion Creek channel to protect existing facilities would have a minor to moderate adverse effect on natural floodplain values. In localized areas, particularly at entry points to the islands (such as East Anacapa Island, Scorpion Valley, Smugglers Cove, Prisoners Harbor, and Bechers Bay), there would continue to be minor to moderate noise impacts due to concentrations of visitors, boats, and park operations. As in alternative 1, long-term moderate adverse noise impacts would continue to occur when aircraft land and take off at the airstrip on Santa Rosa Island. In addition, in alternative 3 the increased landings of aircraft on San Miguel Island would result in a long-term moderate adverse impact on the soundscape. Increased visitor and administrative uses under alternative 3 also would potentially increase the risk of nonnative species introduction and wildfires, which in turn could adversely affect the islands' vegetation and native wildlife populations.

The lack of adequate interpretive media on the islands to give visitors a better understanding and appreciation of elements of the other primary interpretive themes and the lack of firsthand interaction with park resources would have an unavoidable long-term minor to moderate adverse impact on the visitor experience.

Opportunities to visit the islands would continue to be provided, although some visitors would be unable to afford passage or may find it difficult to reach the transportation providers. This would continue to have an unavoidable long-term moderate adverse impact on those unable to travel to the islands.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction materials and energy used would be irretrievably lost. There would also be an irretrievable and irreversible commitment of resources in terms of funds expended on both labor and construction materials. The construction of new facilities would result in the irreversible loss of natural resources in localized areas.

THE RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

Under alternative 3 most of the park would continue to be protected in a natural state and would maintain its long-term productivity — the Park Service would manage the islands to maintain ecological processes and native biological communities. Most areas would be protected in their current state and would maintain their long-term productivity. With increased use levels resulting from the alternative, some vegetation and soils in localized areas may be adversely affected (e.g., trampling of vegetation), which would reduce the productivity of these areas. In developed areas (e.g., part of East Anacapa Island, Scorpion Valley, Prisoners Harbor, Bechers Bay, and Johnsons Lee) the primary short-term uses would be for recreational and education/scientific use. Under alternative 3 there would be expanded development to support these uses and for park operations, resulting in some localized loss of ecological productivity in areas that had no previous development. Adverse impacts on the areas' vegetation and soils would reduce the long-term ecological productivity of these areas, although overall only a relatively small reduction in the park's productivity would be expected. On the other hand, efforts to restore vegetation in a few sites (e.g., the estuarine wetland and floodplains at the mouth of Scorpion Creek on Santa Cruz Island) and

along roads on Santa Rosa Island would increase long-term productivity in these areas. As in all of the alternatives, maintaining facilities in the Scorpion Creek floodplain would continue a long-term reduction in natural and beneficial values of the floodplain and prevent it from functioning naturally.

Channel Islands National Park

Chapter 5: Consultation and Coordination

SUMMARY OF PUBLIC AND AGENCY INVOLVEMENT

The Park Service sought the input of and consulted with various agencies, organizations, and interested persons in preparing this document. Consultation and coordination is an important part of this project. The public had three primary avenues for participation during the development of the plan – participation in public meetings; response to newsletters; and comments submitted by regular mail and through the NPS Planning, Environment, and Public Comment (PEPC) system website.

PLAN DEVELOPMENT

Public meetings and newsletters were used to keep the public informed and involved in the development of the plan for Channel Islands National Park. A mailing list was compiled that consisted of members of governmental agencies, nongovernmental groups, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on November 8, 2001. A newsletter issued in October 2001 described the planning effort. A total of 53 electronic and mailed comments were received in response to that newsletter. Public meetings were held on November 12, 2001 (Santa Barbara); November 13, 2001 (Los Angeles); November 14, 2001 (Oxnard); and November 15, 2001 (Ventura). The planning team also met on April 11, 2002 with representatives from the Coast Guard, Minerals Management Service, U.S. Navy, Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Wildlife, California Regional Water Quality Control Board, California State Historic Preservation Office, Ventura County, Ventura Port District, Santa Cruz Island Foundation, and Vail & Vickers to listen to their concerns for the plan. In addition, planning team members met with representatives from TNC and the sanctuary to discuss their concerns. Comments received in the above meetings and in response to the newsletter were incorporated into issues for the plan.

A second newsletter distributed in August 2002 described the preliminary alternatives for managing the park. In addition, public meetings were held on the preliminary alternatives on September 18, 2002 (Ventura) and on September 19, 2002 (Santa Barbara). A total of 91 separate written responses (including mailback response forms, letters, and e-mails) were received in response to the newsletter. The respondents were fairly evenly spread out among their favored alternatives – no one alternative stood out substantially above the others.

A notice of intent to expand the scope of the environmental impact statement to include a wilderness study was published in the *Federal Register* on April 8, 2009. Public informational open houses were subsequently held at the park headquarters on June 17, 2009, and at Santa Barbara on June 18, 2009. Comments on proposing wilderness for the park were requested to be submitted through the mail and the PEPC website. Three comment letters were received.

DRAFT GENERAL MANAGEMENT PLAN/WILDERNESS STUDY/ ENVIRONMENTAL IMPACT STATEMENT

A notice of availability of the *Channel Islands National Park Draft General Management Plan/Wilderness Study/Environmental Impact Statement* was published in the November 14, 2013 *Federal Register*. The comment period on the draft plan ran from November 8, 2013 through March 10, 2014. This comment

period included two consecutive 30-day extensions beyond the original closure date. Public meetings on the draft plan were held at the park headquarters on December 3, 2013, and at Santa Barbara on December 4, 2013. The park headquarters meeting also included a public hearing for the wilderness study, as required under the Wilderness Act.

A total of 1,091 pieces of correspondence were received from individuals, organizations, and agencies. Although comments from unaffiliated individuals were by far the largest source of comments, a variety of federal and state agencies, city government, recreation groups, businesses, conservation groups, nonprofit groups, and other organizations provided comments. Agency letters are reproduced in appendix H. Most comments were received as e-mails, with the remainder being letters (which were scanned into PEPC). Two form letters were received, totaling 464 separate correspondences. (Many very similar letters were also received requesting airplane access to the landing strip on East Santa Cruz Island.) Comments were received from 22 states, but the majority were from California (~96%).

The Park Service has responded to all substantive comments raised by the public and agencies as part of developing the Final General Management Plan/Wilderness Study/Environmental Impact Statement. In some cases, the content of the document was modified in response to public comments.

CONSULTATION WITH THE STATE HISTORIC PRESERVATION OFFICE AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION

Agencies that have direct or indirect jurisdiction over historic properties are required by Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470, et seq.) to take into account the effect of any undertaking on properties eligible for the national register. To meet the requirements of 36 CFR 800, the Park Service sent letters to the state historic preservation office and the advisory council on September 10, 2001, inviting their participation in the planning process. Both offices were sent all of the newsletters with a request for comments. No comments were received from the advisory council.

The state historic preservation office provided comments on the draft document (see appendix H). In its letter the state did not concur with the proposed finding of no adverse impacts in the draft document. Consultations are ongoing with the state historic preservation office and the results will be included in the record of decision for the general management plan/wilderness study.

CONSULTATION WITH NATIVE AMERICANS

On September 10, 2001, a letter was sent to the Santa Ynez Band of the Mission Indians, the only federally recognized tribe associated with the park, to invite their participation in the planning process. Other groups and members of the Chumash community were briefed on the scope of the planning project and the preliminary alternatives by newsletter. More recently (in early 2011), the park staff held consultation meetings with the Chumash community to seek their input prior to the completion of this draft GMP/EIS. The federally recognized tribe and members of the Chumash community would also have an opportunity to review and comment on this draft plan.

Copies of the draft plan were sent to the Santa Ynez Band and groups and members of the Chumash community with a request for their comments. No comments were received from them, except for a letter from the Wishtoyo Foundation, which represented some members of the Chumash.

SECTION 7 CONSULTATION WITH THE FISH AND WILDLIFE SERVICE AND NATIONAL MARINE FISHERIES SERVICE

The ESA of 1973, as amended, requires in section 7(a)(2) that each federal agency, in consultation with the secretary of the interior, ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

Informal consultation with the Fish and Wildlife Service and National Marine Fisheries Service began in August 2002 with a request for a list of threatened and endangered species that may occur in or near the park. Responses were received on August 30, 2002 and December 13, 2002. (The National Marine Fisheries Service subsequently dropped three of the species petitioned for listing under the ESA. These changes are reflected in the list of species in appendix D.)

The National Marine Fisheries Service comment letter on the draft plan pursuant to the ESA is included in appendix H. The U.S. Fish and Wildlife Service did not provide a response letter, but stated the agency would work with the Park Service after the plan is adopted in analyzing specific potential effects on threatened and endangered species and their habitats through a section 7 consultation.

COASTAL ZONE MANAGEMENT CONSISTENCY DETERMINATION AND CONSULTATION

Federal agency activities in or affecting California's coastal zone must comply with § 307 of the Coastal Zone Management Act and implementing regulations, which require that such federal activities be conducted in a manner consistent to the maximum extent practicable with California's Coastal Management Program.

Although Channel Islands National Park is federal land and excluded from California's coastal zone, the park is geographically within the coastal zone. The Park Service has determined that the preferred alternative described in this plan is consistent with California's Coastal Management Program. Specifically, the preferred alternative is consistent with chapter 3 of the California Coastal Act of 1976 regarding public access, recreation, the marine environment, land resources, and development.

This plan provides the substantive basis for the NPS's consistency determination and the Park Service has submitted this document to the California Coastal Commission for its concurrence. This consistency determination and the commission's concurrence comply with the requirements of the Coastal Zone Management Act.

The California Coastal Commission did not transmit a concurrence letter at the time of the printing of this document. Additional attempts to seek consultation input are ongoing, and the results will be included as part of the record of decision for the general management plan/wilderness study.

CONSULTATION WITH THE U.S. NAVY

Because the Park Service manages San Miguel Island under an agreement with the U.S. Navy, it is important to consult with the U.S. Navy on all resource, visitor, and administrative management activities on the island. The park staff have been seeking input from the U.S. Navy on the general management plan throughout the planning process. The Park Service would seek additional consultation with the U.S. Navy prior to implementation of the proposed actions on San Miguel Island in this plan.

FUTURE COMPLIANCE REQUIREMENTS

The following section indicates future actions the Park Service and/or its contractors would carry out during implementation of the preferred alternative to ensure compliance with applicable federal and state laws.

National Environmental Policy Act Compliance

The following actions discussed under the preferred alternative but not analyzed in this plan would likely require additional environmental analyses with appropriate documentation before they are implemented, consistent with the provisions of the National Environmental Policy Act:

- development of backcountry trails/road management plans for Santa Cruz and Santa Rosa Islands, including the removal of roads from the islands and specific closures and/or conversions of roads to trails
- development of subsequent implementation plans (e.g., commercial services, vegetation management, and fire management plans)
- periodic excavation of sediments from the Scorpion channel on Santa Cruz Island
- construction of a new visitor center on the mainland
- additional site-specific construction projects (e.g., construction of a campground at Bechers Bay on Santa Rosa Island, development of specific campsites and trails on Santa Cruz Island, and development of employee residences in the Prisoners Harbor area)

In addition to these actions, other actions in the preferred alternative could require additional NEPA compliance.

Threatened and Endangered Species

Section 7 of the ESA, as amended (16 USC 1531 et seq.) requires all federal agencies to consult with the Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by any agency would not jeopardize the continued existence of listed species or critical habitat. The Fish and Wildlife Service and National Marine Fisheries Service, which implement the ESA, have been informally consulted regarding effects on threatened and endangered species. The Park Service would continue to consult with both the Fish and Wildlife Service and National Marine Fisheries Service to ensure that actions in the preferred alternative would not adversely affect threatened and endangered species and their habitats (e.g., development of new campsites on Santa Rosa Island).

Essential Fish Habitat

Under the Magnuson-Stevens Act and its amendments, federal agencies are required to identify and protect important marine and anadromous fish habitat. Federal agencies that fund, authorize, or undertake activities that might adversely affect essential fish habitat are required to consult with the NOAA Fisheries Service regarding the potential effects of their actions on essential fish habitat, and respond in writing to that agency's conservation recommendations.

Water Resources

In accordance with the Clean Water Act, a Section 404 permit from the Corps of Engineers would be required for the discharge or placement of fill material into waters of the United States. Any dredging activity within the Scorpion stream channel would require a permit review from the Corps of Engineers. A Section 401 water quality certification also would need to be obtained from the state's central coast regional water quality control

board. Additional consultation would be pursued with the national marine sanctuary before this action was taken.

Cultural Resources

The Park Service has developed a list of actions associated with the proposed plan that could have an effect on cultural resources. Some of these actions are covered by programmatic exclusions and would require no further state historic preservation office (SHPO)/ACHP review. Other actions would need further SHPO/ACHP review. This information is presented in Table 25.

TABLE 25. IMPLEMENTATION ACTIONS THAT COULD AFFECT CULTURAL RESOURCES AND ASSOCIATED SHPO AND ACHP COMPLIANCE REQUIREMENTS

Actions	Compliance Requirements
Removal, improvement, or conversion of roads into trails on Santa Cruz and Santa Rosa Islands.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Establishment of new concessions and commercial uses and associated construction of new facilities or adaptive use of existing structures on various islands.	Requires further SHPO/ACHP review to determine impacts on archeological resources, historic structures, cultural landscapes, and ethnographic resources.
Elimination, control, or management of invasive nonnative vegetation and trees on various islands.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Expanded backcountry beach camping on Santa Rosa and Santa Cruz Islands.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Adaptive use of historic structures in the Anacapa Island Light Station Historic District for park operational and visitor service purposes, opening the district's historic lighthouse to the public, and construction of two additional housing units on the footprint of the district's historic residences.	Requires further SHPO/ACHP review to determine impacts on archeological resources, historic structures, and cultural landscapes.
Adaptive use of historic structures at Scorpion Valley.	Requires further SHPO/ACHP review to determine impacts on historic structures.
Restoration of natural conditions and removal of historic eucalyptus groves at Scorpion Valley.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Adaptive use of historic structures and control or removal of nonnative trees at Prisoners Harbor.	Requires further SHPO/ACHP review to determine impacts on archeological resources, historic structures, and cultural landscapes.
Development of a new maintenance area at Scorpion Valley.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Construction of a new barn/interpretive structure at Scorpion Valley.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Upgrade water system at Smugglers Ranch.	Requires further SHPO/ACHP review to determine impacts on archeological resources, historic structures, and cultural landscapes.

Actions	Compliance Requirements
Potential construction of residential units at Prisoners Harbor.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Development of a small maintenance area at Prisoners Harbor.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Potential development of campsite locations and suitable trail alignments in the NPS portion of Santa Cruz Island.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Development of a new campground in the Prisoners Harbor area.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Adaptive use of Bechers Bay ranch complex buildings and potential construction of new buildings for park operations, concessioner facilities, research facility/ research/education field station, visitor services, staff housing, and visitor lodging.	Requires further SHPO/ACHP review to determine impacts on archeological resources, historic structures, and cultural landscapes.
Potential establishment of commercial vehicle operations on Santa Rosa Island.	Requires further SHPO/ACHP review to determine impacts on historic roads and cultural landscapes.
Potential construction of toilets at various visitor destinations/trailheads on Santa Rosa and San Miguel Islands.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Development of a new campground at the eastern end of the Bechers Bay historic ranch complex.	Requires further SHPO/ACHP review to determine impacts on archeological resources.
Potential development of guided multiday trips and associated construction of a temporary camp, and development/ construction of trails via commercial services and trail plans on San Miguel Island.	Requires further SHPO/ACHP review to determine impacts on archeological resources and cultural landscapes.
Construction of an equipment storage building on San Miguel Island.	Requires further SHPO/ACHP review to determine impacts on archeological resources.

COMMENTS AND RESPONSES ON THE DRAFT PLAN/WILDERNESS STUDY/ENVIRONMENTAL IMPACT STATEMENT

This section summarizes the comments received following the release of the *Channel Islands National Park Draft General Management Plan/Wilderness Study/Environmental Impact Statement* for public review on November 8, 2013. The draft plan was available locally at the park, at local libraries, and on the NPS PEPC site (http://parkplanning.nps.gov/chis). The public was invited to submit comments on the draft document through March 10, 2014.

A total of 1,620 comments were derived from the 1,091 pieces of correspondence received. Most of the comments came from unaffiliated individuals (1,065).

AGENCIES

The following governmental agencies submitted comments on the draft document. Copies of all letters received from government agencies are included in appendix H.

Federal Government

- Channel Islands National Marine Sanctuary
- Environmental Protection Agency
- National Marine Fisheries Service
- U.S. Navy

State Government

- California Coastal Commission
- California State Historic Preservation Office
- California State Lands Commission

Cities

- City of Ventura

ORGANIZATIONS

The following organizations submitted comments on the draft document.

Businesses

- Aspen Helicopters
- Channel Islands Aviation
- Channel Islands Outfitters
- Island Packers
- Los Padres Outfitters
- Santa Barbara Adventure Company

Conservation Groups

- Los Padres Forest Watch
- National Parks Conservation Association
- The Wilderness Society

Other Groups (including nonprofits, education, foundations)

- California Rangeland Trust
- NatureBridge
- Santa Barbara Botanic Garden
- Santa Cruz Island Foundation
- University of California Santa Barbara Natural Reserve System
- Ventura County Cattlemen's Association
- Wishtoyo Foundation

RESPONSES TO COMMENTS

All written and oral comments were considered during the preparation of the final plan/wilderness study/EIS in accordance with the requirements of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (40 CFR 1503).

The comments enabled the study team, NPS decision-makers, and other interested parties to review and assess the views of other agencies, organizations, and individuals regarding the preferred alternative, the other alternatives, and their potential impacts. *It is important to stress that the selection of the preferred alternative and any revisions to the alternatives were not based on how many commenters supported a particular alternative.*

The Council on Environmental Quality guidelines (1978) for implementing the National Environmental Policy Act require the Park Service to respond to "substantive comments." A comment is substantive if it meets any of the following criteria from the "Director's Order 12 Handbook" (§4.6A):

- It questions, with a reasonable basis, the accuracy of information presented in the EIS.
- It questions, with reasonable basis, the adequacy of the environmental analysis.
- It presents reasonable alternatives other than those presented in the EIS.
- It causes changes or revisions in the proposal.

As further stated in the Handbook, substantive comments "raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive." The Park Service prepared responses to all comments determined to be substantive. Comments primarily expressing support or opposition to the draft plan/wilderness study/EIS are not addressed in this section because they were considered nonsubstantive and do not warrant a response. However, the Park Service elected to respond to some nonsubstantive comments when they were identified as being of high importance to the public, represented common questions, or reflected misunderstandings among the public or other stakeholders.

Comments were grouped by similar themes, and summarized with a concern statement that is representative of many comments. Where appropriate, the responses also describe how the text in the final plan/wilderness study/EIS was revised.

NOTE: All page numbers cited refer to the draft plan.

1. Visitor Access

Comment: General Level of Access to the Islands. A number of commenters wanted increased access to the islands generally, enabling more people to visit and enjoy the area. Others liked access as it was or did not support increased access. They noted limited access is one of island's greatest assets, and there are other areas people can go to with easier access (e.g., Catalina).

Response: Relatively few people visit Channel Islands National Park. The National Park Service believes the park can accommodate an increase in access, enabling more people to enjoy the park than occurs now, and still satisfy the purpose of the park. The NPS Organic Act also calls for parks to be available for the enjoyment of the public. However, the agency also recognizes the special mandate in the park's enabling legislation to administer Channel Islands National Park on a "low-intensity, limited-entry basis." The NPS preferred alternative calls for a limited increase in access to the park, primarily a small increase in the number of day visitors at Scorpion Harbor on Santa Cruz Island and an increase in day and overnight visitors on Santa Rosa Island. Although this might change some visitors' experience in the developed areas on the islands (i.e., Scorpion Harbor, Bechers Bay), the increase in access and use being

proposed would not be comparable to the scale of access and use at Catalina Island. There would still be opportunities for people to visit the islands when very few people are present. Access to all of the islands would continue to be weather-dependent and would not be "easy" compared to most national parks. The park staff also would continue to carefully monitor visitor access and use to minimize impacts to resources and visitors.

Comment: Motorized Vehicle Use on Santa Rosa Island. Commenters opposed motorized vehicle use on the islands: it changes the remote experience; "one of the unique features of the islands is the near absence of vehicles." Many urged vehicle use be limited to park administration and scientific research only.

Response: The National Park Service appreciates the concern regarding increased vehicle use on the island. The preferred alternative has been revised in the final plan to limit the areas where visitors would be driven to just three locations: Lobo Canyon, Torrey Pines, and Johnsons Lee. Thus, this plan would not result in a major increase in vehicle traffic. A limited number of people would likely take advantage of the transportation system, resulting in a small increase in vehicle use on a few roads. The park planning team has set an initial limit in the final plan of no more than 10 shuttle trips per day, which would be monitored and subject to change depending on the level of interest and impacts to resources and visitors. The impact analysis in the final plan has been modified to state that the experience of some visitors who are hiking on the roads may be slightly degraded by being passed by vehicles. But this would be an infrequent event, given the number of likely hikers on the roads, the number of shuttles, and the size of the island — for most of the island, and for much of the days, hikers would not see any vehicles with visitors on the roads. Thus, this level of vehicle use would not be expected to change the perception of Santa Rosa Island being a largely vehicle-free island.

Comment: Aircraft Access (General). Many commenters opposed increased air access to the islands and wanted access to be limited to existing use levels. They believed current access is adequate. Limiting aircraft access also would preserve the natural quiet of the islands. From their comments one can infer these commenters opposed any proposals to increase aircraft access to the park.

Response: Under the preferred alternative aircraft access would not substantially increase from current levels. There likely would be some more aircraft flying to Santa Rosa Island bringing more visitors to the island, but this increase would be limited through caps in the concession operation and would not be expected to markedly increase noise levels in the Bechers Bay area. Aircraft access is being proposed on San Miguel Island, once the current U.S. Navy closure is lifted, on a trial basis to provide more opportunities for visitors to reach this remote island. But the number of flights would be very limited, and weather conditions would likely further constrain how frequently aircraft land on the island.

Comment: Aircraft Access by Private Pilots. Several commenters supported access by general aviation private pilots as well as commercial operators. They believe private pilots are well-qualified to land on existing airstrips on the islands and there is no justification why they should not be allowed to visit the park.

Response: NPS regulations (36 *Code of Federal Regulations* 2.17) state that operating or using aircraft on lands or waters in parks is prohibited other than at locations designated pursuant to special regulations. No such special regulations for Channel

Islands National Park. The Bechers Bay air strip, the only air strip commercial operators now use, is not set up for general aviation and allowing all pilots to land on this primitive (non-paved) airstrip presents possible safety issues — the National Park Service has no way of knowing who would and who would not be qualified to land on the strip. There is limited space to park aircraft. Allowing private aircraft to use this airstrip would increase the chance that pilots may land in other unauthorized areas on the islands. There are no supplies or fuel for private aircraft if this need arises, nor is there flight control. Finally, permitting private pilots to land on the islands also would increase the potential for disturbance of sensitive coastal resources, such as pinnipeds.

Comment: Aircraft Access to East Santa Cruz Island. Many commenters supported airplane access to the east end of Santa Cruz Island, opening the airstrip. This would allow more people to visit the island and enjoy it, including disabled visitors; it would provide easier and more comfortable access; make it cheaper to get to Santa Cruz Island; avoid long sea crossing and seasickness; provide alternative administrative access to the east end; and provide faster response time and flight access for emergencies. One commenter noted establishing air service to Santa Cruz Island is needed so aircraft can be available to support NPS operations on San Miguel Island.

Response: The National Park Service understands many people would like aircraft access to the east end of Santa Cruz Island. In developing the alternatives for Santa Cruz Island considered allowing aircraft access, but decided to not provide for this use for the reasons described on page 185 of the draft document. Providing aircraft access for visitors to the island would be faster but not necessarily cheaper or more comfortable than boat access. Reliable boat service is provided to Scorpion Harbor, which disabled visitors can use, and which takes only about an hour to reach from the mainland. Emergency access to the island can be provided via helicopter if needed. The Scorpion Harbor area already is a relatively heavy used area. Allowing use via aircraft could increase the number of visitors in the area beyond the permitted visitor capacity of the area. Finally, the airstrip being referred to no longer exists: the dirt strip has been overgrown with vegetation. Substantial work would be needed to bring the former airstrip up to Federal Aviation Administration safety standards.

Comment: Aircraft Access to San Miguel Island. Commenters were opposed to this action because they believed it was inconsistent with the wilderness character of the island and visitors' experience, would adversely affect research, and increase the possibility of introducing invasive species.

Response: Currently, the National Park Service uses aircraft to access and staff the island. Aircraft access was proposed on a trial basis and would occur relatively infrequently. Although some wilderness qualities would be affected, such as visitors seeking solitude and an absence of noise from motorized equipment, only a small area would be affected for short durations. This will be addressed in the concessioner's flight operations plan. With stipulations and careful design, there would be no reason to expect impacts on research activities on the island, nor would aircraft access increase the possibility of introducing invasive species than would using boats to access the island.

Comment: Providing Mooring Buoys. Channel Islands Marine Sanctuary and the National Marine Fisheries Service supported providing environmentally sensitive mooring buoys, which they stated would not have as much impact on marine resources as anchoring.

Response: The park planning team considered providing buoys, but for the reasons stated on page 186 in the draft plan decided not to propose these devices be provided. The National Park Service is not aware of unacceptable impacts occurring to marine resources, such as eel grass due to anchoring by private boaters, but agrees additional study of this possible impact is warranted. There are also unanswered questions regarding who would install and maintain the mooring buoys, possible liability issues, setting a user capacity, and the impact on the viewshed if many boats were to use the buoys. The National Park Service has indicated in the final plan that it would work with the sanctuary, the National Marine Fisheries Service and the state, all of whom share jurisdiction over these waters, to evaluate the impact of anchoring by private boaters and determine if environmentally sensitive mooring devices should be employed in the park.

Comment: Horseback Use on Santa Rosa Island. Some commenters, including the California Rangeland Trust, Los Padres Outfitters, and Ventura County Cattlemen's Association, supported this activity, stating it would provide more opportunities for visitors to see more of the island. It was noted that horse use is an integral part of the history of the island.

Response: The National Park Service appreciates that ranching is a key part of the history of Santa Rosa Island, and as noted on page 159 of the draft document the entire Bechers Bay ranch complex, including the barns, would be preserved to interpret the ranching history. But as stated on page 186, a commercial horseback operation is not feasible due to a lack of demand, the remoteness of the island, and the high cost of running a horse riding operation (staff, facilities, supplies, etc.). In addition, there are environmental concerns of permitting horse use on the island. Horses would increase the potential for introducing and spreading weed seeds on the island, which would adversely affect the island's native vegetation. Areas where horses stop would likely experience trampling and grazing of native vegetation. None of the roads on the island are designed and hardened for horse use, which would make erosion more likely if this use was permitted.

Comment: Mountain Bike Use on Santa Rosa Island. A few commenters supported this activity, noting it would provide an opportunity for more visitors to access more of the island, and that it would be a new recreational opportunity for visitors.

Response: As stated on page 186 of the draft document, mountain biking would not be an appropriate use on Santa Rosa Island because of the park's enabling legislation and the potential for off-road resource impacts and conflicts with hikers who would share the trails/roads. Bicyclists could bring weed seeds on their bikes and then spread nonnative plants on the island. Blind curves on the roads pose safety concerns. The strong winds and steep hills on the island would be very tough for most bicyclists to ride. It would be difficult to transport bicycles on the concessioner's boats to the island. Managing mountain biking on this large island with roads that are both open and closed would be challenging. If a bike was to break down or if there was an accident, it would be difficult to conduct a search and rescue on Santa Rosa Island — a biker could be stranded for a long time before help would arrive. Finally, there are other convenient opportunities for bicyclists to ride in similar areas (e.g., Catalina Island, Santa Monica Mountains National Recreation Area).

Comment: Provide Ferry Service from Santa Barbara Harbor. One commenter wanted public ferry services offered from Santa Barbara Harbor.

Response: Under the current concessions services contract, the concessioner could expand their operation into Santa Barbara Harbor. Thus, ferry service could be provided from Santa Barbara Harbor. However, it would be up to the concessioner, not the National Park Service, to determine this is necessary and an economically feasible proposition and then propose the service to the agency.

Comment: Access to San Miguel Island. One commenter noted that the sole visitor access point to San Miguel Island is becoming cut off during certain times of year due to elephant seal activity at Cuyler Harbor. The general management plan should consider how to manage visitor use in light of this.

Response: This is an operational issue that is outside scope of the general management plan. The Park Service would continue to work with the National Marine Fisheries Service to provide reliable access to the island.

Comment: Providing Accessible Facilities on the Islands for the Disabled. It was noted that ADA requirements may need to be addressed in the plan as more people visit the islands.

Response: As stated on page 443 in the draft document, a desired condition is to provide access to and use of the park's facilities for physically and learning disabled visitors, in conformance with applicable laws, regulations and NPS policies. The National Park Service would modify existing facilities to meet accessibility standards to the highest degree reasonable, as funding allows or as facilities are replaced or rehabilitated. Park staff also would consult periodically with disabled persons, or their representatives, to increase awareness of the needs of the disabled and to determine how to make the park more accessible.

2. Wilderness

Comment: Islands do not Meet Criteria for Wilderness and are Incompatible with the Park. Commenters noted the park does not meet the criteria for wilderness designation: the island have been altered by past ranching, are not "natural," have been trammeled, and there is a need for roads and vehicles to manage the areas. The many roads on Santa Rosa Island are contradictory to the idea of wilderness. Some commenters stated wilderness designation is incompatible with the original goals for the park and the intentions of the creators of the park. It was noted the park does not need wilderness since it is so remote and difficult to reach.

Response: Regardless of how remote and difficult a park is to reach, both the Wilderness Act and NPS policies require that all lands administered by the National Park Service be evaluate d for their eligibility for inclusion within the national wilderness preservation system. In addition, Channel Island National Park's enabling legislation specifically called for a wilderness study to be prepared.

With regard to whether the islands meet the eligibility criteria, the planning team believes the areas being proposed for wilderness meet the criteria. As noted on pages 47-48 of the draft plan, the islands are undeveloped, offer outstanding opportunities for solitude, and are now protected and managed to preserve natural conditions. It is true that past ranching and farming activities on the islands resulted in substantial trammeling and alteration of native plants, wildlife, and ecosystems. But today the only trammeling that is occurring is related to efforts to restore native vegetation and remove nonnative species. The intent is to restore the islands' landscapes so they appear to be "primarily affected by the forces of nature, with the imprint of humans' work substantially unnoticeable." The areas being

proposed for wilderness may not be "natural" now, but they are moving in that direction — and they are more "natural" now than in the past, with impacts from cattle, sheep, pigs, and horses no longer occurring. Section 6.2.1.2 of NPS *Management Policies 2006* specifically state that disturbed lands can be considered eligible for wilderness designation:

> Lands that have been logged, farmed, grazed, mined, or otherwise used in ways not involving extensive development or alteration of the landscape may also be considered eligible for wilderness designation if, at the time of assessment, the effects of these activities are substantially unnoticeable or their wilderness character could be maintained or restored through appropriate management actions. . . .
>
> An area will not be excluded from a determination of wilderness eligibility solely because established or proposed management practices require the use of tools, equipment, or structures if those practices are necessary to meet minimum requirements for the administration of the area as wilderness.

It also is true that restoration activities will be taking place in many areas proposed for wilderness on Santa Cruz and Santa Rosa Islands. Some of these activities will no doubt require management practices that are not normally allowed in wilderness areas.

The National Park Service consequently has revised its wilderness proposal in the final plan. Potential wilderness rather than full wilderness is now being proposed for lands on Santa Cruz and Santa Rosa Islands. This recognizes the need to use some of the existing roads for ecosystem restoration efforts and for mechanized equipment to remove roads and restore the landscape. Potential wilderness is an appropriate designation for these lands because restoration activities in this area would likely result in a short-term degradation of wilderness character wherever they occur. The potential wilderness designation recognizes that for many years to come the level and intensity of existing non-conforming uses, including the use of roads and motorized or mechanized equipment, would continue. As these restoration activities begin to decline and roads are removed or converted to trails, these areas would be converted to designated wilderness, assuming Congress has acted to include them in the National Wilderness Preservation System.

Comment: Wilderness Eligibility of San Miguel and Prince Islands. The U.S. Navy was concerned that U.S. Navy ownership was the sole reason for determining the islands to be ineligible, and questioned whether existing uses of the islands would preclude wilderness designation. They stated additional analysis of wilderness eligibility of the islands needed to be done, similar to the analysis done for Santa Cruz Island.

Response: Because the National Park Service does not own San Miguel and Prince Islands, the National Park Service cannot consider them for eligibility as wilderness. Under the Wilderness Act only lands administered by the Departments of Agriculture and Interior are directed to be reviewed for eligibility and proposed for inclusion within the national wilderness preservation system. U.S. Navy lands are not specifically covered by the act. Thus, the NPS wilderness study cannot evaluate these lands in the same way it evaluated the eligibility of NPS lands on Santa Cruz Island.

Comment: Additions to the Wilderness Proposal. A couple commenters suggested adding some offshore rocks into the

wilderness proposal (Shag Rock, Sutil Island, Scorpion Rock). A few commenters also suggested that all or portions of San Miguel Island be proposed as wilderness.

Response: The wilderness proposal did not specifically identify these offshore rocks. But as noted on page 48 of the draft document, small islets and rocks offshore of the main islands, including the above rocks, were found eligible for wilderness. They were in fact included in the wilderness proposal in alternatives 2 and 3. The text in the final plan has been revised to note that the proposal included the small islets, islands and rocks offshore of the main islands (except for Prince Island).

Comment: Impacts of Wilderness Designation: Many commenters were opposed to wilderness designation. Commenters such as TNC were concerned about the impact of wilderness on restoration activities — wilderness limits the ability to use tools and technologies needed to protect unique plants and animals. Other concerns about wilderness included limiting the ability of park staff to respond to future natural resource threats; the protection and interpretation of cultural resources; access to the islands; and the ability of researchers' access to the islands. Wilderness will "tie the hands of current and future managers.

Response: Wilderness designation will not "tie the hands of current and future managers," although it does require the National Park Service to consider the effects of its actions on an area's wilderness character (e.g., being untrammeled). Wilderness designation does not prevent efforts to restore disturbed ecosystems. NPS policies (§6.3.7) state:

> Management should seek to sustain the natural distribution, numbers, population composition, and interaction of indigenous species. Management intervention should only be undertaken to the extent necessary to correct past mistakes, the impacts of human use. . .Management actions, including the restoration of extirpated native species, . . . the control of invasive alien species, the management of endangered species. . .should be attempted only when the knowledge and tools exist to accomplish clearly articulated goals.

Thus, efforts to restore the naturalness of Channel Islands National Park could continue with a wilderness designation. Proposing potential wilderness for NPS lands on Santa Cruz and Santa Rosa Islands will also help ensure that needed restoration efforts continue in these areas (see the response above).

It is true that wilderness designation places restrictions on what activities can normally occur, but under a minimum requirements analysis certain techniques and equipment, including motorized equipment, may be allowed if appropriate or necessary to administer the area as wilderness and preserve wilderness character. If deemed necessary, for example, action could be taken to control the spread of an invasive nonnative species. Wilderness also does not limit the ability of NPS staff to interpret cultural resources, although certain activities and structures may be limited within the wilderness area. Likewise, wilderness does not prevent researchers from accessing the areas, although specific methods and research activities would need to be evaluated through a minimum requirements analysis to determine if they are appropriate in wilderness.

Comment: Impacts of Wilderness Designation on Santa Cruz Island: The U.S. Navy opposed designation on portions of Santa Cruz Island where it has facilities.

Response: None of the lands or easements owned by TNC and leased to the U.S. Navy on Santa Cruz Island, including all lands with existing U.S. Navy facilities and roads used by the U.S. Navy, were found eligible for wilderness and therefore were not included in the wilderness proposal. As noted on page 151 of the draft plan, the road from Prisoners Harbor to the site leased by the U.S. Navy, which TNC has an easement, would continue to be maintained.

Comment: Separation of the Wilderness Study from the GMP. Commenters wanted the wilderness study separated from the GMP. They stated that the GMP should be developed prior to any wilderness proposal. The plan should first look at resource management needs and infrastructure to improve public access, which will be precluded by wilderness designation if mechanical devices are required. It will be much easier to design trails and build backcountry campsites before lands are managed as wilderness. Wilderness designation can always occur later if deemed necessary.

Response: The National Park Service frequently combines general management planning and wilderness study processes together. Both processes require similar elements (e.g., alternatives, impact assessments, public involvement) and a proposal for a wilderness designation will affect management directions in a general management plan — and vice versa. Combining the two efforts together can save considerable time in completing the conservation planning and environmental impact analysis process, while facilitating broad-based public consideration of the park's management and its wilderness values. Wilderness designation also does not affect a general management plan's directions regarding trails and campsites, as both of these facilities can be permitted in wilderness. Finally, in the case of Channel Islands National Park, a wilderness study was already mandated as part of the park's enabling legislation, and the National Park Service cannot justify postponing the wilderness study further.

3. Commercial Activities and Level of Development

Comment: Commercial Activities and New Developments. Many commenters were generally opposed to commercial services and new developments, particularly motorized vehicle tours ("jeep tours"), lodging ("hotels") and food services ("restaurants") on Santa Rosa Island — they didn't want to see the islands commercialized or turned into another Catalina Island or Yellowstone National Park. Some were philosophically opposed to providing commercial services in the park. There was concern about increased pressure for additional developments once commercial services are established. It was noted that visitors seeking to drive roads, and use hotels and restaurants have opportunities on Catalina and the mainland for this experience. Some commenters noted only the wealthy would be able to take advantage of these services. There was a concern that commercial activities and new developments would increase pollution, impact the ecosystem, wildlife, naturalness, remoteness, and sense of wildness, and alter/destroy resources (e.g., natural quiet) and the special nature of the visitor experience on the islands. Some believed commercial activities were unsustainable due to the small number of visitors that come to the island, bad weather and a lack of water. A concern with NPS oversight of concessions, due to limited staff, was also noted.

Response: The National Park Service appreciates the concern about proposing new developments and commercial services, and the impacts this could have on park resources and visitor experiences. It is

evident that many commenters believe overcommercialization and development can spoil the character of places visitors come to see. In the case of the Channel Islands plan, no hotels, restaurants, or any developments are being proposed that would resemble what is on Catalina Island. None of the proposed developments in the preferred alternative would be inconsistent with the purposes of the park. The preferred alternative calls for limited new developments (e.g., campsites, restrooms, housing units, education/research camp, field station) in a few small already developed areas, primarily in Scorpion and Prisoners Harbors on Santa Cruz Island, and on Bechers Bay and Johnsons Lee on Santa Rosa Island. Furthermore, these proposed facilities would not be built all at once but would be built in phases over many years, as funding allows. Several of the proposed facilities, including the proposed lodging, would not be new structures, but rather would be adaptive use of existing facilities. Thus, the overall development footprint on the islands is not substantially changing from current conditions.

Likewise, the plan is not proposing a major increase in commercial services on the islands. Commercial services have long been recognized as helping the National Park Service carry out its mission, and have long played an important role in providing high quality visitor experiences in many parks. As stated in the Concessions Management Improvement Act of 1998, concession operations "are consistent to the highest practicable degree with the preservation and conservation of resources and values of the park unit." Commercial services are used by many people in all levels of society, and are not provided for the exclusive use of any one group. In the preferred alternative in the Channel Islands plan, the only new commercial services being proposed cover lodging and food services and limited visitor transportation on Santa Rosa Island, kayaking and snorkeling rentals at Scorpion Harbor on Santa Cruz Island, and limited fixed-wing air access on a trial basis and guided multiday trips on San Miguel Island. Based on a feasibility analysis that was conducted for this plan, all of the commercial services being proposed would be feasible to provide. The plan also is not proposing “jeep tours” on Santa Rosa Island, but rather commercially operated vehicles so visitors can reach more parts of the island. The preferred alternative has subsequently been revised in the final plan to limit the areas that visitors would be able to take shuttles to just Lobo Canyon, Torrey Pines, and Johnsons Lee. All of the above proposed commercial operations would have stipulations on their permits to minimize and avoid impacts to park resources. Although the park staff is limited, the park staff have carefully monitored commercial operations in the park in the past, and do not foresee monitoring the proposed additional services as being an issue.

With regard to lodging on Santa Rosa Island, the preferred alternative has been revised in the final plan to note that only rustic, economy accommodations would be provided — not upscale lodging.

Comment: Concession Feasibility Study. Several commenters expressed concerns about the concession feasibility study, that it did not reflect their input, and they could not review it. They questioned the report’s validity and stated the report was arbitrary and flawed.

Response: The feasibility study was prepared in 2011 by qualified, reputable analysts in Booz Allen Hamilton. As part of the study the analysts contacted and interviewed representative groups, including horse, kayak and aircraft operators. NPS commercial services staff reviewed the study and believe the report’s results are valid and applicable to the park. Due to the inclusion of proprietary information, the report cannot be made available at this point in time. However, additional analysis will be

conducted prior to developing concession contracts to ensure the proposed commercial services are still feasible.

Comment: Impact of New Development on Park Infrastructure and the Groundwater Table. A concern was raised that the park does not have adequate water, electrical or sewer infrastructure to support the proposed new developments. Removing 10,000 gallons of water per day from the groundwater table also was not analyzed in the document.

Response: Only a few new developments are being proposed in already developed areas. The preferred alternative does note the need for additional infrastructure (e.g., wells, solar photovoltaic, expanded sewer system). These new facilities would be built in already developed areas and would have a negligible impact on park resources. The reference to removing 10,000 gallons of water per day at Bechers Bay has been dropped in the final plan. Although an additional well may be necessary, it is not known at this time how much water would need to be withdrawn from the groundwater table. Up until 2014 there have never been well water issues on Santa Rosa Island. The park staff are now implementing water conservation measures in response to the drought. New facilities would be built using best available technology to maximize the conservation of water. The final plan also calls for additional studies on the size and sustainability of the groundwater table before drilling a new well and withdrawing more water.

4. Campgrounds, Campsites and Establishment of a Water Trail

Comment: Providing Additional Campsites and Campgrounds and Reducing Campsites. Many commenters supported additional primitive campsites for kayakers, which would give kayakers an opportunity to paddle out to and around the islands (e.g., Santa Cruz Island). It was noted these also would help visitor safety, providing places to land for emergencies and to take breaks. One commenter suggested adding a second backcountry campsite between Del Norte and Scorpion on Santa Cruz Island. Some commenters were opposed to additional camping sites, stating this was not needed and would adversely affect island resources. Some opposed proposals to reduce the size of existing campgrounds on Anacapa and Santa Cruz Islands, again stating this was not needed and would adversely affect opportunities for visitors to enjoy the islands.

Response: The National Park Service recognizes both the benefits and potential impacts of providing additional backcountry camping sites. The preferred alternative in the draft plan did not propose specific new backcountry campsites. As noted on page 132 in the draft plan, the parkwide backcountry management plan would consider whether or not to expand backcountry camping on the islands.

With regard to the proposed reductions in campgrounds, the preferred alternative in the final plan was revised so no changes are being proposed for the Anacapa campground — the existing number of campsites and campers would be maintained at current levels. With regard to the Scorpion campground on Santa Cruz Island, this facility would not be reduced in capacity, but rather would be reconfigured to better accommodate group camping. To ensure visitor safety, campsites that could be flooded would be closed during the winter, but enough campsites would still be available to meet visitor needs.

Comment: Establishment of a Water Trail. Many kayakers who commented supported the establishment of a water trail for kayakers, usually with campsites on the islands (e.g., Santa Cruz, Anacapa, Santa

Rosa Islands). This would provide a new high quality backcountry experience for visitors.

Response: Designating a water trail may indeed be a good new opportunity for kayakers, but more research is needed on what would be needed to support this trail, such as where beach camping would be needed and potential safety and resource issues. The possibility of establishing a water trail would be examined as part of the future backcountry management plan.

Comment: Temporary Camp on San Miguel Island. Commenters who opposed the camp saw it as being unnecessary and inappropriate with the wild character of the island, an intrusion on the landscape, costly to build and maintain, there was no demand for this, it would impact research, and cannot be adequately monitored by NPS staff. It was also noted that wind breaks would be necessary for the camp. One commenter noted the camp is redundant since multi-day camping trips are already offered by IPCO and the ranger leads day hikes to Point Bennett.

Response: This temporary camp was intended to provide a new opportunity for visitors to experience San Miguel Island and its special resources. The park planning team believes it would be of interest to many people. Although the ranger does lead day hikes to Point Bennett, it is a very long hike and people do not have much time to spend viewing the pinnipeds before they have to turn around and hike back. The temporary camp would be a primitive site with minimal facilities provided and would be designed to blend as much as possible into the environment. This camp would expand the opportunity for more people to see resources they ordinarily wouldn't be able to see. The camp would be located so it does not affect ongoing research, and visitors would be escorted to ensure impacts do not occur.

5. Research Field Station/Environmental Education Camp

Comment: Providing a New Research Station. A few commenters opposed new research structures and facilities due to impacts to island resources. Existing structures could be retrofitted for this purpose.

***Response*:** The preferred alternative in the final plan has been revised to include the Bechers Bay ranch as one of the possible locations for the envisioned research field station. It is possible that existing structures could be adapted to be part of the research station. But as noted on page 160 in the draft document, additional study is needed to determine where this new facility would be built. Wherever it would be located, studies would be conducted prior to construction to ensure cultural and natural resource impacts are avoided or minimized. The facility would be relatively small and would be designed to blend into the landscape as much as possible.

Comment: Need to Assess Related Impacts of a Research Station. A commenter noted the plan needs to evaluate the impacts of infrastructure needed for the research field station, including microwave equipment to provide connectivity.

Response: The National Park Service agrees there is a need to do additional study on the infrastructure requirements of the field station and their impacts. As noted on page 305 of the draft document, due to a lack of information only a general analysis could be done on the impact of the research station. A more detailed environmental document on the research/education field station and its infrastructure would be prepared before construction occurs, when additional information is available on the location and specifications of the facility.

Comment: Location of the Santa Cruz Education/Research Camp. A commenter stated the camp is better located in Scorpion Valley than Prisoners Harbor for user access, safety, and available infrastructure.

Response: With limited suitable land due to geographic, resource and floodplain constraints and existing uses of facilities, there is not sufficient space in the Scorpion Valley to locate the education/volunteers camp without impacting campers during peak season. During the off-season, the number of campsites are reduced to those that are located out of the floodplain.

Comment: Need to Include the Bechers Bay Field Station in Alternative 1. The University of California-Santa Barbara noted the university is already starting work on operating a field station at Bechers Bay. Therefore, operation of the research station should be included in alternative 1.

Response: The park staff has provided the university permission for temporary use of some structures in the area until long-term plans are completed for the actual field station. This operation is limited to a few researchers and is not the same scale as the proposed field station in the preferred alternative. Thus, the planning team does not believe the field station should be included in the "no action" alternative.

6. Other Facilities

Comment: Trails. Commenters suggested adding new trails or improve trails on Santa Rosa Island, Santa Cruz Island, and Santa Barbara Islands (e.g., re-establish the Santa Barbara Island nature trail) to improve access and opportunities for visitors. One commenter opposed new trails, expressing concerns about impacts on Chumash Native American cultural historic resources and ecological conditions of the cultural landscape. One commenter noted there is a need to address the trail up Nidever Canyon on San Miguel Island, which may not be viable in the long term. Another concern was about the Simonton Trail, which may not be feasible to build, may not be desired by visitors, and would impact archeological sites. Also, the trail south to the cliff does not provide a safe beach access.

Response: No new trails were proposed on the islands in the preferred alternative. Proposals to add or improve trails would be considered in the future backcountry management plan. (The reference to a trail to Simonton on San Miguel Island in table 17 was provided as a possible example of a new trail that could be considered in the parkwide management plan, and has been dropped in the final plan.) Before any trail would be built, studies would be conducted to locate a trail so that impacts to cultural and natural resources are minimized. With regard to issues with existing trails on San Miguel Island, these are operational issues that will need to be addressed independent of this general management plan.

Comment: Potable Water. Some commenters noted the need to provide potable water at campsites. It also was suggested there be emergency water caches throughout the backcountry

Response: Water is extremely limited on all of the Channel Islands. Although the draft plan stated provide potable water may be provided at some popular destinations on Santa Cruz Island in the preferred alternative, this would only occur if it proves feasible. It is not feasible to provide potable water at all campgrounds or provide water caches throughout the backcountry — the park staff cannot feasibly provide and treat water so it meets drinkable water quality standards in these remote locations.

Comment: Johnsons Lee Road. One commenter noted the Johnsons Lee Road passes under an unstable rock area that has a great potential to close the road with a rock fall.

Response: The park staff is aware of this potential geologic hazard area. Before commercially operated vehicles would be allowed on the Johnsons Lee Road a geologic hazard study would be conducted on the risk and what options are possible. If road work would need to be done, this would be evaluated in a separate environmental document.

Comment: Blinds and Kayaks on Santa Barbara Island. One commenter suggested adding blinds for pelican viewing on Santa Barbara Island. One commenter suggested a better method for visitors to get their kayaks from the water to/from the upper landing on Santa Barbara Island.

Response: Actions like proposing blinds for bird viewing on Santa Barbara Island are operational details and do not need a general management plan. This suggestion has been forwarded to park managers to consider.

With regard to kayakers need for hauling their kayaks out of the water, the planning team has considered what could be done to address this issue. Unfortunately, given the island and the geography of the landing cove there is no way to make it easier for kayakers to get their kayaks out of the water.

Comment: Administrative Facilities. Some commenters opposed new structures, such as a new storage structure on San Miguel Island and new housing for employees, noting there was not a need for these facilities, that existing facilities could be used, and new facilities would impact cultural and natural resources. One commenter wanted to be considered for concessioner storage and housing units planned for concessions staff.

Response: In revising the draft plan, storage structures on Anacapa and San Miguel Islands have been dropped, and the number of housing units for the concessioner has been reduced. But there is still a need for some new structures on the islands. Existing structures were considered by the planning team whenever possible before proposing new structures. However, for several administrative needs the existing structures either were not large enough, or were not designed to meet NPS administrative needs. In general, these new facilities would be located in already disturbed areas, and would result in minimal impacts on park resources.

With regard to who would be able to use the proposed concessioner facilities, this question is beyond the scope of the general management plan. Specific use of facilities by commercial operators would be determined in the future when concession contracts are developed.

7. Management Jurisdiction Concern

Comment: Conversion of the Navy Road to a Trail on Santa Cruz Island. TNC stated the proposed conversion of the road to a trail, which would limit vehicular access to its properties on Montonon Ridge, would violate the National Park Service's easement agreement with TNC.

Response: As noted on page 151 in the description of the preferred alternative, and elsewhere in the draft plan, the National Park Service recognizes TNC's road easement and is not proposing any actions in any alternative that would violate the terms of the easement. In the preferred alternative the Navy Road would continue to be maintained — there is no proposal to

convert the Navy Road to a trail, although visitors may walk along the road. The impact analysis refers to 12 miles of road on NPS lands on the island being removed and the landscape restored or converted to trails, but this figure does not include the Navy Road easement.

*Comment: **Jurisdiction Over Marine and Submerged Resources.*** The California State Land Commission requested the plan acknowledge state (CSLC) jurisdiction over marine and submerged resources. Specifically, the commission requested that the text on special mandates be revised to clarify these lands are leased to the NPS. Additional revisions were requested regarding ownership of shipwrecks, clarifications on management jurisdiction between submerged and terrestrial resources.

Response: The draft plan acknowledged on page 21 that the California State Land Commission is responsible for administering and managing the use of the state's tidelands, submerged lands, and submerged cultural resources. The text has been changed under "Special Mandates" in the final plan to reflect the Commission's wording. The text also has been revised regarding ownership of shipwrecks as requested by the commission, and the final plan now acknowledges in the Affected Environment that ownership of resources that spans the boundary of the mean high tide line may be split between the commission and the National Park Service.

8. New Alternatives/New Elements

*Comment: **Include an Alternative that Maximizes Resource Protection.*** The National Park Service should include a new alternative that maximizes protection of resources, minimizes facility development, reduces roads and vehicle use, and recommends additional wilderness, while also promoting primitive, low-impact recreation opportunities.

Response: As noted in the descriptions of alternatives 2 and 3, both action alternatives are intended to emphasize resource stewardship, including ecosystem preservation and restoration, the preservation of natural landscapes, and protection and preservation of cultural resources. The park's enabling legislation limits what can be proposed in Channel Islands National Park. Neither of the action alternatives are proposing substantial increases in uses or new developments, new commercial services, or noticeable increased use of existing roads. The plan is relying on adaptive reuse of existing facilities as much as possible. New facilities that are being proposed are largely in areas with existing developments and would have few impacts on the islands' natural or cultural resources. Both action alternatives also are proposing wilderness designation for much of the park, and the alternatives do emphasize primitive, low-impact recreation activities in the vast majority of the park. Thus, adding another alternative that provides even more resource protection is not needed.

*Comment: **Include an Alternative with No Wilderness.*** Commenters noted there should be an action alternative that does not propose wilderness designation.

Response: Wilderness designation provides the maximum permanent level of protection that can be bestowed on park resources. In considering Channel Island National Park's purpose and significance, its fundamental resources and values, the special mandates for this park, the emphasis on protecting sensitive resources on the islands, the park's superb wilderness character qualities, and the land's eligibility for wilderness designation, the park planning team believes all of the action alternatives for the park should include a wilderness proposal.

*Comment: **Boundary Change.*** A commenter suggested adding Richardson Rock within the park boundary.

Response: Richardson Rock is outside the scope of this plan. This area already is protected, lying within Channel Islands National Marine Sanctuary, and is a marine protected area within the California Coastal National Monument. Adding the rock to the park would not necessarily provide greater protection than it already receives. No threats are known to be facing Richardson Rock and little if any management is needed. Given the rock's distance from the rest of the park, it also would be difficult for the National Park Service to access and manage.

*Comment: **Acquisition of San Miguel Island.*** One commenter suggested more emphasis be placed on acquiring San Miguel Island from the U.S. Navy.

Response: The National Park Service has expressed interest in the transfer of San Miguel Island from the U.S. Navy to the Park Service, and will continue to work on this matter.

9. Planning/NEPA Issues (General)

*Comment: **Plan is Inconsistent with Enabling Legislation.*** A commenter stated that the plan balances visitor use impacts in different parts of the park, which is contrary to the enabling legislation that calls for all visitor use impacts to be negligible. It also is in conflict with NPS management policies regarding impairment.

Response: Whenever visitor use occurs in a park, there is the potential for impact to park resources. Section 204(b) of the act establishing Channel Islands National Park states "…it is the intent of Congress that visitor use within the park be limited to assure negligible impact on the park resources." It does not state that all visitor use impacts in all parts of the park be negligible. In the preferred alternative the intent was to provide some more opportunities for visitors to enjoy the park on a limited basis, as called for in the NPS Organic Act, while also recognizing the need to protect park resources. Substantial increases in visitor use are not being proposed in the alternatives. The impacts of visitor use on the park's natural and cultural resources in this plan would in fact be negligible to minor in magnitude. The impacts of past uses of the islands far outweigh the impacts of visitors in the preferred alternative.

With regard to impairment, the National Park Service is mandated under the NPS Organic Act to avoid taking any action that would harm the integrity of park resources or values. As noted on page 24 of the draft document, a determination on impairment will be included as part of the record of decision for this plan.

*Comment: **Lack of a Range of Reasonable Alternatives.*** Some commenters noted alternatives 2 and 3 are essentially the same. Thus, the plan lacked a reasonable range of alternatives.

Response: As described on pages 35-36 in the draft document, several constraints limited the range of alternatives that could be considered, including the islands physical limitations (remote and isolated), the presence of sensitive resources, the special legislative mandates that govern management and use of the park, limited existing infrastructure, high cost of access, maintenance, and development of facilities, and the determination of much of the park being eligible for wilderness designation. Thus, there are not many major differences between alternatives 2 and 3.

But there are enough differences that make the two alternatives distinct. Specifically, alternative 3 would place more attention than alternative 2 on expanding access, educational and recreational opportunities for visitors on the islands, and more accommodations for visitors. Alternative 3 would have more visitor facilities than alternative 2, including new primitive campgrounds at Prisoners Harbor and Johnsons Lee. Alternative 3 would provide for fixed-wing aircraft service to San Miguel Island on a trial basis. Alternative 3 also would slightly increase user capacities for day use at Scorpion Harbor, and for overnight use at Bechers Bay.

Comment: Timeframe for the Plan. It was pointed out that a 20- to 40-year timeframe for this plan was too long and unrealistic, and that it should be shorter. Inconsistences in the length of the timeframe in the plan were also noted.

Response: Inconsistencies in the length of the timeframe have been corrected in the final plan. In the case of Channel Islands National Park the planning team believes that a 20- to 40-year timeframe is a legitimate and realistic period for planning purposes. Given the logistical challenges in managing this park, the high cost of access, maintenance, and development of facilities on the islands, the sensitive resources that still need to be inventoried, the need for additional studies and preparation of environmental documents, and likely funding opportunities in the foreseeable future, it will take many years to fully implement the actions proposed in the general management plan. As a result the preferred alternative description noted that proposed projects would be implemented in four phases, which would realistically be spread out over a 20- to 40-year timeframe.

Comment: Label as a Programmatic Environmental Impact Statement. The Environmental Protection Agency recommended the final environmental impact statement be labeled as a programmatic EIS and include a commitment to conduct subsequent tiered NEPA analyses. The agency also suggested more information be provided on when and how proposed projects would be implemented, and clearly state which projects would take place in years to come.

Response: The National Park Service interprets the word "programmatic" differently from the Environmental Protection Agency. General management plans are not programmatic implementation plans, covering all future environmental compliance for a park. Rather, they are general park plans that propose various actions, many of which will require additional environmental analysis. The draft document clearly stated on page 305 that this should be considered a programmatic analysis and that for many specified future actions additional appropriate environmental documentation will be needed. The need for additional environmental analysis for several actions in the draft plan is also stated on page 181. The National Park Service therefore does not believe it is appropriate to label the general management plan as a programmatic environmental impact statement — and have not done so for other any of the GMPs we have prepared in the past.

With regard to including additional detailed information in proposed projects in the general management plan, this information is not appropriate to include in a conceptual plan that is providing overall future direction for a park for the next 20 to 40 years. The park planning team does not know the specifics of many of the proposed actions, including designs, locations, and timing, nor does it have the site-specific environmental data to adequately analyze potential impacts. This information would be included in subsequent environmental documents that will tier off this plan.

Comment: Identification of the Environmentally Preferable Alternative. TNC stated that the two action alternatives would have adverse impacts on resources such as the island fox due to additional visitor use facilities and increased use. Alternative 1, which does not propose additional visitor use facilities, should be the environmentally preferable alternative.

Response: While it is true that there would be some impacts to natural resources from increased use and new facilities in the two action alternatives, these impacts would be localized, fairly small in magnitude, and be largely confined to a few areas that already have developments. Most of the park's resources would not be affected by the actions proposed in the alternatives. Although the behavior of some island foxes may be affected with increased use in the action alternatives, it is not expected this would adversely affect the fox populations. Overall, the action alternatives would result in more beneficial impacts, and/or fewer adverse resource impacts than alternative 1 due to a number of proposed actions, including closure of roads and restoration of the landscape on Santa Rosa and Santa Cruz Islands, restoration of a estuarine wetland in Scorpion Valley, the application of user capacity indicators and standards, and the proposed designation of much of the park as wilderness or potential wilderness. Thus, the park planning team believes the two action alternatives are environmentally preferable compared to alternative 1.

Comment: Dismissal of Public Health and Safety as an Impact Topic. The U.S. Navy stated this topic should not have been dismissed because of potential unexploded ordnance on San Miguel Island.

Response: The reasons why this topic was dismissed were noted on page 227 of the draft document. With regard to San Miguel Island, as the U.S. Navy pointed out park rangers and researchers have not found unexploded ordnance on the island in the last 25 years. All visitors that hike beyond the Cuyler Harbor beach and the ranch complex are required to be escorted by a ranger, who is trained on the ordnance issue. Although the island is temporarily closed to public access while the U.S. Navy conducts a risk assessment and clean-up of unexploded ordnance if necessary, this is not an issue for the general management plan.

Comment: Indirect Impacts of Induced Growth Due to Increased Visitor Access. The Environmental Protection Agency expressed concern about induced growth from increased visitor access to the islands, which would result in indirect impacts. It asked that the document estimate the amount of growth, likely location, and resources at risk for any foreseeable actions taken due to modifications in the project area.

Response: The National Park Service manages and approves all the developments and uses of lands under its jurisdiction in the park. The purpose of the general management plan is to provide direction for future development and use of park lands. The enabling legislation also requires that visitor use within the park be limited to assure negligible adverse impacts to the park's resources. Other than the developments proposed in the alternatives no other developments would occur as a result of increased use — the general management plan would need to be amended and/or additional NEPA analysis completed before significant new developments would be permitted. In addition, the National Park Service does not expect substantial increases in visitor use as a result of the preferred alternative. Visitor capacities, including day and overnight visitor use limits, are identified for the alternatives to ensure that visitor use does not result in unacceptable resource impacts (see table 16 on pages 187-189 of the draft plan). Finally, as noted in the mitigation

measures all new facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible (see page 174). The park planning team does not know the exact locations of many of the proposed actions, nor their designs, but it believes the impact analysis sufficiently documents the possible changes to resources in the project area due to the alternatives.

Comment: Changes in Department of Defense Policies on San Miguel and Prince Islands. The U.S. Navy noted there have been changes in their policies on the management of the islands, which need to be addressed in this plan, and requested additional consultation.

Response: The park planning team understands that policies have changed regarding tracking and reporting unexploded ordnance and real property management. Park staff have recently consulted with the U.S. Navy on this. Text has been added in the final plan regarding the scope of the plan recognizing that San Miguel Island has been temporarily closed to public use while the U.S. Navy conducts a risk assessment and clean-up if necessary.

Comment: Implementation Plans. A commenter stated the future implementation plans should be defined, prioritized, and scheduled to ensure the plans are prepared. A wilderness stewardship plan also should be prepared. TNC noted there is a need for a fire management plan to reduce the risks from increased numbers of visitors igniting wildfires.

Response: It is beyond the scope of a general management plan to provide details on priorities, schedules and details for future implementation plans. Furthermore, given park, regional office and national needs, changes in issues facing the park, and funding and staff considerations, it is not possible to provide these details in the plan. The Park Service would prepare the plans as soon as is feasible.

With regard to preparation of a wilderness stewardship plan and fire management plan, the final plan now recognizes the need for a wilderness stewardship/backcountry management plan and a fire management plan in the "Future Plans and Studies Needed" section.

Comment: Costs of the Plan. TNC stated the cost estimates needed to be updated to incorporate costs to contractors and the National Park Service for biosecurity precautions and oversight, and to actively mitigate for island fox behavior changes associated with increased visitor use.

Response: Cost estimates in a general management plan are intended to provide a general picture of the overall annual and one-time costs associated with each alternative. They are intended just to provide a relative comparison in the difference in overall costs of the alternatives. Because costs for monitoring and managing nonnative species will vary depending on the project, the type of measures, and when and how they are implemented, the planning team cannot provide specific cost figures in this plan. But the costs related to the oversight of nonnative species are not expected to substantially differ between the alternatives.

With regard to the island fox, other than continuing monitoring and education of visitors there is no need to actively mitigate for island fox behavior changes due to the alternatives being considered.

Comment: Sustainability of Facilities. The Environmental Protection Agency encouraged the National Park Service to commit to smart growth and green building

in its developments and management of the park.

Response: Channel Islands National Park already is well known for its sustainability efforts in managing the park and in the developments that are present. The plan recognizes in several places the need for sustainable infrastructure. Sustainable design is one of the identified mitigative measures (see page 179 of the draft plan). In addition, desired conditions and strategies for sustainable design/development are noted in appendix B (pages 443-444).

Comment: Public Involvement. A few commenters stated stakeholders were not sufficiently involved in the process, there was poor public notice of the meetings on the draft document, and not enough time was provided for the public to comment on the document.

Response: Members of the public, including stakeholders, were provided opportunities to participate in the planning process through public meetings and newsletters, as described on page 413 of the draft document. Notice of the public meetings on the draft plan was included in the letters that were sent to everybody who received a copy of the plan. In addition, notice of the meetings was included in a press release sent to the media, on the park's web site, and on the NPS Planning, Environment and Public Comment (PEPC) web site. NPS policy requires that draft environmental impact statements be available for public review for a minimum of 60 days. Based on public requests, an additional 60 days was added for review of the Channel Island plan, resulting in a 120 day review period. This was sufficient time for the review of the document.

10. Natural Resources (Including Impacts)

Comment: Need for Monitoring of Eelgrass Habitats. The National Marine Fisheries Service encouraged more research and monitoring of eelgrass habitat as this habitat has not been well studied.

Response: Text has been added in the final plan as a needed study to determine the extent of eelgrass habitat in park waters. Text also has been added to encourage research and monitoring eelgrass habitat in the strategies for marine resources management in appendix B.

Comment: Need for Additional Elaboration on Ecosystem Restoration Efforts. TNC argued that there should be further elaboration in the preferred alternative, noting that ecosystem restoration efforts are ongoing and that the philosophy of these restoration efforts is the protection of these species from human-caused threats.

Response: As stated on page 129 of the draft plan, the restoration of terrestrial ecosystems would continue to be emphasized in the preferred alternative. For example, park staff are studying the potential for reestablishing Channel Islands song sparrows on Santa Barbara Island. Text also has been added in the final plan stating that best practices and appropriate technology would be used to control nonnative species, including helicopters, mechanized equipment, and integrated pest management practices, while minimizing impacts to wilderness character as much as possible. In addition, text on efforts to control nonnative species has been added to the "Brief Description of the Park" in chapter 1 and on the guiding philosophy of restoration efforts in the alternatives. However, park managers are not planning to reestablish island species in the park to protect them from threats.

Rather, species are being considered for reintroduction if they are known to have occurred in the Channel Islands but were extirpated directly or indirectly due to people and their activities and their presence will contribute to a more naturally functioning island ecosystem.

Comment: Spread of Non-indigenous Marine Aquatic Species. The National Marine Fisheries Service stated the plan should address threats of non-indigenous marine aquatic species, such as brown algae.

Response: The threat posed by the spread of non-indigenous marine aquatic species such as brown algae is a challenging management issue for the Channel Islands National Park. The park staff will continue to work with the National Marine Fisheries Service, Channel Islands Marine Sanctuary, and other interested parties to monitor the spread of nonnative marine species in park waters and to take appropriate action to eradicate or control the spread of these species. This text has been added to the final plan under strategies for the management of marine resources in appendix B.

Comment: Spread of Invasive Nonnative Species. Many commenters expressed concern about the spread of invasive nonnative species in the park. TNC stated the National Park Service needs to take a proactive role in preventing new introductions of invasive species and this needs to be a central, integrated focus of the plan. A specific concern was raised about the potential for stone pine and pepper trees on NPS lands on Santa Cruz Island to spread and impact native species.

Response: The National Park Service agrees this is a concern, and there is a need to take a proactive role in preventing new introductions of invasive species in the park. As noted in the description of the preferred alternative on page 129 of the draft document, the park staff would continue to eradicate, where feasible, nonnative flora and fauna from the islands, with the highest priority being given to those species that are highly invasive or have unacceptable ecological impacts. As noted on page 148 of the draft document, nonnative plants in cultural landscapes and historic districts would be managed on a case-by-case basis to limit the spread of these plants. If it was not possible to control the spread of nonnative trees, the tress would be removed and replaced with noninvasive species. In addition, several strategies are identified on pages 431-432 to prevent future introductions of nonnative species. Another strategy has been added to the final plan regarding the implementation of the park's biosecurity protocols and the need for increased oversight. The National Park Service would pursue these strategies under all of the alternatives considered for the park.

With regard to the specific concerns raised about the stone pine and pepper trees on NPS lands, this issue is too detailed for a long-range conceptual plan like this general management plan. However, the plan describes the general direction park managers will follow in trying to manage cultural landscape plans so they do not negatively affect surrounding natural areas. Independent of this plan, park managers intend to remove the stone pine at the base of the Prisoners Harbor pier and replace it with a suitable non-invasive tree species. Park managers also will work with TNC to ensure that only one gender of pepper tree is maintained on the island, thus preventing their spread.

Comment: Impact of Removing Eucalyptus from the Scorpion Campground. One commenter urged that a native plant reintroduction program be aggressively pursued to replace the eucalyptus in Scorpion Valley. They noted removing the eucalyptus and not replacing

them with natives will severely decrease the quality of the campgrounds.

Response: The park planning team recognized the importance of the eucalyptus providing shade in the campground as well as being part of the cultural landscape. However, as noted on page 148 of the draft document these trees also pose a hazard to visitors and their spread results in ecological impacts to landscape vegetation on the island. In the preferred alternative the park staff would control the eucalyptus to prevent them from spreading as much as possible and to prevent injury to visitors. But if this is not possible, the eucalyptus trees would be replaced with noninvasive, less hazardous tree species. Additional study would be done at that time to determine which tree species would be appropriate from a biological, cultural landscape, and visitor safety and experience perspective.

Comment: Impact on Water Quality and Aquatic Habitats and Species. The Environmental Protection Agency expressed concerns regarding the lack of information concerning the effects of the alternatives on water quality, biological resources, and potential indirect impacts as a result of induced growth. It also expressed concerns about potential impacts to benthic and aquatic habitats and species.

Response: The draft document in fact considered all available information in analyzing impacts of a conceptual plan that is providing overall future direction for a park for the next 20 to 40 years. For example, the draft document did briefly describe marine and freshwater quality in the Affected Environment (pages 233-235 of the draft document), but as noted the National Park Service has little data on water quality for the park's marine waters. Impacts of actions being proposed in the preferred alternative on fresh and marine water were generally addressed on pages 379-381. Given what is being proposing in the preferred alternative and the included mitigation measures on pages 174-175, the planning team believes the impact analysis covers the primary concerns about potential water quality impacts. None of the actions in the preferred alternative would be expected to result in changes in surface runoff, temperature, and contamination from hazardous materials, or in measurable changes to benthic and aquatic habitats and species. No impacts of construction and increased vehicle traffic on water quality are foreseen as being likely, nor would there be any unavoidable impacts to waters that would require compensatory mitigation options. There also would be no induced growth on the islands resulting from increased visitor use and access of the islands — the general management plan would need to be amended and/or additional environmental analysis completed before new developments beyond those addressed in the plan would be permitted.

Comment: Impact on Marine Resources. The National Marine Fisheries Service and Channel Islands National Marine Sanctuary expressed concern about impacts on marine water. The National Marine Fisheries Service and the sanctuary noted a need to address the potential impact of increased park maintenance and transportation activities on nearshore and subtidal resources. Mitigation measures and waste management protocols should be included in the plan. The Channel Islands National Marine Sanctuary stated the plan should consider the impacts of erosion from road maintenance and road removal on Santa Rosa Island, the disposal of human waste off the island's beaches, and the impacts of discharges from park vessels and increased numbers of visitors' boats on the waters of the sanctuary. The marine sanctuary also was concerned about the possible impact of periodic removal of sediment from the Scorpion Creek stream channel.

Response: The management of park maintenance and transportation activities is an operational question that the general management plan is not addressing. Although there probably would be an increase in NPS administrative boat use as a result of actions proposed in the preferred alternative, a major change in park maintenance and transportation activities would not occur. Park vessels have holding tanks for wastewater and follow federal and state regulations for discharges. Vessels use NPS maintained moorings at the regularly landed landing areas to minimize disturbance to sea floor whenever possible. Some landing craft may be needed to provide construction equipment and materials at Prisoners Harbor, Bechers Bay and Scorpion Harbor, but these would be infrequent and would be carefully operated to minimize impacts to marine resources. Thus, it is expected these activities would have a negligible adverse impact to nearshore and subtidal resources in a few localized areas. In the final plan text has been added to the strategies in the management of marine resources in appendix B to state that park staff would work with the national marine sanctuary, National Marine Fisheries Service and the state to minimize impacts from NPS operational activities on nearshore and subtidal resources. In addition, a mitigative action has been added in the final plan that states park staff would periodically inspect and clean NPS boats to avoid the transport of nonnative species, require concessioners to follow similar procedures for their boats, and work with the State of California to educate private boaters about the need to inspect and clean their boats.

The draft document considered the impacts of erosion from road maintenance activities on Santa Rosa Island and from visitors' boats on water quality (see page 380 for impacts of the preferred alternative in the draft document). With the application of appropriate mitigative measures, closure and restoration of roads, should not result in discharges to marine waters. (Indeed, removal of roads and restoration of the landscape should prevent erosion and transport of sediments to marine waters.) Beach camping also is not being proposed in this plan, nor are any other activities being proposed that would result in the disposal of human waste off the island's beaches — a future backcountry management plan would determine if nearshore campsites are appropriate on the island, and would consider the impacts of the disposal of human waste off of the beaches.

With regard to the periodic removal of sediment in the Scorpion Creek stream channel, this would be addressed in more detail in a subsequent environmental document. The need for consultation with the sanctuary staff on this action has been added to the final plan. It also should be noted that with the removal of feral animals and increased vegetation on Santa Cruz and Santa Rosa Islands, sediment transport in all of the creeks has been greatly reduced.

Comment: Effect of Tours on Point Bennett Pinnipeds and Research. A concern was raised that providing tours to Point Bennett on San Miguel Island would disrupt pinnipeds and ongoing research.

Response: As stated on page 169 in the draft document, the trips to Point Bennett would be escorted by NPS staff or knowledgeable commercial guide and limited to no more than 10 individuals to ensure that impacts to the pinnipeds are avoided. This should also avoid impacts to research. In addition, the National Marines Fisheries Service research station on San Miguel Island probably would be contacted ahead of any scheduled trips to make sure these impacts do not occur. (No concerns were raised by the National Marine Fisheries Service on the draft plan regarding these tours.)

Comment: Impact of Proposed Structures in Marine Waters. The Environmental Protection Agency was concerned about impacts of the construction and maintenance of proposed structures in marine waters and to benthic and aquatic habitats and species.

Response: No new structures were proposed in marine waters in the alternatives considered in the Channel Islands general management plan. (See also the comment below regarding the Scorpion pier.)

Comment: Impacts of the Relocation of the Scorpion Pier. The Channel Islands National Marine Sanctuary was concerned about impacts to the sanctuary from the possible relocation of the Scorpion pier. The Environmental Protection Agency noted the plan should clarify that the pier project is being done as a separate project and why, and include the project in the cumulative impact analysis.

Response: The general management plan is not addressing this topic, although the replacement of the two piers was addressed in the cumulative impacts scenario (page 318 of the draft document) and in the cumulative impact analysis of the two action alternatives (pages 346-347 for the preferred alternative). The draft plan noted on page 439 that this is a separate project, and described the relationship of the general management plan to the project. As noted on page 449 in the draft plan, the replacement and relocation of the Scorpion Harbor pier is being considered in a separate environmental impact statement. (See also http://www.nps.gov/chis/parkmgmt/scorpion-pier-replacement.htm) The final plan has been revised to indicate this is an issue not being addressed in this plan because a more detailed level of site-specific analysis is required for this project than for the general management plan.

Comment: Impacts on Black Abalone. The U.S. Navy noted there is potential for impact on the black abalone due to new trails and access that enable hikers to reach areas of the islands' intertidal zone not regularly visited now, and this should be analyzed in the plan.

Response: No new trails are being proposed in the plan that would provide visitors with access to the intertidal zone. Nor are any other actions being proposed that would affect the waters in the intertidal zone where the abalone occur. Thus, no impacts are foreseen occurring to the black abalone from this plan.

Comment: Possible Wildlife Disturbance from Aircraft Landing on San Miguel Island. The National Marine Fisheries Service expressed concern about possible disturbance to seabirds and marine mammals, and expressed a desire to work with the park staff in incorporating guidance to concessioner contracts and business permits to avoid unnecessary impacts.

Response: Text has been added to state that the park staff would work with the sanctuary to write provisions in the concessioner's contract to avoid wildlife disturbance from aircraft flying near sensitive seabird and marine mammal sites.

Comment: Impacts on Species of Concern. The Environmental Protection Agency expressed concern about the impacts of the alternatives on the many species of concern in the project area. It recommended a "comprehensive biological survey of the entire project area, including a complete review of species," a detailed analysis of direction, indirect and cumulative biological resource impacts that would result, and inclusion of a monitoring plan and conceptual mitigation plan in the final plan.

Response: The park planning team considered all available information in analyzing impacts to federally and state listed threatened and endangered species and their habitats. It is not feasible, nor required, for the planning team to prepare a comprehensive biological survey of the entire project area for this environmental impact statement The planning team considered all of the federal and state listed species, and dismissed those species that it believed would not be affected by the alternatives (see pages 216 and 221-224 in the draft document). The planning team believes the impact analysis did in fact adequately analyze all of the direct and cumulative impacts on the species that potentially could be affected by the alternatives. None of the actions being proposed in the preferred alternative would affect listed species through the destruction of reef habitat, changes to the food web, changes in currents, or degradation of water quality. The plan does identify the need for monitoring selected listed species (see pages 176-177 and 436-437), but the planning team does not believe it is appropriate to include a detailed monitoring or mitigation plan in a general management plan. Park staff is in consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, and will work with them if they raise any concerns that have not been addressed.

Comment: Impacts of Increasing Visitor Use on Listed Plant Species. TNC expressed a concern that with increasing visitor numbers in the preferred alternative there would be a greater chance for visitors negatively affecting the Santa Cruz Island chicory and the island rush-rose.

Response: It is true there would be an increase in people visiting the park and as stated on page 390 of the draft document there could be some trampling of these plants if hikers were to wander off the trails. But as also noted, most visitors would not go into the backcountry, and those that do would be expected to stay on the roads and trails and not affect the plants. Visitors would also be educated on the need to stay on trails. Thus, alternative 3 would be expected to have the same negligible adverse impact on these plant species as alternative 1.

Comment: Impacts on the Townsend Big-eared Bat. A commenter noted the plan provided little attention to impacts due to actions in the former bakery in Scorpion Valley on the Townsend big-eared bat (a state listed species). Encouraging more human activity in the vicinity of the bat's maternity colony could degrade or eliminate the colony and would not be consistent with the requirement to manage the park on a low-intensity, limited-entry basis.

Response: The park planning team recognized the maternity roost in the former bakery is very sensitive to disturbance. As noted in the preferred alternative (page 148 of the draft document) the bats would continue to be protected in the building. There is no intention to evict the bats from the building — no actions are being proposed that would change either the use or management of the former bakery. Although the preferred alternative would provide for a limited increase in visitation in Scorpion Valley, visitors and staff would continue to be restricted from the area around the bakery in Scorpion Valley during the period that the maternity colony is present in the building. Park managers would continue to work with bat biologists to determine administrative activities or uses that may be causing impacts to the maternity colony. Additional adaptive management actions may need to be taken if the bats continue to experience reproductive failure, such as placing additional access restrictions for visitors, concessioners and NPS staff in the area around the bakery, and placing further restrictions on lights and electronics in the interpretive displays during the maternity roost season. Under mitigative

measures, the final plan now states that the fenced area of the ranch complex would be adaptively managed to ensure persistence of the Townsend's big-eared bat maternity colony on Santa Cruz Island. Access and the use of machinery would be restricted in the vicinity of the bakery during the maternity season and access for the bats into the bakery would be maintained. In addition, the final plan notes there is a need for additional research to determine the cause of the decline in the bats.

Comment: Impacts on the Island Fox. TNC noted visitors are now regularly seeing the foxes and suggested that as a result of research on island fox behavior, the impact of increased visitor use and increased camping locations would have a moderate to major adverse impact on the fox. Increased visitor contact also increases the risk of the public introducing a mainland disease to the fox population.

Response: The text has been rewritten in the final plan to note that visitors would often see island foxes in the Scorpion Valley campground, and increasingly many visitors would see foxes in other locations on Santa Cruz, Santa Rosa, and San Miguel Islands. It is true that some feeding of foxes is occurring at the Scorpion Valley campground. With the establishment of new campsites at Smugglers Cove, Prisoners Harbor, Johnsons Lee, and Bechers Bay, some feeding of foxes by visitors also may occasionally occur even though this would be tightly managed by park staff. Although some foxes may subsequently become habituated to people, it is not expected this would adversely affect the fox populations on the islands — there is no evidence that fox numbers are declining or their health is declining due to visitors feeding foxes. The island fox populations have increased in numbers over the past several years, and likely will continue to grow. No actions being proposed in this plan that would result in a moderate to major adverse impact on the island fox populations, which could threaten the existence of the foxes on the islands. It is true there is a risk that visitors could introduce a mainland animal that transmits a disease to the island fox population. But this risk already exists, under current use levels, and the relatively small increase in use provided for under the preferred alternative would not be expected to substantially increase this risk. In addition, visitors bringing mainland animals to the islands is not an action the National Park Service is causing and would actively work to prevent.

Comment: Impacts of New Development and/or Expansion of Development on Soils. TNC expressed a concern that backcountry camping and expansion of the Burma Road on Santa Rosa Island would increase erosion and further impact the park's soils.

Response: Backcountry campsites would be located after surveys are completed to determine sites where soil erosion would not be a concern. The specific locations of appropriate backcountry camping sites will be addressed in the future backcountry management plan. With regard to expansion of the Burma Road, no roads are being proposed to be lengthened in the alternatives in the plan.

Comment: Impacts of New Development on the Park's Soundscape. A concern was raised that new developments and increased numbers of visitors will destroy the soundscape. Impacts of air tours and aircraft flights also need to be considered in the plan.

Response: Only a few new developments and very small increases in visitation are being proposed. The impact analysis notes there would be minor to moderate adverse impacts for short periods of time, such as on summer weekends, due to the concentration of visitors and boats in a few localized areas,

but this would not "destroy" the soundscape. Most of the time the vast majority of Channel Islands National Park would be very quiet.

With regard to air tours and aircraft flights, no air tours occur over the park. Although this plan does not affect aircraft overflights, impacts of high flying aircraft were considered under the analysis of cumulative impacts on the soundscape.

Comment: Increased Potential for Wildfires in the Park due to Increased Visitation. TNC expressed a concern that with increased visitation in the preferred alternative, the likelihood of a wildfire would be high, which would have a major adverse impact on the park's resources.

Response: The text acknowledged in several places (e.g., page 384 of the draft document) that increased numbers of visitors may increase the risk of an accidental fire. But there is no reason to expect that just because more people are in the park that wildfires would also increase — the likelihood of a wildfire being sparked by a small increase in visitor numbers is considered low. Most park visitors would be expected to stay in developed areas and not go in the backcountry. The prohibition on open fires in the backcountry would also reduce the risk of a wildfire. In addition, the plan proposed on page177 several mitigative measures to reduce the risk of wildfires. There are no data to indicate a wildfire would likely occur with a small increase in use in a place like Channel Islands National Park. (To expect a wildfire to occur with increased use is a worst case scenario, which environmental impact statements are not required to consider.) However, the final plan has been revised to indicate there is a need to update the park's fire management plan to address the potential for wildfires.

11. Cultural Resources (including impacts)

Comment: Protection of Ranching History on Santa Rosa Island. A number of commenters believed the plan did not adequately protect the ranching history of Santa Rosa Island, which is an important part of the history of the island and of California.

Response: The National Park Service appreciates the importance of the ranching history of Santa Rosa Island. As noted in the preferred alternative on page 159 of the draft document, the entire ranch complex would be preserved to interpret the ranching history. The historic structures would be adaptively reused to ensure they continue to be maintained. The alternative also stated that the historic line camps may serve as primitive campgrounds, although this decision would be decided in a future backcountry management plan.

Comment: Impact of Increased Numbers of Visitors on Cultural Resources. A few commenters expressed concerns about impacts of increased tourism in the alternatives on cultural resources, including archeological sites. One commenter noted the analysis of expected impacts to archeological sites was overoptimistic, and that ground disturbance is often underestimated. The plan also should address the impacts of archeological excavations on the islands.

Response: A relatively small increase in use would occur under the preferred alternative, and with continued ranger patrols and visitor education efforts it is expected the impacts on cultural resources, including archeological resources, would be minor (see page 395 of the draft document). No archeological excavations are being proposed as part of this plan.

Comment: Impact on Submerged Cultural Resources. The California State Lands Commission stated the EIS should indicate that any submerged archaeological site or submerged historic resource remaining in state waters for more than 50 years is presumed to be significant and evaluate potential impacts to submerged cultural resources from proposed projects, including the replacement of two piers. It was noted that the text indicated in the Affected Environment that removing artifacts from shipwrecks is against both state and federal law. The Channel Islands National Marine Sanctuary also noted its regulations prohibit possible impacts to these resources and requested to be added to the list of entities the park staff would cooperate with in considering possible mitigation work.

Response: The park planning team recognizes that any such resources older than 50 years are presumed to be significant. However, this general management plan is not proposing pier replacement or other projects in state waters. As noted in the plan, the relocation of the pier at Scorpion Harbor is being addressed in a separate environmental impact statement. With regard to the removal of artifacts from shipwrecks, text has been added in the final plan noting this is in violation of state and federal law. The need for coordination with the marine sanctuary also has been added to the text.

12. Visitor Experience and Activities (Including Safety)

Comment: Visitor Safety on San Miguel Island. The U.S. Navy stated the plan needed to address the safety of visitors and staff on San Miguel and Prince Islands regarding unexploded ordnance. At a minimum, mitigation measures should be included in the plan to ensure visitor and staff safety. The U.S. Navy should be consulted on these measures.

Response: See the response to the public health and safety impact topic concern.

Comment: Commercial Guides and Kayakers. A commenter expressed concern that the text seemed to indicate that kayaking would only be available through a commercial guided entity, and suggested alternative wording.

Response: The intent was never to limit kayaking to just a commercial guided activity. Private boaters would continue to bring their boats to the park and kayak under all of the alternatives. The planning team has subsequently changed the text to clarify this as was suggested.

13. Level of Visitor Use/Visitor Capacity

Comment: Private Boaters and User Capacity. TNC raised a concern that the National Park Service does not know how many private boaters are visiting the park, and therefore does not know if user capacity levels have been exceeded. This lack of data is an important information gap, as there are 13 marinas within 80 miles of the park and boater use may increase in the future.

Response: Most visitors who travel to Channel Islands National Park come via concessioner boats, which park staff monitor and manage. As noted on page 42 of the draft plan, although private boaters who land at Scorpion Harbor (and throughout the park) are not tracked, it has not been documented that use levels are causing unacceptable changes in park resource conditions or visitor experiences. The planning team agrees it is important to collect data on private boaters who are coming to the park. The user capacity numbers in the plan are based on best available data, and the planning team recognizes that private boaters are not

adequately being monitored as part of the user capacity numbers. The final plan has been revised to state there is a need to determine how many private (noncommercial) boaters are visiting the park and landing on the islands, and to develop a methodology to monitor private boater use in the park. As noted on pages 42-43, the plan calls for identifying indicators, setting standards, and monitoring the indicators to ensure that unacceptable changes are not occurring to park resources or the quality of the visitor experience. The proposed future wilderness stewardship/backcountry management plan will examine this issue in more detail. The draft general management plan also states on page 181 that user capacity monitoring plans would be developed.

Comment: Campground Capacity. A commenter stated the campground capacity numbers are unrealistic from a historical viewpoint and will rarely come close to being reached (with the exception of Scorpion). All of the campgrounds should be reevaluated and additional sites should be added, even if capacities stay the same.

Response: The campground capacities are based on the number of sites and the number of campers that can be accommodated in the campgrounds. Just because a campground's capacity is not reached means there is an issue that needs to be addressed. The preferred alternative in the final plan has been revised to state that the Anacapa Island campground would be maintained at its current capacity. The plan is not proposing to reduce the footprint or reduce opportunities for camping in the other existing campgrounds in the preferred alternative. Indeed, the preferred alternative is proposing more campsites on Santa Cruz and Santa Rosa Islands. (Although the capacity of the Water Canyon campground at Bechers Bay would be reduced, the alternative also is proposing a new campground in the area so in fact there would be more opportunities for campers in this area.) Given the congressional mandate to administer the park on a low-intensity, limited entry basis, the planning team believes the number of campsites being proposed provides additional opportunities for visitors to camp in the park while still protecting park resources.

Comment: Impacts of Increasing Visitor Use Levels on Santa Rosa Island. Several commenters were opposed to increasing visitor use levels on Santa Rosa Island, noting this "drastic" increase would have detrimental impacts on natural and cultural resources, wilderness character, visitor experiences, and park operations.

Response: The user capacity in the final plan has been revised to 500 people per day (as opposed to 500 people at one time). The 1995 *Development Concept Plan* for Santa Rosa Island stated the upper limit would be 500 people per day, although the plan also recognized no more than 100 visitors per day were visiting the area in the summer. So this general management plan is not calling for an increase in use levels. In addition, although the preferred alternative would set the user capacity for Santa Rosa Island at no more than 500 visitors per day (including campers), this does not necessary mean that this many people would be visiting the island every day — the number of visitors would likely vary substantially depending on weather, sea conditions, the number of ferries operating, etc. Finally, Santa Rosa Island is a big area. Because most people would likely stay in the Bechers Bay area, and smaller numbers would venture out along the roads, only negligible to minor impacts to resources would be expected.

Comment: Level of Use of Scorpion Valley. Use of Scorpion Valley is inconsistent with the enabling legislation, which requires the park to be managed on a low-intensity, limited-entry basis.

Response: The National Park Service has managed all of Channel Islands National Park on a low intensity, limited entry basis, with visitor activities and the number of visitors being managed to ensure park resources are protected. The legislative mandate is to manage the entire park as a whole on a low-intensity, limited entry basis, not necessarily every access point. Scorpion Harbor is the main access to NPS lands on Santa Cruz Island. This is one of a few points where visitors can relatively easily access the islands from the mainland. Consequently, Scorpion Valley's user capacity was set at a relatively high level, compared to the rest of the park The existing use limit of no more than 200 day visitors at one time (excluding campers) and 240 campers was set in the 1984 *Draft General Management Plan Supplement*. This use level has been in place for many years, with no major issues occurring — no visitor caused impacts have been observed to resources in the area that are inconsistent with the park's enabling legislation or the NPS Organic Act. (Most resource impacts in the Scorpion Valley area are due to past uses of the area before the national park was established.) Although the draft plan proposed a slight increase in day use, in the final plan no changes are being proposed to the area's user capacity. In addition, being a major access point/visitor attraction site, the Scorpion Valley user capacity is relatively low compared to similar sites at most national parks. With the exception of summer weekends, for most of the year visitation is substantially below the user capacity.

Comment: Impacts of Increasing Visitor Capacity on San Miguel Island. One commenter noted the plan didn't establish any rationale for increasing the carrying capacity of San Miguel Island. The increased use level is primarily directed at the concessioner and does not consider private boaters that may be present. This increase in use would impact resources and visitor experiences. The island's facilities also cannot support this level of use.

Response: The preferred alternative in the final plan was revised so that the user capacity of the island would be maintained at its present level (75 visitors per day (excluding campers) and 30 campers per night. The draft plan proposed a small increase in day use to provide a few more opportunities for visitors to see San Miguel Island. But upon further reflection this increase could not be justified: the actual number of San Miguel Island visitors rarely comes close to the existing capacity and use levels are not likely to noticeably increase in the future, given the weather, distance, and cost in traveling to the island. Even with allowing limited fixed-winged aircraft to land on the island on a trial basis, the user capacity level would not be exceeded. With regard to private boaters, very few private boaters come to San Miguel Island, and again this use would not be expected to result in the island's user capacity limit being exceeded.

Comment: Impacts of the Island Use Limits. A commenter stated the impacts of the island use limits were not analyzed. These limits affect the islands' natural conditions and drive new developments.

Response: In most cases the user capacities were not changed from current levels in the preferred alternative. The overnight user capacities were modified for a few areas, including Scorpion Harbor (with camping at Smugglers Cove), and Prisoners Harbor, but the proposed increases were not substantial. For Santa Rosa Island, the final plan also does not propose an increase in use for the island as a whole, although the preferred alternative now recognizes the upper limit of 500 people per day, which was identified in the 1995 Development Concept Plan. Given the size of the island and the fact that most visitors just come to the island for a day, the park planning team believed the 500 people

per day limit could be justified. The impacts of the changes in use, as a result of the changes in the user capacities, were analyzed in the various impact topics in the Environmental Consequences chapter, including impacts to vegetation, wildlife, archeological resources, visitor experience, and wilderness character.

Comment: Support Staff, Researchers, Students and Teachers and User Capacity. A concern was raised that the plan did not specify the number of support staff, as well as researchers, students and teachers, that will be living on the islands and who will also impact resources.

Response: The number of additional park and concession staff being proposed is noted under the preferred alternative. Most of the proposed new park staff would not live on the islands, but visit for short periods of time, primarily staying in the existing developed areas. The proposed new concessioner staff also would primarily stay in the existing developed area in Scorpion Valley. Thus, their impacts on park resources would be expected to be negligible. It is not possible to estimate the number of researchers that would be on the islands from year to year, but the number would be expected to be only a handful at most. Students and teachers also would spend most of their time in the developed areas. They also would be covered under the overall user capacity set for each island and therefore their impacts on park resources would be covered under the analysis of visitor impacts.

14. Education/Interpretation

Comment: Interpretation of the Ranching History of Santa Rosa Island. Some commenters stated there is a lack of recognition in the plan promoting the interpretation of the ranching history of Santa Rosa Island.

Response: The preferred alternative states that interpretive exhibits would be located in a new visitor contact station and throughout the historic ranch complex. Many of these exhibits would be designed to interpret the history of the island, including its ranching history. See also the response to cultural resource impacts above.

15. Park Operations

Comment: Need for Parkwide Monitoring. It was noted there is a need to develop a robust and dynamic monitoring strategy for the entire park, not just for issues related to park visitation. This include a parkwide monitoring plan with an annual monitoring report.

Response: The planning team recognized the need for monitoring resources and visitor uses throughout the general management plan (e.g., see pages 42, 428, 429, 434, 436, and 439 of the draft document). The park staff have prepared, and will continue to prepare, appropriate monitoring plans and annual monitoring reports.

16. Consultation/Coordination

Comment: Need to consult with the Channel Islands National Marine Sanctuary. The Channel Islands National Marine Sanctuary noted the need to consult with the sanctuary and obtain a permit from them on the relocation of the Scorpion Harbor pier, obtain a permit for the periodic removal of sediment from Scorpion Valley, and to work with the park staff on human waste disposal on Santa Rosa Island's beaches below the high tide line. The national marine sanctuary also would like to work with the National Park Service to

incorporate guidance to reduce disturbance to sensitive seabirds and marine mammals with the proposed trial flights to San Miguel Island.

Response: The National Park Service agrees with the need for close consultation with the sanctuary. The park staff have coordinated our activities with the sanctuary in the past, and will continue doing so in the future. The draft plan states the National Park Service would maintain a close working relationship with the sanctuary, as well as other partners, to meet mutual management needs (page 426 of the draft document). Any suggestions for reducing or avoiding disturbance of sensitive seabirds and marine mammals on the proposed trial flights to San Miguel Island would be appreciated.

Comment: Lack of Coordination with Tribes. The Wishtoyo Foundation stated the environmental impact statement was inadequate due to missing government-to-government consultation with the federally recognized tribe and other tribal groups.

Response: As documented in the draft plan, early in the planning process federally recognized tribes associated with the park were invited to participate. Members of the Chumash community were briefed by newsletter on the scope of the planning project and the preliminary alternatives. The park staff also held consultation meetings in early 2011 on the plan, prior to the completion of the draft plan. The park staff have continued to contact the Chumash community to get their input on the draft plan.

17. Editorial and Factual Errors

Comment: A number of editorial and factual errors were identified in the draft document by commenters. These comments included corrections and content changes that commenters believe need to be changed in order for the final plan to be accurate and thorough.

Response: The National Park Service appreciates the effort that went into reviewing the draft document and identifying potential changes. Suggestions have been considered and the final General Management Plan / Environmental Impact Statement has been updated as appropriate.

AGENCIES AND ORGANIZATIONS TO WHOM THIS DOCUMENT WAS SENT

FEDERAL AGENCIES

Department of Justice
Department of the Air Force
  Vandenberg Air Force Base
Department of the Army, Corps of Engineers
  Los Angeles District
  South Pacific Division
  Ventura Field Office
Department of the Navy
  Naval Air Station, Point Mugu
  Naval Construction Battalion Ctr., Port Hueneme
Minerals Management Service
National Marine Fisheries Service
  Seattle, WA
  Southwest Region, Long Beach, CA
National Oceanic and Atmospheric Administration
  Channel Islands National Marine Sanctuary
  National Marine Sanctuary Program
  Office of General Counsel
National Park Service
  Columbia Cascades Support Office
  Santa Monica Mountains National Recreation Area
Natural Resources Conservation Service
Pacific States Marine Fisheries Commission
U.S. Coast Guard
  11th District, Alameda
  Channel Islands Harbor Station
  San Pedro
  Santa Barbara
U.S. Fish and Wildlife Service
  National Wildlife Research Center
  Ventura Office
U.S. Environmental Protection Agency
  Washington, DC Office
  San Francisco Office
U.S. Forest Service
  Los Padres National Forest
U.S. Geological Survey
  Biological Resource Division

U.S. SENATORS AND REPRESENTATIVES

Representative Lois Capps
Representative Elton Gallegly
Representative Brad Sherman
Senator Barbara Boxer
Senator Diane Feinstein

CALIFORNIA STATE AGENCIES

California Coastal Commission
California Department of Fish and Wildlife
California Division of Tourism
California Environmental Protection Agency
California Resources Agency, Ocean Resources Program
California State Lands Commission
California State Parks
Office of California Attorney General
State Historic Preservation Office

CALIFORNIA STATE OFFICIALS

Senator Jack O'Connell
Representative Hannah-Beth Jackson

AMERICAN INDIAN TRIBES WITH POTENTIAL CULTURAL AFFILIATION TO THE PARK

Barbareno Chumash Council
Barbareno/Ventureno Band of Chumash Indians
Coastal Band of the Chumash Nation
Gabrielino-Tonga Tribal Council
Northern Chumash Tribal Council
Santa Ynez Band of Mission Indians
yak titʸu titʸu yak tiłhini – The Northern Chumash

LOCAL, CITY, COUNTY, AND REGIONAL GOVERNMENTS

Cachuma Resources Conservation District
Central Coast Regional Quality Control Board
City of San Diego
City of Santa Barbara
City of Ventura
Santa Barbara County
- Arts Commission
- Board of Supervisors
- Planning Department
- Public Health Officer
- Harbor Patrol

Santa Barbara Urban Creeks Council
Ventura County
- Air Pollution Control
- Board of Supervisors
- Parks Department
- Planning Department
- Public Health Services
- Harbor Patrol

Ventura Port District
Ventura Harbor

ORGANIZATIONS AND BUSINESSES

Adventours Outdoor Excursions
ALMAR Ltd. – Ventura Isle Marina
American Bird Conservancy
American Oceans Campaign
American Museum of Natural History
American Sportfishing Association
Anacapa Isle Marina
Anacapa Yacht Club
Antelope Valley Indian Museum
Aqua Adventures
Aquasports, Ocean Kayak Adventures
Aspen Helicopters
Audubon Society of Santa Barbara
Avalon Harbor
Boojum Institute
Buenger Enterprises, Inc.
California Cattlemen's Association
California Native Plant Society
California Preservation Foundation
California Wilderness Association
Catalina Island Conservancy
Catalina Island Visitors Bureau
Central Coast Concerned Mountain Bikes
Channel Islands Aviation
Channel Islands Kayak Center
Channel Islands Marina, Inc.
Channel Islands Yacht Club
Chinese Historical Society of Southern California
Chumash Maritime Assoc.
CICESE Research Center of Mexico
Coastal Conservancy
Concerned Off-Road Bicyclists Assn.
Condor Express
Defenders of Wildlife
Dibblee Geological Foundation
Endangered Species Recovery Council
Environmental Defense Center
Far West Marine Center
Guided Discoveries
Historical Society of Southern California
Horizons West
International Mountain Bicycling Association
Institute for Wildlife Studies
Island Packers Co.
Jepson Herbarium
Lady Raquel Charters
Los Angeles Maritime Museum
The Mail Buoy
The Marine Mammal Center Marin Headlands
Multiple Use Managers
National Parks Conservation Association
National Technical Information Service
National Trust for Historic Preservation
Natural History Museum of Los Angeles County
Oakbrook Park Chumash Interpretive Center
Ocean Aire Electronics
Outdoor and Aquatic Recreation Specialists (OAARS)
Oxnard Tourism Bureau
Pacific Corinthian Yacht Club
Pacific Seabird Group
Pacific States Marine Fisheries Commission
Pacific Winds Sailing Company
Paddle Sports
Padre Associates
Peabody Museum of Natural History
Peninsula Yacht Anchorage
Pierpont Bay Yacht Club
Point Reyes Bird Observatory

Range Watch
San Buenaventura Research Association
Santa Barbara Botanic Garden
Santa Barbara Chamber of Commerce
Santa Barbara County Cattlemen's Association
Santa Barbara Equine Practice
Santa Barbara Historical Consortium
Santa Barbara Historical Society
Santa Barbara League of Women Voters
Santa Barbara Maritime Museum
Santa Barbara Museum of Natural History
Santa Barbara Sailing Club
Santa Barbara Trust for Historic Preservation
Santa Barbara Visitors Bureau
Santa Barbara Yacht Club
Santa Catalina Island Conservancy
Santa Clarita Valley Historical Society
Santa Cruz Island Foundation
Scripps Institution of Oceanography
Sea Center
Sierra Club
Smithsonian Institution, Museum of Natural History
Smithsonian Institution, National Museum of the American Indian
Society for California Archeology, California State University
Southwind Kayak Center
Spirit of Santa Barbara
Surfrider Foundation, Ventura County Chapter
The Nature Conservancy
Santa Cruz Island Preserve
California Field Office
The Ocean Conservancy, Pacific Region
Truth Aquatics
UCLA Institute of Archeology, Fowler Museum of Cultural History
UCSB Recreation Center, Outdoor Recreation Adventure Programs
University of California
Dept. of Anthropology, Central Coast Information Ctr.
Public History Information Unit
Santa Barbara Marine Science Institute
Vail & Vickers
Ventura County Maritime Museum
Ventura County Museum of History and Art
Ventura Harbor Boatyard
Ventura Sailing Club
Ventura Visitors and Convention Bureau
Ventura West Marina
Ventura Yacht Club
The Vickers Co., Ltd
Washington Native Plant Society
Western Foundation of Vertebrate Zoology
Westlake Yacht Club

MEDIA

American Press Service
Antelope Valley Press
Associated Press
Beverly Hills Today
Cable Channel 6
Camarillo Star Free Press
Cox Cable
Daily News
El Vida Newspaper
Event Source
Filmore Herald
Happenings Magazine
KABC-TV
Key Magazine
KCAL-TV
KCBS-FM & KNX-FM
KCET-TV
KCLU Radio
KCOP-TV
KCSB UCSB
KDB News Dept.
KEYT-TV
KHAY/KVEN
KIIS-FM/AM
KKGO-FM
KKHJ-FM
Kleber Pr Network
KLOS-FM
KLVE-FM & KTNQ-AM
KMEX-TV
KMGQ, KRUZ
KNBC-TV
KOLI Communications
The Korean Central Daily
KOST-FM & KACE-FM & KFI-AM
KPWR-FM
KRTH-FM
KSPE

KTTV
KTWV-FM & KFWB-AM
KUHL/KXFM News
KWKW-AM
KYSR-FM & KXEZ-FM
KZBN
KZLA-FM & KLAC-FM
KZTR Radio
L.A. Daily News
La Opinion
Latitude 38
Long Beach Press -Telegram
Los Angeles Times
Montecito Magazine
Ojai Valley News
Outdoor Network
Pasadena Star - News
Power Boat Magazine
Rafu Shimpo
Reuters America, Inc.
San Gabriel Valley Tribune
Santa Barbara Independent
Santa Barbara News Press
Santa Maria Times
Santa Ynez Valley News
Santana
SB Magazine
Sea Magazine
The Navy Dispatch
Today Publications
UCSB Daily Nexus
UPN News 13
Ventura County Parent Magazine
Ventura County Reporter
Ventura County Star Newspaper
Via Magazine

LIBRARIES

Buellton City Library, Santa Ynez
Camarillo City Library
Carpinteria Library
City of Los Angeles Library
E.P. Foster Library, Ventura
Eastside Library, Santa Barbara
Filmore Library
Goleta Library
H.P. Wright Library, Ventura
Moorpark Library
Ojai Library
Oxnard Library
Port Hueneme — Prueter Library
Santa Barbara City Library
Santa Barbara Museum of Natural History Library
Santa Paula Public Library
Thousand Oaks City Library

Channel Islands National Park

Appendixes, Selected References, Preparers and Consultants, Index

APPENDIX A. SUMMARY OF LEGISLATIVE HISTORY FOR CHANNEL ISLANDS NATIONAL PARK

On April 26, 1938, President Franklin D. Roosevelt signed proclamation 2281 designating Anacapa and Santa Barbara Islands as the Channel Islands National Monument. The proclamation noted that the islands warranted protection because they "contain fossils of Pleistocene elephants and ancient trees, and furnish noteworthy examples of volcanism, deposition, and active sea erosion, and have situated thereon various other objects of geological and scientific interest . . . . Several parts of the islands were reserved for lighthouse purposes."

On February 9, 1949, President Harry S Truman issued another proclamation (2825) that added 17,635 acres to the monument. Specifically, the proclamation added the area within 1 nautical mile of the shoreline of Anacapa and Santa Barbara Islands, which included several small islets and rocks and the offshore kelp beds around the islands. It was noted that these islets and rocks were "required for the proper care, management, and protection of the objects of geological and scientific interest located on lands within the said monument."

PL 93-477 (88 Stat 1445), enacted on October 26, 1974, authorized funds for the development of an administrative (headquarters) site and visitor facilities for the monument. Section 401 of the act authorized the secretary of the interior to accept the donation of the fee simple title of up to 5 acres of land and submerged land within the Ventura Marina in Ventura for these facilities.

On March 5, 1980, President Jimmy Carter signed PL 96-199 (94 Stat 67), which established Channel Islands National Park. The act included in the park Santa Barbara and Anacapa Islands from the original monument, plus Santa Rosa, Santa Cruz, and San Miguel Islands (the later to remain under the ownership of the U.S. Navy but managed by the Park Service. Prince Island was also included in the park, as well as the rocks, islets, and submerged lands and waters within 1 nautical mile of each island. The act stated that lands owned by The Nature Conservancy could be acquired only with their consent. Privately owned lands on Santa Rosa were to be acquired "as expeditiously as possible." The act specifically stated that nothing would affect the rights and jurisdiction of the State of California within the park, including its authority over submerged lands, waters, and marine resources within the park boundaries. Section 204(a) of the act declared that the park "shall be administered on a low-intensity, limited-entry basis." Section 204(b) further stated that "in recognition of the special fragility and sensitivity of the park's resources, it is the intent of Congress that the visitor use within the park be limited to assure negligible adverse impact on the park resources. The Secretary shall establish appropriate visitor carrying capacities within the park." Section 206 called for a review of the suitability or nonsuitability of the park for designation as wilderness within three fiscal years after the date of the enactment of the law. Section 207 stated that no fees shall be charged for entrance to the park. Section 208 provided for expenditure of federal funds for the cooperative management of The Nature Conservancy and other private property for research, resource management, and visitor protection and use.

APPENDIX B. SERVICEWIDE MANDATES AND POLICIES PERTAINING TO CHANNEL ISLANDS NATIONAL PARK

TABLE B-1. SERVICEWIDE LAWS AND POLICIES PERTAINING TO CHANNEL ISLANDS NATIONAL PARK

Topic	Desired Conditions and Strategies for Channel Islands National Park
Relations with Private and Public Organizations, Owners of Adjacent Land, and Governmental Agencies	***Desired Conditions:*** The park is managed as part of a greater ecological, social, economic, and cultural system. Good relations are maintained with adjacent landowners, surrounding communities, and private and public groups that affect, and are affected by, the park. The area is managed proactively to resolve external issues and concerns and ensure that area values are not compromised. As noted above, Channel Islands National Park is socially, politically, ecologically, and historically a part of a greater area. The Park Service must consider how its actions in Channel Islands affect the surrounding environment and society. For instance, the management of the park influences local economies through tourism expenditures and the goods and services the Park Service purchases to support park operations. ***Strategies:*** To ensure that the Park Service maintains good relations with landowners and communities surrounding Channel Islands National Park, and to ensure that the park is managed proactively to resolve external issues and concerns, the following strategies would be implemented: • The park staff would continue to establish and foster partnerships with public and private organizations to achieve the purposes and mission of the park. Partnerships would be sought for resource protection, research, education, visitor enjoyment, visitor access, and corridor management purposes. • To foster a spirit of cooperation with neighbors and encourage compatible adjacent land uses, the park staff would keep landowners, land managers, tribes, local governments, and the public informed about park management activities. Periodic consultations would occur with landowners and communities who are affected by, or potentially affected by, park visitors and management actions. Park staff would respond promptly to conflicts that arise over their activities, visitor access, and proposed activities and developments on adjacent lands that could affect Channel Islands. Park managers would seek agreements with landowners to encourage their lands to be managed in a manner compatible with park purposes. Park staff also would seek ways to provide landowners with technical and management assistance to address issues of mutual interest. • The Park Service would work closely with federal, state, and local agencies and tribal governments whose programs affect, or are affected by, activities in Channel Islands. The park staff would continue to coordinate with federal, state, and local agencies. In particular, park managers would maintain a close working relationship with the Channel Islands National Marine Sanctuary, U.S. Navy, and TNC, whose lands abut much of the park, to meet mutual management needs. Park managers also would pursue cooperative regional planning whenever possible to integrate the park into issues of regional concern. • The park staff would work with other government managers to encourage the adoption of practices to conserve and improve marine resources in waters within and surrounding the park.

Topic	Desired Conditions and Strategies for Channel Islands National Park
Government-to-Government Relations between American Indian Tribes and Channel Islands National Park	***Desired Conditions:*** The California Channel Islands have long been significant to several Native American groups. The park staff would work to ensure that traditional Native American ties to the islands are recognized and maintain positive, productive, government-to-government and/or consulting relationships with groups culturally associated with the islands. ***Strategies:*** To enhance the Park Service's relationship with interested Native American groups, the strategies and actions listed below would be followed. Consult regularly and maintain government-to-government relations with the Santa Ynez Band of Mission Indians, the federally recognized tribe with traditional ties to resources within the park. Also, the park would consult regularly with individuals known to be lineal descendants of the islands and other interested Native American parties. The park staff would build on existing relationships, identifying partnerships and activities of mutual benefit. Continue to identify and deepen the understanding of the significance of the park's resources and landscapes to the recognized tribes, lineal descendants and interested Native American parties through collaborative research and information sharing. Ensure the participation of the tribes, lineal descendants, and interested Native American parties in protecting the park's natural and cultural resources of interest and concern to them. Involve the tribes, lineal descendants and interested Native American parties in the park's interpretation program to promote accuracy of information regarding Native American cultural values and to enhance public appreciation of those values. Support continuation of traditional Native American activities in the park, to the extent allowed by applicable laws and regulations.
	Natural Resources
Ecosystem Management	NPS *Management Policies 2006* (§ 1.6,, 4.1, 4.1.4, 4.4.1) provides general direction for managing park units from an ecosystem perspective. The park lies within an extensive landscape of human, biological, and physical dimensions. Park resources and their management are affected by natural processes and social circumstances, which often extend beyond park boundaries. For example, although the park staff protects seabird breeding areas and pinniped haul-out areas in the park, the size and health of the wildlife populations that use the park also depends upon actions taken elsewhere in the waters of the Southern California Bight and beyond. In the past, many park units were managed in a way that did not adapt to natural or social change, or consider influences beyond park boundaries. Managing for a static environment in the human or natural dimension would not provide the means to meet the needs of future generations or accommodate the change inherent to, and resulting from, natural processes. Approaches to ecosystem management are varied and occur at many levels. Achieving the desired future conditions stated in the plan for park resources requires that a regional perspective be considered, recognizing that actions outside the park directly and indirectly affect the park. Many of the threats to park resources, such as invasive, nonnative species, and air pollution, come from outside of the park boundaries, requiring an ecosystem approach to understand and manage the park's natural resources. Imperative in this effort is understanding the health or condition of the ecosystem. Without a planned monitoring program, improvement or degradation of resources cannot be determined with any certainty. Key indicators of resource or system conditions must be identified and monitored (see the natural resources section below). Cooperation, coordination, negotiation, and partnerships with other federal and state agencies are also crucial to meeting or maintaining desired future conditions for the park while recognizing the need to accommodate multiple uses on a regional scale. This approach to ecosystem management may involve many parties or cooperative agreements to obtain a better understanding of transboundary issues.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	In terms of biological, geological, and hydrologic resources, the management of the park's natural resources is focused on allowing natural processes to shape the landscape, while also taking restoration actions to conserve native biological communities and species to achieve their natural functioning condition. ***Desired Conditions:*** Channel Islands National Park is managed holistically as part of a greater ecological, social, economic, and cultural system. The Park Service demonstrates leadership in resource stewardship and conservation of ecosystem values within and outside the park. The park is managed from an ecosystem perspective, where internal and external factors affecting visitor use, environmental quality, and resource stewardship goals are considered at a scale appropriate to their impact on affected resources. Natural processes and population fluctuations occur with as little human intervention as possible. Park resources and visitors are managed considering the ecological and social conditions of the park and surrounding area. Park managers adapt to changing ecological and social conditions within and external to the park and continue as partners in regional planning and land and water management. The park is managed proactively to resolve external issues and concerns to ensure park values are not compromised. ***Strategies:*** Park staff would continue to participate in and encourage ongoing partnerships with federal, state, and local agencies; educational institutions; and other organizations in programs that have importance within and beyond park boundaries. Cooperative agreements, partnerships, and other arrangements can be used to set an example in resource conservation and innovation, and to facilitate research related to park resources and their management. Partnerships important to the long-term viability of natural and cultural resources include, but are not limited to: • inventorying, monitoring, and managing terrestrial resources on Santa Cruz Island with TNC; • monitoring, enforcing regulations, and managing marine resources with the California Department of Fish and Wildlife; • monitoring, enforcing regulations, and managing marine resources with the Channel Islands National Marine Sanctuary (sanctuary); • monitoring and managing federally threatened and endangered species with the Fish and Wildlife Service and National Marine Fisheries Service; • monitoring and managing pinnipeds with the National Marine Fisheries Service • monitoring and managing water quality with the local regional water quality control boards and the state water resources control board; and • supporting scientific research and ecological monitoring to guide recovery/conservation efforts in collaboration with professionals from federal and state agencies, academic institutions, museums, and research organizations. All resource management questions are approached from an ecosystem standpoint, taking into account all biological interrelationships. Long-term monitoring of the change in condition of cultural and natural resources and related human influences continues (see natural resources strategies). Cooperative research and resource management efforts would be encouraged in areas of joint administration and overlapping political boundaries. To increase communication and sharing between park managers and scientists, and thus more effectively address management issues and problems, the Channel Islands research coordinating committee would be reestablished. When feasible, partnerships would be sought with other public agencies (and TNC on Santa Cruz Island) in sharing office space, orientation and contact stations, and employee housing. Areas external to the park where ecological processes, natural and cultural resources, and human use affect park resources or are closely related to park resource management considerations would be identified; joint management actions, agreements, or partnerships to promote resource conservation would be initiated (see natural resources strategies).
Natural Resources (General)	Protection, study, and management of the park's natural resources and processes is essential for achieving the park's purposes and mission. NPS *Management Policies 2006* (§ 4) and "NPS-77

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Natural Resources Management Guideline" provide general direction on natural resource management for the park. ***Desired Conditions:*** Channel Islands National Park retains its ecological integrity, including its natural resources and processes. The park continues to be a dynamic, bio-diverse environment. The natural features of the park remain unimpaired. The islands are dominated by a mosaic of native vegetation and wildlife. Natural processes and populations fluctuate with as little human intervention as possible. Sources of air, water, and noise pollution affecting park resources are limited to the greatest degree possible. Potential threats to park resources are identified early and proactively addressed. Park visitors and staff recognize and understand the value of the park's natural resources. Park staff uses the best available scientific information and technology to manage the park's natural resources. The park is recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use. ***Strategies*:** Science-based, adaptive, decision-making would be followed, with the results of resource monitoring and research incorporated into all aspects of park operations. Park staff would apply ecological principles to ensure that natural resources are maintained and not impaired. Integrated pest management procedures would be used when necessary to control nonnative organisms or other pests. Park staff and other scientists would continue to inventory park resources to quantify, locate, and document biotic and abiotic resources in the park and to assess their status and trends. In particular, the park's soils, floodplains, and wetlands need to be identified and mapped. The park's sea caves would continue to be surveyed and monitored to determine the nature of the resources and the interaction occurring between resources and people. Park staff and other scientists would continue the long-term systematic monitoring of resources and processes to discern natural and anthropogenically induced trends, document changes in species or communities, evaluate the effectiveness of management actions taken to protect and restore resources, and mitigate impacts on resources. The park staff would expand monitoring programs to include geographic areas and resources that are not currently monitored. Partnerships with institutions, agencies, and scientists would be an important component of this endeavor. A systematic survey of rare plants and animals would be completed on all of the islands. Monitoring of rare and endemic plants and communities also would be conducted on all of the islands. Population dynamics studies would be completed for the park's sensitive species. Future facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible. Park staff would also apply mitigation techniques to minimize the impacts of construction and other activities on park resources. Actions that have the potential to result in significant soil disturbance would be evaluated to determine if erosion control measures need to be applied. In all instances where manipulation of the environment is required, special care would be taken to avoid further contamination of the unique gene pools that exist on each island. Seed necessary for revegetation would be obtained only from sources on the island where the work is being done. The most genetically appropriate individuals would be used in all restorations of extirpated species. Any activities or programs that result in disturbance of pinnipeds or rare marine birds and do not contribute to management of the species would be prohibited, especially during breeding seasons. Park rangers would continue to assist in protecting these species through both interpretive programs and law enforcement activities. To protect wildlife, such as marine mammals, marine birds, and other natural resources, the following closures and restrictions would continue: • landing on all offshore rocks and islets would continue to be prohibited; • motorized aircraft would continue to be prohibited from flying at less than 1,000 feet over the

Topic	Desired Conditions and Strategies for Channel Islands National Park
	waters within 1 nautical mile of any island except for enforcement purposes, to engage in kelp bed surveys, or to transport persons or supplies to or from an island, as per the sanctuary regulations; • sea caves that are important for sea bird breeding and nesting would continue to be closed to public entry; • all of the shoreline of San Miguel Island would continue to be closed to public landing or entry, with the exception of Cuyler Harbor; all hikers also would continue to be required to be accompanied beyond the ranger station by a park ranger; • all visitors would continue to be required to be accompanied by a park ranger on Middle Anacapa; and • Beach camping would be prohibited on Santa Barbara, Anacapa, Santa Cruz, and San Miguel Islands. Visitors would continue to be prohibited from bringing pets onto the islands in order to prevent the introduction of nonnative species, including diseases and parasites that could affect native wildlife. Park managers would fully implement and abide by the park's biosecurity protocol policies to prevent the introduction of nonnative species into the park (NPS 2012b; see appendix G). These protocols cover personal gear, equipment and supplies, lumber and wood products, waste, dumpsters, ground vehicles, vessels, planes, soil and gravel, and education. The protocols would apply to concessioners and contractors, visitors, and NPS staff on the islands. The public use restrictions in the park's Compendium, and cited in an April 16, 2007, public notice prohibiting the transportation or delivery of various specified items also would continue to be enforced (see http://www.nps.gov/chis/parkmgmt/public-notices.htm). Depending on the activity, increased oversight would be given to Park Service, TNC, U.S. Navy, University of California, and contractor/concessioner activities on the islands to prevent the introduction and spread of nonnative species. Roads on Santa Rosa and Santa Cruz Islands would be closed if they pass through areas with sensitive resources or are highly susceptible to erosion. Roads that are maintained would be managed to minimize erosion and sedimentation. Scientific research would be encouraged. Cooperative basic and applied research would be encouraged through various partnerships and agreements to increase the understanding of park resources, natural processes, and human interactions with the environment, or to answer specific management questions. Marine bird and pinniped monitoring/research programs that provide basic information for management would continue to be encouraged and supported. The pinniped program would be coordinated through and in agreement with the National Marine Fisheries Service or its designated agents. Collaboration and consultation with the scientific community would continue to be encouraged in order to guide resource management. A symposium bringing together researchers doing work on the Channel Islands would continue to be held approximately every five years. Park managers would ensure that laboratory facilities are available to meet the needs of park staff and independent scientists engaged in fundamental physical, biological, and cultural studies and analyses. The park staff would continue to expand the data management system, including GIS, a research database, and a literature database, for analyzing, modeling, predicting, and testing trends in resource conditions. Park managers would prepare and regularly update a resource stewardship strategy, which includes a list of prioritized actions to achieve the desired resource conditions identified in the *General Management Plan / Environmental Impact Statement*.
Ecosystem Restoration Efforts	NPS *Management Policies 2006* (§ 4.4) call for the Park Service to maintain natural ecosystems in parks and to restore native plant and animal populations. "NPS-77, Natural Resources Management Guideline" also provides general direction on the restoration of natural resources for Channel Islands National Park.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Many of the Channel Island's natural ecosystems have been altered by the activities of people and the introduction of nonnative species. More specifically, the condition of natural vegetation communities has declined in the park due to extensive grazing by nonnative animals, erosion, and weed infestations. Other existing or potential threats to the park's ecosystems include climate change, ocean acidification, the introduction of mainland diseases to wildlife populations, and fire. NPS *Management Policies 2006* (§ 4.4) call for the Park Service to maintain natural ecosystems in parks and to restore native plant and animal populations. For more than 30 years, the Park Service and its partners haves been working to restore the islands' natural ecosystems; eradicating nonnative species; reintroducing extirpated native species; increasing the cover of native plant species; stabilizing soils and controlling soil erosion; promoting the conservation and recovery of threatened, endangered, and rare species, and the habitats they depend on; eliminating other sources of disturbance; and conducting ecological monitoring and research. Restoration plans are continuing for Anacapa and Santa Cruz Islands (NPS 2002, 2006b). Substantial restoration has already occurred on Santa Barbara, Santa Cruz, Santa Rosa, and San Miguel Islands as a result of the removal of nonnative animals. Efforts are being made, in collaboration with the California Department of Fish and Wildlife and the Channel Islands National Marine Sanctuary, to enhance protection and restoration of marine resources within the park. ***Desired Conditions:*** The islands are a model of successful ecological restoration efforts. With the exception of historic ranch sites, altered ecosystems (including terrestrial, intertidal, and marine systems) are restored as nearly as possible to conditions they would be in today had natural ecological processes not been disturbed. Island vegetation is in a condition reminiscent of the period before Europeans began altering the islands. All nonnative plant taxa known to be present on the islands have been assessed for invasiveness and specifically for the threats they pose to native species, natural communities, and ecosystem processes on the Islands as well as for the practical possibilities of eliminating or containing their populations. Priority invasive plant taxa and populations have been identified and targeted for eradication, containment, or control based on this assessment. All federally and state threatened and endangered species are no longer in danger of extinction and are at least stable in the park. The natural fire regime has been restored. ***Strategies:*** Active restoration efforts would continue on all of the islands, primarily focusing on eradication of nonnative wildlife species, weed control, revegetation of native plants, restoration of native plants and animals, and erosion control. The long-term restoration goals, interim goals, and ecological standards specified for 14 native terrestrial plant communities in the park's 1999 Resource Management Plan would continue to be pursued. Research would continue to be encouraged to gain a better understanding of the life history, population dynamics, and responses of listed plant species to management activities, such as on seed production and dispersal mechanisms, soil seed banks, and the effects of fire management. (See USFWS 2000 for a list of research topics.) Actions would also be taken to develop, evaluate, and implement techniques to artificially enhance or introduce plant populations. Efforts would continue, in cooperation with the Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Wildlife, TNC, and other public and private institutions, to survey, restore, and recover all listed federal and state terrestrial and marine threatened and endangered species. Listed species and their habitats would be inventoried and monitored to determine population status and trends, and to evaluate the effectiveness of efforts being taken to reduce threats and recover the species. Efforts would be undertaken to preserve the genetic diversity of these species, such as through collecting and storing seeds. Inventories and monitoring of invasive nonnative plant species would continue on all of the islands. Efforts would continue to control or eradicate nonnative plants that are particularly invasive and destructive pests, or have the potential to rapidly spread and dominate plant communities, such as iceplant, fennel, bull thistle, milk thistle, and spiny cocklebur. Assessments of nonnative plant species and the threats they pose would be conducted and priorities set for eradication, containment, or control of priority invasive species at approximately five-year intervals or until all known harmful invasive plant taxa on the Islands are eliminated, whichever comes first.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Efforts would continue to remove feral mammals on the islands. Efforts would continue to eradicate rats from San Miguel Island. Efforts would continue to reduce human-caused erosion on all of the islands to a minimal level and aid in the recovery of soils and vegetation. Park managers would restore disturbed lands as much as possible and determine on a site-by-site basis whether passive or active restoration is necessary. Park staff would carry out the active restoration of previously or newly disturbed areas using native genetic materials to regain maximum habitat value. Should facilities be removed, the disturbed lands would be rehabilitated to restore natural topography and soils, and the areas would be revegetated with native species. Under some circumstances, primarily in frontcountry developed areas, it may be appropriate and within policy to use nonnative plants in restoration efforts. Only plants that are noninvasive and would remain within developed areas would be used. On Santa Cruz Island, restoration efforts would be conducted in concert with TNC restoration activities. Additional attention would be devoted to preventing future introductions of nonnative species on the islands. Actions that may be taken include rodent-proofing storage areas and containers that haul equipment and supplies to the islands; checking planes, boats, and helicopters that transport people and materials to the islands for rodents and other nonnative species; and informing and educating visitors, concessioners, contractors, employees, permittees, and researchers on the importance of this task. Emergency response plans would be prepared that would set priorities and direct what actions to take should rats or other nonnative species be discovered on an island. Materials such as traps and bait would be in place on the islands to respond immediately to this event. Historically, fire has occurred infrequently in the park. However, in more recent times, fires have increased in frequency. Fire danger is higher now, with nonnative grasslands and fuel buildup. The potential for nonnatural, catastrophic fires would continue during the transition period in vegetation recovery and in the presence of nonnative herbivores on some islands. If use increases in the park, the potential for wild fires could increase. It is important to complete a fire management plan for the park, which provides short- and long-term directions for using fire as a restoration tool and for controlling wildfires in the park. In some cases, prescribed burns may be used to eliminate nonnative plants in tightly managed conditions. Additional attention also needs to be devoted to educating visitors to avoid wildfires on the islands. All visitors would be informed about the need to prevent fires on the islands. No smoking on trails or in brush areas would continue to be enforced. Charcoal or other types of open fires would continue to be prohibited on all islands, except seasonally in designated areas at Scorpion beach on Santa Cruz Island. As ecosystem restoration efforts proceed, and native vegetation replaces nonnative vegetation, the potential for fires should decline in the long term.
Paleontological Resources	NPS *Management Policies 2006* (§ 4.8.2) and "NPS Natural Resource Management Reference Manual #77" provide direction for the protection and management of paleontological resources in park units. The Channel Islands, particularly San Miguel, Santa Rosa, and Santa Cruz, contain numerous plant and animal fossils that illuminate the past natural history of the California coastal region. Pygmy mammoth fossils discovered on the islands are of special interest. Although scientists have learned quite a lot about some of the park's fossils, paleontological resources on the Channel Islands have not been very well studied. ***Desired Conditions***: Channel Islands National Park's paleontological resources, including both organic and mineralized remains in body or trace form, are protected and preserved *in situ*, with opportunities for public education, interpretation, and scientific research. Impacts to paleontological resources from human activities, including construction of facilities and illegal collecting, are minimized. ***Strategies:*** A paleontological research plan that directs future research efforts would be prepared and updated as needed.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	A paleontological resource inventory and assessment would be conducted to determine the extent and scientific significance of the park's paleontological resources, and to ensure that these nonrenewable resources are not lost. Fossil localities and associated geologic data would be documented when specimens are collected. Paleontological resource stability indicators, covering such elements as rates of erosion and human activity, would be developed and monitored to establish vital signs and assess the conditions for fossil resources. A variety of methods would be followed to protect resources such as data recording, stabilization in the field, collection, preparation, and placement of specimens in a museum collection, or construction of shelters over specimens. Paleontological resources would be managed and studied in their geologic context, which provides information about the ancient environment. NPS staff would be a partner with other federal and state agencies, TNC, and academic institutions to conduct paleontological research. NPS staff would expand opportunities for researchers to use the monument's fossil collection to further paleontological knowledge. Human-induced erosion in areas with known or likely paleontological resources would be minimized as much as possible. If destructive and preventable erosion occurs or ground-disturbing activities are proposed in areas with potential paleontological resources, a qualified paleontologist would survey the areas for paleontological resources, evaluate their significance, and specify if data recording, stabilization, or specimen collection is necessary. New facilities would be avoided on areas that may yield fossils, or if necessary, the resource may be collected prior to the initiation of construction. Management actions would be taken to prevent illegal collecting and may be taken to prevent damage from natural processes such as erosion. Paleontological resources along high use trails and/or roads would be monitored and actions taken to reduce impacts. Interpretive and educational programs would continue to be developed to educate visitors and the public about paleontology. Fossils would be prepared, exhibited, and stored according to NPS museum standards.
Air Quality	The Clean Air Act (42 USC 7401 et seq.) gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts. NPS *Management Policies 2006* (§ 4.7), and "NPS Natural Resource Management Reference Manual #77" provide further direction on the protection of air quality and related values for park units. Channel Islands National Park is classified as a Class II area This air quality classification is the second most stringent and is designed to protect the majority of the country from air quality degradation. The Clean Air Act gives federal land managers the responsibility for protecting air quality and related values, including visibility, plants, animals, soils, water quality, cultural resources, and public health, from adverse air pollution impacts. The park is located in the South Central Coast Air Basin. The regulatory agencies responsible for overseeing air quality are the Ventura County and Santa Barbara County Air Pollution Control districts. Air quality impacts in the park are due primarily to external sources, and are a concern. Normally, sea breezes push air pollutants inland, which keeps air quality on the islands good. However, infrequently "Santa Ana" winds carry pollutants several hundred miles offshore and have the potential to greatly affect air quality on the islands. Other atmospheric patterns, such as "Catalina eddies" and eastern Pacific high pressure systems, also can introduce air pollutants from stationary, area, and mobile sources in the Los Angeles basin onto the islands. Polluted air from mainland sources and offshore oil and gas facilities has reduced visibility and may threaten native vegetation in the park. Air pollution sources within the park include stationary sources such as furnaces, boilers, campfires, and generators. Motor vehicles are mobile sources and emissions primarily include carbon monoxide, nitrogen oxides, and hydrocarbons (or volatile organic compounds). Most of the stationary and area sources are associated with park operations. Marine vessels constitute the largest sources of mobile-source emissions in the Channel Islands. However, none of the sources

Topic	Desired Conditions and Strategies for Channel Islands National Park
	in the park, or actions being proposed in the plan, would negatively affect the park's air quality compared to pollution sources outside the park. The South Central Coast Air Basin, which includes the park, is classified by the California Air Resources Board as being in nonattainment for ozone and particulate matter. Both Ventura and Santa Barbara counties also currently exceed the national ambient air quality standards for ozone. However, the federal and state ozone standards have not been exceeded on Santa Rosa Island, where ambient ozone has been monitored since 1997. ***Desired Conditions*:** Good to excellent air quality is maintained on all of the islands and at park headquarters. Scenic views, both day and night, are protected unimpaired for the enjoyment of current and future park visitors. ***Strategies:*** The park staff would continue to work with appropriate federal and state governmental agencies, nearby communities, and the Ventura County and Santa Barbara County Air Pollution Control districts to maintain and improve park regional air quality. Park staff would participate in regional air quality planning and research, and the implementation of air quality standards. Park staff and other scientists would inventory and monitor air quality in the park to gain baseline information and to measure any significant changes (improvement or deterioration) to the Channel Islands' airshed. Emissions associated with administrative and recreational use of the park would be reduced. Using zero emission and/or low emission vehicles in the park would help prevent damage to park air quality. To minimize smoke impacts, controlled burns would occur only when favorable meteorological conditions are present. The vegetation to be burned shall be in a condition that would facilitate combustion and minimize the amount of smoke emitted during combustion. Educational programs would inform visitors, as well as regional residents, about the threats of air pollution to park resources.
Water Quality	Water is a key resource in Channel Islands National Park, shaping the landscape and affecting plants, animals, and visitor use. The Clean Water Act strives to restore and maintain the integrity of U.S. waters, which includes waters found in the park. NPS *Management Policies 2006* (§ 4.6) and "NPS Natural Resource Management Reference Manual #77" provide direction on the protection and management of water in the park. ***Desired Conditions:*** The park's fresh and marine water quality reflects natural conditions and supports native plant and animal communities, and administrative and recreational uses. All sources of water pollution from the islands have been eliminated. ***Strategies:*** Park managers would seek to restore the natural functioning of hydrological systems that have been altered on the islands. Park personnel would develop a program to manage human waste in all areas. Park managers would work with the state and regional water quality control boards to prevent water pollution and minimize the risk of water-borne diseases. Park managers would also participate in state or national water quality remediation and watershed planning programs. A water resource inventory would be completed in order to develop a comprehensive water resources management plan for the park. Park staff would strive to develop a long-term water quality monitoring program for Santa Rosa, Santa Cruz, and San Miguel Islands. The nearshore marine waters should also be monitored. These monitoring programs would regularly measure the park's water quality, including physical, chemical, and biological properties.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Park staff would strive to conserve water in all park operations. Examples of actions that could be taken include installing low-flow fixtures such as toilets and showers, or installing self-contained, composting toilets. Visitor interpretive and education efforts would emphasize the hazards from flash flooding that exist in the park (e.g., in Scorpion Valley) and appropriate responses when flooding occurs. Visitors would be educated in techniques to prevent water pollution and safely collect and treat drinking water from natural sources.
Management of Marine Resources	Channel Islands National Park encompasses the surrounding 1 nautical mile of ocean around the islands. Half of the park's acreage (124,299 acres) is under the ocean and jurisdiction is shared with the State of California and the sanctuary. These waters support productive, diverse biological resources, including many important commercial resources. NPS *Management Policies 2006* (§§ 4.1, 4.4) and "NPS Natural Resource Management Reference Manual #77" provide direction on the protection and management of marine resources within the park boundary. ***Desired Conditions:*** The natural diversity and abundance of marine life within the park boundary, and the structure, function, and integrity of marine ecosystems are protected. The park's waters provide a sanctuary for fish and other sea life. Marine populations are sustained and conserved, including those of economic value. Depleted populations have been rebuilt. Representative and unique marine habitats are protected. The park's marine life provides a reference point against which scientists can measure changes elsewhere in the marine environment. There is minimal human disturbance of marine ecosystems. Prevent establishment of nonnative species. ***Strategies:*** Park staff would cooperate with and assist the California Department of Fish and Wildlife in monitoring, enforcing, and managing the recently established marine protected areas and in educating the public about the purposes of these areas. The Park Service would regulate activities on marine waters in the park, such as the prohibition on personal watercraft, to protect sensitive resources and the visitor experience. Park managers would assist the state in management of the nearshore and intertidal zones to ensure the perpetuation of marine resources. Park managers would encourage state and federal agencies to manage the marine and associated resources around the Channel Islands to ensure adequate food reserves for marine birds, cetaceans, and pinnipeds. Working with the National Marine Fisheries Service, the Park Service would inform visitors coming to the islands regarding the presence of pinniped haul-out areas and that care should be taken to avoid affecting animals using these areas. Park staff would continue to work with the National Marine Fisheries Service, Channel Islands Marine Sanctuary, and other interested parties to monitor the spread of nonnative marine species in park waters and to take appropriate action to eradicate or control the spread of these species. Park staff would also work with these agencies to minimize impacts from NPS vessel use on nearshore and subtidal resources. Cooperative research efforts designed to provide management information for subtidal, intertidal, and marine resources would be encouraged and supported. Artificial reefs and aquaculture operations would not be permitted in the park. They would adversely impact the park's natural marine environment and are not consistent with the purposes of the park. Aquaculture operations outside park waters would be monitored to ensure that these operations do not adversely affect park resources. There is a possibility that sounds from ships are affecting the park's marine environment, particularly cetecans. Research would be conducted to determine the nature and extent of impacts that are occurring to the marine soundscape and marine wildlife. Park managers would cooperate with and assist appropriate federal and state agencies in implementing existing action plans for containment and clean-up of oil spills to protect marine resources surrounding the islands.

Topic	Desired Conditions and Strategies for Channel Islands National Park
Floodplains	Floodplains exist on Santa Cruz, Santa Rosa, and San Miguel Islands where there are perennial and intermittent streams. Some of the floodplains are extensive, such as along Scorpion Creek. But in most cases the floodplains are fairly confined and occur in the lower reaches of the streams, in low gradient coastal areas. Existing developments at Prisoners Harbor and in Scorpion Valley are in or near floodplains. Large floods can occur at Scorpion Valley. Floods in the past have damaged structures and posed safety risks to visitors in Scorpion, and likely would do so again in the future if no action is taken. Floodplains are protected and managed in accordance with EO 11988, "Floodplain Management"; NPS DO-77-2 and its accompanying procedural manual; and NPS *Management Policies 2006* (§ 4.6.4). ***Desired Conditions:*** Natural floodplain values are preserved or restored. Long- and short-term impacts associated with the occupancy and modification of floodplains are avoided. Hazardous conditions associated with flooding that could affect visitor safety are minimized. ***Strategies:*** Whenever possible, new developments would be located on sites outside of floodplains. If it is not possible to avoid locating a new development on a floodplain or avoid a management action that would affect a floodplain, the Park Service would: • prepare and approve a statement of findings in accordance with DO-77-2 • use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing impacts on the natural resources of floodplains • ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR 60) A trails construction expert would examine the trail on a hillside down-valley from the masonry building at Scorpion to consider water management concerns and steps that can be taken to reduce flooding, such as installing water bars and swales, while not causing new gullies or other problems. In addition, the tributary channel and berm would be examined to determine if they need to be enlarged and repaired to provide additional protection against flooding from this tributary. Mitigation measures would be required as part of construction to avoid any potential indirect effects to floodplains. Before initiating any ground-disturbing projects, further investigation would be conducted to determine if floodplain resources would be affected. Floodplains would be addressed at the project level to ensure that projects are consistent with NPS policy and EO 11988.
Wetlands	The larger islands in Channel Islands National Park have small wetlands along permanent and intermittent streams, and in the vicinity of seeps and springs, vernal pools, and small marshes at the estuaries of canyons. Wetlands are protected and managed in accordance with EO 11990, "Protection of Wetlands" and NPS DO-77-1 and its accompanying procedural manual. ***Desired Conditions:*** The natural values of wetlands are maintained and protected. When practicable, natural wetland cultural values are enhanced by using them for educational, recreational, scientific, and similar purposes that do not disrupt natural wetland functions. Natural wetlands that have been degraded due to past human actions, including the introduction of nonnative species, are restored to predisturbance conditions whenever feasible. ***Strategies:*** A parkwide wetland inventory, condition assessment, and functional evaluation would be conducted to help ensure proper management and protection of wetland resources. More detailed wetland mapping would be conducted in areas proposed for development or are otherwise susceptible to degradation or loss due to human activities. The construction of new developments in island wetlands would be avoided. If it is not possible to avoid locating a new development in a wetland or avoid a management action that would adversely affect a wetland, the Park Service would comply with the provisions of EO 11990, the Clean Water Act, and DO-77-1. All practicable measures (including the Best Management Practices described in appendix 2 of the "NPS Procedural Manual #77-1: Wetland Protection") would be included in the proposed action to minimize harm to wetlands. The loss of any wetlands would be compensated.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	A statement of findings for wetlands would be prepared (according to the guidelines defined in the NPS Procedural Manual #77-1) if the action would result in an adverse impact on a wetland. The statement of findings would include an analysis of the alternatives, delineation of the wetland, a wetland restoration plan to identify mitigation, and a wetland functional analysis of the impact site and restoration site.
Threatened and Endangered Species	Under the ESA, the Park Service is mandated to promote the conservation of all federally threatened and endangered species and their critical habitats within the park boundaries. NPS *Management Policies 2006* (§ 4.4.2.3) also call for the agency to survey for, protect, and strive to recover all species native to national park system units that are listed under the ESA. In addition, the Park Service is directed to inventory, monitor, and manage state-listed species in a manner similar to the treatment of federally listed species, to the greatest extent possible. Channel Islands National Park supports 37 federally listed threatened and endangered species and one federally proposed threatened species – one of the highest number of listed species in a unit of the national park system. A number of these species are also listed by the state as being threatened or endangered. ***Desired Conditions:*** All listed species and species proposed for listing have recovered in sufficient numbers so that the species can be delisted. Essential habitats that support these species are all protected. ***Strategies:*** Park staff would continue to work with the Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Wildlife to ensure that NPS actions help federal- and state-listed species recover. If any state- or federal-listed or proposed threatened or endangered species were found in areas that would be affected by construction, visitor use, or restoration activities proposed under any of the alternatives in this plan, park staff would first consult informally with the above agencies. Park staff would then attempt to avoid, minimize, rectify, reduce, compensate, or otherwise mitigate any potential adverse impacts on federal- or state-listed species. Should it be determined through informal consultation that an action might adversely affect a federally listed or proposed species, park staff would initiate formal consultation under Section 7 of the ESA. Park staff would cooperate with the above agencies in inventorying, monitoring, protecting, and perpetuating the natural distribution and abundance of all federal- and state-listed species and their essential habitats in Channel Islands National Park. These species and their required habitats would be specifically considered in ongoing planning and management activities. Park staff would participate in the recovery planning process, including the provision of members on recovery teams where appropriate. Park staff would limit the effects of visitor use on island fox behavior by educating visitors on why they should not feed the foxes and enforcing the existing policies that prohibit visitors from feeding wildlife. Additionally, visitors and contractors would be subject to strict biosecurity standards, which would reduce the risk of introducing pathogens and nonnative species that could threaten the island fox populations. Working with the U.S. Fish and Wildlife Service and National Marine Fisheries Service, information on listed terrestrial and marine species would be developed and distributed to visitors to avoid impacts on these species and their habitat. For example, information provided to boaters and kayakers would include mention of the need to avoid sea turtles that rarely may be encountered. Active management programs would be undertaken to monitor, restore, and maintain listed species' habitats, control detrimental nonnative species, control detrimental visitor access, and reestablish extirpated populations as necessary to maintain the species and the habitats upon which they depend. Efforts would continue to propagate and seed bank listed plant species in order to minimize the effects of a potential catastrophic event. Park managers would encourage and cooperate with the Fish and Wildlife Service and California Department of Fish and Wildlife in reintroducing or allowing the repopulation of sea otters in park waters.

Topic	Desired Conditions and Strategies for Channel Islands National Park
Lightscape Management / Night Sky	NPS *Management Policies 2006* (§ 4.10) provides general direction on preserving the natural landscape of park units; Channel Island's night sky is a feature that significantly contributes to the visitor experience. The policy states that the Park Service would seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting would be limited to meeting basic safety requirements and would be shielded when possible. ***Desired Conditions*:** Opportunities to view the night sky are available. Artificial light sources within the park do not impair night sky viewing opportunities or adversely affect wildlife populations. ***Strategies:*** Impacts on the night sky caused by facilities within Channel Islands National Park would be evaluated. To the extent possible, park staff would work within a regional context to protect night sky quality. If it is determined that light sources within the park affect views of the night sky, alternatives would be studied to existing lighting sources such as shielding lights, changing lamp types, or eliminating unnecessary sources. Park managers would work with the state and boat operators to avoid or minimize adverse wildlife impacts due to light sources on boats.
Natural Soundscape	NPS *Management Policies* 2006 (§ 4.9) and NPS DO-47: *Sound Preservation and Noise Management* require park managers to strive to preserve the natural soundscape (natural quiet) associated with the physical and biological resources (e.g., the sounds of the wind in the trees). The concept of natural quiet was further defined in the *Report on Effects of Aircraft Overflights on the National Park System* (NPS 1995b). What is *natural quiet*? Parks and wildernesses offer a variety of unique, pristine sounds not found in most urban or suburban environments. They also offer a complete absence of sounds that *are* found in such environments. Together, these two conditions provide a very special dimension to a park experience — quiet itself. In the absence of any discernible source of sound (especially manmade), quiet is an important element of the feeling of solitude. Quiet also affords visitors an opportunity to hear faint or very distant sounds, such as animal activity and waterfalls. Such an experience provides an important perspective on the vastness of the environment in which the visitor is located, often beyond the visual boundaries determined by trees, terrain, and the like. In considering natural quiet as a resource, the ability to clearly hear the delicate and quieter intermittent sounds of nature, the ability to experience interludes of extreme quiet for their own sake, and the opportunity to do so for extended periods of time is what natural quiet is all about. Aircraft flights over the park for sightseeing, photography, or filming purposes can adversely affect the natural soundscape. The potential exists for air tours and associated noise impacts in the park. Land-based sources, such as motor vehicles, can also affect natural sounds. ***Desired Conditions:*** Natural sounds predominate in Channel Islands National Park. Visitors have opportunities throughout much of the park to experience natural sounds in an unimpaired condition. The sounds of civilization are generally confined to developed areas. ***Strategies:*** Park managers would continue to follow several policies and practices to minimize noise both from land and air sources. The National Parks Air Tour Management Act (Act) of 2000 (PL 106-181), as amended, requires that all persons conducting or intending to conduct a commercial air tour operation below 5,000 feet above ground level over or within 0.5 mile of the boundary of a national park system unit apply to the Federal Aviation Administration (FAA) for authority to undertake such activity before engaging in that activity. The Act further requires that the Administrator of the FAA (Administrator), in cooperation with the NPS Director (Director), establish an Air Tour Management Plan (ATMP) for each park that does not have such a plan in effect at the time that a person applies to the FAA for authority to conduct a commercial air tour operation. As of 2012, no commercial air tour operators have applied for authority to conduct air tours over Channel Islands National Park; however, some commercial air tour operators advertise air tours within Channel Islands National Park and Channel Islands National Marine Sanctuary. Park managers would work with the FAA to educate air tour operators about the requirements of the Act. If an air tour operator applies to conduct commercial air tour operations for Channel

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Islands, park managers would work with the FAA tour operators and all other interested parties in developing the ATMP. This plan would determine if commercial air tours would be appropriate for the park, and if so, under what conditions (e.g., if air tours are appropriate in some or the entire park, the plan could establish conditions such as routes, altitudes, times of day, and maximum number of flights per unit of time). As an alternative to an ATMP, the Director and Administrator may enter into an agreement with a commercial air tour operator who has applied to conduct commercial air tour operations over a national park (49 USC § 40128(b)(7)(A)). In such cases, the Act requires that the agreement address the management issues necessary to protect the resources and visitor use of the park without compromising aviation safety or the air traffic control system (49 USC § 40128(b)(7)(B)). The Park Service would work with the FAA, tour operators, commercial businesses, and general aviation interests to minimize noise and visual impacts of aviation to the park. Aircraft would be encouraged to fly outside the park, especially for those flights where the presence of the park was incidental to the purpose of the flight (i.e., transit between two points). Actions that may be considered for encouraging pilots to fly outside park boundaries include identifying the park on route maps as a noise-sensitive area, educating pilots about the reasons for keeping a distance from the park, and encouraging pilots to fly in compliance with FAA regulations and advisory guidance in a manner that minimizes noise and other impacts. The Park Service would continue to coordinate with the U.S. Navy and, if necessary, develop new processes to address military aircraft issues similar to those used in other national parks. The existing quiet hours in campgrounds would be maintained. Park managers would minimize noise generated by park management activities by strictly regulating NPS and concession administrative use of noise-producing machinery such as aircraft and motorized equipment. Noise would be a consideration when procuring and using park equipment. Park managers also would prepare a soundscape preservation and noise management plan to provide guidance for managing all noise sources in the park including generators, NPS equipment, other aircraft, and external sources.
Cultural Resources (General)	Channel Islands National Park's cultural resources, including its archeological (including submerged maritime) sites, historic structures/buildings, cultural landscapes, ethnographic resources, and museum collections, are an integral part of the park. Protection of these resources is essential for understanding peoples' past, present, and future relationship with the park environment as well as its expressions of America's cultural heritage. The park's Resource Management Plan provides details on the strategies and actions to address the park's most important cultural resource problems, issues, and research needs. ***Desired Conditions:*** The park's cultural resources are protected and the integrity of the park's cultural resources is preserved unimpaired. Park visitors and employees recognize, understand, and appreciate the value of the park's cultural resources and their relationship to America's cultural heritage. The park is recognized and valued as an example of resource stewardship, conservation, education, and public use. ***Strategies:*** Support basic and applied research, directly and through various partnerships and agreements, to enhance the understanding of cultural resources and processes and to solve specific management questions relating to cultural resources. Use the best available scientific information and technology for making decisions and managing the park's cultural resources. Provide historic preservation training to park resource and maintenance staff and make them aware of the most recent preservation technology and applications available. Employ technically sound historic preservation practices through routine preservation maintenance actions that are intended to slow the rate of deterioration and protect the fabric, character, and design of historic structures/buildings. Collect and analyze information to fill gaps in the knowledge and understanding of Channel Islands' cultural resources, and to assess their status and trends and more effectively protect and manage the resources.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Continue long-term monitoring of archeological (including submerged maritime) sites to measure the deterioration from natural and human sources and to evaluate the effectiveness of management actions to protect resources and mitigate impacts. Use and expand a data management system, including GIS, to analyze, model, predict, and test trends in cultural resource conditions. Research, document, and catalogue the park's museum collections to provide the public and park staff with optimum interpretive and resource management opportunities. Museum objects and archival materials would be conserved, protected, and preserved to NPS and professional standards. Locate, identify, evaluate, and protect park resources in accordance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, to determine if they are eligible for listing in the national register. Manage historic structures/buildings and landscapes as cultural resources and give full consideration to their historical values that may be affected as a result of park planning efforts. Employ visitor use management and construction mitigation techniques to ensure that human activities are not impairing park resources. Park managers would rely on a variety of actions to minimize these impacts, including visitor education and interpretation, and use of foot patrols to enforce the Archeological Resources Protection Act. Regularly update the park's Resource Stewardship Strategy and prioritize actions needed to protect park resources. Apply the following measures to ensure that impacts on sensitive cultural resources are avoided or minimized: • Consult the California state historic preservation officer and undertake an archeological survey to determine the extent and significance of archeological resources in areas that have not been surveyed for actions that could involve ground disturbance or affect structures/buildings and/or cultural landscapes that are either listed in, or determined eligible for listing in, the national register. • Where possible, locate projects and facilities in previously disturbed or developed locations. • Whenever possible, modify project design features to avoid effects to national register-listed or -eligible properties. • Ensure that archeological monitors are present during all construction activities that could impact subsurface cultural deposits. • Add signs and physical barriers to protect national register-listed or -eligible sites.

Topic	Desired Conditions and Strategies for Channel Islands National Park
Archeological (including submerged maritime) Resources	Although Channel Islands National Park includes several archeological districts, the archeological (including submerged maritime) sites in the park have not all been systematically surveyed or inventoried. Precise information about the location, characteristics, significance, and condition of most archeological resources in the national park is lacking, and impacts are difficult to measure. ***Desired Conditions:*** Archeological resources are protected in an undisturbed condition unless it is determined through formal consulting processes that disturbance or natural deterioration is unavoidable. Mitigation of such disturbance or deterioration would be undertaken. ***Strategies:*** Survey and inventory archeological resources and document their significance. Treat all archeological resources as eligible for listing in the national register pending the determination of the California state historic preservation officer and a formal determination by the Keeper of the National Register of Historic Places as to their significance. Protect all archeological resources listed in, or determined eligible for listing in, the national register. If disturbance to such resources is determined to be unavoidable, formal consultations with the advisory council and the California state historic preservation officer would be conducted in accordance with the provisions of the National Historic Preservation Act of 1966, as amended. Archeological resources are preserved as much as possible. The most highly valued sites (i.e., those with high research potential) are avoided during new construction or development wherever possible. No new development is in areas where human burials are known to exist. Development that is causing ongoing site degradation would be removed and the site rehabilitated wherever possible. Where special opportunities exist, prehistoric and historic archeological resources would be interpreted to visitors. Surface prehistoric archeological features, local Chumash traditions, and important historic archeological features would be interpreted. Known archeological resources that would be subject to sea level rise would be documented prior to flooding.
Historic Structures	Channel Islands National Park includes historic structures/buildings, as well as historic districts, that are listed in the national register. In addition, other historic structures/buildings and historic districts are considered by the Park Service to be eligible for listing on the national register and evaluation work is ongoing to achieve that objective. ***Desired Conditions:*** The qualities of historic structures/buildings and districts that contribute to their listing in, or being determined eligible for listing in, the national register are protected in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* unless it is determined through a formal consulting process that alteration, demolition, or natural deterioration is unavoidable. ***Strategies:*** Complete a survey, inventory, and evaluation of historic structures/buildings under national register criteria. Submit the inventory and evaluation results to the California state historic preservation officer and keeper of the national register with recommendations for eligibility for listing in the national register. Determine the appropriate level of preservation for each historic property listed in, or determined eligible for listing in, the national register in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*. Implement and maintain the appropriate level of preservation for such properties.
Ethnographic Resources	Certain contemporary American Indian and other communities are permitted by law, regulation, or policy to pursue customary religious, subsistence, and other cultural uses of resources in Channel Islands National Park with which they are traditionally associated. ***Desired Conditions:*** Recognizing that its resource protection mandate affects this human use as well as the cultural context of resources in the national park, the Park Service plans and executes programs in ways that safeguard cultural and natural resources while reflecting informed concern for the contemporary peoples and cultures traditionally associated with them.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Strategies: Survey and inventory ethnographic resources and document their significance. Protect all ethnographic resources listed in, or determined eligible for listing in, the national register. If disturbance to such resources is unavoidable, formal consultations with the advisory council, the California state historic preservation officer, and relevant tribal historic preservation officers would be conducted in accordance with the provisions of the National Historic Preservation Act of 1966, as amended. Conduct regular consultations with the recognized tribes, lineal descendants, and interested Native American parties to continue to improve communications and resolve any problems or misunderstandings that might occur. Provide for access to, and use of, natural and cultural resources in the national park and collections by American Indians that are consistent with national park purposes, do not unreasonably interfere with American Indian use of traditional areas or sacred resources, and do not degrade national park resources. Through existing agreements and ongoing consultation with culturally associated American Indian tribes, access to the park would continue for traditional and ceremonial activities. The park would continue to consult with these groups to identify and protect sites and areas of traditional or spiritual importance. Known burial areas are protected. These areas are considered among the valued resources of American Indian people and were treated as such during this planning effort. Where burials are discovered, provisions outlined in the Native American Graves Protection and Repatriation Act and its implementing regulations are followed.
Cultural Landscapes	Channel Islands National Park includes cultural landscapes that the Park Service considers eligible for listing in the national register. ***Desired Conditions:*** The qualities of cultural landscapes that contribute to their listing in, or being determined eligible for listing in, the national register are protected in accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* unless it is determined through a formal consulting process that disturbance or natural deterioration is unavoidable. ***Strategies:*** Complete a survey, inventory, and evaluation of cultural landscapes under national register criteria. Submit the inventory and evaluation results to the California state historic preservation officer and the keeper of the national register with recommendations for eligibility for listing in the national register. Determine the appropriate level of preservation for each cultural landscape listed in, or determined eligible for listing in, the national register, subject to the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Implement and maintain the appropriate level of preservation for such cultural landscapes.
Museum Collections	Channel Islands National Park maintains a museum collection of nearly 400,000 items. Most of the objects in the park's collections are housed in repositories at other institutions and universities. The park is curating the majority of its museum collection at the Santa Barbara Museum of Natural History. The park's herbarium is curated at the Santa Barbara Botanic Garden. The majority of the park's archives, historical objects, and small study collections of natural and cultural items are maintained at the park headquarters. Several objects are on exhibit in visitor centers at the Anacapa and Santa Cruz Islands and at several local museums. ***Desired Conditions:*** All museum collections (objects, specimens, and manuscript collections) are identified and inventoried, catalogued, documented, preserved, and protected. The qualities that contribute to the significance of the collections are protected in accordance with established standards. Provision is made for access to the collections for their use as exhibits, research, and interpretation.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Strategies: Inventory and catalog all of the national park's museum collections in accordance with professional standards as outlined in the NPS *Museum Handbook.* Develop and implement a collection management program according to NPS standards to guide protection, conservation, and use of objects in the park's museum collections. Provide on-line and/or physical access to park collections for research, education, interpretation, and other appropriate purposes.
	Visitor Use and Experience
Visitor Information, Orientation, Education, and Interpretation	The Park Service and its partners use a variety of methods to orient visitors to Channel Islands National Park, provide information about the park, interpret the park's resources, and provide educational programs and activities. In concert with the plan, the park, park partners, and stakeholders would develop a comprehensive interpretive plan (CIP). Using the park purpose, mission, resource significance, interpretive themes, visitor experience goals, and the applicable recommendations in the *General Management Plan / Environmental Impact Statement*, the CIP would describe what the park and its partners would do to provide visitors with information, orientation, interpretation, and education services. The CIP would recommend specific media and programs that include exhibits, films, wayside exhibits, publications, and a variety of guided programs and activities. In addition to the CIP, the park, park partners, and representatives from the educational community would develop an education plan for the park. The education plan would be resource-based, address the primary interpretive themes, and be directly tied to local, regional, state, and national school curriculum guidelines and standards. ***Desired Conditions:*** Visitors to Channel Islands National Park would have opportunities to have a safe and satisfying visit, and ensuring opportunities exist where they may: • Get information about the park (in multiple languages) before leaving home. • Get on-site information and an overview of the park (in multiple languages). • Choose from a variety of recreational, interpretive, and educational experiences geared to diverse needs, interests, and abilities. • Easily find park facilities and concession operations (i.e., boat and air transportation). • Visit the islands at a reasonable cost. • Know that the islands are public lands and that they are accessible. • Learn what comfort and safety equipment and precautions are necessary. • Learn about other theme-related sites and programs in the region. • Escape the routines and stresses of the urban environment. Visitors to Channel Islands National Park would have opportunities to make connections between park resources and their meanings, which may occur when visitors: • Understand elements of each of the primary interpretive themes (see the "Planning Background" section). • Experience the serenity, isolation, and solitude of the islands. • Appreciate the diverse range of plant and animal species. • Understand the sensitivity of the islands' plant and animal species, and the need to take special precautions to protect them. • Experience key elements of the islands' history. • Interact with park staff. • Witness resource preservation in action. • Contribute to the support of park programs and preservation efforts. • Create personal and family memories from their park experiences. • Engage in forms of artistic expression. • Explore and discover the islands alone or with others. • Experience the island and marine wilderness areas. • See the underwater resources. • See the results of evolutionary processes. • Experience the islands through all their senses.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Strategies: Park managers would complete and develop implementation strategies for the CIP. The CIP would emphasize providing information, orientation, and interpretive services through the most effective means. The CIP also would provide the foundation and overall concept for the park's education plan—a plan that would be developed by the park in partnership with area educators. Park staff would stay informed of the park's existing and changing visitor demographics and psychographics to better tailor programs and media to meet diverse needs and desires. All media and programs would reflect the park's purpose, mission, resource significance, and desired visitor conditions (including the primary interpretive themes). Park staff would seek new ways to increase awareness of the park, its resources, and themes. This would include reaching out to segments of the population that do not use the park or know of its significance. Park staff would work with local communities and other theme-related sites to tell aspects of the Channel Islands stories in a coordinated and comprehensive fashion. Partnerships with other state, regional, and national parks; educational institutions; tribes; and other organizations would be sought to enrich interpretation and education opportunities about the park themes. Park staff would provide verbal and written messages to visitors so they understand the importance of biosecurity, preventing the introduction of nonnative species and diseases, prior to arriving on the islands and during island orientations.
Levels and Types of Park Development	A variety of different types of development exist in Channel Islands to transport, house, inform, and serve visitors and park staff. Most visitor and operational developments are concentrated at Scorpion Valley, Prisoners Harbor on Santa Cruz Island, the historic ranch area on Santa Rosa Island, Cabrillo Monument/ranch complex on San Miguel Island, Ventura Harbor, Bechers Bay on Santa Rosa Island, and East Anacapa. ***Desired Conditions:*** Park development is the minimum necessary to serve visitor needs and provide for the protection of park resources. Visitor and management facilities at Channel Islands and its concessioners meet sustainability standards, and are harmonious with park resources, compatible with natural processes and surrounding landscapes, aesthetically pleasing, and functional. The Park Service continues to provide access to and use of Channel Islands' facilities for physically and learning disabled visitors, in conformance with applicable laws, regulations, and NPS policies. ***Strategies*:** Park staff would properly maintain and upgrade existing development using sustainability principles where necessary to serve the park mission. They would consider and plan for flood hazards and mitigation efforts as appropriate. Park managers would consider the availability of existing or planned facilities in nearby communities and adjacent lands when deciding whether to construct new developments in the park. This would ensure that any additional development in the park is necessary, appropriate, and cost effective. The Park Service would modify existing facilities to meet accessibility standards as funding allowed or as facilities were replaced or rehabilitated. Park staff would periodically consult with disabled persons or their representatives to increase awareness of the needs of the disabled and to determine how to make the park more accessible. Park managers would work with other governmental, private, and nonprofit organizations to find partners and funding sources for a research / environmental education facility and to explore locations within and outside the park to establish the facility.
Commercial Services	A commercial activity is defined as any activity for which compensation is exchanged. It includes activities by for-profit and nonprofit operators. Commercial services are more than just concessions. They include concession contracts, commercial use authorizations, leases, cooperative agreements, rights-of-way, and special use permits. ***Desired Conditions:*** Commercial services are integral to the visitor experience and the management of Channel Islands National Park. The Park Service permits commercial services at Channel Islands, including guiding services and transportation. These services have added to visitors' enjoyment of the park, have enabled many people to see parts of the park they might not

Topic	Desired Conditions and Strategies for Channel Islands National Park
	otherwise see, and have helped to protect park resources. All entities that provide commercial services must adhere to the park's biosecurity guidelines. ***Strategies***: • Manage businesses through concession contracts and commercial use authorizations; other activities, such as commercial filming, would continue to be managed through special use permits. • Ensure that all commercial activities within the park provide high-quality visitor experiences while protecting important natural, cultural, and scenic resources. • Ensure that before concession contracts and commercial use authorizations are renewed or readvertised, the types of authorized use are still necessary and/or appropriate, the levels of use are consistent with resource protection and quality visitor experiences, and the commercial services program can be managed in an efficient and effective manner.
	Other Topics
Sustainable Design / Development	Sustainability can be described as doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices consider local and global consequences to minimize the short- and long-term environmental impacts of human actions and developments through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques. Over the past several years, the federal government has been emphasizing the adoption of sustainable practices. In particular, several statutes and executive orders are noteworthy for federal agency sustainable practices, including: the Energy Policy and Conservation Act of 2005; the Energy Independence and Security Act of 2007; EO 13423 (strengthens federal environmental, energy, and transportation management); and EO 13514 (sets requirements for federal greenhouse gas emissions, water conservation, building performance, and other sustainable practices). NPS *Management Policies 2006* (§ 1.8, 9.1) also provide direction regarding sustainability of practices and facilities. ***Desired Conditions:*** The park is a leader in sustainable practices. All decisions regarding park operations, facilities management, and development in Channel Islands National Park – from the initial concept through design and construction – reflect principles of resource conservation. Thus, all park developments and park operations are sustainable to the maximum degree possible and practical. New developments and existing facilities are located, built, and modified according to the *Guiding Principles of Sustainable Design* (NPS 1993) or other similar guidelines. The park has state-of-the-art water systems for conserving water, and energy conservation technologies and renewable energy sources whenever possible. Biodegradable, nontoxic, and durable materials are used in the park whenever possible. The reduction, use, and recycling of materials is promoted, while materials that are nondurable, environmentally detrimental, or that require transportation from great distances are avoided as much as possible. ***General Strategies:*** Park staff would work with experts both inside and outside the Park Service to make Channel Islands' facilities and programs sustainable. Partnerships would be sought to implement sustainable practices in the park. Park staff also would work with stakeholders and business partners to augment NPS environmental leadership and sustainability efforts. Park managers would perform value analysis and value engineering, including life cycle analysis, to examine the energy, environmental, and economic implications of proposed park developments. Park staff would support and encourage the service of suppliers, contractors, and concessioners that follow sustainable practices. Concessioners would be encouraged to embrace principles of environmental stewardship that enhance the protection, conservation, and preservation of resources. Energy usage would be substantially reduced and energy-efficient practices and renewable energy sources would be promoted wherever possible. Park interpretive programs would address sustainable park and nonpark practices. Visitors would be educated on the principles of environmental leadership and sustainability through exhibits, media, and printed material. Park staff would be educated to have a comprehensive understanding of their relationship to environmental leadership and sustainability. Best available technology would be used to maximize the conservation of water on the islands.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Park staff would work with local communities to develop comprehensive greening plan(s) where appropriate. By collaborating with local communities, the Park Service can reduce outside impacts to the park and maximize conservation efforts in the region. Park managers would measure and track environmental compliance and performance. Audits would ensure environmental compliance, emphasize best management practices, and educate employees at all levels about environmental management responsibilities.
Climate Change	Climate change is occurring and is expected to affect the park's weather; resources (e.g., shorelines, vegetation, fish and wildlife, historic structures, and archeological resources); facilities (e.g., docks); and visitors (e.g., wildlife viewing). These changes would have direct implications on resource management and park operations, and the way visitors use and experience the park. Although climate change would affect the park during the life of this plan, many of the specific effects, the rate of changes, and the severity of impacts are not known. While there are no laws that provide direct guidance on addressing climate change, there is policy and executive order guidance that directly or indirectly addresses climate change, including the NPS Organic Act, EO 13423 (includes requirements for energy and water conservation measures), EO 13514 (sets requirements for federal greenhouse gas emissions), Department of the Interior Secretarial Order 3226 (ensures that climate change impacts be taken into account in connection with departmental planning and decision making), and NPS *Management Policies 2006* (including sections on environmental leadership [§ 1.8], sustainable energy design [§ 9.1.1.6], and energy management [§ 9.1.7]). The NPS *Climate Change Response Strategy* provides agency direction, focusing on science, adaptation, mitigation, and communication (NPS 2010). The *Green Parks Plan* also calls for the National Park Service to reduce its greenhouse gas emissions and to adapt facilities at risk from climate change. ***Desired Conditions:*** Channel Islands National Park is a leader in its efforts to address climate change, reduce its greenhouse gas emissions, increase its use of renewable energy and other sustainable practices so it is a carbon neutral park, and prepare for and mitigate climate change impacts. Education and interpretive efforts help park visitors understand the process of climate change, its threats to the park and the wider environment, and how they can respond. Park staff promote innovation, best practices, adaptive management, and partnerships to respond to the challenges of climate change and its effects on park resources. Park staff proactively monitor, plan, and adapt to the effects of climate change by using the best information as it becomes available. ***Strategies:*** As a member of the Climate Friendly Parks program, Channel Islands National Park continues to implement its climate friendly action plan, measure park-based greenhouse emissions, develop sustainable strategies to mitigate these emissions and adapt to climate change impacts, educate the public about these efforts, and develop future action plans. Key ecosystem features and processes would continue to be restored and key cultural resources would be protected to increase their resiliency to climate change. By reducing other types of impacts on resources, the overall condition of the resources should improve, and they would more easily recover from or resist the impacts of climate change. Scientific studies and inventories would be encouraged to identify and document changes caused by climate change, to predict potential changes, and to assist in identifying potential responses to climate change. Key natural and cultural resources and visitor amenities that are at risk from climate change would be identified and monitored. Since emissions from all motorized vehicles and watercraft contribute to the park's emissions, options to improve transportation efficiencies would be explored, including NPS and visitor activities on the water and on the islands. Emissions from visitors and NPS employees flying or taking a motorboat to get to the park all add to the emissions associated with the park. Opportunities for alternative transportation options, as well as effective carbon offset strategies, would be explored. Use of low-emission vehicles for NPS operations would be used when possible.

Topic	Desired Conditions and Strategies for Channel Islands National Park
	Park education and interpretive efforts would engage park employees, partners, visitors, and the public on climate change, providing the latest park research and monitoring data and trends, informing the public about what responses are being taken at the park, and inspiring visitors to reduce their carbon footprint. NPS staff would work with partners to plan for climate change and identify actions that can be taken to respond to these changes. Concessioners and other partners would be encouraged to provide or use low-emission vehicles in their activities, both within and outside the park. Anticipated climate change impacts, such as increases in sea levels and changes in vegetation, would be incorporated into future management plans. Adaptive strategies would be developed to improve management of park resources and assets based on climate change projections. (See also the strategies identified above under "Sustainable Design/Practices.")
Park Accessibility	The policy of the Park Service is that park buildings, facilities, programs, and services are accessible to and usable by all people, including those with disabilities, to the highest level that is reasonable. Guidance on this topic is provided by federal statutes, regulations, and guidelines, including: the Architectural Barriers Act of 1968; 28 Code of Federal Regulations (CFR), Part 36; Title 36, 43 CFR Part 17; the Uniform Federal Accessibility Standards of 1984; the ADA Accessibility Guidelines (2004); the Draft Final Accessibility Guidelines for Outdoor Developed Areas (2009); DO-42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services*; and NPS *Management Policies 2006*. ***Desired Conditions:*** Channel Islands National Park's buildings, facilities, programs, and services are accessible to and usable by all people, including those with disabilities to the extent possible. All new and renovated buildings and facilities, including those provided by concessioners, are designed and constructed to provide access to people with disabilities. All services and programs, including those offered by concessioners, volunteers, cooperating associations, and interpreters, also are designed to be accessible by people with disabilities. There are opportunities for all people to access parts of the park's backcountry. ***Strategies:*** Existing buildings and facilities would be evaluated to determine the degree to which they are currently accessible to and usable by people with disabilities, and to identify barriers that limit access. Action plans would be developed identifying if barriers could be removed. Similarly, existing programs, activities, and services (including interpretation, telecommunications, media, and web pages) would be evaluated to determine the degree to which they are currently accessible to and usable by people with disabilities, and to identify barriers to access. Action plans would be developed identifying how barriers would be removed.

Topic	Desired Conditions and Strategies for Channel Islands National Park
Utilities and Communication Facilities	Basic utilities and related access are necessary within the park to support visitor services and administrative operations and to provide for visitor and employee safety. Occasional maintenance, upgrades, and minor route adjustments are carried out within existing corridors. ***Desired Conditions*:** Utility and communications facilities support park operations and public safety with a high degree of reliability, anticipate future loads and needs, minimize impacts on park resources, and are jointly located with other existing facilities and rights-of-way to the greatest extent possible. Only those communications facilities necessary to provide for public safety and administrative efficiency are located in the park. ***Strategies:*** New or reconstructed utilities and communications infrastructure would be located in association with existing structures and along roads or other established corridors in developed areas. This would allow ready access for repair and maintenance, thereby reducing potential visual quality impacts and resource disturbance from overland transport of vehicles and equipment. When utilities require reconstruction or extension into developed areas not currently serviced, park staff would select routes that would minimize impacts on the park's natural, cultural, and visual resources. Rights-of-way would continue in effect or be established for service lines to existing and planned park facilities (including concessions facilities). Rights-of-way would not be granted for utilities, water conveyance, or other facilities within suitable wilderness areas except where valid existing rights are established. Utility lines would be placed underground to the maximum extent possible. Commercial telecommunications applications (Telecommunications Act of 1996) would be processed in accordance with NPS policies (Reference Manual 53) and NEPA guidelines. The primary tests for the applications would be whether there is a documented public safety need, whether or not there are feasible alternatives, and whether a facility would result in derogation of the resources, values, and purposes for which the park was established. For NPS and commercial communications needs there would be no facilities located within suitable wilderness areas, except as specifically provided by law or policy.

APPENDIX C. RELATIONSHIP OF OTHER PLANNING EFFORTS TO THIS GENERAL MANAGEMENT PLAN

Several plans have influenced or would be influenced by the approved *General Management Plan / Environmental Impact Statement* (plan) for Channel Islands National Park. What follows is a brief description of each plan and their relationship to the plan.

OTHER NPS PLANS AND RELATED GUIDANCE

Scorpion Harbor Pier Replacement / Environmental Impact Statement (in process)

The Park Service has initiated work to prepare a plan to replace and potentially relocate the existing Scorpion Harbor pier. The EIS would also evaluate opportunities to improve the existing access road connecting to the pier. The two alternatives currently under consideration include replacing the pier in its existing location and replacing the pier at a location approximately 150 feet to the south. If the pier is replaced in its present location, this would include some armoring of the shoreline to protect the pier access road. If a new pier is constructed to the south, the pier would span the beach and shoreline and would require only a short access road with a small amount of scour protection. In either location, the new pier would need to be longer and higher than the existing pier to facilitate safer vessel mooring in deeper water. Both of the alternatives are consistent with and complement the actions being proposed for Scorpion Harbor in this GMP/EIS.

Prisoners Harbor Coastal Wetland Restoration Plan / Environmental Impact Statement (2010)

This plan calls for the restoration of a 3.1-acre coastal wetland at Prisoners Harbor and a 40-acre associated stream corridor in the lower Cañada del Puerto Creek. Under the plan, all of the cattle corrals would be removed and the scale house would be relocated to its pre-1960s location, eucalyptus would be removed and other invasive species controlled, and a barrier would be built to protect archeological resources and improve the visitor experience. In addition, a portion of the berm would be removed, thereby reconnecting the creek to its floodplain. All of the actions in this plan are consistent with the management directions in the plan.

"Superintendent's Compendium" (2009)

This is a list of designations, closures, permit requirements, and other restrictions on uses in Channel Islands National Park promulgated under the discretionary authority of the superintendent. The compendium covers visitor hours, public use limits, closures, and area designations for specific uses or activities, restrictions on activities in sea caves, a list of activities that require a NPS permit, and general regulations regarding preservation of natural and cultural resources, wildlife protection, fishing, camping and food storage, pets, and use of bicycles, among other topics. The compendium would be modified as necessary to reflect any changes resulting from implementation of the plan.

Channel Islands National Park Business Plan – Fiscal Year 2004

The business plan provided a synopsis of the park's funding history and a detailed picture of the state of current park operations and funding. It also outlined park priorities and funding strategies. The priorities and strategies outlined in the business plan (including operations priorities, investment priorities, island restoration efforts, and strategies for reducing costs) were considered during the development of the plan.

Recovery Strategy for Island Foxes (2003)

This plan is a road map to recovery for three subspecies of island foxes that occur in the park and that are considered to be on the brink of extinction. The actions called for in the strategy are an extension of the emergency actions that the Park Service has been implementing since 1999: captive breeding of island foxes and removal of golden eagles. The latter is required because predation by golden eagles is the primary source of mortality for island foxes on the northern Channel Islands. The recovery strategy builds on the emergency measures by extending both captive breeding of island foxes and removal of golden eagles until no longer required. The strategy identifies recovery goals, which for San Miguel and Santa Rosa Islands are wild populations of approximately 200 foxes that are either stable or increasing. All of the alternatives that were considered in the development of the plan were written to be consistent with the desired conditions and actions called for in this recovery plan.

Santa Cruz Island Primary Restoration Plan (2002)

This document analyzed four alternatives for restoring Santa Cruz Island's ecosystems. The plan proposes to eradicate nonnative feral pigs, reduce the spread and presence of fennel (a nonnative plant), promote the conservation and recovery of rare plant and animal species and their habitats, and eliminate disturbance and degradation of archeological resources. Specific actions in the plan include using a variety of techniques to eradicate feral pigs, construction of pig-proof fences, treating dense fennel stands with herbicide, and instituting a prescribed burn. All of the alternatives that were considered in the development of the plan were written to be consistent with the desired conditions and actions called for in this restoration plan.

Feasibility Study for Reestablishment of Bald Eagles (2002)

This study examined the feasibility of reestablishing a breeding population of bald eagles in the northern Channel Islands. It was proposed that 12 captive-bred or translocated wild eagles be released annually on Santa Cruz over a five-year period. Contaminants in the released birds, their eggs, and their food would be monitored to determine if concentrations of DDT were present, which may impact the ability of the eagles to successfully reproduce. The results of this study would be used to determine whether to proceed with a full-scale bald eagle reintroduction program in the northern Channel Islands. All of the alternatives that were considered in the development of the plan were written to be consistent with the actions called for in reestablishing bald eagles in the park.

Anacapa Island Restoration Project (2000)

This document evaluated six alternatives for restoring Anacapa Island's ecosystems. The purpose of the plan was to eradicate introduced black rats on Anacapa Island and keep it and all of the other islands rat-free. The plan called for the eradication of the black rat on Anacapa Island through the use of a rodenticide bait. It adopted an emergency response plan for the accidental introduction of rodents on Anacapa, Santa Barbara, Prince, and Sutil Islands; and provided a prevention strategy to reduce the potential for rodents to be accidentally introduced into the park. All of the alternatives that were considered in the development of the plan were written to be consistent with the desired conditions and actions called for in this restoration plan.

Santa Rosa Island Development Concept Plan (1995)

This document evaluated two alternatives for the management of Santa Rosa Island. The plan called for expanded NPS operations. NPS-guided recreational activities, such as walks and kayak trips, would be provided. Housing for employees and researchers and a maintenance facility would be constructed in the vicinity of Bechers Bay. Temporary trails and NPS-operated vehicles would move visitors on the island to interpretive media (waysides and guided walks) and to the campground in Water Canyon. The facilities and actions called for in this plan have been incorporated into and/or have been superseded by the directions in the plan.

Statement for Management (1991)

The statement for management discussed different influences that affect management of the park, including legislative and administrative requirements, resource conditions, land uses and trends, visitor uses and trends, and facilities. Major issues facing the park were identified, including land protection, alien species, restoration of native ecosystems, external threats, and access. General management objectives were identified for natural ecosystems, cultural resources, visitor use, and facility development and staffing. Although no longer being prepared by the Park Service, the "Statement for Management" was used as a foundation document in preparing the plan.

General Management Plan Supplement (1985)

This plan focused on the future management of Santa Rosa Island and the eastern portion of Santa Cruz Island. It also proposed management actions for the park waters for all five islands and it recommended changes in the use of Anacapa and San Miguel Islands. The plan called for all of east Santa Cruz Island and Santa Rosa Island to be managed on a limited-entry, low-intensity use basis. Three existing developed areas would serve as entry points. The restoration and preservation of natural biotic associations would be emphasized. Visitor facilities, other than backcountry campsites, would be provided only in existing developed areas or already altered areas, and existing structures would be used to the extent feasible. Scorpion Valley would be the primary visitor access point on east Santa Cruz Island, while the main ranch area at Bechers Bay and Johnsons Lee would be the primary access points on Santa Rosa Island. An environmental education/research field station would be established in existing structures at Johnsons Lee if feasible. Campgrounds and backcountry campsites would be available, but capacities would be limited. All overnight visitors in the park, and all visitors to San Miguel Island, would be required to first obtain permits. Landings on the islands would be limited to selected beaches. The plan

called for the removal of the campground on East Anacapa Island, and for a supervised group day use area at Frenchy's Cove on West Anacapa Island. Marine resource management would emphasize nonconsumptive use. The designation of ecological reserves around all of the islands would be sought, along with regulations to ensure long-term resource protection. Marine interpretive and educational programs would be expanded. The facilities and actions called for in this 1985 plan supplement have been incorporated into and/or superseded by the directions in the plan.

General Management Plan – Anacapa – Santa Barbara – San Miguel Islands (1980)

This two-volume plan addressed management of the three islands. Volume 1 addressed visitor use, interpretation, and general development. Volume 2 addressed natural and cultural resource management. The plan called for the preservation and restoration of natural ecosystems, reduction or elimination of exotic species, protection of special status species, and preservation of archeological and historical features. Visitor capacity levels were set for each island. Visitor use was restricted on use of the islands, with portions of the islands closed seasonally or year-round to visitors. Except for the mainland headquarters, development would be minimal and generally consist of renovation or replacement of existing facilities. The campground on Anacapa Island and the picnic area at Frenchy's Cove would be removed. Emphasis was placed on personal services provided by island staff and for increased staff/visitor contact in park waters. Finally, extensive resource monitoring programs were proposed. The facilities and actions called for in this plan have been incorporated into and/or superseded by the directions in the 1980 *General Management Plan*.

OTHER FEDERAL, STATE, AND LOCAL PLANS

Termination of the Southern Sea Otter Translocation Program (2013)

The Fish and Wildlife Service is removing the regulations that govern the southern sea otter (*Enhydra lutris nereis*) translocation program, including the establishment of an experimental population of southern sea otters, and all associated management actions.

Channel Islands National Marine Sanctuary Management Plan Revision (2009)

In 2009, the Channel Islands National Marine Sanctuary (sanctuary) completed its management plan, which was originally implemented in 1983. The revised sanctuary management plan sets priorities, describes planned programs and projects, contains regulations, guides the development of future activities, and sets performance measures to gauge effectiveness. (For more details on this plan, see the discussion of "Cumulative Impacts" in the beginning of the "Environmental Consequences" chapter.) In preparing the plan, the planning team consulted with the sanctuary planning team to ensure that inconsistencies were avoided between the two plans. Actions in the sanctuary plan were also considered in the analysis of cumulative impacts in the plan.

State of California Final Environmental Document on the Proposed Marine Protected Areas within the Channel Islands National Marine Sanctuary (2002)

This environmental document analyzed the potential environmental impacts of seven alternatives to establish a network of marine protected areas in state waters within the sanctuary. The California Department of Fish and Wildlife recommended that a network of 12 marine protected areas (10 state marine reserves and 2 state marine conservation areas) be established, encompassing approximately 132 square nautical miles within the sanctuary. In the state marine reserves it would be unlawful to damage, take, or possess any living, geological, or cultural marine resource, except under a permit or specific authorization from the state fish and game commission for research, restoration, or monitoring purposes. In one of the marine conservation areas only the recreational take of spiny lobster and pelagic finfish would be allowed; in the other marine conservation area only the commercial and recreational take of spiny lobster and the recreational take of pelagic finfish would be allowed. The existing regulations for the ecological reserves at Anacapa, Santa Barbara, and San Miguel Islands would be repealed, and new regulations implemented. The plan incorporates the state's marine protected areas into the NPS management zones and overall management of marine waters and resources within the park boundary.

Point Mugu Sea Range Final Environmental Impact Statement (2002)

This environmental document examines three alternatives for modernizing facilities at the Naval Air Station Point Mugu and San Nicolas Island to enhance the Sea Range's capability to support existing and future operations, including theater missile defense testing and training, and an increase in current levels of training exercises. Under the plan, the Sea Range would accommodate an increase in the level of current fleet training and special warfare training activities. The actions proposed in the Point Mugu environmental impact statement were considered in the analysis of cumulative impacts in the plan.

Recovery Plan for Thirteen Plant Taxa from the Northern Channel Islands (2000)

This plan identifies actions needed to recover 13 endemic plant taxa on Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Catalina Islands. Two of the plant species are federally listed as endangered, and one is listed as threatened. The actions include controlling alien species, conducting thorough surveys, restoring habitats, conducting research, storing seeds, and developing successful outplanting techniques. Recovery criteria are identified for each of the plant taxa. All of the alternatives, desired conditions, and strategies that were considered in the development of the plan were written to be consistent with the actions called for in this recovery plan.

Recovery Plan for the California Brown Pelican (1983)

This plan identifies actions to recover the endangered California brown pelican. Specific objectives are identified to restore and maintain stable, self-sustaining populations throughout the bird's range. Actions that are identified in the recovery plan include protecting pelican populations in Mexico, maintaining self-sustaining pelican breeding populations in the Southern California Bight (and specifically Anacapa Island), protecting pelican food resources and feeding

habitat, protecting major roosting areas, delineating essential habitat, monitoring pelican populations, conducting research, and disseminating public information and conservation education. All of the alternatives, desired conditions, and strategies that were considered in the development of the plan were written to be consistent with the actions called for in this recovery plan.

SOURCES

California Department of Fish and Game. 2002. *Final 2002 Environmental Document. Marine Protected Areas in the National Oceanic and Atmospheric Administration's Channel Islands National Marine Sanctuary*. Marine Region Field Office. Santa Barbara, CA.

U.S. Department of the Navy. 2002. *Final Environmental Impact Statement / Overseas Environmental Impact Statement. Point Mugu Sea Range*. Naval Air Warfare Center, Weapons Division. Point Mugu, CA.

NPS. 2003. "Superintendent's Compendium." Available on the Internet at: http://www.nps.gov/chis/Compendium2003.htm.

NPS. 2002. *Santa Cruz Island Primary Restoration Plan (2002) Final Environmental Impact Statement*. Ventura, CA.

NPS. 2002. "Feasibility Study for Reestablishment of Bald Eagles on the Northern Channel Islands, California. Environmental Assessment. Available on the Internet at: http://www.nps.gov/chis/rm/HTMLPages/BaldEagleEIS.doc.

NPS. 2002. "Annual Performance Plan for Channel Islands National Park. Fiscal Year 2003." Available on the Internet at: http://www.nps.gov/chis/admin/fy03annualworkplan.doc.

NPS. 2000. *Anacapa Island Restoration Project. Final Environmental Impact Statement*. Available on the Internet at: http://www.nps.gov/chis/rm/HTMLPages/AI_restoration_pdfs.htm.

NPS. 2001. "Draft Recovery Plan for Island Foxes (*Urocyon littoralis*) on the Northern Channel Islands." Available on the Internet at: http://www.nps.gov/chis/rm/HTMLPages/FoxRecoverPlan.htm.

NPS. 1998. "Strategic Plan for Channel Islands National Park. October 1, 1999 – September 30, 2005." Available on the Internet at: http://www.nps.gov/chis/admin/fy00strategicplan.htm.

NPS. 1999. "Resources Management Plan Update. Channel Islands National Park." Available on the Internet at: http://www.nps.gov/chis/rm/HTMLPages/RMP.htm.

NPS. 1995. *Development Concept Plan & Environmental Impact Statement. Santa Rosa Island, Channel Islands National Park*. Ventura, CA.

NPS. 1991. *Statement for Management*. Channel Islands National Park. December 1991 Revision. Ventura, CA.

NPS. 1984. *Draft General Management Plan Supplement. Environmental Assessment*. Ventura, CA.

NPS. 1980. *General Management Plan. Anacapa – Santa Barbara – San Miguel Islands. Vol. 1. Visitor Use / Interpretation / General Development.* Ventura, CA.

NPS. 1980. *General Management Plan. Anacapa – Santa Barbara – San Miguel Islands. Vol. 2. Natural / Cultural Resource Management.* Ventura, CA.

USFWS. 2000. *Thirteen Plant Taxa From the Northern Channel Islands Recovery Plan.* Region 1. Portland, OR.

USFWS. 1983. *The California Brown Pelican Recovery Plan.* Prepared under contract by F. Gress (California Dept. of Fish and Game) and D.W. Anderson (Univ. of California-Davis). Region 1. Portland, OR.

APPENDIX D. SPECIES LISTS

TABLE D-1. ENDEMIC PLANT SPECIES BY ISLAND IN CHANNEL ISLANDS NATIONAL PARK

Species	Anacapa	Santa Cruz*	San Miguel	Santa Rosa	Santa Barbara	Comment
Acmispon argophyllus ssp. argenteus	-	-	-	-	P	Endemic to Isla Guadalupe.
Acmispon argophyllus ssp. Niveus	-	P	-	-	-	
Acmispon dendroideus var. dendroideus	P	P	-	P	-	
Arctostaphylos confertiflora	-	-	-	P	-	Santa Rosa Island manzanita is listed as federally endangered.
Arctostaphylos insularis	-	P	-	-	-	
Arctostaphylos tomentosa ssp. insulicola	-	P	-	P	-	Rare species without legal status.
Arctostaphylos viridissima	-	P	-	-	-	McMinn's is rare without legal status.
Artemisia nesiotica	-	-	-	-	P	
Astragalus miguelensis	P	P	P	P	-	San Miguel locoweed is rare, without legal status.
Astragalus traskiae	-	-	-	-	P	Trask's locoweed is listed as federally endangered.
Berberis pinnata ssp. insularis	-E	P	-	-E	-	Island barberry is presumed extirpated on Santa Rosa and Anacapa Islands. This species is now found only on Santa Cruz Island. It is listed as federally endangered.
Boechera hoffmannii.	-	P	-	P	-	Hoffmann's rockcress is listed as federally endangered.
Calystegia macrostegia ssp. amplissima	-	-	-	-	P	Southern island morning glory is rare, without legal status.
Calystegia macrostegia ssp. macrostegia	P	P		P	-	
Castilleja lanata ssp. hololeuca	P	P	P	P		
Castilleja mollis	-	-	E	P	-	Soft-leaved paintbrush is listed as federally endangered.
Ceanothus arboreus	-	P	-	P		
Ceanothus megacarpus ssp. insularis	P	P	E	P	-	Island big pod ceanothus is rare without legal status.
Chorizanthe wheeleri	-	P	-	P	-	Species is rare without legal status.
Dendromecon rigida ssp. harfordii	-	P	-	P	-	Northern island bush poppy is rare without legal status.
Dudleya blochmaniae ssp. insularis	-	-	-	P	-	Santa Rosa Island live-forever is rare without legal status.
Dudleya candelabrum	-	P	P	P	-	Candelholder dudleya is rare without legal status.
Dudleya gnoma	-	-	-	P	-	East Point dwarf dudleya is rare without legal status.
Dudleya greenei	-	P	P	P	-	Greene's dudleya is rare without legal status.
Dudleya nesiotica	-	P	-	-	-	Species is listed as federally threatened.
Dudleya traskiae	-	-	-	-	P	Species is listed as federally endangered.
Eriogonum arborescens	P	P	-	P	-	

Species	Anacapa	Santa Cruz*	San Miguel	Santa Rosa	Santa Barbara	Comment
Eriogonum giganteum var. compactum	-	-	-	-	P	Rare plant without legal status. California Native Plant Society list 1B.
Eriogonum grande var. grande	P	P	-		-	Island buckwheat is rare without legal status.
Eriogonum grande var. rubescens	P	P	P	P	-	'Red buckwheat' is rare without legal status.
Eriophyllum nevinii	-	-	-	-	P	Species is rare without legal status.
Erysimum insulare	P	P	P	P	-	Species is rare without legal status.
Eschscholzia ramosa	-	P	-	P	P	Species is rare without legal status.
Galium angustifolium ssp. foliosum	P	P	-	P	-	
Galium buxifolium	-	P	P	-	-	Species is listed as federally endangered.
Galium californicum spp. miguelense	-	-	P	P	-	
Galium nuttallii ssp. insulare	-	P	-	P	-	Species is rare without legal status.
Gambelia speciosa	-	-	-	-	?	Island snapdragon is *Galvezia speciosa* in Jepson. Species locale or identity is questionable on Santa Barbara Island.
Gilia nevinii	P	P	-	P	P	Species is rare without legal status.
Gilia tenuiflora ssp. hoffmannii	-	-	-	P	-	Hoffmann's slender flowered gilia is listed as federally endangered.
Hazardia detonsa	P	P	-	P	-	Northern island hazardia was *Haplopappus dentonsa*. Species is rare without legal status.
Helianthemum greenei	-	P	E	P	-	Island rushrose is presumed extirpated from San Miguel. Now it occurs only on Santa Cruz and Santa Rosa Islands. The species is listed as federally threatened.
Hemizonia clementina	P		-	-	P	Species is rare without legal status.
Heuchera maxima	P	P	-	P	-	Island alum-root is rare without legal status.
Jepsonia malvifolia	-	P	-	P	-	Rare species without legal status.
Lavatera assurgentiflora ssp. assurgentiflora	P		P			Rare species without legal status.
Lyonothamnus floribundus ssp. Aspleniifolius	-	P	-	P	-	Santa Cruz Island ironwood is rare without legal status.
Malacothamnus fasciculatus var. nesioticus	-	P	-	-	-	Santa Cruz Island bush mallow is listed as federally endangered.
Malacothrix foliosa ssp. Crispifolia	P	-	-	-	-	Anacapa Island chicory is rare without legal status. Subspecies is only found on Anacapa Island.
Malacothrix foliosa ssp. Philbrickii	-	-	-	-	P	Santa Barbara Island chicory or Philbrick's island chicory. Subspecies is only found on Santa Barbara Island. California Native Plant Society list 1B.
Malacothrix indecora	-	P	P	P	-	Santa Cruz Island chicory is listed as federally endangered.
Malacothrix junakii	P	-	-	-	-	Junak's island chicory is rare without legal status.
Malacothrix saxatilis var. implicate	P	P	P	P	-	
Malacothrix squalida	P	P	-	-	-	Island malacothrix is listed as federally endangered.
Mimulus brandegeei	-	E	-	-	-	Santa Cruz Island monkeyflower is presumed extirpated.

Species	Anacapa	Santa Cruz*	San Miguel	Santa Rosa	Santa Barbara	Comment
Mimulus flemingii	P	P	-	P	-	Island monkeyflower was *Diplacus parviflorus*. Submerged *into M. auranticus* in Jepson. Rare plant without legal status. California Native Plant Society list 4.
Phacelia insularis var. insularis	-	-	P	P	-	Northern island phacelia is listed as federally endangered.
Pinus torreyana ssp. insularis	-	-	-	P	-	Santa Rosa Island Torrey pine is rare without legal status. California Native Plant Society list 1B.
Platystemon californicus var. ciliatus					P	Santa Barbara Island cream cups is rare without legal status. Subspecies is only found on Santa Barbara Island and is on California Native Plant Society list 1B.
Quercus pacifica	-	P	-	P	-	Island scrub oak was *Q. dumosa* v. *polycarpa*. California Native Plant Society list 4.
Quercus tomentella	P	P	-	P	-	California Native Plant Society list 4.
Rhamnus pirifolia	-	P	E	P	-	Island redberry is presumed extirpated from San Miguel Island. California Native Plant Society list 4.
Ribes thacherianum	-	P	-	-	-	Santa Cruz Island gooseberry is rare without legal status. California Native Plant Society list 1B.
Sibara filifolia	-	E	-	-	-	Island rock cress is presumed extirpated from Santa Cruz Island.
Solanum clokeyi	-	P	-	P	-	Island nightshade *was S. wallaceii* v. *c*. Submerged into *S. wallacei* in Jepson. Rare species without legal status. California Native Plant Society list 4.
Thysanocarpus conchuliferus	-	P	-	-	-	Santa Cruz Island lacepod is listed as federally endangered.
Trifolium palmeri	~~P~~	-	-	-	P	Southern island is rare without legal status.

Source: Adapted from S. Junak, T. Ayers, R. Scott, D. Wilken, D. Young. 1995. *A Flora of Santa Cruz Island.* Santa Barbara Botanic Garden and California Native Plant Society. In: NPS 1999 and S. Junak, S. Chaney, R. Philbrick, and R. Clark. 1997. "A Checklist of Vascular Plants of Channel Islands National Park 1997."
P = Present on island.
E = Presumed extirpated from island.
? = Historical record but may be incorrect locale.
* All of the Santa Cruz species are within the park boundary, but some are on TNC lands and not on NPS lands.

TABLE D-2. NONAVIAN NATIVE TERRESTRIAL VERTEBRATES OF CHANNEL ISLANDS NATIONAL PARK

Common Name	*Scientific Name*[1]	Island[2]					Legal Status[3]	Endemic
		A	SC	SR	SM	SB		
AMPHIBIANS								
Blackbelly slender salamander	*Batrachoseps nigriventris*		SC					
Channel Islands slender salamander	*B. pacificus pacificus*	A	SC	SR	SM			Channel Islands
Pacific tree frog	*Pseudacris regilla*		SC	SR				
REPTILES								
Southern alligator lizard	*Elgaria multicarinata*	A	SC	SR	SM			
Island fence lizard	*Sceloporus occidentalis beckii*		SC	SR	SM			Channel Islands
Side-blotched lizard	*Uta stansburnia*	A	SC					
Santa Cruz gopher snake	*Pituophis catenifer pumilus*		SC	SR			CSC	Santa Cruz and Santa Rosa Islands
Western yellowbelly racer	*Coluber constrictor mormon*		SC					
MAMMALS								
California myotis	*Myotis californicus*		SC	SR				
Longeared myotis[4]	*M. evotis*		SC					
Fringed myotis[4]	*M. thysanodes*		SC					
Townsend's big-eared bat	*Corynorhinus townsendii townsendii*		SC	SR			CSC	
Big brown bat[4]	*Eptesicus fuscus*		SC					
Pallid bat	*Antrozous pallidus*		SC				CSC	
Silver-haired bat[4]	*Lasionycteris noctivagans*		SC					
Hoary bat[4]	*Lasiurus cinereus*		SC	SR		SB		
Western bat[4]	*L. blossevillii (= L.borealis, in part)*		SC					
Mexican free-tailed bat[4]	*Tadarida brasiliensis*		SC	SR				
Western mastiff bat[4]	*Eumops perotis*		SC				CSC	
Santa Barbara deer mouse	*Peromyscus maniculatus elusus*					SB		
Anacapa deer mouse	*Peromyscus maniculatus anacapae*	A					CSC	Anacapa Island
Santa Cruz deer mouse	*Peromyscus maniculatus santacruzae*		SC					Santa Cruz Island
Santa Rosa deer mouse	*Peromyscus maniculatus santarosae*			SR				Santa Rosa Island
San Miguel deer mouse	*Peromyscus maniculatus streatori*				SM			San Miguel Island
Santa Cruz Island harvest mouse	*Reithrodontomys megalotis santacruzae*		SC					Santa Cruz Island
Santa Cruz Island fox	*Urocyon littoralis santacruzae*		SC				ST, FP	Santa Cruz Island
Santa Rosa Island fox	*Urocyon littoralis santarosae*			SR			ST, FP	Santa Rosa Island
San Miguel Island fox	*Urocyon littoralis littoralis*				SM		ST, FP	San Miguel Island
Island spotted skunk	*Spilogale gracilis amphiala*		SC	SR			CSC	Santa Cruz and Santa Rosa Islands

1 Nomenclature for reptiles and amphibians is from Collins (1990).
2 Island: A = Anacapa, SC = Santa Cruz, SR = Santa Rosa, SM = San Miguel, SB = Santa Barbara.
3 FP = Proposed by USFWS as Threatened or Endangered, FT = Federally listed as Threatened; CSC = California Species of Special Concern; ST = State-listed as Threatened. Data on legal status is from California Department of Fish and Game (2002).
4 Probable migrant.

TABLE D-3. BREEDING LANDBIRDS OF CHANNEL ISLANDS NATIONAL PARK

Common Name[1]	Scientific Name	Island[2]					Legal Status[3]	Endemic / Introduced
		A	SC	SR	SM	SB		
Northern harrier	*Circus cyaneus*				SM[5]			
Golden eagle	*Aquila chrysaetos*		SC	SR			CSC, FP	
Red-tailed hawk	*Buteo jamaicensis*	A	SC	SR	SM			
Peregrine falcon	*Falco peregrinus*	A	SC	SR	SM	SB	SE, FD	
American kestrel	*Falco sparverius*	A	SC	SR	SM	SB		
Chukar	*Alectoris chukar*			SR				Introduced
California quail	*Callipepla californica*		SC	SR				Introduced
Great blue heron	*Ardea herodias*			SR				
Western snowy plover	*Charadrius alexandrinus nivosus*		SC	SR			FT	
Killdeer	*Charadrius vociferous*		SC	SR				
Black oystercatcher	*Haematopus bachmani*	A	SC	SR	SM	SB		
American oystercatcher	*Haematopus palliates*		SC					
Mourning dove	*Zenaida macroura*		SC	SR				
Barn owl	*Tyto alba*	A	SC	SR	SM	SB		
Northern saw-whet owl	*Aegolius acadicus*		SC					
Burrowing owl	*Athene cunicularia*					SB	CSC	
Short-eared owl	*Asio flammeus*					SB		
White-throated swift	*Aeronautes saxatalis*	A	SC	SR				
Anna's hummingbird	*Calypte anna*		SC		SM			
Allen's hummingbird	*Selasphorus sasin sedentarius*	A	SC	SR	SM			All Channel Islands
Acorn woodpecker	*Melanerpes formicivorus*		SC					
Northern flicker	*Colaptes auratus*		SC					
Pacific-slope flycatcher	*Empidonax difficilis insulicola*	A	SC	SR				All Channel Islands
Black phoebe	*Sayornis nigricans*		SC	SR	SM			
Ash-throated flycatcher	*Myiarchus cinerascens*		SC	SR				
Horned lark	*Eremophila alpestris insularis*		SC	SR	SM	SB		All Channel Islands
Barn swallow	*Hirundo rustica*	A	SC	SR	SM	SB		
Common raven	*Corvus corax*		SC	SR				
Island scrub-jay	*Aphelocoma insularis*		SC					Santa Cruz Island
Bushtit	*Psaltriparus minimus*		SC					
Red-breasted nuthatch	*Sitta Canadensis*		SC					
Rock wren	*Salpinctes obsoletus*	A	SC	SR	SM	SB		
Bewick's wren	*Thryomanes bewickii nesophilus*	A	SC	SR				Northern Channel Islands
Blue-gray gnatcatcher	*Polioptila caerulea*		SC					
Northern mockingbird	*Mimus polyglottos*		SC	SR				
Loggerhead shrike	*Lanius ludovicianus anthonyi*		SC	SR				Northern islands plus San Clemente
European starling	*Sturnus vulgaris*	A	SC	SR	SM	SB		Introduced
Hutton's vireo	*Vireo huttoni*	A	SC	SR				
Orange-crowned warbler	*Vermivora celata sordida*	A	SC	SR	SM	SB		All Channel Islands
Black-headed grosbeak	*Pheucticus melanocephalus*		SC					
Rufous-crowned sparrow	*Aimophila ruficeps obscura*	A	SC					Anacapa and Santa Cruz Islands
Song sparrow	*Melospiza melodia clementae*		SC	SR				Santa Cruz and Santa Rosa Islands
San Miguel song sparrow	*Melospiza melodia micronyx*				SM			San Miguel Island

Common Name[1]	Scientific Name	Island[2]					Legal Status[3]	Endemic / Introduced
		A	SC	SR	SM	SB		
Spotted towhee	*Pipilo maculates*		SC	SR				
Chipping sparrow	*Spizella passerine*	A	SC	SR				
Red-winged blackbird	*Agelaius phoeniceus*		SC					
Western meadowlark	*Sturnella neglecta*	A	SC	SR	SM	SB		
Lesser goldfinch	*Carduelis psaltria*		SC	SR	SM			
House finch	*Carpodacus mexicanus frontalis*	A	SC	SR	SM			All islands but Santa Barbara

Source: Diamond and Jones 1980; Jones et al. 1989.

1 Nomenclature for birds is from California Department of Fish and Game (2003).

2 Island: A = Anacapa, SC = Santa Cruz, SR = Santa Rosa, SM = San Miguel, SB = Santa Barbara.

3 FD = Federally Delisted; CSC = California Species of Special Concern; FP = Fully Protected (State). Data on legal status is from California Department of Fish and Game (2004).

4 Endemic status is from Johnson (1972).

5 T. Coonan, NPS, unpubl. data.

TABLE D-4. SEABIRD SPECIES NESTING ON THE NORTHERN CHANNEL ISLANDS

Name	Status[1]	Anacapa Island	Santa Cruz Island	Santa Rosa Island	San Miguel Island	Santa Barbara Island
Storm-Petrels						
Ashy storm-petrel *Oceanodroma homochroa*	CSC	B[2]	B	-	**B**	B
Black storm-petrel *O. meliana*	CSC	-	-	-	B?	**B**
Leach's storm-petrel *O. leucorhoa*		-	-	-	**B**	B?
Cormorants						
Brandt's cormorants *Phalacrocrax penicillatus*		B	B	B	**B**	B
Double-crested cormorant *P. auritus*	CSC	B	O	-	**B**	B
Pelagic cormorant *P. pelagicus*		B	B	B	**B**	B
Pelicans						
California brown pelican *Pelecanus occidentalis Californicus*		**B**	O	-	O	B
Gulls						
Western gull *Larus occidentalis*		**B**	B	B	B	B
Alcids						
Cassin's auklet *Ptychoramphus aleuticus*	CSC	B	B	-	**B**	B
Pigeon guillemot *Cepphus columba*		B	B	B	**B**	B
Scripp's murrelet *S. Scrippsi*	ST	B	B	-	B[3]	**B**
Rhinoceros auklet *Cerorhinca monocerata*		B?	-	-	**B?**	-
Tufted puffin *Lundra cirrhata*	CSC				**BP-NA**[4]	
Common murre *Uria aalge*					**B**	

Source: Baird 1993; L. Harvey, National Park Service, pers. comm. (2012); H. Carter, pers. comm. (2011); P. Martin, National Park Service, pers. comm. November 26, 2002; Carter et al. 1992; McChesney et al. 1995; Carter et al. 2008.

1 F = Federal, S = State, E = Endangered, T = Threatened, FP = California Department of Fish and Wildlife – Fully Protected, CSC = California Species of Special Concern.

2 B = Breeding.

3 The Scripp's murrelet was listed as a threatened species by theState of California on December 22, 2004.

4 Previously bred, not currently attending.

O = Occasional colony.

Largest colony within the park is in **Bold**.

TABLE D-5. DISTRIBUTION AND ABUNDANCE OF PINNIPEDS (SEALS AND SEA LIONS) ON THE NORTHERN CHANNEL ISLANDS

Name	Status	Anacapa Island	Santa Cruz Island	Santa Rosa Island	San Miguel Island	Santa Barbara Island
Northern fur seal *Callorhinus ursinus*					B	
Northern elephant seal *Mirounga angustirostris*		H	H	B	B	B
California sea lion *Zalophus californianus*		H	H	H	B	B
Harbor seal *Phoca vitulina*		B	B	B	B	B
Steller sea lion *Eumetopias jubatus*	FT				FP	
Guadalupe fur seal *Arctostephalus townsendii*	FT, ST ?				H	

Source: Data from Koski et al. 1998.
F = Federal, S = State, E = Endangered, T = Threatened, B = Breeding, H = Haulout, FP = Formerly Present.

TABLE D-6. FEDERAL AND STATE-LISTED THREATENED AND ENDANGERED SPECIES IN CHANNEL ISLANDS NATIONAL PARK

Scientific Name	Common Name	Federal	State	Anacapa	Santa Cruz	Santa Rosa	San Miguel	Santa Barbara
Acipenser medirostris	North American green sturgeon	T (southern distinct population segment)						
Arctocephalis townsendi	Guadalupe fur seal	T	T				M	
Balaenoptera borealis	Sei whale Rorqual	E						
Balaenoptera musculus	Blue whale	E						
Balaenoptera physalus	Finback whale	E						
Caretta caretta	Loggerhead turtle	T						
Charadrius alexandrinus nivosus	Western snowy plover	T	SSC			R	M	
Chelonia mydas	Green turtle	E/T						
Dermochelys coriacea	Leatherback turtle	E						
Enhydra lutris nereis	Southern sea otter	T		A!	C!	R!	M!	B!
Eubalaena japonica	Right whale	Extirpated; Proposed						
Haliotis sorenseni	White abalone	E		A	C	R!?	M!?	B
Haliotis cracherodii	Black abalone	E		A	C	R	M	B
Lepidochelys olivacea	Olive Ridley turtle	T/E			C?			
Megaptera novaengliae	Humpback whale	E						
Melospiza melodia graminea	Santa Barbara song sparrow	Extinct						B!
Oncorhynchus tshawytscha	Chinook salmon	E (likely the Sacramento River Run ESU)						
Physeter catodon	Sperm whale	E						
Sibaldus musculus	Blue whale	E						
Synthliboramphus hypoleucus	Xantus's murrelet	Candidate	T	A				B
Urocyon littoralis cruzae	Santa Cruz Island fox	E	T		C			
Urocyon littoralis santarosae	Santa Rosa Island fox	E	T			R		
Urocyon littoralis littoralis	San Miguel Island fox	E	T				M	

Scientific Name	Common Name	Federal	State	Anacapa	Santa Cruz	Santa Rosa	San Miguel	Santa Barbara
PLANTS								
[Arabis hoffmannii] now: Boechera hoffmannii	Hoffmann's rock-cress	E		A!	C	R		
Arctostaphylos confertiflora	Santa Rosa Island manzanita	E				R		
Berberis pinnata ssp. insularis	Island barberry	E	E	A!	C	R!?		
Castilleja mollis	Soft-leaved paintbrush	E				R	M!	
Dudleya nesiotica	Santa Cruz Island live-forever	T			C			
Dudleya traskiae	Santa Barbara live-forever	E (EE)	E					B
Galium buxifolium	Box-leaved bedstraw	E			C		M	
Gilia tenuiflora ssp. hoffmannii	Hoffmann's slender-flowered gilia	E				R		
Helianthemum greenei	Island rush-rose	T			C	R		
Malacothamnus fasciculatus ssp. nesioticus	Santa Cruz Island bush mallow	E	E		C			
Malacothrix indecora	Santa Cruz Island malacothrix	E			C	R	M	
Malacothrix squalida	Island malacothrix	E		A	C			
Phacelia insularis ssp. insularis	Island phacelia	E				R	M	
Thysanocarpus conchuliferus	Santa Cruz Island fringepod	E			C			

Legend
E = Endangered
T = Threatened
(EE) = Single island endemic
(E) = Endemic to the islands
! = Extirpated (no longer occurs)
* = Thought to be extinct
A (Anacapa), C (Santa Cruz), R (Santa Rosa), M (San Miguel), B (Santa Barbara) = Island of occurrence

APPENDIX E. STATEMENT OF FINDINGS FOR SCORPION CREEK

STATEMENTS OF FINDINGS FOR
EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT
SCORPION VALLEY DEVELOPED AREA, SANTA CRUZ ISLAND
GENERAL MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT

CHANNEL ISLANDS NATIONAL PARK

Recommended:_____
Superintendent, Channel Islands National Park Date

Concurred:_____
Chief, Water Resources Division Date

Concurred:_____
Regional Safety Officer Date

Approved:_____
Director, Pacific West Region Date

INTRODUCTION

In accordance with Executive Order 11988, "Floodplain Management" and NPS guidelines for implementing the order, the Park Service has evaluated the flood hazards for the developments in Scorpion Valley, Santa Cruz Island, and has prepared this statement of findings (SOF). As an integral part of the effort to develop a general management plan (plan) for the park, the SOF describes the flood hazard, alternatives, and mitigation measures for the continued use of this area. Additional detail regarding the park, future actions to be taken in the area, and environmental impacts may be found in the *General Management Plan / Environmental Impact Statement* (plan).

Much of the following text is based on two reports on the area prepared by the NPS Water Resources Division (NPS 1998, 2003), and from a 1995 trip report (NPS 1995).

Description of the Site

Scorpion Creek drains a small portion of the north side of the easternmost tip of Santa Cruz Island. The watershed area is approximately 2.4 square miles, with a total relief of 1,350 feet and a total length of slightly less than 3 miles. The watershed is steep and highly dissected. The creek is alluvial (depositional) for about 1.5 miles upstream from its mouth. Upstream from that point the stream is extremely steep and deeply incised.

Scorpion Creek experiences wide fluctuations in flow. Generally in the summer the creek does not flow, except after occasional storms. In the winter heavy storms over a period of several days can produce large flows.

Because Scorpion Valley is a relatively narrow valley confined by steep hillsides, developments and uses of this area occur largely along the bottom of the valley. The lower alluvial reaches of the valley have a long history of human occupation. Ranch structures dating back to the 1800s are located on the left side of the valley, approximately 700 to 1,200 feet upstream from the mouth of the creek, including a historic masonry building. Farther upstream, a campground with 40 sites is spread out along the valley floor 0.5 to 1 mile from the beach.

General Characterization of Floodplain Values, Nature of Flooding, and Associated Floodplain Processes in the Area

Scorpion Valley's natural floodplain values have largely been altered by past human habitation. Vegetation cover is poor due in large part to a long history of intensive grazing by domestic animals.

Geomorphically, the area is very unstable due to the steep mainstem and tributary channels upstream and the erodible nature of the surrounding hillsides. Watershed conditions in this area are such that rainfall runs off the surrounding hillside surfaces rapidly, mass hillslope failures are common, and tributary channels are extremely erosive. It is likely that debris flows occur on steep tributaries during periods of intense rainfall, contributing enormous amounts of sediment to the stream. These heavy sediment loads can exacerbate flooding; sediment deposition can change the local paths of streamflows and frequencies of inundation.

Scorpion Valley is subject to periodic floods, some of which can be large events, although there are no long-term data on the frequency of flooding. As with other drainages on Santa Cruz Island, flooding usually occurs in the winter after several days of heavy rain.

All of the developments in Scorpion Valley, including the campground, are in the floodplain, and many are within the active flood channel. Extremely active sedimentation processes interact with streamflow to cause frequent realignments of the channel throughout the entire width of the lower valley. Sediments also can accumulate in the channel, which results in the stream overflowing its banks and causing sedimentation in surrounding areas. Evidence indicates that periodic channel excavation historically has been required to minimize flooding and debris accumulation and thus permit sustained occupation of the valley.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Description of the Preferred Alternative and Why Facilities Would be Retained in the Floodplain

The preferred alternative in the GMP retains the historic ranch structures (including the masonry building) and the campground in their present locations. All of these structures are in the active flood channel, while the campground is considered to be in the 100-year floodplain (NPS 1995, 1998, 2003).

As noted in the "Affected Environment" section, the floodplain for Scorpion Creek extends from valley wall to valley wall. Thus, no structures within the valley can be located outside of the floodplain. This is a very popular recreational site, with one of the park's few campgrounds. The area also is a cultural landscape and several of the ranch structures are on the national register. Moving the facilities would adversely affect these structures and recreational opportunities provided on Santa Cruz Island. In addition, moving the developments out of the valley to another site is not practicable — there are no level sites relatively close to the beach that visitors could easily hike to or that could support the functions provided by the existing developments.

Investigation of Alternative Sites

No alternatives considered in the plan would remove the historic ranch structures and the campground from the floodplain. However, two new locations were considered and rejected for the campground. One site was a slightly elevated area farther up the valley on the southern side. While providing some additional protection from flooding, this site doubled the distance visitors would have to walk and haul camping gear from the water. The site is smaller than the existing campgrounds, requiring a reduced number of sites, and is much steeper than the existing site, requiring design and manipulation to accommodate campsites. Finally, the site is less desirable because it has no shade or screening between campsites. The existing housing/maintenance area overlooks a second potential site up a side canyon to the north. This site is also smaller than the existing campground, requiring a reduced number of sites, and the site is much steeper than the existing campground, requiring design and manipulation to accommodate sites. In addition, this site is exposed with no shade or screening between campsites. Finally, the site has historic check dams and water structures that would be impacted by construction of a campground.

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

As noted above, the geology of the Scorpion Creek watershed is unstable and naturally prone to flood, mud, and debris flows, and mass failure. Extensive grazing by domestic animals has almost certainly accelerated the rates of erosion and caused more sedimentation and flooding than historical norms. Small to medium-sized slumps are found extensively in the watershed. Many of these mass failures are contributing sediment to the main channel and rapid aggradation of the channel occurs during every flood event (NPS 2003). Flooding has occurred historically and was handled by former occupants of the site by bulldozing the channel. In recent years, the Park Service has also excavated the channel to restore some flow capacity to the channel following flood events.

Scorpion Creek has probably flooded repeatedly over the past century. In 1997, a large flood caused substantial damage in the area. High water overflowed the streambanks and into the area occupied by the historic ranch house and other buildings. Also, a small channel draining an adjacent hillslope flooded and eroded a gully. Sediments eroded out of the enlarged gully deposited around the historic masonry structure. A detailed discussion of this event can be found in NPS 1998.

The reason for frequent flooding in the ranch complex is the limited capacity of the Scorpion Creek channel, even in its excavated state, and the flat topography of the overbank area between the channel and the buildings. Based on a flood hazard assessment (NPS 2003), the 100-year flood for Scorpion Creek is expected to span the entire valley width and be about 2 feet deep at the masonry structure. Velocities are predicted to be high over the entire width of flow. When aggradation of the channel and floodplain occurs during a flood, the flood magnitude needed to reach the building complex is much less than the 100-year flood. Given this set of circumstances, it is apparent that any attempt by park staff to maintain this building complex would require periodic channel excavation to rebuild flow capacity following floods. Furthermore, even with channel excavation, it can be expected that floodwaters would continue to periodically cause damage the masonry structure and nearby structures (NPS 2003).

The campground should be considered to be within the 100-year floodplain. Depths of flow of 2 feet or more can be expected during such a flood event with significant flow velocities. However, it should be noted that placement of a low-investment campground in the 100-year floodplain can be in compliance with NPS floodplain management procedures provided that flood risk to humans is managed to an acceptable level. In this case, risk to campers is small because most, if not all, flooding episodes would occur during prolonged wet periods in the winter months when visitation levels are very low.

Scorpion Creek floods usually occur after several days of heavy rains. Thus, there would be ample time to warn people, and the risk of people being trapped or caught in a flood would be very low. If a flood does occur, visitors and park staff can evacuate to a high ground site, such as the park staff housing area.

FLOOD MITIGATION MEASURES

Several actions can be taken in the Scorpion Valley to reduce the risk to life or property. The most important action would be to periodically excavate the channel and remove sediments to rebuild streamflow capacity and keep the stream in the active channel away from park facilities. However,

even with channel excavation, it can be expected that floodwaters would continue to periodically damage the masonry building and nearby structures (NPS 2003). It is estimated that up to about 2,009 linear feet of the channel would need to be dredged to varying depths (tapering up to the campground) from the beach side at the start of the rock wall up to the west end of the lower campground. An estimated maximum 8,000 cubic yards of material may need to be removed from the channel. However, based on the minimal deposition of sediments that occurred after heavy rains in 2004–2005, it is likely that significantly less sediment would need to be dredged. The dredged material would be stockpiled on the south side of the stream, above the upper road crossing to the west. Although the stockpile probably would be in the 100-year floodplain, the material would be stored on a temporary basis (a year or less) and then would be moved out of the floodplain to maintain the road to Smugglers Cove.

Because the Scorpion masonry building and other ranch structures would continue to be vulnerable to damage and loss during large floods, even with the above measures, no irreplaceable records, archeological artifacts or museum collections would be placed in the buildings. Signs also would be placed in the masonry building informing visitors and staffs of the flood risk and suggested actions in the event of flooding (e.g., an evacuation route).

Periodic cleanup of sediments following floods may be needed for continued use of the Scorpion Valley campground. In the peak use time (May to October), rangers are usually present and can warn people of storms and possible flooding. Park staff would post warnings on a campground kiosk and identify where to go in the event of flooding. However, from November through April (the most likely time floods would occur) there is a good chance no rangers would be present. Consequently, in the winter the NPS staff would restrict camping permits and limit camping to 10 campsites that are usually safe to camp in, out of flood danger.

SUMMARY

The Park Service has determined that there is no practicable alternative to maintaining the historic ranch structures and campground within the floodplain of Scorpion Creek. This determination was based on the decision to continue to use Scorpion Valley as a primary visitor use area within the park, with provision for overnight and day use facilities. Although these facilities are within an area subject to flooding, there would be ample time to warn the few people using the area in the winter, and the risk to people being trapped or caught in a flood would be very low. If a flood does occur, visitors and park staff can evacuate to a high ground site, such as the park staff housing area. The proposed flood mitigation measures would reduce the risk to life or property, although even with these measures floodwaters would continue to periodically damage the masonry building and nearby structures — leaving facilities in the valley, even with mitigation measures, means that there would continue to be a risk to property and a small risk to human life due to flooding.

SOURCES

NPS. 1995. “Trip Report for Travel by Smillie to Channel Islands National Park. September 27-29, 1995.” Unpublished report, on file at NPS Water Resources Division, Fort Collins, CO.

NPS. 1998. *Preliminary Hydrologic and Geomorphic Analysis: Scorpion Creek Flood. December 5, 1997. Santa Cruz Island, Channel Islands National Park, CA.* Tech. Report NPS/NRWRD/NRTR-98/172. Prepared by William L. Jackson. Water Resources Div., Fort Collins, CO.

NPS. 2003. "Trip Report for Travel by Gary Smillie and Kimberly Johnson to Channel Islands National Park. January 5-10, 2003." Unpublished report, on file at NPS Water Resources Division, Fort Collins, CO.

APPENDIX F. LIST OF CLASSIFIED STRUCTURES

Anacapa Island Lighthouse Tower
Anacapa Island Light Station Fog Signal Building
Anacapa Island Light Station Keeper's Residence
Anacapa Island Light Station Power House
Anacapa Island Light Station Oil House
Anacapa Island Light Station General Service Building
Anacapa Island Light Station Tank House
Anacapa Island Light Station Rain Shed
Anacapa Island Light Station Derrick Building
Anacapa Island Light Station Upper Derrick Landing
Anacapa Island Light Station Lower Landing
Monument to Cabrillo
Vail & Vickers Ranch Branding Shed
Vail & Vickers Ranch Scale House
Vail & Vickers Ranch Old School House
Vail & Vickers Ranch House
Vail & Vickers Ranch Generator Barn
Vail & Vickers Ranch Horse Barn
Vail & Vickers Ranch House Fence
Vail & Vickers Ranch Corrals
Vail & Vickers Ranch Pasture Fences
Vail & Vickers Ranch Outhouse
Vail & Vickers Corral Outhouse
Nidever Cave
Scorpion Valley Old Forge
Scorpion Valley Masonry Building
Scorpion Valley Bunkhouse
Scorpion Valley Storage Shed
Scorpion Valley Stone Wells and Wind Pump
Scorpion Valley Dairy Cave
Scorpion Valley Potato Cave
Scorpion Valley to Smugglers Ranch Road
Gherini Ranch Fences and Gates
Scorpion Valley Road Retaining Walls
Scorpion Valley Rock Piles
Smugglers Ranch Masonry Building
Smugglers Ranch Water System
Vail & Vickers Ranch China Camp Cabin
Anacapa Island Light Station Flagpole
Scorpion Valley Outhouse
Gherini Ranch Rock Walls and Check Dams
South Point Lighthouse
Vail & Vickers Ranch Smith Highway
Vail & Vickers Ranch Soledad Road
Vail & Vickers Ranch Arlington Roundup
Vail & Vickers Ranch China Camp Roundup
Vail & Vickers Ranch Wreck Roundup

Vail & Vickers Ranch Clapp Springs
Vail & Vickers Ranch Carrington Point Water System
Prisoners' Harbor Warehouse
Prisoners' Harbor Corrals and Scale House
Campo del Norte Ranch House
Campo del Norte Corrals and Sheds
Stanton Ranch Fences and Gates
Stanton Ranch Water System
Main Ranch Trail
Scorpion Valley Reservoir
Scorpion Valley Meat House
Vail & Vickers Ranch Rope House
Vail & Vickers Ranch Small Outhouse
Rancho del Norte Troughs
Rancho del Norte Feed Cribs
Santa Cruz Island Telephone Poles and Line
Ranch House Fence
Rancho del Norte Horse Barn
Rancho del Norte Medicine Shed
Santa Cruz Island Lime Kilns
Anacapa Island Light Station Residence Sidewalks/Patios
Anacapa Island Light Station Concrete Markers

APPENDIX G. BIOSECURITY PROTOCOLS. PREVENTING THE INTRODUCTION OF NONNATIVE SPECIES TO CHANNEL ISLANDS NATIONAL PARK (N.D.)

BACKGROUND AND RATIONALE

Channel Islands National Park (park) was established to conserve the rich biological ecosystems of five islands and nearby rocks and islets. The naturally small populations found on the islands can be easily driven to extinction by new introductions and, therefore, the islands are unusually vulnerable to the impacts of new invaders.

It is much more cost effective to prevent the arrival of introduced species than to attempt to eradicate them after arrival. In many cases, it may be impossible to eliminate a pest once it has arrived.

PROTOCOLS

Personal Gear

- Maximize use of hard-sided boxes. Any cargo packaged and stored overnight must be stored in a hard-sided box. Food may only be stored in containers that are totally sealed (i.e., hard-sided box with a tight fitting top and no holes). The park has purchased a number of plastic boxes with lids that can be used by anyone traveling on park boats or flights.
- Minimize use of megabags. Megabags need to be shaken out prior to each loading. They need to be clean. Megabags should never be loaded except immediately prior to being slung onto a boat. No supplies left in a megabag overnight will be loaded onto a boat without first unloading and inspecting all of the gear.
- No corrugated cardboard boxes may be used to transport food. No corrugated cardboard boxes that are secondhand use (i.e., banana boxes) may be used for any reason.
- All other corrugated cardboard is discouraged. However, items (not food) in original cardboard packaging (preferably sealed) may be used. The park will assess the level of risk that is posed by new boxes.
- Personal gear should be stored in clean pest-free conditions at home. Gear should be cleaned and packed. Boots, sleeping bags, tents, and nets should be cleaned prior to packing.
- All footwear, clothing, and gear (especially Velcro, shoelaces, cuffs, and boot lugs) should be cleaned and inspected for seeds and soil before departing for the islands, when boarding boats, and when moving between islands.

Equipment and Supplies

- Equipment (large and small) should be stored and transported in a manner that prevents the attraction or transport of seeds, invertebrates, vertebrates, and pathogens. Wherever possible, gear should be loaded into, stored, and transported in containers with tight-fitting lids that can prevent access by mobile species such as invertebrates and vertebrates (such as rodents). Corrugated cardboard boxes should be avoided to transport equipment and gear as the corrugations provide hiding places for invertebrates such as earwigs, beetles, and ants.

- Gear and equipment should NOT be left or stored where it is at risk for attracting and harboring potential nonnative species prior to departing. For example, leaving large equipment in the open is a dangerous practice; it provides cover and food for rodents and insects. Gear that is left out in the open may also be exposed to potential weed seeds blown around or carried by other species. Types of safe storage units include plastic or metal containers with tight-fitting lids, conex boxes, inside park buildings, or cold (freezer) storage.
- During the loading and unloading process, all containers used in transport (e.g., dumpsters) should be cleaned of any item that may have spilled, especially foodstuffs, plant materials, and soil. This practice will reduce the risk of attracting insects, rodents, and other pest species

Lumber and Wood Products

- Lumber should only be used if it is clean, new, processed lumber from California. CAUTION: California Pine could contain blister rust or pitch canker and California Oaks could have the pathogen that causes Sudden Oak Death. All lumber must be certified pest- and pathogen-free by either the distributor or the park before use on the islands.
- Bundled lumber should be taken apart, inspected thoroughly, and restacked before leaving the mainland as it could harbor animals and/or seeds. The only exception is if a wholesale supplier has certified lumber pest- and pathogen-free and it is tightly bundled and closely packed. Ideally, lumber should be inspected and cleaned before bundling.
- Under no circumstances should firewood or any unprocessed lumber with bark be allowed on the Channel Islands. Bark can provide habitat to many invertebrates and could carry pathogens such as pine blister rust, pitch pine canker, and Sudden Oak Death.
- All wood products should be processed and ideally treated, with no traces of bark or soil.

Waste

- The buildup and disposal of waste is a significant issue on the Channel Islands. A waste management and disposal plan should be designed with park input and approval as early as possible in the response.

Dumpsters

- Dumpsters are a large risk for transport of nonnative animals. Whenever possible, dumpsters should not be used for personal food wastes. These should be taken off by the individual generating the waste.
- Dumpsters may only be used for construction and/or spill clean-up projects and will be located in a manner in which they will not be used for food materials.
- Under no circumstances should dumpsters go to the islands with any garbage. The inside and outside, including the wheels, of the dumpsters should be pressure washed and treated with a disinfectant solution before leaving the mainland.
- Dumpsters must be inspected, emptied, and cleaned before departing the mainland for the islands.
- Under no circumstances should dumpsters move between islands.

Ground Vehicles

- All vehicles should be washed and inspected prior to departure, especially earthmoving and heavy equipment such as vehicles, tractors, and associated construction equipment. In particular, equipment should be cleaned of soil and vegetative matter before leaving their departure point, be this the mainland or an island.
- Heavy equipment (especially construction and earthmoving equipment) should not be allowed to move between islands without: 1) being transported first to the mainland and cleaned; or 2) being cleaned on the island prior to moving. In some situations it may be necessary to clean equipment while at sea but this should not be routine. Not only is this difficult and dangerous, the boat itself could become a vector for removed contaminants.
- All vehicles should be washed and inspected to ensure no transport of soil or vegetative matter has occurred. Using a hoist for washing is ideal; special attention should be paid to the undersides and insides of vehicles.
- All vehicles transported to the island must be washed to ensure that no soil, vegetation, or seeds are adhering. Using a hoist for washing is ideal and special attention should be paid to the undersides and insides of vehicles. The Park Service may inspect and reject any vehicle that is not completely clean.

Vessels

- Every boat shall have armed bait boxes that are checked monthly. Also, sticky traps should be deployed on every boat and changed monthly.
- Boat decks should be washed clean between cargo runs. No soil or other debris should remain on a boat.
- Any sign of rodents on a boat should be reported to the Superintendent.
- Any landing craft should be trapped intensively using a combination of bait boxes, snap traps, and sticky traps when a load is placed on the boat.
- No scrubbing of boat bottoms will be done at the islands. Vessels should be cleaned in the harbor or offshore.

Planes

- Planes should follow the same rules for containers and food storage as do boats.
- Planes should be maintained in a clean manner and routinely be swept out.
- The presence of yellow star-thistle at the landing strip at Santa Cruz Island poses a risk to the other islands. If a flight is to visit multiple islands, Santa Cruz Island should be the last island visited. An aircraft should never go from Santa Cruz Island to another park island.
- Planes and helicopters shall have their landing gear and passenger compartments cleaned and inspected prior to leaving the mainland.

Soil and Gravel

- The transportation of soil and gravel from the mainland to islands is discouraged. If material is to be transferred, it must be freshly dug and transported to an island as soon as possible. Material that is held on the mainland must be tarped to protect from nonnative seeds. The site where soil or gravel is deposited on an island will be mapped and provided to the Chief of Natural Resource for monitoring.

Education

- Education is the best defense against the introduction of nonnative plants and animals to the islands. Prior to responders departing for the islands, park personnel shall give an overview of the dangers and precautions necessary to mitigate those dangers to response personnel.

APPENDIX H. LETTERS RECEIVED FROM GOVERNMENT AGENCIES ON THE DRAFT GENERAL MANAGEMENT PLAN/WILDERNESS STUDY/ENVIRONMENTAL IMPACT STATEMENT

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Channel Islands National Marine Sanctuary
University of California Santa Barbara
Ocean Science Education Building 514
Santa Barbara, CA 93106

March 10, 2014

Greg Jarvis, Project Manager
National Park Service
Denver Service Center, Planning
12795 W. Alameda Parkway
Denver, CO 80225

RE: NOAA's Channel Islands National Marine Sanctuary Comments on the Channel Islands National Park Draft General Management Plan/Wilderness Management Study/Environmental Impact Statement

Submitted electronically - http://parkplanning.nps.gov/chis

Dear Mr. Jarvis,

The National Oceanic and Atmospheric Administration's (NOAA) Channel Islands National Marine Sanctuary (sanctuary) appreciates the opportunity to provide comments on the Draft General Management Plan / Wilderness Management Study / Environmental Impact Statement (plan/EIS or this plan). This plan defines a direction for resource preservation and enhancing public use and enjoyment of the Channel Islands National Park (park) over the next 20 to 40 years.

The sanctuary is guided by the National Marine Sanctuaries Act (NMSA) *16 U.S.C. 1431 et seq*, with a boundary and jurisdiction overlapping the park waters. The sanctuary and park have a long-standing, mutually-beneficial partnership protecting the unique natural and cultural resources of the northern Channel Islands. We support the park's overall guiding approach to managing marine areas and resources to protect ecosystems and biological diversity and to ensure that visitors have opportunities for high quality experiences. The park staff are to be commended for their commitment to long-term monitoring of the Channel Islands marine ecosystems, such as kelp forest and intertidal monitoring; enforcement of state and federal resource protection regulations; and nationally acclaimed education and outreach programs, like the Naturalist Corps.

We understand that this plan focuses primarily on the park's terrestrial resources and uses and provides only general desired conditions and strategies for managing marine resources. We appreciate that the implementation of the actions in the future approved general management plan depends on future funding. As stated in the draft plan, park managers would prepare more detailed studies and implementation plans and additional environmental documentation to comply with the National Environmental Policy Act and other state and federal statutes. These future more detailed plans offer an appropriate juncture for the park to formally and informally consult with the Sanctuary, as directed by sec. 304(d) of the NMSA, and to collaborate on implementation.

In particular, we look forward to collaborating on the development and implementation of interpretation and research and monitoring plans. Future ideas noted in this plan, such as expanding Channel Islands Live to other islands and building education and research centers on Santa Cruz and Santa Rosa Islands, have great potential to support conservation of natural systems, preservation of cultural resources, and place-based learning and conservation strategies.

The park's commitment to consult, advise, and cooperate with NOAA in monitoring and managing all resources and uses within park waters is notable. We welcome the park renewing and creating new agreements with the state of California and NOAA to ensure cooperative management and enforcement of the park's waters within the proposed marine stewardship zone, particularly the marine protected management zones.

We support the park's future commitment to seek public input in preparing the more specific future plans. We suggest the park continue to utilize the Sanctuary Advisory Council forum as one effective way of engaging stakeholders and the general public. We encourage the park to continue reaching out to these and other stakeholders, including those from the fishing industry and broader Chumash communities.

Attached are more specific comments that we believe will strengthen the Final General Management Plan and EIS. We are aware of the National Marine Fisheries Service letter, support their comments, and look forward to all three agencies working together to implement conservation and monitoring strategies for the park's ocean habitats and species. Thank you for consideration and incorporation of our comments.

We commend the Park Service for a thoughtful and progressive draft general management plan/EIS, and we look forward to working with our colleagues at the park to making the plan a reality. Please call on us if we can clarify or elaborate on our input, Sean Hastings is our direct point of contact and he can be reached at Sean.Hastings@noaa.gov or (805) 893-6424.

Sincerely,

Chris Mobley

Chris Mobley
Superintendent

Cc: Russell Galipeau, Park Superintendent

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

February 6, 2014

Greg Jarvis, Project Manager
National Park Service – Denver Service Center
12795 West Alameda Parkway
Lakewood, CO 80228

Subject: Draft Environmental Impact Statement for Channel Islands National Park Draft General Management Plan / Wilderness Study Project; California. (CEQ# 20130327)

Dear Mr. Jarvis:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement for the Channel Islands National Park Draft General Management Plan / Wilderness Study Project. Our review is provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality's NEPA Implementing Regulations (40 CFR 1500-1508), and Section 309 of the Clean Air Act. These comments were also prepared under the authority of, and in accordance with, the provisions of the Federal Guidelines promulgated at 40 CFR 230 under Section 404(b)(1) of the Clean Water Act.

EPA supports the goal of restoring and maintaining natural ecosystems in the Channel Islands National Park. We understand that the subject Draft Environmental Impact Statement is a programmatic analysis; therefore, impacts from site-specific projects are not fully addressed in this document and will need further NEPA analyses. We recommend that the FEIS be clearly labeled as a Programmatic Final Environmental Impact Statement and include a commitment by the National Park Service to conduct an appropriate level of NEPA analysis, to be tiered from the PFEIS, for future site specific projects. We also recommend that such project-specific NEPA documents include a Jurisdictional Determination by the U.S. Army Corps of Engineers for projects that would result in a discharge to waters of the U.S. This would help clarify the significance of any direct and indirect impacts to waters.

Based on our review of the Preferred Alternative, we have rated the DEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "Summary of Rating Definitions"), due to our concerns regarding water quality, biological resources, and potential indirect impacts as a result of induced growth. Portions of the construction and maintenance of the proposed structures will occur in marine waters within the Scorpion State Marine Reserve and the Channel Islands National Marine Sanctuary. These waters are recognized as special aquatic sites under

the EPA's Clean Water Act Section 404(b)(1) guidelines due to their ecological characteristics. We are concerned about potential direct and indirect impacts to benthic and aquatic habitats and species in the planning area. We are also concerned that the DEIS does not include a sufficient description of monitoring plans to assess environmental impacts from expected increases in visitor activities, such as vehicle tours, air transportation and overnight lodging. The enclosed Detailed Comments provide recommendations to address these and other concerns.

At this general management planning stage, the National Park Service has an excellent opportunity to incorporate sustainability into its decision making. We encourage the NPS to commit to smart growth and green building as guiding principles for its development and management of Channel Islands National Park.

EPA appreciates the opportunity to review this DEIS. When the PFEIS is released, please send one hard copy and one CD to the address above (mail code: ENF-4-2). If you have any questions, please contact me at (415) 972-3521, or have your staff contact James Munson, the lead reviewer for this project. James can be reached at (415) 972-3852 or Munson.James@epa.gov.

Sincerely,

Kathleen Martyn Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

Enclosure:

Summary of the EPA Rating System

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

FEB 2 6 2014

Greg Jarvis
National Park Service – Denver Service Center
12795 West Alameda Parkway
Lakewood, Colorado 80228

Dear Mr. Jarvis:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Environmental Impact Statement (EIS) for the Channel Islands National Park (CINP) Draft General Management Plan. The EIS outlines a long-term (20-40 years) management plan for resource preservation and visitor experience at CINP. The preferred alternative would increase access and educational opportunities for visitors while emphasizing ecosystem preservation and restoration. NMFS concurs with this general approach and believes responsibly increasing visitor access may promote interest in natural resources from the general public. NMFS offers the following comments pursuant to the Endangered Species Act, the Marine Mammal Protection Act, and section 305(b)(1)(D) of the Magnuson-Stevens Fishery Conservation and Management Act, in support of your ecosystem preservation and restoration efforts.

Endangered Species Act

The EIS lists the eastern distinct population segment (DPS) of Steller sea lions (*Eumetopias jubatus*) as a threatened species under the Endangered Species Act (ESA). NMFS recently delisted the eastern DPS of Steller sea lions, in large part because of their population increases in the Pacific Northwest, British Columbia, and Alaska (78 FR 66140, November 4, 2013). The EIS also lists the olive ridley sea turtle (*Lepidochelys olivacea*) as a threatened species; however, olive ridley breeding populations on the Pacific coast of Mexico are listed as endangered. Because members of this population could be found off the Channel Islands, NMFS recommends that olive ridleys be listed in the EIS as threatened/endangered. In addition, we note the reference to an olive ridley nesting on Santa Cruz Island in 2005 (page 223) and would be interested in knowing whether that nest was ever confirmed (i.e., a nest was dug and eggs were deposited). If confirmed, this incident would represent the first known sea turtle nesting event off the U.S. west coast, other than sea turtles nesting in captivity.

Marine Mammal Protection Act

NMFS appreciates the measures outlined in the draft General Management Plan to protect pinnipeds, particularly in sensitive haul-out and breeding areas. We look forward to continuing to work with the National Park Service to minimize impacts to these protected species.

Environmentally Sensitive Mooring Devices

Mooring buoys are a common method for anchoring boats; however their chains can drag across the seafloor tearing up vegetation. In addition, mooring chains can alter sediment composition ultimately impacting the benthic biota (Ostendorp et al. 2008). Walker et al. (1989) investigated the impacts of mooring buoys in Western Australia and found that large areas of seagrass had been lost to mooring. The location of the buoy within the bed may influence the extent of damage, with more significant impacts associated with mooring in the center of the bed versus along the edge. Seagrass loss from boat moorings is increasing, which correlates with increased vessel use (Hastings et al. 1995). Examples of mooring chain damages are evident throughout the world (Jackson et al. 2002, Hiscock *et al.* 2005, Otero 2008).

Eelgrass has been identified at 37 locations throughout the Channel Islands, including Santa Rosa, Santa Cruz and Anacapa Islands (Engle and Miller 2005). These beds are likely the most undisturbed eelgrass beds in Southern California, as they are not subjected to the same intensity of coastal development as eelgrass beds adjacent to the mainland. However, these beds do face multiple stressors including: urchin grazing, interference from brittle stars, anchor scour and sedimentation from coastal erosion (Altstatt 2003). These sites are infrequently monitored and impacts from any of these stressors may not be discerned in time to prevent severe damage. For example, the maximum depth of eelgrass may be used as a corollary for system health (Dennison et al. 1993). NOAA divers surveyed eelgrass habitat in Smuggler's Cove and Scorpion Anchorage in August, 2013. Mooring blocks and chains had created gaps in otherwise continuous eelgrass beds (Figure 1).

Williams and Bechter (1996) examined the effects of 5 different mooring systems on marine vegetation. Their study concluded that mid-line float systems and all-rope lines had the least impact on substrate and aquatic vegetation. Disturbance impact of the remaining mooring types (e.g. swinging chain moorings) ranged from 86% to 100% disturbance. Other regions have begun incorporating best management practices for moorings in order to reduce impacts to eelgrass beds (Short 2009). Examples include clumping mooring lines together to minimize the extent of eelgrass damage (Herbert et al. 2009), the use of cyclone moorings that prevent swinging of chains (Shafer 2002), and elastic lines that stretch instead of requiring long lengths of chain. NMFS believes CINP should consider incorporating environmentally sensitive mooring designs to prevent chain scour. These devices would prevent disturbance to benthic habitat, including highly productive submerged aquatic vegetation. Replacement of these mooring blocks would restore habitat function for economically and ecologically valuable fishes, meeting several of the five goals addressed by this plan. If anchorages are used more frequently by recreational and commercial vessels, CINP may consider incorporating environmentally friendly mooring systems as a minimization measure for the effects of anchor scour. NMFS notes that construction of additional moorings is not being considered at this time and therefore no additional impacts from moorings would occur as part of the proposed plan

Invasive Species Management

NMFS concurs with the non-indigenous species (NIS) control activities outlined in the EIS. However, much of the focus appears to be on terrestrial NIS. While terrestrial NIS pose a serious threat for relatively un-disturbed upland habitat, NMFS would like CINP to consider action on aquatic NIS. In particular, the invasive brown algae *Sargassum horneri* has spread throughout the Channel Islands (Miller and Engle 2009) with potentially harsh ecological consequences (Riosmena-Rodríguez et al. 2012). For example, large reef patches on the leeward side of Catalina Island are dominated by *S. horneri*, with possible effects to biodiversity and ecosystem stability (Figure 2; Bax

et al. 2003). Other NIS that may pose a threat include *Undaria pinnatifida*, *Grateloupia* spp. and *Zoobotryon verticillatum*. As more visitors gain access to CINP, the probability of NIS introduction and proliferation increases. Monitoring or control efforts on these NIS would meet several of the five goals addressed by this management plan.

Habitat Monitoring

Long-term biological monitoring of marine habitats creates a baseline to compare against any natural or anthropogenic driven habitat changes, may document the effects of management actions and provides data to compare with similar habitats throughout the region. Given its remote location, monitoring marine systems in CINP would supply valuable information on less disturbed habitats. In particular, eelgrass habitats in CINP are not frequently studied and information on persistence, areal extent, and density would be valuable. Such a monitoring effort would be in accordance with the Southern California Regional Eelgrass Monitoring Plan (Bernstein et al. 2011) to expand monitoring efforts to coastal and offshore eelgrass beds.

Both alternatives 2 and 3 include a provision for park staff to facilitate research and monitoring to support conservation of natural systems. NMFS is fully supportive of this provision, and requests CINP consider eelgrass habitat in the monitoring effort.

Park Operations

Associated with increased guest use of CINP, as outlined in the EIS, would be a requirement for more frequent maintenance and transportation of individuals and supplies. Specific maintenance actions were not thoroughly covered in the EIS but it is possible they would impact nearshore and subtidal resources. For example, increased vessel usage in nearshore areas may scour seagrasses and macroalgae. NMFS would like the opportunity to review any changes in park operations that may affect intertidal and subtidal habitats, so as to provide avoidance, minimization or mitigating measures to protect the valuable natural resources of CINP.

Conclusion

NMFS believes the management plan outlines a reasonable approach for habitat conservation and allowing public access to CINP. We ask that you consider our comments when finalizing the EIS and the CINP management plan. If CINP would like to further discuss these recommendations with NMFS, please contact Christina Fahy (for ESA and/or MMPA comments) at Christina.Fahy@noaa.gov or by phone at (562) 980-4023 or Adam Obaza by email at Adam.Obaza@noaa.gov or by phone at (562) 980-4044.

Sincerely,

Chris Yates
Assistant Regional Administrator
for Protected Resources

cc: Administrative File: 150316WCR2014_PR_J105.03

Literature Cited

Altstatt, J. 2003. Restoration of a historic eelgrass (*Zostera marina*) bed at Frenchy's Cove, Anacapa Island. Pages 397-404 *in* Garcelon, D.K. and C.A. Schwemm (eds.), Proceedings of the Sixth California Islands Symposium. National Park Service Technical Publication CHIS-05-01, Institute for Wildlife Studies, Arcata, CA

Bax, N., A. Williamson, M. Aguero, E. Gonzalez, and W. Geeves. 2003. Marine invasive alien species: a threat to global biodiversity. Marine Policy 27: 313-323

Bernstein, B., K. Merkel, B. Chesney, M. Sutula. 2011. Recommendations for a Southern California regional eelgrass monitoring program. Technical Report 632 to the Southern California Coastal Water Research Project. 45 p.

Dennison, W.C., R.J. Orth, K.A. Moore, J.C. Stevenson, V. Carter, S. Kollar, P.W. Bergstrom and R.A. Batiuk. 1993. Assessing water quality with submersed aquatic vegetation. Bioscience 43: 86-94

Engle, J.M. and K.A. Miller. 2005. Distribution and morphology of eelgrass (*Zostera marina* L.) at the California Channel Islands. Pages 405-414 *in*: Garcelon, D.K. and C.A. Schwemm (eds.), Proceedings of the Sixth California Islands Symposium. National Park Service Technical Publication CHIS-05-01, Institute for Wildlife Studies, Arcata, CA

Hastings, K., P. Hesp, and G.A. Kendrick. 1995. Seagrass loss associated with boat moorings at Rottnest Island, Western Australia. Ocean & Coastal Management 263: 225-246

Herbert, R.J.H., T.P. Crowe, S. Bray, and M. Sheader. 2009. Disturbance of intertidal soft sediment assemblages caused by swinging boat moorings. Hydrobiologia 625: 105-116

Hiscock, K., J. Sewell, and J. Oakley. 2005. Marine health check 2005. A report to gauge the health of the UK's sea-life. Godalming, WWF-UK. 79 p.

Jackson, E.L., A.A. Rowden, M.J. Attrill, S.F. Bossy, and M.B. Jones. 2002. Comparison of fish and mobile macroinvertebrates associated with seagrass and adjacent sand at St. Catherine Bay, Jersey English Channel: emphasis on commercial species. Bulletin of Marine Science 713: 1333-1341

Miller, K.A. and J.M. Engle. 2009. The natural history of *Undaria pinnatifida* and *Sargassum filicinum* at the California Channel Islands: Non-native seaweeds with different invasion styles. Pages 131-140 *in* Damiani, C.C. and D.K. Garcelon (eds.), Proceedings of the 7th California Islands Symposium. Institute for Wildlife Studies, Arcata, CA.

Ostendorp, W., T. Gretler, M. Mainberger, M. Peintinger, and K. Schmieder. 2008. Effects of mooring management on submerged vegetation, sediments and macroinvertebrates in Lake Constance, Germany. Wetlands Ecology and Management 175: 525-541

Otero, E. 2008. Characterization of mechanical damage to seagrass beds in La Cordillera Reefs Natural Reserve. Conservation and Management of Puerto Rico's Coral Reefs, Task CRI-10. 57p.

Riosmena-Rodríguez, R., G.H. Boo, J.M. López-Vivas, A. Hernández-Velasco, A. Sáenz-Arroyo, and S.M. Boo. 2012. The invasive seaweed *Sargassum filicinum* (Fucales, Phaeophyceae) is on the move along the Mexican Pacific coastline. Botanica Marina 55(5): 547-551

Shafer, D.J. 2002. Potential impacts to seagrasses from single-family residential dock structures in the Pacific Northwest. U.S. Army Corps of Engineers Report, Seattle, WA, 28 p.

Short, F. 2009. Eelgrass distribution in the Great Bay Estuary for 2008. The Piscataqua Region Estuaries Partnership. 7 p.

Walker, D.I., R.J. Lukatelich, G. Bastyan, and A.J. Mccomb. 1989. Effect of boat moorings on seagrass beds near Perth, Western Australia. Aquatic Botany 36:69–77

Williams, B. and C. Bechter. 1996. Impact of mooring buoy installations on eelgrass and macroalgae. Washington Department of Fish and Wildlife.

DEPARTMENT OF THE NAVY
NAVAL BASE VENTURA COUNTY
311 MAIN ROAD, SUITE 1
POINT MUGU, CA 93042-5033

IN REPLY REFER TO:

11010
Ser N0000CV/ 0105
January 23, 2014

Mr. Russell E. Galipeau, Jr.
Superintendent
Channel Islands National Park
1901 Spinnaker Dr.
Ventura, CA 93001

Dear Mr. Galipeau:

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE CHANNEL ISLANDS NATIONAL PARK GENERAL MANAGEMENT PLAN AND WILDERNESS STUDY

Thank you for the opportunity to review the draft Environmental Impact Statement (EIS) for the Channel Islands National Park General Management Plan and Wilderness Study. As a major landowner within the park, the Navy is greatly interested in the draft plan.

As you may know, Naval Base Ventura County (NBVC) includes three main operating areas: Point Mugu, Port Hueneme, and San Nicolas Island. NBVC is also responsible for thirteen "special areas," including Santa Cruz Island, San Miguel Island, and Prince Island, which are within the Channel Islands National Park boundary. The Navy leases land from the Nature Conservancy at Santa Cruz Island and has owned San Miguel Island and Prince Island since 1934. These "special areas" are within an operational range (Point Mugu Sea Range).

The Navy's comments on the draft EIS are included as an attachment to this letter. However, I do want to highlight two significant concerns:

1. Wilderness Designation at Santa Cruz Island. Wilderness designation of Navy real property at Santa Cruz Island would impact mission readiness and operations. We respectfully request that any Navy real property be removed from the proposed wilderness designations within the Channel Islands National Park.

2. Potential Unexploded Ordnance at San Miguel Island and Prince Island. The Navy and the Air Force used San Miguel Island and Prince Island intensively as targets for bombing and

shelling from 1942 to 1963, and then more sporadically until the early 1970's. In 1965, the Navy initiated a four-day ordnance sweep to remove ordnance from San Miguel Island. Since that time, shrapnel, ammunition and bomb casings continue to be found. The most recent finding was on January 14, 2014. The Navy is treating the object as potential unexploded ordnance until our explosive safety staff have completed an evaluation of the object and have determined the appropriate course of action.

Based on the potential risk, we ask that the National Park Service (NPS) address safety in the EIS, specifically for the alternatives at San Miguel Island and Prince Island. Although the NPS is at the EIS stage in its planning process, we also request that you reconsider your recommendations at San Miguel Island and Prince Island. We understand that the NPS consulted with the Navy in 2002 regarding this plan; however, over the last ten years, the Depart of Defense's requirements and policies for tracking and reporting unexploded ordnance and real property management have changed. NPS staff should meet with Navy staff to discuss safety; both parties should include staff with subject matter expertise in federal explosive and ordnance issues.

I regret that our comments may delay your planning process. However, I have shore installation management responsibility for Navy real property at Santa Cruz Island, San Miguel Island and Prince Island and I must thoroughly consider any proposal that could impact public safety on Navy property. If you have any questions or need additional information, my point of contact for this matter is Ms. Anna Shepherd, who may be reached at COMM: (805) 989-9752 or email: anna.shepherd@navy.mil.

L. R. VASQUEZ
Captain, U.S. Navy
Commanding Officer

Copy:
Greg Jarvis, Project Manager
National Park Service
Denver Service Center

California Coastal Commission

Author Information

Name:	Mark Delaplaine
Organization:	California Coastal Commission
Address:	45 Fremont St., Suite 2000 San Francisco, CA 94105-2219 USA
E-mail:	mdelaplaine@coastal.ca.gov

Correspondence Information

Date Sent: 12/03/2013	Date Received: 12/03/2013
Number of Signatures: 1	Form Letter: No

Correspondence Text

Page 436 of the Draft General Management Plan / Environmental Impact Statement currently out for public comment contains the discussion below with respect to coordination with our agency. We expect a cover letter notifying us when a federal agency includes a consistency determination and intends it to start the formal CZMA coordination/review process. If you intended this document to start the time clock (which is 60-75 days) for our review, please let us know that, and we will commence the clock when we receive such communication. Please be aware that we ideally would want to see the public's comments and your (at least tentative) responses before any scheduled Coastal Commission action on this plan.

Mark Delaplaine
Manager, Energy, Ocean Resources and Federal Consistency Division
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
Mark.Delaplaine@coastal.ca.gov

(415) 904-5289

STATE OF CALIFORNIA – THE NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

March 28, 2014 In reply refer to: NPS_2013_1125_002

Russell E. Galipeau, Jr., Superintendent
National Park Service
Channel Islands National Park
1901 Spinnaker Drive
Ventura, CA 93001-4354

Re: Draft General Management Plan / Environmental Impact Statement for Channel Islands National Park

Dear Mr. Galipeau:

Thank you for your November 20, 2013, letter initiating consultation regarding an undertaking at Channel Islands National Park. The National Park Service (NPS) is consulting with the State Historic Preservation Officer (SHPO) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulations at 36 CFR Part 800. Along with your consultation letter, you provided CDs containing the Draft General Management Plan (GMP) / Environmental Impact Statement (EIS) dated November 2013. Upon request, NPS also provided a hard copy of the same document.

The proposed undertaking as described, involves preparation of a long-term, comprehensive plan to define the overall management direction for the next fifteen to twenty years for Channel Islands National Park. Actions and management strategies envisioned in the GMP have the potential to affect historic properties. The GMP was developed concurrently with the NEPA document, the Draft EIS. NPS used an integrated NEPA – Section 106 process to comply with Section 106.

NPS identified Alternative 3 as the preferred alternative and requests the SHPO's concurrence that this alternative will have no adverse effect on historic properties. After reviewing the information submitted, the SHPO offers the following comments.

- The SHPO concurs that this action qualifies as a federal undertaking as defined in 36 CFR 800.
- No Area of Potential Effects (APE) is identified in the Draft GMP / EIS. Please provide an APE description and map. If the document already contains that information, please indicate where it can be found.
- It is understood that identification and evaluation efforts will continue during the period covered by the Draft GMP / EIS.
- At this time, the SHPO cannot concur with the proposed Finding of No Adverse Effects.
    - The Draft GMP / EIS contains an Impacts of Alternative 3 section beginning on page 376, and analysis of impacts on cultural resources begins on page 394.
    - Analysis of impacts under NEPA for Archeological Resources, Ethnographic Resources, Historic Structures / Buildings, and Cultural Landscapes all indicate some degree of adverse impacts.

- However, in each of these four categories, NPS states that, after applying the criteria for adverse effects, NPS concludes that Alternative 3 would "most likely be" or "would be" no adverse effect.
- While the SHPO recognizes the difference between environmental impacts under NEPA and assessment of effects under Section 106, no evidence or analysis is included to support a finding of no adverse effects.

- Besides providing the requested APE information, the SHPO recommends the following to conclude this consultation.
  - The Draft GMP / EIS should include clarifying language specifying that the Section 106 consultation and analysis it includes refers to the GMP only.
    - If the document already contains that information, please indicate where it can be found.
  - The Draft GMP / EIS should include language that describes the process by which NPS will consult under Section 106 for future undertakings, both for those envisioned by the GMP (like the ones included in Table 25) and for those not specified in the GMP.
  - This language should state that NPS will review these undertakings in accordance with the Servicewide PA or with the standard consultation process at 36 CFR 800.
    - If the document already contains that information, please indicate where it can be found.
  - Regarding Table 25, another recommendation is to specify that these 21 actions are not intended as a comprehensive list of future undertakings that will require consultation as described.

Thank you for seeking the SHPO's comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Mark Beason, Project Review Unit Historian, at (916) 445-4047 or mark.beason@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* **(916) 574-1810**
California Relay Service TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Contact Phone: **(916) 574-1900**
Contact FAX: **(916) 574-1885**

January 9, 2014

Channel Islands National Park
Attention: Greg Jarvis, Project Manager
Denver Service Center, Planning
12795 W. Alameda Parkway
Denver, CO 80225

Subject: Channel Islands National Park Draft General Management Plan/Wilderness Study Environmental Impact Statement (EIS), Channel Islands National Park, Ventura and Santa Barbara Counties, California

Dear Mr. Jarvis:

California State Lands Commission (CSLC) staff has reviewed the Draft EIS for the Channel Islands National Park Draft General Management Plan/Wilderness Study (Project) which is being prepared by the National Park Service (NPS). The NPS, as a public agency proposing to carry out a project on federal land, is the lead agency under the National Environmental Policy Act (NEPA). The CSLC is a trustee agency because of its trust responsibility for projects that could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters. Additionally, if the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion

or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

The Draft EIS for the Channel Islands National Park involves lands under lease to the NPS from the CSLC (Lease No. PRC 8390.9). This lease was authorized by the CSLC on June 18, 2002 and will expire on February 28, 2022.

Proposed Project and Project Location

The Draft EIS analyzes three alternatives for managing the Park's natural resources and facilitating visitors' recreational experience. Proposed actions for the Channel Islands could include road removal and restoration, building infrastructure for staff and visitors, controlling sediment, replacing piers, designating wilderness areas, and altering visitor access and activities. The proposed Project also includes an expanded visitor services and education center in Ventura Harbor on the mainland.

The Channel Islands, located offshore of Ventura and Santa Barbara Counties, are only accessible by watercraft or aircraft. Five islands comprise the land-based recreational use areas, including Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara Island.

CEQA

If it is determined that a specific proposed project requires a lease or permit from CSLC for activities on State sovereign lands, the lease or permit would require approval by the CSLC at a properly noticed public meeting, and as a discretionary action, would also require the CSLC to comply with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The State CEQA Guidelines provide a mechanism by which an EIS can be used by an approving agency if specified conditions are met (see generally §§ 15220-15225). With regard to circulation and public review of the document, pursuant to section 15225 of the State CEQA Guidelines, the CSLC may only use an EIS in place of an Environmental Impact Report if the federal lead agency circulated the EIS in accordance with CEQA and gave notice of the document's availability as specified in State CEQA Guidelines section 15087.

Because the CSLC is a state agency, when it acts as a lead agency under CEQA, it is required to circulate environmental documents through the State Clearinghouse at the Governor's Office of Planning and Research. Prior to the NPS's approval of a specific proposed project and before the CSLC can consider approval of a lease or permit, an Environmental Assessment (EA) or an EIS for a specific proposed project will need to be noticed and circulated in accordance with CEQA requirements. Please contact Mara Noelle at the contact information identified below for further assistance in meeting this requirement. With regard to CEQA's substantive requirements to avoid or mitigate

significant effects on the environment, CSLC staff has reviewed the Management Plan/Wilderness Study EIS for compliance with the conditions set forth in CEQA and the State CEQA Guidelines and provides the following comments.

Environmental Review

Cultural Resources

1. The EIS Chapter 1 introduction describing Special Mandates and Administrative Commitments, page 21, has a paragraph on CSLC management responsibilities. The CLSC requests this paragraph be revised to clarify that lands under CSLC jurisdiction are leased to the NPS under Lease No. PRC 8390.9. This CSLC lease was not issued to the California Department of Fish and Wildlife, as currently stated in the EIS.

2. Ownership and management of submerged archeological resources are discussed in various levels of detail in different sections in the EIS. For example, in Chapter 1, page 21, the EIS refers to consultation with State agencies, including actions that occur in submerged lands and where submerged cultural resources could be located.

   The statement on page 21 that the CSLC owns shipwrecks below the mean high tide line should be revised to state that the title to all abandoned shipwrecks, archaeological sites, and historic or cultural resources on or in the tide and submerged lands of California is vested in the State and under the jurisdiction of the CSLC. The CSLC would not have jurisdiction over all shipwrecks within the national marine sanctuary because the sanctuary's boundaries extend out 6 nautical miles while the State's jurisdiction extends only 3 nautical miles. The CSLC requests that the NPS consult with CSLC staff if any submerged cultural resources are discovered during construction for proposed projects and pier replacement, or inadvertently during normal or new Park operations and uses.

3. In Chapter 2, page 174, under Mitigative Measures, the EIS mentions coordination with the State regarding submerged marine resources; however, the CSLC is not referenced. The EIS should indicate that any submerged archaeological site or submerged historic resource remaining in state waters for more than 50 years is presumed to be significant and evaluate potential impacts to submerged cultural resources from proposed projects, including the replacement of two piers.

4. The statement on page 288 in Chapter 3, Affected Environment, beginning with, "The distinction between 'submerged' and 'terrestrial' resources..." should be revised to indicate that ownership of a resource that spans the boundary of the mean high tide line may be split between the CSLC and the NPS.

5. A statement on page 289 indicates that shipwrecks are vulnerable to pilfering. CSLC staff suggests that a statement be added that removing artifacts from shipwrecks is against both State and Federal law.

Thank you for the opportunity to comment on the Draft EIS. The CSLC staff supports continued and additional access to coastal resources on state sovereign lands.

Please send copies of future Project-related documents, including electronic copies of the Final EIS, when it becomes available, or refer questions concerning environmental review to Mara Noelle, Senior Environmental Scientist, at (916) 574-2388 or via e-mail at Mara.Noelle@slc.ca.gov. For questions concerning archaeological or historic resources under CSLC jurisdiction, please contact Senior Staff Counsel Pam Griggs at (916) 574-1854 or via email at Pamela.Griggs@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Grace Kato, Public Land Manager, at (916) 574-1227, or via email at Grace.Kato@slc.ca.gov).

Sincerely,

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
G. Kato, LMD, CSLC
M. Noelle, DEPM, CSLC
P. Griggs, Legal, CSLC
Shelli Haaf, Legal, CSLC

City of Ventura

Author Information

Name:	Jeffrey Lambert
Organization:	City of Ventura
Organization Type:	T - Town or City Government
Address:	PO Box 99 Room 133 Ventura, CA 93001 USA
E-mail:	jlambert@cityofventura.net

Correspondence Information

Date Sent: 01/17/2014	Date Received: 01/17/2014
Number of Signatures: 1	Form Letter: No
Contains Request(s): No	Type: Web Form

Correspondence Text

The City of Ventura expresses support for Alternative 3 of the Channel Islands National Park General Management Plan. As you may know, the City of Ventura adopted the 2013-2018 Economic Development Strategy in March 2013. Tourism, Retail, and Quality of Life is one of the six focus areas of the strategy, with a specific goal to collaborate with Channel Islands National Park to promote it as an international destination.

Alternative 3 would most likely result in more revenue-generating activity as a result of the expanded visitor center, enhanced educational programs, increased demand for island trips, increased retail sales, and higher occupancy rates at area hotels to accommodate out of town park visitors. It is also expected that this alternative would result in job creation for technical, educational, and service industries.

Furthermore, the City of Ventura supports the wilderness designation proposal to protect the unique and diverse ecosystems of the islands.

In addition to economic and environmental gains, the improving access to the park would also result in social benefits. The expansion of the Visitors Center would provide increased learning opportunities for those who cannot or do not wish to travel to the islands. The Channel Islands are a huge educational asset that should be better capitalized, particularly for workforce training and development and enhancing the science curriculum as local schools.

Alternative 3 suggests a growing partnership between the City of Ventura and the Channel Islands National Park. The City strongly supports strengthening a collaborative relationship with the National Park Service and is committed to being a partner in implementing this plan.

During the planning and implementation process, the City suggests collaboration with the Ventura Harbor to address increased parking and possible alternative modes of transportation to and from the Ventura Harbor.

SELECTED REFERENCES

Agenbroad, L.D.
1998 "New Pygmy Mammoth (*Mammuthus exilis*) Localities and Radiocarbon Dates from San Miguel, Santa Rosa, and Santa Cruz Islands, California." In *Contributions to the Geology of the Northern Channel Islands, Southern California*, edited by P.W. Weigand, Pp. 169-175. American Association of Petroleum Geologists, Pacific Section, MP 45.
2002 "New Localities, Chronology and Comparisons for the Pygmy Mammoth *(Mammuthus exilis)*: 1994-1998." In *Proceedings of the Fifth Channel Islands Symposium,* edited by H. Browne and H. Cheney. USDI-Mineral Management Service and the Santa Barbara Museum of Natural History. Vol. 2, pp. 518-524. Santa Barbara, CA.

Agenbroad, L.D., D. Morris, and L. Roth
1999 "Pygmy Mammoths *Mammuthus exilis* from Channel Islands National Park, California USA." In *Mammoths and Mammoth Fauna: Studies of an Extinct Ecosystem,* edited by G. Haynes, J. Klimowicz, and J.W.F. Reumer. Pp. 89-102. Deinsea 6.

Anderson, D.W.
1988 "Dose-response Relationship between Human Disturbance and Brown Pelican Breeding Success." *Wildlife Society Bull.* 16:340-345.

Anderson, D.W. and J.O. Keith
1980 "The Human Influence on Seabird Nesting Success: Conservation Implications." *Biol. Conserv.* 18:65-80.

Baird, P.
1993 "Birds." In *Ecology of the Southern California Bight: A Synthesis and Interpretation,* edited by M.D. Dailey, D.J. Reish, and J.W. Anderson, Pp. 541-603. University of California Press, Berkeley, CA.

Belnap, J.
1994 "Cyanobacterial-lichen Soil Crusts of San Nicholas Island" In *Abstracts, The Fourth California Islands Symposium: Update on the Status of Resources, March 23-24,1994,* edited by W.L. Halvorson and G.J. Maender. Santa Barbara Museum of Natural History. Santa Barbara, CA.

Braje, T.J., J.G. Costello, J.M. Erlandson, M.A. Glassow, J.R. Johnson, D.P. Morris, J.E. Perry, and T.C. Rick
2010 "Channel Islands National Park Archeological Overview and Assessment," edited by M.A. Glassow. Department of the Interior, National Park Service.

Brown, P.E.
1980 "Distribution of Bats of the California Channel Islands." In *California Islands. Proceedings of a Multidisciplinary Symposium.* Santa Barbara Museum of Natural History.

Brown, P.E., R. Berry, and C. Brown
1994 "Foraging Behavior of Townsend's Big-eared Bats (*Plecotus townsendii*) on Santa Cruz Island." In *The Fourth California Islands Symposium: Update on the Status of Resources* edited by W.L. Halvorson and G.J. Meander. Santa Barbara Museum of Natural History, Santa Barbara, CA.

Burkett, E.E., N.A. Rojek, A.E. Henry, M.J. Fluharty, L. Comrack, P.R. Kelly, A.C. Mahaney, and K.M. Fien
2003 "Report to the California Fish and Game Commission: Status Review of Xantus's Murrelet (*Synthliboramphus hypoleucus*) in California." Status Report 2003-01. California Dept. of Fish and Game, Habitat Conservation Planning Branch.

California Department of Fish and Game
2002 Special animals. CDF&G Natural Heritage Division, Natural Diversity Database. Available at: http://www.dfg.ca.gov/whdab/ spanimal.pdf.

California Department of Fish and Game, Marine Resources Division
2002 *Marine Protected Areas in NOAA's Channel Islands National Marine Sanctuary*. Final environmental document.
2005 *Final Market Squid Fishery Management Plan Environmental Document*. Available at: www.dfg.ca.gov/mrd/msfmp. (Accessed: March 14, 2005).

California Natural Resources Agency
2009 "Executive Summary. 2009 California Adaptation Strategy. A Report to the Governor of the State of California in Response to Executive Order S-13-2008." Available at: http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

California Ocean Protection Council
2011 "Resolution of the California Ocean Protection Council on Sea-Level Rise." Adopted on March 11, 2011. Available at: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/OPC_SeaLevelRise_Resolution_Adopted031111.pdf.

Carter, H.R., G.J. McChesney, D.L. Jaques, C.S. Strong, M.W. Parker, J.E. Takekawa, D.L. Jory, and D.L. Whitworth
1992 "Breeding Populations of Seabirds in California 1989-1991." Draft report to Minerals Management Service.

Carter, H.R., R.J. Young, G.J. McChesney, W.R. McIver, R.T. Golightly, and F. Gress
2004 "Breeding Colony Surveys of Brandt's Cormorants and Other Seabirds in California in 2003." Vol. 1. Draft report prepared for the U.S. Fish and Wildlife Service. Dixon, CA. (unpublished final report).

Carter, H.R., W.R. McIver, and G.J. McChesney
2008 Ashy Storm-Petrel (Oceanodroma homochroa). Pages 117-124 In: W.D. Shuford, and T. Gardali (eds.). California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies in Western Birds 1.

Cayan, D., M. Tyree, M. Dettinger, H. Hidalgo, T. Das, E. Maurer, P. Bromirski, N. Graham, and R. Flick
2009 Climate Change Scenarios and Sea Level Rise Estimates for California 2008 Climate Change Scenarios Assessment. California Climate Change Center. CEC–500–2009–014–F.

Collins, J.T.
1990 "Standard Common and Current Scientific Names for North American Amphibians and Reptiles." Herpetological Circular No. 19. Society for the Study of Amphibians and Reptiles.

Collins, P.W.
2009 "Historic and Prehistoric Record for the Occurrence of Island Scrub- jays (*Aphelocoma insularis*) on the Northern Channel Islands, Santa Barbara County, California." Santa Barbara Museum of Natural History Technical Reports. Number 5.

Diamond, J.M. and H.L. Jones
1980 "Breeding Landbirds of the Channel Islands." In *California Islands: Proceedings of a Multidisciplinary Symposium,* edited by D.M. Power. Pp. 597 –612. Santa Barbara Museum of Natural History, Santa Barbara, CA.

Drost, C.
2003 "Scorpion Ranch House Bat Assessment." Report prepared for National Park Service, Channel Islands National Park. USGS Southwest Biological Science Center, Colorado Plateau Field Station. Flagstaff, AZ.

Drost, C.A. and G.M. Fellers
1991 "Density Cycles in an Island Population of Deer Mice, *Peromyscus maniculatus*." *Oikos* 60:351-364.

Engelhard, G.H., A.N.J. Baarspul, M. Broekman, J.C.S. Creuwels, and P.J.H. Reijnders
2002 "Human disturbance, nursing behaviour, and lactational pup growth in a declining southern elephant seal (*Mirounga leonina*) population." *Canadian Journal of Zoology* 1886.11 (2002):1876-1886.

Fellers, G.M. and C.A. Drost
1991 "Terrestrial Invertebrate Monitoring Handbook." Channel Islands National Park. Ventura, CA. On file at Channel Islands National Park headquarters.

Fenn, D.B. and W.R. Allardice
1988 Soil and vegetation of Santa Barbara Island [Santa Barbara Co.], Channel Islands National Park, CA, USA. *Environm. Management* 12:109—118.

Forney, K.A., J. Barlow, M.M. Muto, M. Lowry, J. Baker, G. Cameron, J. Mobley, C. Stinchcomb, and J.V. Carretta
2000 "U.S. Pacific Marine Mammal Stock Assessments: 2000." U.S. Department of Commerce, La Jolla, CA. (NOAA Technical Memorandum NMFS-SWFSC-300) 276p. Available at: http://www.nmfs.noaa.gov/ prot_res/readingrm/MMSARS/ 2000PacificSARs.pdf.

Garcelon, D.K., C.C. Newman, Z. Nelson, M. Dennis, J. DePue, and G.A. Schmidt
2003 "Status of the Island Spotted Skunk on Santa Cruz and Santa Rosa Islands." Paper presented at 6th California Islands Symposium, December 1-3 2003. Ventura, CA.

Gonzalez, P., R.P. Neilson, J.M. Lenihan, and R.J. Drapek
2010 "Global Patterns in the Vulnerability of Ecosystems to Vegetation Shifts Due to Climate Change." *Global Ecology and Biogeography* 19: 755-768.

Gress, F.
1995 "Organochlorines, Eggshell Thinning, and Productivity Relationships in Brown Pelicans Breeding in the Southern California Bight." Ph.D. dissertation. Univ. of Calif., Davis.

Guthrie, D.A.
1980 Analysis of Avifaunal and Bat Remains from Midden Sites on San Miguel Island. In T*he California Islands: Proceedings of a Multidisciplinary Symposium*, edited by D.M. Power. pp. 703-717. Santa Barbara Museum of Natural History, Santa Barbara, CA.
1992 "A Late Pleistocene Avifauna from San Miguel Island, California." Natural History Museum Los Angeles County Science Series No. 36:317-327.
1993 "New Information on the Prehistoric Fauna of San Miguel Island, California." In the *Third California Islands Symposium: Recent Advances in Research on the California Islands,* edited by F. G. Hochberg.
1998 "Fossil Vertebrates from Pleistocene Terrestrial Deposits on the Northern Channel Islands, Southern California." In *Contributions to the Geology of the Northern Channel Islands, Southern California,* edited by P.W. Weigand. Pp. 187-192. American Association of Petroleum Geologists, Pacific Section, MP 45.

Guthrie, D.A., H.W. Thomas, and G.L. Kennedy
2000 "A New Species of Extinct Late Pleistocene Puffin (Aves: Alcidae) From the Southern California Channel Islands." In *Proceedings of the Fifth California Islands Symposium*, pp. 525-530.

Halvorson, W.L., D.B. Fenn, and W.R. Allardice
1988 "Soils and Vegetation of Santa Barbara Island, Channel Islands National Park, California, USA." *Environmental Management* 12(1):109-118.

Heberger, M., H. Cooley, P. Herrera, P. Gleick, and E. Moore
2009 "The Impacts of Sea-Level Rise on the California Coast." A paper from the California Climate Change Center. Available at: http://pacinst.org/reports/sea_level_rise/report.pdf.

Hochberg, F.G. Jr.
1979 "Invertebrate Zoology: Land Molluscs." In *Natural Resources Study of the Channel Islands National Monument, California*, edited by D.M. Power. Prepared for the National Park Service by the Santa Barbara Museum of Natural History. Santa Barbara, CA.

Howald, G.R., K.R. Faulkner, B. Tershy, B. Keitt, H. Gellerman, E.M. Creel, M. Grinnell, S.T. Ortega, and D.A. Croll
2005 "Eradication of Black Rats from Anacapa Island: Biological and Social Considerations." In *6th California Islands Symposium. December 1-3 2003. Ventura, California.* Edited by D.K. Garcelon and C.A. Shwemm. NPS Tech Pub CHIS-05-01. Institute for Wildlife Studies, Arcata, CA.

Hunt, G.L., Jr., R.L. Ptiman, and H.L. Jones
1980 "Distribution and Abundance of Seabirds Breeding on the California Channel Islands." In *The California Islands: Proceedings of a Multidisciplinary Symposium,* edited by D.M. Power. Pp. 443-459. Santa Barbara Museum of Natural History, Santa Barbara, CA.

Intergovernmental Panel on Climate Change (IPCC)
2007 *Climate Change 2007: The Physical Science Basis.* Cambridge University Press, Cambridge, UK.

Johnson, D.L.
1979 "Geology, Soils, and Erosion." In *Natural Resources Study of the Channel Islands National Monument, California*, edited by D.M. Power. Prepared for the National Park Service by the Santa Barbara Museum of Natural History. Santa Barbara, CA.

Johnson, N.K.
1972 "Origin and Differentiation of the Avifauna of the Channel Islands, California." *Condor* 74(3):295-315.

Johnson, S.R., J.J. Burns, C.I. Malme, and R.A. Davis
1989 (1989). Synthesis of information on the effects of noise and disturbance on major haulout concentrations of Bering Sea pinnipeds (OCS Study MMS 88-0092; NTIS PB89-191373). Anchorage: LGL Alaska Research Associates Inc. for U.S. Minerals Management Service. Available at: www.boemre.gov/alaska/reports/1980rpts/88_0092/88_0092a.pdf.

Jones, L., P. Collins, and R. Stefani
1989 "A Checklist of the Birds of Channel Islands National Park." Southwest Parks and Monuments Association, Tucson, AZ.

Junak, S., T. Ayers, R. Scott, D. Wilken, and D. Young
1995 *A Flora of Santa Cruz Island.* Santa Barbara Botanic Garden and California Native Plant Society.

Junak, S., S. Chaney, R. Philbrick, and R. Clark
1997 "A Checklist of Vascular Plants of Channel Islands National Park, 1997." Southwest Parks and Monuments Association, Tucson, AZ.

Koski, W.R., J.W. Lawson, D.H. Thomson, and W.J. Richardson
1998 "Point Mugu Sea Range Marine Mammal Technical Report." Department of the Navy, Naval Air Warfare Center, Weapons Division, Point Mugu, CA.

Kovach, S.D. and R.J. Dow
1985 "Island Fox Research, San Nicholas Island, Ventura County, California: 1984 Annual Report." Unpublished report to the California Department of Fish and Game.

Kroeber, A.L.
1925 Kroeber's Handbook of the Indians of California. Washington: Smithsonian Institution.

Lamb, S.
2000 Channel Islands National Park. Southwest Parks and Monuments Association, Tucson, AZ.

Landres, P., C. Barns, J.G. Dennis, T. Devine, P. Geissler, C.S. McCasland, L. Merigliano, J. Seastrand, and R. Swain
2008 "Keeping it Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System." USDA, Forest Service, Rocky Mountain Research Station. General Technical Report RMRS-GTR-212. Fort Collins, CO.

Largier, J.L., B.S. Cheng, and K.D. Higgason, ed.
2010 *Climate Change Impacts: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries*. Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils. Available at: http://farallones.noaa.gov/eco/climate/pdf/gfcb_climate_impacts_060310.pdf.

Laughrin, L.L.
1978 "Status Report on the San Nicolas Island Fox." University of California, Santa Barbara.

Livingston, D.S.
2000 "Draft Historic Resource Study, Channel Islands National Park." Prepared for the National Park Service. On file at park headquarters.

McChesney, G.J., H.R. Carter, and D.L. Whitworth
1995 Reoccupation and extension of southern breeding limits of Tufted Puffins and Rhinoceros Auklets in California. *Colon. Waterbirds* 18:79–90.

McChesney, G.J., F. Gress, H.R. Carter, and D.L. Whitworth
2000 "Nesting Habitat Assessment for Xantus's Murrelets and Other Crevice-nesting Seabirds at Anacapa Island, California, in 1997." Unpublished report. U.S. Geological Survey, Western Ecological Research Center, Dixon, CA, and Humboldt State Univ., Dept. of Wildlife, Arcata, CA.

McDonald, M.A., J.A. Hildebrand, and S.M. Wiggins
2006 "Increases in Deep Ocean Ambient Noise West of San Nicolas Island, California. *J. Acoust. Soc. Am.* 120(2):711-717.

McEachern, K.
1996 "Summary of Proposed Endangered Plant Data Collected on Santa Rosa Island by National Biological Service Staff and Collaborators, 1994-1996." USGS-NBS, Channel Islands Research Station, Ventura, CA.
2004 "Ecological Effects of Animal Introduction at Channel Islands National Park" *Park Science* 22(2): 46-52.

McEachern, K. and D. Wilken
1996 "Inventory and Monitoring of California Islands Candidate Plant Taxa — Final National Biological Service Report. Channel Islands National Park, California." USGS-NBS, Channel Islands Research Station, Ventura, CA.

McEachern, A., D. Thomson, and K. Chess.
2009 "Climate alters response of an endemic island plant to removal of invasive herbivores." *Ecological Adaptations* 19(6):1574-1584.

McEachern, K., D. Wilden, and K. Chess
1997 "Inventory and Monitoring of California Islands Candidate Plant Taxa." U.S. Geological Survey Open File Report 00-73. USGS-Biological Resources Discipline-Western Ecological Research Center, Sacramento, CA.

McKenna, M.F., M. Soldevilla, E. Oleson, W.S.M. Wiggins, and J.A. Hildebrand
2009 "Increased underwater noise levels in the Santa Barbara Channel from commercial ship traffic and its potential impact on Blue Whales (*Balaenoptera musculus*)." In *Proceedings of the Seventh California Islands Symposium. Institute for Wildlife Studies*, edited by C.C. Damiani and D.K. Garcelon. Institute for Wildlife Studies, Arcata, CA.

McKenna, M.F., S.L. Katz, S.M. Wiggins, D. Ross, and J.A. Hildebrand
2012 "A Quieting Ocean: Unintended Consequence of a Fluctuating Economy." *The Journal of the Acoustical Society of America* 132: EL169–75.

McMinn, H.E.
1951 *An Illustrated Manual of California Shrubs*. University of California Press, Los Angeles, CA.

Melin, S.R. and R.L. DeLong
1999 "Observations of a Guadalupe Fur Seal (*Arctocephalus townsendi*) Female and Pup at San Miguel Island, California." *Marine Mammal Science* 15(3):885-888.

Miller, S.E.
1979 "Invertebrate Zoology: Insects and Their Relatives." In *Natural Resources Study of the Channel Islands National Monument, California*, edited by D.M. Power. Prepared for the National Park Service by the Santa Barbara Museum of Natural History, Santa Barbara, CA.

Mitchell, T.D. and P.D. Jones
2005 "An Improved Method of Constructing a Database of Monthly Climate Observations and Associated High-Resolution Grids." *International Journal of Climatology* 25:693-712.

National Park Service, U.S. Department of the Interior
n.d. "The Island Night Lizard — A Unique Channel Islands Endemic." By G.M. Fellers and C.A. Drost. Unpublished report. On file on park headquarters.
1980a *General Management Plan, Anacapa, Santa Barbara, San Miguel Islands, Channel Islands National Park. Vol. 1. Visitor Use / Interpretation / General Development.* Denver Service Center, Denver, CO.
1980b *General Management Plan. Anacapa-Santa Barbara-San Miguel Islands, Channel Islands National Park. Vol. 2. Natural / Cultural Resource Management.* Denver Service Center, Denver CO.

1984 *Draft General Management Plan Supplement Environmental Assessment, Channel Islands National Park / California*. Denver Service Center. Denver, CO.
1991 "Statement for Management." Copy available at park headquarters.
1995a *Santa Rosa Island Development Concept Plan / Environmental Impact Statement*. Pacific West Field Area.
1995b "Inventory of Water Quality on Santa Rosa Island." Technical Report Number 95-07. On file at park headquarters.
1998 "Preliminary Hydrologic and Geomorphic Analysis: Scorpion Creek Flood. December 5, 1997. Santa Cruz Island, Channel Islands National Park, CA." Tech. Report NPS/NRWRD/ NRTR-98/172. Prepared by W.L. Jackson, Water Resources Div., Fort Collins, CO.
1999 "Resource Management Plan" Update. Available at: http://www.nps.gov/chis/rm/HTMLPages/RMP.htm.
2000 *Anacapa Island Restoration Project. Final Environmental Impact Statement*. Copy available at park headquarters.
2001a "Landbird Monitoring 1995-2000 Annual Report." Tech. Report 2001-03. Channel Islands National Park. On file at park headquarters. Available at: http://www1.nature.nps.gov/im/units/chis/PDFReports/Terrestrial/9500LBAnnl.pdf.
2001b "Status and Ecology of Deer Mice (*Peromyscus maniculatus* subsp.) on Anacapa, Santa Barbara, and San Miguel Islands, California. Summary of Monitoring 1992 – 2000," by C.A. Schwemm and T.J. Coonan. Tech. Report 01-02. On file at park headquarters.
2002a *Santa Cruz Island Primary Restoration Plan. Final Environmental Impact Statement*.
2002b "Island Fox Captive Breeding Program. 2001 Annual Report." Tech. Rept. 02-01. Prepared by T. Coonan and K. Rutz. Ventura, CA.
2003a "Recovery Strategy for Island Foxes (*Urocyon littoralis*) on the Northern Channel Islands." Prepared by T. Coonan. Ventura, CA.
2003b "Report for Travel to Channel Islands National Park During May 11-16, 2003." Unpublished report. Copy on file at park headquarters.
2006a "Assessment of Coastal Water Resources and Watershed Conditions at Channel Islands National Park, California." Prepared by D.L. Engle. Technical Report NPS/NRWRD/NRTR-2006/354. Water Resources Division, Natural Resource Program Center. Ft. Collins, CO.
2006b *Management Policies 2006*. Washington, DC.
2010 *National Park Service. Climate Change Response Strategy*. NPS Climate Change Response Program, Fort Collins, CO.
2011 "Climate Friendly Parks. Channel Islands National Park Action Plan." Available at: http://www.nps.gov/climatefriendlyparks/parks/CHIS.html.
2012 *Green Parks Plan*. Available at: www.nps.gov/greenparksplan.
n.d. "Biosecurity Protocols: Preventing the Introduction of Non-native Species to Channel Islands National Park." Unpub. paper. On file at park headquarters.
In process "Island Fox Recovery Program. Channel Islands National Park 2013 Annual Report." Natural Resource Report NPS/MEDN/NRR-2014. Prepared by T.J. Coonan, A. Guglielmino, and R. Shea. Ventura, CA.

National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service, National Park Service, California Dept. of Fish and Game, California State Lands Commission, California Dept. of Parks and Recreation
2002 *Feasibility Study for Reestablishment of Bald Eagles on the Northern Channel Islands, California. Environmental Assessment*. Montrose Settlements Restoration Program. Long Beach, CA.

The Nature Conservancy
2009 "Climate Stress Reports: Version 1.1. Northern Channel Islands — Last Great Place." Unpub. report.

NatureServe Explorer
2005 NatureServe Explorer, An Online Encyclopedia of Life (web application). Version 4.2 NatureServe, Arlington, VA. Available at: http://www.natureserve.org/explorer. Last accessed: January 24, 2005.

Naughton, I., M. Caterino, C. Hanna, and D. Holway
In process "Contributions to an Arthropod Inventory of Santa Cruz Island, California." In: "Proceedings from the 8th California Islands Symposium." Western North American Naturalist.

Office of National Marine Sanctuaries
2008 "Channel Islands National Marine Sanctuary Condition Report. 2009." U.S. Dept. of Commerce, National Oceanic & Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. Available at: http://sanctuaries.noaa.gov/science/condition/pdfs/cinms_conditionreport09.pdf.

Pinter, N. and W.D. Vestal
2005 "El Nino-drive Landsliding and Postgrazing Vegetative Recovery, Santa Cruz Island, California." *Journal of Geophysical Research,* Vol. 110, F02003.

Powell, J.A.
1994. Biogeography of Lepidoptera on the California Channel Islands. In The Fourth California Islands Symposium: Update on the Status of Resources.Santa Barbara, CA: Santa Barbara Museum of Natural History. pp. 449-464.

Power, D.M. (ed.)
1980a "Hydrology and Water Resources." In *The California Islands: Proceedings of a Multidisciplinary Symposium.* Santa Barbara Museum of Natural History, Santa Barbara, CA. Pp. 443-459.
1980b *Natural Resources Study of the Channel Islands National Monument, California*. Prepared for the National Park Service by the Santa Barbara Museum of Natural History. Santa Barbara, CA.

Roelke-Parker, M.E., L. Munson, C. Packer, R. Kock, S. Cleaveland, M. Carpenter, S.J. O'Brien, A. Pospischil, R. Hofmann-Lehmann, and H. Lutz
1996 "A Canine Distemper Virus Epidemic in Serengeti Lions (*Panthera leo*)." *Nature* 379(6564):441-5.

Rentz, D.C. and D.B. Weissman
1982. Faunal Affinities, Systematics, and Bionomics of the Orthoptera of the California Channel Islands. Vol. 94. Univ of California Press.

Rust, R., A. Menke, and D. Miller
1985. A Biogeographic Comparison of the Bees, Sphecid Wasps, and Mealybugs of the California Channel Islands (Hymenoptera, Homoptera). In Entomology of the California Channel Islands. Proceedings of 1st Symposium, Santa Barbara Museum of Natural History, Santa Barbara, CA. pp. 29-59.

Suryan, R.M. and J.T. Harvey
1999 Variability in reactions of Pacific harbor seals Phoca vitulina richardsi, to disturbance. Fishery Bulletin 97:332–339.

Thorne, R.F.
1967 "A Flora of Santa Catalina Island, California." *Aliso* 6(3):45.

U.S. Department of Agriculture, Natural Resources Conservation Service
2007 Soil survey of Channel Islands National Park, California. Available at: http://soils.usda.gov/survey/printed_surveys/.

U.S. Department of the Navy (U.S. Navy)
2002 "Final Natural Resources Summary Report. San Miguel Island." Naval Air Warfare Center Weapons Division, Point Mugu, CA.

U.S. Fish and Wildlife Service, U.S. Department of the Interior
1979 *Classification of Wetlands and Deepwater Habitats of the United States*. Office of Biological Services. FWS/OBS-79/31. Washington, DC.
1983 *The California Brown Pelican Recovery Plan*. Prepared for the U.S. Fish and Wildlife Service by F. Gress and D.W. Anderson. Portland, OR.
1995 "Biological Opinion for the Effects of Park Activities on Western Snowy Plovers and Brown Pelicans at Channel Islands National Park, California (1-8-94-F-32)." Memorandum from the Acting Field Supervisor, Ventura Field Office. On file at park headquarters.
2000 *Thirteen Plant Taxa from the Northern Channel Islands Recovery Plan*. Prepared by T. Thomas. Portland, OR.
2001 *Western Snowy Plover* (Charadrius alexandrinus nivosus) *Pacific Coast Population Draft Recovery Plan*. U.S. Fish and Wildlife Service, Region 1. Portland, OR.
2005 *Regional Seabird Conservation Plan, Pacific Region*. Migratory Birds and Habitat Programs, Pacific Region. Portland, OR.

U.S. Geological Survey (USGS), U.S. Department of the Interior
2005 "Relative Coastal Vulnerability Assessment of Channel Islands National Park (CHIS) to Sea-Level Rise." USGS Open File Report 2005-1057. Prepared by E. Pendleton, E. Thieler, and S. Williams. Available at: http://pubs.usgs.gov/of/2005/1057/images/pdf/chis.pdf.

University of Idaho, College of Natural Resources
n.d. "Channel Islands National Park 2013 Visitor Survey Card Data Report." Report. No. CHIS713. Unpubl. report, on file at park headquarters.

Valentine, J.W. and J.H. Lipps
1963 "Late Cenozoic Rocky-shore Assemblages from Anacapa Island, California." *Journal of Paleontology* 37:1292-1302.

Van Vuren, D. and B.E. Coblentz
1989 "Population Characteristics of Feral Sheep on Santa Cruz Island." *J. Wildlife Management* 53:306-313.

Von Blocker, J.C. Jr.
1967 "The Land Mammals of the Southern California Islands." In *Proceedings of the Symposium on the Biology of the California Islands,* edited by R.N. Philbrick. Santa Barbara Botanic Garden, Santa Barbara, CA.

Warzybok, P. and R.W. Bradley
2008 "Population size and reproductive performance of seabirds on Southeast Farallon Island, 2008." Unpub. report to U.S. Fish and Wildlife Service. PRBO Conservation Science, Petaluma.

White, J.A.
1966 "A New *Peromyscus* from the Late Pleistocene of Anacapa Island, California, with Notes on Variation in *Peromyscus nesodytes*." Los Angeles County Museum Contributions in Science No. 96:1-8.

Wilken, D.
1996 "Reproductive Strategies of Four Plants Restricted to the Northern Channel Islands." Report prepared by the Santa Barbara Botanic Garden for the U.S. Fish and Wildlife Service. Santa Barbara, CA.

Wilkinson R.
2002 "Preparing for a Changing Climate. The Potential Consequences of Climate Variability and Change for California." A Report of the California Regional Assessment Group for the U.S. Global Change Research Program. Available at: http://www.ncgia.ucsb.edu/pubs/CA_Report.pdf.

Wilson, R.W.
1936 "A New Pleistocene Deer-mouse from Santa Rosa Island." *Journal of Mammalogy* 17:408-410.

PREPARERS

CORE PLANNING TEAM

Denver Service Center, National Park Service

Steve DeGrush, Natural Resource Specialist. B.S. Natural Resources and M.S. Land Use Planning and Community Development. 4 years with the National Park Service. Contributed to the financial planning overview section of the plan.

Tom Gibney, Landscape Architect. B.A. Classical Civilizations, M.L.A. Landscape Architecture, certificate in historic preservation. 2.5 years with the National Park Service. Worked on development concept planning and site design for Scorpion Valley, Prisoners Harbor, and Bechers Bay in the alternatives chapter (now project manager).

Gregory Jarvis, Natural Resource Specialist. B.S. Geology. 24 years with the National Park Service. Project Manager. Overall responsibility for preparation of the plan.

Carrie Miller, Cultural Resource Specialist. B.S. and M.Arh. Architectural History. 4 years with the National Park Service, 7 years in cultural resource management in the private sector. Responsible for addressing comments on impacts analysis of cultural resources.

Michael Rees, Natural Resource Specialist. B.A. Environmental Studies and M.F.S. Forest Science. 22 years with the National Park Service. Responsible for writing the description of the park's natural resources and wilderness character, assessing impacts on these resources, and writing the floodplain statement of findings.

Harlan Unrau, Cultural Resource Specialist. B.A. and M.A. History. (retired) 33 years with the National Park Service. Responsible for writing the description of the park's cultural resources and initially assessing impacts on these resources.

Terri Urbanowski, Landscape Architect. M.L.A. Landscape Architecture. 21 years with the National Park Service. Worked on development concept planning and site design for Scorpion and Prisoners Harbor areas in the alternatives chapter.

Harper's Ferry Center, National Park Service

Paul Lee, Interpretive Planner. B.S. Education/Biology, M.S. Plant Ecology (retired). 41 years with the National Park Service. Responsible for writing the description of the park's visitor use and assessing impacts on visitor uses and experiences.

Channel Islands National Park

Rhonda Brooks, Chief of Transportation (no longer with the park). B.A. Geography. 19 years with the National Park Service. Involved in development of alternatives for the general management plan and in addressing island transportation concerns and needs in the plan.

Kate Faulkner, Chief of Natural Resources Management. B.S. and M.S. Natural Resources Management. 33 years with the National Park Service. Involved in development of alternatives for the general management plan and in addressing natural resource concerns, needs, and impacts in the plan.

Jack Fitzgerald, Chief Park Ranger (retired). B.A. Communication Arts. 30 years with the National Park Service. Involved in development of alternatives for the general management plan, and in addressing visitor protection needs, concerns, and impacts in the plan.

Russell Galipeau, Superintendent. B.S. Forest Resource Conservation. 32 years with the National Park Service. Responsible for providing overall management and oversight for all aspects of the plan, including development of the alternatives and selection of the preferred alternative.
Tim Glass, Facilities Manager. B.S. Business Management (retired). 23 years with the National Park Service. Involved in development of alternatives and in addressing facility costs, concerns, needs, and impacts in the plan.
Ann Huston, Chief of Cultural Resources Management. (retired) B.A. Social Science, M.A. Historic Preservation. 33 years with the National Park Service. Involved in development of alternatives and in addressing cultural resource concerns, needs, and impacts in the plan.
Yvonne Menard, Chief of Interpretation. B.A. Interpretation of Natural and Cultural History. 32 years with the National Park Service. Involved in development of alternatives and in addressing visitor use and interpretive needs, concerns, and impacts in the plan.
Cathy Schwemm, Wildlife Biologist (GIS Specialist) (no longer with the National Park Service). B.S. and M.S. Wildlife Biology. 22 years with the National Park Service. Involved in development of alternatives and in GIS mapping).

Publication Services, NPS Denver Service Center

Christy Fischer, Editor (retired)
Glenda Heronema, Visual Information Specialist (retired)
Lori Yokomizo, Web Developer

OTHER CONTRIBUTORS AND CONSULTANTS

Denver Service Center

Rick Alesch, former Project Manager
Kerri Cahill, Branch Chief
Tamara Delaplane, Project Specialist (Landscape Architect)
Pam Holtman, Cultural Resource Specialist (now with WASO Park Planning and Special Studies)
Barbara J. Johnson, Chief of Planning
Dave Kreger, Branch Chief
Charles Notzon, Outdoor Recreation Planner
Megan Truebenbach, Landscape Architect

Pacific West Region

Keith Dunbar, Chief of Planning (retired)
Ray Murray, Chief Partnership Program
Alan Schmierer, Environmental Protection Specialist
Trystan Stern, Chief of Concessions
Stephanie Toothman, Chief of Cultural Resources (now in Washington, D.C.)

Channel Islands National Park

David Ashe, Chief Ranger
Karl Bachman, Facility Manager
Trish Buffington, Budget Officer
Sarah Chaney, Vegetation Biologist
Tim Coonan, Terrestrial Biologist
Gary Davis, Research Scientist (retired)
Tom Dore, Interpretive Ranger (no longer with the National Park Service)
Georganna Hawley, Archeologist (no longer with the National Park Service)
Paige Martin, Seabird Biologist (now with U.S. Fish and Wildlife Service)
Steve Ortega, Natural Resource Specialist (now with Golden Gate National Recreation Area)
Dan Richards, Marine Biologist (retired)
Dirk Rodriquez, Botanist

NPS Natural Resource Program Center, Water Resources Division

Kevin Noon, Natural Resource Specialist (Wetlands)
Gary Smillie, Hydrologist

NPS Natural Resource Program Center, Geologic Resources Division

Pete Biggam, Soil Scientist (no longer with the Park Service)
Greg McDonald, Paleontologist (now NPS Senior Curator of Natural History)

U.S. Geological Survey, Biological Resources Division

Kathryn McEachern, Senior Plant Ecologist

Natural Resource Conservation Service, U.S. Department of Agriculture

Daniel Johnson, Soil Scientist Project Leader (Monroe, Louisiana)

Private Consultants

Dornbush Associates
Jason Bass, Principal (socioeconomic analysis)

ERO Resources Corporation
David Hesker, Graphics Consultant
Kay Wall, Editorial Consultant

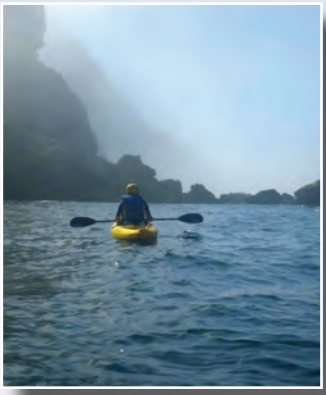
INDEX

adaptive management, 32, 444
air quality, 217, 433
American Indian, xvii, 178, 228, 273, 332, 361, 395, 418, 420, 427, 440, 447, 493
archeology, 4, 177, 225, 282, 420, 440, 441
campers, 55, 56, 88, 132, 185, 401
campground, ix, 26, 42, 47, 53, 55-57, 61, 64, 65, 73, 81, 83, 85, 86, 88, 92, 95, 99, 101-105, 113, 114, 124, 126, 129, 132, 136, 139, 144, 147, 148, 150-152, 159-161, 170, 172, 185, 191-193, 195, 197, 202, 208, 227, 235, 293,296, 298, 300, 302, 335, 337, 339, 342, 343, 345, 349, 350, 352, 360, 367, 368, 372, 375-377, 379, 383, 384, 393, 398, 400, 401, 403, 405, 415-417, 451, 452, 471-473, 474
camping, ix, 5, 6, 7, 37, 38, 42, 45, 52, 53, 61, 62, 64, 65, 73, 81, 88, 89, 98, 99, 103-105, 113-115, 123, 124, 126, 128, 132, 144, 149-151, 159, 160, 169, 170, 172, 177, 181, 185, 187, 188, 190, 191, 193, 197, 227, 265, 279, 293, 296-298, 302, 361, 371, 395, 401, 404, 416, 429, 447, 449, 472, 474
carrying capacity, 41, 364, 398
cultural resources, v, xii-xvi, xix, 3, 4, 9, 12, 15, 17-22, 28, 31, 35, 37-39, 50, 51, 53, 54, 57, 58, 61, 64, 73, 86, 89, 93, 96, 98, 101, 102, 113, 129, 130, 133, 135, 137, 140, 143, 147, 148, 159, 174, 177, 179, 182-184, 192, 225, 272, 281, 282, 284, 287-290, 293, 299-301, 305, 312, 313, 318, 319, 331-335, 338, 341, 361-364, 366, 368, 371, 394-399, 402, 405, 415, 416, 427, 433, 438, 440, 444, 449, 451, 487, 488
endangered species, xx, 22, 216, 221, 222, 270, 415, 419, 436, 447, 468
environmental justice, 228
erosion, 5, 28, 91, 135, 174-176, 199, 214, 229, 230, 231, 233, 234, 241, 246, 248, 262, 268, 278, 284, 286, 288, 296, 308, 320, 321, 324, 332, 340, 342-344, 346, 351, 362, 374, 376-378, 380, 384, 385, 395, 408, 425, 429, 430, 432, 473, 481
ethnographic resources, vii-ix, 17, 51, 73, 86, 87, 129, 130, 178, 183, 206, 226, 291, 312, 313, 333, 334, 363, 396, 397, 405, 416, 438, 440
fire, 57, 104, 105, 152, 177, 247, 249, 264, 267-270, 280, 290, 300, 323, 328-330, 332, 340, 349, 350, 357, 358, 383, 384, 391, 392, 415, 430, 447
fishing, 16-18, 21, 22, 29, 37, 38, 39, 42, 220, 222, 227, 255, 272, 273, 277, 285-288, 293, 294, 318, 326, 354, 388, 447, 449
flooding, vii, 101, 147, 175, 201, 215, 219, 227, 235, 237, 247, 262, 309, 322, 323, 347, 348, 367, 381, 382, 401, 434, 435, 440, 471-474
floodplains, viii, ix, 26, 64, 66, 101, 104-106, 147, 150-152, 175, 192, 194, 201, 215, 219, 235, 237, 238, 309, 310, 322, 323, 341, 347, 348, 374, 375, 381, 382, 408, 409, 435, 449, 471, 472-474, 487
floods, 64, 85, 101, 104, 105, 129, 150, 151, 175, 176, 192, 193, 201, 235, 236, 262, 290, 309, 345, 348, 382, 435, 443, 471-475, 484
fundamental resources and values, 12, 15, 16, 36, 93, 137
hiking, 6, 7, 37, 38, 45, 52, 55, 56, 61, 64, 73, 81, 83, 88, 91, 98, 103, 105, 113, 115, 123, 126, 132, 135, 144, 149, 151, 159-161, 169, 172, 190, 196, 227, 265, 270, 293, 296, 297, 302, 349, 352, 371, 383, 386, 404, 447
interpretation, xiii, xiv, xv, xvi, 3, 18, 37, 38, 39, 54, 57, 58, 64, 89, 93, 95, 113, 133, 136, 137, 139, 159, 191, 193, 208, 227, 292, 294, 300, 301, 315, 316, 336, 337, 364, 366-369, 398-403, 427, 432, 438, 441, 442, 446, 452, 455, 478, 483, 488
invasive species, 38, 39
mitigation measures, 35, 175, 177, 178, 220, 251, 307, 328, 346, 348, 356, 358, 380, 382, 390, 392, 435, 471, 473, 474
National Environmental Policy Act, vii, xv, xx, 3, 14, 29, 177, 181, 183, 184, 217, 225, 226, 228, 305, 312, 317, 414, 415, 446
National Historic Preservation Act, xvi, xx, 22, 23, 24, 177, 225, 226, 291, 312, 413, 438, 440
National Register of Historic Places, xv, 5-7, 86, 129, 177, 178, 181, 183, 207, 225, 272, 274, 280, 282, 284, 285, 289-291, 312-315, 331, 334, 335, 361, 363-365, 395, 397-399, 413, 438, 440, 441, 447, 472

Native American, xvii, 15, 19, 22, 31, 51, 86, 87, 130, 178, 226, 278, 291, 332, 333, 361, 395, 413, 427, 440
natural resources, vii, viii, xii-xvi, 3, 28, 37, 38, 50, 58, 61, 64, 73, 81, 83, 86, 93, 94, 98, 101, 113, 123, 126, 129, 137, 138, 143, 147, 159, 169, 172, 174, 181, 183, 213, 215, 224, 229, 248, 262, 263, 286, 290, 300, 301, 305-307, 320, 340, 342, 351, 360, 374, 376, 394, 408, 418, 427, 429, 430, 435, 440, 479, 481, 483, 485, 487, 493
nonnative species, 11, 17, 176, 202, 215, 238, 242, 244, 247-249, 260, 261, 264, 320, 324, 325, 339, 349, 351, 371, 374, 383, 385, 386, 405, 408, 427, 429, 430, 434, 436
Section 106, xvi, 177, 183, 206, 207, 225, 226, 312-315, 333-335, 362-364, 366, 396-399, 413
soils, xv, 174, 186, 199, 214, 218, 229, 230, 231, 232, 237-243, 254, 260, 268, 272, 308, 320, 321, 341-344, 347, 348, 374, 376-378, 381, 382, 408, 429, 430, 433, 481, 485
soundscapes, vii-ix, xv, 17, 18, 205, 216, 270, 271, 297, 307, 308, 311, 330, 331, 359-361, 393, 394, 408, 434, 437
sustainability, 32, 443, 444
threatened and endangered species, vii-ix, xv, xvii, 21, 31, 42, 176, 204, 213, 216, 221, 263, 307, 308, 310, 328, 339, 356, 357, 371, 389, 391, 405, 414, 415, 427, 430, 436, 464
trails, 6, 7, 65, 88, 103, 105, 113-115, 123, 126, 132, 149, 151, 159, 161, 169, 172, 174, 197, 264, 268, 270, 299, 316, 328, 356, 367, 390, 400, 416, 417, 435, 477
user capacity, xi-xiv, 3, 41, 52, 53, 61, 65, 73, 81, 83, 86, 88, 89, 99, 105, 115, 124, 126, 129, 132, 144, 151, 161, 170, 172, 181, 183, 189, 217, 298, 357, 368, 372, 391, 402, 406
vegetation, vii-ix, 7, 27, 38, 51, 81, 87, 101, 102, 106, 123, 130, 147, 148, 152, 169, 174-176, 182, 183, 186, 202, 207, 214, 215, 220, 223, 229-234, 236-248, 250, 251, 253-255, 260, 261, 264, 266-268, 270, 277, 290, 293, 295, 296, 308, 310, 318, 320, 323-331, 335, 340, 341, 347-353, 355, 357, 358, 360, 365, 374, 381-387, 389, 391, 392, 394, 398, 408, 415, 416, 429, 430, 433, 444, 471, 480, 481, 489
visitor experience, v, vii-ix, xvi, 3, 11, 16-18, 26-28, 35-37, 41-45, 59, 88, 105, 115, 128, 131, 151, 161, 185, 190, 206, 208, 215, 216, 227, 305, 315, 316, 336, 337, 341, 363, 366-369, 374, 395-397, 399-403, 408, 434, 437, 442, 443, 449
water quality, vii-ix, xv, 21, 174, 200, 214, 220, 222, 223, 233-235, 246, 307-309, 321, 322, 326, 340, 345-348, 354, 379-382, 388, 413, 415, 427, 433, 434, 447, 483
water quantity, 218
wetlands, viii, 101, 147, 175, 201, 202, 214, 219, 236, 237, 242, 245, 310, 323, 347-349, 351-353, 359, 381, 382, 387, 393, 408, 436, 449
wilderness, i, iii, v-ix, xi-xviii, 3, 12, 14, 23, 25, 26, 29, 31, 32, 35-37, 46-48, 50, 52, 57, 64, 73, 85-87, 98, 103, 113, 123, 126, 128-131, 143, 149, 159, 169, 172, 183, 190-192, 194, 196-198, 206, 209, 227, 295-297, 299, 300, 305, 306, 316, 317, 338, 339, 343, 345, 346, 348, 351, 354, 357, 360-363, 367, 370-373, 377, 379, 380, 382, 385, 388, 391, 394-396, 400, 403-406, 419, 425, 442, 446, 447, 482, 487
wildlife, vii-ix, xv, xvii, xx, 6, 7, 15-17, 19-21, 27-30, 32, 48, 52, 58, 61, 64, 83, 88, 98, 103, 113, 126, 132, 144, 149, 159, 172, 174, 176, 177, 183, 190, 197, 203, 213-216, 220, 227, 234, 249, 250-253, 257-259, 261-264, 266-270, 293-296, 298, 301, 308, 310, 311, 325-328, 338, 340, 352-357, 361, 369, 374, 386-390, 395, 403, 408, 413-415, 418, 419, 427, 429, 430, 434, 436, 437, 444, 449, 452, 453, 462, 464, 478, 479, 481-486, 488, 489, 493

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-CHIS/159/127684A 2015 This document was printed on recycled paper.

National Park Service
U.S. Department of the Interior

Channel Islands National Park
1901 Spinnaker Dr.
Ventura, CA 93001