Final Report

SHELL OIL SPILL
LITIGATION SETTLEMENT
TRUSTEE COMMITTEE

1990-2001

THE PEOPLE WHO MADE IT POSSIBLE

Members of The Shell Oil Spill Litigation Settlement Trustee Committee

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California State Coastal Conservancy
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Ducks Unlimited
Martinez Area Land Trust
Mountain View Sanitary District
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San Francisco Bay Institute
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Scientists working on study of Mason's lilaeopsis

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OVERVIEW

AS CALIFORNIA'S EVER EXPANDING POPULATION GROWS, THE WILD LANDS AND THE POPULATIONS of fish and wildlife that depend upon them dwindles. It is for this reason that the people who live around San Francisco Bay value more highly that which remains.

When 400,000 gallons of crude oil poured out of a storage tank in 1988 at the Shell Manufacturing Complex in Martinez, it was an environmental crisis. A thick layer of oil covered the 100-acre marsh nearby; many other shorelines and water areas were oiled; and habitat for fish and wildlife was damaged.

When the spill was over, the company responsible had paid nearly $11 million to restore damage to natural resources. Initially, this funding was targeted toward restoring 1,000 acres of wetland, protecting and enhancing the marsh most affected by the spill, restoring recreational areas, and developing approaches to protect one threatened species of plant. After eleven years, much more was accomplished. Nearly 3,000 acres of wetlands have been restored or enhanced and nearly 11,000 acres of former marsh have been preserved from development and are available for enhancement and eventual full restoration. Shoreline parks have also been expanded and restored. The environmental and recreational gains have been substantial.

How did this happen?

A committee of federal, state, and local natural resource managers, serving as trustees of the settlement fund, created a workable, cooperative, and effective decision-making process to use the available funds to achieve the greatest possible benefit for fish and wildlife habitat and communities affected by the spill. The Shell Oil Spill Litigation Settlement Trustee Committee worked intensively to identify projects that maximized the volume and value of habitat created, enhanced, and restored. The Trustee Committee enlisted the help of people from the affected communities, private landowners, farmers, other government agencies, and environmental groups in this endeavor. They were able to leverage additional funding, and thereby stretch their resources to enable greater habitat restoration and land acquisition. Their administrative process allowed them to get sound information and to act quickly when opportunities arose.

A flexible process grounded on solid information and administered by experienced personnel led to great results. When people who know the land and its natural resources are equipped with authority and appropriate monetary resources, they can achieve great results that will, in this case, benefit generations to come. It may be a model that will prove useful in achieving maximum benefits in complex situations elsewhere.

THE SPILL

LATE IN THE EVENING OF APRIL 23, 1988, A TANK AT THE SHELL MANUFACTURING COMPLEX in Martinez, filled with hundreds of thousands of gallons of San Joaquin crude oil, began to leak. A hose, designed to drain water from the roof of the tank, failed. Oil began siphoning out into the containment area surrounding the tank. Unfortunately, a storm water release valve had been left open, and the oil continued to drain into a nearby creek, under the freeway, and down into a marsh now called McNabney Marsh. Oil filled the 100-acre marsh to a depth of more than four inches before flowing under the railroad tracks, past the refinery and chemical plant, and finally out into the Carquinez Strait, upstream into Suisun Bay, and, on the next tide, downstream into San Pablo Bay.

Due to darkness, it took a while before anyone noticed the spill and a while longer to figure out where it had come from. Workers at the Shell wharf were the first to recognize and report oil on the water. They didn't know, at first, that it had come from a leaking tank on their own property. Before the source of the spill could be located and stopped, about 400,000 gallons of heavy crude oil had leaked out into the environment.

Many federal, state and local agency personnel, oil company representatives, cleanup contractors, scientists and others responded to the spill. In an attempt to recover as much oil from the surface of the water as possible, Clean Bay, an oil company cooperative, dispatched skimmers, and Shell and Coast Guard personnel placed oil boom and sorbant materials. After as much floating oil as possible was removed, cleanup of residues on shorelines began. Pump trucks sucked pooled oil from the McNabney Marsh, and a legion of Shell workers spread and retrieved sorbant boom, pom-pom, and pads. Cleanup of waterfront areas in Martinez and Benicia involved the use of high-pressure water washing to mobilize deposited oil and sorbant pads to recover it. This initially had only limited success, but in the end proved to be quite effective. The McNabney Marsh was ultimately drained, and contaminated vegetation was cut and removed by small crews using hand tools.

Yet, once oil is released, damage is inevitable. Not all of the spilled oil can be recovered, as it disperses on water and land. Even oil that is recovered causes damage before its removal. Damages include direct effects on fish, wildlife, and plants; damage to habitat; and to recreational areas.

As the cleanup proceeded, people started to think about how to undo the damage. After any significant spill, there are claims for recovery of damages including damage to boats, municipal breakwaters, and marine facilities; response and cleanup costs; lost revenue, and damage to natural resources. Resolution of such claims can drag on for years in the courts, delaying resource restoration. In this case, all the federal, state, and local agencies agreed to proceed together with a consolidated claim. This contributed to a timely settlement that accelerated the recovery. In April 1990, Shell offered about $20 million to settle all of the claims in a single, consolidated state and federal action. The settlement included $10,838,000 to restore damage to natural resources, under the direction of a Trustee Committee established by the court. Over the next eleven years, the Trustee Committee funded and contributed to projects to restore the damages of the spill and to protect and enhance fish and wildlife resources and recreation in the areas of the spill.

HOW RESTORATION GOT STARTED

AFTER SETTLEMENT OF CLAIMS FROM THE OIL SPILL, A MEMORANDUM OF AGREEMENT identified the participants and established the purposes of the Trustee Committee. Their fundamental charge was to restore, rehabilitate, create and acquire the equivalent of the natural resources damaged by the spill. The Committee was to give special attention to three areas: the marsh area that had been gravely damaged during the spill; a restoration project at the Benicia State Recreation Area; and conservation of an endangered plant species, Mason's lilaeopsis.

Under the Memorandum of Agreement, the Trustees had the authority to take any actions they thought would best contribute to restoration. The Committee was composed of representatives from two federal agencies (the National Marine Fisheries Service and the United States Fish and Wildlife Service), three state agencies (the California Department of Fish and Game, the California State Lands Commission, and the San Francisco Bay Conservation and Development Commission), and one local agency (the East Bay Regional Park District). The Park District represented the interests of people living near the spill for projects that would benefit their communities. The Bay Conservation and Development Commission was included because it represented the interests of the people who rely upon the Bay for economic, recreational, and aesthetic purposes. The other four agencies were trustees of the natural resources damaged by the spill and sought to restore and enhance habitat for fish and wildlife. To serve on the Trustee Committee, agencies appointed knowledgeable representatives with diverse backgrounds and firsthand knowledge of the natural resources at risk. The Trustees recognized the importance of compensating fully for damages caused by the spill and the opportunity to increase habitat values.

The Trustees arranged for the California Environmental Trust to administer the settlement fund. The California Environmental Trust is a nonprofit organization established in 1985 to administer settlement funds from environmental lawsuits and to help people reach consensus on complex issues of development and environmental protection. This arrangement provided greater flexibility than administration by any single agency, gave the Trustees the ability to act quickly to take advantage of opportunities, and kept overhead costs at six percent of total expenditures.

The Trustees sought advice from a technical advisory committee that included many knowledgeable scientists and resource managers. These representatives of state, federal, and local agencies and other organizations offered their ideas and expertise to help make restoration a reality.

The Trustees solicited proposals for ways to restore one thousand acres of wetlands, as specified in the settlement agreement, and to protect McNabney Marsh and other related habitats in the areas affected by the spill. Many people responded, submitting 51 ideas, including suggestions for parcels that could be purchased, marshes that could be restored, and endangered species that could be saved from extinction. The Trustees held two town hall meetings during which they heard from a variety of people with all kinds of ideas.

The Trustees set criteria by which to evaluate and prioritize the proposals. These included priority for restoration projects that were feasible to accomplish in the short term and for acquisition of wetlands habitat that was vulnerable to development and permanent loss. Meeting every month, the Trustees methodically worked their way through all of the proposals, looking at feasibility and relevance to restoring wildlife habitat and enhancing the biology and ecology of the Bay. They made decisions by consensus, in order to insure that projects selected had strong support from all of the member agencies.

The Trustees had two responsibilities. They sought to enhance resources that were most important to people living in areas most affected by the spill, along the shores of Carquinez Strait in Contra Costa and Solano counties. The Trustees also sought to enhance resources of greatest value and significance to the Bay ecosystem as a whole. These areas were further west, in Napa and Sonoma counties. The Trustees sought to achieve a balance in the projects they selected. The areas closest to the spill site were more highly developed and cost more to acquire than areas further away. The Trustees chose a mix of projects that included impacted areas adjacent to the spill area, as well as larger projects a bit farther away. This mixed approach allowed them to restore sites immediately impacted by the spill while also contributing as much as possible to improving the overall natural habitat of the Bay.

While the Trustees carefully evaluated the various projects, they also sought to magnify the effectiveness and impact of the Fund by partnering with a variety of organizations with additional funds that could be pooled. The Trustees were successful, and as a result more than doubled the resources available for creating, enhancing, or restoring wetlands around the Bay.

The participants report that the strong working relationships forged during the eleven years of work by the Trustee Committee, the public meetings, and the work of the technical advisory committee have carried over into other areas, contributing to better resource management in many contexts.

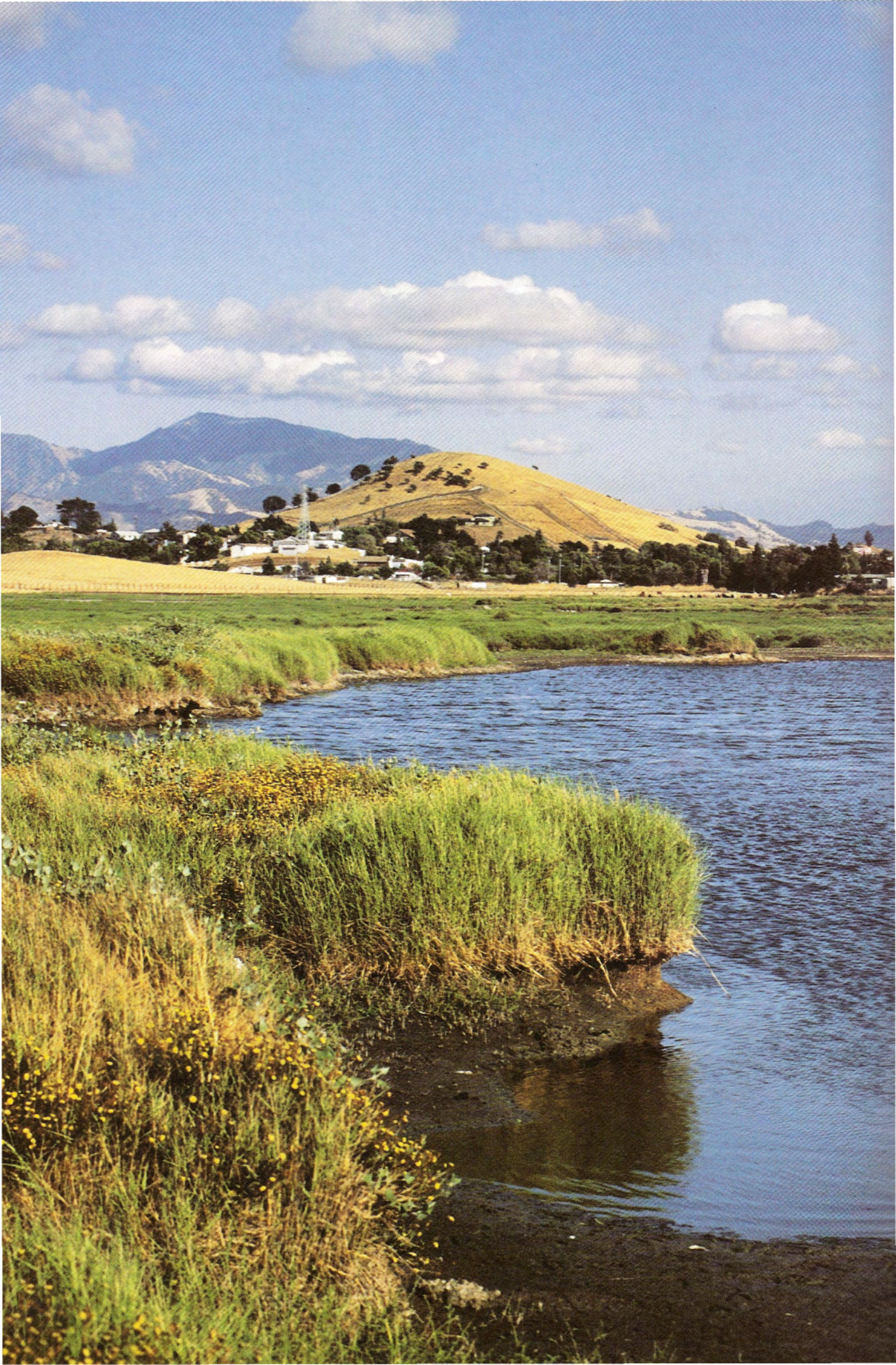
Amount of Land, Acquired, Protected and/or Restored

Number of Acres Acquired and Protected		**Number of Acres Restored** *(all or in part)*	
Cargill Salt property	10,000	Tolay Creek	435
Point Pinole	168	Sonoma Baylands	31
South Sonoma Valley (Camp II)	530	Petaluma River Marsh	48
McNabney Marsh	60	Benicia State Recreation Area	29
McNabney Marsh Uplands	138	Cullinan Ranch (pending)	1,493
Suisun Sand	51	McNabney Marsh wetlands (pending)	60
TOTAL	**10,947**	Cargill Salt, Pond 2a	550
		Suisun Sand (pending)	51
		TOTAL	**2,697**

Studies Completed

Masons lilaeopsis (endangered plant) restoration

San Francisco Bay Estuary Atlas



McNabney Marsh Acquisition, Restoration, and Public Education

MANY PEOPLE DRIVE BY MCNABNEY MARSH (formerly known as Shell Marsh), located on Interstate 680 immediately south of the Benicia Bridge, without recognizing that it provides productive habitat for fish, birds, invertebrates, and other creatures. Though nestled between a busy Interstate freeway, a railroad, an oil refinery, a sewage treatment plant, a chemical plant, and a small community, McNabney Marsh is an important wetlands area. It is a long marsh, with tussocks of vegetation peeking up from shimmering blue waters. Birds linger. Fish thrive. Winds rustle the tall grasses. On a fall day, white pelicans float on the surface, ducks dabble for food, and shorebirds stalk the creatures of the mud. It is the marsh most heavily oiled during the spill. Because of the direct and significant impact of the spill, the court settlement specified that the Trustees give special consideration to restoring and enhancing this marsh. Moreover, a development company, which then owned most of the Marsh and adjacent uplands, was proposing to develop the uplands for an industrial complex.

The Trustees initially focused on preserving and enhancing the marsh alone. During project evaluation, the remainder of the parcel, comprising the 138 acres of uplands to the east, became available. In 1992, the Trustees funded purchase of 60 acres of the Marsh and 138 upland acres for $3,000,000. The upland areas complement the habitat values of the marsh. Purchase of the upland areas allowed for establishment of a transition habitat and a buffer zone. It also would provide space to enable public viewing and interpretation of the marsh.

The ability of the Trustees to act quickly and to pay cash for property contributed to the success of this acquisition. The East Bay Regional Park District completed the acquisition, took title to the property on behalf of the Trustees and is managing it along with the other trustee agencies, in accordance with the fish and wildlife values of the area.

The goal for restoration of the Marsh is to create a particularly valuable type of ecosystem—a brackish marsh. To achieve restoration of brackish habitat will require return of salt waters from the Bay to the Marsh. Such flows have been absent from the Marsh for many years, because of water control structures built along the shore. The Marsh receives about two million gallons per day of freshwater discharge from the Mountain View Sanitary District. The salt budget is being depleted over time, however, and parts of the Marsh are beginning to develop plants more characteristic of freshwater marshes. Tidal action would allow the marsh to retain its estuarine vegetation and species.

The Trustees retained environmental consulting firms to recommend ways to protect the marsh and maximize habitat values. A Marsh Management Advisory Committee was formed by the California Department of Fish and Game to evaluate assessments and make recommendations to the Trustees for further steps to enhance the wetland habitat values of the marsh.

The CalFed program has also provided funding to study the Marsh enhancement process. Researchers have concluded that the Marsh is one of the most productive wetland systems in the Bay Area, providing food and shelter for a wide variety of fish, mammals, birds, and invertebrates. Counts of fish show large populations.

The San Francisco Bay Regional Water Quality Control Board contributed to this effort by directing Santa Fe Pacific Pipeline Partners to deposit $30,000 in the Shell Trustee Fund to settle liability for an oil spill into Peyton Slough. Caltrans also contributed toward the restoration, as a means to reduce freeway flooding.

Considerable effort has gone into developing a restoration plan for the marsh that is workable and acceptable to the parties that own or manage adjacent lands or resources. The current enhancement effort involves several partners. The Mountain View Sanitary District, which owns a portion of the Marsh and releases treated wastewater into it, has volunteered to take responsibility for restoration of the entire marsh, not just the portion that they own. The Sanitary District has operated successful wetlands restoration and enhancement projects using treated wastewater on its property. The East Bay Regional Park District, in consultation with the District and the California Department of Fish and Game, granted an easement to Mountain View Sanitation District for this management approach.

To restore tidal flows into the Marsh, the trustees supported the installation of a set of "Nekton" gates, an innovative tide gate that allows water and fish to enter and exit the Marsh at various times during each tidal cycle. These are installed next to a chemical plant at the mouth of the outlet of the Marsh. The Contra Costa County Mosquito and Vector Control District manages water levels through a newly constructed water control structure funded in part by the Trustees.

downstream of the tide gates, the San Francisco Bay Regional Water Quality Control Board has restricted use of the gates until contaminants in slough sediments have been removed or capped. The Board plans to issue an order with a schedule for the cleanup in the spring of 2001. The cleanup will likely occur in 2002.

The East Bay Regional Park District manages the 138 acres of upland habitat on the hillside east of the Marsh. The open, rolling hillsides offer good venues for views of the ecological zones and birds of the marsh. The Trustees allocated funding for the development of access and public education centers. The Department of Fish and Game also contributed $60,000 for interpretive displays. The East Bay Regional Park District plans to start construction in 2001 to allow visitors to view this beautiful and productive area and to learn about restoration of this valuable wildlife habitat. Though direct access to the Marsh is prohibited, interpretive panels located in the uplands will allow people to stop and see the pelicans, geese, ducks, wading birds, and red fox that they miss when they speed by on the adjacent freeway.

The protection and restoration of the Marsh are a legacy of many individuals and organizations. One who played a key role in these actions was Al McNabney. As a representative of Mount Diablo Audubon Society, Al was a tireless advocate of preservation of the Marsh, attending many meetings and writing many letters to draw attention to the beauty and values of the area. When it was acquired, he turned to working to ensure that public education and access would be part of the design for the area. He was instrumental in obtaining funding for interpretive elements to be built there. As a memorial to him and to commemorate his efforts, the Marsh was renamed McNabney Marsh.

RESEARCH PROJECTS

Mason's lilaeopsis

MASON'S LILAEOPSIS IS A PERENNIAL HERB, related to the carrot, endemic to the area of the spill. It was, even before the spill, listed as "rare" by the State of California. The plant was vulnerable to damage by the spill and cleanup.

Mason's lilaeopsis grows in a narrow band in the intertidal zone. The plants are adapted to live in tidally inundated, wave-cut beaches or levees. The largest and healthiest populations grow on uninhabited islands in Suisun Bay where there is no riprap and little human activity.

The Trustees funded a review of the studies in the scientific literature about this plant, and funded studies of how the plants had been affected by being oiled. Scientists also assessed where the plants live now, how this compares to where the plants had lived before and how best to restore the plants.

The field surveys found that the plant is widely distributed in the Sacramento-San Joaquin Delta and lower reaches of the Napa River. No populations were found west of the Napa River system. The researchers found that crude oil is quite detrimental to the endangered plant, especially in salty environments.

Any increase in salinity of the San Francisco Estuary and the Delta due to water diversion would be expected to compromise the viability of the plant.

Benefits to Fish Resources

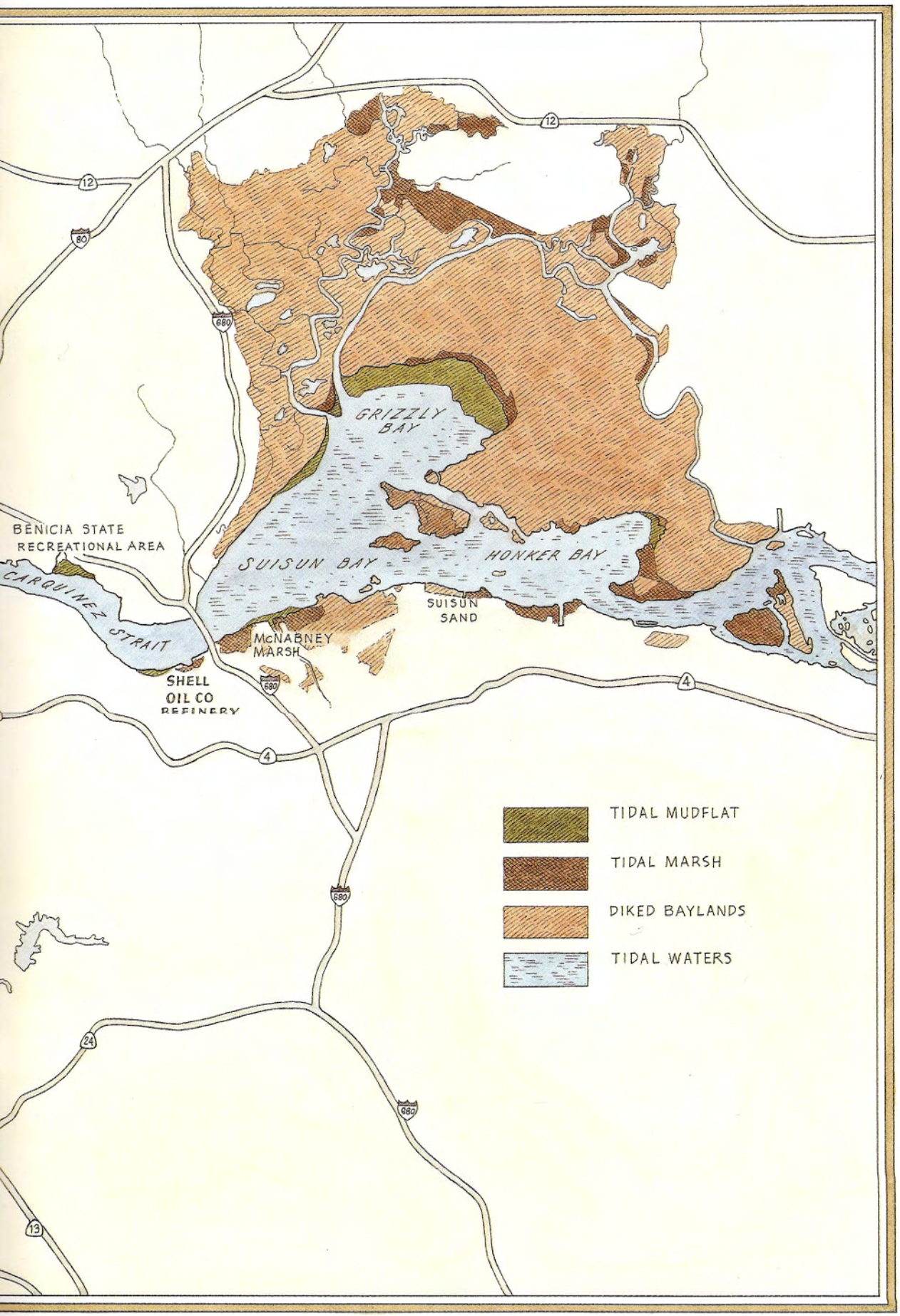
THE ACTUAL ADVERSE EFFECTS OF THE 1988 spill on fish and other aquatic organisms could not be quantified. Nonetheless, it was determined that there were both direct and indirect impacts from the oil on fish and other aquatic organisms in their inter-dependent ecosystem. Very few direct impacts are visible in any submerged habitat, especially those in high current and high turbidity conditions. With this limitation, some funds from the settlement were dedicated to assure substantial habitat improvements that would benefit fish and aquatic invertebrate species most likely affected by the spill. Emphasis was placed on habitat of high value to striped bass, sturgeon, salmon, and steelhead, focusing primarily on their juvenile habitat requirements.

The Trustees concluded that the wetlands restoration projects fully compensated for the loss of fish during the spill. The projects added thousands of acres of the shallow water habitat most critical for migrating fish and for rearing fish, including Petaluma Marsh, Cargill salt ponds, Tolay Creek, and Sonoma Baylands, where juvenile chinook salmon are already found. Of course, studies that specifically count the many benefits for fish are beyond the scope of the Trustees work and will await the efforts of fisheries researchers.

Computer Data For Geographic Information Systems

THE TRUSTEES FUNDED WORK BY THE SAN Francisco Bay Institute to prepare several kinds of information for a geographic information computer system. This information, once put into the system, will be available for a variety of planning and priority-setting processes.

SOUTH SONOMA VALLEY
CARGILL SALT PONDS
PETALUMA RIVER MARSH
TOLAY CREEK
SONOMA BAYLANDS
CULLINAN RANCH
SAN PABLO BAY
POINT PINOLE REGIONAL SHORELINE
12
121
221
116
29
101
37
80
580
13
24


12
12
80
680
GRIZZLY BAY
BENICIA STATE RECREATIONAL AREA
SUISUN BAY
HONKER BAY
CARQUINEZ STRAIT
SUISUN SAND
McNABNEY MARSH
SHELL OIL CO REFINERY
680
4
4
680
24
680
13
TIDAL MUDFLAT
TIDAL MARSH
DIKED BAYLANDS
TIDAL WATERS

NAPA–SONOMA MARSHES AND OPPORTUNITIES FOR RESTORATION

ONLY ABOUT TEN PERCENT OF THE TIDAL and freshwater marshlands that once bordered San Francisco Bay remain. Airports, harbors, port facilities, salt ponds, industrial parks, and houses now cover former Bay Area estuarine marshes. In such areas, restoring the natural legacy of wetlands is quite costly.

Fortunately, not all of the Bay's marshes have been permanently covered over with runways, subdivisions, and big buildings. In the northernmost shores of San Francisco Bay, much of the historic wetlands were converted to agricultural use or commercial salt production. Of particular interest are the extensive historic wetland areas between the Napa River and Sonoma Creek. At one time these wetlands extended for many miles inland and provided extensive and diverse habitats for all kinds of wildlife. The system as a whole comprises about 46,000 acres. Most are no longer in their natural condition, but present an opportunity for acquisition and restoration that may never be available again.

As early as the late 19th century, farmers built levees around wetland parcels to separate lands from tidal influence and constructed drainage ditches. Many of these altered historic wetlands have subsided and are now below sea level. Freshwater drained from the former marshes flushed out most salts. A limited variety of crops could be grown on these "reclaimed" lands due to the marsh soils and limited freshwater for irrigation.

The former wetlands of the North Bay are beginning to be restored to their natural state. Resource managers are trying different methods, sometimes using fill to raise the levels of the subsided lands, and other times relying on natural sedimentation to restore wetlands over time.

One of the issues that the Trustees wrestled with was whether to use their resources to protect lands from development by purchasing them or to restore lands that were already in public ownership and needed restoration funding. Acquisition was attractive because, lands, once developed, might never again be available to be restored. Restoration was attractive because more funding may be allocated for acquisition of lands than for restoration. The Trustees decided to undertake both acquisition and restoration projects where the best opportunities arose.

Sonoma Baylands Restoration

THE SONOMA BAYLANDS PILOT MARSH restoration project created 31 acres of tidal wetland habitat for endangered species at the north shore of San Pablo Bay near the mouth of the Petaluma River. This project was a cooperative endeavor between the United States Army Corps of Engineers and the Port of Oakland. The Corps of Engineers provided most of the funding for this project. In late 1992, the California State Coastal Conservancy asked the Trustees for $70,000 needed as part of the non-federal matching dollars for the project, and the Trustees approved the request.

The Corps used dredged material to raise the level of the marsh area. The fill was completed in 1995, and a dike was breached for a 30-acre pilot project in January 1996. The parcel will be managed by the California Department of Fish and Game.

South Sonoma Valley (Camp II) Acquisition

IN THIS PROJECT THE TRUSTEE COMMITTEE allocated funds to acquire privately owned properties just north of Camp Three Island along Sonoma Creek. The California Department of Fish and Game owned property adjacent to the eastern side of the parcels, but these could not be restored without also flooding the Camp II property. Thus, the purchase of this property enables the two adjacent areas to be restored.

The Trustees first considered this property in the early 1990's. At the request of the County of Sonoma, the Trustees initially allocated $1 million toward the purchase. The Sonoma County Agricultural Preservation and Open Space District and the California Department of Fish and Game also proposed to contribute to this project. In late 1992, the Wildlife Conservation Board completed an appraisal of the properties with funding provided by the Trustees. However, a purchase agreement could not be reached with the owners at that time.

In 1998, the Trustees considered the Camp II property again. The Wildlife Conservation Board had obtained $840,000 that could be used for purchase of one of the two parcels of interest. At the Board's request, the Trustees provided $358,000 towards purchase of a 528-acre parcel. Late in the year, a second parcel became available and was purchased with $127,000 in funding from the Wildlife Conservation Board and $80,000 from the Trustees. The property will be managed by the California Department of Fish and Game as part of the San Pablo Bay unit.

Petaluma River Marsh Restoration

ON THE EAST SHORE OF THE PETALUMA River, just upstream of Highway 37, the Sonoma Land Trust acquired a 46-acre parcel of historic marsh that had been diked and dewatered for farming many years ago. The wetland characteristics could be restored by breaching the levee that separated it from the river. At the same time, adjoining levees would need to be raised and strengthened so that the adjacent farmland would not also be inundated.

Several agencies contributed funding or assistance to restore this wetland, including the Sonoma Land Trust, United States Army Corps of Engineers, which directed mitigation funds from the California State Coastal Conservancy, and the Lincoln Property Co., as mitigation for a residential development.

On a summer day in August 1994, friends and supporters of the wetlands restoration gathered. A gigantic backhoe approached the levee and cleared an opening, letting the silty river water rush in. Silts will gradually settle on the subsided former marsh, accumulating until the depth is suitable to support marsh vegetation. The marsh is well on its way to again supporting a diverse assemblage of fish and wildlife species including plankton, crab worms, mussels, fish, and birds.

Cullinan Ranch Restoration

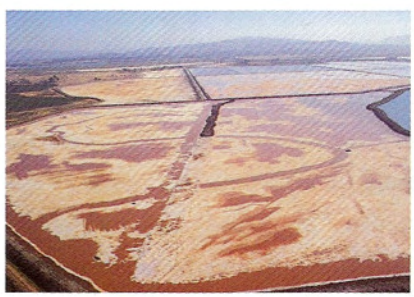
THE FORMER CULLINAN RANCH IS ANOTHER large property on the north edge of San Pablo Bay west of Vallejo. The property is separated from the Bay by Highway 37, originally a toll road built on fill. Historically the property was part of a network of tidal marshes and sloughs known as Island 1. Starting as far back as the late 1800's, farmers altered the 1,493 acres by constructing levees and digging drainage ditches throughout the property. Rainwater collected in the ditches was pumped into Dutchman's Slough, which flows behind the property and connects with the Napa River. Though the area has lacked tidal action for many years, it has functioned as a wetland seasonally flooded by rainwater. Red-tailed hawks, marsh wrens, and white-tailed kites are found here.

In the 1980's, an extensive housing development had been proposed for the area and had received approvals from several government agencies. A lawsuit led by a local grassroots effort and several agencies challenged the project and halted further development. The United States Fish and Wildlife Service purchased the property in 1991 with cooperation from the California State Coastal Conservancy and the Solano County Farmlands Open Space Foundation. The property became part of the San Pablo Bay National Wildlife Refuge.

The Trustees allocated $560,000 for restoration. Part of this funding was used for a hydrology study of the area. Some restoration work has begun. A grove of mature eucalyptus trees has been cleared, and five electric transmission towers are being reinforced to withstand daily tidal flooding. Recyclers are dismantling old barns and sheds, reclaiming timbers for use elsewhere. The pump that used to drain the site has been removed.

The next step will be to breach the levee at one or more places along Dutchman Slough in order to restore the flow of tidally influenced, brackish water and sediment from San Pablo Bay to this area. Funds are being sought for this work. The process of restoration will take time. Because the land has subsided, the area will look like a bay in which ducks and water birds will rest and feed. Over time, sediments in the salt water settle out, and salt marsh plants will begin to take hold.

Ultimately the parcel is expected to have a mix of open and more vegetated areas and offer prime habitat to many bay species, including the endangered salt marsh harvest mouse. Restoration costs are estimated to total from $2 million to $15 million over the next 20 years. In the meantime, many species of resident and migratory waterfowl and shorebirds are already using the area in greater numbers since the curtailment of the farming operations.



Cargill Salt Ponds

IN THE 1950's, IN LARGE TRACTS OF HISTORIC marsh interwoven by a network of tidal sloughs draining to the Napa River and Sonoma Creek, the Leslie Salt Company developed a series of solar evaporation ponds that moved salt water from the Bay to crystalizers on the east bank of the Napa River. Evaporation lessened the volume of the water, which got saltier. Ultimately,

salt was produced in crystalizer ponds. Cargill Salt, acquired Leslie's Bay Area operations in both the north and south bay in 1978.

Their North Bay property includes contiguous salt ponds, mudflats, and tidal marshes north and south of state highway 37 between Sonoma Creek and the Napa River. Biologists report that as many as 128 species of birds currently use the area.

In 1990, when Cargill Salt decided to cease making salt, mothball its operations, and seek a buyer, little did they know it would create one of the largest marsh restoration projects in California. Because this property is very large—nearly 10,000 acres—and not as subsided as some other areas, it presented a major opportunity for wetland restoration. Unlike many other former bay area wetlands, the old natural slough channels are still visible beneath the ponds, and natural circulation may be able to be restored. Getting it into public ownership would anchor plans for ultimate restoration of the historic wetlands of the North Bay.

Cargill Salt entered into discussions with the Trustees about acquisition of the property, and conducted extensive toxicity tests and hydraulic modeling to demonstrate that emptying the salts and residues from the ponds was feasible. A purchase agreement was executed in May 1994 by the California Wildlife Conservation Board on behalf of the Trustees, who allocated $7,280,000 of the $10 milllion needed for the acquisition. Other contributing agencies were the California Wildlife Conservation Board, the United States Fish and Wildlife Service, the California State Lands Commission, and the California State Coastal Conservancy.

The parcel is managed by the California Department of Fish and Game and is now the subject of further environmental impact analysis.

The site poses challenges. To maintain the movement of water through the site requires continual management. Removal of the salts and residues needs to be carefully managed. The salinity of the Napa River and tributary sloughs varies by season, and affects the times when discharges of diluted brines may be permissible without harming fish, shrimp, or other aquatic organisms. A public advisory committee provides input for resource mangers as they plan for restoration of this area.

During the extremely wet winter of 1994, all ponds in the system were full and threatening to overflow. Pond 2a, was opened to tidal action with approval of the San Francisco Bay Regional Water Quality Control Board as a safety valve and, as a result, got an early start on restoration. Marsh plants rapidly re-established themselves. Birds came back. Today, the area looks like the salt works had never been there. This success, and the resiliency of wetland organisms in reclaiming areas that they had historically occupied, gives wildlife resource managers at the Department of Fish and Game hope that restoration can proceed largely through natural recovery, after ponds are emptied, levees breached, and waters returned to more natural conditions.

Restoration of the salt ponds will likely take many years and involve the creation of a mosaic of habitats. Some are likely to be saltier than others due to their location, initial salt concentration, and availability of freshwater for dilution.

Tolay Creek Restoration

THE WIDE MUD FLATS THAT RIM THE BAY are important habitats for a variety of waterfowl and shore birds. The adjoining wetlands, and especially those within transition areas between the Bay and freshwater creeks provide vital habitat for fish and endangered birds such as the California clapper rail, the black rail, and the salt marsh harvest mouse.

Tolay Creek is such an area. It enters San Pablo Bay at Lower Tubbs Island in Sonoma County, about 18 miles from the spill site, in the Napa Sonoma Marshes. Tolay Creek was once a slough that surrounded marsh islands. In the early 1900's, farmers built levees around the islands and drained off the water. Tolay Creek silted in, and upland plants that live in drier areas invaded it. Tidal flows to the wetlands had been restricted by sedimentation, the construction of a bridge across the channel on Highway 37, and the development of a tidal lagoon on the Department of Fish and Game's property.

Approximately 300 acres of wetlands border the creek on properties owned by the United States Fish and Wildlife Service and the California Department of Fish and Game. Adjacent lands are owned by a private owner and the Vallejo Sanitation District. All of the wetlands are within the San Pablo Bay National Wildlife Refuge or the Department of Fish and Game's Napa-Sonoma Marshes.

The Trustees provided $190,000 for a project proposed by the United States Fish and Wildlife Service to increase tidal flow in Tolay Creek and enhance the bordering wetlands by excavating the creek channel. The United States Fish and Wildlife Service, Natural Resource Conservation Service, Environmental Protection Agency, California Department of Fish and Game, California Department of Transportation, Marin-Sonoma Mosquito Abatement District, Southern Sonoma Resource Conservation District, Vallejo Sanitation District, Save San Francisco Bay Association, CalFed, and Ducks Unlimited joined with the Trustees in providing funds and services to carry out this project. The project evolved over time as managers learned more about the area; it experienced some flooding during its first year. However, it has succeeded in increasing the valuable wetland habitat within the creek, restoring 435 acres of tidal wetlands.

CARQUINEZ STRAIT PROJECTS

Suisun Sand

THE EAST BAY REGIONAL PARK DISTRICT has begun to develop a new regional shoreline preserve near Bay Point along the shores of Suisun Bay, the meeting point of the Sacramento and San Joaquin Rivers. A land purchase funded in part by the Trustee Committee provided a critical first step toward the new Bay Point/Pittsburg Regional Shoreline.

The Suisun Sand Corporation, a sand mining and reclamation company, owned a 51.5-acre former wetland parcel located on the southern shore of Suisun Bay near West Pittsburg in Contra Costa County. The site was zoned for heavy industry and had been the subject of a considerable amount of litigation.

The property contains about 15 acres of healthy marsh. It represents an important first step toward preserving wetlands along this shoreline. Future acquisition opportunities nearby could include a large area of wetlands at the Concord Naval Station and areas near Point Edith. The acquisition will allow the Park District to provide limited public access to the bay shoreline as well as to restore marshlands.

The Trustees provided $800,000 toward the acquisition of the property in exchange for the East Bay Regional Park District's promise to restore it. The Park District used its own funds to complete the litigation regarding cleanup of the property. The Park District will also restore the remaining 36 acres to wetlands and manage the property.

The California State Lands Commission owns adjacent property, which will be leased to the Park District for management. CalFed provided an additional $160,000 in December 1997.

Benicia State Recreation Area

THE WETLANDS ALONG THE NORTH SHORE of the Carquinez Strait and Southampton Bay, part of the Benicia State Recreation Area, were heavily oiled during the Shell oil spill and, for this reason, specifically included as important for project consideration in the memorandum of understanding.

The California Department of Parks and Recreation proposed a project involving removal of oily and other debris that had accumulated on the shoreline, removal of invasive plant species, and construction or improvement of recreational facilities for people using the park. The Trustee Committee awarded $65,000 toward the habitat improvement elements of the project, which cost a total of about $190,000. The Federal Emergency Management Agency also provided funding.

This improvement project, conducted in 1996 and 1997, used helicopters to haul out large debris to minimize the effects on sensitive wetland vegetation. Workers from the California Conservation Corps removed a total of 51 tons of debris from the wetland and shoreline area. Work also included removal of non-native plant species including broom, eucalyptus, pampas grass, fig trees, and exotic shrubs, which were growing in or immediately adjacent to the wetlands. The project improved public access to the natural areas by clearing brush from a trail along the shoreline. In addition, signs and shelters were upgraded.

Point Pinole Regional Shoreline

THE POINT PINOLE REGIONAL SHORELINE is the largest park on the East Bay shore of San Francisco Bay. Funding provided by the Trustee Committee contributed to the purchase of a key parcel that had been missing from the Shoreline and threatened with development. It also allowed for a two-mile extension for the right of way for the San Francisco Bay Trail.

The Point Pinole Regional Shoreline is located north of Richmond, on a point that extends out into the bay, surrounded by eucalyptus and grassland areas. Many species of birds use the Shoreline, including egrets, herons, the endangered clapper rail, willets, avocets, killdeer, grebes, salt marsh song sparrows, and loons. The Shoreline Park also includes a very rare type of grassland that has largely been eliminated from the shores of San Francisco Bay. It has two large salt marshes—a 36-acre marsh on the southwestern portion and the 51-acre George Whittell Marsh along the northern shoreline.

The East Bay Regional Park District acquired property at Point Pinole in the 1970's, after Bethlehem Steel proposed to build a steel mill on the Point. The site was used during most of the 20th century to manufacture explosives. Trees were grown on the site to screen the surrounding area from inadvertent explosions at the plant. However, the Park District was not able to acquire all of the property that was important for the park.

In the 1990's, Pinole Properties Inc, owner of a large parcel adjacent to the Regional Shoreline, proposed to build 650,000 square feet of office space next to the existing park. The local government had approved zoning for the project. The property had tremendous value for recreational as well as ecological reasons, and this development would have impacted those using the existing park.

The East Bay Regional Park District proposed to leverage $1.8 million of funding from the Trustees with $1.8 million from the State Lands Commission, and about $5 million in park bonds to acquire the property at Point Pinole. The District negotiated a purchase agreement and acquired the property in October 1996, preserving the property and creating a six-mile long shoreline corridor. The acquisition included 168 acres of property plus an easement for the San Francisco Bay Trail. The plan for the Regional Shoreline provides for recreational and natural areas, with the majority preserved for wetlands habitat.

FINANCIAL SUMMARY

INCOME		
Shell Trustee Fund	Initial deposit for settlement	$10,838,000
Interest on fund		4,248,165
California Department of Fish and Game	Interpretive access McNabney Marsh uplands	60,000
Santa Fe Pacific Pipeline Partners	McNabney Marsh restoration	30,000
National Coastal Wetlands Grant Program (USFWS)	Cargill acquisition	750,000
Karnes settlement (enforcement action)	Point Pinole	275,394
Reversion of Unused Studies Fund	Original settlement	236,404
Gahagan and Bryant	Cullinan Ranch	29,911
TOTAL CONTRIBUTED DIRECTLY		**$16,467,874**
ESTIMATED PARTNER CONTRIBUTIONS		**$19,791,518**

EXPENDITURES

Projects	Recipient	Trustees' Contribution	Estimated Total Cost	Partners' Contributions
Mason's lilaeopsis	S.F. State University	$ 197,401	$ 197,401	California Department of Fish and Game
McNabney Marsh				
Property Acquisition	East Bay Regional Park District	3,018,428	3,018,428	
Restoration and Management	Mountain View Sanitary District	680,000	1.25m–2.75m	Caltrans ($300k), Santa Fe Pipeline ($30k)
Uplands Interpretive Access	East Bay Regional Park District	248,700	317,062	California Department of Fish and Game ($60k)
Napa/Sonoma Marshes				
Cargill Property acquisition and restoration	Wildlife Conservation Board	7,280,000	$10,000,000	Wildlife Conservation Board (WCB) ($1.25mil); United States Fish and Wildlife Service (USFWS) ($750k); California State Lands Commission ($500k); California State Coastal Conservancy ($1mil)
Cullinan Ranch wetlands restoration	US Fish and Wildlife Service	589,911	6 mil to 8 mil	USFWS ($6 mil for purchase) USFWS/San Francisco Bay Estuary Program ($115k); EPA ($30k); CalFed ($380k); Ducks Unlimited ($42k); LTMS ($30k); WCB; Caltrans

FINANCIAL SUMMARY

EXPENDITURES *continued*

Projects	Recipient	Trustees' Contribution	Estimated Total Cost	Partners' Contributions
Napa/Sonoma Marshes				
Petaluma Marsh Restoration	Sonoma Land Trust	$ 130,200	$ _____	Lincoln Property Company ($114,518); Burbank Homes ($5k)
Sonoma Baylands restoration	California State Coastal Conservancy	70,000	_____	Corps of Engineers; California Department of Fish and Game (manage restored site); PGE ($30k); Wildlife Conservation Bd. ($35k)
Tolay Creek wetlands restoration	Ducks Unlimited on behalf of USFWS	190,000	1,130,000	CalFed ($260k); California Department of Fish and Game; Save the Bay ($75k); five others
South Sonoma Valley (Camp II) property acquisition	Wildlife Conservation Board	442,000	1,190,000	California Department of Fish and Game
Property appraisal	Wildlife Conservation Board	5,000	5,000	none
Boxer Marsh	Marin-Sonoma Mosquito Abatement District	5,700	5,700	none
Contra Costa County Wetlands				
Suisun Sand property Acquisition; Restoration required by agreement	East Bay Regional Park District	800,000	1,100,000 500,000	East Bay Regional Park District ($300k) CalFed ($160k)
Benicia State Park Recreation Area	California Department of Parks and Recreation	64,967	190,308	California Department of Parks and Recreation ($125k)
Point Pinole property acquisition	East Bay Regional Park District	1,800,030	10,000,000	State Lands ($1.8 mil); EBRPD Park Bond Funds ($6.4mil)
San Francisco Bay Data	San Francisco Bay Estuary Institute	30,000	_____	
Project Administration, Management, and Reporting		915,538	_____	
TOTAL		**$16,467,874**	**$35,000,000-$38,000,000**	

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