FINAL ENVIRONMENTAL STATEMENT

Acquisition

San Francisco Bay National Wildlife Refuge

California

Not in file

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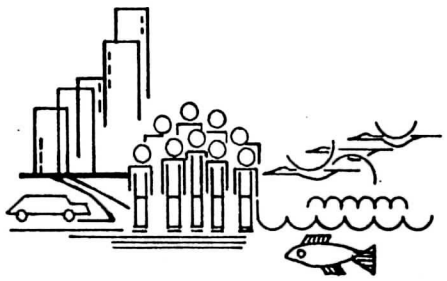


FINAL ENVIRONMENTAL STATEMENT

Acquisition
San Francisco Bay
National Wildlife Refuge
California

DEPARTMENT OF THE INTERIOR

FINAL

ENVIRONMENTAL STATEMENT

FES 77-23

ACQUISITION
OF LANDS FOR THE
SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE
CALIFORNIA

PREPARED BY

U. S. FISH AND WILDLIFE SERVICE

DEPARTMENT OF THE INTERIOR

WASHINGTON, D. C.

Lynn A. Greenwalt

Director

SUMMARY

FINAL ENVIRONMENTAL STATEMENT

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE, REGION I

1. Type of Action: (X) Administrative ( ) Legislative

2. Brief Description of Action: Federal Government proposes to acquire approximately 23,000 acres of land in the south San Francisco Bay region, Alameda, San Mateo and Santa Clara Counties, to be included in a national wildlife refuge for protection of fish and wildlife and to provide opportunities for wildlife oriented recreation and nature study within the open space so provided. As part of this proposal, certain acquired salt ponds would be reserved to the Leslie Salt Company under an easement agreement with the right to continue producing salt therein by the solar evaporation process.

3. Summary of Environmental Impacts: The principal impact would be the preservation of natural values of the bay with emphasis on protection for wildlife. Related benefits would be the provision of wildlife oriented public recreation and education. Other impacts relate to possible loss of direct tax revenues, support of existing restrictions on development opportunities and regulation of personal activities.

4. Alternatives Considered:

   A. Alternative A - No Action

   B. Alternative B - Original Proposed Boundary (21,662 acres)

   C. Alternative C - Irregular Boundary (22,000 acres)

   D. Alternative D - Expand Acquisition Proposal (36,500 acres)

   E. Alternative E - Salt Production with Leaseback

   F. Alternative F - No Salt Production - Return to Marsh

5. Comments Have Been Requested From the Following:

* Advisory Council on Historic Preservation
  Department of Agriculture
  Department of Commerce
* Department of Defense
  Department of the Interior
    * Bureau of Indian Affairs
    * Bureau of Land Management
    * Bureau of Mines
    * Bureau of Outdoor Recreation
    * Bureau of Reclamation
    * National Park Service
    * U.S. Geological Survey
* Department of Transportation
* Environmental Protection Agency
  Pacific Flyway Council
* California State Clearinghouse
  (For complete list see Page IX-1)

6. Date Statement Submitted to CEQ and Notice of Availability Sent to the Federal Register:

Draft Statement: 9/15/76

Final Statement: JUNE 29 1977

* Comments received and appended.

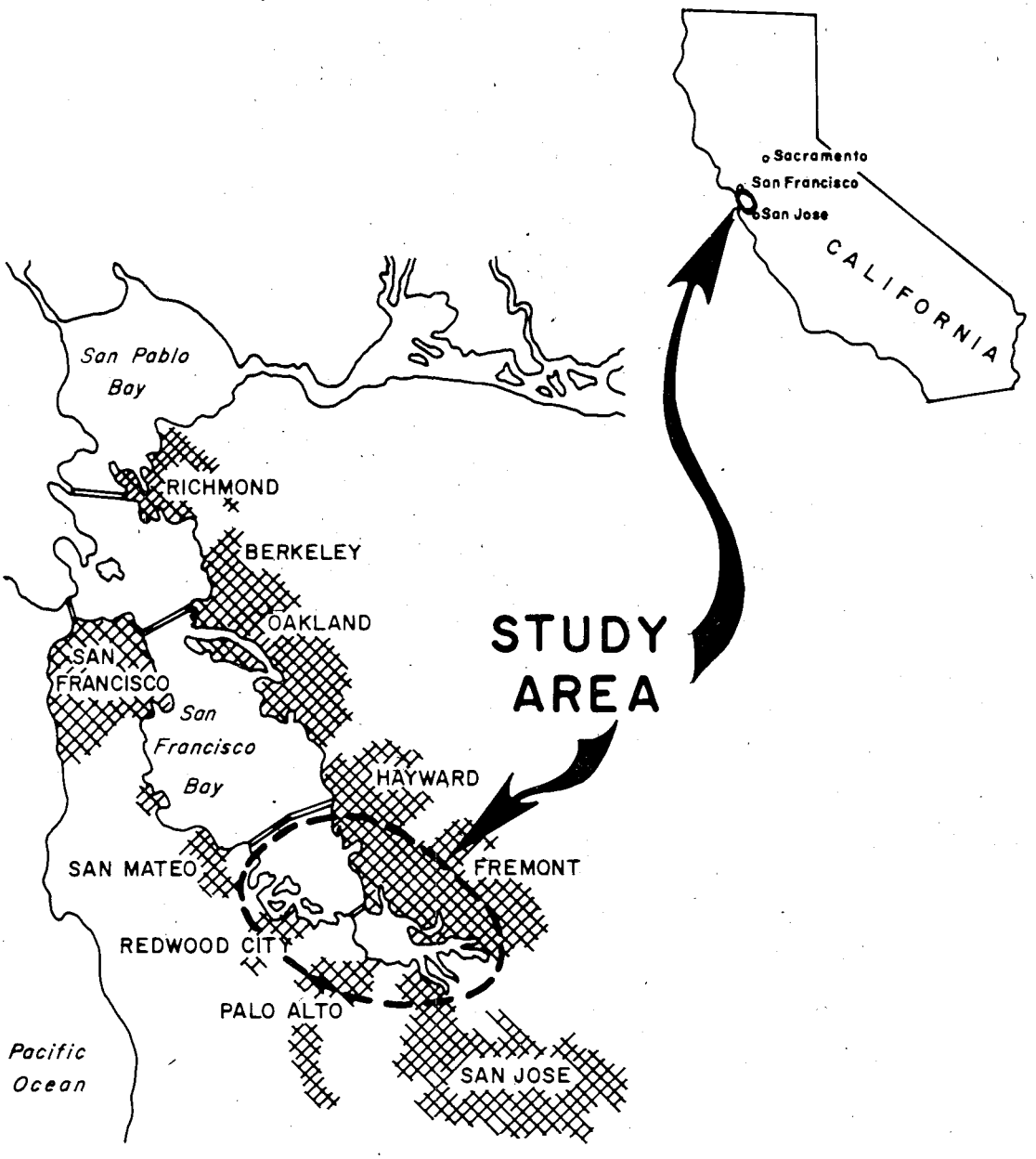


Figure 1. General Study Area, San Francisco Bay National Wildlife Refuge

TABLE OF CONTENTS

77

Page

FIGURES (Continued)

TABLES

Page

TABLES (Continued)

The Proposed Action

ENVIRONMENTAL IMPACT STATEMENT

LAND ACQUISITION

SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE

I. GENERAL DESCRIPTION AND HISTORY OF THE PROPOSAL

The United States Fish and Wildlife Service proposes to acquire approximately 23,000 acres in south San Francisco Bay for the purpose of protecting and preserving associated fish and wildlife and other natural values of the area. The acquired acreage would become a unit of the National Wildlife Refuge System.

In 1972, Congress passed PL 92-330 which directed action toward formation of the San Francisco Bay National Wildlife Refuge. Its primary objective would be to acquire and administer the area for the preservation and protection of critical habitat and associated wildlife, including species known to be threatened with extinction, and to provide opportunity for wildlife oriented recreation and nature study in the open space so preserved.

This statement is in compliance with the National Environmental Policy Act of 1969, 83 Stat. 852, 42 U.S.C., which requires such declarations when actions of significant environmental effect are proposed. As a land acquisition statement, it addresses subsequent development and operation only insofar as they relate to the proposed change of ownership. These activities would be addressed in a future environmental assessment. When it is acquired, the refuge would be operated in accordance with legislation, Executive Orders and policies (Appendix 5) applicable to the System. These provide controls necessary to assure fulfillment of primary objectives. For example, activities such as photography and hiking would not be permitted at times and places where disturbance to endangered species would result.

A. Project Location

San Francisco Bay is situated in the Coast Range of mountains which lie along the western edge of California. It is one of the nation's major estuaries, approximately 55 miles long and ranges in width from 3 to 12 miles. Its watershed (excluding the Sacramento and San Joaquin Rivers) covers 3,500 square miles, while the 9-county 1/ bay area totals nearly 7,000 square miles.

1/ Alameda, San Mateo, Santa Clara, Marin, Sonoma, Solano, Contra Costa, Napa and San Francisco.

The proposed project is located in south San Francisco Bay, in Alameda, San Mateo and Santa Clara Counties, extending from near the San Mateo-Hayward Bridge to the extreme south end of the bay (Figure 2).

B. Project History

The substantial fish and wildlife values of San Francisco Bay have long been recognized by resource agencies. In the 1960's, interest and concern for the future of the bay intensified in both the public and private sectors. Early in 1968, a cross-section of environmentally concerned citizens formed the South San Francisco Baylands Planning, Conservation, and National Wildlife Refuge Committee. The committee, which was formed for the purpose of studying the resources and problems of south San Francisco Bay, recommended the establishment of a national wildlife refuge as an important step in preserving remaining natural resources in this portion of the estuary.

High interest in and support for the refuge proposal ultimately resulted in the enactment of Public Law 92-330 on June 30, 1972. This Act (Appendix 1) authorized and directed the Secretary of the Interior to establish a refuge not to exceed 23,000 acres in south San Francisco Bay by June 30, 1977. Further, it authorized a refuge composed of four units (Mowry Slough, Fremont, Greco Island and Alviso) and placed a ceiling of $9,000,000 on acquisition costs. An important provision of the Act authorized the Secretary, "...from time to time to make corrections in the boundaries of the refuge..." (as depicted on the map entitled Proposed Action - San Francisco Bay National Wildlife Refuge, Figure 2).

C. Specific Proposal

The purpose of the proposal is to:

1. Preserve and maintain wildlife habitat necessary to support sizable populations of migratory wildlife and indigenous waterfowl, fauna such as the harbor seal, terns, herons, egrets, stilts, avocets and snowy plovers. Typical flora includes algae, diatoms, cordgrass, pickleweed, saltgrass, other grass and coyote bush.

2. Protect and enhance habitat for threatened species of wildlife. They include the salt marsh harvest mouse, California clapper rail, California least tern, brown pelican and peregrine falcon.

3. Provide opportunities for wildlife and ecological studies, environmental education, and wildlife interpretation. This would require development of programs and facilities to accommodate many of the 600,000 school children of the surrounding area. Walkways, contact stations, interpretive material and staffing are included in concept planning.

4. Maintain open space, open water, marsh, and tidal mudflats for public enjoyment. Habitat manipulation would be minor except in situations where reversion to natural marsh is feasible. Appropriate administrative and public facilities such as offices, roads and trails are foreseen.

Accomplishment of the objectives would result in minor physical modification of the existing environment. As conceived, structural design would be compatible with the surroundings and in keeping with intent to maintain relative naturalness. The purposes of such developments as headquarters, visitor center, parking areas and trails would be for efficient management of the area while conducting public use activities in ways beneficial to people and not damaging to wildlife.

Location and unit boundaries of the proposed refuge acquisition are depicted in Figure 2. The units were selected for their importance as wildlife habitat. Five major habitat types (for description see Section II) are represented. Table 1 lists the approximate acreages and percentage of each type collectively and separately by unit.

Figure 2
Proposed Action
San Francisco Bay
National Wildlife Refuge

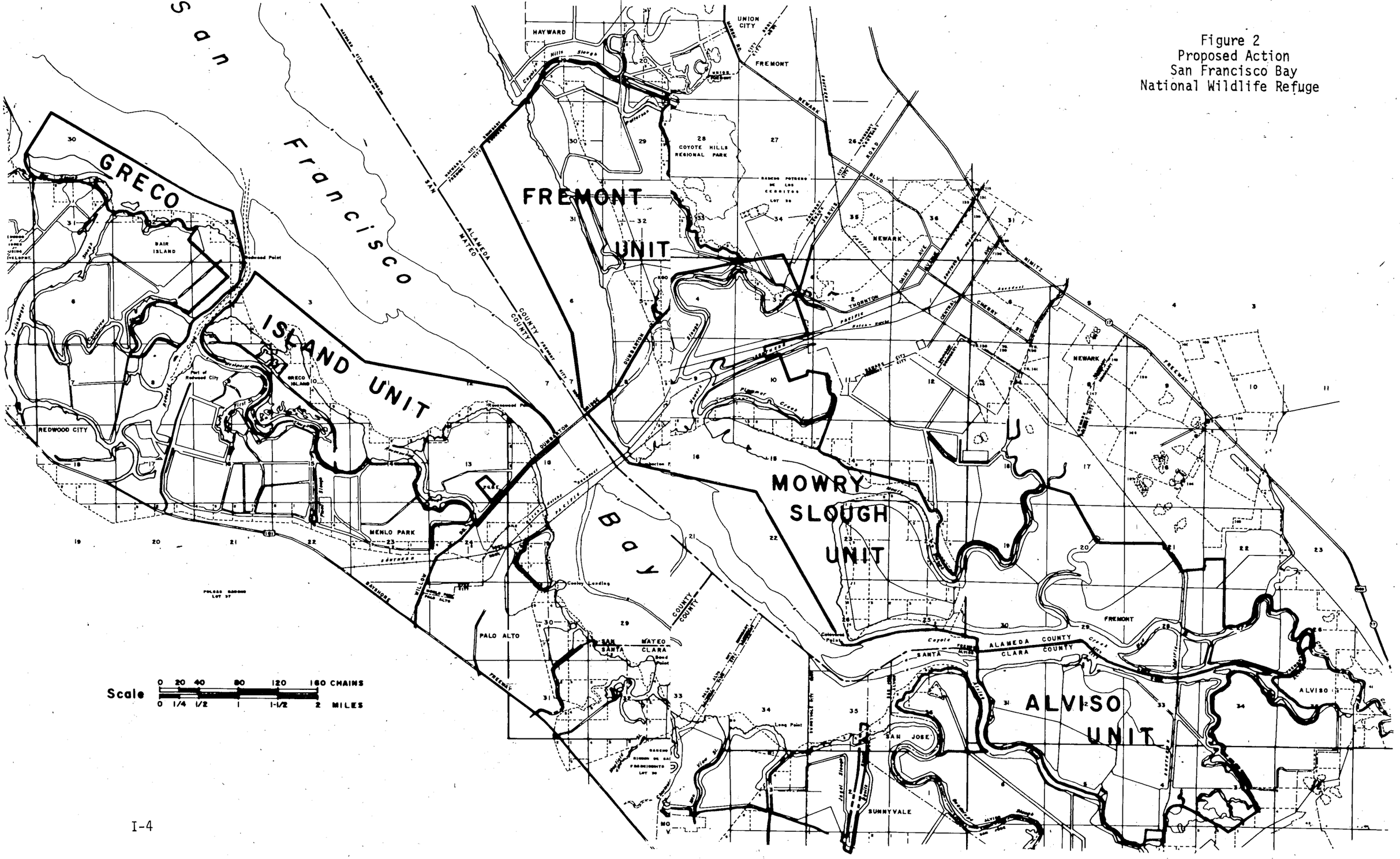


TABLE 1

Acreage estimates by Unit and Habitat Type
San Francisco Bay
National Wildlife Refuge

Unit	Salt Ponds	Salt Marsh	Tidal Mudflats	Upland	Open Water	Total	Percent of Total
Fremont	2,760	225	1,305	0	0	4,290	18.6
Greco Island	625	1,312	2,639	35	417	5,028	21.9
Mowry Slough	6,330	1,704	1,474	162	360	10,030	43.6
Alviso	2,975	587	17	35	38	3,652	15.9
	12,690	3,828	5,435	232	815	23,000	

Description of Units

1. Fremont Unit (4,290 acres)

The unit's east boundary abuts Coyote Hills, a promontory reaching 285 feet above the bay floor. Coyote Hills Slough marks the north boundary, and the east approach to the Dumbarton Bridge (Highway 84) delineates the south boundary. The unit contains approximately 4,290 acres comprising 64.3 percent salt ponds and 30.4 percent tidal mudflats. Salt marsh constitutes 5.3 percent of the total area.

2. Mowry Slough Unit (10,030 acres)

The eastern approach to the Dumbarton Bridge forms the northern boundary of this unit. The eastern boundary follows an irregular course along salt pond levees for the most part. The southern boundary runs along Coyote Creek, the western boundary an irregular line which roughly follows the outer edge of the tidal flats in the bay proper. Total acreage encompassed by the unit is 10,030. Salt ponds make up 63.1 percent of this unit, salt marsh 17.0 percent, tidal mudflats 14.7 percent, upland 1.6 percent and open water 3.6 percent.

3. Alviso Unit (3,652 acres)

This unit is comprised of a complex of 9 salt ponds and associated tidal flats and marsh fringes. Total acreage is 3,652 with 81.5 percent salt ponds, 16.1 percent marsh, .5 percent mudflats, .9 percent upland (35 acres) and 1.0 percent open water (38 acres). Artesian Slough (east bank) and Grand Boulevard form the eastern boundary. A line through Coyote Creek and Mud Slough denotes the northern boundary. The spur line railroad is the southern boundary, while Alviso Slough and the Knapp property border the western boundary.

4. Greco Island Unit (5,028 acres)

The unit is bordered on the north and east by bay mudflats and the west approach to the Dumbarton Bridge delineates the unit on the south. Westpoint and Ravenswood Sloughs and a meandering line across Bair Island form the western boundary. This unit,

which contains a diverse variety of habitat types and some extremely sensitive wildlife areas, contains approximately 5,028 acres. This acreage is composed of 52.5 percent tidal mudflats, 26.1 percent marsh, 12.4 percent salt ponds, 0.7 percent upland, and 8.3 percent open water.

D. Acquisition Schedule

Progress on acquisition is approximately on schedule.

Section 5 of Public Law 92-330 authorized to be appropriated such sums as may be necessary to carry out the provisions of the Act for the period beginning July 1, 1972 and ending June 30, 1977, not to exceed, however, $9 million for the acquisition of lands and interests therein. To date $6.4 million has been appropriated from funds made available pursuant to the Land and Water Conservation Fund Act.

The cadastral survey performed by Murray & McCormick, Inc., has been underway since late in 1974 and is now complete. The remaining survey work is currently being performed by the Fish and Wildlife Service.

Fish and Wildlife Service staff appraisals have been completed for all the lands within the authorized boundary owned by Leslie Salt Co. and are in progress on the remaining ownerships. An independent fee contract appraisal has been completed for the Leslie Salt Co. lands.

To date, the 50-acre City of Fremont tract, located in the Mowry Slough Unit, has been donated and 72 separate parcels in the Alviso Unit totaling 178 acres have been donated by Santa Clara County.

The State land within the refuge, under jurisdiction of the State Lands Commission, would be leased for a 66 year period at no cost to the Fish and Wildlife Service. This acreage would remain undetermined until the State's claim to tide and submerged lands has finally been settled.

A parcel of excess property from Moffett Field Naval Air Station totaling 37.26 acres has been acquired. This parcel, along with a 38.72 acre easement, will be managed as a part of the refuge, even though it is not within one of the designated units.

A one year delay may be experienced with regard to certain areas in the Greco Island Unit currently being litigated between the State of California and Westbay Community Associates. The suit is to determine the extent of ownership and rights of the State to land claimed in fee by Westbay Community Associates. The State's sovereign right to certain submerged land and the rights of the public to use tidelands for fisheries, navigation and commerce must be defined in each of the refuge units as is being done in the Westbay case. This will be attempted by negotiated settlement with each of the landowners. The progress of acquisition depends heavily on the State's ability to devote the time and effort to this work. No money will be paid for land until this question has been resolved. Except for tidelands and submerged lands, the Leslie Salt Co. has completed this title clearing procedure with the State, so that the salt pond area total of approximately 13,000 acres is ready for purchase.

E. Existing and Proposed Land Use

Approximately 12,690 acres of the area proposed for acquisition represent concentrator salt ponds managed by the Leslie Salt Co. Of these, 95 percent are currently functioning as concentrator ponds in the salt production process and 5 percent are out of production. It is the position of the Service that commercial salt production is compatible with the refuge proposal provided certain adjustments, not associated with the basic production process, are agreed upon. It is the stated desire of the Leslie Salt Co. to remain in the salt production business as long as it is economically feasible. This proposal includes an easement for continued operation of the salt ponds by the Company (Appendix 4). This easement remains to be finalized.

The Alviso Unit is crossed by a line of the Southern Pacific Railroad and the Mowry Slough Unit by both the Southern Pacific Railroad and the Hetch Hetchy Aqueduct. The Dumbarton Bridge separates the Fremont and Mowry Slough Units and forms the southern boundary of the Greco Island Unit. All four units are crossed by transmission lines of the Pacific Gas and Electric Company, (Figures 35 & 36).

Leslie Salt Company leases, for waterfowl hunting purposes, designated portions of their ownership to private clubs. Harvest rights in a number of salt ponds are leased by Leslie for the taking of brine shrimp and the long-jawed mudsucker (Figures 6 & 7).

Interrelationships with Other Jurisdiction and Project Proposals

There are a number of overlapping and regulatory authorities which influence present land use of the area proposed for acquisition. Although each jurisdiction has a different purpose and authority under which it functions, their net effect maintains open space on a theme of clean air and water.

Zoning Jurisdiction

The first level of control is under the zoning authority of the city and county. By State law, each must complete a general plan. Zoning will then conform to this plan when completed. These plans are now in progress. At present, the terminology applied to zoning on the project land is as diverse as the city and counties involved. The following is a listing of the terminology applied by zoning authority:

City of Hayward - Flood Plain
City of Fremont - Agricultural Flood Plain
City of Newark - Agricultural and Open Space
Santa Clara County - Exclusive Agricultural
City of San Jose - Agricultural
City of Sunnyvale - Public Facilities
City of Menlo Park - Flood Plain
Redwood City - Tidal Plain

The definitions of the "Open Space-Agricultural" zoning from a development standpoint may allow as much as an airport or as little as a wildlife sanctuary on the same type of land. However, from the general plans being adopted, it appears that the intent is to leave the project area in a lightly developed or undeveloped condition. For instance, Santa Clara County has adopted a policy which says "filling of existing bay water areas, salt ponds, wetlands and marsh areas should not be allowed except for minimal filling for open space and recreation uses when alternative suitable dryland sites are not available. The possibility of bringing the salt ponds under public ownership, breaching the dikes and reopening the salt ponds to the tidal action of the bay should be examined." Zoning conflicts with this proposal should be minimal.

Water Districts

The jurisdiction of Santa Clara Water District and Alameda Flood Control and Water Conservation District extends to areas of the proposed refuge. The Santa Clara District's

interest is in Coyote Creek, Alviso Slough and Guadalupe Slough as these water courses provide drainage outlets for the major watersheds of the Santa Clara Valley. These outlets are located in the Alviso Unit of the refuge. The Alameda District's interest is in the tidal sloughs on the east half of the refuge, which are an integral part of the drainage system that serves the cities of Newark and Fremont. Both the Fremont and Mowry Slough Units are within the boundary of the Alameda District. The Alameda flood control channel forms the northern boundary of the Fremont Unit. The refuge would work with the districts to keep these water courses available for drainage outlets.

San Francisco Bay Conservation and Development Commission (BCDC)

The next level of control which has a significant influence on land use is the San Francisco Bay Conservation and Development Commission. BCDC has provided guidelines and an advisory and permit system to assure that bay and bayside development will proceed only in an orderly manner and in keeping with the greatest public need, keeping in mind the need for all legitimate and desirable uses. The proposed refuge area is regarded in BCDC plans as being maintained predominantly in its present near natural state.

It will be necessary to enter into a cooperative agreement with BCDC once the land has been acquired and plans for management and development have been formulated. The San Francisco Bay Conservation and Development Commission was created by State enactment in 1965 of the McAteer-Petris Act. It is regarded locally as being representative of majority public feeling and as having power sufficient to control developments within its jurisdiction.

Corps of Engineers

The Corps of Engineers, pursuant to the Rivers and Harbors Act of 1899, has the authority to require permits from anyone for construction of any new bridge, dam, dike, causeway or the creation of any new obstruction up to the line of mean higher high water. Under the separate authority of the Federal Water Pollution Control Act, the Corps may require permits for "the discharge of dredge or fill material up to the line of mean higher high water in its unobstructed natural state".

The Corps authority to require permits behind the Leslie Salt dikes was recently challenged in court. The U.S. District Court decision given on March 11, 1976, upheld the right of the Corps to extend their permit authority behind Leslie's dikes to the line of mean higher high water.

U.S. Environmental Protection Agency (E.P.A.)

The Environmental Protection Agency is specifically charged with administering the Federal Water Pollution Control Act. Their policy to protect the nation's wetlands has resulted in opposition to additional filling of San Francisco Bay unless there are compensating benefits.

Other Project Proposals

Various entities in the south bay are beginning or contemplating projects on which the proposal presented by this statement may have an impact.

Dumbarton Bridge

A new Dumbarton Bridge, complete with approach road, is to be located just north of the present bridge (Figure 8). The bridge and road forms the south boundary of the Greco Island Unit and the Fremont Unit (Figure 2). If the Service has gained title to the Leslie Salt property prior to right-of-way acquisition for the approach road, an easement would be requested from the Service. This would not be issued without mitigation for habitat lost by construction of the new road and bridge.

Since issuance of the draft statement, the U.S. Coast Guard has released a Final Environmental Statement for the proposed replacement of the Dumbarton Bridge. The loss of 66 acres of habitat needed for the bridge would be mitigated by the addition of 200 acres of equivalent utility land.

Redwood City

The port of Redwood City is the only significant industrial port in the South Bay area and is able to handle shallow draft ships. Expansion of the present port facility is being contemplated. Refuge acquisition would prevent expansion of the port to the Greco Island Unit near the Bair Island portion of the refuge. Acquisition would also prevent the use of these areas for dredge spoil sites.

Santa Clara County Marina

An expansion of the Santa Clara County Marina on Steamboat Slough near Alviso is being planned and a Corps of Engineers permit to expand and deepen the boat basin has been applied for. The dredging spoils from this deepening project are beirg piped well away from the refuge area. The Marina is adjacent to a parcel of land to be acquired for a refuge visitor center. The use and development of this tract may conflict with an area that the Marina has indicated will be used for expanded parking facilities.

California Department of Fish and Game

The northeasterly portion of Bair Island was acquired by the State Lands Commission through donation by Mobil Oil Estates. In turn, this 800 acre parcel was turned over to the California Department of Fish and Game to be managed as a state wildlife management area. This reserve abuts the Bair Island portion of the refuge.

South Bay Dischargers

The San Jose-Santa Clara, Palo Alto and Sunnyvale sewage disposal districts in the South Bay (Figures 10 & 12) are contemplating a combined sewage disposal system, with the effluent to be discharg 1.5 miles north of the Dumbarton Bridge. The combination of districts is known as the South Bay Dischargers. One proposed outfall for this project would run through the Alviso Unit of the refuge in the present location of the City of San Jose sewage outfall. Another alternative alignment would cross the Greco Island Unit.

If this project becomes a reality, the Leslie Salt Co. may be able to discharge their bittern (salt crystalizer residue) through this system. The bittern is presently being stored in diked ponds on Leslie property within the refuge proposal.

The matter of sewage treatment and discharge is being examined by the Association of Bay Area Governments.

Southern Pacific Railroad

The Southern Pacific Railroad is planning to construct a major terminal and rail yard near the eastern boundary of the Mowry Slough Unit on the bayward end of Durham Road. Conflicts with this facility will be in the management and development and not the acquisition segment of this proposal. A leasehold interest would be acquired covering the two railroad corridors that pass through the refuge, so that some management control can be exercised over the railroad right-of-way.

State Lands Commission

Approximately one-third of the proposal area is under the exclusive jurisdiction of this agency pursuant to Public Resources Code Section 6301. The Commission would be the leasing agency for State lands within the proposed area. Also, the Commission has identified the proposed waterway areas possessing significant environmental values and has adopted protective regulations.

U.S. Coast Guard

The U.S. Coast Guard, Department of Transportation, has jurisdictional authority over marina safety on waters of the South Bay area. Of prime importance are navigational aid and barriers to navigation. Their principal mandate is to preserve the navigable capacity of the waters of the United States for interstate commerce and travel.

The Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

The area within the refuge boundary is typical of south San Francisco Bay in that the topography is flat and few locations are much above high tide. Natural values have been modified somewhat by human activity. Despite the continuing problem of pollution, the proposed refuge site is rich ecologically, supporting substantial and diverse wildlife populations. This is demonstrated by the fact that 70 percent of all shore bird species using the Pacific Flyway inhabit the marshes, mudflats, open water and salt ponds of the area.

A. Physical Factors

1. Climate

The bay area has a modified Mediterranean climate, with warm to hot, dry summers and moist, mild winters. The varied topography of the area permits wide variation of local climate in terms of temperature, rain, wind and fog. Average annual rainfall in the south bay is 16 inches, and it occurs primarily between November and April. The prevailing wind direction is from the northwest with maximum speeds of 16 mph generally occurring by late afternoon. During the night and early morning, the light winds reverse to the southeast direction. The influence of the ocean affects this daily wind cycle. Cooling sea breezes and high fog in summer affect coastal and bay area cities so that they seldom experience temperature extremes. In the south bay mean monthly temperatures range from 48° to 68°F.

2. Vegetation (Figure 19)

Five general habitat types are included in the proposed refuge: salt ponds, salt marshes, upland, tidal mudflats and open water. Sloughs, sometimes designated as a separate type, are considered here to be a combination of open water, marsh and mudflat. Open water areas are characteristically unvegetated. Typical vegetation of each of the other habitat types is summarized below.

Salt Ponds (12,690 acres) - Algae forms are the major flora in the ponds. Oscillatoria, a blue-green alga, and Stichococcus, a green alga, have been reported as the most common forms in some of these ponds. The most abundant diatom identified was Navicula. The flora found in the salt ponds is dependent on the salinity and is usually highly seasonal. ("Salt Marsh Veg.")

Salt Water Marshes (3,828 acres) - Salt marshes in the area are typified by two dominant forms of vegetation, cord grass (Spartina foliosa) and pickleweed (Salicornia virginicus) (Figure 20). Cord grass is generally found on lower elevations exposed to daily tidal action. Spartina is reportedly five to ten times as productive per acre as wheat. Salicornia, which also provides excellent wildlife habitat, is generally found on higher elevations, but below the point of mean higher high water. Salt grass (Distichlis spicata) is locally abundant. Other species, such as brass buttons, salt bush, gum plant and arrowgrass are found scattered over the marsh on elevated sites. Upper portions of sloughs are frequently vegetated by less salt tolerant species such as bulrush and cattails.

Upland (232 acres) - Grasses, shrubs, trees and herbs that are typical of more arid conditions predominate in the upland areas. They include eucalyptus, coyote bush and native grasses. Marsh and salt-tolerant species are usually present also, including sweet fennel, salt bush, curlydock, gum plant, and coyote bush. Brass buttons, alkali heath, salt grass, other grasses, and Jaumea are commonly noted on the salt pond dikes.

Mudflats (5,435 acres) - Tidal mudflats cover much of the acreage between low and high tides, and may have a moisture content of about 75 percent by weight. Microscopic vegetation, including diatoms, blue-green, green and red algae, is often present.

3. Soils

Two major soil associations occur in the area to be included in the San Francisco Bay National Wildlife Refuge: the Alviso Association and the Tidal Marsh Association.

The Alviso Association consists of fine-textured soils and are influenced by tidal water. These soils are very poorly drained and have developed into gleyed, fine-textured alluvium. They occupy level tidal flats along San Francisco Bay at elevations from sea level to 10 feet. The average growing season for vegetation in the areas occupied by this soil association is 300 to 325 days.

Alviso soils comprise up to 85 percent of this association. Alviso soils include dark gray clay surface soils and gleyed, gray, silty clay subsoils. They overlie gleyed alluvium mixed with layers of organic matter, and they are affected by high concentrations of salt. Surface soil averages 6 to 10 inches in thickness and the subsoil 30 to 40 inches.

The Tidal Marsh Association occurs on areas periodically covered by tidal water. Eighty-five percent of this association is tidal marshland, and fifteen percent is Alviso soils, described above.

These surface soils of the proposed refuge are highly expansive, providing poor foundation material which may settle and cause damage to structures placed upon it. Baylands soils additionally have a high risk to life and property because of the possibility of lateral spreading, liquefaction and amplification of the intensity of ground shaking during future large earthquakes (Appendix 6).

4. Topography (Figure 3)

San Francisco Bay lies in a northwesterly trending depression and is 55 miles long and from 3 to 12 miles wide. On the west the hills of the San Francisco and Marin Peninsulas form a nearly continuous north-south barrier between the bay and the Pacific Ocean, and on the east side of the bay are low plain slopes to the Berkeley Hills which separate the bay area from the Central Valley. These two parallel ridges on either side of the bay have constrained most of the urban growth to valley floors and the flat plain adjacent to the bay.

Two distinct units comprise the geologic formations underlying the bay: an older bedrock unit and a younger, unconsolidated sedimentary sequence. The bedrock is generally composed of sandstone, siltstone, chert and greenstone of the Franciscan formation and is deeper in the southern part of the bay where depths of 300 to 800 feet are common. The surface of the bedrock is very irregular. Coyote Hills, which forms the eastern boundary of the proposed refuge, is also composed largely of bedrock.

Much of San Francisco Bay is shallow, with the average depth being only 20 feet. The southern end of the bay is even more shallow, generally averaging less than 10 feet. Only 15 percent of the bay is more than 30 feet deep, although a few deeper channels representing dredged drainage systems are present and provide access to ocean-going vessels.

Figure 3

Topography

SCALE

0 2000 FT 1 MILE 2 MILES NORTH

5. Geology (Figures 4 and 16 and Appendix 6)

The San Francisco Bay trough was formed by a combination of warping and faulting of layers of rock in response to northeast-southwest compressional forces of unknown origin. This trough came into existence at the end of the Pliocene epoch or at the beginning of the Pleistocene about one million years ago. The bay was flooded during the Pleistocene when release of water from melting glaciers caused a general rise in sea level.

Alluvial material deposited on the bedrock prior to the Wisconsin ice of the Pleistocene consists of silty clay and loose to medium sand and gravel. The thickness of this older bay mud ranges from less than 1 foot to more than 200 feet. It may be missing entirely along some margins of the bay, but is exposed over portions of the southern baylands in Santa Clara County. Because older bay mud has been more deeply buried and since it presumably was consolidated from exposure during the lower sea levels of the Wisconsin ice, it contains less moisture than younger bay mud.

The younger bay mud was formed and deposited after the melting of the Wisconsin continental glaciers and consists of soft silty clay. It varies in thickness in the south bay from a few feet at the southern shoreline to about 30 feet at Coyote Creek, and is found particularly in areas occupied by salt ponds and marshland.

The depletion of groundwater in deep aquifers has resulted in consolidation of clay layers and is responsible for the subsidence occurring in the south bay. Since 1934 reduction in ground surface elevation of land in the area of Alviso amounted to nearly nine feet and to half a foot at the Dumbarton Bridge.

The geologic history of the bay area includes a long record of extensive earth movement and seismic activity. San Andreas Fault Zone lies to the west of the bay and the Hayward Fault Zone to the east. Greco Island Unit of the refuge is 7 to 8

miles east of San Andreas Fault, while the Hayward Fault ranges in distance from the refuge from 5 miles at the Alviso and Fremont Units to 7 miles at Mowry Slough. Both of these faults are seismically active. The expected frequency of damaging earthquakes in the bay area is about 12 per century.

The following is quoted from U.S. Geological Survey and U.S. Housing and Urban Development San Francisco Bay Region Environmental and Resources Planning Study, 1971.

"The rapidly expanding urban region surrounding San Francisco Bay lies on one of the earth's most active tectonic features--the San Andreas fault system. Along this fault system the crustal plate that floors the Pacific Ocean is sliding northwestward past the crustal plate supporting the North American continent at a rate of several centimeters per year. The opposing plates slide past each other smoothly in some regions where their relative motion is accommodated by a seismic creep and frequent small-to-moderate earthquakes. In other regions, including the Bay area, they are more firmly locked together and slip suddenly, after long but irregular intervals of time, when stresses across the fault induced by slowly accumulating elastic strains along the plate edges build up to levels that exceed the "strength" of the fault. The great earthquakes that can result from this process, such as the 1906 San Francisco earthquake, constitute a major hazard to life and property. The historical record suggests that the Bay area should expect at least one great earthquake (M>8), several major ones (M>7), and many destructive ones (M>5.5) per century.

"The San Andreas fault system is quite complex in the Bay area. It splits southeast of San Francisco Bay and major branches run along both sides of the Bay. The principal "San Andreas" branch, which produced the 1906 quake, runs up the peninsula west of the Bay and continues northwestward to Cape Mendocino. The subsidiary Calaveras and Hayward branches can be traced up the east side of the Bay to Carquinez Strait but their relationship to major faults in the Coast Ranges of the strait is not clear. Although a major earthquake occurred on the

Figure 4

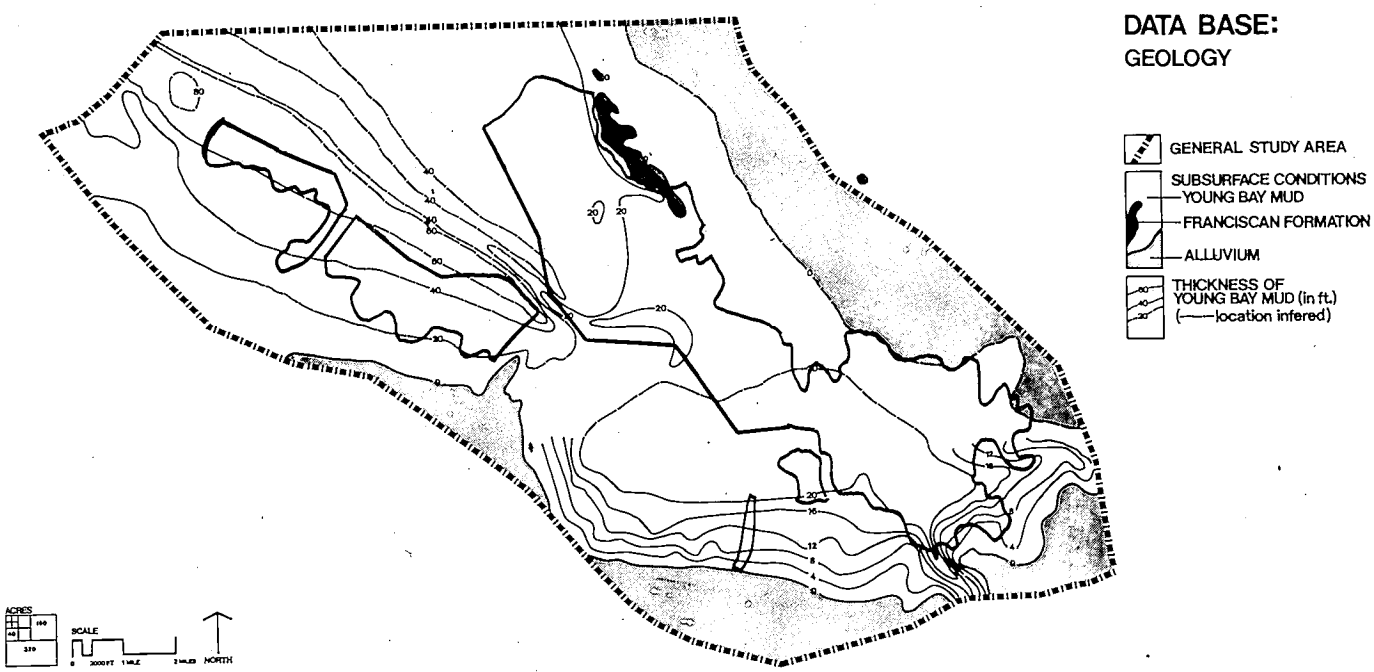
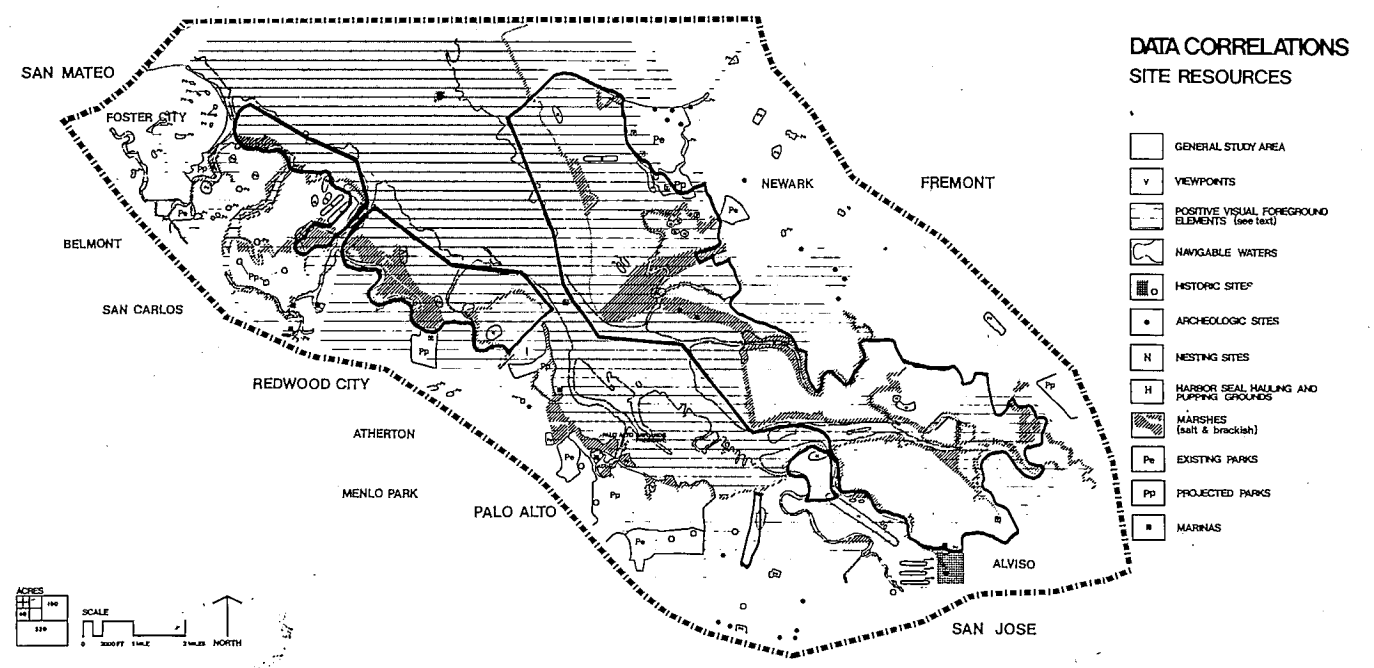


Figure 5



Hayward fault in 1868, both the Hayward and Calaveras faults appear to be creeping sporadically at the present time.

"Most of the destruction caused by earthquakes results from damage to, or collapse of, structures built by man--destruction caused either directly by ground shaking produced by seismic waves spreading outward from the generating fault, or indirectly by failures in the underlying materials (foundation failures, landslides, etc.) induced by ground shaking. Measures to lessen or avoid earthquake damage usually are directed toward preventing damage to structures."

In the south bay the bedrock which lies 600 to 2,400 feet beneath the baylands may have fault features roughly parallel to the 2 major fault systems. One of the linear features interpreted as a fault may be the northern extension of the Silver Creek Fault. There is a possibility that sympathetic movement might occur on these subparallel faults in the event of a large earthquake on a major fault.

The south bay is susceptible to other effects from major earthquakes as well as from sympathetic movement. The violence of ground motion is significantly greater in soft alluvial materials such as bay mud than in areas with more solid rock at or near the surface. Poor ground has been found to be a greater hazard than close proximity to fault or epicenter. Lurch cracking is also expected to be a major damage factor in many areas of bay mud and has occurred in past quakes in water saturated sediments, soils and alluvium up to 75 miles from the epicenter. Compaction and soil flowage on very low slopes in bay mud may also occur.

6. Water

a. Present Quality

The normal pattern by which an estuary is flushed, i.e., by the combination of river discharge and tidal action producing a net outflow of tidally mixed waters, does not exist in San Francisco Bay south of the Dumbarton Bridge. The minimal flushing of water pollutants there is due to the lack of major inflows and to poor water circulation.

The inability of the south bay to disperse waste discharges causes water quality to deteriorate more readily here than in other parts of the bay. Pollutants injected into the bay south of Islais Creek have remained in the south bay for 21 days, and some materials discharged into the south bay remained in the area for about a year.

In summer evaporation losses in the southerly extreme of the bay exceed stream influx and waste discharges exceed the dilution capability from tidal exchange. At this time the south bay waters are significantly low or entirely lacking in dissolved oxygen, particularly in the vicinity of San Jose's waste discharge. Minimum dissolved oxygen (DO) level reported in the main body of the south bay is 0.8 mg/l and in some adjacent sloughs is 0.0 mg/l. Median saturation in this area is 65 percent. Water quality objectives for the area are 5.0 mg/l DO and at least 80 percent saturation as an annual median.

This oxygenation of the bay relies heavily on the tidal prism, i.e., the volume of water between the planes of low and high water. The tidal prism accounts for about one-fourth of the capacity of the system. Oxygenation of the remainder of the bay water is through diffusion from the tidal prism, by direct absorption from the air and through exposure to the mudflats that are aerated during the low tide. Under average conditions of salinity and temperature in the bay, the oxygen absorbing capacity of the water approximates 8.5 ppm by weight. Of this, marine life requires an estimated 5.0 ppm, leaving 3.5 ppm available for waste assimilation. However, under actual conditions, such as would occur with a marked change in the turbulence factor, the amount of oxygen absorbed may be much less.

Biological Oxygen Demand (BOD) represents the oxygen required for aerobic decomposition and therefore stabilization of organic matter in waste waters. BOD measures 0.4 to 3.0 mg/l north of the Dumbarton Bridge with an average of 1.0 mg/l, and these values increase greatly in the south bay where the mean is 10.0 mg/l and the extreme 298.0 mg/l. BOD concentration varies according to tidal stage and the discharge from south bay sewage treatment plants. The average benthic oxygen demand in this area is 1.0 gm O2/sq meter/day.

Chloride concentration decreases proceeding south toward the Dumbarton Bridge and drops off sharply south of the bridge. During wet winter months, values in the south bay range from 2,000 to 5,000 mg/l and from 10,000 to 14,000 mg/l during the dry summer.

Average water temperature south of the San Mateo Bridge is 8°C - 16°C. Water temperatures in the shallower portions of the bay are much higher in the summer and early fall months, ranging up to 27.1°C.

Transparency, determined by the mean of Secchi disc readings, increases seaward and has low values in periods of maximum rain runoff. The minimum transparency recorded in the south bay is 1.9 feet.

Mean pH levels also increase seaward. The lowest recorded for the bay was 6.8 in the south bay, with a mean pH in that area of 7.60.

Nitrate nitrogen concentrations varied with highs during the winter and lows in mid-summer, corresponding to the periods of increased plankton concentrations. Mean concentration for the south bay is about 0.35 mg/l. Maximum values in the south bay were 7.0 to 20.0 mg/l for unoxidized nitrogen; 2.0 to 20.0 mg/l for ammonia nitrogen (included in unoxidized nitrogen); and 22.0 mg/l for total nitrogen.

Mean concentrations of reactive phosphate varied from 0.2 to 0.5 mg/l in the bay system with no discernible pattern of fluctuation over time. Maximum phosphorous values (soluble orthophosphate) average 0.2 mg/l over the south bay, reaching a peak of about 2.0 mg/l at the Dumbarton Bridge.

Mean concentration for dissolved silica (SiO_2) in the south bay was 8.7 mg/l, decreasing seaward to a minimum of 3.6 mg/l in the central bay. The maximum value in the south bay was more than 20.0 mg/l.

Microplankton concentrations peak during the summer months and are lower in the south bay than in the central and north bays.

South San Francisco Bay has the poorest bacteriological quality in the bay area with coliform concentrations in excess of MPN 1000/100 ml in 79 percent of the samples.

Biostimulants have not been a matter of concern as yet in the main body of the bay, and no excessive growth of phytoplankton has occurred there to date. However, some of the south bay sloughs receiving waste water discharges have had some undesirable aquatic growth.

In contrast to the comparatively poor quality of the surface waters of the area described above, the groundwater quality through the south bay is generally good, and is found at depths of 200-400 feet under much of the salt marsh and south bay. There have been two reported exceptions, however, including high chloride concentrations and increasing salinity.

High chloride concentrations have occurred in the upper aquifer in areas adjacent to the bay, particularly in wells close to canals. Subsidence which permits saline bay waters to intrude in these canals up to 4 miles upstream has been cited as the probable cause of the chloride concentration in canals. The loss of fresh water sources due to salinity also appears to be a function of the same salt water intrusion accompanying ground settling.

b. Water Quality Standards

Before arriving at water quality objectives for a given area, the beneficial uses of the water must be determined and then the standards established that will protect the receiving waters for the maintenance of these uses. In California all of these determinations except the type of treatment to be used are the responsibility of the local Regional Water Quality Control Board. This board acts as a clearinghouse for Federal, State, local and individual interests and establishes beneficial uses, water quality objectives of the receiving waters, and waste discharge requirements for the individual dischargers. It also is responsible for legal enforcement of water quality with advice from the County Health Department.

In 1969, the Porter-Cologne Water Quality Control Act passed the State legislature and improved the ability of the various control agencies to enforce waste water discharge requirements.

On the local level the County Health Department, working with the Fish and Game Department, State Department of Public Health, and the Department of Water Resources, comments on water quality standards and waste discharge requirements and makes periodic inspections of the various treatment plants in the county.

On the Federal level, the Environmental Protection Agency undertakes research to identify the real causes of water quality problems and provides a source of funds to State agencies involved in this aspect of water quality control.

Tightening of State water quality standards has resulted in some improvement in overall water quality in the south bay as evidenced by the increase in numbers in populations of aquatic organisms such as grass shrimp. Further treatment of waste water entering the south bay should have additional beneficial effect on water quality; but since there is always some discharge of pollutants, reliance must remain on the dilution capacity to minimize concentration of pollutants. This dilution can only be assured by an adequate flow from the north to south bay.

Based on recent studies water transfer from the Sacramento Delta south, as envisioned in the State Water Plan, may have an effect on the water quality of the south bay. Seasonal salinity variation is controlled largely by Delta waters entering the north bay and is almost unaffected by the discharge of south bay streams a Presence of excessive algal growth in the south bay, which contributes to oxygen depletion, also occurs at low levels of Delta discharge when turbidity of the bay is low and photosynthesis less inhibited.

c. Available Quantity of Water

Of the current water supply of the San Francisco Water Department, approximately four-fifths comes from the Tuolomne River Watershed via the Hetch Hetchy dam and aqueduct system. The remainder comes from local sources in San Mateo and Alameda Counties. Technical advances, population growth and diminishing fresh water sources are expected to make desalinization a practicable process for providing a portion of the fresh water supply of the bay area. Bay-side sites, near population centers, would be more economical than ocean sites requiring an expensive aqueduct system.

The flow of the Sacramento-San Joaquin River system discharges into the bay from 681,000 acre-feet/month during late summer to 3,342,000 acre-feet/month of relatively fresh water in some winter months. This fresh water flow from the Sacramento Delta is scheduled to be reduced from the present annual average of 17.5 million acre-feet to about 2.5 million acre-feet. The San Francisco Bay depends on the Delta flow to provide dilution, oxygenation and flushing action. Effects of this decrease in water quantity are not known at this time, but additional facts relative to the reduction are discussed in the section on water quality.

Additional fill in shallow parts of the bay, reducing both water volume and surface area, would compound the effects of pollution beyond the effects associated with water quantity. This is due to the fact that tidal flow, which is necessary to flush waste from the bay and to aerate the water, would be diminished in strength in conjunction with the decline in water supply.

7. Air Quality

Carbon monoxide is the biggest contributor to pollution of the air in the area of San Francisco Bay. An estimated 6,600 tons of this substance are released daily into the air, or two-thirds of the total air pollution in the area.

In the south bay, the yearly ranges of air pollutants are as follows: oxidants - 0.02 to 0.10 ppm; carbon monoxide -

4.0 to 10.0 ppm; oxides of nitrogen - 0.08 to 0.31 ppm; and hydrocarbons - 4.0 to 8.0 ppm.

In the Fremont area of the south bay, located near 3 of the 4 units of this proposal (Figure 2), levels of oxidant exceeded State standards of 0.1 ppm on 44 days in 1972 and on 45 days in 1971. Levels of suspended particulate matter were in excess of the State standard (100 micrograms/m3) on 28 and 41 days for 1972 and 1971, respectively.

Motor vehicles account for the majority of emissions of carbon monoxide, nitrous oxides and organic gases, while industrial air emissions are responsible for about two-thirds of the particulate emissions in the bay area. Reductions in smog (concentrations of suspended particulates, sulfur dioxide, and oxidants) occurred in the south bay from 1969 to 1972 and are expected to continue to decline due largely to increasingly stringent emission controls.

An inversion layer is one in which a layer of air is warmer than the air immediately below it, thus reversing the normal decrease of temperature with altitude. Such an inversion prevents air pollutants from rising and being diluted vertically. When an inversion layer is lower than the hills surrounding the bay, it locks the low-lying, pollution-bearing air into the bay area basin.

Air inversions occur commonly in the bay area, particularly in the summer. Duration of such inversions varies with the timing of weather patterns which act to break up inversions.

B. Land Uses

1. Urban - Suburban

a. Transportation

Transportation for people and products is readily available through most of the bay area. The area is served by two international and nine other airports; three transcontinental railroads; three interstate, ten Federal or State, and numerous county highways; and by one port of entry and seven other ports. The

PERCENTAGE OF DAYS WITH VARIOUS LEVELS OF AIR POLLUTION

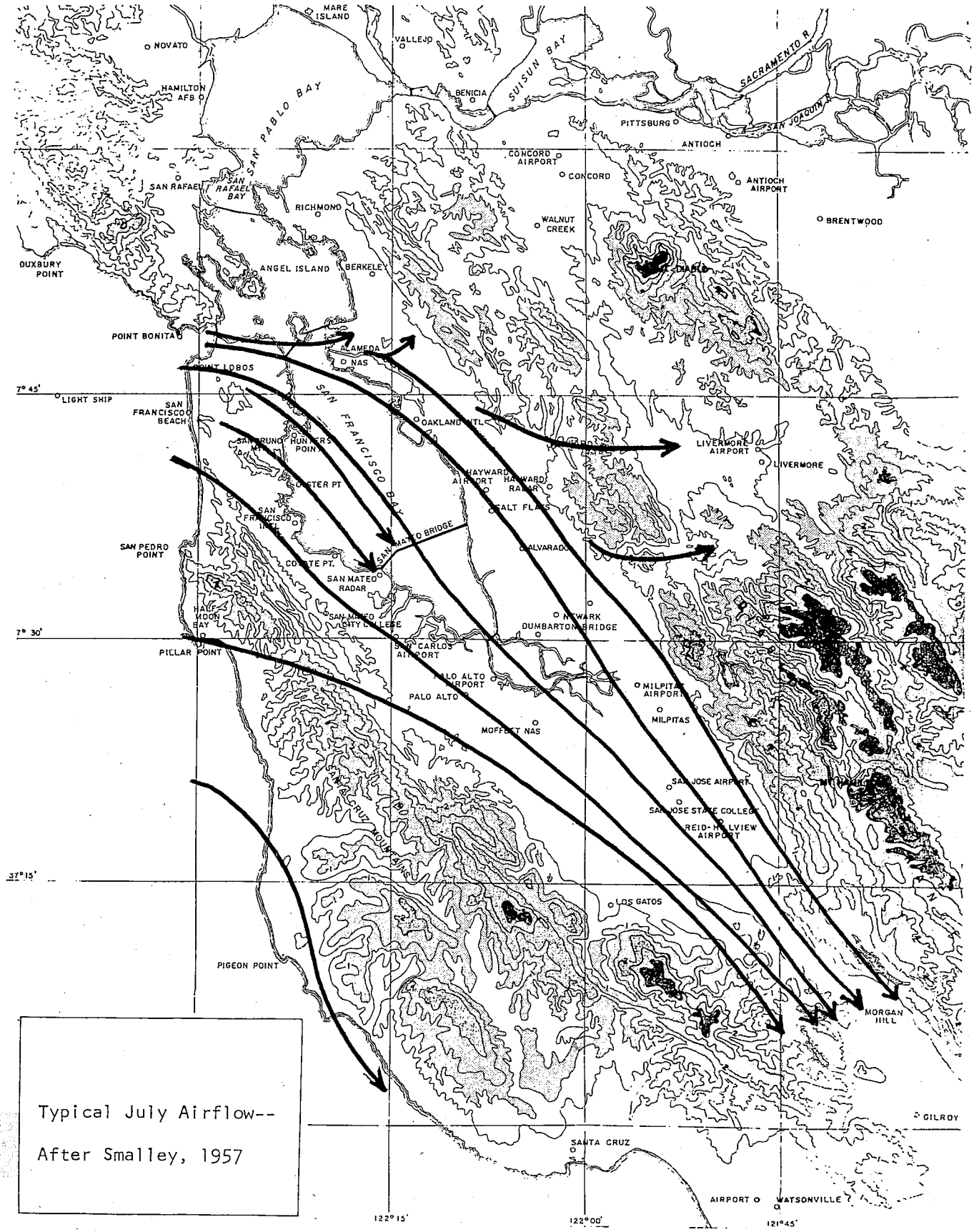
IN THE SOUTH BAY AREA

1969

Month	Clean Air (%)	Light Pollution (%)	Moderate Pollution (%)	Heavy Pollution (%)
Jan.	48	42	10	0
Feb.	75	25	0	0
Mar.	48	45	7	0
Apr.	43	57	0	0
May	32	65	3	0
June	43	57	0	0
July	3	84	13	0
Aug.	7	52	36	7
Sept.	13	33	47	7
Oct.	10	67	10	13
Nov.	7	7	73	17
Dec.	42	39	13	7
All months	30%	49%	17%	4%

Source: Bay Area Air Pollution Control District, 1970.

(Map following from background paper prepared for planning policy committee, Baylands subcommittee by Francis Ludwig, 1970.)



Typical July Airflow--

After Smalley, 1957

Bay Area Rapid Transit system (BART) has several routes already open on both sides of the bay and more routes are planned. Local and long distance bus services connect every urban center and most rural populations.

In the south bay the major automotive routes are State Highway 17 on the east, U.S. 101 on the west and California Route 237 on the south. Air transportation facilities in the south bay area include four public airports -- San Carlos, Hayward, Palo Alto and San Jose, the latter of which handles regularly scheduled commercial flights -- and one military air station at Moffett Field.

The total area of land being used for transportation or utilities in the baylands (below 6.5-foot contour) of Santa Clara County is currently 430 acres, or 2.2 percent of that available.

Both the Alviso and Mowry Slough Units are crossed by Southern Pacific Railroad rights-of-way. Appropriate agreements will be negotiated with the railroad for management of such land through the refuge.

Dumbarton Bridge approaches provide the line of separation between the Fremont and Mowry Slough Units and the southern boundary of the Greco Island Unit (Figure 2). The State Toll Bridge Administration (TBA) has an active plan to replace the present bridge and most approaches with new facilities located immediately north of and parallel to the existing facilities. The U.S. Coast Guard on December 10, 1976, filed a Final Environmental Statement with the Council on Environmental Quality covering the bridge project, including a 4(f) statement outlining possible alternatives, even though the lands are not currently owned by the Federal Government. The bridge replacement project would require permits from the San Francisco Bay Conservation and Development Commission, the Corps of Engineers (pursuant to Section 404 of the Federal Water Pollution Control Act, P.L. 92-500) as well as the U.S. Coast Guard.

Figure 6

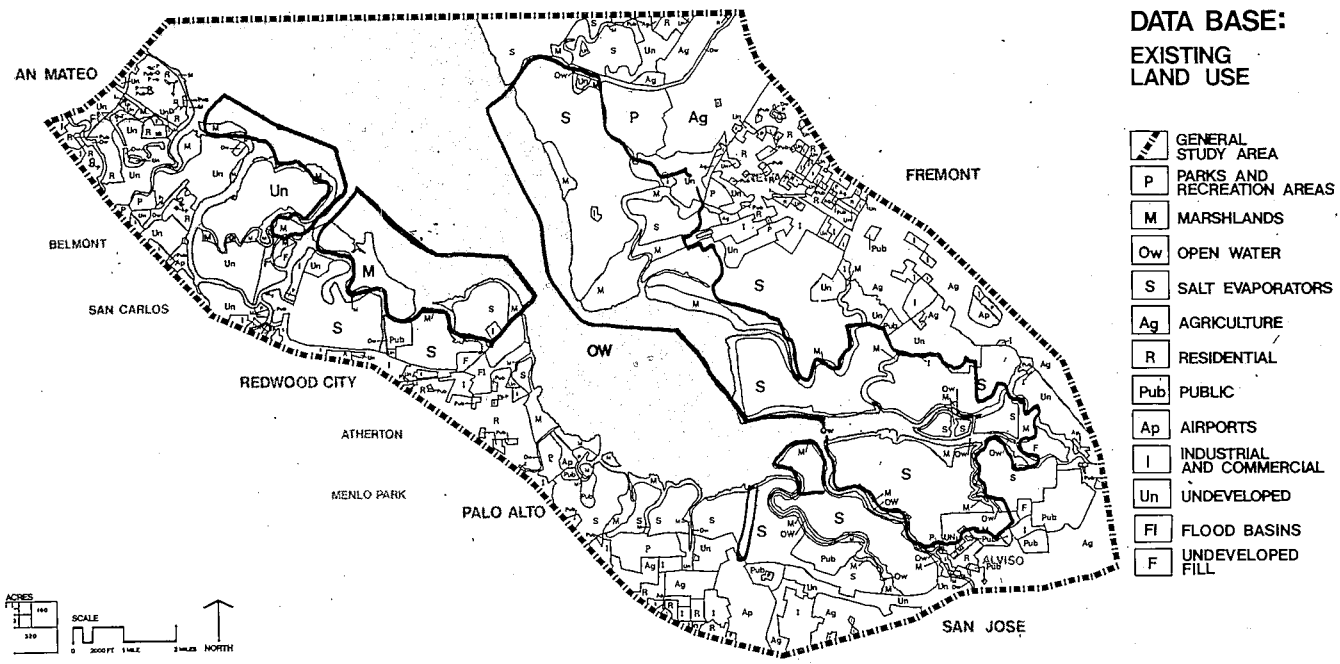


Figure 7

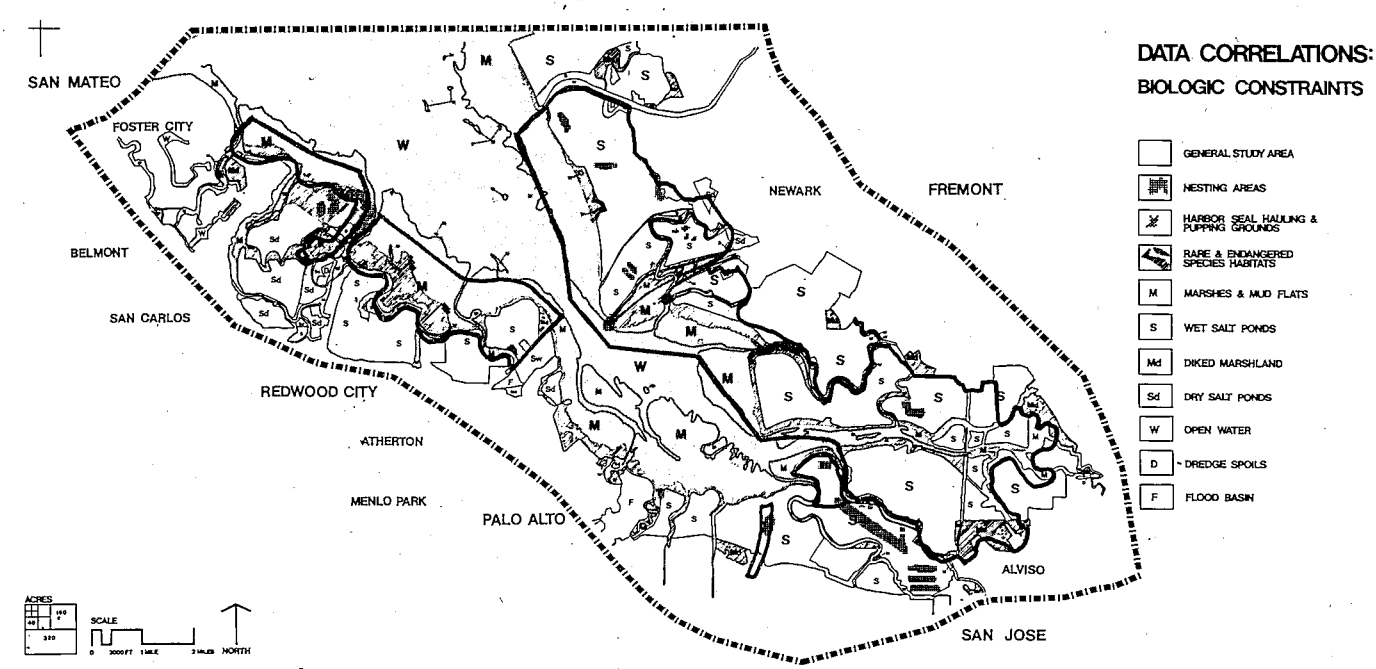


Figure 8

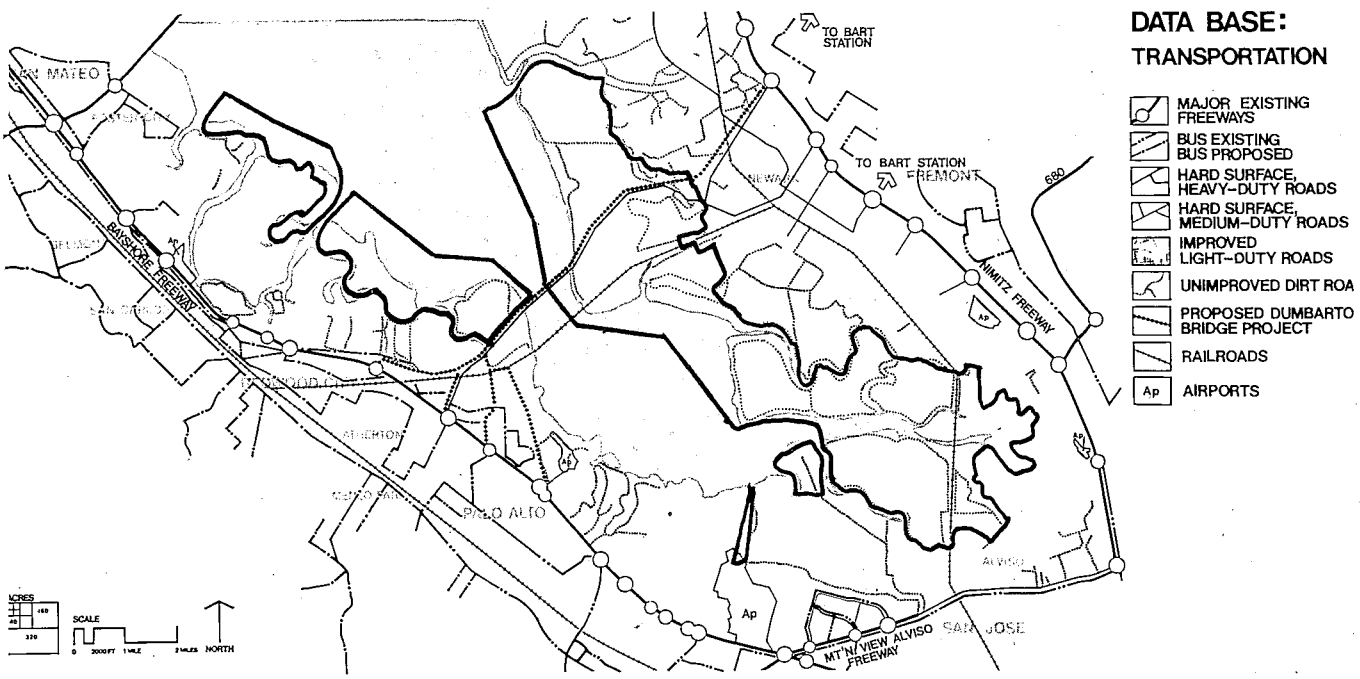
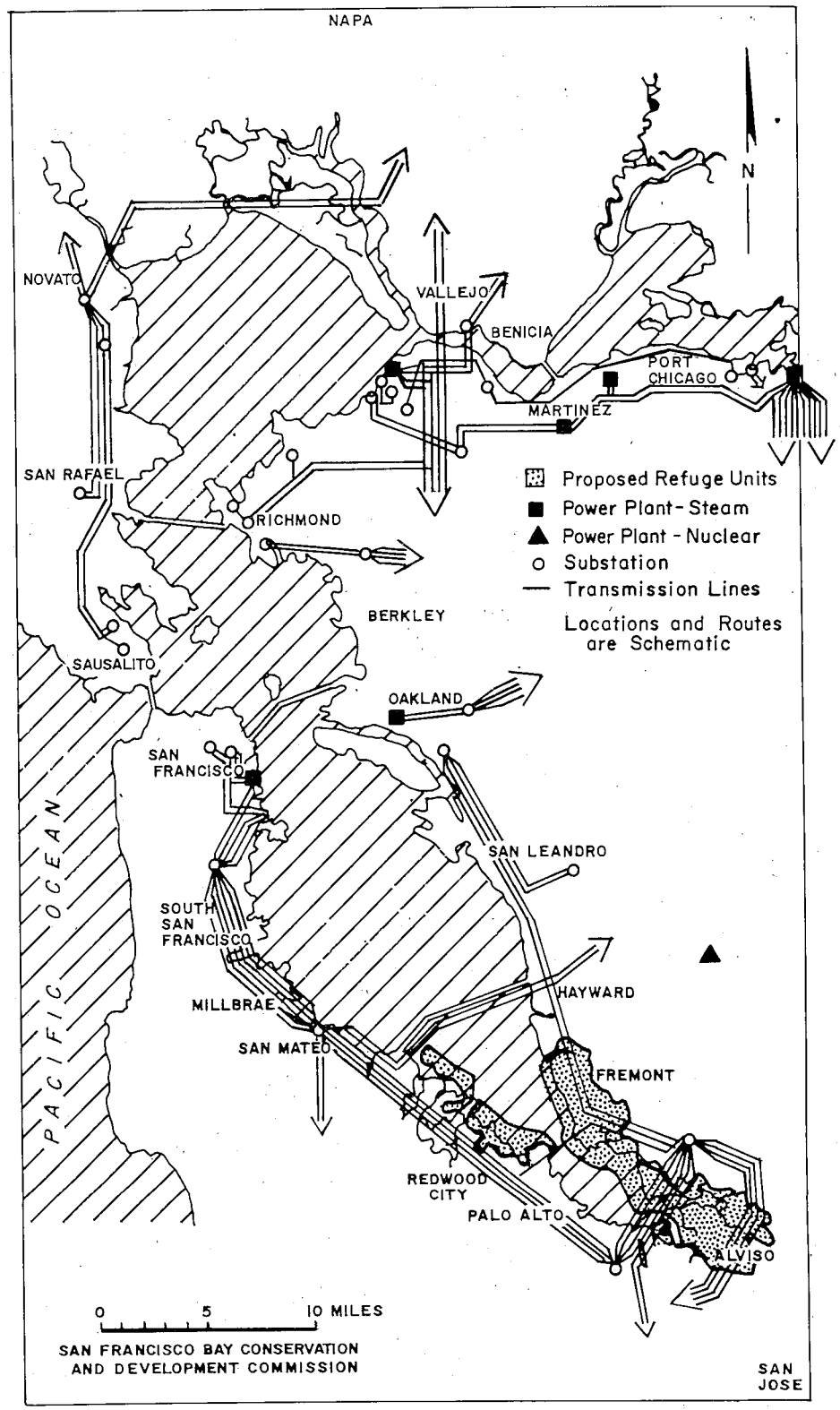

TO BART STATION
TO BART STATION
FREMONT
NEWARK
680
NIMITZ FREEWAY
BAYSHORE FREEWAY
MENLO PARK
ATHERTON
PALO ALTO
Ap
MT'N VIEW ALVISO FREEWAY
SAN JOSE
SCALE
NORTH
DATA BASE:
TRANSPORTATION
MAJOR EXISTING FREEWAYS
BUS EXISTING BUS PROPOSED
HARD SURFACE, HEAVY-DUTY ROADS
HARD SURFACE, MEDIUM-DUTY ROADS
IMPROVED LIGHT-DUTY ROADS
UNIMPROVED DIRT ROA
PROPOSED DUMBARTO BRIDGE PROJECT
RAILROADS
Ap
AIRPORTS

Figure 9

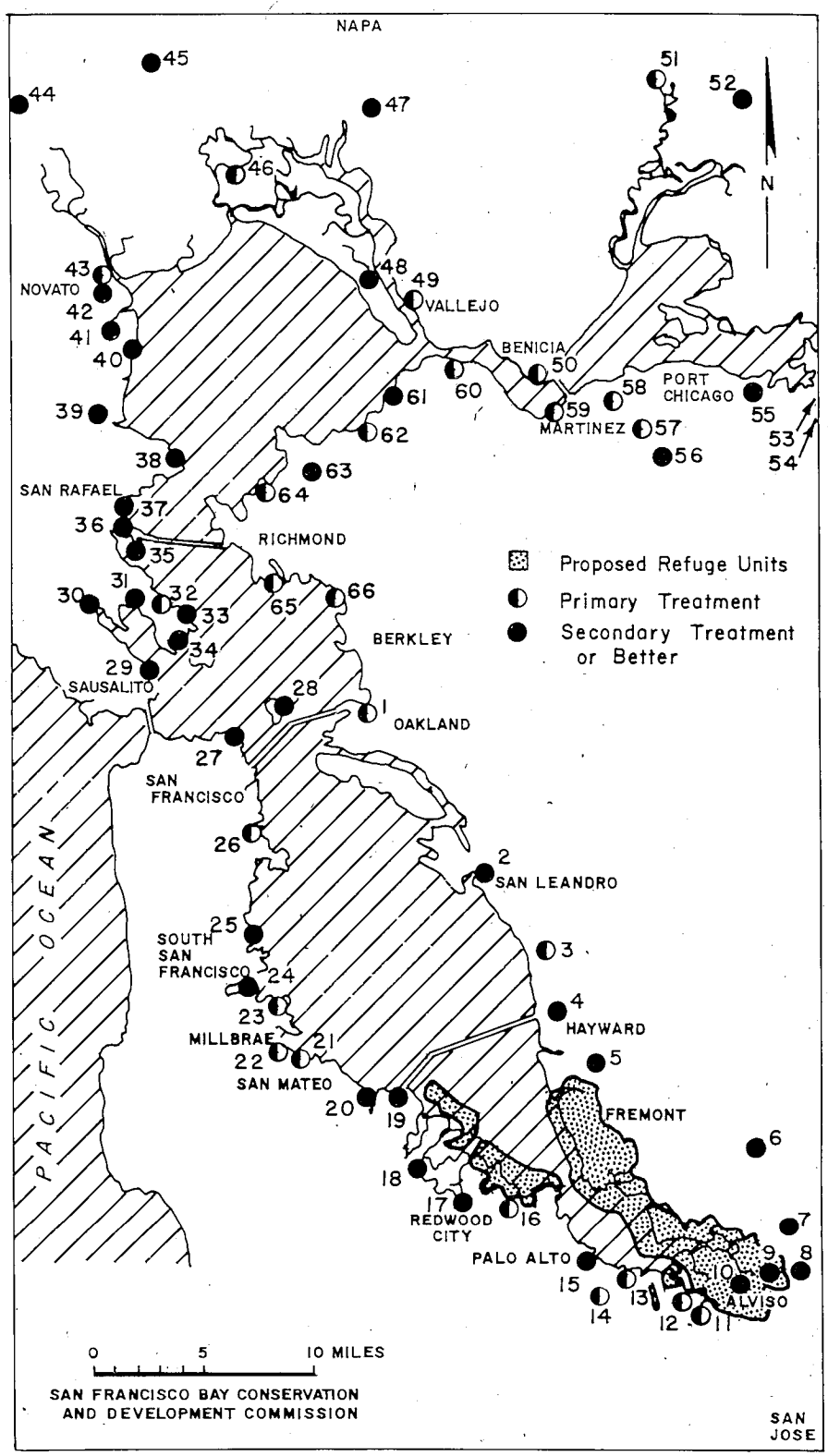
Electric Power Generating Plants and Transmission Routes Near the Bay



Source: Pacific Gas and Electric Company

Figure 10

Major Publicly-Operated Sewage Treatment Plants Near the Bay



Source: Regional Water Quality Control Board, Sewage Plant Operators

b. Utilities

The types of public utilities around the bay are electric power, communications, water supply, sewage treatment, natural gas and bulk carrier pipelines.

The bayshore is an attractive location for electricity generating plants using steam, because the bay can be used for cooling and waste water discharges; the shore and surrounding flatlands provide convenient routes for transmission lines; the population is centered around the bay; and because barge and tanker access provides economical fuel supplies. Although 40 percent of the electrical generating capacity of the Pacific Gas and Electric system is located on the shore of the estuary, only 3 substations are located in the south bay. Figure 9 shows the locations of generating plants and transmission routes around the bay.

Technological advances favoring larger, more efficient electrical power generating plants and transmission lines may cause the total number of generating stations and transmission routes to decline as older, smaller and less efficient units are retired. A proposed 230 KV transmission line from the Newark substation to the Ravenswood substation would cross the refuge. Similar possibilities may be anticipated in the future.

Newer power generating methods, such as thermionic and magneto-hydrodynamic, can operate without water in any significant quantity, and other trends, such as air and water pollution control, rising land costs, and buffer zone requirements are also acting to lessen the attractiveness of the bay shoreline as a site for generating plants.

Locations of the major sewage treatment plants near the bay are shown in Figures 10 and 12. Shoreline locations are not necessary since the only access to the bay required is for outfall pipes. Outfalls in the south bay, where the water is shallow and circulation poor, have more adverse effect than outfalls of similar quality effluent into deeper areas where tidal currents are strong. The San Jose-Santa Clara County sewage treatment plant is located near the Alviso Unit of the refuge, and currently discharges into Artesian Slough, immediately adjacent to the refuge.

The municipal waste discharge plants of the south bay area and the type and amount of discharge of each are summarized in Table 2.

Towers of radio-telegraph, shortwave and AM radio stations are located around the bay since the high conductivity of salt water and marshland makes bay-shore location desirable. Existing facilities have little impact on the area except aesthetically and where they are constructed on bay fill, such as station KGO. The facilities of Pacific Telephone and Telegraph also have no major effect on the area.

Several pipelines transporting fresh water, fuel and other products are located around the bay as shown in Figure 11. Construction of these lines constituted a disturbance to the environment, and some, like the Hetch Hetchy Aqueduct, occupy former marshland. The wide variety of utilities in the bay area must be considered because of their influence on planning and management of the refuge.

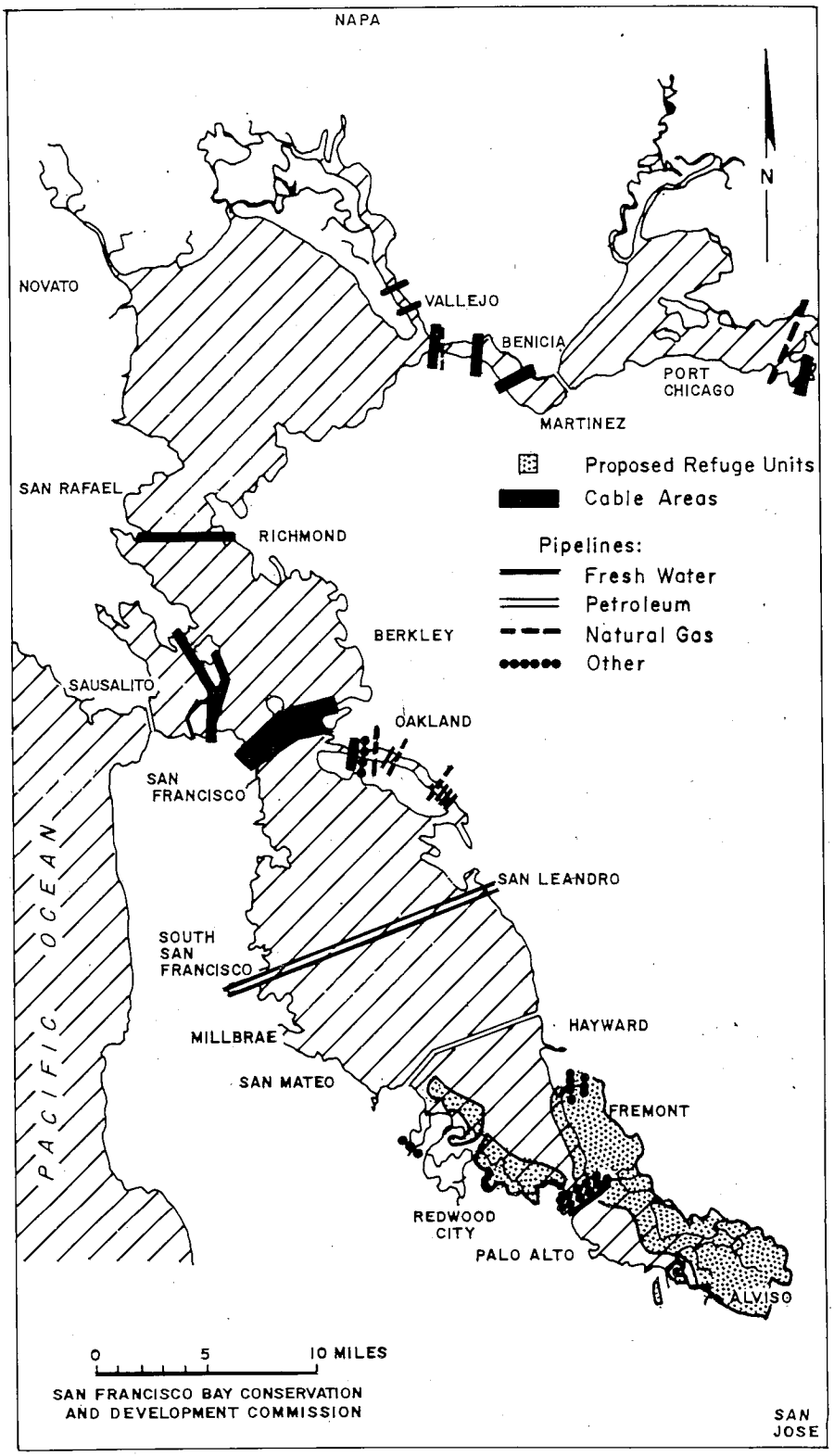
TABLE 2

Municipal Waste Discharges
Into the South Bay and Approximate
Flow From Each Source

Plant	Treatment	Capacity	Current Amount of Discharge
City of Palo Alto	Primary plant, activated sludge	35 mgd	20 mgd
City of Sunnyvale	Primary plant	15 mgd	13 mgd
City of San Jose	Activated Sludge	94 mgd	90 mgd (seasonal average)
City of Milpitas	Activated Sludge	3.8 mgd	3 mgd
City of Fremont	Activated Sludge	7 mgd	5 mgd
City of Warm Springs	Trickling filter	10 mgd	5 mgd
Total Daily Discharge		164.8 mgd	136 mgd

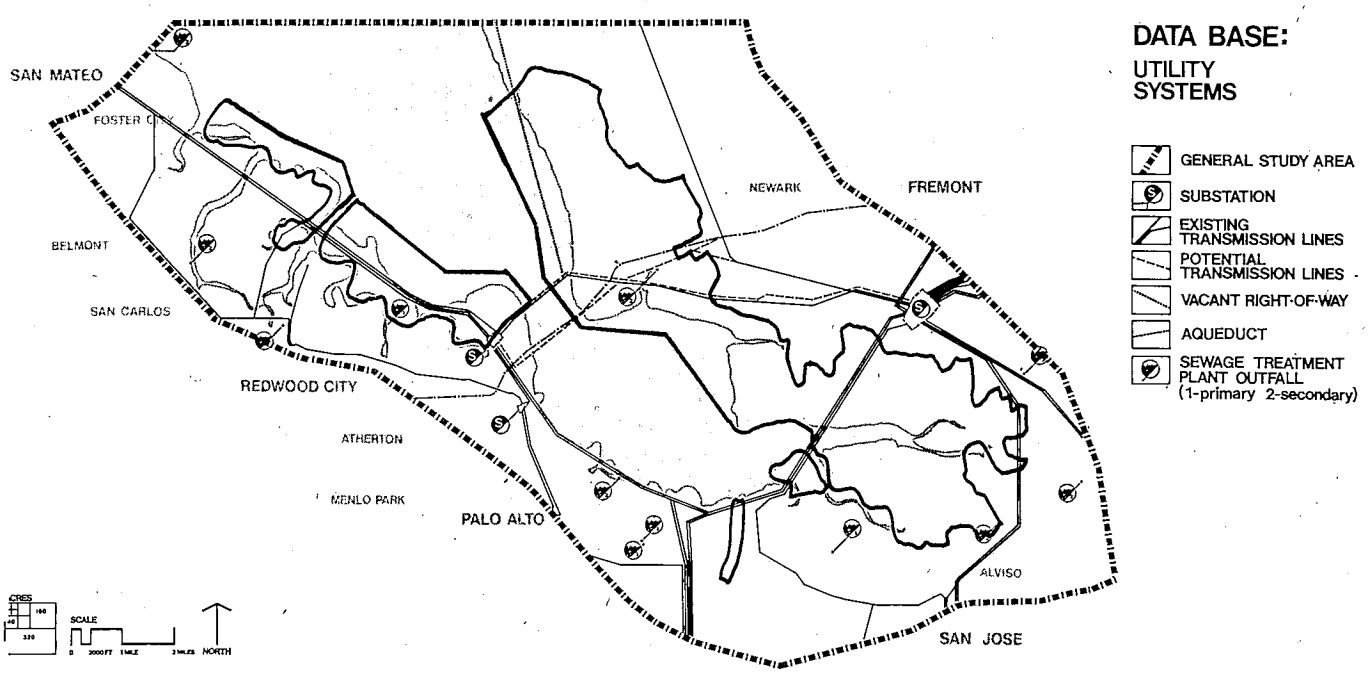
Figure 11

Principal Pipelines and Cable Areas in the Bay



Source: U. S. Army Corps of Engineers

Figure 12


SAN MATEO
FOSTER C
BELMONT
SAN CARLOS
REDWOOD CITY
ATHERTON
MENLO PARK
PALO ALTO
NEWARK
FREMONT
ALVISO
SAN JOSE
SCALE
NORTH
DATA BASE:
UTILITY SYSTEMS
GENERAL STUDY AREA
SUBSTATION
EXISTING TRANSMISSION LINES
POTENTIAL TRANSMISSION LINES
VACANT RIGHT-OF-WAY
AQUEDUCT
SEWAGE TREATMENT PLANT OUTFALL (1-primary 2-secondary)

c. Solid Waste

In addition to waste treatment plants, four sanitary fill sites are located adjacent to the proposed refuge. These are the City of Fremont and East Bay Disposal Company sites on the west end of Durham Road, which is a cut and cover site supposedly sufficient for the area's needs for 30 years; the Corning Glass site immediately adjacent to the east boundary of the Alviso Unit by the New Chicago Marsh; and the Menlo Park land fill between the Greco Unit and U.S. Highway 101; and a U.S. Navy site in the vicinity of Jagel's Slough.

The future of these sites is uncertain. Engineering and construction problems are associated with development of dump fills in the bay area, since the great variation in their composition and denseness causes the behavior of this ground to be very erratic and unpredictable in the event of earth movements. Furthermore, the heterogeneous nature of the fill also makes the extension of foundations through the fill very difficult and costly.

2. Watershed

The south bay serves as a catchment area for the Guadalupe River and Coyote Creek watersheds. The former with its adjacent streams handles a drainage area of about 160 square miles. Los Gatos Creek, with a drainage area of 50 square miles, and Alamitos Creek, with a drainage area of 35 square miles, are the principal tributaries of the Guadalupe River. Coyote Creek drains about 420 square miles and its major tributary is Silver Creek. (Figure 3)

Other watersheds draining into the south bay include the following:

Stream	Drainage Area
Matadero Creek	7.2 sq. mi.
Baron Creek	3.5 sq. mi.
Adobe Creek	9.9 sq. mi.
Permanente Creek	17.0 sq. mi.
Stevens Creek	25.0 sq. mi.
Calabazas Creek (below junction with Saratoga Creek)	20.8 sq. mi.
San Tomas Aquinas Creek	19.0 sq. mi.
Berryessa Creek	8.6 sq. mi.
Arroyo de los Coches	7.6 sq. mi.
Calero Creek	2.3 sq. mi.
Scott Creek	1.1 sq. mi.

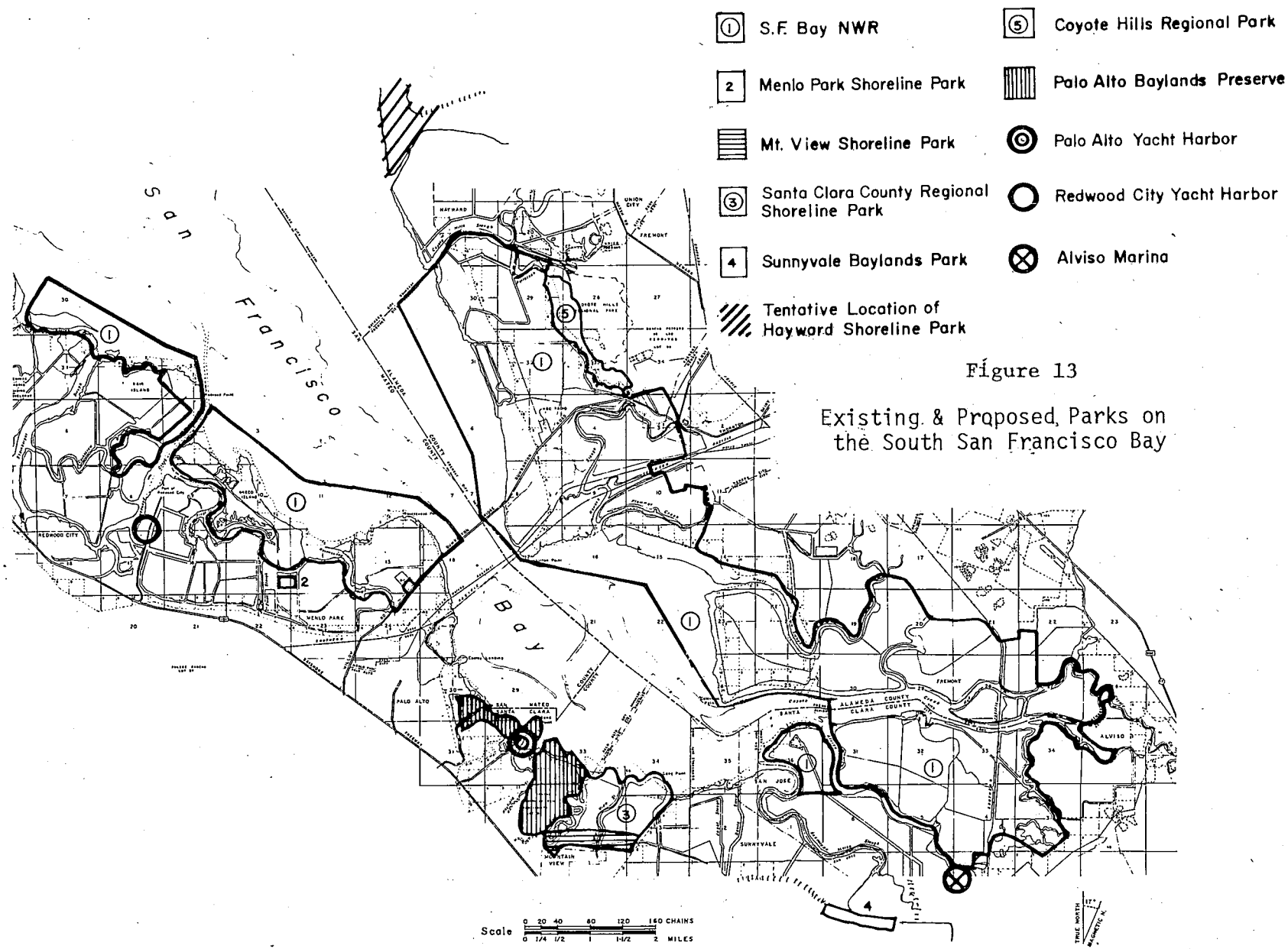


Figure 13

Existing & Proposed Parks on the South San Francisco Bay

The watershed of the entire San Francisco Bay area is discussed above under "General Description and History of the Proposal."

3. Recreation

Two major recreation areas are located adjacent to the south bay: the 1,500-acre Palo Alto Baylands and the 928-acre Coyote Hills Regional Park. In addition, the City of Mountain View has plans for a 500-acre park on the bay front. This park and other local sites, including Sunnyvale Baylands Park and Menlo Shoreline Park, are shown in relation to the refuge in Figures 13 and 22.

A marina at Alviso has recently been constructed by the county of Santa Clara. Adjoining the Alviso Interpretive Center, these two facilities would complement each other.

Studies by Stanford Research Institute show that passive pursuits, such as walking or driving for pleasure, nature walks, sight-seeing and picnicking, are the most popular activities, accounting for more than half of the total recreation demand.

Even with access to the bay limited to less than 10 miles of shoreline, participation in wildlife-oriented recreation is evident. In 1965 an estimated 135,000 man days were spent hunting; 370,000 in wildlife observation, photography, and similar activities; and 3,200,000 in fishing. In their San Francisco Baylands study, the Bureau of Outdoor Recreation indicates that demand increases at a faster rate than population when water-related areas close to metropolitan complexes are opened up.

With most free time occurring in short segments during the work week and with the energy shortage curtailing long-distance travel, more pressure will probably be put on recreation facilities closer to home than on those requiring substantial travel time.

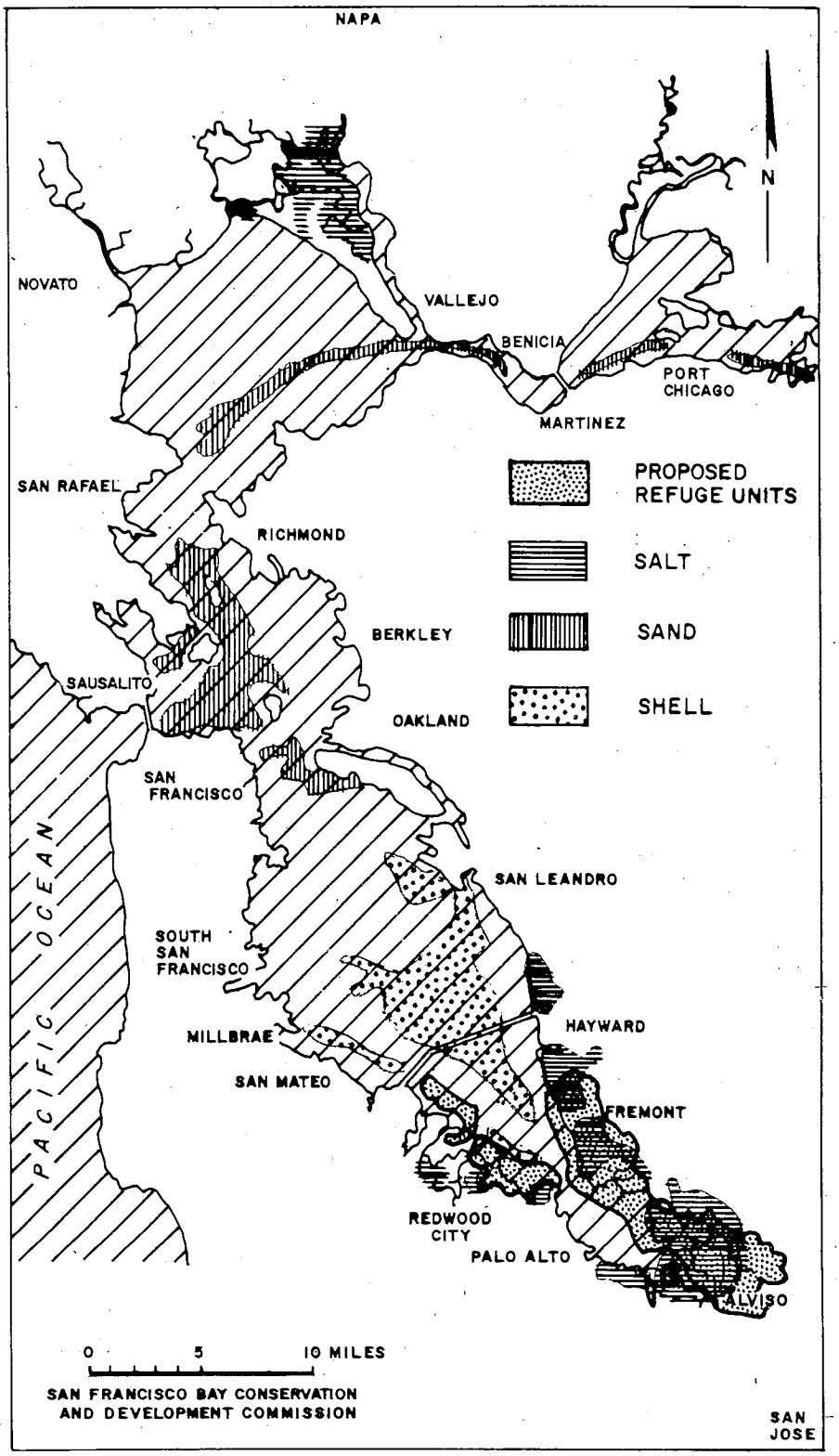
4. Minerals

The only mineral use of land scheduled to be included in the refuge is salt production by solar evaporation of sea water in salt ponds. Large tonnages of salt are produced annually, much of which is shipped in bulk and unrefined for industrial use. 1/ Leslie Salt Company has indicated that they plan to continue solar salt production so long as it is economically feasible.

1/ Approximately 200,000 tons and 579,000 tons salt were extracted in 1975 in the north and south bays respectively.

Figure 14

Sand and Shell Deposits and Salt Production Ponds in San Francisco Bay



Source: Compiled from Figure 1 BCDC Report on Geology; U.S.G.S. quadrangles; and Leslie Salt Co. maps

TABLE 3
MINERAL RESOURCES OF THE SAN FRANCISCO BAY REGION BY COUNTIES*

Commodity	San Mateo	Alameda	Contra Costa	Marin	Santa Clara
Asbestos		2	1		
Chromite	1	2	1	1	2
Clay	1	2	3	3	2
Coal		1	1		
Copper		1	1	1	1
Diatomite			3		
Expansible shale	1	3	3	3	1
Gemstones	2	1	1	2	2
Limestone and shells	5	5	3	1	5
Magnesite		1			1
Manganese		2	1	1	2

1 Occurrence, not likely to be used
2 Small resource, or useable only at high price
3 Significant resource not being used, but likely to be used within 20 years
4 Significant resource being used
5 Significant resource being used, but likely to be exhausted, seriously depleted, or uneconomic in 20 years

* Map showing mineral resources of San Francisco Bay Region, California-Present Availability and Planning for the Future. Edgar H. Bailey and Deborah R. Harden, USGS, 1975.

TABLE 3 (Cont'd)

Commodity	San Mateo	Alameda	Contra Costa	Marin	Santa Clara
Mercury	1	1	2	3	4
Mineral water	4		2	2	4
Oil & Gas	2	1	5	1	1
Peat			4		1
Pumice			2		
Pyrite		1			
Salines	4	4		2	3
Sand & gravel	1	4	1	1	3
Sands, specialty	1	1	3		
Stone, crushed & broken	4	3	3	3	3
Stone, dimension	1	1	1	3	1
Stone, ornamental				1	
Sulphur, byproducts			3		

1 Occurrence, not likely to be used
2 Small resource, or useable only at high price
3 Significant resource not being used, but likely to be used within 20 years
4 Significant resource being used
5 Significant resource being used, but likely to be exhausted, seriously depleted, or uneconomic in 20 years

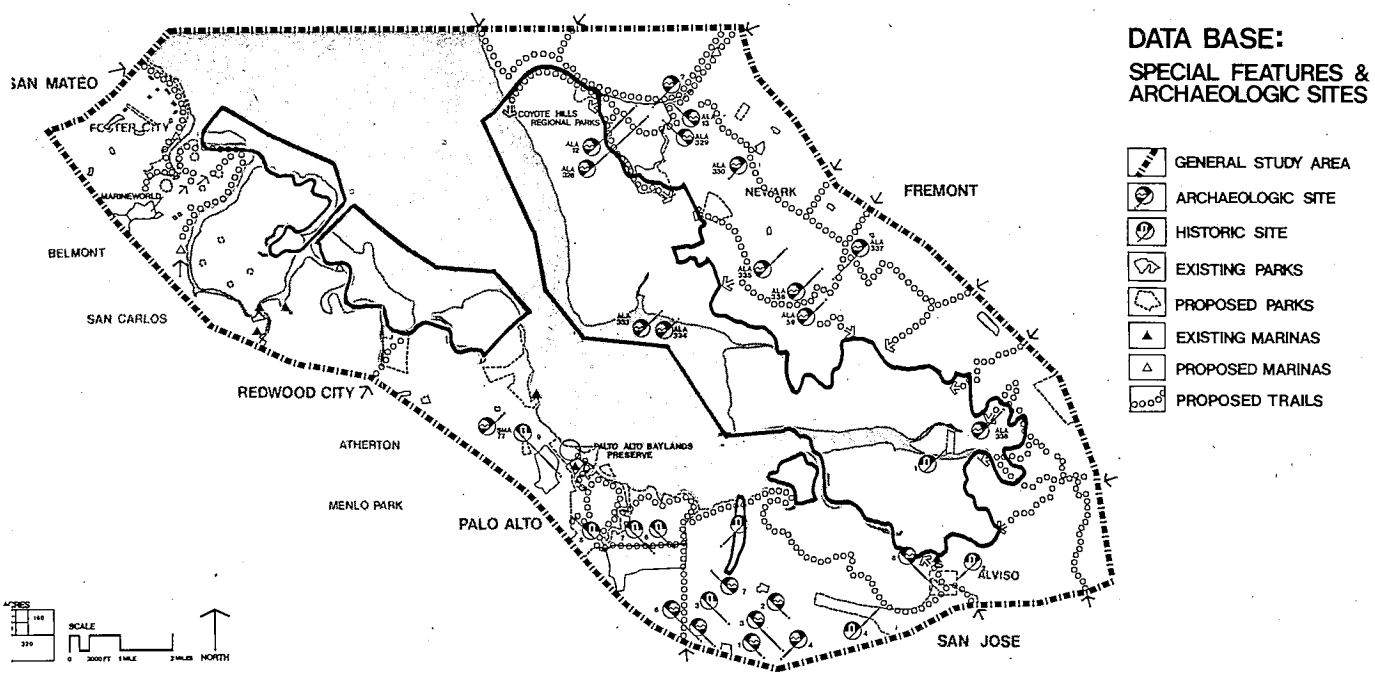
Other mineral resources in the south bay include limestone and shell used in the manufacture of cement; rock, sand and gravel used for road base construction; and minerals such as cinnabar, chromite, manganese and magnesite used in manufacturing. None of the land to be included in the refuge is being used in or is suitable for production of these other minerals, with the possible exception of shell. Locations of sand and shell deposits and salt production ponds are shown in Figure 14. Although it has authority to grant mineral leases for Lands under easement, Leslie Salt Company would be required to clear means of access and methods of operation with the Service.

A complete list of the mineral resources of the San Francisco Bay area with particular locations and probable occurrence is shown in Table 3.

5. Archaeology

The Antiquities Act of 1906 and 1960 provides for protection and preservation of American antiquities. Existing and proposed recreation features and historic sites are yet to be fully evaluated with regard to their resource potential for the proposed programs of the refuge and their potential impact on wildlife. Reference to the most recent listing of the National Register of Historic Places has revealed no listed property on the proposed area. Based upon this reference, it has been determined that the proposed undertaking will not result in the transfer, sale, demolition or substantive alteration of eligible National Register properties. Executive Order 11593 directs the U.S. Fish and Wildlife Service to survey property under its jurisdiction to determine the presence of historical and archaeological resources, and to nominate to the National Register of Historic Places those areas that meet the established criteria for such recognition. The Service is also bound to comply with Section 106 of the National Historic Preservation Act of 1966 and the Antiquities Act which further ensures that the integrity of historic sites will be maintained. Known sites will be preserved, and personnel would cooperate with the State Historic Preservation Office in the identification and protection of archeeological and historic values on or adjacent to the proposed refuge. These range from kitchen middens from presettlement times to remnants of hunting shacks and a railroad station. Contact has been effected with the State Historic Preservation Officer.

Figure 15


SAN MATEO
FOSTER CITY
MARINEWORLD
BELMONT
SAN CARLOS
REDWOOD CITY
ATHERTON
MENLO PARK
PALO ALTO
COYOTE HILLS REGIONAL PARKS
PALO ALTO BAYLANDS PRESERVE
NEWARK
FREMONT
ALVISO
SAN JOSE
SCALE
NORTH
DATA BASE:
SPECIAL FEATURES & ARCHAEOLOGIC SITES
GENERAL STUDY AREA
ARCHAEOLOGIC SITE
HISTORIC SITE
EXISTING PARKS
PROPOSED PARKS
EXISTING MARINAS
PROPOSED MARINAS
PROPOSED TRAILS

The south bay area is rich in historical sites. Of signifcance to the proposed project is the designation of the community of Alviso as a National Historic Site and the inclusion of the abandoned village of Drawbridge within the refuge boundary. Service developments in the Alviso Unit would consider the historic values of the village as they relate to the refuge program. Drawbridge presents unique opportunities to preserve an extremely interesting cultural feature and provide a primary base for interpretive facilities, particularly those relating to wildfowling on the bay. It would also be used by photographers and artists.

Although most of the sites listed on the accompanying map are difficult to find, experience with the sites at Coyote Hills has shown what happens when unlimited access is available, and construction of fences may be necessary for protection. The Archaeologic and Historic Sites Map indicates known archaeologic sites (Figure 15). All undisturbed marsh areas and sloughs bordering on the Bay are potential locations for sites and will be studied in greater detail before development is considered in those areas.

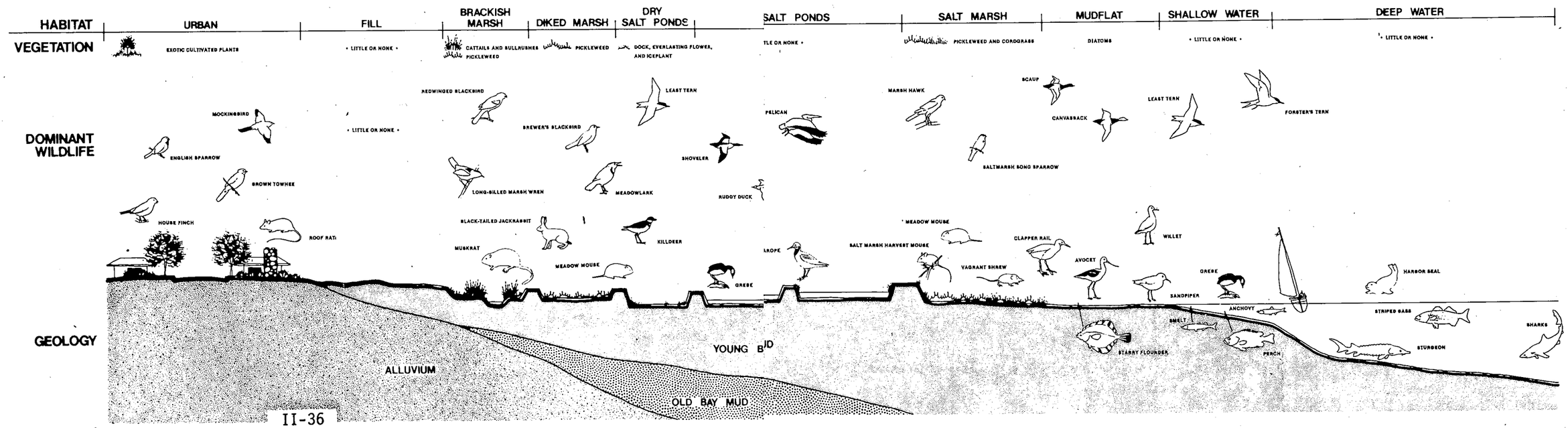
Historic sites would provide a unique educational resource for the proposed refuge. This is especially true of this area which is located in an intense urban setting.

C. Wildlife Use (Figures 16, 17, 18 & 19) (Table 4)

The San Francisco Bay National Wildlife Refuge proposal has substantial acreages of marsh types preferred by endangered and threatened forms of wildlife.

The endangered California least tern utilizes the south bay part of the year, arriving in its breeding area during the last week of April and departing in August. Nesting normally occurs either on Bay Farm Island, outside the proposed refuge, or on Bair Island (included in the refuge).

Figure 16


HABITAT
URBAN
FILL
BRACKISH MARSH
DIKED MARSH
DRY SALT PONDS
SALT PONDS
SALT MARSH
MUDFLAT
SHALLOW WATER
DEEP WATER
VEGETATION
EXOTIC CULTIVATED PLANTS
+ LITTLE OR NONE +
CATTAILS AND BULLRUSHES
PICKLEWEED
PICKLEWEED
DOCK, EVERLASTING FLOWER, AND ICEPLANT
TLE OR NONE +
PICKLEWEED AND CORDGRASS
DIATOMS
+ LITTLE OR NONE +
+ LITTLE OR NONE +
DOMINANT WILDLIFE
MOCKINGBIRD
ENGLISH SPARROW
BROWN TOWHEE
HOUSE FINCH
ROOF RAT
+ LITTLE OR NONE +
REDWINGED BLACKBIRD
BREWER'S BLACKBIRD
LONG-BILLED MARSH WREN
BLACK-TAILED JACKRABBIT
MUSKRAT
MEADOW MOUSE
KILLDEER
GREBE
LEAST TERN
SHOVELER
MEADOWLARK
RUDDY DUCK
LAPPE
PELICAN
MARSH HAWK
SALTMARSH SONG SPARROW
MEADOW MOUSE
SALT MARSH HARVEST MOUSE
VAGRANT SHREW
CLAPPER RAIL
SCAUP
CANVASBACK
LEAST TERN
FORSTER'S TERN
WILLET
AVOCET
SANDPIPER
GREBE
HARBOR SEAL
STRIPED BASS
STURGEON
SHARKS
SMELT
ANCHOVY
PERCH
STARRY FLOUNDER
GEOLOGY
ALLUVIUM
YOUNG BAY MUD
OLD BAY MUD

California brown pelicans, also endangered, are found in the south bay in limited numbers from June through September, but do not nest there. Black rails, also threatened, are present in limited numbers and the bay marshes may prove to be a key wintering area for this species. The peregrine falcon is an infrequent visitor. Another race proposed for addition to the threatened species list, the Alameda song sparrow, is reportedly found only in the south bay marshes in the Fremont, Mowry Slough and Alviso units. The white-tailed kite, at one time considered on the verge of extinction and still afforded fully protected status by the State of California, occurs within the proposal area.

There are two subspecies of salt marsh harvest mice which are endemic to the marshes of San Francisco, San Pablo and Suisun Bays. Reithrodontomys raviventris raviventris, commonly called the "red-bellied harvest mouse," is found in the marshes of San Francisco Bay. R. r. is found around San Pablo and Suisun Bays.

The majority of California clapper rails are found around south San Francisco Bay in Alameda, Santa Clara and San Mateo Counties. Wilbur (1976) estimated that at least 50 percent of the total California clapper rail population is found in south San Francisco Bay. They also occur in marshes of Contra Costa, Solano, Napa, Sonoma and Marin Counties. Outside the San Francisco Bay area, California clapper rails have been reported at Humboldt Bay and Morro Bay. There have been no authenticated records for Humboldt Bay since 1947 or for Morro Bay since about 1942, but recent unconfirmed reports from both areas suggest that clapper rails may still occur there (Wilbur, 1976).

San Francisco Bay is a key wintering area for diving ducks in the Pacific Flyway. Over 53% (1954-1975 average) of the flyway canvasback population winters on the estuary and normally 6,900 frequent the proposed refuge. The bulk of the flyway scaup population winters on the estuary with south bay numbers ranging from 50,000 to 100,000. Scoters, buffleheads and ruddy ducks are abundant during the winter with lesser numbers of other divers and puddle ducks present. A limited amount of duck nesting, primarily by cinnamon teal, pintail, gadwall, ruddy ducks, mallards and shovelers, occurs (Table 4).

Figure 17

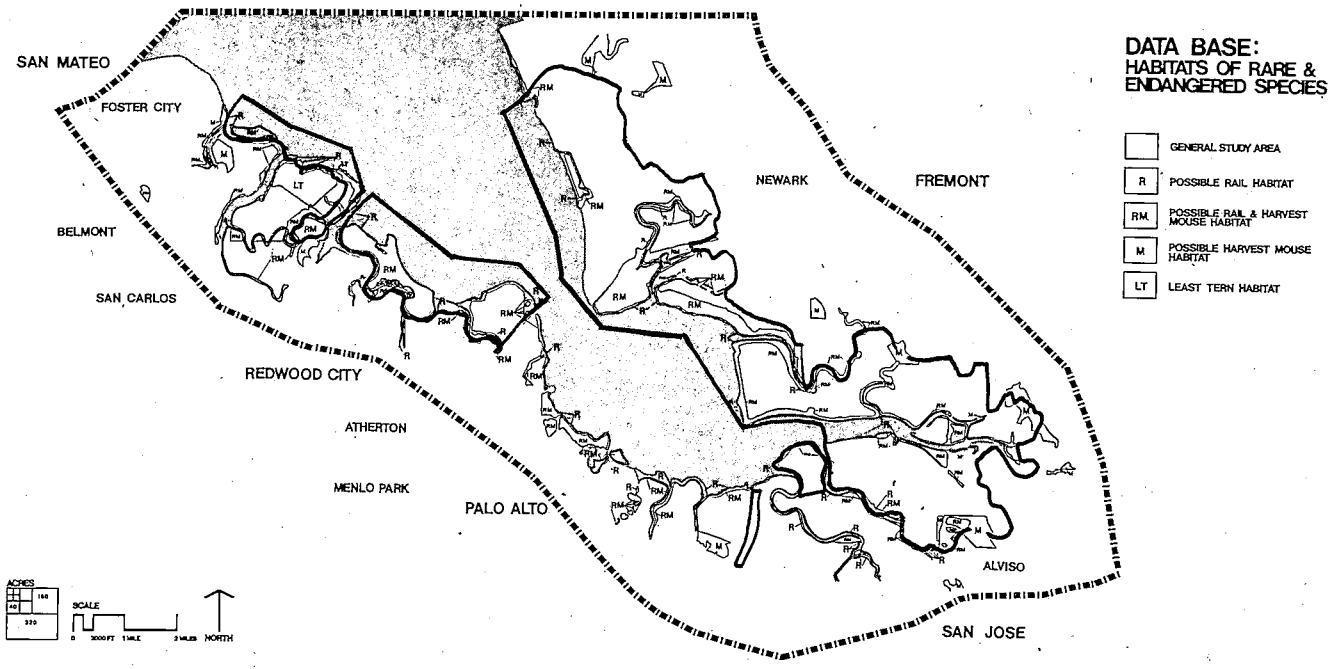
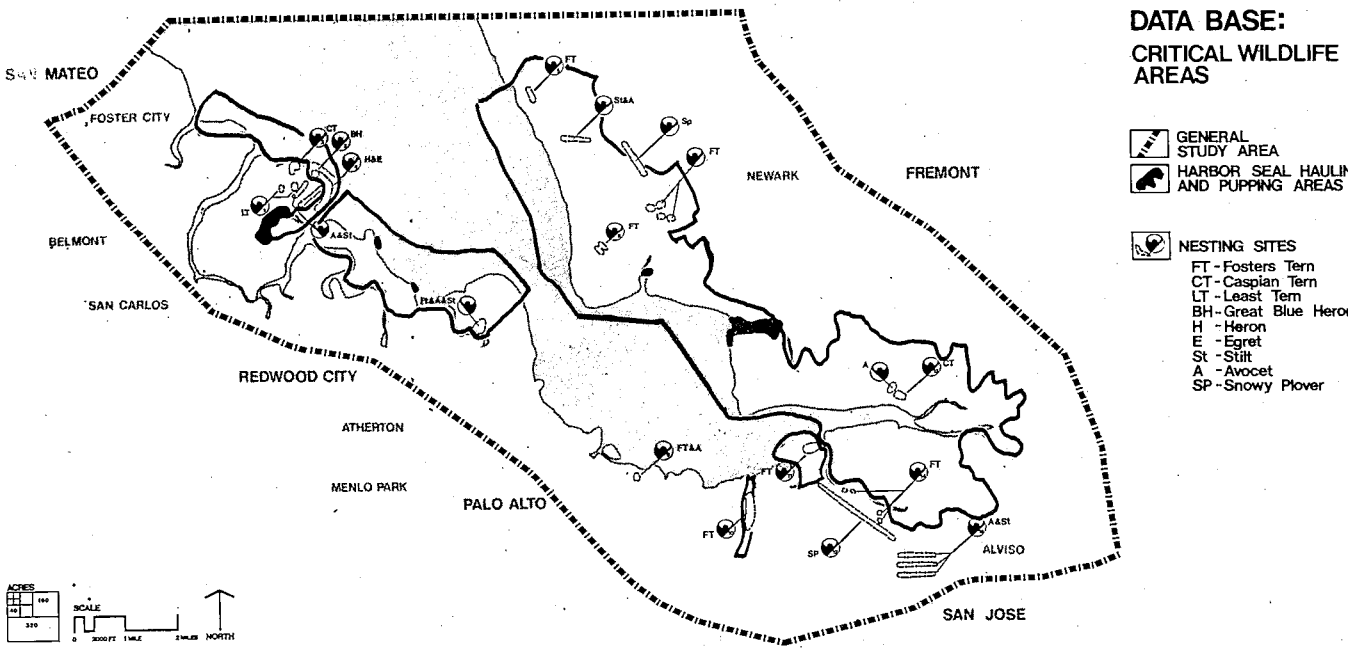


Figure 18



South bay wetlands support hundreds of thousands of shorebirds. Certain species, like the avocet and black-necked stilt, nest on the levees and are year-round residents. Other species utilize the area as wintering habitat or during migration. The more abundant shorebirds include least and western sandpipers, stilts, avocets, dunlins, marbled godwits, long-billed curlews, willets, dowitchers, and greater yellowlegs. Western, horned and eared grebes are present in large numbers during the over-wintering periods. Gulls are year-round residents with Bonaparte's gulls preferring salt ponds as feeding and resting areas. Both Forster's and Caspian terns nest in substantial numbers in the south bay. Caspians nest at several sites with the largest rookery (500 nests) observed in 1973 being located in the Mowry Slough Unit. Of a total of six Forster's tern nesting rookeries noted in 1973, all but one were located within the proposed refuge. Total nests of this species were 1,775 (Table 4).

Table 4

ESTIMATED WATERFOWL USE - EARLY 1970's

SOUTH SAN FRANCISCO BAY (SOUTH OF SAN MATEO BRIDGE)

	Ducks	Use Days
January	60,000	1,860,000
February	60,000	1,680,000
March	40,000	1,240,000
April	20,000	600,000
May	6,000	186,000
June	1,000	30,000
July	2,000	62,000
August	10,000	310,000
September	22,000	660,000
October	35,000	1,085,000
November	45,000	1,350,000
December	60,000	1,860,000
Total	361,000	10,923,000*

Main waterfowl species present in the south bay are the shoveler, pintail, wigeon, scaup, canvasback, and ruddy duck. Species also present are the mallard, gadwall, green-winged teal, goldeneye, bufflehead, and scoters.

* 6,000,000 use days south of Dumbarton Bridge

	Coots	Use Days
January	6,000	186,000
February	5,000	140,000
March	4,000	124,000
April	2,000	60,000
May	1,000	31,000
June	200	6,000
July	300	9,300
August	300	9,300
September	1,000	30,000
October	2,000	62,000
November	3,000	90,000
December	5,000	155,000
Total	29,800	902,600*

* 800,000 use days south of Dumbarton Bridge

Table 4 (con't)

ESTIMATED WATERFOWL USE - EARLY 1970's

SOUTH SAN FRANCISCO BAY (SOUTH OF SAN MATEO BRIDGE)

Shorebirds, Water Birds, Terns and Allies
(Sandpipers, Willets, Avocets, Stilts, Grebes,
Terns, Pelicans, Phalaropes)
(Excludes Gulls)

	No.	Use Days
January	90,000	2,790,000
February	90,000	2,520,000
March	70,000	2,170,000
April	60,000	1,800,000
May	50,000	1,550,000
June	40,000	1,200,000
July	40,000	1,240,000
August	40,000	1,240,000
September	50,000	1,500,000
October	50,000	1,550,000
November	70,000	2,100,000
December	90,000	2,790,000
Total	740,000	22,450,000*

* 18,000,000 use days south of Dumbarton Bridge

The proposal area does not include all the wildlife habitat south of San Mateo Bridge. It includes more habitat than is located south of Dumbarton Bridge. Therefore, wildlife populations for the proposed refuge are estimated at levels between the above figures. More definitive data are the subject of ongoing studies.

Figure 19

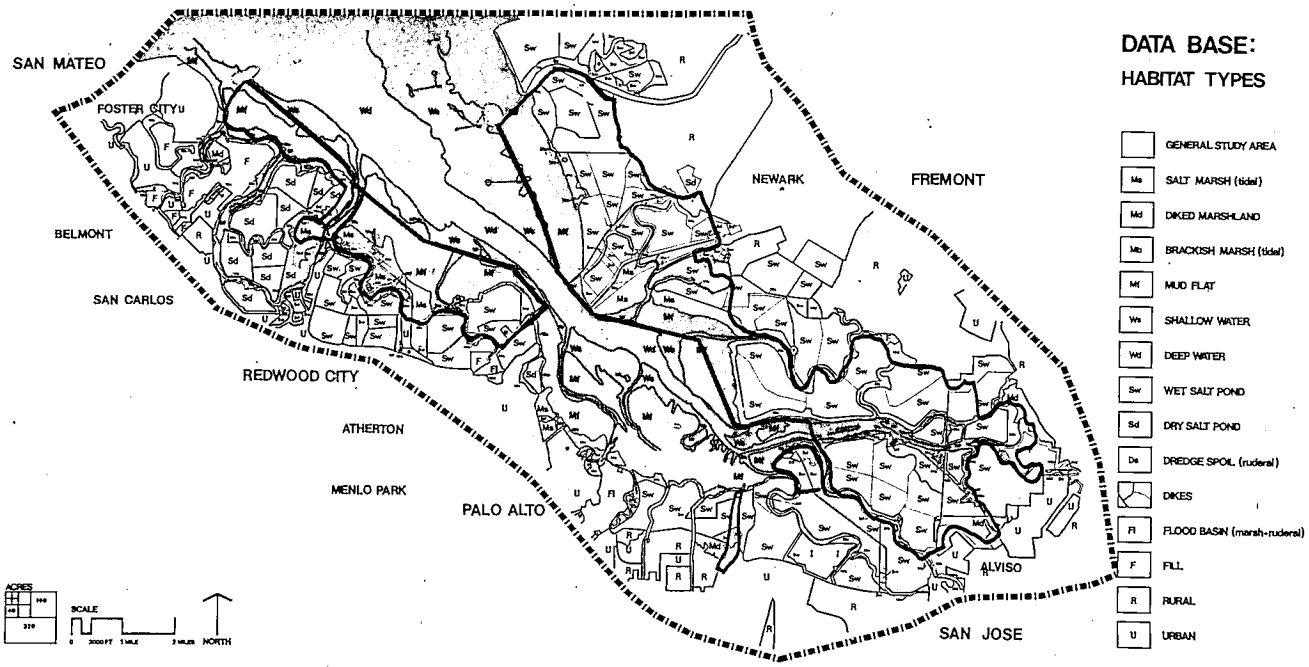
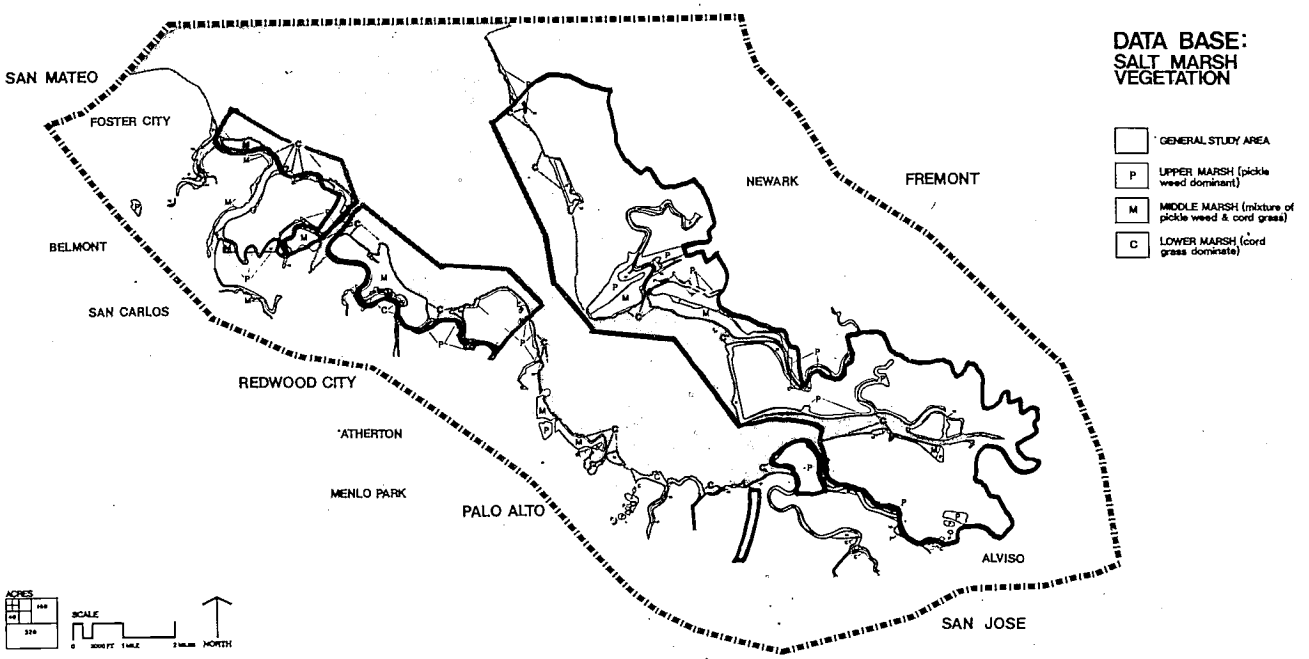


Figure 20



The largest wading bird rookery on the entire bay, and the only one known to exist south of the Golden Gate, is located on Bair Island, within the boundaries of the proposed project. During the 1973 breeding season the rookery supported approximately 1,000 nests of great blue herons, black-crowned night herons, and snowy egrets. During the non-nesting season these birds disperse widely around the bay and are joined by great egrets, currently a non-nester on the south bay.

The overall productivity of the project area is illustrated by the refuge bird list (Appendix 2) which contains 248 species. South San Francisco Bay has the potential to support once again a substantial fishery for fin fishes, shrimp, shellfish and possibly crabs (Appendix 3). Due to existing low water quality and resultant low populations of these forms, the current harvest is negligible. Poor water quality has also been responsible for contamination of certain shellfish, particularly oysters, so that these are not currently suitable for human consumption. Plans to upgrade sewage treatment facilities currently dumping effluent into the south bay are in process, and ultimately the outlook is optimistic for improved water quality. As conditions improve it is anticipated that populations of the above forms will respond favorably, both in population size and in quality desirable for human use.

The refuge would provide protection and habitat for the harbor seal as well as a myriad of other resident mammals. Forty-seven species of mammals use the general bay area. A major harbor seal hauling ground, with recent peaks of 230 animals, exists in Mowry Slough. Less heavily used hauling grounds are located at the mouth of Newark Slough, on Greco Island, and on Corkscrew Slough (Bair Island). Thirty species of reptiles and amphibians have been identified in the bay area. Lists of mammal, reptile, amphibian and fish species represented on the south bay appear in Appendix 3.

D. Cultural Environment

In keeping with policy, the refuge would preserve desirable environmental quality. Included would be compliance with E.O. 11593, which requires the refuge staff to cooperate with other agencies in identifying and protecting historic and archaeologic values which occur on or adjacent to the proposed refuge. Figure 15 (p. II-46) indicates known sites of lasting interest.

1. Visual Environment

The proposed refuge has the visual appearance of an intermingling of natural areas and extensive urbanization. From virtually every site within the refuge boundaries,

the wildlife and their respective habitats are viewed in juxtaposition with man's encroachment on the bay. This encroachment is visible in the smog, bridges, power transmission lines, railroads, aqueducts, radio transmitting stations, and the urban sprawl on the adjacent baylands and hills as far as the City of San Francisco (Figure 21).

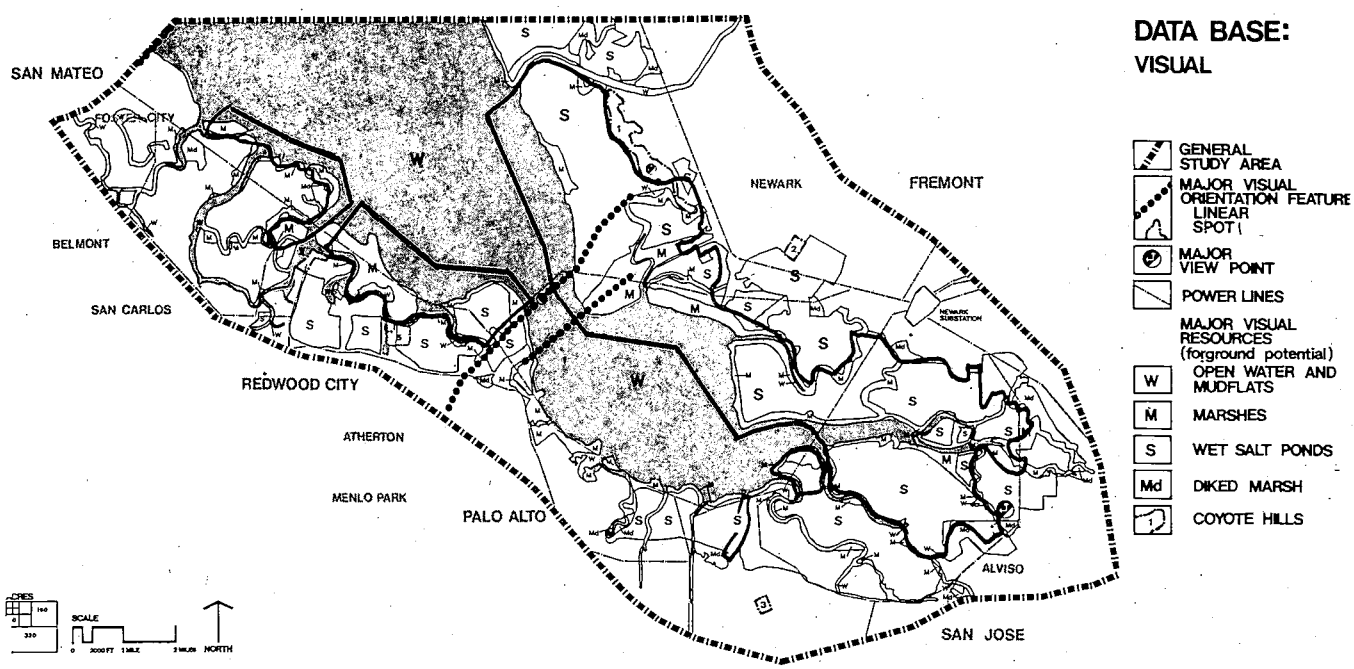
2. Political

a. Government

The San Francisco Bay basin, somewhat imperfectly outlined by the boundaries of the 9 counties surrounding the bay, contains a metropolitan center of 4.5 million people. As opposed to most urban centers, which have their major population concentrated within the limits of one city (for example Los Angeles) or at least subject to the centralized government of a single county (such as Chicago area within Cook County), the bay area population is dispersed among these 9 counties and numerous cities. As a result of this distribution of population, there has been no obvious government agency to coordinate the geographic region as a whole. Consequently, the San Francisco Bay area comprises one of the most complex metropolitan communities in the United States, at least in terms of political organization.

This greater than average governmental decentralization has encouraged organizational experimentation. To date several agencies with regional authority over the bay area have been formed. These include the Association of Bay Area Governments, San Francisco Bay Conservation and Development Commission, Metropolitan Transportation Commission, Bay Delta Study (of the State Water Resources Control Board), and the Joint Committee on Bay Area Regional Organization. However, these are predominantly single-purpose agencies and none have the power of broad integration of all aspects of bay area government.

Figure 21


SAN MATEO
FOSTER CITY
BELMONT
SAN CARLOS
REDWOOD CITY
ATHERTON
MENLO PARK
PALO ALTO
NEWARK
FREMONT
ALVISO
SAN JOSE
DATA BASE:
VISUAL
GENERAL STUDY AREA
MAJOR VISUAL ORIENTATION FEATURE
LINEAR
SPOT
MAJOR VIEW POINT
POWER LINES
MAJOR VISUAL RESOURCES (forground potential)
W OPEN WATER AND MUDFLATS
M MARSHES
S WET SALT PONDS
Md DIKED MARSH
COYOTE HILLS
SCALE
NORTH

b. Planning

Major responsibility for the San Francisco Bay was delegated to the San Francisco Bay Conservation and Development Commission (BCDC) in 1965. The McAteer-Petris Act passed in that year by the California State Legislature established the BCDC as a permanent commission with some regulatory authority over development of San Francisco Bay and a 100-foot wide band along its shoreline. The Act limits bay fill to water oriented use and includes additional constraints that public benefits must exceed public detriment from the fill and loss of water area, and that fill will be authorized only when no alternative upland location is available.

With these restrictions on the use of the bay and its shoreline, the BCDC plan gives high priority to the wildlife refuge as a form of recreation which, with its low-key activities, would preserve the bayshore and the water quality while providing public use of the bay not readily available at the present.

A review of the numerous regional, general, open space and recreational plans and proposals for south San Francisco Bay discloses general agreement and no apparent conflicts regarding the preservation of the land to be included in the San Francisco Bay National Wildlife Refuge. Agencies and plans that have endorsed or indicated concordance with the use of the land for the refuge and its concomitant protection of wildlife, open space and ecological values include the following: San Francisco Bay Conservation and Development Commission (discussed above); Association of Bay Area Governments; Santa Clara County Regional Park Plan; Alameda County General Plan; San Mateo County General Plan; City of Fremont General Plan; and the Cities of Menlo Park, Palo Alto, Mountain View, Redwood City, San Jose, Santa Clara, Hayward and Milpitas.

c. Zoning and Other Land Use Controls

In accordance with the plan developed by BCDC discussed in the section immediately above, and also in compliance with the specifications of the Association of Bay Area Governments, which designate that all baylands south of Foster City on the west side of the bay and south of the San Mateo Bridge on the east should remain in permanent open space and in public ownership, local zoning restrictions favor the establishment of the San Francisco Bay National Wildlife Refuge. Federal acquisition of the land relieves the local governments of the necessity of continuing to police these zoning restrictions against development.

Other land use controls favoring the retention of baylands in open space offer tax relief, as provided in the California Land Conservation Act (Williamson Act). This Act, which passed the California Legislature in 1965, allows a lower tax assessment to property owners for restricting the use of the land for no less than 10 years.

3. Social and Economic Conditions

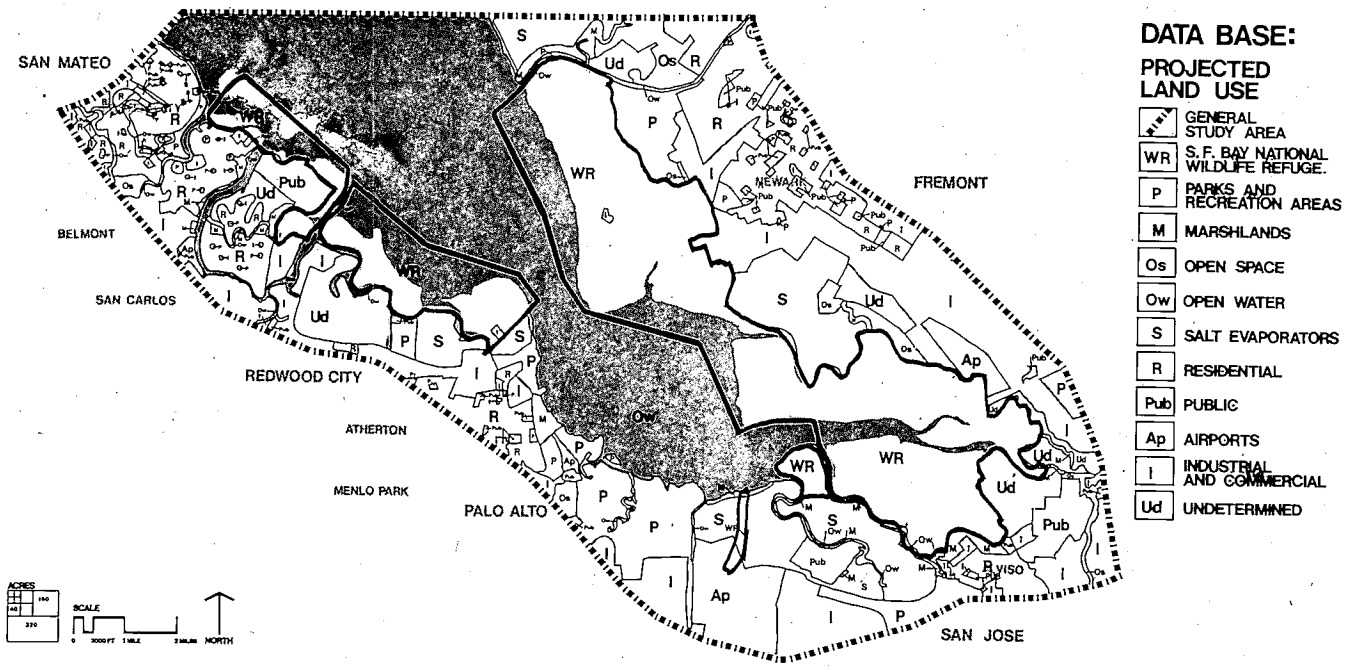
a. Brief Economic History of the Area

World War II marked the most sudden increase in the economy of the south bay with the establishment of many new industries. The expansion of population and employment opportunities continued in the bay area after the war and the south bay was included in this expansion.

Manufacturing accounted for the outstanding increase in employment, particularly in the durable goods field. Employment by various levels of government also grew much more rapidly than did population. Employment in services, finance, insurance and real estate also gained relatively, while food processing, which had been a major economic factor, declined as agricultural lands were converted to other uses.

The natural beauty of the bay and its cultural heritage and entertainment facilities have proven to be a prime tourist attraction. With an increase

Figure 22


SAN MATEO
BELMONT
SAN CARLOS
REDWOOD CITY
ATHERTON
MENLO PARK
PALO ALTO
FREMONT
NEWARK
SAN JOSE
DATA BASE:
PROJECTED LAND USE
GENERAL STUDY AREA
S. F. BAY NATIONAL WILDLIFE REFUGE.
PARKS AND RECREATION AREAS
MARSHLANDS
OPEN SPACE
OPEN WATER
SALT EVAPORATORS
RESIDENTIAL
PUBLIC
AIRPORTS
INDUSTRIAL AND COMMERCIAL
UNDETERMINED
SCALE
NORTH

in leisure time, the bay area's tourist business is likely to increase, particularly if the scenic natural resources of the bay are conserved.

b. South Bay Economy (Social Economic Characteristics)

(1) Population

The 1970 U.S. Census of Population put the number of people in the San Francisco Bay area at 4,519,200, an increase of 843,000 over the 1960 census. The communities of the south bay constituted approximately one-fourth of the total bay area population, compared to less than one-fifth of the area's population in 1960. Bay area population is expected to increase to 8.2 million by the end of this century. 1/ Data on distribution of past, present and future populations of the bay area as shown in Figure 23 is based on information contributed by the Association of Bay Area Governments. The refuge site is not a residential area.

(2) Employment

Wholesale and retail trade encompass the largest sector of jobs in the area, accounting for 21 percent of the total employment. The services sector of the economy is a close second to trade, employing 19.9 percent of the bay area total. This sector recently has also had the highest growth rate of all sectors. Manufacturing, although declining in relative importance, accounts for 18.4 percent of all bay area employment. Manufacturing is well distributed among the major industry groups. Types of employment and number of persons employed by each are shown in Figure 24.

1/ San Francisco Bay Conservation and Development Commission, Economics and Population Growth, February, 1967.

4. Noise

Noise levels in the Fremont and Mowry Slough Units of the refuge are affected by the vehicular traffic on the Dumbarton Bridge, the southern crossing of the Amtrak railroad tracks, and the industrialized areas located immediately adjacent to the eastern edge of the salt ponds and Coyote Hills Regional Park.

Sources of noise closest to the Alviso Unit include highway traffic on California 17 and 237, the community of Alviso and associated industries, San Jose Sewage Treatment Plant, Corning sanitary landfill project adjacent to the New Chicago Marsh, and a crossing of the Southern Pacific Railroad which traverses the unit.

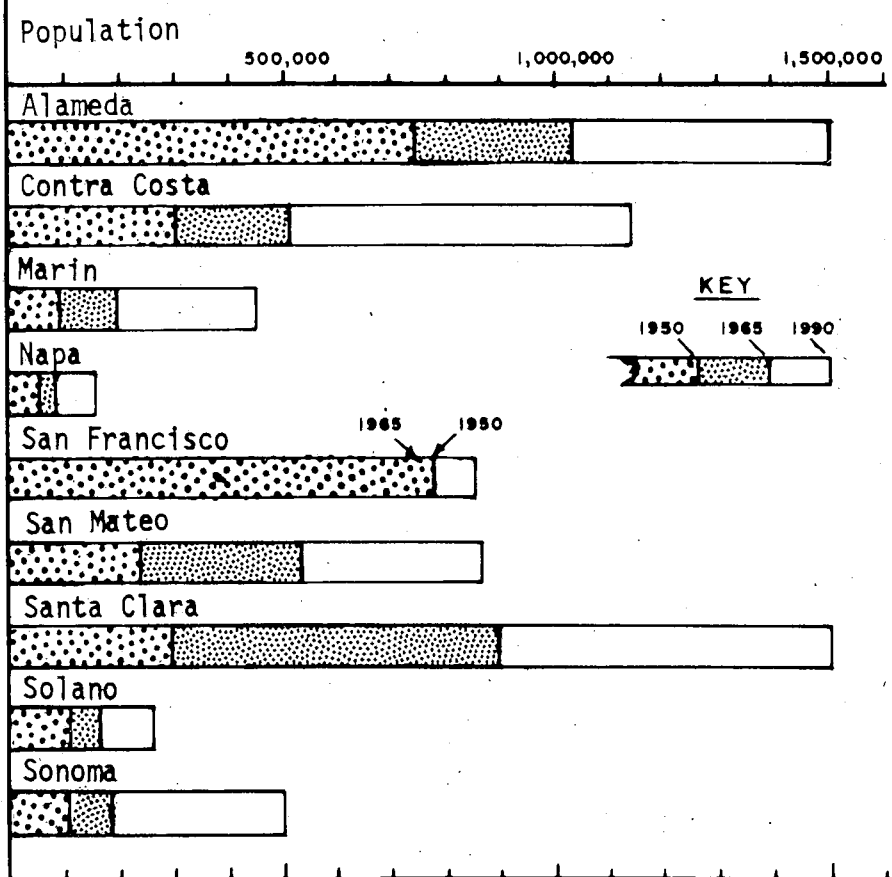
Greco Island Unit is most affected by noise levels from the Dumbarton Bridge and State Highway 84, landfill associated with the solid waste disposal site of the City of Menlo Park, industrial and vehicular use along U.S. Highway 101, and the Port of Redwood City with its concomitant users.

All four units of the refuge are influenced by air traffic from the numerous bay area airports. This is not likely to change.

Health and Nuisance Factors

Two species of salt marsh mosquitoes occur within the units of the proposed refuge. Both are highly pestiferous and constitute a threat to the health of area residents, in addition to being a nuisance. The Norway rat also occurs within the area. There are three separate local governmental bodies which have organized to oversee vector problems in the area and their major objective is to physically eliminate mosquito sources. These are the Alameda County Mosquito Abatement District, Santa Clara County Environmental Management Agency and the San Mateo County Mosquito Abatement District. Specific functions of these agencies include provision of technical assistance, specifying potential mosquito brooding areas, providing temporary emergency control measures, and working with organizations and agencies in formulating long-range plans to maintain and preserve a favorable environment for residents within their respective districts. Because of their past and continuing efforts, mosquito and rat populations do not pose an immediate problem in the proposed area.

Population of the Bay Area Counties, 1950, 1965, 1990



Source: Association of Bay Area Governments

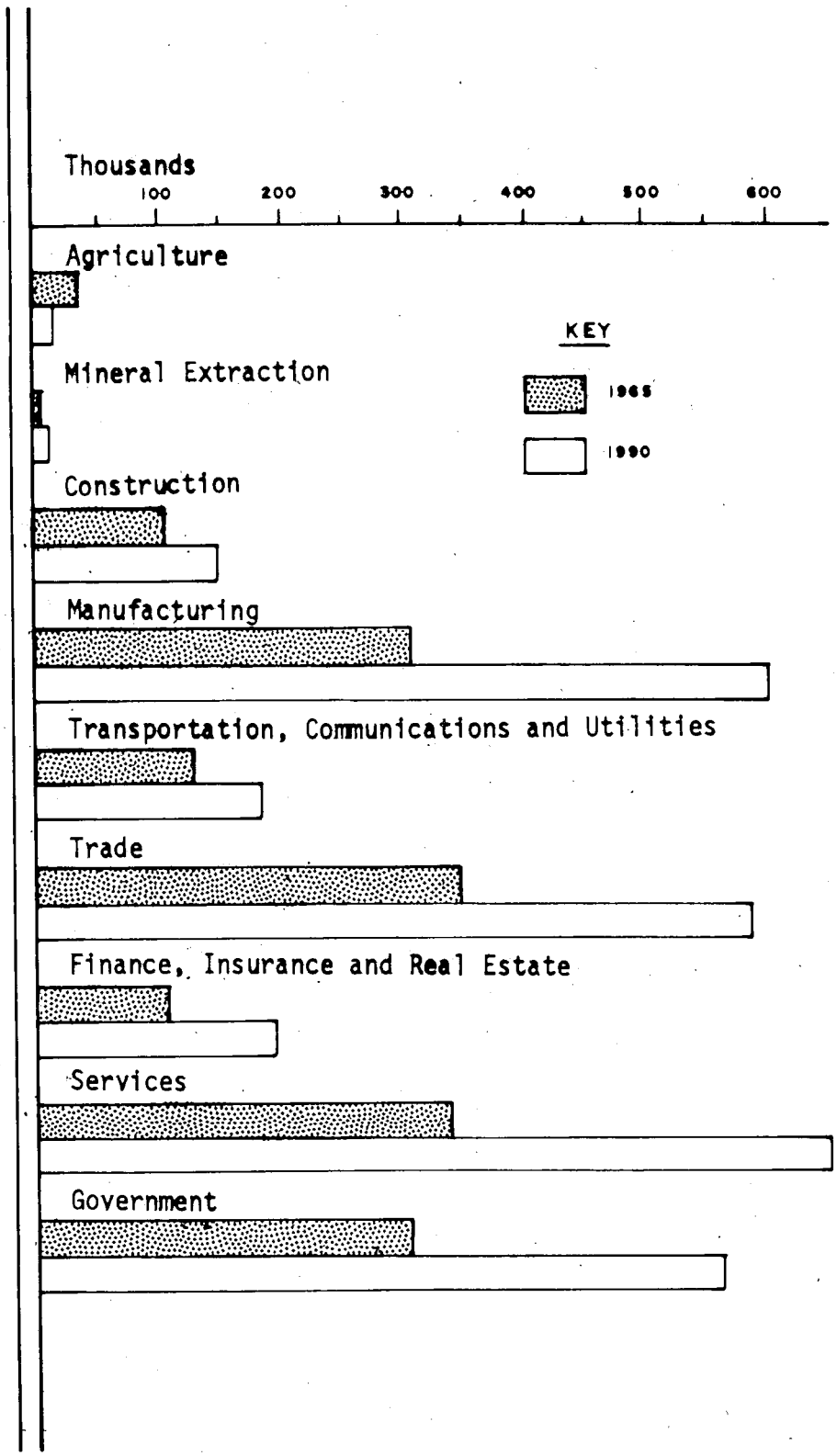
Figure 23

Probable Future Environment Without the Proposed Action

The probable future environment without the proposed refuge would be given a substantial measure of protection through local laws and regulations. Already the trend toward undesirable development has been affected in some instances. Existing natural qualities that remain have been recognized, and the move toward preservation is popular. How effective these safeguards are expected to be is reflected in the supportive response to the refuge idea. It is generally accepted that a national wildlife refuge embraces programs beneficial to the environment. There is confidence refuge status would improve ability to withstand pressures for modification of protective regulations. Almost without exception, public and private agencies and groups have rallied for the proposal because it promises to preserve wildlife habitat's relative naturalness while offering opportunites for public enjoyment.

Figure 24

Bay Area Civilian Employment by Industry Group, 1965 and 1990



Source: Association of Bay Area Governments

The Impacts

III. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

Acquisition proposed would have a variety of direct and indirect impacts of local, national and international significance. The most significant local impact of the proposal is that 23,000 acres of the south bay would be preserved in public ownership for the protection of native wildlife, open space and wildlife-oriented public use. While public uses are considered here briefly in relation to acquisition, effects of refuge development and operation would be examined in a subsequent environmental assessment.

The following discussion describes foreseeable effects of the acquisition on the site and on adjacent activities. It emphasizes that impacts from acquisition relate primarily to preservation, while future development and operation would concern effects caused by activities. While this statement is concerned with acquisition, discussion on planned refuge activities is included to enable consideration of ultimate effects of the proposed action.

A. Impacts on the Natural Environment

1. Impact on Wildlife

Marshes of the area provide year-round habitat for two endangered species, the California clapper rail and and the red-bellied salt marsh harvest mouse. The endangered California least tern uses the south bay as a nesting and breeding area from about the last part of April until the mid part of August. Limited numbers of endangered California brown pelicans use the south bay habitat from June through September. The Peregrine falcon, also endangered, is sighted on rare occasions. Black rails, a threatened species, are present in small numbers and the marshes may provide suitable wintering habitat. The Alameda song sparrow is proposed for addition to the threatened list. Principally, the impact on these endangered species would be protection of habitat where they may continue to find suitable food, nesting and resting areas during certain seasons of the year. Refuge administration of the proposal would provide safeguards against developmental patterns in the south bay area, and the welfare of endangered wildlife would be considered prior to implementation of refuge management actions. Numbers of individual endangered

or threatened species are not expected to show any significant increases as a result of this proposal; present populations are expected to remain relatively static over the next 10-15 years.

Present use-days by shorebirds, waterbirds, terns and allies are 22,450,000 annually as shown in Table 4. This abundant array of birdlife is supported by the south bay wetlands. Some species, such as the avocet and black-necked stilt, nest on the levees and are year-round residents. Others, like scaup and buffleheads, use the area as key wintering habitat. The white-tailed kite, once considered on the verge of extinction and still afforded fully protected status by the State of California, occurs within the proposal area.

The greater Pacific Flyway portion of canvasbacks overwinter on the estuary, as do a major number of scaup. The cinnamon teal, pintail, gadwall, ruddy duck, mallard and shoveler also occur in significant numbers. The area provides habitat needs for Caspian tern nesting rookeries, particularly in the Mowry Slough unit. Great blue heron, black-crowned night heron and snowy egret rookeries are abundant. Approximately 1,000 nests were counted in 1973.

The contribution made to the Pacific Flyway migratory bird population is significant. No figures which signify the contribution made to the total harvest of Pacific Flyway birds are available but data indicate substantial impact. The proposal would ensure continuation of undisturbed habitat for these species and, as management plans are formed and put into practice, increases in numbers should be noted. But for the most part, natural processes will be allowed to prevail under refuge administration, perpetuating these species for an indefinite period of time.

Bay waters have the potential to restore a substantial fishery for shrimp, shellfish, fin fishes and crabs. Bass, sunfish, flounder, herring, trout, and similar fish were once present in ample numbers, but poor water quality has greatly impacted their populations.

Improvements are being made to sewage treatment facilities, and the outlook for improved water quality is optimistic. While this factor is outside refuge administration to effect, should water quality be improved and aquatic life restored to former numbers, the proposal would provide a barrier against other forms of on-site contamination such as commercial development necessitating the use of dredges, draglines and related fishery habitat destructive practices.

Forty-seven species of mammals use the general bay area, including a major harbor seal breeding ground in Mowry Slough. Representatives of these species include opossum, brush rabbit, big brown bat, Brazilian free-tailed bat, California ground squirrel, etc. These species would be assured of food, water, cover and room to roam under this proposal, with natural forces interacting to maintain habitat balance.

In summary, available data indicate that 248 species of birds, including four offically classified as endangered, 47 mammal species, including 1 endangered species, and numerous forms of aquatic animals, amphibians and reptiles find life requirements in the extensive marshes, wetlands and bay waters of the proposal. They include year-round residents and seasonal users. Refuge administration would ensure perpetuation of these varied and complex series of habitats, primarily permitting the continuance of natural processes through protection from undue disturbances from man's activities. Management practices, yet to be fully prepared, would take into account the welfare of all species, but in line with Service policy endangered or threatened species would receive prime consideration. No significant increases or decreases in numbers of these species are anticipated as an impact of this proposal; the principal impact would be stabilization and protection of present populations.

Refuge acquisition and subsequent administration would assure that the substantial contribution made by migratory waterfowl to the Pacific Flyway population would continue and, within the next 10 years, provide an increase in numbers. Wintering grounds would be preserved and protected. Should water quality improve as now expected the bay waters would produce marine life. These aquatic forms would benefit from restrictions on other public use activities. It is believed that present heron rookeries would persist indefinitely or increase within the limitations imposed by natural factors.

2. Impact on Air Quality

Table 1-a, indicates degrees of air pollution in the South Bay area. There are more days of heavy pollution (page II-12) than for other parts of the Bay. Pollutants include carbon monoxide, oxides of nitrogen and hydro-carbons. Sulfur dioxide and oxidants are expected to decline due to emission controls. Air quality is affected by nearby vehicular traffic, heavy aircraft use and more distant industry. Prevailing winds tend to bring in pollution from major activity centers. The acquisition proposed would not affect this.

Refuge development and management would lead to changes related to increased human activity. While physical modifications, such as construction of trails, parking lots, and contact stations, would encourage more visitor use, vehicular travel on the refuge still would not be substantial. Operation of refuge maintenance equipment also would be minor. Since field burning is not foreseen, exhaust emissions constitute the principal adverse impact on air quality.

Since activities affecting air pollution would be low key, acquisition and future operation of the refuge would not result in significant impact on air quality except to support existing regulations prohibiting new industrial development on the site. Conversely, if without local zoning and refuge status shallow baylands were to be filled, the future climate would be smoggier. If there should be urban development the effect would be greater than from vegetated parklands planted on fills. 1/

In a small degree climate and air quality are affected in proportion to the extent of marsh preserved or expanded. Large expanses of vegetation modify temperatures and produce oxygen (carbon dioxide + water + light = glucose and oxygen). The proposed action would not reduce the vegetation, and air quality related thereto would not be changed.

1/ Possible Effects of Bay fill on Air Quality, Ludwig, Francis, 1970.

3. Impact on Vegetation

Salt ponds, comprising 12,690 acres, contain mainly algae and diatoms. Cordgrass and pickleweed are the principal salt marsh plants. Microscopic forms are the dominant vegetation on the mud flats, comprising 5,435 acres.

Thousands of acres of salt marsh have been lost through dredging and filling and the creation of salt ponds. This proposal would place into public ownership 3,828 acres of salt marsh, which is a substantial percentage of marsh remaining south of the San Mateo-Hayward Bridge. Acquisition would support present regulations designed to maintain natural qualities.

Major productivity in estuaries, such as San Francisco Bay, occurs in the salt marsh proper. Cordgrass is one of the most highly productive wild plants, and pickleweed also is an extremely productive species. Debris from marsh plants is ingested by lower animals and thus forms the base for complex food chains.

In addition to the isolation factor, the type of vegetation present on the eastern end of Bair Island accounts for the large wading bird nesting rookery. Acquisition and management would be directed to retaining vegetative types in their present condition. The southern extension of the Coyote Hills represents the bulk of the true upland vegetation found within the project. Public use of this tract, including wildlife observation, photography and hiking, would be planned to limit damaging the flora. Pathways and blinds are examples of safeguards.

The proposal would allow continued salt production within the project. By agreement, those ponds no longer needed for salt production may revert to marsh vegetation. The results would be expanded marsh habitat and natural environmental values. This could be accomplished in different ways including planned removal of dikes permitting tidal action to resume. Details would be part of planning to be described in a future assessment.

4. Impact on Watershed

Acquisition would have no direct effect on the quality and quantity of fresh water entering the south bay. Rights and authorities of water control agencies would

be recognized, and while the Service would not administer watersheds, the refuge would cooperate with Federal, State, and local entities. They include the Corps of Engineers, Environmental Protection Agency, State Resources Agency (Departments of Conservation, Fish and Game, Navigation and Ocean Development, Parks and Recreation, Water Resources), Association of Bay Governments, local governments and others.

5. Impact on Minerals (Figure 14)

As presently planned, acquisition would not affect salt production by the solar evaporation process. This would be allowed to continue after project implementation, according to this proposal. Refuge status, however, would limit surface access by the Leslie Salt Company to activities compatible with wildlife within an area directly related to salt production. The salt ponds include 2,750 acres in the Fremont Unit, 625 acres in the Greco Island Unit, 6,330 acres in the Mowry Slough Unit, and 2,975 acres in the Alviso Unit.

There is no clear indication oil and gas deposits exist beneath the southern portion of San Francisco Bay. 1/ It has been reported that the "younger" oil and gas bearing rocks do not appear to be present in the lower bay. Oil deposits have been located in sections of Contra Costa, Alameda, San Mateo and Santa Clara Counties, but these are not major production areas. Geologists do not feel that a major oil field may be located in the proposal area. 2/

Acquisition of refuge lands would impose additional restrictions on activities relating to oil and gas extraction, if deposits should be found there. Surface access would be prohibited. Any oil and gas extraction would be by slant drilling from adjacent properties.

A portion of the southern extremity of Coyote Hills was previously quarried for stone. Prohibition of additional quarrying would not result in a significant impact as the stone resource base in Fremont should be adequate to meet anticipated needs. Large quantities of limestone located east and west of the baylands do not extend to the proposed area.

1/ Oil and Gas Production in San Francisco Bay, San Francisco Bay Development Committee, 1968.

2/ USGS & HUD, Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future, Edgar H. Bailey and Deborah R. Harden.
San Francisco Environmental and Resource Planning Study, Circular 637.

Products to be recovered from the general bay area in the next few years depend on: (1) population, (2) mineral and energy needs, (3) availability of minerals, and (4) policies of regulatory agencies. The southern part of San Francisco Bay contains a reserve of oyster shells suitable for cement manufacture, but a plant ceased production in 1970. If utilization of submerged shell beds within the refuge should become the subject of permit requests they probably would be denied. Even without the refuge, it is unlikely bay authorities would grant permits for removing shell there.

A number of other minerals including shells (Ca) are located in the bay region, but it does not appear that project implementation would result in any significant impact on overall supplies. Acquisition alone would not change the presence of minerals, but subsequent refuge control could affect their removal. Such controls could make utilization more costly. Minerals not removed would remain available for future need.

6. Impact on Recreation (Figure 13)

Acquisition proposed would affect recreational opportunities insofar as wildlife needs are concerned. Such needs would receive primary consideration, possibly affecting personal freedom. However, once acquired, San Francisco Bay National Wildlife Refuge would provide substantial opportunities for quality wildlife-oriented activities. These would include such subjects as interpretation, wildlife observation, photography, fishing, and waterfowl hunting. Present availability of recreational opportunities is affected by limited access and facilities and absence of professional personnel.

The refuge would provide facilities and expertise to assist adjacent school districts in meeting their environmental education responsibilities to some 1 million school children. It would be a demonstration area with Federal and local interests working together to extend the classroom into an outdoor laboratory where students study ecology firsthand. The educational potential of the San Francisco Bay Refuge is fourfold: (1) as an educational facility for school age children; (2) as an inservice training facility for teachers; (3) as a base for research; and (4) as an area for public visits and environmental learning.

Service efforts would be devoted to wildlife-associated activities in accordance with existing policy and regulations. Non-wildlife oriented activities such as picnicking, boating, playgrounds, camping, etc., can be provided by nearby regional and local parks and are not included in concept planning. As non-conforming uses refuge control would restrict such activities on the refuge site. To the extent possible, services would be located on the perimeter of the refuge to reduce unnecessary encroachment on large acreages of habitat.

Capacity and control features built into public use programs to preclude excessive disturbance and loss of wildlife values would affect recreational opportunities by limiting areas of use, types of activities permitted and possibly seasons. With properly designed and controlled recreational activities, the total refuge program would produce substantial public use benefits associated with high fish and wildlife values. However, conflicts between public use and wildlife would be resolved in favor of wildlife in accordance with Service policy and existing legislation.

Depending on conditions agreed to at the time of purchase, acquisition could affect plans for expansion of such facilities as the Santa Clara County marina by precluding extension in the refuge. For the most part the refuge would discourage types of development likely to disturb wildlife or to intrude on natural qualities of the Bay. Until negotiations are complete, refuge opportunities to control expansion are in question. Until then, existing authorities would impose certain requirements and limitations.

7. Impact on Archaeologic, Historic and Paleontologic Resources

Executive Order 11593 directs the U.S. Fish and Wildlife Service to survey property under its jurisdiction to determine the presence of historical and archaeological resources and to nominate to the National Register of Historic Places those areas that meet established criteria. Large numbers of archaeological sites have been located in the bay region (Figure 15). Several sites have been located in Santa Clara County baylands to the west of the Alviso Unit. Ohlone Indian mounds of some importance are located within the Coyote Hills Regional Park, a short distance from the Fremont Unit of the refuge. These

mounds have been thoroughly investigated and are adequately protected by the park. A total of 147 archaeological sites have been recorded to date within San Mateo County, and more may be discovered on the acquisition site.

In view of the rather limited knowledge available concerning existence of smaller sites, care will be exercised in developing refuge programs to insure preservation of archaeological values. Once the sites are identified they would be marked and protected. Without safeguards, construction of buildings, roads, trails and other facilitites proposed would be hazardous to historic features. Properly planned appropriate development would be made compatible with preservation of historic sites.

The acquisition proposed would assure protection of historic and archaeological features by law and refuge policy.

8. Impact on Urban-Suburban Development

a. Residential, Industrial, Commercial

The site already is zoned against incompatible development and the refuge would support existing restrictions. Therefore, by protecting the site from environmental degradation, the refuge would contribute toward impacts on potential residential, industrial or commercial development. The proposed general land use, i.e., open space, wildlife and administrative and public facilities, is not opposed to current zoning and general plans over most of the area.

Earlier projections indicated that 80% of the available lowland acreage would be developed by the year 2000. The advent of reduced population growth, improved land use planning, tighter regulations controls, and the importation of energy should tend to decrease the need for development in the lowland areas.

To the extent the proposed acquisition would discourage future rezoning and potential urbanization of baylands

included in the refuge proposal, this would impact on developers and others desiring bayfront properties. Acquisition would prevent expansion by Redwood City Port Authorities of an industrial port involving Greco Island and Bair Island and preclude the area's use for dredge spoil sites.

b. Transportation

In view of already overcrowded thoroughfares and projected growth increases, there are a number of proposals to expand existing transportation facilities and construct new facilities. Regional coordination of transportation systems is now the responsibility of the Metropolitan Transportation Commission. Expansion of existing freeways around the project area (U.S. 101, State Highway 17 and California 237) will not be affected by this proposal.

At the present time, Alameda County is the only county directly associated with the refuge served by the Bay Area Rapid Transit District (BART). In the past, voters in San Mateo and Santa Clara Counties have elected to decline extension of BART into their areas. This situation could change and future proposals to cross refuge lands by BART lines are possible.

The new Dumbarton Bridge proposed by the California Department of Transportation would provide the line of separation between the Fremont and Mowry Slough Units and the southern boundary of the Greco Island Unit (Figure 2). The impacts of this undertaking have been adequately discussed in a Final Environmental Statement filed with the Council on Environmental Quality by the U.S. Coast Guard on December 10, 1976. Essentially, the project would fill 66 acres of salt pond and salt marsh considered as valuable habitat for the salt marsh harvest mouse, among other species. As mitigation for this loss, the TBA has agreed to purchase at least 200 acres of land within the tidal zone which has been diked off from the tidal action, breach the dikes, and allow the land to revert to a marsh. Other interrelated measures to enhance public use of the refuge are discussed in the U.S. Coast Guard Statement.

Several new airport sites have been proposed in the past for the San Jose area. Some would be detrimental to the proposed refuge, and two would virtually eliminate the Alviso Unit. Present recommendations of the Bay Area Study of Airport Requirements (BASAR) include expanding the existing San Jose Airport and improving it rather than constructing a new jetport. The airport question is not a dead issue and the potential threat may exist for years. Acquisition of the Alviso Unit and other units for refuge purposes, backed by existing rights, would virtually bar airfield construction on these lands.

Long-term preservation of habitat and limited management for all units of the refuge are expected to increase waterfowl populations to a limited extent. Should bird numbers increase in the area immediately north of the Moffett Field Naval Air Station, additional air navigation hazards could result. However, the Service has no plans to actively manipulate this habitat for increased bird usage, thus, little or no significant population increases with subsequent hazards to flight operations are anticipated.

In short, subject to conditions of purchase, the refuge would serve as a constraint to use of its lands for transportation projects, i.e., highways, bridges, rail lines, etc., inasmuch as such uses could have potential effects on fulfillment of refuge objectives. In this regard, any proposed use would have to stand the test of two evaluations:

1. Pursuant to the National Wildlife Refuge Management Act and the Secretary of the Interior's Regulations, it must be found that the proposed use is not incompatible with the purposes for which the refuge was established and is being managed, and

2. Pursuant to Section 4(f) of the Department of Transportation Act, as amended, the Secretary of Transportation would need to approve the proposed project with a finding that there was no feasible alternative to the proposed use and that, if there was not such an alternative, the proposed project included all measures to minimize harm by the use.

c. Utilities

A number of utility lines traverse the proposed project (Figures 9, 10, 11, & 12). These consist primarily of high voltage transmission lines constructed by the Pacific Gas and Electric Company. Probably there will be future requests by PG&E to construct additional lines through the refuge to meet the ever increasing electrical demands of the Peninsula residents. Proposals for new lines would require negotiation of an agreement for use of refuge land. A determination would also have to be made that such use would be compatible with purposes for which the refuge was established.

The Hetch Hetchy Aqueduct crosses the Mowry Slough Unit in an east-west alignment. The aqueduct right-of-way would be under cooperative agreement to control public use. Other bay crossings by utilities are a possibility. For example, the South Bay Dischargers are currently considering various means of collecting effluent from south bay sewage treatment plants and transporting it via a 10-foot diameter outfall to a point approximately 1.5 miles north of the Dumbarton Bridge. Several of the alternative alignments are located in the bay, and at least one crosses a portion of the Greco Island unit of the refuge.

Refuge status would not necessarily prohibit all future construction of utility lines, but it would make authorization subject to consideration of natural values the refuge proposes to preserve. These would be spelled out in required agreements.

d. Solid Waste

In the past, baylands have been a popular depository for garbage and other waste materials, and four sanitary fill sites are located adjacent to the proposed refuge. Due to increased interest and authority on the part of regulatory agencies and to an aroused public, the location of new "sanitary land fills" on baylands is becoming difficult. Location of new land fills within the refuge would be prohibited. This would affect costs of developing alternate sites.

Bay authorities recognize the problem and as part of the solution propose full utilization of existing dumps and development of new sites in acceptable inland locations. The proposed refuge area would not be an acceptable or sufficiently inland site. Therefore, the refuge would augment existing restrictions and the impact related thereto would be minor.

e. Sewage

Outfalls in the South Bay, where the water is shallow and the circulation poor, cause more impact on esthetic and biological qualities than from outfalls of similar quality discharged into deeper water where tidal currents are strong. Municipal waste discharge plants of the South Bay area are summarized in Table 2, p. II-24. Refuge establishment would have no impact on existing outfalls but would be another authority to contend with should the need to construct new facilities occur.

The Management Program for San Francisco Bay presented by BCDC and the Resources Agency of California recognizes the variety of needs that can be fulfilled in the South Bay area including the refuge. It notes pressures and limited opportunities for fills, power plants and other uses, but the intent is to maintain bay water quality suitable for public use and enjoyment of the area. BCDC support of the refuge proposal in effect augments other agency regulatory roles. The refuge would preclude sewage plants on lands under its control, and as such it would be supportive of other agency restrictions on new developments in this area.

9. Impact on Water Quality

By precluding industrial development and supporting local zoning regulations the project would be a factor in maintaining or improving water quality in the bay. It would provide a focal point for fish and wildlife interests in the south bay; and discussions concerning water quality would be influenced by coordination with all concerned organizations,

agencies and planning groups. Project interests must extend well beyond the immediate refuge area, as activities in the north bay and projects such as the Peripheral Canal and sewage disposal agencies may have a significant effect on south bay water quality.

B. Impact on Cultural Environment

1. Visual (Figure 21)

Existing man-made structures within the project, such as transmission lines, bridges, railroads, radio towers, etc., have a severe impact on the appearance of the bay. The proposed acquisition would have little impact on existing conditions. Refuge developments would be limited to those essential to fulfillment of objectives. Although required refuge facilities would be designed to be compatible with the existing environment, they represent modifications. Architectural design and materials used in construction would be selected to create minimum visual pollution. The act of acquisition would support retention of present visual features; natural and man-made. Refuge custody and management would tend toward cleanup and discourage new obstructions. Existing rights such as Corps of Engineers flood control responsibilities would be recognized, however.

2. Social and Economic

a. Planning and Zoning

With a view toward controlling urban development, the Regional Plan 1970:1990 - San Francisco Bay Region has been adopted by the Association of Bay Area Governments. A significant concept of the plan is that urban development, which accompanies an increase in population and employment opportunities, should take place within distinct communities located in a series of general growth corridors. The plan emphasizes a priority need for saving large amounts of open space. This open space, which includes baylands, is reserved for recreation, watershed, flood plains, and agriculture. The plan specifies that all baylands south of Foster City on the west side and south of San Mateo

Bridge on the east side should be in permanent open space. The ABAG plan further declares that all lands designated in permanent open space should be in public ownership, either outright or less than fee title. Affected are 125 entities having some interest in the proposed acquisition and 2 owners and 20 tenants would be removed from the area included.

Project establishment would not conflict with existing zoning or land uses contained in the relevant city, county and regional plans. The majority of local governmental bodies and various State agencies have expressed strong support for the refuge proposal.

b. Economics

The economic efficiency of any bayland protection proposal relates in terms of its costs or benefits to society. Industrial development precluded under present authorities backed by regulations inherent in refuges would adversely impact supply, service, labor and administrative segments of the economy. Such loss is the cost to society for the preservation of baylands in their relatively natural state.

Because of existing regulations, supported by refuge restrictions, there would be commercial opportunity losses in large-scale preservation of the south baylands. Ponds, marshes and tidal flats are limited now to fish and wildlife production, salt production, recreation, and possibly some other low intensity uses. Preclusion of industrial development is reflected by a substantial difference in land values. The land market and development radiate from the City of San Francisco. If development is restricted in one area, it may move to a more costly location farther away until the point is reached when it would be more economical to locate near another population center. Since acquisition would strengthen existing restrictions, the proposed action would contribute toward increased costs relating to such moves.

While under this refuge proposal salt production would be expected to continue, the project would restrict further expansion or alteration of the salt production units, and the refuge could be considered an impediment to this industry.

The Leslie Salt Company presently issues a brine shrimp harvest permit, conducts bait fish operation, and leases waterfowl hunting privileges. Under refuge administration income from these uses will be lost to the Leslie Salt Company. Specific monetary figures are not available for inclusion in the FES.

Subsequent to refuge acquisition economic return occurring from brine shrimp and bait fish leases will become public funds. Any funds generated in connection with waterfowl hunting under refuge control will accrue to the migratory waterfowl conservation funds to become available for purchase of migratory bird refuge lands as appropriated by the Congress.

Constraints imposed by the refuge on the above activities could be more restrictive than those already applied by local regulatory agencies and present impediments to economic activity. For example, brine shrimp harvest may be restricted to seasons and locations not now an issue. Bait fish operation may be restricted in time and place to protect endangered species. Waterfowl hunting will be subject to refuge hunting policies for the purpose of providing a quality experience. Use of the baylands for wildlife conservation, open space and education could generate returns from user activities. Depending on the type of facilities developed within the area, economic returns could be substantial.

Bayland protection involves "joint consumption goods," which are public goods that cannot be made specific to a purchase. When open baylands are preserved, the public is affected in terms of esthetics, ecological diversity and air quality. These types of public benefits are not limited to those who may use the refuge site.

Wildlife and natural habitat are not compared with industrial development of the land. On balance economic values of development may not exceed the inherent long-term benefits of preserving wildlife habitat. Directly or indirectly, both generate income.

From a city or county viewpoint, comparison of developed versus undeveloped lands often rests on expected tax returns. The case for development is not definite, and relationships between types of urban development and local revenues and costs come to no firm conclusion.

Development of baylands for residential purposes often involves large fixed costs for municipal government. Utilities, roads and operating costs can outweigh revenue gains from new development. Unstable land conditions on bay fill increase maintenance problems and earthquake hazards. 1/ In some instances diseconomies may result, as when added increment of housing requires a new sewage plant. In most cases, bayland residential development would add to public utility and road capital costs. Therefore, even without local zoning restrictions a refuge could impact the local economy less than would appear from loss of industries foregone.

The regional and local economic growth resulting from establishing a refuge could be based on many factors: tourist spending, increase in adjoining property values, and non-local investment and operation. The great majority of visitors to the refuge in the south bay would be local people. Although they do not spend as much money as tourists, they would come in large numbers. Food, transportation and concessionaires would be required nearby.

Property values often increase as a result of refuge and recreation development. Land adjacent to the site would be impacted by increased amenity factors relating to an esthetically pleasing landscape maintained in permanent open space and increased income possibilities from tourist spending.

Federal spending for refuge development, services and supplies could have a beneficial impact on the regional and local economy. It may be relatively minor compared with the employment and economic potential of urban development. The "closed system" nature of the urban land market in the bay region, however, may

1/ USGS & HUD, San Francisco Bay Environment and Resources Planning Study, 1971.

mean that foreclosed development of the baylands would merely be transferred elsewhere in the region. Under this assumption, the impact of Federal investment in a refuge would result in a net economic gain to the overall San Francisco Bay region.

To summarize, acquisition alone would affect the local economy little. Future refuge operation and development would produce additional impacts. From the standpoint of economic efficiency, the choice of bayland protection versus development offers no clear-cut "best" answer. For example, local tax revenues may be greater if baylands are developed. But most development already is precluded and costs incurred in providing services, roads, schools and utilities may more than offset revenues. 1/ Federal investment in a wildlife refuge could result in overall regional economic growth as well as providing for the open space requirements of local governments and people.

To what extent returns under the Revenue Sharing Act (PL 88-523, 1964) would compensate for taxes lost cannot be defined until the cost of acquisition is determined by actual purchase prices.

3. Noise

Although it is relatively minor, noise pollution in the project area is inescapable due to heavy vehicular and aircraft movement in the total bay region. The proposed project would offer some escape from immediate exposure to intense noise levels associated with urban areas and transportation corridors nearby. Refuge planning would take noise into account in design, location and construction, but the impact would be more in relation to maintaining an area in which significantly additional local noise would be prevented. Such a facility as a visitor center would be designed to exclude outside noise.

1/ The Revenue Sharing Act directs the Secretary of the Interior to make payments from net refuge receipts to counties in which units of the National Wildlife Refuge System are located. Such funds are to be expended for the benefit of public schools and roads. Counties receive either 25 percent of the annual gross sales from a refuge or up to 3/4 of one percent of the purchase price of the land, adjusted every 5 years, whichever is greater.

C. Impacts on Potential for Man-Caused Accidents

Acquisition would not impact the potential for accidents, except possibly to preclude hazards inherent in such types of public use as mass sports, which would not be permitted under refuge control. Plans for development and management would include safeguards against accidents. They would recognize need for additional barricades around certain equipment such as pump and electrical equipment.

D. Impacts on Potential for Natural Catastrophes

Seismic activity is a constant threat in the project area. Acquisition would affect this only insofar as refuge laws and regulations would apply against man-caused disturbance. Although structure design and construction would take this into account, and emergency evacuation plans would be developed to protect both visitors and refuge personnel, the potential hazard from earthquakes, flooding and subsidence remains. While changing title to the land would have no effect on land movement, attracting a large number of people to a geologically unstable area could constitute an impact.

Both salt water flooding and fresh water flooding are potential hazards. Ongoing flood control programs in Alameda and Santa Clara Counties are designed to alleviate the problem. The proposed acquisition would not affect this, but future refuge facility design must consider that salt water flooding would be a continuing threat, both to people and structures.

The two species of salt marsh mosquitos and the Norway rat which occur in the south bay area offer a potential threat to public health and constitutes a nuisance problem to residents of the area. Close cooperation with local governing bodies established for the specific control of mosquitoes and rats will be necessary to formulate long-term control procedures. Without coordination of effort and effective control, the threat of the refuge as a breeding area for proliferation of those pestiferous animals is recognized. An effective control program will obligate the Service to physical-biological control techniques that could affect the planning and coordination with local agencies; the total impact is expected to be minimal.

Summary

Acquisition would underwrite existing regulations which preclude many activities adverse to environmental protection. Therefore, it is in support of local efforts to maintain remaining natural qualities of the South Bay. Joining other entities in this objective, the U.S. Fish and Wildlife Service becomes a partner in obstructing such activities as industrial construction, land fills and residential development. Impacts inherent in transfer of title include loss of direct tax revenues, returns from revenue sharing, need for new agreements, application of restrictive regulations, and loss of opportunities for types of public use not compatible with refuge objectives. Public opinion is affected by this response to popular support for the proposed refuge.

Mitigation

IV. MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

Mitigating measures described in this section are covered by legislation and regulations applicable to acquisition and management of lands for the refuge.

Present local restrictions offer certain safeguards against environmental degradation, and the refuge would provide additional protection for wildlife habitat and preservation of natural qualities. These represent indirect forms of mitigation for permanent removal of lands from such activities as filling and development. For other types of impacts, mitigation or damage varies according to the activity and the point of view. For example, purchase of Leslie Salt Co. lands would be mitigated by the Company's being able to continue operations as long as economically feasible. To the Company, restrictions applied (preclusion of ability to sell lands or leases or prohibit public use) represent impairment of their opportunities to operate as they would under private ownership.

Loss of Private Lands and Improvements

There are approximately 125 separate entities within this proposal who own land, own an interest in land or who own real property improvements. The largest land ownership, the Leslie Salt Company's 15,000 acres, would be acquired in fee and an easement for saltmaking rights would be reserved to them. The allowance providing for the continuation of the salt production business would mitigate the potential direct loss to the South Bay economy of a possible 450 jobs and $5,000,000.

It would be necessary to relocate 2 landowners and 20 tenants who reside within this proposal. Monetary loss of property and improvements to all landowners and tenants would be mitigated by payment of just compensation based on a fair market value for this property.

Those people who reside within the proposal area would be relocated in replacement housing, and moving expenses would be paid for personal property of landowners and tenants pursuant to regulations contained in the Relocation Assistance Act (PL 91-646).

Removal of Lands from the Tax Rolls

Taxes would not be levied on private lands once they are acquired and become a part of the refuge. This would have economic impact on governmental bodies now receiving those tax revenues. Under existing circumstances and in accordance with PL 88-523, the Refuge Revenue Sharing Act, three-fourths of one percent of the costs of lands to be acquired in fee would be paid to the appropriate county involved to be used for school and road purposes. This could replace tax revenue losses, particularly for the salt pond areas.

The fee paid for private lands would be negotiated, and the proposed easement with Leslie Salt Company, whereby the Company may be liable for taxes on facilities necessary to their production operations, remains to be finalized. The Company would also be taxed on a possessory interest (saltmaking rights) that they have retained. This would be based on income derived from this use. Their income should not change appreciably. The acreage involved in the Revenue Sharing payment would remain undetermined until settlement has been reached with the State regarding the extent of their ownership. The acreage of other private owners to be acquired would remain undetermined until State settlement on tidelands has been reached. The outcome of these matters would have a significant bearing on the amount of revenue sharing funds paid to the counties.

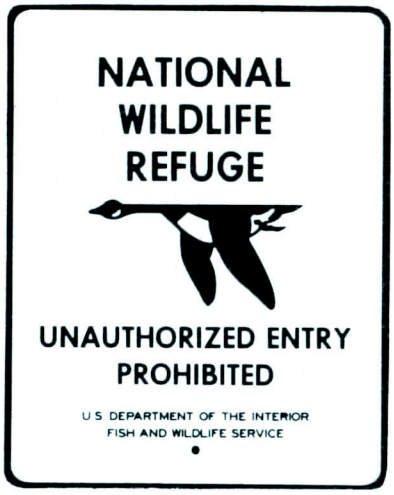
Jurisdictional Transfer of Public Lands to the Refuge

Jurisdictional transfer of State, county, or municipal lands to the refuge would result in restricted use by the various governmental agencies involved. Mitigation for this action lies in relieving those governmental entities from administrative and other responsibilities associated with their stewardship of these lands. These include, but are not limited to, activities such as providing public access, facilities, safety, law enforcement and surveillance.

Donations and/or leases would be utilized to provide refuge status to those lands owned by local governments. Lands owned by the State of California would be afforded refuge status under a long-term lease agreement. Because there would be benefits accruing to the citizens

from the refuge project, this should be considered in weighing any economic disadvantages associated with donations of municipally owned lands. Santa Clara County and the City of Fremont have donated fee title to 178 and 50 acres, respectively, to the Federal government.

Initial contact has been made with local authorities for the provision of mosquito and rat control programs. The Service will seek technical assistance from those agencies and perform those activities which will prevent proliferation of those species, funds permitting.



Unavoidable Adverse Impacts

V. UNAVOIDABLE ADVERSE IMPACTS

Transfer of lands from private to public ownership could represent a personal loss impossible to mitigate. To a potential developer or sanitary fill operator, the refuge could be objectionable in activities forbidden and opportunities denied. In supporting local restrictions against commercial, industrial, and residential development within the refuge area, the proposed action would cause impacts on potential users which cannot be avoided.

Until purchase of the land is completed it is impossible to compare taxes lost with funds that would be paid under the Refuge Revenue Sharing Act. The revenue sharing is based on 3/4 of 1% of the purchase price of the tract; taxes are based on the assessed value of the tract, or if they are under a land conservation agreement with the county (Williamson Act lands), the land is taxed based on the income derived from it.

Comparing taxes versus revenue sharing, for example, Leslie Salt Co., the largest land owner within the project, for the most part is under a county land conservation agreement. Therefore, they are taxed on an income basis. Since the U.S. Fish and Wildlife Service intends to reserve salt production to Leslie through an easement agreement, this income would continue. The Company would continue to be taxed based on the income derived thru this possessory interest. This income would decrease, increase or remain the same. The money to be paid the Company for all other rights on which 3/4 of 1% payment to the counties would be based could be the market value, a negotiated figure, or a court award.

It is possible payments to counties may be less than current tax revenues. If this proves to be the case, the difference in revenues cannot be compensated for under existing legislation. Intangible values and added expenditures in the local area by refuge visitors could more than offset such a deficit should it occur. Nevertheless, to individuals and organizations directly affected by the acquisition, the refuge represents unmitigable constraints and opportunities lost.

Relationship Between Short-Term and Long-Term Uses

VI. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed means of assuring preservation of the long-term productivity and other values is for the Federal government to acquire fee title to those lands as permitted by P.L. 92-330, and to secure leases with the longest possible time periods on the remainder of the project lands. Planning would take into account that what is done in development and operations must neither ignore immediate gain nor sustained productivity.

The refuge project would prohibit further industrial development within the proposed boundaries. Thus it would impair private opportunities for profit for some and affect near term enterprise. By preserving natural values, along with other public benefits, it would insure maintenance of the critically important long term productivity of the wildlife habitat of these baylands.

Short term economic uses weighed against their long term effects take into account the compensating factor of lower land cost and lesser economic impact. By compromising the first choice of full control to accommodate such uses as salt extraction, the gain is in funds saved and jobs sustained. Doing so does not substantially affect long term values.

Long term productivity of the proposed acquisition, as habitat for endangered species, other wildlife, open space and opportunities for enjoyment, would not be affected substantially by short term uses. As long as the area would remain in refuge status it would not be available for industrial exploitation. The trade-off would be in natural values preserved for the growing human populations of the metropolitan area.

Habitat management involves short term trade-offs which result in long term productivity of plant and animal values for benefits to human appreciation. Immediate or short term adverse impacts associated with human uses such as littering, trampling, vandalism, and disturbance to wildlife would occur to some extent. Long term benefits to people would be increased environmental awareness through participation in interpretive and educational programs or by exposure to sights and sounds of wildlife. Maintaining these opportunities would be a trade-off for private control forfeited and industry foregone.

Irreversible or Irretrievable Commitments

VII. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION

There would be no irreversible or irretrievable commitments of the area's resources as a result of this proposal. Minor development, largely for public use and maintenance, could be removed and the area restored essentially to its present condition. Resources and productivity would be maintained and could be made available for possible future use.

The proposed acquisition would help preserve, for purposes of fish, wildlife, open space and selected public use activities, 23,000 acres of land and water in the southern portion of San Francisco Bay. It would place severe constraints on exploration for and/or extraction of mineral resources. Establishment of refuges restricts mineral exploration or entry under present mining laws; however, mineral surveys and development could occur under permit from the Secretary of the Interior when in the national interest. Proposals would be subject to the Mineral Leasing Act of 1920 and subsequent amendments. Both exploration and extraction permitted by Secretarial Order would be accomplished under strict control designed to protect wildlife habitat, water quality, scenic and historic/archaeological values.

Refuge designation can delay exploration and thus delay determination of the potential for profitable extraction. Controls placed on development could also result in greater industry expenditures of time and money for environmental studies and mitigating measures, increasing the cost of the final marketable product to the consumer.

Salt production would continue for the foreseeable future as a renewable and retrievable resource under the proposed action. Such activities as stone quarrying and shell harvesting would be prohibited. However, these values would remain to be utilized at some future time if there should be a compelling reason to do so, or if found to be compatible with refuge wildlife objectives.

Refuge establishment and the associated preservation of baylands would serve over the longer term to prevent further degradation of

the air and water quality. This relates to the long term commitment to maintain existing natural marsh, open water and tidal flat conditions. The refuge would be an influence as a rallying point in local and regional decisions concerning pollution control. Location of new solid waste disposal sites in the baylands is becoming more and more difficult. The refuge, along with other authorities, would prohibit any future solid waste disposal on the lands and waters involved. Regional control agencies support this irreversible commitment against environmental degradation.

Alternatives

VIII. ALTERNATIVES TO THE PROPOSED ACTION

This section examines six alternatives to the proposal to acquire approximately 23,000 acres for the refuge as directed by P.L. 92-330. While acquisition is the subject of this statement, refuge operation is covered in gross terms to enable review of the proposal in relation to foreseeable consequences of the various alternatives. A subsequent assessment would be made in connection with plans for development and operations, and data gathering continues.

Alternative A - No Action (No Project)

Under this alternative there would be no acquisition. Public Law 92-330 which establishes the refuge would need to be remanded.

Activities would continue as at present with various regulatory bodies, including the State of California, Corps of Engineers and BCDC, providing protection for the area in accord with existing authorities. Physical changes such as residential developments which may be compatible with existing regulations and permitted under present ownerships would occur on lands above mean high tide. Unavoidable impacts resulting from acquisition and development would not be factors. Value of the refuge as a catalyst and focal point for local environmental protection would be lost.

Climate, air, vegetation and watersheds would be affected only to the extent local regulations would not apply and insofar as refuge designation would offer additional protection. Minerals also would be affected little.

Wildlife oriented recreation probably would not be developed under existing controls. Loss of opportunities for such education would be significant. For example, about 1 million school children in that vicinity would miss refuge planned environmental education opportunities. Since conflict between wildlife and public use would be resolved in favor of wildlife, non-wildlife oriented activities, discouraged under refuge control, could be enjoyed with less constraint.

Archaeological and historic features would receive added protection under refuge regulations. Under this no action alternative such values would benefit from Federal, State and local controls but possibly not with the same emphasis.

Urban-suburban development would be affected by the refuge and existing laws. Therefore, the impact of this alternative would be toward relief from the added restrictions inherent in refuge control. Transportation and utility facilities located on the proposed area would not be affected, but removed from refuge interest, expansion of services could involve conditions adverse to the utility companies. Therefore, "no action" would relieve companies from having to comply with requirements imposed as a result of refuge designation. Conversely, mitigation of habitat losses due to railroad expansion on the refuge would be required under U.S.F.W.S custody.

Solid waste disposal, water quality, visual characteristics, noise, economics and potential for accidents would remain as they are. Under this alternative additional safeguards which would accrue under refuge control would not apply. Modifications of the environment due to construction of refuge facilities, such as visitor stations, would not occur.

This alternative would avoid impacts associated with acquisition and such actions as removing or precluding activities not beneficial to wildlife. Such activities as salt production would not be affected by need to impose constraints on expansion and control of public access.

Condemnation procedures which might be required for acquisition of certain parcels would not be needed because no private lands would be acquired. There would be no reduction in the County real estate tax rolls, and there would be no returns under the Revenue Sharing Act.

State, County, City and private organizations and individuals would purchase portions of the area for compatible recreational uses probably including baseball, touchball, soccer and picnicking. These areas would probably be smaller than the refuge proposal and would consequently reduce the public use opportunities and fish and wildlife habitat.

Zoning, comprehensive plans and other regulations would have large areas in open spaces and recreational uses. Enforcement of necessary regulations and maintaining the area would require personnel, equipment and funds. Special pressure groups could be expected to push for development privileges.

From the standpoint of preserving wildlife and other natural values, adoption of this alternative could result in fragmentation of responsibilities as well as area.

Conclusion

The no action alternative could reduce the area's long term opportunities for producing and maintaining a diversity of wildlife for enjoyment by people. It would remove the additional protection of natural values offered under refuge custody. Conversely, existing opportunities for economic expansion which may exist or be offered in the future would not be affected, and adverse impacts of acquisition and facilities development would be avoided. This alternative does not respond to P.L. 92-330.

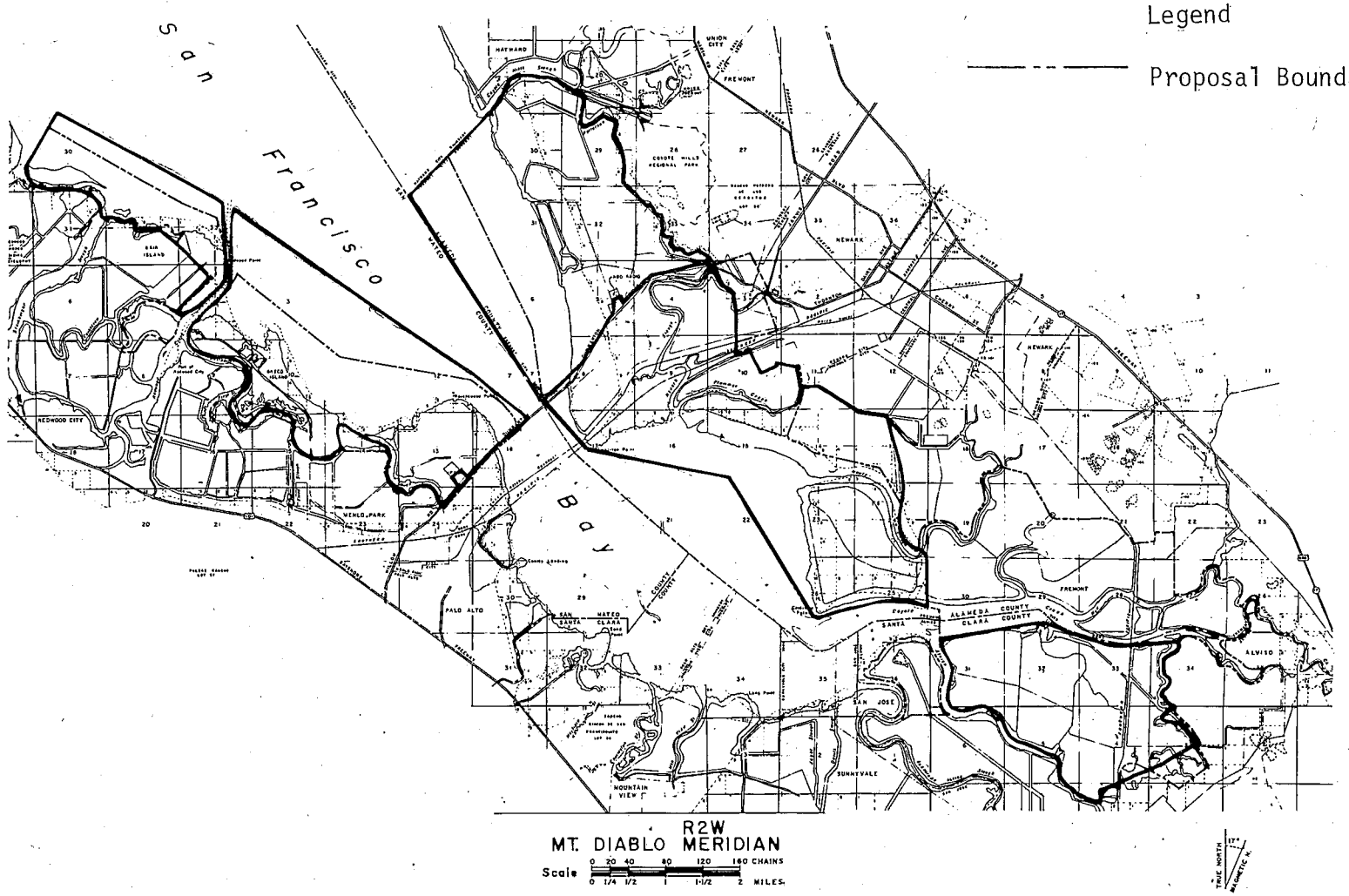
Alternative B - Original Proposed Boundary

As originally envisioned, the proposal area totalled 21,662 acres (Figure 25). Under this alternative approximately 1,300 acres of prime marsh, tidal mud flats and upland would not be acquired. The impacts are similar to those examined in the proposal in type but the degree of impact would be disproportionately greater in relation to the relatively small acreage involved. The 1,300 acres are habitat for the major Caspian tern nesting rookery on the south bay; the 1973 census computed the number of nests at about 500. The largest nesting colony of Forster's terns on the south bay, and possibly on the entire estuary, is located within this area. The sloughs, marshes and tidal mud flats adjacent to Coyote Creek, which support numerous migratory waterfowl and the endangered clapper rail and salt marsh harvest mouse, would not be part of the refuge. Artesian Slough, a unique freshwater marsh containing bass and sunfish, would be excluded.

While present zoning restrictions generally protect the cited resources, heavy pressures from commercial and industrial interests over a long term could be anticipated, and some species probably would be displaced and ultimately destroyed. Wildlife objectives for the preservation and welfare of migratory waterfowl would be reduced by an estimated 10-15 percent; refuge protection would not be extended to the clapper rail and salt marsh harvest

Figure 25

Alternative B
(21,662-Acre Refuge)



mouse; and major Caspian and Forster's tern rookeries would be deprived of management efforts for their perpetuation. An estimated reduction of 15-20 percent in endangered species use could result. Although the endangered species present have been identified, total population figures must await the results of ongoing studies. Therefore, for the purpose of assessing alternatives, the relative amount of habitat added or deleted is the basis for estimating population changes.

The upland part of this 1,300 acre exclusion is tentatively scheduled for interpretive facilities which would provide environmental awareness programs for numerous school children and adults of the San Francisco Bay area. Reduction of the proposal to the area noted in this alternative would diminish the refuge's capability to provide adequate educational programs by an estimated 20 percent. Further, access into other portions of the refuge would be affected significantly and refuge visits probably would drop an estimated 15-20 percent. The Knapp property, an area possessing considerable historical interest, would not be given refuge protection. Additionally, Station Island and the abandoned ghost village of Drawbridge, both areas possessing significant historical and wildlife values, would be excluded from the National Wildlife Refuge System protection and management efforts toward their preservation, restoration and maintenance.

Use Data Projections

	Proposal	Alternative B
Endangered Species (use days)	483 thousand	410 thousand
Waterfowl (use days)	9 million	8 million
Other Water Birds (use days)	20 million	19 million
Education (activity hours)	60 thousand	50 thousand

In summary, the impacts of this alternative would significantly affect endangered species, migratory waterfowl and shorebirds. Interpretive facilities would be reduced resulting in fewer oppor-

tunities for schoolchildren and adults of the San Francisco Bay area. Access to other portions of the refuge would be made more difficult and overall visitor numbers would decrease. Areas possessing historical values would not be extended refuge protection and maintenance efforts directed toward long-term objectives of providing benefits for wildlife and man.

Alternative C - Boundary as Proposed by the South San Francisco Baylands Planning, Conservation and National Wildlife Refuge Committee (Figure 26)

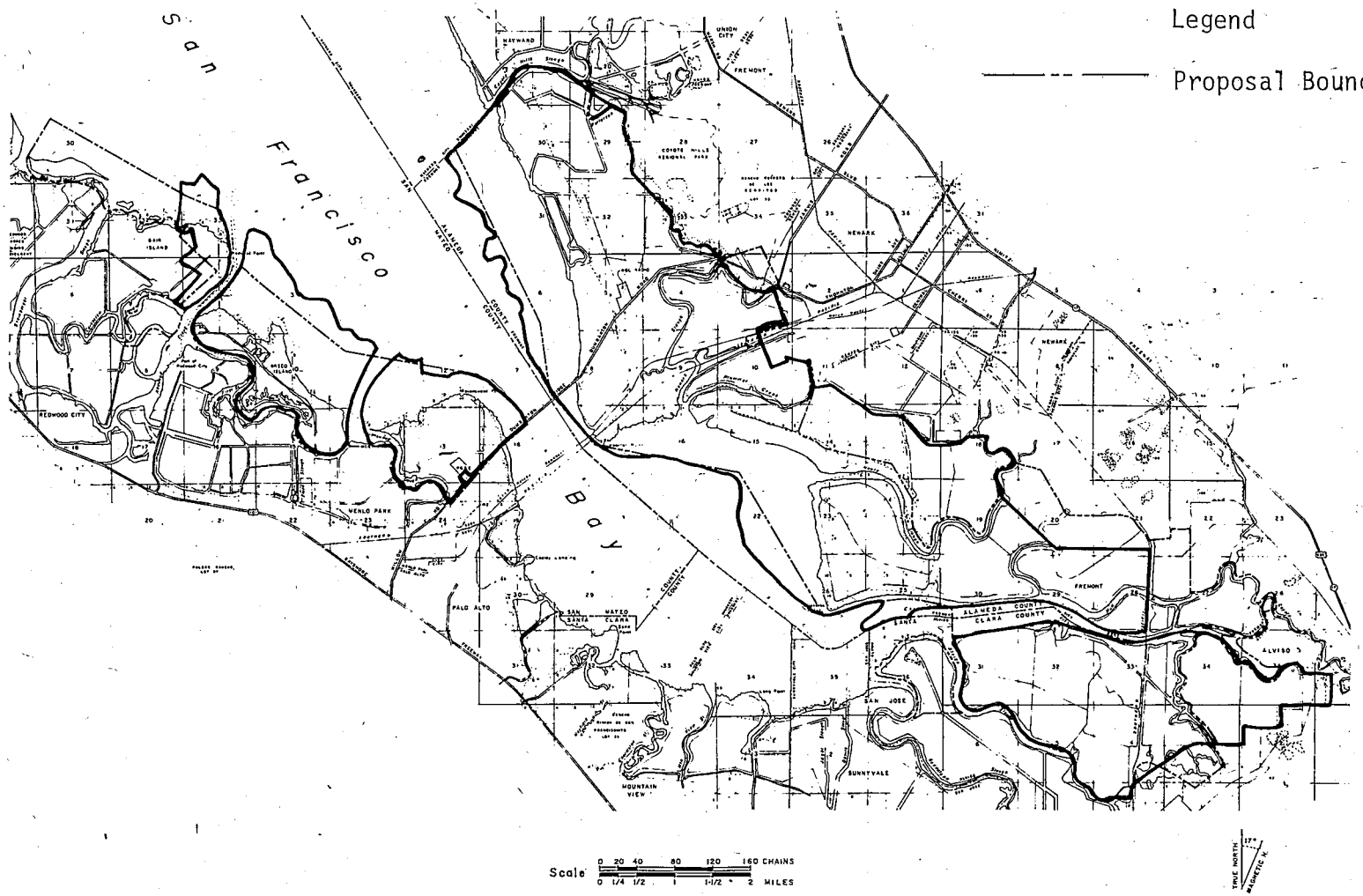
This alternative includes approximately 22,000 acres of baylands rich in fish and wildlife values. It is similar to the proposal (23,000 acres) except that this alternative calls for an irregular boundary on the bayside following the outer edge of the tidal flats.

The associated impacts of this alternative are similar to those examined under the proposal with the following exceptions: Refuge protection and subsequent management efforts would not be extended to the Knapp property which serves as habitat for the largest nesting colony of Forster's terns on the south bay and possibly on the entire estuary. Valuable marsh lands which provide for the needs of approximately 5,000 migratory waterfowl overwintering on the area would not be included within refuge boundaries. Vegetation which provides a food source for terns, migratory waterfowl and aquatic organisms of a lower order (brine shrimp, oysters, etc.) would, over the long-term, be subjected to pressures for developmental activities and possible destruction from industrial and commercial interests. Present zoning restriction in effect on this acreage would be protective of the resources for an indefinite period, but without Federal ownership and the barriers to development inherent in refuge administration, destruction to 1,000 acres of habitat deemed critical to the cited major species could result. Migratory waterfowl objectives would be reduced by about 4 percent.

The Knapp property, having historical interest, would not be included under this proposal and would not receive Federal protection and maintenance. The area is considered as having high recreational value and its deletion would cause an estimated 1 percent reduction in recreational use; education, 5 percent.

Figure 26

Alternative C
(22,000-Acre Refuge)



Overall, this alternative would affect wildlife objectives in that the largest colony of Forster's terns and habitat for approximately 5,000 migratory waterfowl and numerous aquatic organisms would not be provided refuge protection. An historical site of considerable interest would be excluded from Federal ownership and inherent care and maintenance. Refuge interpretive facilities, recreational values, and visitor use would not be affected to a significant degree.

Use Data Projections

	Proposal	Alternative C
Endangered Species (use days)	483 thousand	444 thousand
Waterfowl (use days)	9 million	8.6 million
Other Water Birds (use days)	20 million	18 million
Education (activity hours)	60 thousand	57 thousand

Alternative D. - Expansion of Refuge Boundary to Encompass a Larger Area (36,500 acres) (Figure 27)

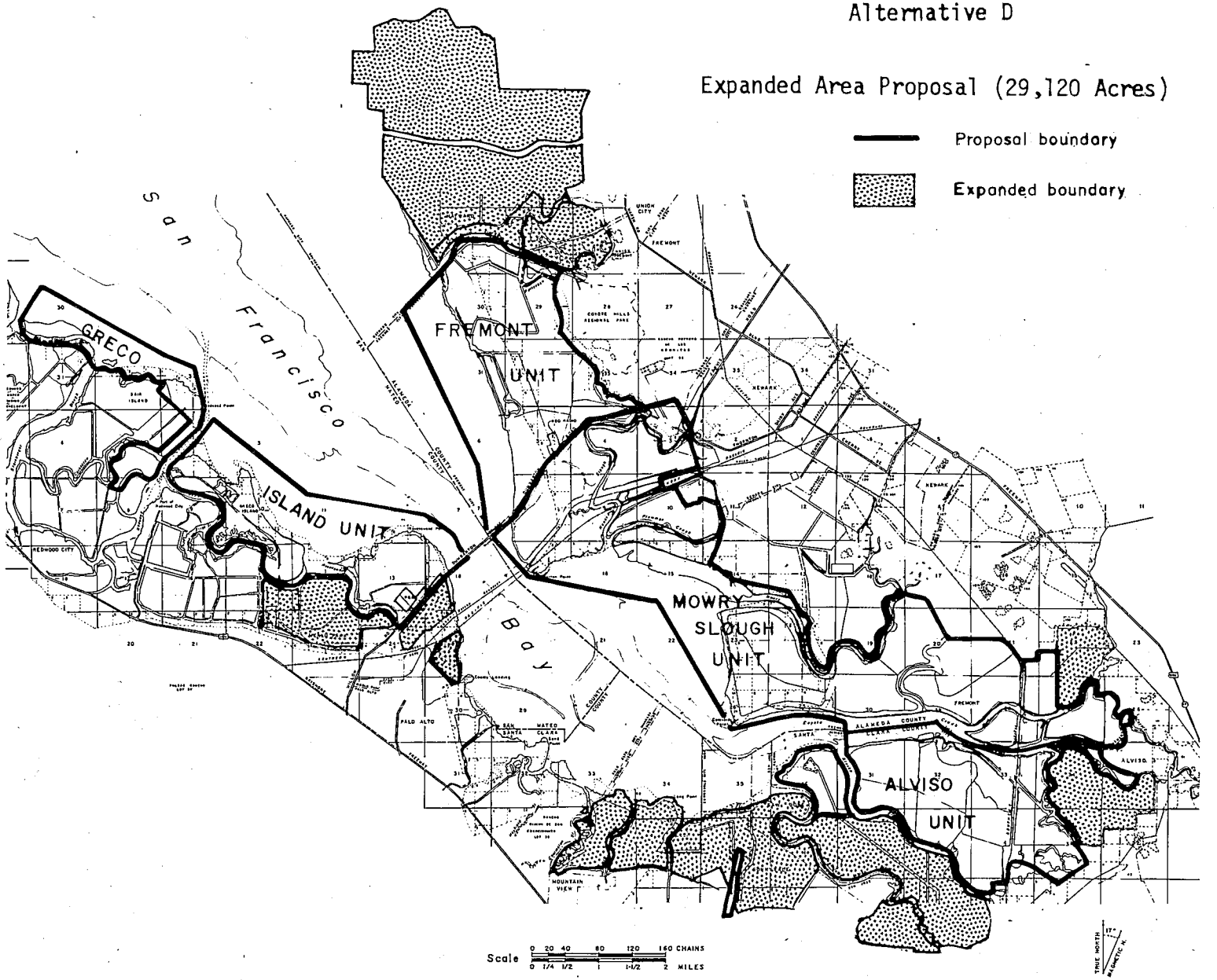
Public Law 92-330 stipulates that the refuge shall not exceed 23,000 acres or cost more than $9 million. Amendment of the legislation is possible, however, and an area larger than the proposal is set forth as an alternative. This alternative describes a refuge containing approximately 36,500 acres, with boundaries extending both northward along the Hayward Shoreline and eastward to the oxidation ponds of San Jose-Santa Clara Sewage Treatment Plant. In addition to lands covered in the proposal, it includes several valuable marsh areas, e.g., Charleston Slough and Alameda Creek outlet, as well as additional buffer areas for other critical habitats. Salt marsh included in this additional response totals approximately 4,392 acres. To round out certain parcels it may be necessary to acquire areas not considered prime habitat.

The impacts of this alternative would be similar to those examined under the proposal and in addition include the following:

Figure 27

Alternative D

Expanded Area Proposal (29,120 Acres)



The additional acreage possesses significant wildlife values for endangered species, migratory birds, shorebirds, aquatic saltwater organisms, mammals and amphibians as described in the proposal. The black rail, California clapper rail, California least tern, and red-bellied salt marsh havest mouse find refuge in these areas but not to the extent they do in the South Bay. The Peregrine falcon also has been sighted. Migratory bird species such as the canvasback, scaup, cinnamon teal, pintail, mallard and shoveler, find life requirements on these additional lands.

Approximately 10 percent would be added to projected bird population numbers receiving refuge protection and management under the proposal. Perpetuation of endangered species habitat would be assured under refuge administration and use increased 2-5 percent.

Should bird population increase substantially in the vicinity of Moffett Field, this could give cause for concern as the safety of flight operations could be impaired. The Service has no plans to actively manage for increased usage.

Recreational opportunities would increase under this alternative. The area would be suitable for recreational development, i.e., roads, trails, and provide additional opportunity for interpretive centers for environmental studies. Recreational benefits would increase by an estimated 15 percent over proposal levels, and educational/interpretive facilities could expand by about 10 percent when installations are complete and operational.

Esthetic qualities remaining would be maintained to the extent development of facilities necessary to fulfill refuge objectives would permit.

Inclusion of certain lands might conflict with several local planning and acquisition programs. Both the City of Palo Alto and Santa Clara County are considering acquisition of the Charleston Slough Unit, a portion of which abuts the Mountain View Regional Shoreline Park now under development.

Redwood City is currently restudying their waterfront area, and the additional area to be included on Bair Island might conflict with their general plan.

In summary, this alternative proposal would produce greater benefits to endangered species, migratory and shorebirds, aquatic organisms and mammals. Recreational and educational outputs could increase within the range of 10-15 percent. Industrial opportunities would be restricted, and the local tax base could be adversely affected.

Use Data Projections

	Proposal	Alternative D
Endangered Species (use days)	483 thousand	502 thousand
Waterfowl (use days)	9 million	10 million
Other Water Birds (use days)	20 million	22 million
Education (activity hours)	60 thousand	66 thousand

The bulk of the additional acreage contained in Alternative D is administered by the Leslie Salt Company. There would be a reservation to permit continued salt production.

This larger area alternative would have impact on industrial opportunities insofar as it would support local, state and Federal regulations in precluding such developments as new filling for industrial and residential construction. Refuge status would impose long term obstacles for such activities. Subject to conditions prevailing at the time of purchase, tax base loss may be offset by counties receiving funds under the Revenue Sharing Act. Until land purchase costs are finalized, amounts accruing under the Act will remain in question.

Alternative E - Salt Production with Leaseback

The proposed action is to acquire certain Leslie Salt Co. lands subject to an easement which would permit the Company to continue salt production. This alternative considers acquiring all of

Leslie's interest, then leasing the salt production rights back to the Company. As owner, the Service would control the land uses, and it would be able to curtail activities considered detrimental to wildlife and wildlife habitat. It would cost the Service more to acquire this position than purchasing the lands subject to easement. The initial cost for full interest is estimated at $20 million. However, the public would receive a return of a portion of this through annual or five-year lease payments. The price of acquisition would be reduced if a lump sum payment for a lease in perpetuity, or for a term of years, should be agreed on initially. The total price would then be reduced by the market value of the leasehold interest at the time of acquisition.

The impacts of this alternative on the resource have been determined to be similar to those examined under the proposal, i.e., endangered species, migratory birds, shorebirds, mammals, aquatic organisms, would receive the full protection of the National Wildlife Refuge System. Subsequent management efforts to enhance habitat would not be hampered by easement.

Although not fulfilling all food producing potentials, dual use of salt production and wildlife habitat would be relatively compatible. In the future, if salt production became uneconomical, the transition to wildlife habitat would be simplified. Designated parts of ponds could revert to marsh as may be agreed.

This proposal would help maintain the tax base and general income. Employees of Leslie Salt Company would retain their jobs in an industry with a low level of energy use.

In summary, this alternative proposes acquisition of a 23,000 acre refuge, as provided for under P.L. 92-330, in fee title, with leaseback of salt production ponds acquired from the Leslie Salt Company. Impacts would be similar to those foreseen under the proposal except that by leaseback a greater measure of control and protection for the resource would be offered the refuge than if the acquisition were subject to an easement.

Alternative F - Acquire Full Fee Interest in the Leslie Salt Ownership and Restore the Salt Ponds to Marshland and Tideland

Without the need to negotiate restrictive commitments, this alternative would offer opportunity for full dedication to natural values as compared with acquisition subject to reservations.

The following impacts could be anticipated:

Reversion of selected salt ponds to tidal marsh could be accomplished without being legally encumbered by Leslie's salt-production easement. Selected ponds would be restored, while others would remain as diked open waters. Pond reversion would assume a "checkerboard" pattern lending a maximum edge effect habitat. Many evaporators are presently replete with high protein wildlife food, i.e., plankton, invertebrates and vertebrates. The production of this high protein food can be continued under salt production. In addition to supplying food for wildlife, the evaporators offer a relatively calm and protective haven for birds when the bay waters may be threatening. They also supply nesting sites for many ground nesting birds including the endangered California least tern. While the California least tern would benefit from properly managed salt ponds, the endangered California clapper rail and red-bellied salt marsh harvest mouse would benefit more by reversion of the evaporators to tidal marshes. The clapper rail generally favors the cordgrass habitat of the lower marsh, whereas the harvest mouse frequents the middle marsh zone with its accompanying pickleweed.

Alternation or retention of the evaporators would have profound impact on the south bay's flora and fauna potential; desirable species composition of both plants and animals would be attained via a phased "checkerboard" pond reversion approach. The resulting increase in total marsh and tideland area of the bay would multiply benefits to plant and animal communities and to the total estuarine environment. Benefits include the estuary's ability to replenish oxygen to the air and water, to improve water quality and to provide a nursery for a number of marine organisms. Severance damages and requirements to purchase uneconomic remnants imposed by the Relocation Assistance and Real Property Acquisition Policies Act (Public Law 91-646) would make it necessary to offer to purchase all of Leslie Salt Company's South Bay Salt Production Unit totaling 31,887± acres. The estimated cost of purchase for land and facilities would be $20,000,000.

A direct loss of revenue to the economy of the South Bay region of an estimated $5,000,000 annually and displacement or reassignment of approximately 450 employees of the Leslie Salt Company, Morton Salt Company and associated industries would result. A low energy industry not detrimental to air quality would be lost. Some revenue would be restored by operation of the refuge through direct employment and by drawing visitors who would purchase goods and services in the area.

In summary, the most significant impact of this alternative is the reduction of salt production. A subsequent loss of high protein

Consultation and Coordination

IX. CONSULTATION AND COORDINATION IN DEVELOPMENT OF THE PROPOSAL AND IN PREPARATION OF THE STATEMENT

Since 1968, the refuge proposal has been discussed by and with a large number of organizations, agencies and individuals, including Chambers of Commerce, universities, conservation organizations, Federal, State, County and local entities. Public Law 92-330 is a manifestation of the expressions of most, and input and comment have been received from many. While most formally favor establishment of a national wildlife refuge in the south bay, endorsement of the general proposal does not necessarily reflect approval of the specific project as described in this report.

Coordination in the Review of the Draft Environmental Statement

Copies of this draft environmental statement were sent to the following agencies and private groups for review:

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
- Forest Service
- Soil Conservation Service

Department of Commerce
Department of Defense
Department of the Interior
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Mines
- Bureau of Outdoor Recreation
- Bureau of Reclamation
- National Park Service
- U.S. Geological Survey

Department of Transportation
Environmental Protection Agency
Pacific Flyway Council

State and Local Agencies

California State Clearing House

California Department of Fish and Game
San Francisco Bay Conservation and Development Commission
Association of Bay Area Governments
Metropolitan Transportation Commission
San Mateo County Board of Supervisors
Santa Clara County Board of Supervisors
Alameda County Board of Supervisors
San Jose City Council
Hayward City Council
Fremont City Council
Union City Council
Berkeley City Council
Albany City Council
Milpitas City Council
San Mateo City Council
Menlo Park City Council
Redwood City Council
Alameda County Parks Advisory Committee
Alameda County Planning Commission
Alameda Creek-Coyote Hills Aquatic Park Joint Agency
Fremont Recreation Commission
East Bay Regional Park District
Santa Clara County Planning Department
San Jose Parks and Recreation Commission
Hayward Planning Commission
San Mateo County Parks and Recreation Department
Santa Clara County Department of Education
Oakland Park Commission
Palo Alto City Council
Santa Clara City Council

Private Groups

American Ornithologists' Union, Inc.
Animal Protection Institute
Conservation Foundation
Defenders of Wildlife
Ducks Unlimited, Inc.
Ecological Society of America
Environmental Policy Center
Friends of Animals
Friends of the Earth

Fund for Animals
International Association of Game, Fish and Conservation Commission
Izaak Walton League of America, Inc.
Migratory Bird Conservation Commission
National Audubon Society
National Parks and Conservation Association
National Rifle Association of America
National Waterfowl Council
National Wildlife Federation
National Wildlife Refuge Association
Outdoor Writers Association of America, Inc.
Resources for the Future, Inc.
Sierra Club
The Wilderness Society
The Wildlife Society
Water Resources Council
Wildlife Management Institute
Sierra Club (Bay Chapter); (Loma Prieta Chapter)
Save San Francisco Bay Association
The Committee for Green Foothills
California Wildlife Federation
California Associated Sportsmen
Trout Unlimited (South San Francisco Bay Area)
California Bowmen's Association
Consumers' Co-op Membership of Palo Alto, Mountain View and Sunnyvale
Impact (Democratic action group)
Santa Clara County Central Labor Council
Women's Club of Menlo Park
California Federation of Women's Clubs
Technical Action Panel of Santa Clara and San Benito Counties
California Farmer-Consumer Association
San Jose Rod and Gun Club
San Jose State College Conservation Forum
California Retired Teachers Association
League of Women Voters of Fremont
Bay-Ocean District Garden Clubs of California
Committee for Governmental Responsibility
Gerson/Overstreet
Caywood, Napp, Ward, AIA, Architects & Planners
Tri-State Engineering Company

Our Lady of Peace Church
Mobil Oil Estates Limited
Ideal-Basic Industries, Inc., Executive Representative
Pacific Gas and Electric Co., Senior Land Planner
Southern Pacific Land Company
Leslie Salt Company
Tri-City Ecology Center
San Francisco Bay Waterfowlers Association
Hancock, Rothert and Bunshoft
Robert W. Gross & Associates
Bay Land Area Study Team
Mr. Kent Dedrick
The Nature Conservancy
The Trust for Public Lands
Dr. Tom Harvey, California State University
Dr. Howard L. Cogswell, California State University
Toups Corporation
ECIS, Inc.
Mr. Brad Goodhart
Mr. & Mrs. William Hurd
Mr. Paul McKeehan
Kennard, Delahousie and Gault, Architecture & Planning
Mr. Robert W. Cook, A.I.P.
Albert A. Hoover & Associates
Frank L. Hope & Associates
McCue Boone Tomsick, Director of Planning Services
Aitken & Associates

Schools and Colleges

San Jose State University
De Anza College
Foothill College
College of San Mateo
Canada College
San Francisco State College
City College of San Francisco
Contra Costa College
Merritt College
Laney College
Ohlone Junior College
Fremont Unified School District
Gavilan College
University of California, Berkeley
Hayward State University
Museum of Vertebrate Zoology, U.C. Berkeley

SUMMARY OF CHANGES MADE
IN FINAL AS A RESULT OF
DRAFT REVIEW PROCESS

Commenting Agency	Comment	Page(s)
Advisory Council on Historic Preservation	Historic Sites	II - 33 III - 8
Dept. of Defense (U.S. Navy)	Air Navigation Hazards	III - 11 VIII - 10
	Landfill	II - 27
Bureau of Mines	South Bay Economic Loss	III - 15
	Restriction on Salt Production Activities	III - 6,15
	Shrimp Harvesting, Bait Fish, Waterfowl Hunting	III - 16
	No Action Alternative	VIII - 1
	Mineral Resources	VII - 1
Bureau of Outdoor Recreation	Utility Lines	III - 12
Resource Agency of California (State Clearinghouse)	Land Jurisdiction	I - 7,13
	Interrelationships	I - 16
	Water Districts	I - 9
	Mineral Leasing	II - 33
	Geologic Formations	II - 5
	Groundwater Quality	II - 11
	Mosquito & Rat Control	II - 50 IV - 3
Leslie Salt Co.	Economic Feasibility of Salt Production	I-8, IV-2 II - 29
	High Protein Food	VIII - 13
	Dike Broaching	III - 5
	Acreage - Alt. D	VIII - 8 VIII - 11

Commenting Agency	Comment	Page(s)
Leslie Salt Co. (cont'd)	Loss pf Revenue	III - 16
	Safeguards	III - 19
	Soil Stability	II - 6
	Water Circulation	II - 9
West Bay Community Associates and Ideal Industries	Endangered Species	II - 35
	Peregrine Falcon	II - 35
Santa Clara Environmental Health Services	Mosquito & Rat Control	II-68, III-19 IV-3
Mobil Oil Estates (Redwood Ltd.)	Land Donation	I - 12
San Francisco Bay Conservation & Development Commission	Regulatory Powers	II - 46
County of Santa Clara	Knapp Property	I - 6
	U.S. Coast Guard	I - 13
	Dredging Spoils	I - 12
	Sewage Treatment	I - 21
	School Children	III-7, VIII-1
California Academy of Sciences	Marshland Acreage	VIII - 8
	White-tailed Kite	II-37, III-2

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
Two Embarcadero Center, Suite 530
San Francisco, California 94111

IN REPLY REFER TO
9ED

November 3, 1976

Mr. Stephen H. Taub
Chief, Branch of Environmental Coordination
Fish and Wildlife Service
US Department of the Interior
Washington, D. C. 20240

Dear Mr. Taub:

We have reviewed the Draft Environmental Impact Statement for the San Francisco Bay National Wildlife Refuge in Alameda, San Mateo, and Santa Clara Counties, California, and have no specific comments to offer.

We appreciate this opportunity to comment on the Draft Statement.

Sincerely yours,

for F. E. Hawley
Regional Administrator

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
STATE OFFICE
Federal Office Bldg., Room E-2841
2800 Cottage Way
Sacramento, California 95825

IN REPLY REFER TO
1792 (INT)
(C-911.4)

OCT 5 1976

Memorandum

To: Chief, Branch of Environmental Coordination, Fish and Wildlife Service, USDI, Washington, DC

From: State Director, California

Subject: Draft Environmental Statement - Acquisition for San Francisco Bay National Wildlife Refuge (DES-76/35)

Because of commitments of Bureau personnel to environmental assessments of Bureau programs and preparation of environmental statements on Bureau proposals, we are unable to give the statement a thorough review. However, cursory review shows that no National Resource Lands are involved. Therefore, we have no comments at this time.

ACTING STATE DIRECTOR

cc: Director, WO (260)

United States Department of the Interior
BUREAU OF RECLAMATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO: 430
565.

NOV . 1976

Memorandum

To: Director, Fish and Wildlife Service

From: Assistant Commissioner of Reclamation

Subject: Draft Environmental Statement--Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California (DES 76/35)

As requested in the memorandum of September 15, 1976, from Mr. S. H. Taub of your staff, we have reviewed the subject environmental statement. We have no comments to offer.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
Sacramento Area Office
2800 Cottage Way
Sacramento, California 95825

IN REPLY REFER TO
Land Operations

OCT 7 1976

Chief, Branch of Environmental Coordination
U. S. Fish & Wildlife Service
Washington, D. C. 20240

Subject: Draft EIS - Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California (DES 76/35)

Dear Sir:

We have reviewed the above subject and found no Indian lands are involved. We have nothing from our particular jurisdiction or special expertise on which we feel the need to comment.

Sincerely yours,

Area Director

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON D.C. 20240

L7619-460

NOV 5 1976

Memorandum

To: Fish and Wildlife Service

Through: Assistant Secretary for Fish and Wildlife and Parks

From: Associate Director, Management and Operations

Subject: Draft Environmental Statement on Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California (DES 76-35)

We have reviewed the draft environmental statement and offer the following comments for your consideration.

Comments on the Environmental Statement

The statement appears to deal adequately with the effects of the project upon archeological and historical resources.

Since the study area is rich in cultural values, viable alternative locations for roads, buildings, trails and other facilities should be considered. Other aspects being equal, we recommend that the alternative having the least impact upon cultural resources be selected.

We request that copies of any archeological reports received be made available to the Western Archeological Center, National Park Service, P. O. Box 49008, Tucson, Arizona 85717, so that a more comprehensive review of the final statement will be possible.

Raymond L. Freeman

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
100 CALIFORNIA STREET
SAN FRANCISCO CALIFORNIA 94111

Mr. Stephen H. Taub
Chief, Branch of Environmental
Coordination
U.S. Department of the Fish and
Wildlife Service
Washington DC 20240

DEC 1 1976

Re: FWS/RS

Dear Mr. Taub:

The Environmental Protection Agency has received and reviewed the Draft Environmental Impact Statement for Acquisition San Francisco Bay National Wildlife Refuge, California.

FPA's comments on the Draft Environmental Impact Statement have been classified as LO-1. The classification and date of EPA's comments will be published in the Federal Register, in accordance with our responsibility to inform the public of our views of the proposed Federal Actions Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the consequences of the proposed action and the adequacy of the environmental statement.

Within present funding constraints, the proposed action will maximize the preservation and protection of environmental values of the southern portion of San Francisco Bay. Besides protection of critical habitat and associated wildlife, this project will help maintain this area as part of San Francisco Bay and protect it from further filling.

While EPA has no environmental reservations about this proposed action, we note that on page VIII-II the discussion of alternative D mentions that amendments to the legislation are possible. EPA believes that a future discussion of available funding is relative to the feasibility of alternatives D and F. If further funding is feasible, these alternatives should be re-evaluated along with the proposed alternative. 1

EPA appreciates the opportunity to comment on this Draft Environmental Impact Statement, and requests two copies of the final statement when available.

If you have any questions about our comments, please contact Patricia Sanderson Port, EIS Coordinator, at (415)556-3232.

Sincerely,

for Paul De Falco, Jr.
Regional Administrator

cc: Council on Environmental Quality

Response to Environmental Protection Agency

1. Cost is noted in Alternative D because the proposed action has an established limit of $9 million for acquisition. The additional estimated cost of $20 million for Alternative D and F is outside the legislation. However, this does not directly affect feasibility. Combined with other factors, statement of estimated costs facilitates evaluation of the proposal and the alternatives.

United States Department of the Interior

BUREAU OF OUTDOOR RECREATION
WASHINGTON, D.C. 20240

IN REPLY REFER TO:
E3035

OCT 27 1976

Memorandum

To: Chief, Branch of Environmental Coordination, U.S. Fish and Wildlife Service

From: Director, Bureau of Outdoor Recreation

Subject: Review of draft environmental impact statement for Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California (DES 76/35)

We have reviewed the subject draft environmental impact statement submitted by your memorandum dated September 15, 1976.

Our only comment concerns the potential visual impact of additional utility lines crossing the refuge (page III-21). As existing structures have a severe impact on the appearance of the bay (page III-24), additional transmission lines would further degrade the visual experience. The EIS should discuss any Federal obligation to permit new lines once Federal ownership is assumed, and the appropriate Fish and Wildlife Service policies regarding such development on refuges. 1

for John Crutcher

Response to Bureau of Outdoor Recreation

1. Service policy prohibits developments which are incompatible with objectives for which a particular refuge is established or where significant adverse impacts on wildlife values could be anticipated. In each instance wherein a new project is proposed the action would be subject to compliance with NEPA and other laws and regulations governing operation of NWR's (the latter are set forth in FES 76-59, Operation of the National Wildlife Refuge System), but the Service would have the responsibility to consider new proposals for crossing of utility lines. Federal ownership would not rule out absolutely such crossings.

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

OFFICE OF THE DIRECTOR

In Reply Refer To:
EGS-DES-76/35-MS760

Memorandum

To: Chief, Branch of Environmental Coordination
Fish and Wildlife Service

Through: Assistant Secretary--Energy and Minerals

From: Director, Geological Survey

OCT 21 1976

Subject: Review of draft environmental statement for San Francisco Bay National Wildlife Refuge, California

We have reviewed the subject draft environmental statement as requested in your memorandum of September 15.

Discussion of the effects on chemical water quality of the estuarine environment (p. II-11 to II-17) should include consideration of effluent seepage from three sanitary landfill sites (p. II-37). 1

It is noted that the depletion of ground water in deep aquifers has resulted in consolidation of clay layers and is responsible for subsidence (p. II-9). The effects of increased ground-water depletion on continued subsidence that may result in decreased mud flat exposure during low tide should be considered. The decreased exposure of mud flats to air would tend to reduce oxygenation of bay water. 2

Director

Response to Geological Survey

1. For a land acquisition statement it was considered adequate to recognize importance of water quality to the refuge and the local communities. Subject to limitations of authority the refuge would join others toward maintaining water quality standards. Adequate data on effluent seepage from the sanitary landfill sites are not presently available for inclusion in this FES. The importance of this possible adverse impact is of concern not only to the Service but to other South Bay agencies and is an item that contributed to the uncertainty of establishing the fill areas.

2. The role of algae on mudflats in producing oxygen for shallow water is probably very important (Harvey, 1966). However, it is not known how much oxygen is given off into the water and mud and air.

   The boundaries having been established in the proposal, exposure of the mudflats would depend on other factors as well as subsidence. Topography and water manipulation in the ponds also have an effect. While this would be considered, limited ability of the refuge to affect levels and related exposure of flats precludes wide expanses.

OFFICE OF THE DIRECTOR

United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW.
WASHINGTON, D.C. 20241

November 3, 1976

DES-76/35

Memorandum

To: Director, Fish and Wildlife Service

Through: Assistant Secretary--Energy and Minerals

From: Director, Bureau of Mines

Subject: Draft environmental statement, Acquisition of San Francisco Bay National Wildlife Refuge, Alameda, San Mateo, and Santa Clara Counties, California

We have reviewed your draft environmental statement for the acquisition of 23,000 acres in the southern portion of San Francisco Bay for the purpose of maintaining and enhancing fish, wildlife, and natural wetland values of the area. Nearly 13,000 acres of the proposed acquisition is in ponds managed by Leslie Salt Co. for the production of salt by solar evaporation of natural brine. Acquisition of an additional 6100 acres owned by Leslie Salt Co. is also proposed.

Although minerals are discussed briefly, some descriptions are misleading and lack continuity. Additional historical and analytical background for salt production by solar evaporation is needed to determine its compatibility with wildlife refuge management. The environmental statement includes several remarks indicating compatibility, but the remarks are largely unsupported by analytical data.

We suggest the following items from the environmental statement be given more detailed consideration or subjected to further analysis:

Page I-15, paragraph 1, lines 1-4: The compatibility of the wildlife proposal with salt production by solar evaporation has not been established in this report. An economic appraisal of such salt production in the San Francisco Bay area is needed. The appraisal should delineate the history and technology of salt production, capital investment, and the relationship of local production to local and regional utilization as well as to total domestic output. 1

Page I-15, paragraph 1: The reserved easement for continued operation of salt ponds by the company (Appendix 4, pages 18-21) imposes severe operating restrictions, the effects of which cannot be determined without a detailed economic appraisal. 2

Page II-41, "Minerals": Additional analytical background is required in this section. Leslie Salt Co. has expressed no intention to curtail its salt production. The company's attitude toward the proposed action should be determined and stated clearly. Calculated from the 1975 average price for salt, f.o.b. mine, the 779,000 tons of salt produced from the company's North and South Bay operations combined should be valued at $11.2 million. The revenues stated in the report are much less (page III-27). This apparent discrepancy should be resolved. 3

Page III-10, "Impact on Minerals": No specific reasons are given for limiting the company's access or activities. Again, no statement is made regarding the company's opinion about the proposed restrictions. Further clarification is required regarding revenues from activities other than salt production. It is not clear whether these revenues are derived from by-products of salt output or other less directly related sources. 4

Page III-27, "Economics": As noted previously, the calculated value of salt production from this project is about $11 million annually. Furthermore, the impact on local and regional distribution and utilization patterns has not been considered. 5

Page IV-1, "Mitigating Measures in the Proposed Action," paragraph 2, lines 7-9: The apparent lack of any stated agreement with the company poses a sensitive issue. If implementation of the proposed action required exercise of the right of condemnation through litigation, legal costs and compensation to the company could render the project economically infeasible. 6

Page IV-2, paragraph 1: The USF&S intends to acquire all other rights from the company, including the right to lease the salt ponds for harvesting brine shrimp, bait fish, and hunting water fowl. The importance of revenue from these activities to the net profitability of salt production apparently has not been examined. 7

Page IV-2, "Loss of Private Lands and Improvements": The apparent discrepancy between the stated value and calculated value of salt production ($5 million vs. $11.2 million) is repeated in this section. 8

Page VII-1: The constraints should be specifically defined. 9

Page VIII-3, paragraph 3: Again, the specific constraints should be defined.

Page VIII-19, f.f., "Alternative F - Acquire full fee interest in the Leslie Salt ownership and restore the salt ponds to marsh lands and tide lands.": The statements contained in the first and second paragraphs of page VIII-19 are misleading. The cost of purchase of the Leslie Salt Co. South Bay salt production unit totaling 31,887 acres is estimated to be $20 million for land and facilities. The direct loss of revenue to the economy of the South Bay Region is estimated at $5 million annually, with displacement or reassignment of approximately 450 employees. Neither the $20 million cost nor the opportunities for reassignment of 450 employees are adequately substantiated. Furthermore, it can be shown that the average annual value of salt production is more than double the stated $5 million, or over $11.2 million, based on 1975 output. Based on these revenues, a more realistic appraisal of land acquisition cost could be over $100 million, more than 10 times the maximum authorized by law. 10

The following information is offered as additional background for the analysis and evaluation of salt production by solar evaporation in the San Francisco Bay area:

Solar evaporation, the only method now used for producing salt from sea water, is feasible only in a few places and depends upon the presence of local markets, a large area of suitable land, and a dry climate.

Small works are generally uneconomic. To optimize the advantages of mechanized operation, a single salt works should cover a minimum of 5,000 acres. The land should be at or near sea level and impermeable to brine seepage. Salt marshlands generally meet these criteria. For many years, salt marshes were considered of little value except for salt production. Today, the salt industry must compete for the land with expanding industries and communities. It is often feasible to reclaim marshland by draining and filling, and large areas of former marshland are now covered with industrial plants or housing tracts. An example of the competition and changing land-use patterns is found near Long Beach, California, where salt production by solar evaporation ceased in 1946 as the last available marshland was reclaimed for other purposes. Elsewhere in California, coastal marshlands which might have been used for salt production have been filled.

One of the first salt plants on San Francisco Bay was built in 1862. The industry then consisted of small, inefficient plants, few of which had annual capacities of more than 10,000 tons. A trend toward consolidation of the small plants began in 1900 and culminated in 1941 when all salt production in the area was controlled by one firm. That firm, Leslie Salt Co., remains the largest producer of salt in California and one of the largest producers of

salt by solar evaporation in the world. The company has more than 31,000 acres of evaporating ponds in production in Alameda, Santa Clara, and San Mateo Counties, with additional development on the north shore of San Pablo Bay. Total production by Leslie Salt Co. averages nearly 2 million tons annually. The company concentrates bay water in large, irregular evaporating ponds, then runs the concentrated brines into smaller, rectangular ponds where further evaporation causes the salt to crystallize. Each autumn, salt from the crystallization ponds is scraped, washed, and stockpiled. Most of the crude salt is sold in bulk to the chemical industry and for other industrial purposes, but a portion is refined.

The following references should be helpful in preparing an appraisal of salt production by solar evaporation in the San Francisco Bay area:

1. See, D. S., Sodium Chloride--The Production and Properties of Salt and Brine: Chapter in Solar Salt, ed. by D. W. Kaufmann, Reinhold Publishing Corp., 1960, pp. 96-108.

2. Smith, G. I., Salt: Chapter in Mineral Resources of California, California Division of Mines Bull. 191, 1966, pp. 356-361.

3. VerPlank, W. E., Salt in California: California Division of Mines Bull. 175, 1958, 168 pp.

Thomas V. Falkie
Director

Response to Bureau of Mines

1. As a land acquisition statement, further discussion of solar salt evaporation processes is not considered necessary nor appropriate. Moreover, the level of detail requested concerning the history and environment of current salt production technology would be valueless in identifying and analyzing impacts of the proposal, since no significant conflicts are foreseen. We believe that sufficient analyses have been presented to indicate compatibility. Presence of wildlife in the salt ponds is one indication that wildlife objectives can be met consonant with salt producing activities.

   The FWS does not normally prepare the traditional benefit/cost ratio study which you appear to be requesting, but the planning process did consider economic as well as environmental implications in advancing the proposal. The Service has complied with that section of the CEQ Guidelines which state "in each case the analysis should be sufficiently detailed to reveal the agency's comparative evaluation of the environmental benefits, costs and risks of the proposed action and each reasonable alternative." CEQ Guidelines, August, 1973, F.R. 20550. This portrayal of the environmental benefits, risks, and costs is undertaken in the statement, even if not in quantified form.

2. At present the proposed reserve easement is still in process of negotiation. In our appraisals to determine the worth of Leslie's operation, economic reports were studied. The conditions to be imposed by the easement are not considered to be unduly restrictive.

3. The Company's attitude toward the proposed action is believed to be adequately expressed to the extent that they intend to remain in business "so long as economically feasible" (Leslie's letter of comment attached as part of the FES). Salt is the only mineral of economic significance in the proposed area, and we believe that to be adequately discussed in light of minimal impact. No firm value figure was available for inclusion in the Minerals section of the draft, therefore, the tonnage figure of 779,000 gave the reviewer a concept of salt production magnitude. The reference to 55 million and 450 jobs in Chapter III of the draft was our estimate of loss to the South Bay economy, not to the total revenue generated by the South Bay salt business. Inclusion of these figures in Chapter III was in error; they have been removed from the FES.

Response to Bureau of Mines (cont'd)

4. Restrictions on incompatible activities are included in the proposed reserve easement to protect refuge values. Since the easement is still in the negotiating stage it would be premature to indicate its acceptance. However, it is expected conditions therein will include those noted in the text. Essentially, these will restrict Leslie's activities to those related directly to salt production. The FES text Chapter III, has been changed to state this more clearly.

   Harvest of brine shrimp and bait fish by the company would not be permitted under the revised proposed reserve easement. The dollar values of these by-products are not readily available for inclusion in the FES.

5. It appears our statements regarding salt production in the draft were not fully understood. Since salt production is to continue, no impacts on regional and local economies and utilization patterns are anticipated.

6. Shrimp harvesting, bait fish operations and waterfowl hunting leasing have been more fully examined in Chapter III of the FES.

7. See response No. 3.

8. Constraints have been more specifically defined in the FES.

9. The cited sentence concerning constraints contained a typographical error. Under the No Action Alternative no constraints would be effected on salt production since no further steps to acquire the land would be taken.

10. Extensive appraisal data gathered in connection with this proposal indicate that all of Leslie Salt Company rights to the salt ponds plus severance damage would come to an estimated 20 million dollars. This, of course, is an opinion of value; the true value would not be known unless this alternative is selected.

DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON D C 20350

16 DEC 1976

U. S. Department of the Interior
Fish and Wildlife Service
Washington, D. C. 20240

Dear Sirs:

On 10 November 1976 an interim reply to your original request for review of the Draft Environmental Impact Statement (DEIS) on the Acquisition of the San Francisco Bay National Wildlife Refuge, California was forwarded. It was stated in the above correspondence that detailed comments to be prepared by the cognizant operational commander would be forthcoming.

Accordingly, those detailed comments initially referenced are as follows:

a. Generally, the preservation of the environment in its natural state is a compatible and highly desirable endeavor in the vicinity of Naval Air Station Moffett Field; however, in the case of the San Francisco Bay Wildlife Refuge, certain incompatibilities or potential incompatibilities may provide an unacceptable impact on flight operations. Indeed, page III-20 of the DEIS discusses the detrimental impact of proposed new airports on the proposed refuge and indicates that the refuge would virtually bar airfield construction. It should follow that establishment of a refuge in the vicinity of an existing airport would be equally unacceptable. 1

b. Notwithstanding the statement on page III-5 of the DEIS that no significant increases or decreases in endangered species would result, one of the overall purposes of the wildlife refuge is to promote the natural bird populations through preservation of their habitats and the prohibition of activities or practices which tend to reduce those populations. To the extent that water fowl and other bird populations are encouraged to increase in the area immediately north of Moffett Field, hazards to air navigation will result.

c. As presented in the DEIS, Alternative D provides the most objectionable situation. By including the Charleston Slough Unit in an expanded refuge area, refuge status would be extended to the Leslie Salt concentrator ponds in the north approach to Moffett Field. Action taken to manage the refuge 2

would encourage the water fowl and other bird populations and increase the probability of conflicts between birds and aircraft including ingestion of birds into aircraft engines and collision of birds with control surfaces of arriving or departing aircraft. 2

d. Alternatives A, B and C, which pertain to the "no project alternative" and alternatives with boundaries which are not in the immediate vicinity of Moffett Field are considered to be compatible with NAS Moffett Field operations. The basic proposal, however, which includes the Jagels Slough parcel recently transferred to the Department of the Interior by the Department of the Navy, is considered to seriously impact Moffett Field operations. The inclusion of this parcel portends the eventual enlargement of the refuge to include the whole Charleston Slough Unit with the attendant hazards to air navigation cited above for Alternative D. Further, prior to any further acquisition of the Charleston Slough Unit, the basic proposal could gradually increase the bird population, hence, the hazards to air navigation. The DEIS on page III-24 indicates that "project interests must extend beyond the immediate refuge area". This could result in a prohibition of recreational water fowl hunting in the private areas near the Jagels Slough parcel. This and other refuge management actions, in cooperation with local agencies which plan park uses in the area, could result in substantially the same impact as for Alternative D. In regard to the Jagel Slough parcel, it should be noted that on page I-13 of the DEIS this parcel is said to consist of 75.98 acres acquired from Moffett Field. The former Navy property includes only 37.26 acres of fee simple ownership. The remaining 38.72 acre parcel consists of a navigation easement. No other property rights were owned by the Navy, and, unless the Department of Interior has acquired additional rights from others, the use of the easement parcel in the wildlife refuge is questionable. 3 4

e. The DEIS makes numerous references to local planning agency plans and policies which are consistent with the proposed refuge. It should be noted that the San Francisco Bay plan of the Bay Conservation and Development Commission designates the areas in the north approach to Moffett Field as follows: "If not needed for salt production, ponds north of Moffett Field should be preserved for possible airport expansion." 5

f. Page I-17 of the DEIS quotes the published policy of the Santa Clara County that "the possibility of bringing salt ponds under public ownership, breaching the dikes and reopening

the salt ponds to the tidal action of the bay should be examined." Page III-9 suggests that "those ponds no longer needed for salt production may be permitted to revert to marsh vegetation." It should be noted that general area subsidence has resulted in the inland dikes near Moffett Field being too low at the present time for effective flood control. Consequently, flooding of the salt ponds north of Moffett Field would endanger the runways, portions of which are at elevation below mean high water. Therefore, the impact of the proposed refuge on flood control should be addressed in the DEIS. 5

g. It should be noted that there is an existing Navy sanitary landfill operation in a dry salt pond on Navy property in the vicinity of the Jagels Slough parcel. This landfill is currently operating outside the Corps of Engineers jurisdiction. This sanitary landfill should be acknowledged as existing on page II-37. 6

h. In summary, the Navy is opposed to those alternatives for the San Francisco Bay Wildlife Refuge which would increase hazards to air navigation or would otherwise be incompatible with the mission of the Naval Air Station.

The Navy is aware that the formal commenting period for review of the DEIS has expired, however, it is believed that the proposal has significant impact on the continual safe operation of Naval Air Station Moffett Field and that these points should be formally addressed in the final EIS.

Sincerely,

PETER W. McDAVITT
Special Assistant to the
Assistant Secretary of the Navy
(Installations and Logistics)

Response to Department of Defense (U.S. Navy)

1. The reference on page III-20 of the DES relative to barring airfield construction pertains to acquisition of lands and not to air navigation hazards resulting from waterfowl population increases. Nevertheless, we can understand your concern that establishment of the refuge might result in population increases, impacting on flight operations at Moffett Field. Long-term preservation of the habitat in addition to limited management for the refuge as a whole could result in some population increases thereby affecting air operations, and this has been noted in Chapter III of the FES. However, management efforts to increase waterfowl use in the vicinity immediately north of the Field will not be undertaken so air navigation hazards should not vary significantly from existing conditions.

2. We appreciate your identification of the potential hazard if the Charleston Slough area were included in the Refuge. As under the proposal, no active management to increase the present levels of bird life would be initiated. Should an increase occur through natural means this could be of concern to airfield operations. We have revised Chapter VIII of the FES to recognize this potential impact.

3. Please see comments 1 and 2. The inclusion of the Jagel-Slough parcel does not necessarily portend the acquisition of the Charleston Slough unit.

4. The Fish and Wildlife Service has acquired the Navy's former interest in the Jagel-Slough Unit, and it is our intent to include the entire 75.98-acre parcel in the refuge. This may necessitate the acquisition by lease of the State's interest in the property.

5. As proposed, the Service does not anticipate the acquisition of those salt ponds north of Moffett Field. As for flood prevention in general, we intend to cooperate with flood control agencies in the Bay area, and believe the statement adequately sets forth this intent.

6. The FES has been expanded to acknowledge the landfill.

OFFICE OF THE SECRETARY
PENDLETON HUNTLEY
1416 NINTH STREET
95814
(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Navigation and Ocean Development
Department of Parks and Recreation
Department of Water Resources

EDMUND G. BROWN JR.
GOVERNOR OF
CALIFORNIA

Air Resources Board
Colorado River Board
San Francisco Bay Conservation and Development Commission
Solid Waste Management Board
State Lands Commission
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards
Energy Resources Conservation and Development Commission

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

JAN 7 1977

Mr. Lynn A. Greenwalt, Director
U. S. Fish and Wildlife Service
Department of the Interior
Washington, D. C. 20240

Dear Mr. Greenwalt:

The State of California has reviewed your "Draft Environmental Statement IES 76-35, Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California", transmitted by Notice of Intent (SCH 76102903) dated October 25, 1976), and submitted to the Office of Planning and Research (State Clearinghouse) in the Governor's Office. This review fulfills the requirements under Part II of the U. S. Office of Management and Budget Circular A-95 and the National Environmental Policy Act of 1969.

The State's review has been coordinated with the Departments of Conservation, Fish and Game, Navigation and Ocean Development, Parks and Recreation, Water Resources, Food and Agriculture, Health, and Transportation; the Air Resources Board, the Solid Waste Management Board, the State Water Resources Control Board, the San Francisco Bay Conservation and Development Commission, the Energy Resources Conservation and Development Commission, and the State Lands Division of the State Lands Commission.

General Comments

Alameda County Water District is responsible for management of the ground water basin underlying the Fremont and Mowry Slough units. Its program to protect the ground water resource includes a sea water intrusion barrier consisting of pumping wells discharging to drainage ways. These plans should be considered during development of specific acquisition plans. For additional information, see DWR Bulletin 118-1, Volume II, "Additional Fremont Area Study, 1973", and Bulletin 147-2 "Fremont Salinity Barrier, 1975".

Mr. Lynn A. Greenwalt, Director
Page 2

Specific Comments

Page I-13, paragraph 3, a reference is made to "The state land within the refuge would be leased for a 66-year period . . . ." The section does not indicate that these lands are under the jurisdiction of the State Lands Commission. It would seem that clarification of which state agency is leasing would be in order.

Further along this line, on pages I-16 through I-23, concerning "Interrelationships with Other Jurisdiction and Project Proposals", the State Lands Commission is not mentioned.

Pages I-16 through I-23, using Table 1 on page I-9, approximately one-third of the total area is under the "exclusive" jurisdiction of the State Lands Commission pursuant to Public Resources Code Section 6301.

Also, the Commission has identified the proposed waterway areas possessing significant environmental values of statewide interest and has adopted regulations to protect these values. These factors should be stated in this section.

Pages I-17 and I-18, Water Districts: No mention is made that the Fremont and Mowry Slough units are within the boundary of Alameda County Water District.

Page II-41, item 4, Minerals, states that "The only mineral use of land scheduled to be included in the refuge is salt production . . .". As there have been sand or shell dredging permits by the State Lands Commission in the past in close proximity of the proposed refuge area, it is a question for management whether or not the State Lands Commission lease to the Fish and Wildlife Service should reserve the right to grant mineral leases, including oil and gas, which are not inconsistent with the operation of the refuge.

Page II-59, in the last paragraph, the report states that major responsibility for San Francisco Bay was delegated to BCDC in 1969. The correct date is 1965, which is correctly stated on Page I-19, in the first paragraph. The preparation of the San Francisco Bay Plan was also begun in 1965, and completed in 1969, when the California Legislature made BCDC a permanent agency.

Appendix 4, page 20, number 11, states that Leslie shall have the right to utilize a barge canal. This area appears to be a portion of Parcel 4 of Exhibit B (Reel 2119, Ala. Co., O.R. Image 377) involved in the 1968 Leslie Salt exchange. The parcels described in Exhibit B were not freed of the public trust and therefore there is a sovereign title interest which should be mentioned.

Page II-8, Geology: The impression is given that bedrock is everywhere at a depth of 300 to 800 feet. No mention is made that Coyote Hills, which forms the east boundary of the proposed refuge, is composed of bedrock (Franciscan Formation). 5

Page II-9, Par. 2: "Bair Island Unit of the refuge ...." No Bair Island Unit appears on Figure 2. Is it intended to mean Greco Island Unit? 6

Page II-10, Figure 5, supposedly depicts, among other things, navigable waters. Such depiction is not clear from the diagram. Further, the federal standard for navigation is distinctly different from the state test. 7

Page II-11, Water: No mention is made of ground water. The report indicates that it was assumed that all ground water is saline. There is fresh water at depths of 200 to 400 feet under much of the salt marsh and south bay. The radio station at the east end of the bridge has a well. There is a fresh water well in the bay immediately south of Dumbarton Bridge. This well once served an oyster-packing plant. 8

Chapter II: The figures shown as "Data Base" are much too small as are figures in other chapters. 9

Page II-19, Par. 3; II-21, Par. 2; and III-24, Par. 1: These paragraphs either state or infer that the State Water Project may have a detrimental effect on the water quality of south bay. Department of Water Resources investigations indicate otherwise. We refer you to the Draft Environmental Impact Report Peripheral Canal Project, August 1974. The following two paragraphs are from page V-132 of subject report: 10

1. The operation of CVP-SWP systems does not have a great effect on winter floodflows to the Bay. During most of the winter, the projects merely pass water through on a somewhat modified schedule in accordance with flood control criteria designed to reduce flood peaks, but the total volume of water reaching the Bay in, say, a month, is not affected significantly. In the early spring, as the reservoirs start to fill for water conservation, floodflows reaching the Delta would be reduced. Floodflows to the Bay are also reduced to conserve water during the first storm or storms of the season when San Luis Reservoir is low, and also following a dry year when upstream storage reservoirs are below flood control reservation.

2. The operation of CVP-SWP systems does have an impact on summer flows. In general, the projects provide greater flows in the summer than would otherwise exist. In the Bay, however, water circulation is dominated by tidal action in the summer, and the effect of the projects on circulation is negligible except in the Suisun Bay area.

Recommendations

1. Table I in Section I shows 3,828 acres to be placed in the salt marsh category. This type of habitat may be conducive to mosquito production if development does not provide for proper water management. Mosquito control had its origin in the Bay Area and was initiated to make the area more habitable. The question arises as to the compatibility of the stated goal of 600,000 school children getting their environmental education and 3,828 acres of unmanaged salt water marsh. Mitigation efforts may have to include tidegates, water circulation ditches, and avoidance of temporary standing water.

   Section II - Description of the environment -- no mention of the existence of local health and vector control agencies is made in the section. Local mosquito control work is ongoing and necessary in order to maintain a suitable environment for the human population. Mosquito and gnat control are necessary from the nuisance aspect and disease potential. Failure to include or acknowledge this necessary program for the area described in the proposal is an error.

   Section III - Environmental Impact of the proposed action. A discussion of the impact of increased mosquito and gnat potential is needed. This should include species and potential health hazards and nuisance problems. 11

   Section IV - Mosquito prevention is possible by advance planning and engineering for proper water management. A commitment to water management and methods by which this can be accomplished is necessary in this section. Failure to do advance planning may result in the need for chemical applications to control mosquitos. These treatments are expensive and have a short useful life as well as having a potential adverse impact on the environment.

   Inclusion of the above subjects in the final environmental statement is necessary.

2. We concur this project may affect air quality significantly less than either residential or commercial/industrial development and that low key park development may attract a few more visitors than presently use the area.

   However, with proper mitigation measures, local air pollutant emissions associated with the increased visitor use may be offset or possibly decreased. Some beneficial mitigation measures include: 12

   - provision of high occupancy vehicle and/or public transit service to the refuge.
   - deemphasizing pleasure driving.
   - provision of bicycle/pedestrian trails to and through areas of the refuge.

The project may also have beneficial impacts upon air quality. Open space contributes to improved air quality through the absence of significant polluting sources and making available volumes of air in which pollutants can be diluted. The centralized location of the project may benefit regional air quality by reducing vehicular travel to more distant locations offering similar recreational opportunities.

3. The plan proposed is in potential conflict with the stated purposes of the National Wildlife Refuge System, which include preservation, protection, and restoration of habitat for wildlife. 13

   The draft report does not give proper recognition and emphasis to the major potential that exists for restoration of historic marshlands. In fact, the proposed action cited in the DEIS of reserved easement for "permanent" salt making rights to Leslie Salt Company (Appendix 4) appears to foreclose all opportunities for restoration on those lands. The DEIS in Table 1 on page I-9 indicates that more than half of the 23,000 acres of the refuge is currently "Salt Ponds". 14

   In view of the continued loss of valuable marshlands, and the recognition in legislative mandates at federal and state levels of government of the value of these lands to wildlife, we deem it of greatest priority to pursue all opportunities to restore marshlands. This project provides major opportunities to achieve significant restoration, and therefore we believe it is imperative that the plan maintain the option for restoration of the diked lands within the refuge boundaries where such restoration is feasible.

   For the above reasons, we feel that Alternative F in the DEIS would best meet the objectives of the National Wildlife Refuge System, and would make possible the *optimum management program* for all fish and wildlife resources of the refuge.

Thank you for the opportunity to review and comment.

Sincerely,

CLAIRE T. DEDRICK
Secretary for Resources

By _____
L. Frank Goodson
Assistant to the Secretary
Projects Coordinator

cc: Director of Management Systems
State Clearinghouse
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
SCH No. 76102903

Response to The Resources Agency of California (State Clearinghouse)

1. Corrective information concerning jurisdiction, interrelationships and regulations has been provided in Chapter 1 of the FES.

2. Requested change concerning the Alameda County Water District has been made.

3. The status of mineral leasing is more adequately discussed in the final text.

4. Recognition of sovereign title interest will be made in the proposed easement prior to finalization.

5. That Coyote Hills is composed of bedrock has been added to the text. A review of the overall discussion of geologic formations does not appear to give the impression that bedrock is found everywhere.

6. Bair Island is part of the Greco Island Unit. Correction made.

7. Federal navigable waters are depicted by the irregular lines in the middle portion of the map, as indicated by the legend. You are correct, however, in that detail is often lost during the reduction phase of a figure such as this. A discussion of the difference between State and Federal standards for navigation would appear to add little to the reader's understanding of the EIS.

8. Your information concerning groundwater has been added to the final test. Our statement to the effect that "groundwater quality is generally good" attests to the belief that not all groundwater is saline.

9. See response #7.

10. Your views and findings of the Department of Water Resources concerning the impact on water quality of the State Water Project are acknowledged. It is recognized that there are differing viewpoints as to the impact of the Plan. Therefore, the word "detrimental" has been stricken from the FES.

11. Chapters II, III and IV of the FES have been revised to incorporate a discussion of mosquitoes.

Response to The Resources Agency of California (State Clearinghouse) (cont'd)

12. The Service concurs with your suggestions, i.e., mitigating measures to offset air pollutant emissions due to increased visitation. As development and managment plans proceed it is likely that all or most of these suggestions will be adopted.

13. Recreational use is permitted on NWR's insofar as such use does not conflict with established refuge objectives. Potential significant conflicts between wildlife management and public use are not foreseen. If such conflicts do occur they will be resolved in favor of wildlife.

14. The Service is not incognizant of the marsh restoration possibilities on the proposed area but believes that sufficient discussion is set forth to accurately portray the present situation. Limitations on restoration activities are present but to state that opportunities are irreversibly lost because of the proposed Leslie Salt easement would be inaccurate. Time could affect the Company's desire to remain in business but speculation of this nature would not be appropriate. Moreover, alternative F is believed to adequately address return of the area to marshland.

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY — EDMUND G. BROWN JR., Governor

DEPARTMENT OF HEALTH
2151 BERKELEY WAY
BERKELEY 94704
(415) 843-7900 Ext. 552

November 29, 1976

U. S. Department of Interior
Fish and Wildlife Service
Division of National Wildlife Refuge
Room 2343, 18th & C Streets N. W.
Washington, D. C. 20240

Attention: E. I. S. Coordinator

Dear Sir:

The Draft Environmental Statement 76-35 regarding acquisition of lands for the San Francisco Bay National Wildlife Refuge, California, came to our attention too late for us to comment upon it by the December 1, 1976 deadline. A quick perusal of this draft, however, revealed that the public health importance of mosquito control in wildlife refuges has been completely overlooked. Since we belive our input is imperative in this and other similar planning documents, we request that the deadline for comments on the draft be extended for about two weeks so that our staff has ample time to review it and submit our suggestions for your consideration. 1

Sincerely yours,

VECTOR AND WASTE
MANAGEMENT SECTION

Robert S. Lane

Robert S. Lane, Ph.D.
Public Health Biologist

RSL:tj
cc: R. F. Peters, Chief

Response to Department of Health, State of California

1. The comment period was extended and these remarks are contained in State Clearinghouse letter of January 7, 1977.

ALAMEDA COUNTY PARKS ADVISORY COMMISSION

November 19, 1976

Marcus C. Nelson, Chief
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Mr. Nelson:

Re: FWS/RF

On Thursday, November 4, 1976, the Alameda County Parks Advisory Commission considered your Draft EIS for Acquisition of Lands for the San Francisco Bay National Wildlife Refuge. The Commission adopted the enclosed staff report as their comments.

The Commission is particularly interested in preservation of the remaining shoreline and baylands, and is pleased at the progress of the refuge. It will be very significant in preservation of the Bay, and the Commission wholeheartedly endorses the project.

Thank you for the opportunity to comment on this document.

Very truly yours,

William H. Fraley

William H. Fraley, Secretary
Parks Advisory Commission

WHF:cb

Enclosure

cc: U.S. Fish & Wildlife Service, Fremont

PARKS ADVISORY COMMISSION
STAFF REPORT - NOVEMBER 4, 1976

AGENDA ITEM NO. 3: REPORTS AND CORRESPONDENCE

1. Draft EIS: Acquisition of Lands for the San Francisco Bay National Wildlife Refuge - U.S. Fish & Wildlife Service, Department of the Interior, Washington D.C., 1976

This document is available in the Planning Department offices if any Commissioner wishes to read it in its entirety. Due to its relevance to the shoreline efforts of the Commission, it is summarized below.

STAFF RECOMMENDATION: That the Parks Advisory Commission adopt the following comments and submit them to the Department of the Interior.

In 1968, increasing concern for preservation of wildlife values resulted in formation of a study committee on the South Bay area. This led to Congressional authorization in 1972 of $9 million to establish a 32,000 acre refuge in the area to preserve and maintain wildlife habitats for migratory and indigenous species, particularly threatened and endangered species; to provide educative and interpretive opportunities; and to maintain open space for public benefits. It includes the shoreline from Coyote Hills Slough (Hayward/Fremont City Limits) to Guadalupe Slough in Santa Clara County, an area from Foster City to the Dumbarton Bridge in San Mateo County, plus several smaller areas in Santa Clara County. It includes 12,690 acres of salt ponds, 3,828 acres of salt marsh, 5,435 acres of tidal mud flats, 232 acres of upland, and 815 acres open water. The project is designed to retain the area in as natural a state as possible. While there will be public access, it will be limited such to minimize its impact.

The main impact which the EIS notes is that the area will be kept in its natural state, thus preserving it as a wildlife habitat and open space reserve, as opposed to eventual drainage, fill, and development as has been done elsewhere around the Bay, which would destroy this natural resource and have adverse impacts. The acquisition will not affect the salt production which now is concentrated in the area and is its main industry; the Department of the Interior will purchase the property but the salt producers will retain easements for salt manufacture. As noted above, it will remove the area from potential development; however, there is a great deal of land which is more appropriate for necessary development than this area, and development can be directed there. There will be subvention payments to the various jurisdictions to at least partly compensate for lost tax revenues. On the balance, the impact of the project appears definitely positive.

Two criticisms are noted. First, although the report reads well, the maps are often difficult to read. The refuge boundary is often indistinguishable, and other information is lost. Secondly, there are places where the EIS goes to an unnecessary level of detail. While the value of the EIS/EIR process cannot be denied, the cost involved in preparation and distribution of them is great. Where the detail of the report goes into overkill, these funds are better spent on the project itself, rather than paper and ink.

AGENDA ITEM NO. 4: REPORT ON BAY AREA PARKS AND RECREATION COMMISSIONERS' ASSOCIATION MEETING

Claire Dettenrieder attended this meeting, and will present a report to the Commission.

AGENDA ITEM NO. 5: REPORT ON PROGRESS OF STANTON HOUSE PROJECT

This was continued from the September meeting. A representative from the Castro Valley Historical Society will present a report on progress for funding the restoration of the house.

AGENDA ITEM NO. 6: DISCUSSION OF ROLE OF PARKS ADVISORY COMMISSION

This was continued from the October meeting. See Staff Report and Minutes for Agenda Item No. 6, October 4, 1976.

AGENDA ITEM NO. 7: DISCUSSION OF PROPOSITION TWO

This matter was before the electorate last Tuesday, November 2, 1976, at which time its fate was decided.

STAFF RECOMMENDATION: If the bond issue passed, that this be continued until the December meeting to allow staff to contact the Department of Parks and Recreation for information as to how the project is going to be treated this time.

BOARD OF TRUSTEES

FRED C. ROBERTS
MANAGER
1524 EAST SEVENTH STREET
OAKLAND, CALIFORNIA 94601
(415) 532-7121

Alameda County
Mosquito Abatement District

December 1, 1976
RE: FWS/RF

Mr. Marcus C. Nelson, Chief
Division of National Wildlife Refuges
United States Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240

Dear Mr. Nelson:

The Alameda County Mosquito Abatement District is interested in the proposed South Bay Wildlife Refuge because of the potential for the production of highly pestiferous mosquitoes. In fact, the formation of the District in 1930 was brought about by a petition of some 30,000 residents who found the environmental conditions caused by two species of salt marsh mosquitoes to be intolerable.

Our District, in order to provide effective and efficient control of mosquitoes, has essentially assumed a regulatory configuration. The District's main objective is to physically eliminate mosquito sources. When this cannot be accomplished because the mosquito production is associated with a specific land use, the District transfers responsibility for mosquito control to the landowner or land manager. Consistent with this policy, we see our role in the South Bay Wildlife Refuge as:

(1) To specify for your agency, the real and potential mosquito problems inherent in the refuge.

(2) Provide technical assistance in formulating long-term programs for preventing mosquito problems on the salt marshes.

(3) Provide ongoing technical assistance during the management of the refuge.

(4) Provide temporary emergency control as required until long-term control can be established. 1

(5) When possible, and as specified by park personnel, the District will stock fish for mosquito control purposes.

(6) Serve as a communication conduit between the citizens and the refuge when the citizens are adversely affected by mosquitoes that emerge from the refuge. (This role cannot be avoided since our personnel are routinely called into mosquito problems to determine the source of the mosquitoes).

Community health, comfort and prosperity are promoted by effective, continuous mosquito abatement measures.

The District has used a variety of effective control strategies to provide control over the two endemic species of salt marsh mosquitoes. The methodologies currently employed have been developed to provide effective and efficient control in a manner compatible with various land use patterns. For obvious reasons, long-term control of mosquitoes in the refuge should not be provided by insecticides. Except for a few isolated situations where we are required to apply pesticides, the sources of salt marsh mosquitoes in Alameda County are currently controlled by physical-biological control techniques. It is extremely important, however, to formulate control strategies early in the planning stages to insure that proper consideration is given to mosquito control methods that are compatible or even enhance the objectives of the refuge. 1

After reviewing the Draft Environmental Statement on the Acquisition of the San Francisco Bay National Wildlife Refuge, the Alameda County Mosquito Abatement District would like to add the following comments:

1. There is tremendous potential on the proposed refuge for the production of two species of salt marsh mosquitoes - Aedes dorsalis and Aedes squamiger. 2

2. Since both species of salt marsh mosquitoes are highly pestiferous, the potential for public outcry is great if undue numbers of mosquitoes are produced on the refuge.

3. Consistent with District policy, the Alameda County Mosquito Abatement District would expect the National Wildlife Refuge to assume the costs of mosquito control on the refuge. 3

4. An assessment of mosquito problems on candidate lands prior to land acquisition would seem prudent to determine the inherent costs of mosquito prevention and control. 4

5. An evaluation of potential mosquito problems prior to any environmental modifications (including breaching levees) would also seem prudent. 5

6. Long-term mosquito prevention and control measures should be formulated during the planning stages, an accounting made of their costs, and plans made for long-term funding. 6

7. Local mosquito control agencies can be used as a valuable resource to assist in cost analysis and in planning mosquito control strategies that are compatible with the objectives of the refuge.

Thank you for the opportunity to provide our point of view. We wish your agency the best in its ambitious undertaking. We stand ready to assist you and cooperate with you to help in this very worthwhile project.

Sincerely,

Fred C. Roberts
Manager

FCR:ep
cc: E.I.S. Coordinator-Div. of Nat. Wildlife Refuge, Washington, D.C.
Robert Personius -S.F. Bay Nat. Wildlife

Response to Alameda County Mosquito Abatement District

1. The Service appreciates the District's definition of its role in the proposed refuge and concurs with all aspects of enumerated functions. In the operation of the refuge, we believe that close coordination can be effected to carry out mutually satisfactory effort. A control agreement, wherein special responsibilities and procedures could be delineated, would appear to be the most practicable method to effect a close working relationship. This would also apply to Santa Clara Environmental Health Services and San Mateo Mosquito Abatement District.

2. Chapters II, III, and IV of the FES have been revised to recognize that two species of salt marsh mosquitoes do occur in the Bay, set forth potential impacts and discuss mitigating measures.

3. See response #1. The current methodologies employed by the District would appear equally acceptable to the Service, and specific land use management could be geared to be consistent with these strategies. Present management plans call for a minimum of land manipulation activities and associated costs should be relatively modest.

4. Our studies of the candidate areas have not revealed any serious vector problems. Under refuge objectives, where the primary emphasis is on preservation rather than manipulation, no problems of cost magnitude are anticipated.

5. Physical modifications would be subject to environmental analysis prior to initiation. Mosquito prevention and control would be an aspect of each analysis. The Service will not hesitate to draw upon the expertise of the District (and others), in making its analyses and formulating mitigating measures.

6. Long-term mosquito prevention and control measures will be a part of our overall management plan being prepared for the refuge including consideration of costs. Physical-biological control techniques are routinely utilized by the Service. There are no plans to use insecticides on the proposed area.

Environmental Management Agency
Planning Department
County Government Center, East Wing
70 West Hedding Street
San Jose, California 95110
299-2521 Area Code 408

County of Santa Clara
California

December 9, 1976

U.S. Fish and Wildlife Service
Department of the Interior
Washington, D.C. 20242

Dear Friends:

Subject: Draft Environmental Statement, DES 76-35, Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California

The following are our comments:

1. It is not clear, referenced page I-11, whether the Knapp property is included in the 23,000 acres authorized by Congress; it is so implied elsewhere in the report, particularly in the maps, can this be clarified? 1

2. A minor correction is needed on page I-12--In line 3, it should read 5,028 acres instead of 5.028 acres.

3. The word perpetuity, page I-15, line 7, is a bit strong; elsewhere, it states indefinitely (as long as it is financially feasible for Leslie Salt to continue solar salt production) which would be a good substitute for "in perpetuity". 2

4. "Interrelationships with Other Jurisdictions and Project Proposals".

   Several jurisdictions are cited but the only reference to the U.S. Coast Guard is the reference to a pending permit for a new Dumbarton Bridge. It would be advisable to cite their role in respect to navigation and any development proposals which might have any adverse effect on navigation. 3

5. To the best of our knowledge, there is no plan to expand the parking for the Marina, see page I-21, at the present time.

   The dredging spoils from the Marina project are being piped to an area southwesterly, well away from the Refuge Area.

   It is not clear what refuge visitor center is referred to and the siting in respect to the Marina. 4

6. "South Bay Dischargers" referred to on page I-22 has or is being phased out. It is reported in the press that Santa Clara County is requesting (and a suit is implied) to recover some $225,000 in contributions.

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The matter of sewage treatment and discharge is being examined by the Association of Bay Area Governments.

The City of Palo Alto, supported by the Santa Clara County Water Conservation District, received a grant from the U.S. Environmental Protection Agency to construct a tertiary sewage treatment test facility.

It is anticipated and hoped that the Palo Alto test facility will be of such beneficial significance that the manifold collection and discharge line once advocated by the South Bay Dischargers would be physically and financially unlikely. 5

The Association of Bay Area Governments in conjunction with local agencies is performing a study under Federal 208 Program funding which should further resolve the sewage treatment discharge, water pollution, water quality, question.

7. In the report it cites that some 600,000 school children of the area would be benefitted by the educational opportunity and experience.

   Further check indicates that all of us have been rather conservative in the numbers of school children. Attached is some of the data from the Special Federal Census of 1975 which indicates that there are some 400,000 school age children in Santa Clara County alone; and therefore if Alameda and San Mateo Counties are included, there would be approximately 1,000,000 school age children who could benefit from the Refuge. 6

8. The report mentions rehabilitation for wildlife habitat such as the possible breaking of selected salt pond dikes to return these specific areas to tidal action.

   A very good test example of reclamation for wildlife habitat is the Faber Tract northerly of the Palo Alto Environmental Center.

   A couple of years ago Dr. Tom Havey, Consultant to the Bay Conservation and Development Commission, along with some other biologists and environmentalists were instrumental in getting the dike broached to this former salt pond which had been used for dredging spoils. They instituted a program of transplanting Cord Grass and Pickleweed. The effort was effective and the reclamation area is developing into a rather good salt marsh. 7

   Since then other reclamation has been initiated and supported by the U.S. Army Corp of Engineers in the area of Alameda Creek near the northerly end of the Coyote Hills, East Bay Regional Park.

   Such reclamation should be stressed in the Report.

9. When the Congressional Committee conducted their hearing on the Refuge Bill, the writer requested that about 1,000 acres be added to the U.S. Department of Interior's Refuge Plan. The 1,000 acres consisted of about 800 acres of salt ponds and 200 acres of uplands easterly of Artesian Slough, see the Alviso Unit on the map for Alternate C.

   The reason that we have been insistent that the acreage be included as shown in Figure 26 of your report are as follows:

   a. Artesian Slough and now the additional marsh shown along Coyote Creek easterly of Artesian Slough are prime estuarine habitat areas. They are "home" for endangered and nesting species. This area needs the addition as a buffer so it's not possible for the unscrupulous to develop a uncontrollable firing line to shoot any living thing that moves in these marshes.

   b. Since the two large ponds have not been used to any great extent, they should be available for early marsh reclamation work.

   c. The plans are to build a new environmental and educational center on Artesian Slough directly west of the subject area.

      Students and other volunteers would have a base there to work on the marsh reclamation of the subject ponds.

   d. The 200± acres of upland at the east end of the salt ponds were taken over by the San Jose-Santa Clara Sewage Disposal Plant and developed into sewage sludge ponds.

      If the subject salt ponds are not considered as part of the Refuge and acquired soon, it's just a question of time before they are converted into some other land use such as commercial and industrial or possibly solid waste disposal or additional sewage sludge ponds, and thereby be so costly that they could never be acquired for the Refuge.

   e. If the two subject ponds are not included, it will be more difficult and costly to maintain and administer the Refuge.

      We therefore ask that under Alternate C and D that this be addressed separately from the main body of the alternates. 8

10. There should be more mention of how the Refuge would be complimentary to the National Historic District of the Old Port of Alviso.

We wish to thank the Task Force for the opportunity to respond to the Draft of the Environmental Statement.

The Fish and Wildlife staff are to be congratulated on their efforts in addressing such a complex subject and complex areas which make up this most unique Refuge of the Refuge System.

Sincerely yours,

Roy S. Cameron
Director of Planning

Arthur L. Ogilvie, Ph.D.
Associate Planner

RSC:ALO:eo

Enclosures

cc Congressman Don Edwards
Congressman Paul N. McCloskey, Jr.

Response to County of Santa Clara (Environmental Management)

1. That the Knapp property is included within the western boundary of the proposal is more clearly noted in the FES.

2. This change in wording has been made at the request of the Leslie Salt Company.

3. The jurisdictional role of the U.S. Coast Guard is briefly noted in the FES.

4. Concern for possible conflicts re expanded parking facilities was expressed by local operators. The refuge visitor center site would be adjacent to the marina. This is according to development and operation plans currently being prepared by the Service. Your information re dredging spoils has been added to the text of the FES.

5. The text has been changed to update this discussion.

6. The figure of 600,000 was derived from local sources, not from the more authoritative Federal Census of 1975. Therefore, we have changed the FES text to read 1,000,000 school children.

7. Reclamation of habitat is a secondary refuge goal and opportunities will not be ignored in planning. The principal objective is preservation however, and it is proper that the statement focus on this issue.

8. The subject Tract is recognized in Alternative D to a degree believed sufficient for this analysis. The proposal boundary being on the outside (east) toe of the dike will be helpful; however, there would be some control under Leslie's ownership.

County of Santa Clara
California

Environmental Management Agency
Environmental Health Services
2220 Moorpark Avenue
San Jose, California 95128
297-1636 Area Code 408

December 1, 1976

U. S. Dept of the Interior
Fish & Wildlife Service
Division of National Wildlife Refuges
Room 2343, 18th & C Street, N.W.
Washington, D.C. 20240

ATTENTION: EIS Coordinator

DES 76-35

The Santa Clara County Environmental Management Agency joins with the other Bay Area Vector Control Agencies in expressing great concern over the fact that we were not notified regarding DES 76-35. We are also alarmed that the Draft Environmental Statement does not address itself to the potential health hazards associated with marshland mosquito production. The impact that the proposed marsh changes would have on rodent populations should also be explored. 1

It is hoped that the final Environmental Statement will contain contingency plans, including funds, to protect the people of the Bay Area from the health hazards associated with marshland flooding. 2

JAMES ST-GERMAINE
ASST. CHIEF ENVIRONMENTAL HEALTH SERVICES

JS:lb

cc: Robert Personius, Refuge Manager
San Francisco Bay National Wildlife Refuge

An Equal Opportunity Employer

County of Santa Clara
California

Environmental Management Agency
Environmental Health Services
2220 Moorpark Avenue
San Jose, California 95128
297-1636 Area Code 408

December 3, 1976

Marcus C. Nelson, Chief
Division of National Wildlife Refuges
United States Department of the Interior
Fish and Wildlife Service
Washington, D. C. 20240

ACQUISITION OF LANDS FOR THE SAN FRANCISCO BAY
NATIONAL WILDLIFE REFUGE (DES 76-35)

This is in regard to the letter of December 1, 1976 that you have received from Mr. Fred Roberts, Manager of the Alameda County Mosquito Abatement District. In his letter, Mr. Roberts points out the problem of mosquito production from the proposed wildlife refuge area described in DES 76-35, and makes suggestions for cooperative mosquito control activities. The Santa Clara County Environmental Management Agency strongly endorses the principles set forth in Mr. Robert's letter.

In addition to mosquito control, this agency is also concerned about the effects that the changes in marshland environment will have on rat populations. Increased Norway rat populations would be potentially hazardous to public health and detrimental to wildlife. 3

We sincerely feel that the best interests of the wildlife refuge, as well as the health and well being of Bay Area residents can best be served through cooperative planning and management programs involving local agencies and the citizens they serve. 4

V. L. CANCILLA, CHIEF
ENVIRONMENTAL HEALTH SERVICES, EMA

VLC:jp

cc: Robert Personius, Refuge Manager
San Francisco Bay National Wildlife Refuge

EIS Coordinator, Washington, D.C.

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Response to County of Santa Clara Environmental Health Services (Letters of December 1 & 3, 1976).

1. Copies of the DES were provided the California State Clearinghouse in accordance with OMB Circular A-95. Our failure to directly provide your agency with a copy is regretted.

2. Chapters II, III, and IV of the FES have been revised to recognize the existence of mosquitoes and the Norway rat. There will be little marsh change, thus no expansion of present rat population numbers is expected. Marshland flooding would not be a deliberate action of the refuge as a management technique.

3. See response #2.

4. The Service foresees no problem in cooperating fully with both State and local agencies in planning, development and management of the proposed refuge. As is the case with other NWR's, local authorities and the public are invited to provide input on development and management matters.

Please see responses to San Mateo and Alameda Mosquito Control Districts.

SAN MATEO COUNTY
MOSQUITO ABATEMENT DISTRICT
1351 ROLLINS ROAD
BURLINGAME, CALIFORNIA 94010
PHONE (415) 344-8592

December 6, 1976

Mr. Marcus C. Nelson, Chief
Division of National Wildlife Refuges
United States Department of the Interior
Fish and Wildlife Service
Washington, D. C. 20240

RE: Department of the Interior Draft
Environmental Statement DES 76-35
Titled: Acquisition of Lands for the San Francisco Bay
National Wildlife Refuge, California

Dear Mr. Nelson:

The goals and objectives of the San Mateo County Mosquito Abatement District are to create, improve and preserve an environment favorable to the comfort and health of people and animals within the District by providing a comprehensive, environmentally compatible mosquito control program with emphasis on the progressive elimination or reduction of mosquito producing sources thus reducing the adverse effects of mosquitoes.

The District is organized under, and in accordance with Division 3, Chapters 5 and 5.5, Sections 2200 through 2426, of the California Health and Safety Code which contain the laws relating to mosquito abatement districts and mosquito control.

The mosquito problems which necessitated formation of this District occurred in salt marshes along the San Francisco Bay periphery. This was uppermost in our minds as we reviewed the above cited document which outlined the money needs for acquiring the necessary acreage for the Refuge.

Our comments are directed to those hidden costs not yet discussed. These costs could be due to land management procedures as well as other control measures necessary to prevent or eliminate mosquito production within the Refuge. We feel these costs should be acknowledged, if not fully outlined, in the final EIS. 1

Since this District will have to address itself to any mosquito problems arising in the Refuge, we feel it is essential that U. S. Fish & Wildlife Service prepare management objectives and policies which fully address potential public health and vector control problems. Failure to do this will, at some time, necessitate emergency control measures which can only mean pesticides.

While we know that chemicals are not the way to accomplish long term mosquito control, and recognize that they are in direct conflict with the objectives of any wildlife refuge, we see no alternative unless the South Bay Wildlife Refuge management policies include acknowledgment of your responsibilities as landowner for mosquito control as outlined in the California Health and Safety Code.

Another hidden cost might be incurred should this District proceed with mosquito control in the Refuge and then, by order of its Board of Trustees, bill the Refuge to recover costs which otherwise would have to be borne by the citizens of the District.

In order to proceed with your plans for the Refuge, while at the same time recognizing our responsibilities for insuring public health and comfort, we would welcome an opportunity to meet with members of your staff to formulate management policies which meet the objectives of our respective agencies.

Sincerely,

Calvin J. Rogers
Manager-Entomologist

CJR/jrr

Response to San Mateo County Mosquito Abatement District

1. Long-term mosquito prevention and control measures will be a part of our overall management plans being prepared for the refuge, including consideration of costs. Since the primary objectives of the refuge will be preservation of existing habitat as opposed to extensive manipulation measures, we do not anticipate that control cost will be a major factor. It is expected that these can be financed through normal operating funds, based on sound, long-term mosquito preventive measures (physical-biological), aided by expertise from the concerned Districts.

Please refer to responses to comments from the Alameda District and Santa Clara Environmental Health Services.

STATE OF CALIFORNIA — EDMUND G. BROWN JR., Governor

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
50 VAN NESS AVENUE
SAN FRANCISCO, CALIFORNIA 94102
PHONE 557-3686

December 2, 1976

Fish and Wildlife Service
U. S. Department of Interior
Washington, D. C. 20240

Attention: Stephen H. Taub

Subject: Draft Environmental Statement, Acquisition, San Francisco Bay National Wildlife Refuge. (SCH No. 76102903; BCDC Inquiry File No. MC.MC.6804.1)

Gentlemen:

We appreciate the opportunity to comment on the Draft Environmental Statement for Acquisition, San Francisco Bay National Wildlife Refuge. While the Commission has not reviewed the report, the staff has read it in light of the Commission's policies and jurisdiction as stated in the McAteer-Petris Act and the San Francisco Bay Plan, and would like to offer some comments.

First, we support the Fish and Wildlife Service for its efforts to establish a 23,000-acre wildlife refuge in south San Francisco Bay for the purpose of protecting and preserving fish and wildlife habitats while providing opportunities for wildlife and ecological studies, environmental education and wildlife interpretation. The refuge use is consistent with the policies of the San Francisco Bay Plan and the provisions of the McAteer-Petris Act.

We would like to point out an inconsistency in the report in regard to the date on which BCDC was granted regulatory powers by the California Legislature pursuant to the McAteer-Petris Act. On Page II-59, in the last paragraph, the report states that major responsibility for San Francisco Bay was delegated to BCDC in 1969. The correct date is 1965, which is correctly stated on Page I-19, in the first paragraph. The preparation of the San Francisco Bay Plan was also begun in 1965, and completed in 1969 when the California Legislature made BCDC a permanent agency. 1

We appreciate having had the opportunity to review this report which presented a thoughtful and careful discussion of planning and environmental concerns. BCDC supports your project and we believe the wildlife refuge will have positive environmental benefits which far outweigh any adverse impacts that may occur.

Very truly yours,

CHARLES R. ROBERTS
Executive Director

CRR/bbs
cc: L. Frank Goodrow
California Resources Agency

Response to the San Francisco Bay Conservation and Development Commission

1. The correction is appreciated and the text has been changed to show this prior date.

Advisory Council on Historic Preservation
1522 K Street NW
Washington, D.C. 20005

September 20, 1976

Mr. Stephen H. Taub, Chief
Branch of Environmental
Coordination
Fish and Wildlife Service
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Taub:

This is in response to your request of September 15, 1976 for comments on the environmental statement for Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, Alameda, San Mateo and Santa Clara Counties, California. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that while you have discussed the historical, architectural, and archeological aspects related to the undertaking, the Advisory Council needs additional information to adequately evaluate the effects on these cultural resources. Please furnish additional data indicating:

I. Compliance with Section 106 of the National Historic Preservation Act of 1966 (16 *U.S.C. 470[f]*). The Council must have evidence that the most recent listing of the National Register of Historic Places has been consulted (see Federal Register, February 10, 1976 and monthly supplements each first Tuesday thereafter) and that either of the following conditions is satisfied: 1

A. If no National Register property is affected by the project, a section detailing this determination must appear in the environmental statement.

B. If a National Register property is affected by the project, the environmental statement must contain an account of steps taken in compliance with Section 106 and a comprehensive discussion of the contemplated effects on the National Register property. (36 C.F.R. Part 800 details compliance procedures.)

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

II. Compliance with Executive Order 11593, "Protection and Enhancement of the Cultural Environment" of May 13, 1971.

A. Under Section 2(a) of the Executive Order, Federal agencies are required to locate, inventory, and nominate eligible historic, architectural, and archeological properties under their control or jurisdiction to the National Register of Historic Places. The results of this survey should be included in the environmental statement as evidence of compliance with Section 2(a).

B. Until the inventory required by Section 2(a) is complete, Federal agencies are required by Section 2(b) of the Order to submit proposals for the transfer, sale, demolition, or substantial alteration of federally owned properties eligible for inclusion in the National Register to the Council for review and comment. Federal agencies must continue to comply with Section 2(b) review requirements even after the initial inventory is complete, when they obtain jurisdiction or control over additional properties or when properties under their jurisdiction or control are found to be eligible for inclusion in the National Register subsequent to the initial inventory.

The environmental statement should contain a determination as to whether or not the proposed undertaking will result in the transfer, sale, demolition or substantial alteration of eligible National Register properties under Federal jurisdiction. If such is the case, the nature of the effect should be clearly indicated as well as an account of the steps taken in compliance with Section 2(b). (36 C.F.R. Part 800 details compliance procedures.) 2

C. Under Section 1(3), Federal agencies are required to establish procedures regarding the preservation and enhancement of non-federally owned historic, architectural, and archeological properties in the execution of their plans and programs.

The environmental statement should contain a determination as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures and objects of historical, architectural, or archeological significance.

III. Contact with the State Historic Preservation Officer.

The procedures for compliance with Section 106 of the National Historic Preservation Act of 1966 and the Executive Order 11593 require the Federal agency to consult with the appropriate State Historic Preservation Officer. The State Historic Preservation Officer for California is Herb Rhodes, Director, Department of Parks and Recreation, State of California, P. O. Box 2390, Sacramento, California 95841.

Should you have any questions or require any additional assistance, please contact Michael H. Bureman of the Advisory Council staff at P. O. Box 25085, Denver, Colorado 80225, telephone number (303) 234-4946.

Sincerely yours,

Louis S. Wall
Assistant Director, Office
of Review and Compliance

Response to Advisory Council on Historic Preservation

1. No National Register properties will be affected by the proposal. This has been clarified in Chapters II and III of the FES.

2. Contact has been made with the State Historic Preservation Officer and so noted in Chapter II of the FES.

Wildlife Management Institute
709 Wire Building, 1000 Vermont Ave., N.W. Washington, D.C. 20005 • 202 [illegible]

DANIEL A. POOLE
President
L. K. JAHN
Vice President
L. L. WILLIAMSON
Secretary
IRA N. GABRIELSON
Board Chairman

November 1, 1976

EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and "C" Streets, N.W.
Washington, D.C. 20240

Dear Sir:

The Wildlife Management Institute is pleased to comment on DRAFT ENVIRONMENTAL STATEMENT, ACQUISITION SAN FRANCISCO NATIONAL WILDLIFE REFUGE, California.

The statement and environmental efforts are well done and properly assessed.

We strongly support the refuge proposal.

We favor selection of Alternative D with 29,100 acres in the refuge over the proposal with 23,000 acres. We believe preservation of habitat for endangered species alone justifies this, although the increased habitat for migratory and nongame species is also important.

Alternatives A,B,C, all with reduced or no acreage are not acceptable.

The summary paragraphs at the end of discussions on each alternative are good. They should be revised and clearly labeled as reasons for rejection. 1

This statement has been coordinated with William B. Morse, our western field representative.

Thank you for the opportunity to review the statement.

Sincerely,

Daniel A. Poole
President

DAP:jh

DEDICATED TO WILDLIFE SINCE 1911

Response to Wildlife Management Institute

1. It is not the prerogative of the EIS to reject or select from the alternatives; the intent is to set forth the alternatives and examine associated impacts in sufficient depth to assist the decision-maker in selecting the least environmentally damaging course of action.

National Wildlife Federation

1412 16TH ST., N.W., WASHINGTON, D.C. 20036 Phone 202—797-6800

November 8, 1976

EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Sir:

The National Wildlife Federation appreciates the opportunity to comment concerning the draft environmental statement, "Acquisition, San Francisco Bay National Wildlife Refuge, California".

While we support and encourage the refuge as proposed, we would prefer to see steps taken to implement Alternative D, with its increased acreage and use potentials. We feel that such a proposal is justified by the benefits which would accrue to endangered species, game, and nongame wildlife species.

Reiterating our support for the overall proposal, we make the following suggestions:

P. II-33. More detailed information should be provided concerning the environmental and wildlife impacts associated with the numerous utilities in the area, as well as suggestions for mitigating adverse impacts. | 1

P. II-37. Since the future of proposed sanitary landfills is uncertain, what possible ways could they adversely affect the refuge in the future, and how could these effects be mitigated and conflicts resolved? | 2

P. II-60, and III-12,13. Assurance is needed that non-wildlife oriented recreation on the refuge will not receive a higher priority for allocation of time and money than wildlife oriented recreational activities. | 3

We appreciate this opportunity to contribute to the planning process.

Sincerely,

THOMAS L. KIMBALL
Executive Vice President

Response to National Wildlife Federation

1. The present utilities in the area are undoubtedly having an impact on wildlife of the area but the extent and magnitude are not sufficiently known to give a specific reply to your comment. It could be theorized that without the utilities additional habitat would be available but supportive evidence is lacking. The audio-visual impact of these facilities is recognized in the statement.

   Under refuge administration proposals for new utility lines would be subject to environmental analysis as provided for under NEPA and conforming with the various laws and regulations under which the National Wildlife Refuge System is operated. Such proposals would be permitted only when it is determined that refuge objectives would not be significantly affected. This has been clarified in Chapter III of the FES.

2. The leaching of pollutants from the landfill materials into the Bay waters could be an adverse impact of concern, not only to the Fish and Wildlife Service but to other environmental agencies as well, and is an item that contributes to the uncertainty of establishing the fill areas. The maintenance of water quality is of mutual concern to all South Bay authorities and satisfactory measures to minimize or prevent leachates from entering Bay waters would have to be instituted and enforced, should such fill operation be permitted.

3. Consistent with Fish and Wildlife Service policy, no recreational activities other than those of a wildlife-oriented nature are contemplated or will be pursued insofar as the future management of the refuge is concerned.

NPCA

November 4, 1976

EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Sir/Madam:

The following are the comments of the National Parks and Conservation Association on the Draft Environmental Statement on Acquisition of the San Francisco Bay National Wildlife Refuge.

The National Parks and Conservation Association has strongly supported efforts to establish the San Francisco Bay National Wildlife Refuge. The variety of wildlife in South San Francisco Bay, especially endangered species, and the potential for rehabilitation of a portion of the natural environment of this heavily urbanized area, amplified by its location in a densely-populated area in need of preserved open space and wildlife education opportunities, make this refuge a valuable addition to the refuge system and an invaluable asset to the Bay Area.

NPCA supports acquisition of the approximately 23,000 acres outlined in the Draft Environmental Statement. This area contains a wide variety of wildlife, including several endangered species, which survive in several different types of habitat. We feel, however, that the proposed acquisition should be expanded, and some of the terms strengthened, in order to provide even broader and more effective protection for the area's wildlife and its habitat.

Alternative D, as discussed in the DES, calls for acquisition of 6,100 acres in addition to the 23,000 proposed in the body of the statement, which would bring the total to 29,100 acres of land in the refuge. To implement this proposal, amendment of the refuge boundaries indicated in the legislation would be necessary.

National Parks & Conservation Association, 1701 Eighteenth Street, N.W., Washington, D.C. 20009
telephone (202) 265-2717 printed on recycled paper

NPCA advocates expansion of the refuge boundaries to those suggested by Alternative D. In general, the expanded boundary would preserve additional habitat for wildlife, affording protection for more animals. Of particular and added importance is the inclusion of additional land on Bair Island. At least two endangered species, the least tern and the clapper rail, nest on this island, and the only colonies of Great Blue Herons, Blackcrowned Night Herons, and Snowy Egrets in the South Bay are located on Bair. Although a small strip of the northern edge of Bair Island is included in the proposed boundaries, additional land adjacent to this strip must be included to provide these populations with adequate protection for their continued existence. Some colonies of the least tern may, in fact, be outside of the proposed boundary; at any rate, a buffer area is certainly necessary to ensure that these populations are not disturbed.

Mere acquisition of land, of course, does not guarantee the survival of wildlife on that land; proper restrictions and management will determine the effectiveness of protection. It is therefore essential that the refuge be operated for the benefit of the wildlife on that land, with all other interests subordinate to that purpose. This must be made clear in the reserved easement to Leslie Salt. | 1

NPCA objects to provision #10 of the easement, which states,

> When necessary for wildlife disease control, Leslie shall temporarily lower or deepen the brine level in any individual pond to the level set forth in a notice of the Manager, provided, however, that Leslie will not be required to release brine from storage or to make such a change in brine level that will result in a loss of salt production. [emphasis added]

This suggests that Leslie's economic interests will be allowed to override the best interests of the wildlife. Leslie's superseding rights in this provision must be removed; furthermore, it should be made clear in the terms of the easement that the Manager has the right to take emergency actions necessary for wildlife survival which may interfere with Leslie's operations, possibly with reimbursement to the company for any loss that such action might incur.

In addition, we urge clarification of provision #7 of the easement, which states,

> Leslie shall not vary the salinity of the individual salt ponds to an extent that will result in an adverse effect on wildlife without written approval of the Manager.

This gives no guidance to Leslie nor to the Manager as to when approval by the Manager would be necessary. Acceptable maximum variance of salinity levels should be determined and included in the terms of the easement to avoid confusion and argument. More refined restrictions could be set by the Manager at any time that new data or circumstances warranted.

NPCA urges adoption of these additions and changes to the current acquisition proposal. We feel their inclusion will create an even more desirable and effective refuge than is currently proposed.

Sincerely,

T. Destry Jarvis
Parks and Conservation

Response to National Parks & Conservation Association

1. Thank you for the suggestions concerning provisions 7 and 10 of the proposed easement. The reserved easement is still in the proposal stage, and some variation from the draft presented may become the final version. It is not however, expected that the terms will place additional restraints on Leslie, nor significantly affect present and future populations of wildlife. Restrictions untenable to salt making would negate the intent and value of the reserved easement.

   Further study will be given to those provisions during the final negotiations stage.

SIERRA CLUB
LEGAL DEFENSE FUND, INC.

December 6, 1976

Mr. Robert Personius, Manager
San Francisco Bay
National Wildlife Refuge
3849 Peralta Boulevard
Fremont, California 94436

Re: Comments on Draft Environmental Impact Statement: Acquisition, San Francisco Bay National Wildlife Refuge

Dear Sir:

Please accept these comments on the above Draft EIS on behalf of the Sierra Club. I realize that they are being submitted beyond the deadline for such comments; however, I was told on Friday, December 3, 1976, by Mr. Ken Larson that if sent this week directly to the Refuge Manager they would be considered.

We have essentially one comment: we urge rejection of the proposed "Reserved easement" agreement with the Leslie Salt Company (see DEIS Appendix 4) and adoption instead of some form of a leaseback agreement, as proposed in Alternative E, DEIS pp. VIII-16 to 17. 1

As noted at pp. I-14 of the DEIS, approximately 12,690 acres of the area proposed for acquisition consist of salt ponds owned by the Leslie Salt Company, of which 95% are currently in active use. This is more than 50% of the total proposed acreage to be acquired for the Refuge (23,000 acres, see DEIS p. I-1).

Public Law 92-330, 16 U.S.C. §668ff-668jj (DEIS App. 1), which authorized and directed the Secretary of the Interior

to establish the San Francisco Bay National Wildlife Refuge, states in its opening sentence that the purpose of the Refuge is "the preservation and enhancement of highly significant wildlife habitat...for the protection of migratory waterfowl and other wildlife...." (Emphasis supplied.) In our opinion, "enhancement" means more than the preservation and protection of the remaining natural marsh areas from further commercial development, either as salt ponds or shopping centers; it means restoration whenever and wherever possible, of former salt marsh areas now used as salt ponds to their natural marsh condition. 2

The proposed reserved easement to be granted to Leslie Salt Company, and "its successors and assigns," however, would allow Leslie to continue to use its existing salt ponds for salt producing activities in perpetuity, and would therefore permanently foreclose any opportunity for restoration of this enormous portion of the Refuge to productive salt marsh. It should be noted that the proposed "reserved easement" would be granted not only to Leslie Salt Company, but also "its successors and assigns," and that it would grant "the permanent right, privilege, and easement to produce salt...." No periodic public review or reassessment of the wisdom of allowing continued salt production activities on over half the area of the new Refuge is provided for. The only exception would be when Leslie (or its successors) decides, in its apparent sole discretion, and without any required consideration of the public interest, to discontinue its salt production activities.

We feel that this arrangement would clearly violate both the letter and spirit of *P. L. 92-330*.

We are sensitive to the local economic and employment dislocation that an outright acquisition and immediate shutdown of all of Leslie's salt ponds might entail (DEIS, Alternative F, pp. VIII-17 through 19). Therefore we strongly urge the adoption of Alternative E: "Salt Production with Leaseback" (DEIS pp. VIII-16 through 17).

As noted in the DEIS, "this proposal would help maintain the tax base and general income. Employees of Leslie Salt Company would retain their jobs...." Pg. VIII-17.

Moreover, the general public would benefit economically from the rent or royalty payments to be made by Leslie.

Most important from the perspective of fulfilling the Congressional purpose of "preservation and enhancement" of wildlife habitat, an agreement which provided for relatively short term leases that could periodically be reviewed and renegotiated would give the government more control over the use of more than 50% of the Refuge's land area: the Fish and Wildlife Service, and not Leslie Salt Comp, would have the power to decide how long and on how large an area salt production should be allowed to continue, and, conversely, how much area should be allowed to revert to marsh.

Thank you for considering these comments.

Very truly yours,

Michael R. Sherwood

Michael R. Sherwood

:IRS:lm

Response to Sierra Legal Defense

1. Notwithstanding benefits of a leaseback to Leslie Salt Company, as described in Alternative E, the proposal considers that the reserved easement would contribute to significantly lower acquisition and maintenance costs without serious impact on refuge objectives. Your comment expresses an alternative preference, and will be included in those favoring selection of Alternative E.

2. These subjects are described in this statement only in gross terms sufficient to enable a preview of actions subsequent to acquisition. Refuge objectives are based on both preservation and enhancement, with emphasis on maintaining present values. Enhancement is a part of the development and planning process insofar as preliminary circumstances will permit. A point to consider is that natural factors, subsidence for example, make restoration of some marshes impractical. Further, the existing biota could be affected by major changes in habitat. This and the various alternatives were considered in preparation of the proposal.

CALIFORNIA ACADEMY OF SCIENCES
GOLDEN GATE PARK SAN FRANCISCO CALIFORNIA 94118
(AREA CODE 415) 221-5100

THE SCIENCE MUSEUM
THE ALEXANDER F. MORRISON PLANETARIUM
THE STEINHART AQUARIUM

Department of Birds and Mammals

21 October 1976

EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N. W.
Washington, D.C. 20240

Dear Sir:

The American Ornithologists' Union, through the Committee on Public Responsibility, has asked me to comment on Draft Environmental Statement No. 76-35 entitled "Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California." The A. O. U. asked me because my positions as Chairman of the Department of Birds and Mammals at the California Academy of Sciences and President of the Board of Directors of Point Reyes Bird Observatory have afforded me the opportunity to become familiar with the area involved and particularly with its wildlife values.

I wish to lend my wholehearted support to acquisition of lands for the proposed San Francisco Bay National Wildlife Refuge. Following are my comments on the D. E. S.

Preservation of the salt marsh habitat and its associated fauna, especially rare and endangered species, I believe is the primary function of the San Francisco Bay National Wildlife Refuge. The proposed action, however, encompasses only 3823 acres (16.6%) of marshland, which at best is only a minimal amount in order to save the endangered California Clapper Rail and Salt Marsh Harvest Mouse from extinction. Every population of animals has a minimal level of abundance below which it no longer can sustain itself over a long period of time. Although I have seen no numerical data for these two animals, I suspect that the populations, because of the small amount of habitat available to them, come close to this minimal level. The expanded area of Alternative D, on the other hand, encompasses much more salt marsh (the exact figures should be, but are not, given by the D. E. S.) and therefore is to be desired over the proposed action. In addition, Alternative D would provide a more cohesive unit that not only would be less vulnerable to development pressures along its

1

boundaries, but also should be easier to manage. It would also provide a better buffer zone for existing and proposed non-Federal parks, which are more subject to future encroachments by development than are Federal lands. I therefore strongly urge approval of Alternative D, with the appropriate amendment of Public Law 92-330 to allow for the acquisition of the additional lands. If only part of the additional lands of Alternative D can be acquired, the first to be obtained should be those supporting natural salt marsh.

I also feel strongly that Public Law 92-330 should be amended to allow for any future expansion even beyond Alternative D. If additional lands and funds become available without hardship to landowners, addition of said lands should be a simple procedure, unhampered by the necessity to amend a Federal law.

I can find no text mention of the White-tailed Kite (Elanus leucurus) which occurs in the area. At one time this species was considered on the verge of extinction and, although it has staged a dramatic comeback, it is still rare enough to be afforded "Fully Protected" status by the State of California. This species should be listed along with the Clapper Rail, Brown Pelican, etc. as a prime argument for establishment of the refuge.

2

Water quality in the refuge and adjacent bay is of primary concern. Acquisition of the lands in the proposed action (or even better, Alternative D) would provide additional rationale for abandoning the proposed diversion of the Sacramento Delta water flow (as set forth in the State Water Plan), a project which, in my opinion, would be highly detrimental to all the natural values of San Francisco Bay. The reduction of the amount of water flow from about 17.5 to about 2.5 million acre-feet certainly would reduce flushing action, dilution, and oxygenation to a point that would seriously lower water quality in the South Bay. I would hope that if the refuge becomes a reality, the Federal Government would lend its support to halting this diversion on the grounds that it would harm the refuge. In addition, I support the South Bay Dischargers in their plan to combine sewage systems with the effluent discharged 1.5 miles north of the Dumbarton Bridge, where flushing action is greater than farther south. While this perhaps is not the ideal means of sewage disposal, it is better than current procedures.

Certain aspects of future management of the refuge are not covered in the present D. E. S., but perhaps should be considered at the outset. I urge that waterfowl hunting, which is a very popular and, in my opinion, worthy sport, if allowed at all, be carefully restricted to areas not utilized or potentially utilized by any of the

3

rare and endangered species. Hunting of any kind is not compatible with the protection of rare and endangered species. The marsh species (California Clapper Rail and Salt Marsh Harvest Mouse) certainly would suffer greatly if hunting of any kind were allowed in the salt marsh habitat. The vegetation and mice would be trampled and rails accidentally shot. The open water offshore, where most of the waterfowl congregate, is the primary feeding habitat of the endangered Brown Pelican, which would be greatly disturbed, if not physically harmed, by shooting. Continued hunting in the salt ponds would cause unnecessary disturbance to migrating and wintering shorebirds. Finally, because of its narrow width, portions of the proposed refuge do not lend themselves to compatibility between dangerous shooting and other types of recreational use. Hunters and grade school children are a dangerous combination. Waterfowl hunting would require that certain areas of the refuge be closed to non-hunting use during the fall, when wildlife observation is at its best.

Respectfully submitted,

Laurence C. Binford

Laurence C. Binford, Ph.D.
Chairman

LCB:np
cc: Richard C. Banks

Response to the California Academy of Sciences (American Ornithologists Union)

1. Your expressions concerning Alternative D are noted and appreciated. This Alternative (now corrected to read 36,500 acres) contains approximately 4,378 acres of salt marsh.

   Numerical data for the California clapper rail and salt marsh harvest mouse are sparse. The population of rails was estimated by Gill (1971) at 2,750, but he believes there has been a considerable reduction in recent years. The absence of trapping recapture data on the harvest mouse makes it impossible to estimate the present population.

2. The white-tailed kite (Elanus Leucurus) is now listed in the FES as a beneficiary of the proposed refuge.

3. Prior to initiation of any waterfowl hunting on the proposal, the factors which you mention will be given thorough consideration. Should conflicts arise between protected species and hunting, it is Service policy to resolve the issue in favor of the protected species. Similarly, hunting would not be permitted in recreational areas during periods of use. These and other safety considerations will be analyzed during development and operational planning.

UNIVERSITY OF CALIFORNIA SYSTEMWIDE ADMINISTRATION

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Vice President--
Business & Finance

BERKELEY, CALIFORNIA 94720

Physical Planning
Construction & Operations

November 15, 1976

Mr. Marcus C. Nelson, Chief
Division of National Wildlife Refuges
United States Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240

Dear Mr. Nelson:

Subject: Draft Environmental Impact Statement
Acquisition San Francisco Bay National
Wildlife Refuge

Thank you for the opportunity to review the Draft Environmental Impact Statement for the above-named project. The University of California owns no property in the immediate area and would therefore not be directly affected by the proposed project. However, the location and preservation of a National Wildlife Refuge in the San Francisco Bay region would certainly provide indirect benefits to the University and the surrounding community as well.

The University has no specific comments to make on the Draft EIR.

Sincerely,

Ira Stephen Fink
University Community Planner

SH:jim

National Audubon Society

950 THIRD AVENUE, NEW YORK, N.Y. 10022 (212) 832-3200 CABLE: NATAUDUBON

November 3, 1976

EIS Coordinator
Division of National Wildlife Refuges
U.S. Fish and Wildlife Service
Room 2343
18th and C Streets, N.W.
Washington, D.C. 20240

Dear Sir:

The National Audubon Society is pleased to comment on DRAFT ENVIRONMENTAL STATEMENT, ACQUISITION SAN FRANCISCO NATIONAL WILDLIFE REFUGE, California.

The document is well written and properly assessed. The National Audubon Society strongly supports the acquisition of the full 29,100 acres as outlined in Alternative D. This action will guarantee acquisition of areas for endangered species, migratory waterfowl and nongame species.

Thank you for the opportunity to review the statement.

Sincerely,

Charles H. Callison
Executive Vice President

CHC:rl

cc: Paul Howard

AMERICANS COMMITTED TO CONSERVATION

BAY LAND AREA STUDY TEAM
WEST BAY - Box 602
BRISBANE, Calif. 94005

8 December 1976

Director LYNN A. GREENWALT
US Fish & Wildlife Service
2343 INTERIOR Bldg. NW
WASHINGTON, D.C. 20240
Attn. R. L. Miers

Dear Director GREENWALT:

Re: DES 76-35 dated 14 September 1976
SF Bay National Wildlife Refuge Calif.

Thank you for the long and friendly chinwag we had yesterday afternoon in Fremont.

The general position of Leslie Salt is their ponds are not in San Francisco Bay and have never been subject to a public trust and easement for navigation because of federal swamp patents issued the State between 1910 and 1920. Our persistent concern is that Interior agrees with Leslie, basically, and is spending federal funds to extinguish public trust rights of the People of California in San Francisco Bay lands below MHHW in the very year Judge Sweigert says the Corps of Engineers has navigation jurisdiction to MHHW under 33 USC 401 - 403 in his Judgment C73-2294WTS dated 21 May 1976.

Enclosed are pictures of our BLASTs of 20 June 1972 to President Nixon and 2 February 1974 to Attorney General Saxbe. State Lands Division attempts to extinguish the public trust for Leslie are discussed in the Alameda County OBSERVER for 20 January 1968. Governor Reagan did his damndest to extinguish trusts Leslie denied existed and is now reserving to raise salt (Appendix 4, page 18)!

The two environmental concerns we have is that Interior will try to save ALL of Bair Island in the West Bay; and will question EPA on the siltation effects of their supersevers on those East and South Bay sloughs Governor Reagan did not quitclaim to Leslie on 31 January 1968. SF Engineer's Public Notice 11193-98 dated 19 October 1976.

With every best wish,

RESPECTFULLY:

LUMAN C. DRAKE

cc w/h encls.
1. NIXON 6/20/72
2. SAXBE 2/ 2/74
3. OBSERVER 1/20/68
4. FLERTZHEIM 11/18/76

Russell E. Train
Grant Admin. No. C-06-0868
Leo J. Ryan

BAY LAND AREA STUDY TEAM (BLAST)
WEST BAY - Box 602
Brisbane, Calif. 94005

EAST BAY - Box 341
Alameda, Calif. 94501

Hon. RICHARD M. NIXON
President of the United States
Executive Office of the White House
WASHINGTON, D. C. 20500

20 June 1972

Re HR12143-S. 2241
BCDC Bird Rest

Dear President Nixon:

We hope you will VETO the above bills and remand them to Governor Reagan with a note to Speaker Moretti to REVOKE 1959 California Statutes Chapter 1885 as follows:

AN ACT TO ENFORCE THE PUBLIC TRUST FOR FISHERIES IN SF BAY

The People of the State of California represented in Senate and Assembly do enact as follows:--

Sec. 1. 1959 Statutes Chapter 1885 page 4446 is REVOKED.

Sec. 2. NO private person or corporation takes fee simple title to San Francisco Bay lands below the plane of mean higher high water, diked or untiked, filled or unfilled, with 1968 gubernatorial quitclaims contrary to the historic State-sovereign TRUST claims of the People of California, 1959 Chapter 1885 and 1971 Assembly Joint Resolution 49 notwithstanding.

Sec. 3. The tidewaters of San Francisco Bay, a NAVIGABLE arm of the Pacific Ocean, are a common highway, a public highway and forever free as well to the People of California as to the People of the United States. They are ALL impressed with a State-sovereign, public, common-law trust and easement for water commerce, navigation and FISHERIES to the plane of the mean higher high water, which is extinguishable ONLY by this Legislature upon a four-fifths majority finding by each house, the governor concurring.

Sec. 4. ENFORCEMENT of the public trust for FISHERIES is the direct and fixed responsibility of the Attorney General under Article I, Sec. 25 and Article XV of the State Constitution.

The reasons for requesting this are contained in the California Act of Admission, the Arkansas Swamp Act, the CONTROLLING Act to Quiet Land Titles in California of 1866, the Rivers & Harbors Appropriations Act of 1899, the historic People versus California Fish Co. of 1913, 1959 Statutes Chapter 1885 itself and Opinions of California Legislative Counsel No. 21598 dated November 19, 1971 and No. 22199 dated December 2, 1971 copies of which have been sent to Chairman Dingell and Chairman Magnuson.

There was NO opposition to passage of HR12143 including Leslie Salt. A similar bill can be easily passed when the California LEGISLATURE has dealt correctively with the public trust situation in the NAVIGABLE waters of San Francisco Bay.

Thank you from the inheritors of California. Respectfully:

Encl. Affidavit 48620 of HENRY G. KEITH

BAY LAND AREA STUDY TEAM

LUMAN C. DRAKE, Publicity, WestBay

cc Ronald Reagan
Ed Reinecke
Bob Moretti
John A. Nejedly
Edwin L. Z'Berg
Frank J. Hortig
Melvin B. Lane
Robert F. Frochlke
Nathaniel P. Reed
Alan M. Cranston
John V. Tunney
Warren G. Magnuson
John D. Dingell
Raymond J. Sherwin
William E. Siri
David R. Brower
Edward Lee Rogers

No. 954271

RECEIPT FOR CERTIFIED MAIL—30¢ (plus postage)

FEB 1974

SF (BLAST)

LAST BAY - Box 341
Alameda, Calif. 94501

2 February 1974

P.S. Form 3800 NO INSURANCE COVERAGE PROVIDED—NOT FOR INTERNATIONAL MAIL

Reference our (copies attached):

1. JCPD BLAST dated 2 February 1973
2. Lastland BLAST dated 2 November 1973
3. Tunney BLAST dated 12 December 1973

Congratulations on your confirmation as 70th US Attorney General. We see (December 12th hearing, p. 73) where John Tunney asked you not to monkey with the tacenite trial on the floor of Lake Superior. More than noninterference under your Oath of Office will be necessary in San Francisco Bay.

In the opinion of the Bay Land Area Study Team your office is the *only* office concerned and informed on the multinational corporate rape of sovereign lands below high waters of the San Francisco Bay. Groundhog Day in the final year of Ronald Reagan's Governorship is a sunny time to treat the US Attorney General to a look at what the State of California has done and continues to do in disposal of sovereign lands of a part of the Nation.

Positive action by the US Attorney General will be necessary to publish federal laws which the states ignore, and to enforce the Congressional Act of 1866, 14 US 218 et seq. and 9 US 452 as starters. "Fraud" we have been told is a nono word. Our study team can find no truer word to describe title claims of the UTAH INTERNATIONAL CORPORATION and their subsidiaries to the BAY FARM ISLAND tidelands, after study of the public land record Exhibits A through H, provided herewith to you by investigators of SF Corps of Engineers Permit 05-55 on the grounds of fraud by the applicant. No State or Federal (swamp) patents have ever issued under BAY FARM ISLAND Reclamation District 2105.

The California State Constitution, Article XV prohibits corporate sales, obstructions and subdivisions on sovereign lands. There is a new 20th century case of the San Francisco Bay Commission called "Exchange of Lands"--to wit 18,800 acres of tidelands under Footnote 6 of Marks v. Whitney (1971) for 21,662 acres of saltmarsh and tidelands under PL 92-350 (1972)--which circumvents Article XV, ignores restrictions of the US Arkansas Swamp Act (9 US 519) segregation and is derogatory of rulings by US Surveyor General N. H. Brown (Exhibit C).

Our study team respectfully requests that if Controller Flournoy and State Attorney Younger waive total responsibility for the loss of sovereign lands in the Washington office of the Chief of Engineers, that US Attorney General SAXBE read, obey and enforce the US statutes as written, faithful to Article 2d of the May 26, 1848 Protocol to the Treaty of Guadalupe-Hidalgo, and petition Chief Justice Donald R. Wright to fix Footnote 6 of his unanimous 1971 Marks v. Whitney in the State Sovereign interest.

Thank you for the confidence of 20th century USAG intentions in the Bay of St. Francis, signed by yourself. With every best wish from Box 602,

11 Enclosures:
3 References
8 Exhibits A - H

RESPECTFULLY:

LUMAN C. DRAKE

cc w/o encls.

JANUARY 20, 1968 OBSERVER VOL. 57, NO. 3

TIDELANDS SWAP— OR SWIPE?

The State Lands Division held its final public hearing on the proposed Leslie Slough-Swamp Monday night, January 15 in the City of Santa Clara, which followed "backgrounders" held in Alameda, Santa Clara, and San Mateo Counties respectively on January 9, 10, and 11, with F. H. Hortig, Executive Director for the Lands Division and N. Greggory Taylor, Deputy Attorney General, pushing a hard-sell for the deal with Leslie Salt Company.

After something over a 100 years of ignoring its responsibility for the once navigable sloughs which are tide lands belonging to the people by virtue of the State's sovereignty, 1601 acres (subject to the tidal action of the Bay which comprise the bed-and-bank of the sloughs) are situated within the claimed Leslie holdings. Leslie claims they were validly patented to their predecessors as swamp and overflowed lands (defined as wetlands not subject to the daily ebb and flow of the tide).

Mrs. Helen L. Freeman, President of Alameda Conservation Association, brought out facts of "the Arkansas Swamp Act of 1850. This act, which authorized the sale of Swamp and Overflowed Lands which were public lands of the U.S. and required that the lands be identified as S & O Lands; segregated by an official survey; approved by the U.S. Surveyor General, after which they were patented to each state and subject to entry for purposes of reclamation and agricultural use." All streams, sloughs, and navigable waterways were excluded from the survey and withheld from sale. However, that did not deter some early and unscrupulous public officials from conveying areas in the middle of the Bay as "swamp land," and likewise the foothills of the Sierras in some counties.

So, as Mrs. Freeman pointed out, the State is only affirming what has always belonged to it, and as an attractive little mini-skirted housewife, Mrs. Cheriel M. Jensen, said in substance, "you don't save the Bay by giving it away."

Mrs. Elinor B. Coffman, other member of the crack research team for ACA, hone down on the significance of the statute (Chapter 1885, Stats. 1959) enabling the State Lands Commission to undertake the deal. Deputy AG Taylor admitted that the legislation afforded them opportunity of bypassing certain of the constituted laws governing the Bay's lands, but said it was beneficial to the State because it could avoid costly litigation. Mrs. Coffman contends that it is a scheme for attempting to legalize the early swindles.

Walter Cooper of Foster City submitted the most graphic and caustic report of the evening, as he unfolded maps revealing the "state's give-away into private ownership 100 acres of Seal Slough now assessed at $1 million dollars, for the Foster City Estero District, public money in the a $15,000 per acre having been used for filling the priv opment." Cooper also pointed out that Senator Dol the main sponsor of the infamous Chapter 1885, setting up the deals for disposing of the Bay.

Fraud Claims

Bay Land Area Study Team
West Bay - Box 602
Brisbane, CA 94005

Luman Drake, representing Bay Land Area Stu (BLAST) has been caustic in his fight against the L and, in a recent letter to the State Lands Commission out in part: "The State Lands Commission is now at to give Leslie Salt Company public lands, filled at p pense, under the pretext that it is in the public Gentlemen, this is a public fraud! It is one thing for t ney General to do nothing when sovereign lands a gated from the public domain through diking, dewat filling. It is quite another for him to cooperate in t sequent attempted confirmation in private ownership the law."

Observers noted that the very vocal San Mateo t tionists groups were curiously silent, giving rise to of whether the rumor that Pete McCloskey made deliver the conservationists into the arms of Leslie more than a campaign noise, in the primary battle Shirley Temple Black.

Mindful that Leslie Salt's holdings exceed 14,00 the three counties, and that this slough-swap is an to quiet their title to swamp and overflow lands, as w and submerged lands, we were indeed surprised to l the Save SF Bay Assn. had arranged a closed doo with the Leslie representatives prior to any of the p meetings or the hearing. In view of the current f over the Port of Oakland's request to fill 75 acres for safety and accommodation of larger jets at the Airp strange it is that SSFR Assn. had not an opposing utter re the Leslie Slough-Swap.

Since the public hearing is closed, Wm. E. Siri, I informed the Observer they will have an executive s Tuesday the 23rd, to establish their position.

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BAY LAND AREA STUDY TEAM
WEST BAY - Box 602
BRISBANE, Calif. 94005

16 November 1976

Col. HENRY A. FLEMTZHEIM Jr.
SF District Corps of Engineers
211 Main Street
SAN FRANCISCO, Calif. 94105

Sir--

Re 96" East Bay Super Sewer
PN 11193-98 dated 19 October 76

This 96" super sewer diverts sewage from two sloughs behind the BCDC Bird Rest under PL 92-330 and permits and promotes a population growth in the agricultural East Bay of 110,000 over its design life of 20 years. It will cost $170 million and set the precedent for 187 more subregional EPA-financed sewers to submerged lands in San Francisco Bay.

Permit 11193-98 MUST be denied until such time as the ABAG EMTF takes another look at assumptions underlying water policies which force treated sewage onto submerged lands for dilution. The dye test for the 600-foot outfall diffuser in Brisbane did NOT show any of the effluent headed for the Golden Gate.

The local proponent of this sewer assures us the effluents meet state and federal receiving standards. Why can't the state and federal standards be loosed in the sloughs which nourish the saltmarshes? This force main to -28 feet MLLW undermines local enforceable responsibility for adequate treatment of municipal wastes, subverts the BIOLOGICAL operation of SF Bay as an estuary by forcing freshwater wastes onto submerged lands, and promotes the siltation of sloughs by diverting their majority freshwater runout.

Municipal sewage needs to be locally upgraded to tertiary, released in amounts which don't overload sloughs, saltmarshes or tidelands and can be monitored locally by scurce. Super sewers waste the wastes at tremendous federal cost. Dischargers back to the drawing boards. Bigger is not better. Small, clean, local is beautiful.

RESPECTFULLY:

LUMAN C. DRAKE

cc Paul DeFalco Jr. RE-127
Wayne A. Bruce
Dianne Feinstein
Jos. C. Houghteling
Fred H. Dierker
James F. Trout
Leo J. Ryan
Nathaniel P. Reed
William E. Siri
Clerk Smithson UP 3-76
Robt. Rutzmoeller
J. V. Couche
Phil Holmes
Lyndel W. Melton 510:LWM

Kent Dedrick
1559 Ninth Avenue
Sacramento, CA
95818

December 5, 1976

Division of National Wildlife Refuges
U.S. Fish and Wildlife Service
Department of the Interior
Attn. EIS Coordinator
Room 2343
18th & C St. N.W.
Washington, D.C. 20240

via

Mr. Robert Personius, Manager,
San Francisco Bay National
Wildlife Refuge
3849 Peralta Blvd.
Fremont, CA 94436

PERSONIUS
NUGENT
OSUGI
DEC 7 1976
CRABB
OLSEN

Subject: Comments upon Department of the Interior Draft Environmental Statement DES 76-35 entitled: "Acquisition of Lands for the San Francisco Bay National Wildlife Refuge" (submitted to CEQ on September 14, 1976).

Gentlemen;

I have been assured by Mr. Personius that my comments on the above cited environmental statement (hereafter "DEIS") would be accepted even though they are presented after the December 1 deadline. I learned of this deadline from a Bay Area citizen on about Nov. 29, and phoned Mr. Personius the next day requesting permission to submit comments after Dec. 1. As above, this permission was granted provided that my comments would be sent directly to Mr. Personius at the earliest date possible.

I should also note for the record that contrary to the statement on pp. ii and IX-1, the DEIS was not sent to me until I learned of its existence from another citizen and requested a copy from Mr. Personius, who kindly placed it in the mail to me promptly. 1

Because of the nature of the proposed action given in the DEIS, whereby restoration of habitat is given at best minor consideration, I have prepared the attached Appendix entitled: "The Restoration Issue and the U.S. Fish & Wildlife Service". 2

This Appendix provides excerpts from a number of statutes and regulations governing the U.S. Fish & Wildlife Service and the Department of the Interior bearing on the restoration issue. While there is some overlap between this list and that given on pp. 22-28 of the DEIS Appendix, the emphasis is considerably different since the latter statute and treaty summaries barely touch upon the restoration issue.

This issue is the primary focus of the remarks given herein.

The primary purposes of the National Wildlife Refuge System are clearly stated in (50 C.F.R. 25.2; see Appendix). These "primary objectives" of the System are "restoration" as well as "preservation" of habitat, the protection and preservation of endangered or rare species, and management to achieve "maximum production". According to (16 U.S.C. 460k-460k-4), recreational activities "can be appropriate incidental or secondary" uses of refuge areas (see Appendix). 3

Mainly in tune with the above objectives, Public Law 92-330 establishing the San Francisco Bay refuge gives as purposes the "preservation and enhancement of highly significant wildlife habitat", protection of endangered species, and "wildlife-oriented recreation and nature study."

But the "Master Plan" of October 1974 for the Refuge prepared by EDAW, Inc. cited "three major purposes" for it at page 4, namely:

- "preservation of the natural resources of the South Bay"
- "provide environmental education"
- "protection of an important open space resource and other wildlife oriented recreation opportunities"

Only three pages later at page 7, this same document refers to the Refuge's "dual objectives" of "resource preservation" and "public education". The two (or three) objectives as seen by the consultant apparently had major influence upon planning process and the plans suggested by the firm. In the 79-page "Master Plan", I have found only one short sentence dealing with habitat improvement: "Present plans call for returning tidal action to the New Chicago Marsh, thus restoring true salt marsh conditions." (see p. 17). The New Chicago Marsh is but a miniscule fraction of the refuge area available for restoration.

The DEIS gives four purposes of the refuge at pp.I-5,6 , namely:

(1) Preserve and maintain habitat ...
(2) Protect and enhance habitat for threatened species ...
(3) Ecological studies, wildlife interpretation and education,
(4) Maintain open space with "minor" habitat manipulation.

The proposed program as seen in the DEIS is perhaps most clearly stated at page I-6: "Accomplishment of the objectives (of the refuge) would result in minor physical modification of the existing environment." (emphasis added). When viewed in connection with the refuge site itself and its potential habitat values, "minor physical modification" is manifestly inconsistent with the thrust of most of the material given in the attached Appendix calling for restoration, enhancement, maximum production, and the like.

Except for the obvious upland character of the small Coyote Hills part of the site, the refuge area either is now -- or has been -- subject to regular salt water flooding by the tidal waters of San Francisco Bay. The Department of the Interior has repeatedly recognized that the loss of migratory and other waterfowl populations using San Francisco Bay since the time of statehood is directly attributable to loss of habitat in the baylands; mainly through diking and/or filling.

More specifically, the DEIS at page I-9 shows that over half of the 23,000 acres of the proposed refuge consist of diked areas in salt production. These latter areas can be clearly identified on historic topographic and hydrographic survey maps prepared by duly authorized Federal agencies as having once been regularly flooded saltmarsh, heavily cut up by major and minor tidal creeks and natural ponds, and in some areas, as open waters of San Francisco Bay.

Therefore, the opportunity for restoration of habitat in the refuge area is enormous. But the opportunity for the U.S. Fish & Wildlife Service to initiate restoration of any single diked area to its full ecological vitality and recreational potential will be all but foreclosed under the conditions of the reserved easement for "permanent" salt making rights to Leslie Salt Co. (see Appendix 4 of DEIS). Yet this is the proposed action cited by the DEIS. 4

According to the DEIS at page VII-1, "there would be no irreversible or irretrievable committments of the area's resources as a result of this proposal", which appears contrary to fact if the phraseology of the reserved easement is taken at face value. To put the matter differently, section VII of the DEIS does not state that under the proposed action, the

option for major habitat restoration might well be lost forever.

Again taken at face value, the proposed action appears to block future U.S. citizens and agencies from once more realizing the benefits that may be expected to flow from restoring some or all of the diked areas to tidal action. For the most part, these benefits are well-known, and include:

(1) Restoration of navigable channels for use in commerce and recreation now blocked off by dams and dikes.

(2) Increased tidal flow in San Francisco Bay south of Dumbarton Bridge to improve circulation and water quality in areas now subject to substandard dissolved oxygen concentration.

(3) Improved bay water quality due to increased tidewater surface area, and due to sewage nutrient assimilation by new marsh vegetation and shellfish colonies in former diked areas.

(4) Lessened sediment deposition in existing south bay navigation channels and harbors due to increased tidal flow.

(5) Natural removal of mobile sediments in existing bay waters through deposition in newly established marshlands; hence less dredging needed.

(6) Improvement of former shellfish beds in existing open waters because of lowered sediment load as per (5) above.

(7) Improved fish, shellfish, and waterfowl food supply in existing open waters due to increased supply of detritus from marshlands thus established.

(8) Major restoration of habitat within the diked areas for migratory waterfowl, endangered species, shorebirds, fish, and shellfish.

Some of the above benefits are related to the high primary productivity of the tidal marsh. Some recent measurements in San Francisco Bay[1] reveal that Cordgrass (Spartina foliosa) produces over 7 tons dry weight biomass per acre annually, with Pickleweed (Salicornia pacifica) at about 4.5 tons per acre.

1 Cameron, Guy N. 1972. Analysis of insect trophic diversity in two salt marsh communities. Ecology 53: 58-73.

More extensive research on salt marsh yields has been performed on the east coast, and in Georgia workers have found yields of up to 17.8 tons per acre annually for Spartina alterniflora for tall streamside stands, 10.2 tons per acre for middle marsh stands, and 3.3 tons per acre for high marsh stands[2]. By contrast, the nation's corn crop yield for dry weight biomass is estimated at 5.7 tons per acre, but at the large cost in fertilizers and pesticides with special hybrid varieties in intensive agriculture. Natural salt marsh, on the other hand, provides enormous yields at no cost whatsoever.

Many of the benefits noted above provide economic advantages to the public at large that would be available as a result of restoring diked areas to tidal flow. Some of these economic advantages are:

(1) Reduced cost of sewage treatment facilities.

(2) Reduced navigational dredging, and reduced spoils location site conflicts.

(3) Increased sports and commercial fisheries.

(4) Increased sports hunting opportunities.

(5) Increased tourism receipts due to increased sports hunting and fishing, and to wildlife observation opportunities.

(6) Increased opportunities for scientific research contracts on estuarine restoration, etc., and funded by major agencies.

Estimates of the public value of some of these benefits in dollar terms have been published, and provide an impressive case for the need of retaining and restoring the salt marsh lands of the nation.[3]

Many other studies have been completed, are underway, or are planned at present that bear upon many of the benefits given here on page 4. Far more high quality scientific and economic research work is needed to establish the extent or value of some of these factors in greater detail and applicable directly to south San Francisco Bay.

For this reason alone, it is of the greatest importance to maintain the option for restoration of these estuarine resources until such additional studies can be undertaken and results analysed.

2 Odum, Eugene P. 1973. Description and value assessment of south Atlantic and Gulf coast marshes and estuaries. Proc. Fish & Wildlife Values of the Estuarine Habitat, BSPW, Atlanta, GA.

3 Gosselink, J.G., E.P. Odum and R.M. Pope 1974. The value of the tidal marsh. La. State Univ. Rpt. LSU-SG-74-03, Baton Rouge, LA.

With regard to the DEIS, the above ecological and economic factors have for the most part been ignored, or only lightly sketched in Alternatives E and F (see DEIS, pp. VIII-10 to 19). Furthermore, it was a disappointment to many citizens of the Bay Area to find that the refuge "Master Plan" of October 1974 also failed to provide detailed information dealing with the benefits that might be expected upon execution of either of Alternatives E or F. It is unfortunate that the Master Plan wasn't revised prior to preparation of the DEIS in this regard, for the latter fails to correct the former.

In regard to Alternatives E and F, it is my considered view that the DEIS is inadequate in coverage. 5

At present, time does not permit a detailed response to the DEIS, but certain broad observations might be helpful:

(1) All supportable statements should be specifically referenced. Opinions or editorial remarks should be clearly identified as such.

(2) The history of the refuge area and its basic character of estuarine origin should be discussed, with full reference to the abundant public and federal records bearing on it.

(3) The well-known history of fish and wildlife resource losses in San Francisco Bay should be given considerable prominence. No such details are given in the DEIS.*

(4) Many parts of the DEIS dealing with clearly peripheral issues should be shortened considerably by providing clear attributable remarks in the place of lengthy discourse. 6

To these ends I offer my full assistance and am willing to provide source material from my extensive map, library, and research files dealing with San Francisco Bay and the estuarine environment.

A final observation deals with the reserved easement language at Appendix 4 of the DEIS. My brief examination of the language suggests one more area of concern dealing with the shared maintenance responsibility as given in paragraph 6. Dike and dam maintenance is likely the major concern since these structures are largely constructed of water saturated highly expansive soils that tend to crack deeply with desiccation during the hot summer months. The serious subsidence problems in the Santa Clara Valley place an additional demand on the dikes as well, and they are generally believed to be subject to massive failure in the event of substantial earthquakes. I have personally observed the natural breaching of some dikes in the south bay and have been impressed by the rapidity of their deterioration under high tide and wind conditions.

* See, e.g., attached copies of news items.

Concerning dike failure trigerred by earthquakes, it should be pointed out that there have been no substantial earthquakes in the Bay Area during the ten year maintenance record period cited in paragraph 6 from mid-1962 to mid-1972. The last damaging earthquake in the Bay Area was the 1957 Daly City event of Richter magnitude 5.3 which hardly qualifies as a major shock! Perhaps specific language dealing with earthquakes, subsidence, and other factors should be introduced to protect the United States from responsibility for dike failure under such circumstances. 7

Finally, let me compliment the U.S. Fish and Wildlife Service and the Department of the Interior for their fine work in San Francisco Bay over the years. The above critique of the DEIS at issue unfortunately does not cite its many good features, and I regret that the close time constraints on the preparation of this report have made it impossible to specify them.

Very truly yours

Kent Dedrick

Kent Dedrick

Enclosures:

Appendix: "The restoration issue and the U.S. Fish and Wildlife Service."

News items re waterfowl hunting in San Francisco Bay.

cc

District Engineer, San Francisco District
S.F. Bay Conservation & Development Commission
National Audubon Society
Michael R. Sherwood
Hon. Paul N. McCloskey, Jr.

Response to Mr. Kent Dedrick

1. Our records indicate that a copy of the draft statement was mailed to your Menlo Park address September 15, 1976. Inconvenience caused by non-receipt is regretted.

2. The new items appended to your letter of comment provide very interesting reading. They do not however, contribute significantly to the analysis of the proposed action and, for space-saving purposes, have been deleted from printing.

   As we note in the following responses it is believed that the issue of marsh restoration has been adequately addressed for purposes of this statement. Thus, your appendix entitled "The Issue of Marsh Restoration and the U.S. Fish and Wildlife Service" has not been made a part of the document. Should reviewers desire to obtain a copy of the paper they are advised to contact you.

3. The information given is appreciated and duly noted through becoming part of the FES. The central theme of your letter appears to focus on restoration of the area to salt marsh instead of commenting directly on the assessment of environmental impact. Please see CEQ Guidelines as published in the Federal Register, August 1, 1973, F.R. 20550. These guidelines do not, of course, preclude commenting directly on the proposal per se, and you have made a number of fine points pertaining to the manner in which the refuge shall be developed and operated.

   The Service does not construe that the many laws and regulations under which the System is operated require that each refuge be extensively manipulated. Many areas serve their intended purpose through being preserved in their natural state; a prime example of this would be Pelican Island, Florida, officially recognized as the first refuge in the System, established to protect nesting pelicans, herons and egrets. Other refuges require extensive management, such as Delevan, California, where extensive farming is done to meet food requirements of migratory birds. The activities of all refuges fall within national objectives even though individual refuge objectives may vary for optimum wildlife benefit in a particular area. Thus, we see no inconsistency nor violation of authority in establishing

Response to Mr. Kent Dedrick (cont'd)

preservation of existing conditions as the primary objective of the proposed San Francisco Bay National Wildlife Refuge. You may find DES-76-59, "Operation of The National Wildlife Refuge System," to be of interest in this respect.

4. The Service is not incognizant of habitat restoration potential of the area. While short term options are limited by the proposed easement, from a practicable standpoint this cannot be construed as irreversible. Time could affect Leslie's desire to continue the easement, and it is possible that terms of the easement could be modified. We believe that it would be in error to state that the option for major habitat restoration might well be lost forever; conjecture is a many-faceted undertaking and highly subjective.

5. A review of alternatives E & F leads us to believe that they are adequate for the purposes of this land acquisition proposal. Provision of additional detailed information would do little to assist the decision-maker in determining the wisest course of action.

6. The Service has endeavored to put forth a document which adequately states the proposal, identifies and assesses environmental impact, and discusses viable alternatives. We believe this has been accomplished. This organization possesses considerable expertise in the field of wildlife management and there are no known unsupportable statements in the document. While history of the area is indeed extremely interesting, its worth to the decision-maker would be questionable. Without your identification of 'peripheral' issues, this comment cannot be addressed.

7. Potential damage to dikes and other structures is recognized in the proposed reserve easement. Paragraph 6 was worded to obviate government responsibility for costs "which are not attributable to refuge operation or public use."

500 W. Middlefield #175
Mountain View, Calif. 94043

November 29, 1976

EIS Coordinator - Rm. 2343
U.S. Department of the Interior
U.S. Fish & Wildlife Service
Division of National Wildlife Refuges
18th and C Streets, N.W.
Washington, D.C. 20240

Re: DEIS - Acquisition San Francisco Bay National Wildlife Refuge, California

To: EIS Coordinator

Am I reading the EIS correctly: the Federal government will pay Leslie $3-11 million (San Jose Mercury, Nov 6/76) for Leslie's 15,000 acres and then will subsidize Leslie's salt-making activities into perpetuity? And all this with no lease-back payments on the part of Leslie to the people of the United States?

To whom are dike construction and repair permits issued from the Army Corps of Engineers and the San Francisco Bay Conservation & Development Commission: the Fish & Wildlife Service or Leslie Salt Company?

I would think the prime goal of the Refuge System would be restoration of habitat through the removal and/or breaching of dikes. As your own studies show (Estuarine Areas Hearings, Mar 1967; National Estuary Study, 1970), the diking of San Francisco Bay was effectual in removing not only 80% of basic habitat, but also in removing food supplies from the estuarine system. Twenty-five percent of basic habitat loss was due to salt pond construction (National Estuary Study).

G. K. Gilbert's classic study on San Francisco Bay (USGS Professional Paper No. 105, 1917, ff 85) showed the marshlands and open waters of South San Francisco Bay had a greater effect on the tidal volume in the Golden Gate than did other regions of San Francisco Bay. I would think that restoration of South Bay marshlands could only be benificial to the Bay as a whole as well as to the Pacific Flyway.

Approximately 25% of refuge lands are comprised of mudflats and open waters of San Francisco Bay. Are these lands in danger of being filled? Aren't they already part of the public domain? Wouldn't the refuge be fulfilling its obligations to the public by purchasing other marsh tracts which are in danger of being filled rather than including lands which the public already owns?

Sincerely,

(Miss) Jessie D. Vosti

Response to (Miss) Jessie D. Vosti

1. The proposal assumes that the production of salt by the solar evaporation process is compatible with the purpose for which the refuge is being acquired. Salt making rights reserved to Leslie could result in a reduced purchase price. This is not considered to be a subsidy. Further, continued operation of the salt ponds by Leslie would reduce refuge maintenance costs. We believe the subject of acquisition of all of Leslie's holdings, subject to a lease-back, is adequately addressed in Alternative E.

   All permits issued by the Corps of Engineers will be to the Fish and Wildlife Service.

2. Over the short term, present zoning restrictions and regulations would prohibit filling the mudflats and open areas of the proposed refuge. In the long term however, prohibitive laws and regulations enacted by local jurisdictions could be modified or amended.

   Land classifications are complex and mixed as illustrated by ongoing litigation to establish ownership. Local opinion varies among the jurisdictional authorities of Federal, State and South Bay area governments. Because of these unresolved opinions the Service has proposed the outlined boundary to assure that habitats included within them will be retained with a minimum of human alteration.

Mobil Oil Estates (Redwood) Limited

350 MARINE WORLD PARKWAY
REDWOOD CITY, CALIFORNIA 94065
TELEPHONE (415) 592-4170

November 3, 1976
41.410

U.S. Department of Interior
Fish and Wildlife Service
Division of National Wildlife Refuges
18th and "C" Streets, Rm 2343
Washington D.C., 20240

Attention: E.I.S. Coordinator

RE: DES 76-35 Draft Environmental Statement - Acquisition of Lands for the San Francisco Bay National Wildlife Refuge, California

Dear Coordinator:

We have reviewed the Draft Environmental Statement (DES 76-35) Acquisition of Lands for the San Francisco Bay National Wildlife Refuge prepared by U.S. Fish and Wildlife Service and wish to bring the following comments to your attention.

1. The first sentence on page 1-22 states that 800 acres on Bair Island were acquired through an exchange with Mobil Oil Estates Ltd. Attached is a copy of the title page of the official agreement clearly identifying the transaction as a donation. This is a correction that we feel is important to make to prevent any further misunderstandings. 1

2. In Figure 6 on page II-26 Data Base - Existing Land Use, a portion of Redwood Shores in Redwood City that is dry and behind dikes is shown as (M) marshlands. (A marked copy of this exhibit is attached.) This particular area is given the same (M) marshland designation as Bird Island which is outside the dikes and subject to tidal flow. This dry area has been diked off from the Bay and used for grazing since 1930. This designation seems inconsistent with Figure 7 below on the same page, where the same site is indicated to be (Md) diked marshland. This (M) marshland designation also appears to be inconsistent with Figure 5 on page II-10 (Data Correlations - Site Resources) which indicates where marshes presently exist in the area, but does not show the site we have questioned as being a marsh. 2

Mobil

U.S. Department of Interior
Page 2 November 3, 1976

Figure 19 on page II-55 also indicates the same dry grassy site to be (Md) diked marshland.

We feel that these inconsistencies could all be cleared up if the site in question marked in red on the copies of Figures (attached) be redesignated in the EIR as follows: 2

Figure 6 - from (M) marshland to (Un) undeveloped.
Figure 7 - from (Md) diked marshland to no designation like the balance of Redwood Peninsula.
Figure 19 -from (Md) diked marshland to (R) rural.

3. Figure 17 - Data Base - Habitats of Rare and Endangered Species indicates a portion of the Redwood Peninsula to be a possible Harvest Mouse habitat. This appears to be a presumptious unconfirmed conclusion that could be eliminated. It is not in keeping with the high level of technical quality that characterizes this overall document. 3

In conclusion, except for the above stated reservations we find this EIR to be complete and accurate with regard to our lands. We wish to go on record as supporting the concept of a South San Francisco Bay Wildlife Refuge.

Sincerely,

Eugene Masciarelli

Eugene Masciarelli
Project Planner

EFM:jas:R

cc: Mr. Robert Personius, Manager
South San Francisco Bay Wildlife Refuge
3849 Peralta Ave.
Fremont, CA 94536

Response to Mobil Oil Estates (Redwood) Limited

1. The FES has been corrected to show that the 800-acre parcel was donated to the State. The error is regretted. For space saving purposes we have not printed the Real Property Donation Agreement appended to your letter.

2. The designation of "diked marshland" for a portion of Redwood Shores in Figure 7 and 19 is correct. Diked marsh-land is an area which was formerly subject to tidal flows. Animals present include the meadow mouse, black-tailed jackrabbit, meadow lark, and sometimes the salt marsh harvest mouse. Vegetation consists of low shrub growth with some grasses as ground cover.

   The "marsh-land" designation in Figure 6 is used to described salt and brackish marshes. A diked marsh is still a marsh. The "undeveloped" designation means land not in current use - which is correct.

3. Although a portion of Redwood Peninsula has not been trapped for the harvest mouse, we believe the area can be considered as possible habitat. The mouse is present in similar diked marshes such as the Palo Alto Flood Control Basin and New Chicago Marsh at Alviso and we believe that this area has high potential for occurrence of this species.

WESTBAY COMMUNITY ASSOCIATES

4 WEST FOURTH AVENUE SAN MATEO CALIF 94402
415 344-1539

October 27, 1976

United States Fish & Wildlife Service
Department of the Interior
Attention of EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N. W.
Washington, D. C. 20240

Gentlemen:

Westbay Community Associates ("Westbay") is the owner of real property including Greco Island in San Mateo County within the boundaries of the proposed San Francisco Bay National Wildlife Refuge. The following comments are made on behalf of Westbay on the Department of Interior's Draft Environmental Statement ("Draft ES") made available to the Council on Environmental Quality on September 14, 1976 (page references herein are to the Draft ES).

1. THERE IS NO NECESSITY FOR THE PROPOSED FEDERAL PROJECT AND THE PROPOSED LAND ACQUISITION IS NOT JUSTIFIED (see specific proposal, pp. I-5 through I-7).

The Draft ES states that the first purpose of the proposal is to preserve and maintain wildlife habitats necessary to support sizable populations of migratory wildlife and indigenous waterfowl, etc. (p. I-5). No showing is made anywhere in the Draft ES that migratory waterfowl are, or in the foreseeable future will be, unable to continue to stop in the San Francisco Bay Area if the project is not implemented. No showing is made with respect to the necessity of acquiring Westbay's property or other property for this purpose. 1

The second asserted basis for the Federal proposal is to protect threatened species of wildlife consisting of the salt marsh harvest mouse, California clapper rail, California least tern, brown pelican and peregrine falcon (p. I-5). The claim is made that two endangered forms, the California clapper rail and the redbellied salt marsh harvest mouse, are now found only in the Bay marshes (p. II-48). The statement concerning the 2

mouse species is misleading, to say the least, in its implication that without the Federal refuge there will be no protection for these mice. Such mice are found on Tubbs Island, marshland owned by the City of Palo Alto, and are currently being protected by the Nature Conservancy. They are also found on parts of Greco Island, on land owned by Westbay but leased to the Audubon Society. 2

So far as the California clapper rail is concerned, the statement that it is found only in the San Francisco Bay region is erroneous. It appears to have a habitat in the Humboldt area (Oberholser (1937) 84 Proceedings of the Smithsonian, p. 313). The California clapper rail was listed as a game bird as late as 1972. 3

The Draft ES indicates that the endangered California least tern utilizes the South Bay part of the year and that nesting normally occurs on Bay Farm Island (admitted to be outside the proposed refuge) or on Bair Island (in the proposed refuge, p. II-48). The Draft E fails to disclose that the California Least Tern Census and Nesting Survey of September 1975, prepared by the State of California Resources Agency, indicates: 4

(a) That this tern has nesting areas from San Diego County to Alameda County;

(b) 70% of the nests were found in San Diego County;

(c) 17% of the nests in the state were located in the San Diego Airport, adjacent to a Marine Recruit Training Depot;

(d) Only 2% were located in San Mateo County.

The Draft ES states that endangered California brown pelicans are found in the South Bay in limited numbers but admits that they do not nest there (p. II-48). The South San Francisco Breeding Bird Survey of 1971 ("1971 Survey") prepared for the State of California Resources Agency does not even mention brown pelicans. They were mentioned in the 1972 publication of the same agency entitled "At The Crossroads" as being found on the Pacific coast from Canada to Mexico with a California nesting colony in the Channel Islands ("At The Crossroads," p. 13). 5

The peregrine falcon is listed among the endangered species for which the proposed Federal refuge is to be established in the Draft ES in the specific proposal section (p. I-5), but curiously is omitted from the more detailed statement concerning endangered forms (p. II-48). Perhaps the authors discovered 6

that the peregrine falcon is found in the Channel Islands rather than in the San Francisco Bay ("At The Crossroads," p. 19). 6

In short, the implication that a Federal game refuge is essential to protect endangered species is wholly without foundation.

That there is no necessity for the project, either for migratory wildlife or indigenous waterfowl or for endangered species, is shown by "Alternative A, No. Action (No Project) (p. VIII-1, et seq.) where it is admitted that various regulatory bodies, including the State of California, The United States Corps of Engineers and the San Francisco Bay Conservation and Development Commission ("BCDC") are currently providing protection for the area "in accordance with existing authorities" (p. VIII-1).

It is then stated that if the refuge is not established "Value of the refuge as a catalyst and focal point for local environmental protection would be lost" (p. VIII-1). There is no showing: 7

(a) That there is any necessity for a Federal catalyst or focal point for environmental protection in the San Francisco Bay area, which is known throughout the state and the nation as a leader in environmental consciousness;

(b) Why it is necessary or desirable to establish a Federal game refuge in this area at all, much less one that is as large as that proposed.

The Draft ES argues that wildlife-oriented recreation probably would not be developed under existing controls (p. VIII-2). No authority is cited for this proposition and it is erroneous. The BCDC plan provides for just such recreational opportunities. Similarly, there is no factual basis for the statement that without the project 600,000 school children would be affected by lack of educational opportunities (p. VIII-2), nor for the implication that archaeological and historic features are in need of added protection (p. VIII-2). Archaeological and historic features are given adequate protection by California planning laws and BCDC. The Draft ES admits that if the Federal project is not pursued, state, county, city and private organizations and individuals would purchase portions of the area for recreational uses of all kinds (p. VIII-4). 8

The discussion of the alternative of no Federal action in the Draft ES is wholly inadequate. It fails to consider or deal with the following obvious basic questions which should be taken into account in discussing the alternative of no Federal action.

1. Is there really a demonstrated need for a Federal wildlife refuge in the San Francisco Bay area, or is the Draft ES a mere 9

rationalization of a previously determined course of action? (It is submitted that obviously the latter is the case - the Draft ES has been prepared years after the passage of Public Law 92-330, enacted June 30, 1972, directing the establishment of the proposed refuge.) 9

2. Even if it were to be assumed that a San Francisco Bay National Wildlife Refuge could be justified, is there any scientific justification for the size of the proposed refuge, or has the designation in Public Law 92-330 been accepted and rationalized? (It is submitted that the latter is true, except that the Secretary of the Interior has expanded the Congressional direction to designate 21,592 acres to approximately 23,000 acres (p. I-1) without any explanation of the necessity therefor or why a smaller designation would not be appropriate.) 10

3. Has there been an impartial study of whether the regulations of the BCDC, the United States Army Corps of Engineers and other regulatory bodies are sufficient to preserve the habitats of migrating wildlife and to nurture endangered species in the San Francisco Bay Area, thus obviating the need for a Federal refuge or is the Draft ES a mere rationalization of a previously determined course of action? (It is submitted that it is obviously the latter in view of Public Law 92-330.) 11

4. How can the Secretary of the Interior comply with the requirements of the United States Constitution and the Relocation Assistance and Real Property Acquisition Policies Act (42 U. S. C. §4601, et. seq.) that property owners be promptly paid the fair market value of any property to be acquired for the proposed reserve, in view of the fact that Congress has authorized only $9 million for property acquisition and to date only $6.4 million has been appropriated for that purpose (p. I-12).

Dividing the $6.4 million thus far appropriated by the 23,000 acres proposed to be acquired gives a figure of only $278 per acre. Dividing the $9 million maximum authorized for land acquisition by Public Law 92-330 results in a figure of only $391 per acre. Both are obviously far below the fair market value of land within the proposed reserve located as it is within the heart of a major metropolitan area. 12

It is possible, of course, that some land will be acquired from public bodies at no cost to the Federal government, thus increasing the amount available for the purchase of private lands. The Draft ES is deficient, however, in not dealing with this problem in detail. It is impossible to determine from the Draft ES how the proposed project can be financially feasible.

In this connection the Draft ES should, but does not, contain an in depth study of the possibility of making the project more feasible financially by not acquiring title to privately owned property in certain areas and by acquiring such property in other areas subject to easements permitting the landowner to conduct commercial operations which are not incompatible with the purposes of the proposed reserve. Such arrangements are permissible under applicable law (see 16 U. S. C. § 668 dd (d). One such arrangement has apparently been negotiated between representatives of the Secretary of the Interior and Leslie Salt Co. (pp. I-14, I-15, III-8, III-9, III-10, III-27, Appendix 4). Such arrangements should be pursued with other landowners so that acquisition costs can be lowered by permitting the landowner to conduct a compatible commercial venture. 12

Westbay is particularly interested in pursuing with representatives of the Secretary of the Interior the possibility of carrying on a commercial shellfish growing and harvesting operation on its property. The Draft ES recognizes the existence of a potential to restore a substandard fishery for shellfish and other fish but erroneously assumes that any such development is dependent upon improvement in water quality in the South Bay (p. III-4). Under techniques that have been employed on the East Coast of the United States for years with the permission of Federal authorities, shellfish grown in waters of substandard quality may be readily purified by being transplanted to areas of higher quality water where they are rapidly purified by circulation of higher quality water through them. Such shellfish become ready for market and meet all health standards within a comparatively short period. These techniques have been employed successfully and commercially in the United Kingdom and other areas of Western Europe for approximately 50 years. 13

Such shellfish operations would have a minimal effect on wildlife operations when properly conducted and such operations are considered by the staff of BCDC, the California Department of Fish and Game and the United States Bureau of Water Quality to be fully compatible with improving the habitat of the San Francisco Bay region.

Such shellfish operations would provide a large and important food source, rich in protein and delectable. In addition, such an operation would supply needed employment in a water oriented industry in complete harmony with the San Francisco Bay plan. The contemplated shellfish operation would comply with all requirements of the California Department of Fish and Game, the BCDC and the United States Army Corps of Engineers.

II. THE DRAFT ENVIRONMENTAL STATEMENT FAILS IN ADDITIONAL RESPECTS TO MEET THE REQUIREMENTS OF NEPA AND APPLICABLE REGULATIONS.

It would unduly prolong these comments to detail in every respect the failure of the Draft Environmental Statement to meet the requirements of the National Environmental Policy Act of 1969 as amended ("NEPA" (42 U. S. C. § 4321, et seq.)) and applicable regulations. In addition to the defects mentioned in the preceding section of these comments, the most striking violation is the failure to comply with the requirement that an Environmental Impact Statement ("EIS") be prepared at the earliest possible date so that it can aid in decision making at the inception of any project. Thus NEPA requires that a detailed statement by the responsible official on the environmental impact be included "in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment" (42 U. S. C. § 4332 (C)). 14

The regulations stress that this must be done as early as possible and in all cases prior to agency decision concerning recommendations or favorable reports on proposals for legislation which significantly affect the quality of the human environment (Council on Environmental Quality, Preparation of Environmental Impact Statements: Guidelines 40 C. F. R., Part 1500, 38 F.R. 20550 (Aug. 1, 1973) S 1500.2).

Public Law 92-330 was enacted June 30, 1972, and the first purported EIS has been prepared over four years after the adoption of a statute directing in detail the establishment of a San Francisco Bay National Wildlife Refuge. It is clear that the Draft ES comes far too late and is nothing but a rationalization of a predetermined course of action.

In addition, the Draft ES:

(a) Fails to comply with statutory requirements; 15

(b) Fails to give adequate consideration to possible alternatives; 16

(c) Fails to reflect true consultation with other agencies at the earliest possible, or any meaningful time; 17

(d) Gives insufficient consideration to environmental amenities or values; 18

(e) Fails to mitigate impacts. 18

III. THE SECRETARY OF THE INTERIOR HAS FAILED TO COMPLY WITH THE REQUIREMENTS OF THE RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT.

The Draft ES notes the necessity for the Secretary of the Interior to comply with the Relocation Assistance and Real Property Acquisition Policies Act (42 U. S. C. § 4601, et seq., p.p. VIII-18, VIII-19). That Act at section 4651 declares a uniform policy for real property acquisitions by Federal agencies to encourage and expedite the acquisition of real property by agreement with owners, to avoid litigation and court congestion, to ensure consistent treatment for owners in dealing with Federal programs and to promote public confidence in land acquisition practices.

Heads of Federal agencies are directed, among other things, to:

(1) Make every reasonable effort to acquire expeditiously real property by negotiation;

(2) Have the property appraised before the initiation of negotiations, giving the owner the opportunity to accompany the appraiser;

(3) Prior to negotiations to establish an amount believed to be just compensation therefor and to make a prompt offer for the full amount so established, in no case to be below the agencies' appraisal. The owner is to be provided with a written statement of, and summary of, the basis for the amount established as just compensation.

This Act obviously contemplates expeditious action by the head of the agency to have an appraisal prepared and to commence negotiations. The Secretary has not acted expeditiously. The claim is made in the Draft ES that progress on acquisition is approximately on schedule but it is admitted that only the land of Leslie Salt Co. has been appraised (both by the Fish and Wildlife Staff and by an outside appraiser). Appraisals of the remaining ownerships are reportedly "in progress" (pp. I-12, I-13).

Westbay has made repeated requests for the commencement of negotiations but representatives of the Secretary of the Interior have

failed to commence negotiations. It is essential that negotiations be instituted at an early date so that Westbay may explore with the Department the possibility of carrying on the shellfish operation previously referred to. It is requested that the Secretary of the Interior direct immediate negotiations on that subject and that an appraisal of Westbay's property be completed at the earliest possible date.

Sincerely,

W. Scott Moore

W. Scott Moore
Vice President
Kevaland Corporation, General Partner
Westbay Community Associates

cc: United States Fish & Wildlife Service
Department of the Interior
1500 N. E. Irving Street
P. O. Box 3737
Portland, Oregon 97208

Ideal Basic Industries
Ideal Plaza—950 17th Street
PO Box 8789
Denver Colorado 80201
303 623 5661

IDEAL

October 27, 1976

United States Fish & Wildlife Service
Department of the Interior
Attention of EIS Coordinator
Division of National Wildlife Refuges
Room 2343
18th and C Streets, N. W.
Washington, D. C. 20240

Gentlemen:

Ideal Basic Industries, Inc. ("Ideal Basic") is the owner of real property in Alameda County and Santa Clara County apparently within the boundaries of the proposed San Francisco Bay National Wildlife Refuge. The following comments are made on behalf of Ideal Basic on the Department of Interior's Draft Environmental Statement ("Draft ES") made available to the Council on Environmental Quality on September 14, 1976 (page references herein are to the Draft ES).

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(d) Gives insufficient consideration to environmental amenities or values;

(e) Fails to meet "good faith consideration" tests; and 18

(f) Fails to mitigate impacts.

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Sincerely,

W. Scott Moore

W. Scott Moore
Vice President

CC: United States Fish & Wildlife Service
Department of the Interior
1500 N.E. Irving Street
P. O. Box 3737
Portland, Oregon 97208

Response to Westbay Community Associates and Ideal Basic Industries (both having similar content and signed by Mr. W. Scott Moore).

1. It is the intent of an EIS to set forth the proposed action, objectively evaluate the known and potential impacts of that action, and present viable alternatives. (See CEQ Guidelines published in the Federal Register, August 1, 1973, F.R. 20330). Justificatory statements supporting the proposal would be inappropriate.

2. The information provided is appreciated. Chapter II of the FES has been changed to clarify that these species are found in the San Francisco Bay marshes. There was no intent to imply that they are found only on proposed refuge lands.

3. Chapter II of the FES has been revised to include additional information on the California clapper rail.

   According to the Code of Federal Regulations, Title 50, Chapter I, Sections 10.13 and 20.11, the California clapper rail is a migratory game bird which is defined as, "... those migratory birds included in the terms of conventions between the United States and any foreign country for the protection of migratory birds, for which open seasons are prescribed ... ." However, the hunting season for the California clapper rail has been closed since 1913 because of extremely low populations.

4. The information presented in the comment about the California least tern is correct. The discussion of the endangered species did not include a description of their statewide distribution because the statement essentially deals with the project area. The primary objective of the proposed refuge is to preserve existing conditions for present populations of wildlife.

5. The information in the Draft ES about the California brown pelican is accurate. The brown pelican is not mentioned in the "South San Francisco Bay Breeding Survey, 1971" because it does not nest in that area.

6. Based on FWS survey data, the peregrine falcon also is an infrequent visitor around San Francisco Bay as well as the Channel Islands.

Response to Westbay Community Associates and Ideal Basic Industries (both having similar content and signed by Mr. W. Scott Moore) (cont'd)

Mention of this species was inadvertantly omitted from the more detailed section about endangered species. Its occurrence is now noted in Chapter II of the FES.

7. See response No. 1. The DES was not intended to and should not be construed as a document of "admission", "showing of" or "argument for" the acquisition of a national wildlife refuge in the South Bay area. The statement is to (1) portray an environmental reflection of P.L. 92-330 which authorized acquisition of lands for the refuge, (2) evaluate the impacts of that acquisition, and (3) explore viable alternatives.

   The Service has attempted to present an objective environmental assessment of the proposal and associated impacts. It is our belief that this objective has been accomplished.

8. It is our view that wildlife oriented recreation of the type planned under refuge programs would not be available under the no action alternative. Projected loss of interpretation, observation, photography, and educational opportunities is qualified by the phrase, "unless other agencies would fill the void." Moreover, under this alternative, the refuge environmental education program would not be effected for approximately 1 million school children. It was not our intent to imply that California planning laws and BCDC do not provide recreational opportunity or adequate protection for archaeological and historic features. The EIS states that the proposed refuge would provide "added" protection.

9. The DES was delayed pending development of data relating to surveys appraisals, biology, etc., essential to its preparation.

10. See responses 1 & 7. The 21,662 acres referred to in P.L. 92-330 was recommended to the Congress as suitable wildlife habitat after studies and investigations by private groups, individuals, state and federal authorities. The discussion in Alternative B is believed to adequately set forth the impacts associated with adhering to the original proposed boundary. P.L. 92-330 permits boundary correction within the 23,000-acre proposal.

11. P.L. 92-330 is a consolidated expression by various private and governmental conservation agencies concerning the desirability of a national wildlife refuge in the South Bay.

Response to Westbay Community Associates and Ideal Basic Industries (both having similar content and signed by Mr. W. Scott Moore) (cont'd)

12. To date, $6.8 million as authorized under P.L. 92-330 have been appropriated. P.L. 92-330 expresses the attitude that the lands proposed for acquisition can be acquired within the $9 million authorized in the bill. Based upon independent fee appraisal studies we have no reason to believe the $9 million figure to be inadequate, nor to doubt that the remaining $2.2 million will be appropriated. Actual costs will be determined by amounts paid at the time of purchase. A showing of financial feasibility is not an objective of this EIS since P.L. 92-330 authorized the refuge, set its boundaries and placed an upper limit on funds to be expended for purchase. It should be noted that the FWS does not normally prepare the traditional benefit/cost ratio study but the planning process did consider economic as well as environmental implications in advancing the proposal. The Service has complied with that section of the CEQ Guidelines which states "in each case the analysis should be sufficiently detailed to reveal the agency's comparative evaluation of the environmental benefits, costs and risks of the proposed action and each reasonable alternative" (CEQ Guidelines, August, 1973, 38 F.R. 20550). This portrayal of the environmental benefits, risks and costs is undertaken in the statement, even if not in quantified form.

    The proposed reserve easement (Appendix 4) in connection with continued salt production suggests we believe that the solar salt production process is compatible with refuge objectives. It is an ongoing use, not a new industry having impacts not yet tested by operation. The proposed easement would avoid impacts associated with terminating an established enterprise. While similar compatible uses are not foreseen, future possibilities are not ruled out.

13. Proposals for economic uses subsequent to acquisition would be examined for compatibility with refuge objectives, local regulations, and requirements of other agencies.

14. See response No. 9.

15. See response No. 9.

Response to Westbay Community Associates and Ideal Basic Industries (both having similar content and signed by Mr. W. Scott Moore) (cont'd)

16. The Service believes that all viable alternatives have been presented. In the absence of specific reasonable alternatives offered by the comments of Westbay and Ideal, this position will be maintained.

17. As reflected in Chapter IX of the EIS, consultation and coordination has been effected with numerous agencies, organizations, and individuals having knowledge or jurisdictional interest in the proposal. Such consultation and coordination has been ongoing since passage of P.L. 92-330 and will remain a continuing process.

18. The EIS gives full consideration to the environmental amenities and associated impacts inherent in the proposal. All input from local, state, federal, and interested individuals has been considered in developing the proposal and subsequent environmental analysis.

ADMINISTRATIVE OFFICES
7200 CENTRAL AVE., NEWARK, CALIFORNIA 94560 / 797-1620

LESLIE SALT CO.

November 3, 1976

U.S. Fish & Wildlife Service
Chief, Branch of Environmental Coordination
Main Interior Building, Room 2542
Washington, D. C. 20240

RE: Comments on Draft EIS, Proposed San Francisco Bay National Wildlife Refuge (INT DES 76-35)

Dear Sir:

The following comments on the draft environmental impact statement for the Proposed San Francisco Bay National Wildlife Refuge are submitted on behalf of Leslie Salt Co.

I. Adverse Environmental Impact If Salt Making Ceases.

An underlying assumption of the draft environmental impact statement (DEIS) is that salt making will continue (i, I-14-15, III-9-10, III-27, IV-1-3, VII-1, VIII-17-18). Although Leslie intends to remain in salt production so long as possible, it can do so only as long as continued salt production is economically feasible. The economic feasibility of continued salt operations is *presently unknown because* of uncertainties associated with the proposal. For example, subsequent development and operation of the Refuge is not yet fully defined (I-2), and the salt-making rights are not yet finalized (IV-3). 1

The effect upon the Refuge of no salt making is discussed under Alternative F (VIII-17). However, the sufficiency of the analysis is inadequate in two respects. First, the salt ponds are a rich protein source for the wildlife in the Refuge (VIII-18). But this high protein productivity is dependent upon the high salt pond salinity and the salt making cycle. See Anderson, A Preliminary Study of the Relationship of Salt Ponds and Wildlife--South San Francisco Bay, 56 Calif. Fish & Game 240-52 (1970). If salt making ceased, the ability of the Refuge to support wildlife would be reduced. Second, maintenance of the outboard levees is essential to the integrity of the Refuge. The DEIS mistakenly implies that many of the salt ponds could return to tidal marsh. But some of these areas have subsided (See, e.g., Summary of a Report to the Santa Clara County Flood Control and Water District on the Baylands Salt Water Flood Control Planning Study, prepared by Tudor Engineering Company, January, 1973). In consequence, upon abandonment of salt production they might return to open water or mud flat with much lower biological productivity. This problem was cogently described in the preliminary report of Tudor Engineering Company to the Santa Clara County Flood Control Water District, at 119-20 (1972):

2

3

"It has been suggested that, should the public obtain possession or control of the salt ponds

and should there be no further need for salt, the outboard levees of the ponds could be broken open for tidal action and pristine tidal marsh would reappear. This just would not happen . . . What would probably result would be a morass of sterile muck--unproductive, noisome, dangerous and impassable."

The continued production of salt and maintenance of the dikes may be essential to operation of the Refuge as contemplated. The final environmental impact statement (FEIS) should fully discuss the possible adverse environmental impacts of a cessation of salt making by Leslie and the probable public expense for maintenance of the dikes.

4

II. Modification of Salt Making Easement.

The salt making easement included in the DEIS (Appendix 4) is objectionable to Leslie because it does not go far enough to ensure that continued salt making will be economically feasible. Leslie does not believe that changes desired by it would fundamentally alter the government's intended use of land to be acquired for the Refuge or the suitability of the salt pond areas for such intended use. Nor would these desired modifications change the environmental impact of the Refuge. But the FEIS should indicate that changes in the proposed easement are contemplated.

5

Recognition of possible future modifications should at least be made in the discussion associated with pages I-14-15, IV-3, and Appendix 4. If such modifications are not made, the possibility of the adverse environmental impact mentioned in (I.) above would become a serious possibility.

III. Alternative Acquisition Method.

The Fish and Wildlife Service may not have sufficient funds to purchase all of the Leslie property. Note that the enabling legislation limited total acquisition cost to only $9 million of which so far only $6.4 million has been appropriated (I-12). The FEIS should indicate alternative acquisition schemes if these funds are not sufficient. For example, the Refuge might be established with the available funds at somewhat reduced acreage. The FEIS should indicate that this alternative acquisition method or others may be utilized without affecting the environmental impact of the Refuge.

6

IV. Value of Leslie's Present Ownership Rights.

The DEIS states on pages VIII-16 and VIII-18 that the government could acquire all of Leslie's present ownership rights in the salt ponds to be included in the refuge plus pay related severance damages to salt ponds outside the Refuge for only $20 million. This figure is incorrect and

7

either should be adjusted upward to reflect the actual value of Leslie's interest or should be deleted.

7

V. Leslie's Salt Making Commitment.

The DEIS states on pages I-15 and II-41 that Leslie intends to remain in solar salt production in perpetuity. These statements should be altered to reflect Leslie's true intentions: Leslie intends to remain in solar salt production so long as it is economically feasible.

8

VI. Expansion of Refuge to Encompass a Larger Area.

Alternative D (VIII-11) contemplates addition of the balance of Leslie's South Bay lands to the Refuge. The total of Leslie's lands included in this alternative is 29,100 acres. When added to the approximately 7,400 acres not owned by Leslie but included in the present 23,000 acre Refuge, the total acreage for this proposal would be approximately 36,500 acres. The expanded Refuge area of 29,100 acres mentioned in Alternative D is in error.

9

VII. FEIS Limited to Acquisition.

The FEIS will be limited only to environmental impacts of the acquisition with future EIS's planned for subsequent development and operation (I-2, III-1). This procedure may be acceptable so long as sufficient discussion

10

of future plans is included to enable consideration of the ultimate effects of the proposed action. However, the discussion is not sufficient to determine these ultimate effects. Specifically, the discussion of the impact of cessation of salt making on page III-9-10 and the discussion of future salt making operations on page III-27-28 are not sufficiently detailed to determine the ultimate environmental impact. 10

VIII. Other Inaccuracies, Omissions, and Deceptions.

1. The DEIS states on pages III-27 and IV-2 that salt production is a $5 million industry which supports 450 jobs. Salt revenues of Morton Salt and Leslie which are dependent upon South Bay salt ponds are approximately $25 million and support about 600 jobs including harvest workers. 11

2. The DEIS in its discussion of "Impacts on Potential for Man-Caused Accidents" (III-32) omits to discuss safeguards needed for the salt making facilities which must be added to protect both Refuge visitors and the equipment. 12

3. The DEIS states on page II-5 that the Refuge surface soils are "highly expansive", "providing poor foundation material", and having a "high risk to life and property". These statements are inaccurate and should be deleted. 13

4. The DEIS states on page II-12 that "The constriction of the bay at the Dumbarton Bridge further impedes the circulation of water south of this point. This situation is aggravated by the presence of diked salt ponds near the bridge." There is no evidence to support this statement and it should be deleted. 14

5. The DEIS states on page II-37 that there are severe problems associated with construction of dump fills and extension of foundations through the fill. These statements are inaccurate. Properly engineered fills can be used economically for foundations for construction through the spectrum from residential to light industry. 15

6. The DEIS states on page III-17 that "The site already is zoned against development." This statement is misleading. The zoning on the site is generally oriented toward holding pattern zoning such as agricultural, agricultural flood plane, or our private open space. These designations do not permanently preclude development. 16

LESLIE SALT CO.

By J. H. Lillie

John H. Lillie, President

Response to Leslie Salt Company

1. Studies have indicated that a National Wildlife Refuge and solar salt production can co-exist in San Francisco Bay. The concept of this proposal assumes that solar salt production will be economically feasible and the easement reservation included as an appendix to this statement is a reflection of this effort. If necessary, changes in the proposed easement can be negotiated to the extent that refuge objectives are not compromised. The FES now notes however, that the Leslie Salt Company intends to remain in business as long as economically feasible.

2. We believe that the draft statement adequately recognized that certain ponds provide a high protein source for refuge wildlife, in particular waterbirds. The text of the FES has been revised to indicate that this protein source would most likely be lost should salt production cease.

3. With proper planning and subsequent discrete manipulation certain salt pond areas could be returned to a salt marsh situation. The report by Tudor Engineering Company on the Santa Clara Flood Control Water District principally addresses a situation whereby breaking of the dike would be indiscriminate and unplanned. The text of the FES has been revised to indicate that any dike breaching would take place through the planning process.

4. See responses 2 and 3. We believe that alternative F adequately addressed this issue. Further, it is inherently recognized that funds would have to be expended for dike alteration and maintenance.

5. See response 1. It is anticipated that agreement can be reached whereby salt production and refuge operation can compatibly co-exist. Provisions of the easement will not be diluted to a point where a fully manageable refuge is not possible.

6. To date 6.8 million dollars have been appropriated for acquisition of the refuge. Independent fee appraisal studies have indicated that ample monies were provided under the Act to cover the acquisition of lands considered in this proposal. In view of these appraisal studies we believe no alternative acquisition schemes are necessary.

Response to Leslie Salt Company (cont'd)

7. Extensive appraisal data gathered in connection with this proposal indicate that all of the Leslie Salt Company rights to the salt ponds plus severance damage would amount to approximately 20 million dollars. This is the firmest figure available for use in considering this alternative. The true value would not be known unless the alternative is selected.

8. See response #1.

9. The correct figure of 36,500 acres has been inserted in Alternative D and other appropriate places in the FES.

10. It is assumed that saltmaking would continue essentially as at present. Therefore, impacts of saltmaking cessation would be inappropriate in Chapter III. In the belief that future saltmaking would be minimally impacted, the discussion appears adequate. Moreover, Alternative F discusses the impacts of saltmaking cessation.

11. Reference in our statement to 5 million dollars and 450 jobs attributed to Leslie is our estimate of loss to the South Bay economy, not to total revenue generated by the South Bay Salt business. This language in Chapter III has been deleted from the FES as it is not an impact. The Morton Salt operation is not included in our estimates. Based on available information, this firm could purchase necessary salt from other sources and continue to operate.

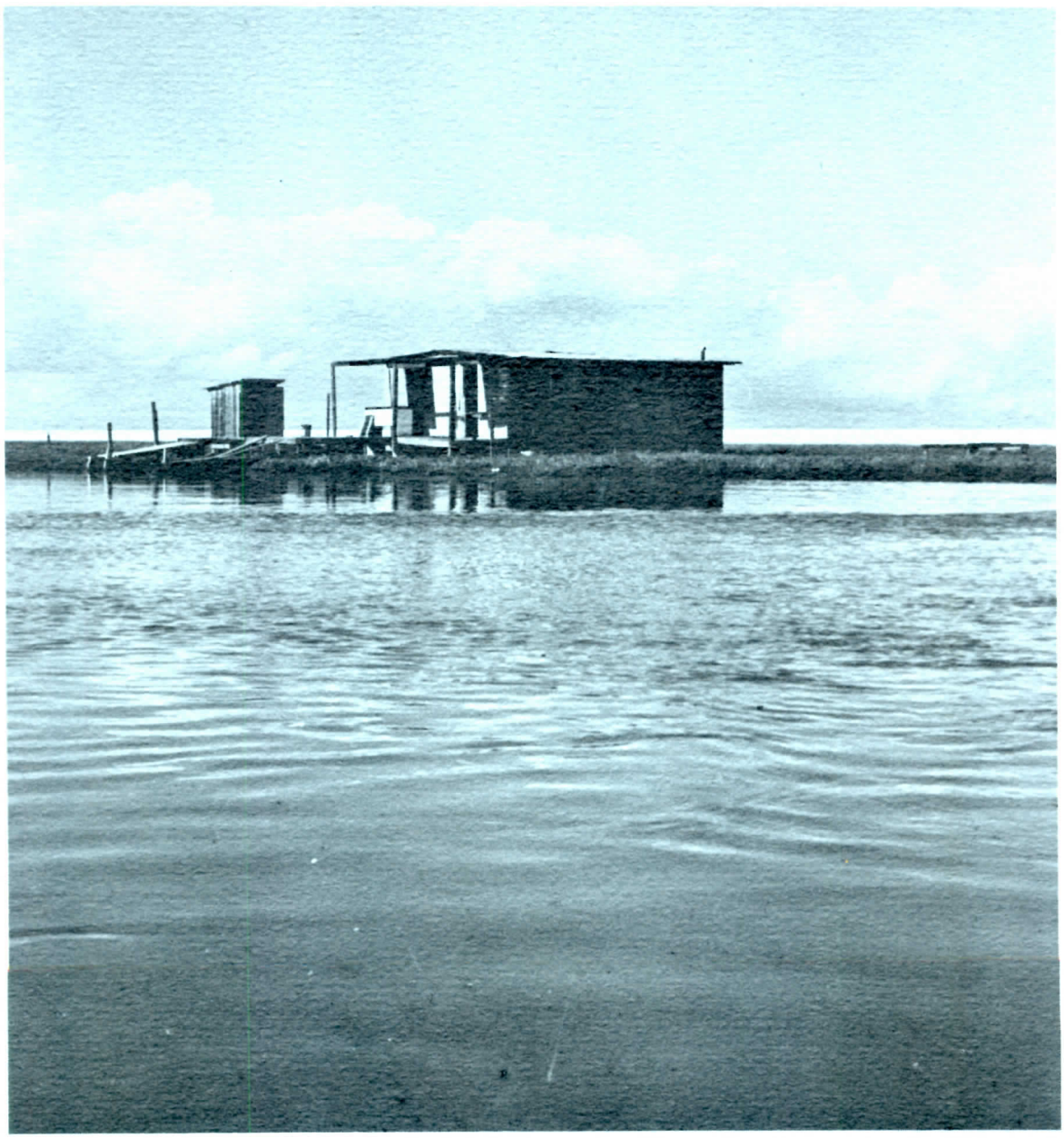
12. The necessity for safeguards is now recognized in Chapter III of the FES. These are also covered in the easement reservation.

13. Chapter II of the FES has been expanded to include excerpts from U.S. Geological Survey and U.S. Housing and Urban Development Report on San Francisco Bay Environment and Resources Study, 1971.

14. While we believe this statement to be valid, no firm supportive data are available and it has been deleted from the FES.

15. The problems with construction of dump fills and foundations are severe relative to the same construction on a higher ground. This is evidenced by the extensive engineering studies, and subsequent fill and foundation work that went into fills at Foster City and Redwood Shores before development could take place.

16. A detailed analysis of the various authorities affecting this proposal conducted in connection with an appraisal of the property involved indicated this zoning will be retained through the foreseeable future. It is true, however, that these zoning designations do not permanently preclude development.



Appendix

Payments to Counties

(c) The Secretary, at the end of each fiscal year, shall pay, out of the net receipts in the fund (after payment of necessary expenses) for such fiscal year, which funds shall be expended solely for the benefit of public schools and roads as follows:

(1) to each county in which reserved public lands in an area of the System are situated, an amount equal to 25 per centum of the net receipts collected by the Secretary from such reserved public lands in that particular area of the System: Provided, that when any such area is situated in more than one county the distributive share to each county from the aforesaid receipts shall be proportional to its acreage of such public lands therein; and

(2) to each county in which areas in the System are situated that have been acquired in fee by the United States, either (A) three-fourths of 1 per centum of the cost of the areas, exclusive of any improvements to such areas made subsequent to Federal acquisition, such cost to be adjusted to represent current values as determined by the Secretary for the first full fiscal year after enactment of this Act and as redetermined by him at five-year intervals thereafter, or (B) 25 per centum of the net receipts collected by the Secretary from such acquired lands in that particular area of the System within such counties, whichever is greater. The determinations by the Secretary under this subsection shall be accomplished in such manner as he shall consider to be equitable and in the public interest, and his determinations hereunder shall be final and conclusive.

Limitation on Amount; Reduction of Payments

(d) The payments under subsection (c) of this section to the counties in the United States for any one fiscal year shall not exceed the amount of net receipts in the fund for that fiscal year and, in case the net receipts are insufficient for a particular fiscal year to pay the aggregate amount of the payments for that fiscal year to the counties, the payment to each county shall be reduced proportionately.

Uses for Surplus Moneys

(e) Any moneys remaining in the fund after all payments are made for any fiscal year may be used by the Secretary thereafter for management of the System, including but not limited to the construction, improvement, repair, and alteration of buildings, roads, and other facilities, and for enforcement of the Migratory Bird Treaty Act, as amended.

Wilderness Act of 1964 (16 U.S.C. 1131-1136). Directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within national wildlife refuges and game ranges and to recommend to the President the suitability of each such area or island for formal preservation as wilderness under later special Acts of Congress. As of December 1971, seventeen areas under the Bureau of Sport Fisheries and Wildlife's administration have been added to the wilderness system by specific statutory authority.

Klamath Federal Reclamation Project, California-Oregon Act of September 2, 1964 (16 U.S.C. 695k-695r). Stabilizes the ownership of lands within the Klamath Federal reclamation project, California-Oregon, and provides a permanent basis for the administration and management of the project and of the Tule Lake, Upper Klamath, Lower Klamath, and Clear Lake National Wildlife Refuges, to preserve waterfowl habitat in a vital area of the Pacific Flyway. The Act dedicates lands within the Executive boundaries of the refuges to wildlife conservation and provides for their administration for the major purpose of waterfowl management with full consideration of optimum agricultural use consistent therewith; rounds out refuges by addition of tracts of public lands; continues the leasing of agricultural lands; and provides for distribution of net-lease revenues among local counties and the Reclamation Fund.

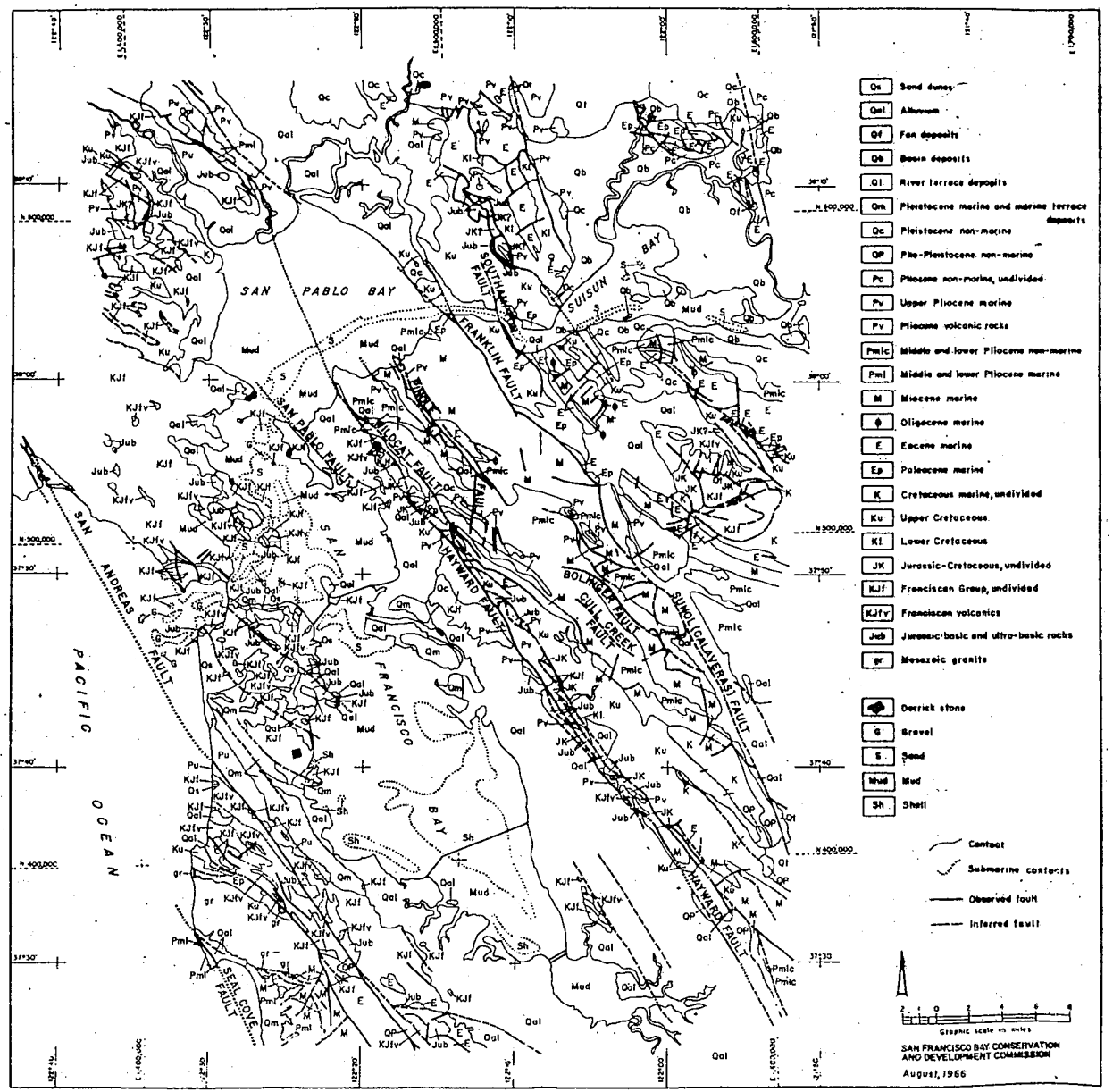
Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460L-4 to 460L-11). Creates a special Land and Water Conservation Fund derived from various types of revenue. Authorizes Bureau of Sport Fisheries and Wildlife and other Federal agencies (up to March 31, 1970) to collect entrance and user fees at their installations where outdoor recreation facilities meet certain qualifications. Authorizes appropriations from the Fund for matching

grants to States for outdoor recreation projects, and appropriations for acquisition of (1) recreation lands adjacent to national wildlife refuges and national fish hatcheries; (2) any national area authorized for the preservation of fish and wildlife threatened with extinction; (3) inholdings in the National Forest System; and (4) inholdings within the National Park System and future outdoor recreation areas. A 1968 amendment expanded the Fund to authorize appropriations and other revenues to make the income of the Fund not less than $200 million a year for 5 years. A 1972 amendment (P.L. 92-345) reestablishes the Golden Eagle Passport, a $10 permit for admission to National Parks and Forest Service recreation areas.

Federal Water Project Recreation Act of 1965 (16 U.S.C. 460L-12 et seq.). Declares the intent of Congress that recreation and fish and wildlife enhancement shall be fully considered purposes of Federal water-development projects if non-Federal public bodies agree to (1) bear not less than half of the separable cost allocated to these purposes; (2) administer project land and water areas devoted to the purposes; and (3) bear all costs of operation, maintenance, and replacement. Where Federal lands or authorized Federal programs for fish and wildlife conservation are involved, the cost-sharing requirements are exempted. This Act provides for expenditure of Federal water project funds for land acquisition needed to establish refuges for migratory waterfowl when recommended by the Secretary of the Interior and authorizes the Secretary to provide facilities for outdoor recreation and fish and wildlife at all reservoirs under his control except those within national wildlife refuges.

Appendix 6

Geologic Map of San Francisco Bay Area



Source: Geology adapted from California Division of Mines and Geology Geologic Map of California on a scale of 1:250,000, and Trask (1953)

Compiled by James E. Kahle and Harold B. Goldman

REFERENCES

1. Alameda County Water District, Draft Environmental Impact Report on the Aquifer Reclamation Program, March, 1973.

2. Anderson, William. 1970. A Preliminary Study of the Relationship of Saltponds and Wildlife - South San Francisco Bay. California Department of Fish and Game 56(4): 240-252.

3. Association of Bay Area Governments, Preliminary Regional Plan for the San Francisco Bay Region, November, 1966.

4. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Estuarine Ecology, July, 1970.

5. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Flood Control, June, 1970.

6. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Geology and Structural Engineering Part I, November, 1970.

7. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Geology and Structural Engineering Part II, November, 1970.

8. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Ownership and Governmental Powers: A Summary of Planning Issues in the Santa Clara County Baylands, August, 1970.

9. Baylands Subcommittee of the Planning Policy Committee of Santa Clara County, Water Quality and Circulation, September, 1970.

10. Bureau of Outdoor Recreation, South San Francisco Baylands Environmental Values and Alternatives, September, 1970.

11. City of Fremont, Environmental Impact Report for the Mission Hills Swim and Raquet Club, December, 1973.

12. Goldman, Harold. February, 1967. Geology of San Francisco Bay, San Francisco Bay Conservation and Development Commission.

13. Harvey, Thomas. October, 1966. Some Ecological Aspects of San Francisco Bay. San Francisco Bay Conservation and Development Commission.

14. San Francisco Bay Conservation and Development Commission, Fish and Wildlife, September 1967.

15. San Francisco Bay Conservation and Development Commission, San Francisco Bay Plan, January 1969.

16. San Francisco Bay Conservation and Development Commission, Management Program for San Francisco Bay, 1976 (Draft).

17. San Francisco Bay Conservation and Development Commission, Marshes and Mud Flats, October 1966.

18. San Francisco Bay Conservation and Development Commission, Pollution, July 1967.

19. San Francisco Bay Conservation and Development Commission, Recreation, January 1968.

20. San Mateo County Planning Department, Open Space and Conservation, Elements of the San Mateo County General Plan, October 1973.

21. Sanitary Engineering Research Laboratory, Appendices to a Comprehensive Study of San Francisco Bay, 1961-1962, South San Francisco Bay Area, University of California, Report 63-4.

22. Sanitary Engineering Research Laboratory, A Comprehensive Study of San Francisco Bay, Volume V: Summary of Physical, Chemical and Biological Water and Sediment Data, University of California, Report 63-2.

23. County of Santa Clara Planning Department, A Policy Plan for the Baylands of Santa Clara County, July 1972.

24. County of Santa Clara Planning Commission, A Plan for Conservation of Resources, An Element of the General Plan of Santa Clara County, June 1973.

25. Scott Stanley and John Bollens. October, 1967. Government. San Francisco Bay Conservation and Development Commission.

26. South Bay Dischargers Authority, Environmental Impact Report, Overall Program for Water Quality Management in South San Francisco Bay, December 1973.

27. State of California Department of Transportation, Toll Bridge Administration, Final Environmental Impact Statement, Dumbarton Bridge Replacement Project, October 1973.

28. Stromberg, Peter. April, 1968. Oil and Gas Production in San Francisco Bay. San Francisco Bay Conservation and Development Commission.

29. U.S. Department of Agriculture, Soil Conservation Service, Soils of Santa Clara County, August 1968.

30. U.S. Geological Survey, Map Showing Mineral Resources of the San Francisco Bay Region, California - Present Availability and Planning for the Future. Edgar H. Bailey and Deborah R. Harden, 1975.

31. Ludwig, Francis. August, 1970. Possible Effects of Bay Fill on Air Quality. Standford Research Institute.

32. U.S. Geological Survey and U.S. Department of Housing and Urban Development, 1975, Studies for Seismic Zonation of the San Francisco Bay Region. U.S. Geological Survey Prof. Paper 941-A.

33. U.S. Geological Survey and U.S. Department of Housing and Urban Development, 1971, San Francisco Bay Region Environment and Resources Planning Study.

34. Operation of the National Wildlife Refuge System, FES 76 - 59, U.S. Fish and Wildlife Service, November 1976.

APPENDIX 1

Public Law 92-330
92nd Congress, H. R. 12143
June 30, 1972

An Act

86 STAT. 399

To provide for the establishment of the San Francisco Bay National Wildlife Refuge.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, for the preservation and enhancement of highly significant wildlife habitat in the area known as south San Francisco Bay in the State of California, for the protection of migratory waterfowl and other wildlife, including species known to be threatened with extinction, and to provide an opportunity for wildlife-oriented recreation and nature study within the open space so preserved, the Secretary of the Interior (hereinafter referred to as the "Secretary") is authorized and directed to establish, as herein provided, a national wildlife refuge to be known as the San Francisco Bay National Wildlife Refuge (hereinafter referred to as the "refuge"). San Francisco National Wildlife Refuge, Establishment.

SEC. 2. There shall be included within the boundaries of the refuge those lands, marshes, tidal flats, salt ponds, submerged lands, and open waters in the south San Francisco Bay area generally depicted on the map entitled "Boundary Map, Proposed San Francisco Bay National Wildlife Refuge", dated July 1971, and which comprise approximately twenty-one thousand six hundred and sixty-two acres within four distinct units to be known as Fremont (five thousand five hundred and twenty acres), Mowry Slough (seven thousand one hundred and seventy-five acres), Alviso (three thousand and eighty acres), and Greco Island (five thousand eight hundred and eighty-seven acres). Said boundary map shall be on file and available for public inspection in the offices of the Bureau of Sport Fisheries and Wildlife, Department of the Interior. Description.

SEC. 3. (a) The Secretary shall establish the refuge by publication of a notice to that effect in the Federal Register at such time as he determines that lands, waters, and interests therein sufficient to constitute an efficiently administrable refuge have been acquired for administration in accordance with the purposes of this Act. The Secertary may from time to time make corrections in the boundaries of the refuge, but the total area within the boundaries shall not exceed twenty-three thousand acres of land, marshes, tidal flats, salt ponds, submerged lands, and open waters. Publication in Federal Register.

(b) Prior to the establishment of the refuge and thereafter, the Secretary shall administer the lands, waters, and interests therein acquired for the refuge in accordance with the provisions of the National Wildlife Refuge System Administration Act of 1966, as amended (80 Stat. 927; 16 U.S.C. 668dd–668ee); except that the Secretary may utilize such additional statutory authority as may be available to him for the conservation and management of wildlife and natural resources, the development of outdoor recreation opportunities, and interpretive education as he deems appropriate to carry out the purposes of this Act. Administration. 82 Stat. 359; 83 Stat. 283.

SEC. 4. The Secretary may acquire lands and waters or interests therein within the boundaries of the refuge by donation, purchase with donated or appropriated funds, or exchange: *Provided, however*, That lands, waters, and interests therein owned by the State of California or any political subdivision thereof may be acquired only by donation. Lands, waters, acquisition.

86 STAT. 400

Appropriation, limitation.

SEC. 5. There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act for the period beginning July 1, 1972, and ending June 30, 1977, not to exceed, however, $9,000,000 for the acquisition of lands and interests therein as authorized by section 4 of this Act, and not to exceed $11,300,000 for the carrying out of the other provisions of this Act.

Approved June 30, 1972.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 92-813 (Comm. on Merchant Marine and Fisheries).
SENATE REPORT No. 92-859 (Comm. on Commerce).
CONGRESSIONAL RECORD, Vol 118 (1972):
Feb. 7, considered and passed House.
June 16, considered and passed Senate.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 8, No. 27:
July 1, Presidential statement.

APPENDIX 2

BIRDS OF THE SAN FRANCISCO BAY NATIONAL WILDLIFE REFUGE

S - March-May
S - June-August
F - September-November
W - December-February

a - abundant
c - common
u - uncommon
o - occasional
r - rare
x - accidental

* - nesting
** - endangered species

	S	S	F	W
LOONS				
Common Loon				o
Arctic Loon				r
Red-throated Loon				o
GREBES				
Red-necked Grebe				r
Horned Grebe	u	r	u	c
Eared Grebe	a	u	c	a
Western Grebe	c	u	c	c
Pied-billed Grebe	c	c	c	c
PETRELS				
Leach's Petrel		x		
Ashy Petrel		x		
PELICANS				
White Pelican	o	c	c	c
Brown Pelican**		o	o	o
CORMORANTS				
Double-crested Cormorant	u	o	a	a
Brandts Cormorant			r	r
Pelagic Cormorant		x		
HERONS and BITTERNS				
Great Blue Heron*	c	c	c	c
Green Heron			r	
Little Blue Heron		x		
Cattle Egret			r	r
Great Egret	c	c	c	c
Snowy Egret*	a	a	a	a
Black-crown Night Heron*	c	c	c	c
Least Bittern			r	
American Bittern*	u	u	u	u

	S	S	E	W
SWANS, GEESE and DUCKS				
Whistling Swan				r
Canada Goose			r	u
Black Brant				r
White-fronted Goose			o	o
Snow Goose			r	o
Ross' Goose				r
Fulvous Tree Duck		x		
Mallard*	c	c	c	c
Gadwall*	u	o	c	c
Pintail*	c	a	a	a
Green-winged Teal	o	o	o	u
Blue-winged Teal	r	r	o	o
Cinnamon Teal*	c	u	u	c
Northern Shoveler*	c	u	a	a
European Wigeon			r	r
American Wigeon	u	u	c	a
Wood Duck			o	o
Redhead	r		o	o
Ring-necked Duck	r			r
Canvasback	c	o	c	a
Greater Scaup	u	r	o	c
Lesser Scaup	a	o	a	a
Common Goldeneye	u	r	u	u
Barrow's Goldeneye	r		o	o
Bufflehead	u	o	c	c
Oldsquaw	r	r	r	r
White-winged Scoter	r		u	u
Surf Scoter	u	r	c	c
Common Scoter			o	o
Ruddy Duck*	c	c	a	a
Common Merganser				r
Red-breasted Merganser			u	u
AMERICAN VULTURES				
Turkey Vulture	u	u	u	u
California Condor		x		
KITES, HAWKS, HARRIERS and EAGLES				
White-tailed Kite*	c	c	c	c
Sharp-shinned Hawk	o	o	o	o
Cooper's Hawk	o	o	o	o
Red-tailed Hawk	c	c	c	c
Red-shouldered Hawk		x		
Swainson's Hawk		x		

	S	S	F	W
KITES, HAWKS, HARRIERS, and EAGLES (Cont'd)				
Rough-legged Hawk		x		
Ferruginous Hawk		x		
Golden Eagle	r	r	r	r
Bald Eagle		x		
Marsh Hawk*	c	c	c	c
Osprey		r	r	
FALCONS				
Prairie Falcon			r	r
Peregrine Falcon**			r	r
Merlin			r	r
American Kestrel	c	c	c	c
OUAILS AND PHEASANTS				
California Quail*	u	u	u	u
Ring-necked Pheasant*	c	c	c	c
Chukar	r	r	r	r
CRANES				
Sandhill Crane		x		
RAILS, GALLINULES and COOTS				
Clapper Rail* **	u	u	u	u
Virginia Rail*	u	u	u	u
Sora*	u	u	u	u
Black Rail			r	o
Common Gallinule	o	o	o	o
American Coot*	c	c	c	a
PLOVERS and TURNSTONES				
Semipalmated Plover		o	o	o
Snowy Plover*	u	c	u	u
Killdeer*	c	c	c	c
American Golden Plover	r		r	r
Black-bellied Plover	c	r	c	c
Ruddy Turnstone			o	u
Black Turnstone			u	u

	S	S	F	W
SANDPIPERS				
Common Snipe	u		u	u
Long-billed Curlew	c	o	c	c
Whimbrel	u	r	o	o
Spotted Sandpiper			r	r
Wandering Tattler		r	r	r
Willet	a	c	a	a
Greater Yellowlegs	c	u	c	c
Lesser Yellowlegs	o	o	o	o
Red Knot	u	o	u	u
Pectoral Sandpiper	r	r	r	
Baird's Sandpiper		x		
Least Sandpiper	c	c	a	a
Dunlin	c	r	a	a
Short-billed Dowitcher	c	u	c	c
Long-billed Dowitcher	c	o	c	c
Western Sandpiper	a	c	a	a
Marbled Godwit	a	c	a	a
Ruff		x		
Sanderling	u	r	u	u
AVOCETS and STILTS				
American Avocet*	c	c	a	a
Black-necked Stilt*	c	c	c	c
PHALAROPES				
Red Phalarope	r		r	r
Wilson's Phalarope	u	c	u	
Northern Phalarope	c	c	c	r
JAEGERS				
Pomarine Jaeger		x		
Parasitic Jaeger		x		
GULLS and TERNS				
Glaucous Gull	o		r	o
Glaucous-winged Gull	a	u	a	a
Western Gull	u	u	c	u

	S	S	F	W
GULLS and TERNS (cont'd)				
Herring Gull	a	o	c	a
Thayer's Gull	u		u	u
California Gull	a	a	a	a
Ring-billed Gull	c	c	a	a
Mew Gull	r		r	o
Franklin's Gull			r	r
Bonaparte's Gull	a	c	a	a
Heermann's Gull		x		
Black-legged Kittiwake				r
Forster's Tern*	c	c	a	o
Common Tern	r	r	o	
Least Tern* **	r	r	r	
Elegant Tern	r	o	o	
Caspian Tern*	o	c	c	
Black Tern	r	r	r	
AUKS, MURRES and PUFFINS				
Common Murre			r	r
DOVES and PIGEONS				
Rock Dove	u	u	u	u
Mourning Dove*	u	u	u	u
OWLS				
Barn Owl	u	u	u	u
Great Horned Owl	u	u	u	u
Burrowing Owl*	c	c	c	c
Short-eared Owl*	u	u	u	u
SWIFTS				
Vaux's Swift	o			
White-throated Swift	u	u	u	u
HUMMINGBIRDS				
Anna's Hummingbird*	u	u	u	u
Rufous Hummingbird	u		u	u
Allen's Hummingbird*	u	o	o	u

	S	S	F	W
KINGFISHERS				
Belted Kingfisher	o	r	u	u
WOODPECKERS				
Common Flicker*	u	u	u	u
Acorn Woodpecker	r			r
Yellow-bellied Sapsucker				u
Hairy Woodpecker	r	r	r	o
Downey Woodpecker*	u	u	u	u
Nuttall's Woodpecker	r			r
TYRANT FLYCATCHERS				
Western Kingbird	o			
Ash-throated Flycatcher	o	o	o	
Black Phoebe*	u	u	u	c
Say's Phoebe	o	o	o	o
Willow Flycatcher (Traill's)			u	
Hammonds Flycatcher	o		o	
Gray Flycatcher	o		o	
Western Flycatcher	u	u	u	
Western Wood Peewee	r			
Olive-sided Flycatcher	o		o	
LARKS				
Horned Lark	u	u	u	u
SWALLOWS				
Violet-green Swallow	u	u	u	o
Tree Swallow*	u	u	u	o
Bank Swallow	r			
Rough-winged Swallow	u	u	o	r
Barn Swallow*	a	a	c	
Cliff Swallow*	a	a	c	
JAYS, MAGPIES and CROWS				
Scrub Jay*	u	u	u	u
Common Crow	r	r	r	r

	S	S	F	W
TITMICE and BUSHTITS				
Chestnut-backed Chickadee*	u	u	u	u
Plain Titmouse	u	u	u	u
Bushtit*	u	u	u	u
NUTHATCHES				
White-breasted Nuthatch				o
Red-breasted Nuthatch				o
CREEPERS				
Brown Creeper				r
WRENTIT				
Wrentit	o	o	o	o
WRENS				
House Wren				r
Bewick's Wren*	c	c	c	c
Long-billed Marsh Wren*	c	c	c	c
Rock Wren	u	u	u	u
MOCKINGBIRDS and THRASHERS				
Mockingbird*	o	o	o	o
Sage Thrasher		x		
THRUSHES and SOLITAIRES				
American Robin*	u	u	u	c
Varied Thrush	u		u	u
Hermit Thrush	u		u	u
Swainson's Thrush	u	u		
Western Bluebird	o	o	o	o
Mountain Bluebird		x		
GNATCATCHERS and KINGLETS				
Blue-gray Gnatcatcher	r		o	
Golden-crowned Kinglet	o		o	o
Ruby-crowned Kinglet	c		c	c

	S	S	F	W
PIPITS				
Water Pipit	c		c	c
WAXWINGS				
Cedar Waxwing	o		r	o
SHRIKES				
Northern Shrike		x		
Loggerhead Shrike*	o	o	o	o
STARLINGS				
Starling*	c	c	c	c
VIREOS				
Hutton's Vireo	u	u	u	u
Solitary Vireo	o		o	
Red-eyed Vireo		x		
Warbling Vireo	u	u	o	
WOOD WARBLERS				
Orange-crowned Warbler	c	u	u	o
Nashville Warbler	r		r	
Yellow Warbler	u	u	u	
Yellow-rumped Warbler (Audubon's & Myrtle)	c		c	c
Black-throated Gray Warbler	r			
Townsend's Warbler	o		o	o
Hermit Warbler	o			
MacGillvray's Warbler	o		o	
Saltmarsh Yellowthroat*	o	o	o	
Wilson's Warbler	o	o	o	
WEAVER FINCHES				
House Sparrow*	c	c	c	c

	S	S	F	W
BLACKBIRDS and ORIOLES				
Western Meadowlark*	c	c	c	c
Yellow-headed Blackbird			r	r
Red-winged Blackbird*	c	c	c	c
Tricolored Blackbird*	u	u	u	u
Northern Oriole (Bullocks)*	o	o		
Brewer's Blackbird*	a	a	a	a
Brown-headed Cowbird*	u	o	o	o
Western Tanager	o			
FINCHES and SPARROWS				
Black-headed Grosbeak	c	c		
Purple Finch	r			r
House Finch*	c	c	c	c
Pine Siskin	r			r
American Goldfinch*	c	c	c	u
Lesser Goldfinch*	c	c	c	u
Rufous-sided Towhee*	u	u	u	u
Brown Towhee*	u	u	u	u
Savannah Sparrow*	c	c	c	c
Sharp-tailed Sparrow	r			r
Lark Sparrow	r			r
Dark-eyed Junco (Oregon)*	o		o	o
Brewer's Sparrow		x		
Harris' Sparrow		x		
White-crowned Sparrow	c		c	c
Golden-crowned Sparrow	o		u	c
White-throated Sparrow		x		
Fox Sparrow	u		u	u
Lincoln's Sparrow	u		u	u
Swamp Sparrow				r
Song Sparrow*	a	a	a	a

APPENDIX 3

WILDLIFE SPECIES PRESENT
IN THE
SOUTH SAN FRANCISCO BAY REGION

MAMMALS

Marsupials	
Opossum	*Didelphis marsupialis*
Insectivores	
Trowbridge shrew	*Sorex trowbridgii*
Vagrant shrew	*S. vagrans*
Pacific shrew	*S. pacificus*
Ornate shrew	*S. ornatus*
Shrew-mole	*neurotrichus gibbsii*
Broad-handed mole	*Scapanus latimanus*
Bats	
Little brown myotis	*Myotis lucifugus*
Yuma myotis	*M. yumanensis*
Long-eared myotis	*M. evotis*
Fringed myotis	*M. thysanodes*
Hairy-winged myotis	*M. volans*
California myotis	*M. californicus*
Western pipistrelle	*Pipistrellus hesperus*
Big brown bat	*Eptesicus fuscus*
Hoary bat	*Lasiurus cinereus*
Lump-nosed bat	*Plecotus townsendii*
Pallid bat	*Antrozous pallidus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Lagomorphs	
Black-tailed hare	*Lepus californicus*
Audubon cottontail	*Sylvilagus audubonii*
Brush rabbit	*S. bachmani*
Rodents	
California ground squirrel	*Otospermophilus beecheyi*
Merriam chipmunk	*Eutamias merriami*
Western gray squirrel	*Sciurus griseus*
Botta pocket gopher	*Thomomys bottae*
California pocket mouse	*Perognathus californicus*
Western harvest mouse	*Reithrodontomys megalotis*
Salt marsh harvest mouse	*R. raviventris*

Rodents (Cont'd)	
California mouse	Peromyscus californicus
Deer mouse	P. maniculatus
Brush mouse	P. boylii
Pinyon mouse	P. truei
Dusky-footed wood rat	Neotoma fuscipes
California meadow mouse	Microtus californicus
Muskrat	Ondatra zibethica
Norway rat	Rattus norvegicus
Black rat	R. rattus
House mouse	Mus musculus
Cetaceans	
Harbor porpoise	Phocaena phocoena
Carnivores	
Coyote	Canis latrans
Gray fox	Urocyon cinereoargentus
Raccoon	Procyon lotor
Long-tailed weasel	Mustela frenata
Badger	Taxidea taxus
Striped skunk	Mephitis mephitis
Harbor seal	Phoca vitulina

REPTILES

Western fence lizard	Sceloporus occidentalis
Coast horned lizard	Phrynosoma coronatum
Western skink	Eumeces skiltonianus
Western whiptail	Cnemidophorus tigris
Southern alligator lizard	Gerrhonotus multicarnatus
Northern alligator lizard	G. coeruleus
Rubber boa	Charina bottae
Ringneck snake	Diadophis amabilis
Sharp-tailed snake	Contia tenuis
Racer	Coluber constrictor

Reptiles (Cont'd)	
Coachwhip	*Masticophis flagellum*
Striped racer	*M. lateralis*
Gopher snake	*Pituophis catenifer*
Common kingsnake	*Lampropeltis getulus*
Western garter snake	*Thamnophis elegans*
Common garter snake	*T. sirtalis*
Western rattlesnake	*Crotalus viridis*

AMPHIBIANS

Tiger salamander	*Ambystoma tigrinum*
Pacific giant salamander	*Dicamptodon ensatus*
California newt	*Taricha torosa*
Rough-skinned newt	*T. granulosa*
Ensatina	*Ensatina eschscholtzi*
California slender salamander	*Batrachoseps attenuatus*
Arboreal salamander	*Aneides lugubris*
Western spadefoot	*Scaphiopus hammondi*
Western toad	*Bufo boreas*
Pacific treefrog	*Hyla regilla*
Red-legged frog	*Rana aurora*
Yellow-legged frog	*R. boylei*
Bullfrog	*R. catesbeiana*

FISH

Sharks and Rays	
Brown smoothhound	*Mustelus henlei*
Leopard shark	*Triakis semifasciata*
Spiny dogfish	*Squalus acanthias*
Bat ray	*Myliobatus californica*
Sturgeons	
White sturgeon	*Acipenser transmontanus*
Herrings	
American Shad	*Alosa sapidissima*
Pacific herring	*Clupea harengus*
Threadfin shad	*Dorosoma petenense*
Anchovies	
Northern anchovy	*Engraulis mordax*
Trouts	
Chinook salmon	*Oncorhynchus tshawytscha*
Steelhead trout	*Salmo gairdneri*
Smelts	
Whitebait smelt	*Allosmerus elongatus*
Surf smelt	*Hypomesus pretiosus*
Longfin smelt	*Spirinchus thaleichthys*
Toad Fishes	
Plainfin midshipman	*Porichthys notatus*
Codfish	
Pacific tomcod	*Microgadus proximus*
Killifishes	
Rainwater killifish	*Lucania parva*
Livebearers	
Mosquitofish	*Gambusia affinis*
Silversides	
Topsmelt	*Atherinops affinis*
Jacksmelt	*A. californiensis*

Fish (Cont'd)

Sticklebacks	
Threespine stickleback	*Gasterosteus aculeatus*
Pipefishes	
Bay pipefish	*Syngnathus griseolineatus*
Basses	
Striped bass	*Morone saxatilis*
Sunfishes	
Bluegill	*Lepomis macrochirus*
Drums	
White croaker	*Genyonemus lineatus*
Surfperches	
Shiner perch	*Cymatogaster aggregata*
Black perch	*Embiotoca jacksoni*
Walleye surfperch	*Hyperprosopon argenteum*
Reef perch	*Micrometras aurora*
White seaperch	*Phanerodon furcatus*
Pile perch	*Rhacochilus vacca*
Gobies	
Yellowfin goby	*Acanthogobius flavimanus*
Arrow goby	*Clevelandia ios*
Longjaw mudsucker	*Gillichthys mirabilis*
Cheekspot goby	*Ilypnus gilberti*
Bay goby	*Lepidogobius lepidus*
Scorpionfishes	
Brown rockfish	*Sebastes auriculatus*
Sculpins	
Pacific staghorn sculpin	*Leptocottus armatus*
Flounders	
Pacific sanddab	*Citharichthys sordidus*
Speckled sanddab	*C. stigmaeus*
Diamond turbot	*Hypsopsetta guttulata*
Starry flounder	*Platichthys stellatus*
English sole	*Parophrys vetulus*
Sand sole	*Psettichthys melanostictus*

REFERENCES - WILDLIFE

Ingles, Lloyd G. 1965. Mammals of the Pacific States - California, Oregon, and Washington.

Stebbins, Robert C. 1966. Reptiles and Amphibians of the San Francisco Bay Region.

Stebbins, Robert C. 1966. A Field Guide to Western Reptiles and Amphibians.

Wild, Paul W. January 1969. Macrofauna of Plummer Creek of San Francisco Bay Collected by a Specially Designed Trap. M.A. Thesis, San Jose State University.

EDAW Inc., Data Base - San Francisco Bay National Wildlife Refuge.

APPENDIX 4

RESERVED EASEMENT

There is reserved to Leslie Salt Co. (hereinafter called Leslie), its successors and assigns, the permanent right, privilege and easement to produce salt by the solar evaporation method, and to extract chemical products, by-products and minerals from the brine used for salt production upon existing salt ponds within the refuge boundary, including the right to use fixtures located thereon. Such right, privilege and easement shall be exercised in such a manner as not to interfere with the use of said tracts as a component of the National Wildlife Refuge System provided that the United States in constructing and using trails, roads and other improvements upon said tracts shall not materially interfere with their use for salt production, and further provided that:

1. The area of salt ponds existing on the date title transfers shall not be increased nor additional salt ponds created without the written approval of the Director of the United States Fish and Wildlife Service.

2. The rights reserved herein shall not include the right to harvest brine shrimp and bait fish from said tracts, but the United States shall have such right to harvest from the salt ponds upon said tracts.

3. If Leslie fails to utilize any area for salt production for a continuous one-year period, the United States shall have the right to control the water levels and salinity of any salt ponds therein. Such one-year period of nonuse shall begin upon the date that Leslie receives a written notice from the Manager of the San Francisco Bay National Wildlife Refuge (hereinafter called Manager) that he has determined that the use of a specifically described tract of land for salt production has apparently been discontinued. Leslie shall have the right to reinstitute the use of such area for salt production upon 30-days' written notice to the Manager, provided that the Manager may suspend such resumption of use for a period of up to 90 days after receipt of such notice if earlier resumption of use would be injurious to wildlife; provided further, that if Leslie fails to utilize such area for salt production for a continuous five-year period beginning

with the date of receipt of such notice from the Manager that salt production has apparently been discontinued, its right to utilize such area for salt production shall terminate.

4. Leslie shall have the right to perform maintenance work and operational work necessary for salt production, including the right to construct, remove or relocate levees not affected by tidal action, only in accordance with an annual schedule of work delivered to the Manager by October 1 of each year. Such schedule shall cover the succeeding calendar year and shall specifically describe each item of work, the area where, and the period within which, such item of work will be performed. The Manager shall, within thirty days deliver to Leslie a notice of approval of items of work and the period of time within which such work may be performed, provided that the Manager shall have the right to eliminate any item of work or to provide for a different period of time within which such work may be performed if such work or the scheduling thereof would be injurious to wildlife.

Leslie shall also have the right to perform emergency repair work necessary for dike rupture repair, dike failure prevention, pump repair, gate repair or to correct any other condition posing imminent threat to Leslie's operations or property or to persons or property of adjacent landowners. Whenever such emergency repair work is required, Leslie shall immediately notify the Manager and shall take all measures in carrying out such emergency work required by the Manager to prevent harm to wildlife. Work other than that included in the annual schedule of work and emergency repair work shall be performed by Leslie only upon written approval of the Manager.

5. The United States shall have the right to regulate access to the lands to which this reservation applies including use of such posting, gates, locks and other control devices as it deems appropriate. Leslie shall have the right of access for its salt-producing operation and locks placed upon gates by the United States will be connected with locks put upon such gates by Leslie so that either Leslie or the United States can enter through the gates.

6. Leslie shall not be liable for any maintenance or construction made necessary by the use of the lands as a component of the National Wildlife Refuge System and the United States, subject to the availability of appropriations, shall reimburse Leslie for any maintenance or construction made necessary by such use and

performed by Leslie. The normal level of maintenance required for Leslie's salt-producing operation shall be based on its maintenance records for the period July 1, 1962 to June 30, 1972. Maintenance in excess of such normal level shall be presumed to result from the operation of the refuge and public use thereof, provided, however, that Leslie shall not be reimbursed for costs of maintenance or construction above such normal level which are not attributable to refuge operation or public use.

7. Leslie shall not vary the salinity of the individual salt ponds to an extent that will result in an adverse effect on wildlife without written approval of the Manager.

8. Leslie, if it utilizes its present bittern storage on that portion of Tract 108 north of Plummer Creek to its full capacity and cannot secure permits for disposal of additional bittern, may store bittern on that part of Tract 108 south of Plummer Creek, provided, however, that if Leslie secures permits to dispose of bittern it shall, at its expense, remove all solids and flush and restore such bittern storage areas to salt pond use or to an equivalent condition.

9. It shall be the responsibility of Leslie to obtain all permits and approvals of agencies required for its salt-producing operation.

10. When necessary for wildlife disease control, Leslie shall temporarily lower or deepen the brine level in any individual pond to the level set forth in a notice of the Manager, provided, however, that Leslie will not be required to release brine from storage or to make such a change in brine level that will result in a loss of salt production.

11. Leslie shall have the right to utilize, in connection with its salt-producing operation only, a barge canal upon the following described land:

All bearings and distances are based on the California Coordinate System, Zone 3. To obtain ground level distances, multiply distances shown herein by 1.0000587. All areas shown are true ground areas.

T. 5 S., R. 2 W., Mount Diablo Meridian: In Sections 9 and 10, containing submerged lands, tidelands, and uplands.

A strip of land 70 feet wide, 35 feet on each side of the following described center line:

BEGINNING AT A POINT ON THE EAST LINE OF NEWARK SLOUGH, BEING ALSO PARCEL Q-2 AS DESCRIBED IN REEL 2119, IMAGE 305 OF RECORD IN ALAMEDA COUNTY, FROM WHICH THE NATIONAL GEODETIC SURVEY POINT, "RED HILL", BEARS N.13°33'01" W., 14,859.01 FEET DISTANT; THENCE LEAVING SAID SLOUGH AND ALONG THE CENTER LINE OF A CANAL,

N.67°20'14" E.,	36.31 FEET;
N.68°27'36" E.,	78.11 FEET;
N.68°27'37" E.,	37.01 FEET;
N.63°24'18" E.,	93.68 FEET;
N.63°28'14" E.,	100.95 FEET;
N.60°30'30" E.,	113.95 FEET;
N.57°28'16" E.,	94.99 FEET;
N.62°34'42" E.,	115.47 FEET;
N.60°06'37" E.,	132.94 FEET;
N.65°54'11" E.,	104.78 FEET;
N.60°20'40" E.,	134.62 FEET;
N.60°35'05" E.,	92.46 FEET;
N.61°16'11" E.,	93.03 FEET;
N.63°15'45" E.,	138.25 FEET;
N.62°22'07" E.,	181.89 FEET;
N.62°58'36" E.,	182.28 FEET;
N.61°53'41" E.,	127.61 FEET;
N.61°44'04" E.,	168.34 FEET;
N.61°37'56" E.,	172.28 FEET;
N.62°52'27" E.,	85.88 FEET;
N.61°15'53" E.,	188.47 FEET;
N.65°12'16" E.,	128.76 FEET;
N.66°16'11" E.,	174.51 FEET;
N.69°09'07" E.,	115.96 FEET;
N.65°57'32" E.,	104.39 FEET;
N.68°25'29" E.,	168.95 FEET;
N.67°50'02" E.,	199.18 FEET;
N.68°38'52" E.,	197.96 FEET;
N.67°13'08" E.,	208.38 FEET;
N.68°35'23" E.,	155.10 FEET;
N.67°15'24" E.,	116.47 FEET;
N.68°28'26" E.,	173.93 FEET;
N.69°08'27" E.,	175.38 FEET;
N.68°18'46" E.,	185.28 FEET;

N.66°26'39" E., 110.32 FEET;
N.68°36'10" E., 107.39 FEET;
N.67°43'44" E., 147.47 FEET;
N.71°29'08" E., 50.19 FEET;
AND N.67°13'46" E., 72.18 FEET

TO A POINT ON THE EAST BOUNDARY LINE OF THE LESLIE SALT CO. TRACT (108) AND THE END OF SAID DESCRIBED CENTER LINE, FROM WHICH A STANDARD U.S. FISH AND WILDLIFE SERVICE MONUMENT MARKED "STA. 307" BEARS N.23°56'17" W., 269.51 FEET DISTANT, CONTAINING 8.14 ACRES, MORE OR LESS, AND

BOUNDED ON THE NORTH AND SOUTH BY LANDS OF LESLIE SALT CO. TRACT (108), ON THE WEST BY NEWARK SLOUGH, AND ON THE EAST BY OTHER LANDS OF LESLIE SALT CO.

12. In the event of violation of any of the provisions of this reservation, the Director of the United States Fish and Wildlife Service may serve upon Leslie a notice describing the specific violation. If Leslie fails to abate, discontinue or correct such violation within 60 calendar days following receipt of such notice, the United States shall have the option to terminate this reserved right, privilege and easement, in whole or in part without any compensation to Leslie. Upon termination of this reserved easement by Leslie or by the United States, under the terms hereof, Leslie shall not remove or alter permanently sited electrical pumps, water control structures, pipes, culverts or electrical lines or poles without prior approval of the Manager.

APPENDIX 5

ACTS AND TREATIES THAT RELATE TO THE ADMINISTRATION OF THE NATIONAL WILDLIFE REFUGE SYSTEM

Lacey Act of 1900, as amended (16 U.S.C. 701) -- Section 1 states that the duties of the Department of the Interior include conservation, preservation, and restoration of game birds and other wild birds. Authorizes regulations for introduction of American or foreign "birds or animals" into new localities. Authorizes collection and publication of information on wild birds. The Criminal Code Provisions of this Act (18 U.S.C. 41) states the intent of Congress to protect all wildlife within Federal sanctuaries, refuges, fish hatcheries and breeding grounds, and provides that anyone, except in compliance with rules and regulations promulgated by authority of law, who hunts, traps, or willfully disturbs any such wildlife, or willfully injures, molests or destroys any property of the United States on such lands or water shall be fined up to $500.00 or imprisoned for not more than six (6) months or both.

Antiquities Act of 1906 (Stat. 225, 16 U.S.C. 431). The Act requires permits for the examination of ruins, the excavation of archaeological sites, and the gathering of objects of antiquity to be obtained from the Secretaries of the Interior, Agriculture, or Army for the conduct of such activities on lands under their respective jurisdictions. The Act authorizes the Secretaries to make and publish uniform rules and regulations to carry out this responsibility.

Refuge Trespass Act of June 28, 1906 (18 U.S.C. 41; 43 Stat. 98, 18 U.S.C. 145). Provided first Federal protection for wildlife on National Wildlife Refuges. The Act made it unlawful to hunt, trap, capture, willfully disturb or kill any bird or wild animal, or take or destroy the eggs of any such birds, on any lands of the United States set apart or reserved as refuges or breeding grounds for such birds or animals by any law, proclamation, or executive order, except under rules and regulations of the Secretary. The Act also protects Government property on such lands.

Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711; 50 CFR Subchapter B), as amended. Implements treaties with Great Britian (for Canada) and Mexico, for protection of migratory birds whose welfare is a Federal responsibility; provides for regulations to control taking, possession, selling, transporting and importing of migratory birds and provides penalties for violations.

Migratory Bird Conservation Act, (1929), as amended (16 U.S.C. 715-715s) Establishes a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition for migratory bird refuges; authorizes acquisition, development, and maintenance of such refuges with other agencies in conservation; authorizes investigations and publications on North American birds. Section 401 of the Act as amended in 1964 by the Refuge Revenue-sharing Act, directs the Secretary of the Interior to pay certain net revenues from units in the National Wildlife Refuge System to local counties for use of public schools and roads. Remaining moneys are used for management of the System and for enforcement of the Migratory Bird Treaty Act.

Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718-718h; 48 Stat. 451), as amended. Requires that all waterfowl hunters, sixteen (16) years of age or older possess a valid "duck" stamp; required use of "duck" stamp net revenue to acquire migratory bird refuges and waterfowl production areas.

Fish and Wildlife Coordination Act (1934), as amended (16 U.S.C 661-666c). Authorizes assistance to Federal, State, and other agencies in development, protection, rearing, and stocking of fish and wildlife and controlling losses thereof. Authorizes surveys of fish and wildlife of all Federal lands and on effects of pollution. Authorizes surveys to prevent losses of, and to enhance, fish and wildlife at water-use projects constructed or licensed by the Federal Government. Authorizes incorporation of conservation measures at Federal water projects and use of project lands by Bureau of Sport Fisheries and Wildlife or State wildlife agencies. Authorizes Federal water-resource agencies to acquire lands in connection with water-use projects specifically for the conservation and enhancement of fish and wildlife. Requires consultation with the Bureau of Sport Fisheries and Wildlife and the wildlife agency of any State wherein the waters of any stream or other water body are proposed or authorized to be impounded,

diverted, channelized, or otherwise controlled or modified by any Federal agency, or any private agency under Federal permit or license, with a view to preventing loss of or damage to wildlife resources in connection with such water resource.

Historic Sites Act of 1935 (49 Stat. 666, 16 U.S.C. 461). The Act declares it a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.

(1) Section 2 (a) of the Act directs the Secretary of the Interior to secure, collate, and preserve drawings, plans, photographs and other data of historic and archaeological sites, buildings, and objects.

(2) Section 2 (c) of the Act directs the Secretary of the Interior to make necessary investigations to obtain historical and archaeological information regarding particular sites, buildings, or objects of national significance.

(3) Section 2 (k) of the Act directs the Secretary of the Interior to perform any and all acts and make such rules and regulations as may be necessary and proper to carry out the provisions of the Act.

Convention Between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, 1936 (50 Stat. 1311). This treaty adopted a system for the protection of certain migratory birds in the United States and Mexico; allows, under regulation, the rational use of certain migratory birds; provides for enactment of laws and regulations to protect birds by establishment of closed seasons and refuge zones; prohibits killing of insectivorous birds, except under permit when harmful to agriculture; provides for enactment of regulations on transportation of game mammals across the United States-Mexican border. Implementation of the treaty was accomplished in 1936 by amending the Migratory Bird Treaty Act of 1918. Amended March 1972, to add 32 additional families of birds including eagles, hawks, owls and Corvidae family.

Revenue Sharing Act of 1964 (P.L. 88-523). First Act to define legally the National Wildlife Refuge System. The Act more positively identifies and authorizes land management programs and the disposition of revenues derived from these programs. The Act provides for payments to counties in which refuge units are located from the refuge receipt fund as indicated in pertinent portions of the Act which follows:

> Sec. 401 (a) Beginning with the next full fiscal year and for each fiscal year thereafter, all revenues received by the Secretary of the Interior from the sale or other disposition of animals, timber, hay, grass, or other products of the soil, minerals, shells, sand, or gravel, from other privileges, or from leases for public accommodations or facilities incidental to, but not in conflict with the basic purposes for which those areas of the National Wildlife Refuge System were established, during each fiscal year in connection with the operation and management of those areas of the National Wildlife Refuge System that are solely or primarily administered by him, through the United States Fish and Wildlife Service, shall be covered into the United States Treasury and be reserved in a separate fund for disposition as hereafter prescribed. Amounts in the fund shall remain available until expended, any may be expended by the Secretary without further appropriation in the manner hereafter prescribed. The National Wildlife Refuge System (hereafter referred to as the "System") includes those lands and waters administered by the Secretary as wildlife refuges, lands acquired or reserved for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas established under any law, proclamation, Executive, or public land order.
>
> Deduction of Expenses
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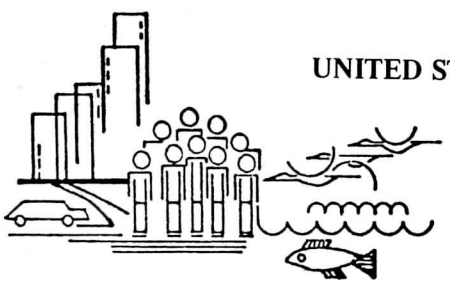
> (b) The Secretary may pay from the fund any necessary expenses incurred by him in connection with the revenue-producing measures set forth in subsection (a) of this section.



UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE