

CHAPTER

12 SUISUN MARSH LOCAL PROTECTION PROGRAM POLICIES

Amended October 2, 2018

INTRODUCTION

The Suisun Marsh is shown in Figures SM-1 and SM-2. The County is required to prepare and adopt a component of the Local Protection Program to implement the Suisun Marsh Preservation Act of 1977 (Marsh Act) and the Suisun Marsh Protection Plan within the Suisun Marsh Primary and Secondary Management Areas (See Chapter 4, Suisun Marsh). The County Component of the Local Protection Program is comprised of policies contained in the County General Plan and County Code provisions, including the Zoning Ordinance (Chapter 28) and Grading, Drainage, Land Leveling and Erosion Control Ordinance (Chapter 31).

RELATIONSHIP TO OTHER GENERAL PLAN CHAPTERS

The County Component of the Suisun Marsh Local Protection Program includes this Chapter 12 and the following General Plan provisions:

Chapter 2, Land Use
Table LU-5

WB Water Bodies and Courses

PR Park and Recreation

M Marsh

A Agriculture

PQP Public/ Quasi-Public

TC-R Traditional Community Residential

CR Commercial Recreation

WDI Water Dependent Industrial

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Special Study Area – Collinsville subsection; Goal SS.G-3 ; Policies SS.P-20, SS.P-21, SS.P-23, SS.P-24, SS.P-25, and SS.P-27; Figure SS-5

Chapter 4, Resource

Marsh and Delta Areas – Suisun Marsh subsection;
Figure RS-3

Chapter 8, Public Facilities and Services

Potrero Hills Landfill discussion in Solid Waste section; Policy PF.P-31

LAND USE DIAGRAM

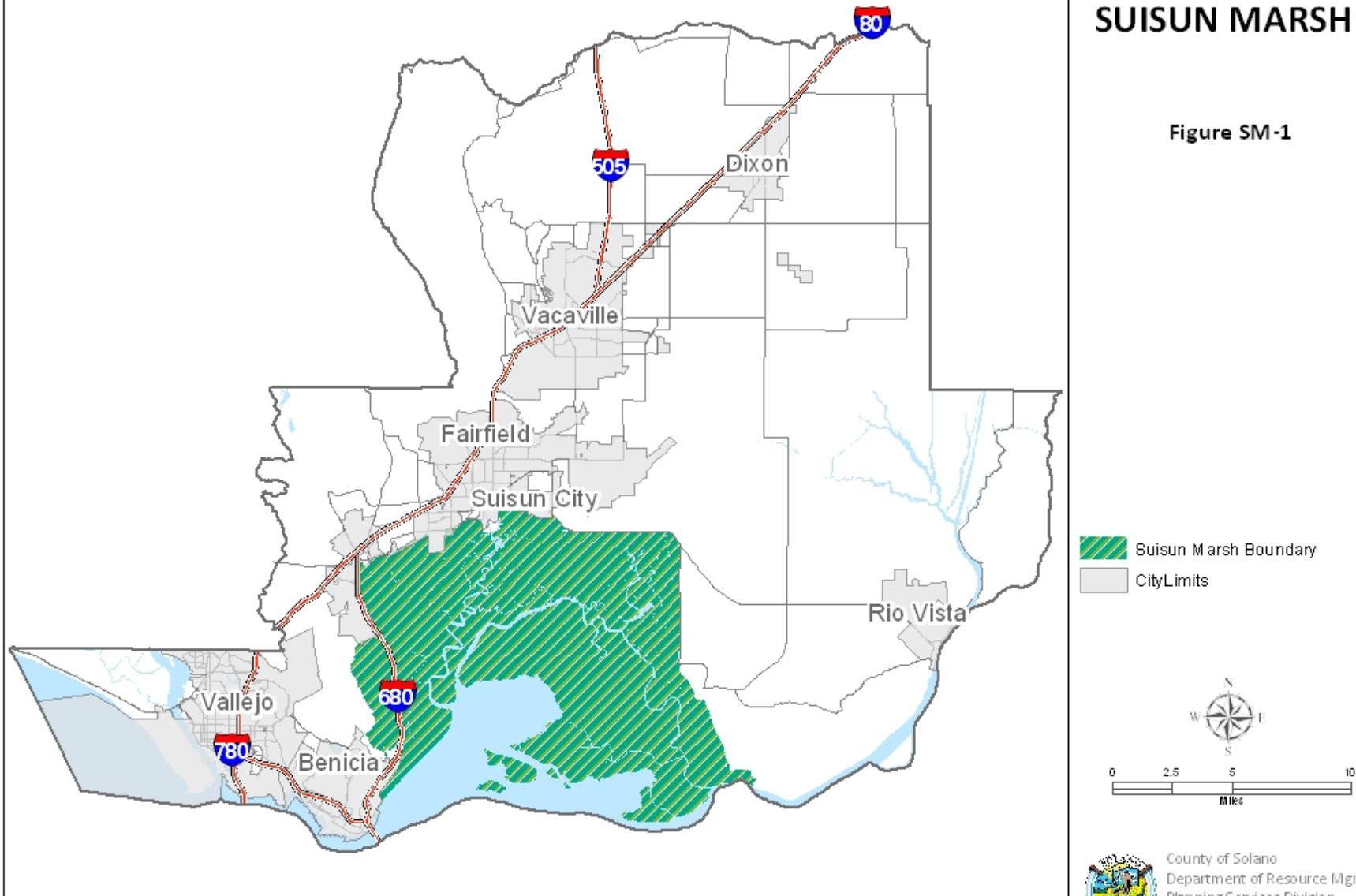
Within the Suisun Marsh Management area, the following land use designations apply:

- Water Bodies and Courses
- Park and Recreation
- Agriculture
- Public/Quasi-Public
- Traditional Community – Residential
- Commercial Recreation
- Water Dependent Industrial

These land use designations are described in Chapter 2, Land Use, and are shown on the Suisun Marsh Land Use Diagram in Figure SM-3.

COUNTY VIEW SUISUN MARSH

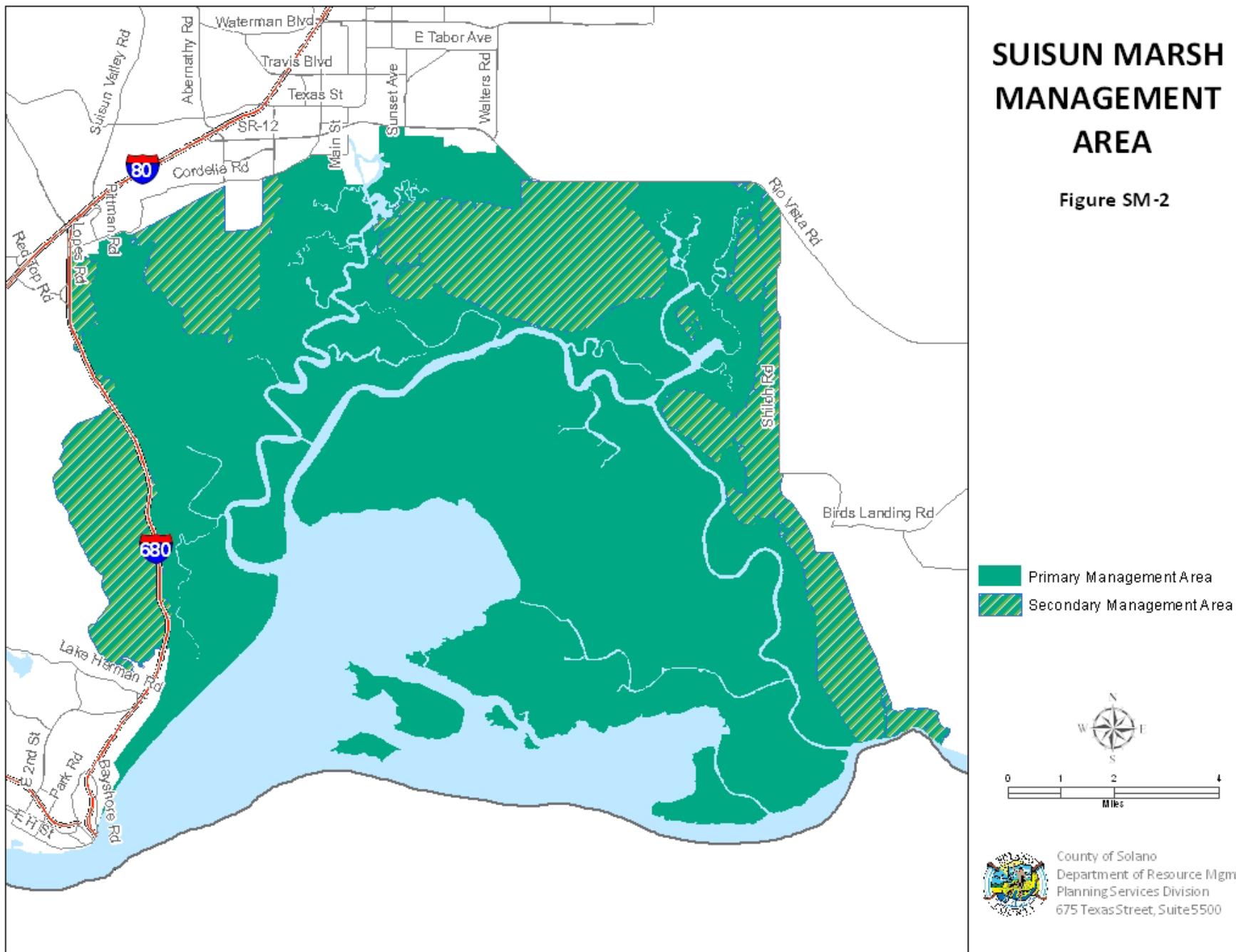
Figure SM-1



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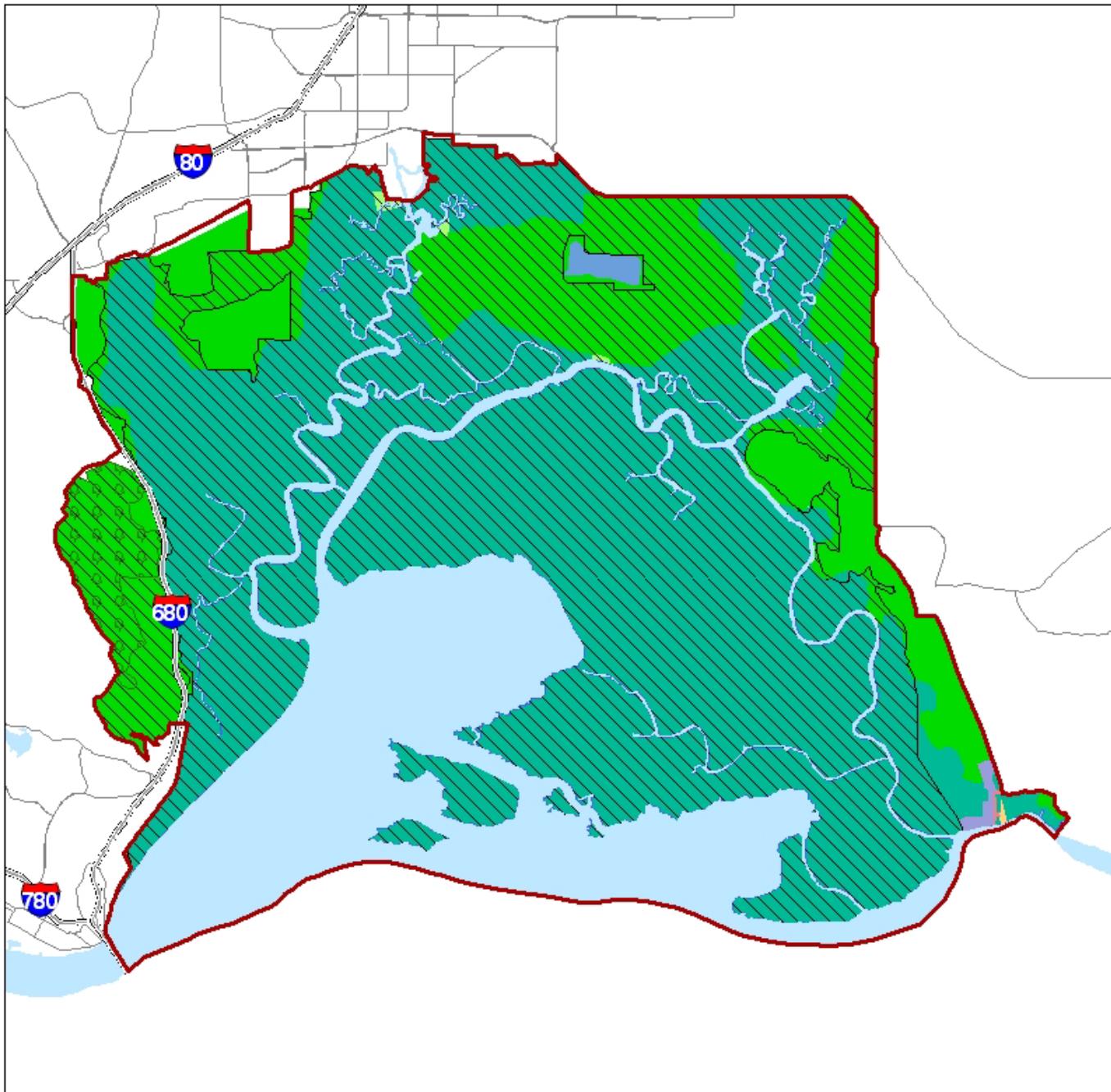
SUISUN MARSH MANAGEMENT AREA

Figure SM-2



General Plan Land Uses Suisun Marsh

Figure SM-3



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SUISUN MARSH POLICIES

BIOLOGIC RESOURCES

The Suisun Marsh represents an area of significant aquatic and wildlife habitat and is an irreplaceable and unique resource to the residents of Solano County, the state and nation. The Marsh comprises approximately 85,000 acres of tidal marsh, managed wetlands, and waterways. It is the largest remaining wetland around San Francisco Bay and includes more than ten percent of California's remaining wetland area. The Marsh is also a wildlife habitat of nationwide importance in that it provides wintering habitat for waterfowl of the Pacific fly-way. Because of its size and estuarine location, it supports a diversity of plant communities which provide habitats for a variety of fish and wildlife, including several rare and endangered species.

The Suisun Marsh Preservation Act delineates two management areas within the Marsh. The Primary Management Area consists of tidal marshes, seasonal marshes, managed wetlands, and lowland grasslands within the Marsh. The Secondary Management Area is comprised of upland grasslands and cultivated lands, which serve as significant buffers to the Marsh.

The tidal marshes, managed wetlands, seasonal marshes, and the lowland grasslands of the Primary Management Area represent a vital resource for many forms of marsh wildlife. Most of the wetlands in the Marsh are managed wetlands that are artificially flooded and cultivated to enhance the production of preferred waterfowl food plants. The tidal marshes, which occur on the edges of the bays and sloughs, are exposed to the natural daily tidal rhythm. Seasonal marshes are found adjacent to the managed wetlands in several areas. They are low-lying lands that are flooded annually by winter and spring rains, and dry out with the approach of summer. Between the wetlands and the upland grasslands lies a "transition zone" of lowland grasslands, which supports a mixture of plants common to both the wetlands and the upland grasslands. Because of their critical importance to Marsh wildlife, these areas should be managed so as to preserve and enhance marsh habitat while limiting agricultural use to practices consistent with wildlife use.

The upland grasslands and cultivated lands of the Secondary Management Area provide habitat for marsh-related wildlife, but more importantly, by their location and existing uses, they buffer the wetlands and lowland grasslands from the adverse impacts of both urban development and other upland land uses and practices incompatible with preservation of the Marsh. Within this upland area, existing grazing and agricultural uses should continue, and agricultural practices favoring wildlife use and habitat enhancement should be encouraged.

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Wildlife Habitat Management and Preservation

Wildlife habitat within both the Primary and Secondary Management Areas of the Suisun Marsh shall be managed and preserved through the following policies:

- SM.P-1: The diversity of habitats in the Suisun Marsh shall be preserved and enhanced wherever possible to maintain the unique wildlife resource.
- SM.P-2: The Marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland grasslands, which are critical habitats for marsh-related wildlife and are essential to the integrity of the Suisun Marsh, shall be protected from degradation. Habitat areas that have become degraded or are of marginal value should be restored or enhanced, where feasible, if other values of the Marsh would not be adversely impacted.
- SM.P-3: The eucalyptus groves in the Marsh, particularly those on Joyce and Grizzly Islands, should not be disturbed.
- SM.P-4: Burning in the Primary Management Area is a valuable management tool. However, it should be kept to a minimum to prevent uncontrolled fires, which may destroy beneficial plant species and damage peat levees, and to minimize air pollution.
- SM.P-5: Where feasible, historic marshes should be returned to wetland status, either as tidal marshes or managed wetlands. If some of the managed wetlands are no longer needed for waterfowl hunting, they should also be restored as tidal marshes.
- SM.P-6: The County's zoning and subdivision ordinances shall limit or prohibit land divisions or other types of development that are inconsistent with protection of the Marsh.

Agriculture

The following policies apply to agricultural uses within the Suisun Marsh:

- SM.P-7: Agriculture within the Primary Management Area of the Suisun Marsh should be limited to activities compatible with, or intended for, the maintenance or improvement of wildlife habitat. These include agricultural uses such as grain production and

grazing. Agricultural activities involving removal or persistent plowing of natural vegetation should not be permitted. Grain production should be confined to the Grizzly Island Wildlife Area and relatively small, well-suited areas of some of the large duck clubs. Grazing should be used to control vegetation on duck clubs where plant cover is sub-optimum for waterfowl use and should be discouraged on those clubs where there is already a good mixture of preferred waterfowl food plants. Grazing pressures should not exceed sound range management practices.

SM.P-8: Agricultural uses consistent with protection of the Marsh, such as grazing and grain production, should be maintained in the Secondary Management Area. In the event such uses become infeasible, other uses compatible with protection of the Marsh should be permitted. The value of the upland grassland and cultivated lands as habitats for marsh-related wildlife should be maintained and enhanced where possible by planting or encouraging valuable wildlife food or cover plant species.

SM.P-9: Existing non-agricultural uses on sites within the Secondary Management Area, such as Potrero Hills Landfill (former Solano Garbage Company), Universal Propulsion Co. Inc. (former Goodrich and Explosive Technology Corporation), FP Smith Parts and Equipment, Flatiron Construction, and others, should be allowed to continue if they are conducted so that they will not cause adverse impacts upon the Marsh. Any change in uses of these sites should be compatible with the preservation of the ecological and aesthetic resources of the Marsh.

SM.P-10: Within the Marsh, the County shall limit special assessments against agricultural lands for the provision of public services, where the demand for such services is not generated by agricultural use on the land.

WATER QUALITY AND FLOOD CONTROL

The Suisun Marsh is located where the salt water of the Pacific Ocean and fresh water of the Sacramento and San Joaquin River Delta meet and mix. Because of its location, it provides a transition between salt and fresh water habitats, which creates the unique diversity of fish and wildlife habitats characteristic of a brackish marsh. Water quality in the Marsh today is generally adequate, in terms of salinity, turbidity, temperature,

and pollution levels. The salinity level, however, is almost totally dependent upon the amount of fresh water flowing in from the Delta, since it is this inflow that limits the intrusion of saline ocean waters. Numerous upstream storage facilities, together with diversions of water from the Delta and the tributary streams of the Delta, have substantially reduced the amount of fresh water flowing into the Delta, with a resultant increase in salinity intrusion into the Marsh and Delta.

Other sources of fresh water to the Marsh are groundwater, wastewater discharge, and surface runoff from the Marsh watershed. The Fairfield-Suisun groundwater basin drains into the Marsh by subsurface flow and provides fresh water mixing and flushing action. It is recharged with fresh water runoff from the watershed by percolation on the Suisun Valley floor and along the stream channels. Any disruption or impedance of runoff and streamflow such as might occur from stream channelization or further upstream diversions within the watershed may adversely affect the function of the groundwater basins and their relationship with the Marsh. Additionally, any substantial removal of groundwater by pumping or subsurface drainage could interrupt natural subsurface discharges into the fresh water aquifers. Waste water flows into the Suisun Marsh area that can affect water quality come from four principal sources: municipal sewage treatment plants, industrial discharges, agricultural return, and stormwater runoff from the watershed.

Future changes in land uses in the Suisun Marsh and its watershed could affect water quality through changes in turbidity, temperature, or pollution levels. The riparian habitats in streams tributary to the Marsh are important to the continued high quality of water in the Marsh sloughs. This vegetation helps to retain proper water temperatures in the stream channels and filters sediments that would be carried into the Marsh sloughs. Increased sedimentation cause by soil erosion into tributary streams in the watershed would increase turbidity in the Marsh.

The following policies are intended to preserve water quality and reduce flood hazards in the Suisun Marsh:

- SM.P-11: Projects designed to import or redistribute the fresh water in the Marsh for salinity control should be planned carefully so that the expected benefits are realized. Furthermore, any proposed import project should be studied to determine if the project would adversely affect the Marsh by encouraging urban and industrial growth in the Marsh area. No import project should be constructed if the adverse environmental impacts of growth on the Marsh would outweigh the possible beneficial impacts of salinity control.
- SM.P-12: To prevent crop damage in some areas, the withdrawal of groundwater from the underground aquifers surrounding the Marsh may be desirable. Withdrawal should not be so extensive as to allow

- the salt water of the Marsh to intrude into fresh water aquifers, or to disrupt the natural subsurface flow of groundwater into the Marsh.
- SM.P-13: The County's Grading, Drainage, Land Leveling, and Erosion Control Ordinance should be administered in a manner that protects the Marsh from potential significant adverse water quality impacts. Disruption or impediments to natural patterns and volumes of surface runoff and stream flow in the Suisun Marsh and its watershed should not be permitted if it would result in significant adverse effects on the quality of water in or entering the Marsh. Any development in the Suisun Marsh or its watershed proposed for areas that have poor soil conditions for construction, or that are seismically active, should be controlled to prevent or minimize earth disturbance, erosion, water pollution, and hazards to public safety.
- SM.P-14: Any development of industrial facilities in the Suisun Marsh or its watershed should be designed and conditioned to eliminate significant adverse environmental impacts on the water quality of the Suisun Marsh. Activities that could significantly alter the temperature, salinity, or turbidity of the water should be prohibited. Industrial facilities that will increase the potential for spills of toxic and hazardous materials should not be permitted unless it is established that spills of such materials will not represent a significant threat to the Marsh.
- SM.P-15: Riparian vegetation in the Marsh and the immediate Suisun Marsh watershed should be preserved due to its importance in the maintenance of water quality and its value as marsh-related wildlife habitat. Removal of riparian vegetation adjacent to watercourses in the Marsh or in the immediate Suisun Marsh watershed that would increase sedimentation or runoff in or into the Marsh should not be permitted if it would cause a significant adverse environmental impact on the Marsh. Any stream modification in the immediate Suisun Marsh watershed that would involve removal of significant existing riparian vegetation should be permitted only where necessary to ensure the protection of life or existing structures from floods, and in such cases, only the minimum amount of modification necessary should be allowed.

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- SM.P-16: Within the Suisun Marsh and its watershed, sound agricultural practices which conserve water quality and riparian vegetation shall be encouraged.
- SM.P-17: Public roadway construction and improvement activities should be subject to restrictions permitting the natural water movement necessary to sustain the marsh environment.
- SM.P-18: Upstream land use practices that contribute to increased rates of surface water runoff should be prohibited or regulated to prevent significant adverse impacts to water quality in the Marsh.

NATURAL GAS

Several thousand feet below the tidal marshes, managed wetlands, sloughs, and bays of the Suisun Marsh are geologic formations that contain trapped accumulations of natural gas. These formations and the accumulated gas constitute the Suisun Marsh gas fields. Gas has been extracted from the Suisun fields since their discovery in 1938. However, due to high demands for natural gas as a fuel and the limited nature of the resource, the fields are expected to be completely depleted in the future. After the depletion of the fields, the remaining geologic formations may be suitable for the underground storage of natural gas extracted from other fields and transported to the Bay Area by pipeline or tanker.

Provisions for natural gas exploration, operation, and storage shall be controlled through the following policies:

- SM.P-19: Transportation of natural gas by underground pipeline is the most economical and safe method of gas transportation in the Suisun Marsh area. Future gas pipelines should be permitted if they are consistent with the Suisun Marsh Protection Plan and if the design and construction meet the following standards:
- a. Existing pipeline systems are utilized to the maximum extent feasible.
 - b. The pipeline design meets all applicable safety standards of the Office of Pipeline Safety Operations and other regulatory agencies.
 - c. The pipeline route avoids tidal marshes and managed wetlands wherever possible and, if that is not possible, the route crosses as little marsh or managed wetland as possible.

- d. Wide track or amphibious construction equipment is used in tidal marsh or managed wetland areas. Pads or mats are used as needed to prevent any construction equipment from sinking into the soft marsh muds and damaging the marsh plants.
 - e. The "trench and push" construction method is used in all tidal marsh and managed wetland areas where feasible, so that the construction zone is kept as small as possible and the minimum amount of heavy equipment passes through the marsh or wetland area.
 - f. Prior to any pipeline construction or related activities in the Marsh, the contractors should consult with the Department of Fish and Wildlife to determine at what time such construction or related activities should be conducted so as to create the least possible adverse impact on breeding, migration, or other fish and wildlife activities.
 - g. Prior to any underground pipeline construction in the Marsh, the contractors should consult with the Solano County Mosquito Abatement District to ensure existing recirculation water ditches are not blocked and levees are adequately repaired after pipeline construction, or that effective mosquito control measures are maintained.
 - h. At slough, mudflat, and bay crossings of gas pipelines, the trench is dredged in a manner that minimizes turbidity and prevents interference of the dredging operation with fish or wildlife.
 - i. A regular surface and aerial inspection of the pipeline route is carried out as required by the Office of Pipeline Safety Operations.
- SM.P-20: If additional gas wells or ancillary facilities are required for gas exploration, production, or injection, the drilling should be accomplished with the following safeguards:
- a. Drilling operations should conform to the regulations of the California Division of Oil and Gas designed to prevent damage to natural resources.

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- b. The drilling operation is confined to as small an area as possible and does not irreversibly damage unique vegetation or fish and wildlife habitats.
 - c. After drilling is complete, all drilling muds, water waste, and any other fluids are removed entirely from the site and disposed of in a manner that does not adversely affect the Marsh.
 - d. All buildings, tanks, "Christmas trees" or other facilities related to the production or storage of natural gas do not result in the permanent loss of water surface in the Marsh.
- SM.P-21: Construction and drilling in tidal marsh and managed wetland areas should occur only during the dry months of the years (generally April 15 through October 15) when these activities would not disturb wintering waterfowl.
- SM.P-22: If gas wells are abandoned, they should be sealed in accordance with Division of Oil and Gas regulations; the drilling or production facilities should be removed; and the surface area should be revegetated with native vegetation within one growing season after abandonment.
- SM.P-23: Storage of natural gas in depleted gas reservoirs is a reasonable use of the resource and should be permitted. Storage facilities should meet all safety standards of the Division of Oil and Gas.
- SM.P-24: Because the Suisun Marsh offers both natural gas and depleted gas fields suitable for gas storage, and because it is close to the urban Bay Area and the proposed waterfront industrial area on the Sacramento River, gas will probably continue to be transported out of, into, and around the Marsh. All gas transportation into and out of the Marsh is now by underground pipeline systems. If other types of systems for the transport or storage of liquefied natural gas (LNG) are proposed for the Suisun Marsh area, a detailed investigation of the hazards and impacts of LNG facilities should be carried out before approval of the facilities.

UTILITIES, FACILITIES, AND TRANSPORTATION

Construction of utilities, other public or quasi-public facilities, and transportation systems in the Suisun Marsh can: (1) disrupt the Marsh ecosystem at the time of construction; (2) have lasting effects on wildlife by forming barriers and obstacles to their movement and flight patterns; and (3) stimulate urban development by providing services that are a prerequisite for such development.

The following policies are intended to protect the Marsh from such facilities:

- SM.P-25: In the Suisun Marsh, improvements to public utility and transportation facilities should follow these planning guidelines:
- a. New electric power transmission utility corridors should be located at least one-half mile from the edge of the Marsh. New transmission lines, whether adjacent to the Marsh or within existing utility corridors, should be constructed so that all wires are at least six feet apart.
 - b. Urban utilities and public services (e.g., natural gas lines, electric lines for local power distribution, domestic water mains, and sewers) should be allowed to extend into the Suisun Marsh and the adjacent upland area necessary to protect the Marsh only to serve existing uses and other uses consistent with protection of the Marsh, such as agriculture. However, utilities in the Secondary Management Area necessary for the operation of water-related industry within the area designated for such use in the Suisun Marsh Protection Plan at Collinsville would be permissible.
 - c. Within the Marsh, new electric lines for local distribution should be installed underground unless undergrounding would have a greater adverse environmental effect on the Marsh than above-ground construction, or the cost of underground installation would be so expensive as to preclude service. Any distribution line necessary to be constructed above ground should have all wires at least six feet apart.
 - d. New telephone lines installed in the Marsh and within one-half mile of the Marsh should

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be buried underground whenever possible. All new telephone cables routed through the Suisun Marsh area should be buried, and the alignment should avoid wetland areas whenever possible.

- e. New roadways (highways, primary and secondary roads) and rail lines that form barriers to movement of terrestrial wildlife should not be constructed in the Suisun Marsh or in adjacent uplands that are necessary to protect the Marsh, except where such roadways and rail lines are necessary in the Secondary Management Area for the operation of water-related industry and port uses within the area designated by the Protection Plan as a water-related industry reserve area at Collinsville. Rail access to serve the water-related industrial reserve area may be permitted within the existing Sacramento Northern Railroad right-of-way or along the east side of the Marsh, whichever route would result in the least disturbance to wetlands and wildlife. Wherever possible, rail access to the Sacramento River and through the area designated as a water-related industrial reserve area should be located above the 10 foot contour in order to avoid adverse impacts to wetlands. Whenever the reconstructed line would pass through wetland areas, it should be constructed on trestles or in a manner which allows for the natural movement of water and wildlife beneath the alignment.
- f. The Solano County General Plan acknowledges the need for the possible expansion of Highway 12. When traffic loads warrant the widening of Highway 12, such expansion must be designed so as to minimize adverse environmental impacts on the Marsh.

SM.P-26: Underground pipelines, wires, and cables should be permitted in the Suisun Marsh if no alternative route is feasible and they are designed and constructed to meet the following standards;

- a. Installation of pipelines, wires, and cables (particularly local service utilities) are

- located within existing road rights-of-way whenever possible.
- b. All pipelines passing through the Suisun Marsh meet Pipeline Safety Regulations of the U.S. Department of Transportation regarding pipe thickness, pressure limiting devices, emergency shut-down valves and other safety design criteria.
 - c. Whenever construction occurs within the wetlands, it is confined to the dry months (generally April 15 through October 15) to minimize disturbance of wetland vegetation, wintering migratory waterfowl, other water-associated birds, and nesting resident birds.
 - d. In wetland areas, wide-track or amphibious construction equipment is used to reduce the bearing weight of the equipment unless pads are laid to support the heavy machinery and to prevent it from sinking into the soft marsh soil. Equipment movement to the construction site within the Suisun Marsh is limited to roads in the immediate vicinity of the pipeline, wire, or cable being installed to minimize disruption of Marsh wildlife habitat. The construction site is well defined and clearly marked so that workers do not disturb adjacent Marsh areas.
 - e. When a trench is cut to install a pipe, wire, or cable, excavation is only slightly wider than the utility line to be buried to minimize wetland disturbance.
 - f. When pipelines are being installed across wetlands, the "trench and push" method of construction is employed. This construction method, the least damaging to the wetlands because it avoids the need for heavy equipment alongside the trench to install the pipe, involves filling the excavated trench with water and pushing or pulling the assembled pipe through the Marsh trench.
 - g. Tidal marsh and managed wetlands disturbed during pipeline, wire, or cable construction will generally revegetate naturally within one growing season if the

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- top layer of soil and vegetation is stockpiled when the trench is first dug and replaced on top of the backfilled trench to facilitate revegetation. If a completed trench is not revegetated within one growing season in a managed wetland, the disturbed area must be reseeded with appropriate native plant seed.
- h. In water areas (bays and sloughs), dredging and pipe and cable installation is scheduled so as to avoid major fish migrations.
- SM.P-27: To protect the Suisun Marsh from potential accidental drainage of toxic materials, any use of the former Pacific Reclamation and Disposal, Inc. site should meet all requirements of the Regional Water Quality Control Board, and any future dam construction to contain waste material should meet all requirements of appropriate regulatory agencies, such as the Division of Dam Safety. Any future expansion, construction, or operation of the former Pacific Reclamation facility should be away from the steep slopes of the hills that front directly on the Marsh.
- SM.P-28: The Potrero Hills Landfill should be permitted to continue its County-approved operation until it reaches final capacity and is closed. Expansion of this facility could impact upland grassland areas, which provide valuable habitat for marsh-related wildlife. However, pursuant to section 29409 of the Suisun Marsh Preservation Act, expansion of the Potrero Hills Landfill should be permitted if it can be shown that the construction and operation of such facilities will not have significant adverse ecological or aesthetic impacts on the Suisun Marsh.
- SM.P-29: Material Disposal Company's debris disposal facility, which is currently not in operation, should not be permitted to resume functioning because its operation would involve fill in tidal marsh and is not compatible with preservation of the Suisun Marsh.
- SM.P-30: Extraction and removal of minerals or natural materials from existing quarries and borrow areas within the Secondary Management Area of the Suisun Marsh should be allowed to continue where not in conflict with protection of the Marsh and in conformance with County Codes. Sites governed by the above provisions include: Two on the Tule Vista Livestock Company properties, of which one is

located east of Scally Road and the other located northeast of Beldon's Landing, one on the Guy Stewart property 1,500 feet west of Shiloh Road, two on the Barnes property 8,000 feet west of Shiloh Road in the Kirby Hills, and two on the Wagent property 3,000 feet west of Shiloh Road. These are in addition to existing sites under County land use permit.

- SM.P-31: In order to improve marsh management, it is important to improve and maintain exterior and interior levee systems, as well as other water control facilities on public and privately-owned managed wetlands. Hauling excessive amounts of earth material on public roads for levee maintenance use can have a detrimental effect on the roads. In order to minimize impacts on existing public roads on the Marsh, earth levee maintenance materials may be transferred from a shore site to barges for transporting the material to a repair site on a temporary basis under the following conditions: (1) there is a proven need for the levee maintenance material at a specific repair site, (2) the transfer site is not a wetland tidal marsh or seasonal marsh; (3) the transfer operation is limited to the minimum time necessary to provide material for the levee repair; (4) any equipment, machinery, or similar facilities needed to transfer materials shall be temporary and removed from the transfer site when not in use and (5) no permanent improvements are developed at a transfer site. At such time as is determined to be appropriate by the Board of Supervisors, a study may be undertaken to determine whether, when deliveries of marsh maintenance materials are made within the Marsh, the operation of a transfer site could encompass transfer of natural materials reclaimed from within the Suisun Marsh from barges to the shore site. Such study, if undertaken, would address the issues of conformance of such an operation with the policies and purposes of the Suisun Marsh Protection Act, and what limitations, conditions, and standards would be necessary to insure protection of the Marsh from adverse environmental impact from such activity.
- SM.P-32: The proliferation of sites for the disposal of special wastes could have significant adverse impacts upon preservation of marsh upland areas. The animal burial ground on Scally Road under County Use Permit should be allowed to operate as

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conditioned. The creation of additional disposal sites of a special nature shall be prohibited.

SM.P-33: The following policies toward diking, filling, and dredging of sloughs, managed wetlands, and marshes should be implemented:

- a. No dredging, filling, or diking activity shall be conducted within the Primary Management Area of the Suisun Marsh, except with the permission of the appropriate permitting authorities.
- b. In order to minimize adverse effects on desirable plant and wildlife communities and to minimize the potential for erosion and sedimentation, all diking, dredging, and filling activities shall be carried out in conformity with the following general principles and standards:
 - i. Stripping or burning of vegetation, or other soil disturbance, should be done in a manner which will minimize adverse impacts on desirable plant and wildlife communities and control erosion and sedimentation.
 - ii. Existing native vegetation shall be retained, protected, and supplemented wherever practical. Development shall be accomplished so that existing trees will be preserved whenever practicable.
 - iii. Exposure of soil to erosion by removal of vegetation shall be limited to the smallest area practicable and for the shortest time practicable. Soil exposure should not exceed an area in which work can be completed during a single construction season to insure that soil stability is established well in advance of the rainy season. In general, soil disturbance shall be limited to the period between April 15 and October 15.
 - iv. Permanent control structures should be installed and final vegetation established as soon as practicable.

- v. Facilities shall be constructed in a manner which will minimize erosion and sediment deposition in adjacent waterways and wetlands.
 - vi. Slopes, both cut and fill, shall not be steeper than 2:1 unless a thorough geological and engineering analysis indicates that steeper slopes are safe and appropriate erosion control measures are specified.
 - vii. Cuts and fills shall not encroach upon existing watercourses or constructed channels in a manner that adversely affects adjacent properties or the carrying capability of the watercourse.
 - viii. Disposal of cleared vegetation and excavated materials shall be done in a manner which reduces the risk of erosion and sedimentation and shall conform to the provisions of these standards.
 - ix. Diking, filling, and dredging activities shall be conducted so as to minimize interference with critical wildlife activities such as nesting and breeding.
- c. To prevent sedimentation resulting from dredging projects and to restore and enhance wetlands, dredged sediments should be disposed of in one of the following ways: (a) placement on dry land; (b) placement as fill in approved fills or levee projects; (c) barging or piping to suitable disposal sites in the ocean, or dumping in areas of the bay designated for such purposes by the appropriate governmental agency; or (d) used to restore or enhance tidal, managed, or seasonal wetlands.
- d. All proposed channels should be designed not to undermine the stability of any adjacent dikes and fills.
- e. Any proposed fills, dikes, or piers should be thoroughly evaluated to determine their effects on sloughs, managed wetlands, and

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marshes, and proposals should be modified as necessary to minimize any harmful effects.

SM.P-34

Wind energy is an important renewable, natural resource which is limited in its statewide distribution. Areas which are endowed with the resource should be considered for prudent development of wind energy. Certain areas within the Suisun Marsh have been identified as having significant potential for wind energy resource development. Specifically identified are areas west of I-680 and in the Potrero Hills; however, numerous other areas may have potential for development of private or commercial wind energy machines. Installation of wind turbines in the Suisun Marsh could have a significant impact upon maintenance of the area in its present natural state, on Marsh wildlife, and on the visual characteristics of the Marsh. Therefore, careful consideration will need to be given projects on a case by case basis to ensure that significant adverse ecological or aesthetic impacts on the Marsh will be avoided. The County's objective is to balance the prudent use of wind resources of the Marsh with the need to protect and maintain its essential environmental qualities. The following should be followed in siting wind energy projects: (1) Commercial wind turbine generators should be permitted in the Secondary Management Area only. (2) Projects should not be allowed to proliferate in the Marsh, but should be allowed only where monitoring has shown productivity to be feasible. (3) The location and density of machines should not substantially alter the principal (agricultural or wetland) allowed uses in the Marsh. (4) Roads and utility transmission lines to serve machines and transmit power from machines must be installed in conformance with provisions of the Suisun Marsh Preservation Act. (5) In order to protect the biological resources of the Marsh, the design, density, height, noise level, illumination, and location of wind turbine generators and ancillary facilities should minimize or avoid the following adverse effects: collision hazards for birds, interference with migratory flight patterns, or disturbance of wildlife habitat. Design considerations of importance should include non-synchronous machines, low-noise design, subdued security lighting, and minimal tower lighting. (6) All construction must be carried out so as to minimize erosion and prevent sedimentation in the Marsh. (7) The installation and operation of wind turbine

facilities must protect the visual characteristics of the Marsh. In order to minimize the impact upon the aesthetics of the Marsh as a natural open space area, wind turbine generators and ancillary facilities should be designed and sited to complement the natural landscape whenever feasible, consistent with the following guidelines: colors should blend with the landscape; lighting should be subdued and be provided for safety and security reasons only; and facilities should be located off the ridgeline unless to do so would result in higher tower height, significant grading, or cut and fill.

RECREATION AND MARSH ACCESS

The Suisun Marsh is an 85,000-acre natural recreational area of statewide significance. The area provides for a variety of recreational opportunities on both private and public lands. Duck hunting is the major recreational activity in the Marsh occurring from late October until January. Fishing accounts for nearly as much recreational use in the Marsh as duck hunting. In addition, several other forms of recreation such as water sports, upland game hunting, and wildlife observation are popular in the Marsh.

The importance of the Suisun Marsh as a recreational area can be seen in the amount of land which is given over to duck hunting. The General Plan's land use diagram identifies two recreational sites in the Marsh. A Wildlife Interpretive Center is planned to be developed near the intersection of Hill Slough and Grizzly Island Road. Beldon's Landing is developed with fishing and boat launch facilities.

Rush Ranch is a 2,070-acre ranch located on Grizzly Island Road, approximately two miles south of Highway 12. The ranch is owned and operated by the Solano Land Trust. The site includes historic buildings, self-guided hiking tours, educational facilities, and a nature center which showcases many of the historic and natural features of the property.

In addition to the above mentioned recreational sites, a number of more passive recreational areas exist in the Marsh. Passive recreational opportunities will be provided at the following areas:

- The 1,112-acre Hill Slough Wildlife area extends along Grizzly Island Road from Hill Slough to State Route 12. Levee construction will return some lands to wetland status and provide public hiking trails.
- The Peytonia Slough Ecological Reserve is a 206-acre area directly south of the City of Suisun City open for public hiking, fishing, and wildlife observation.

A number of recreational oriented commercial uses exist in the Marsh. These uses, which include Little Honker Bay Resort, Pierce Harbor, Suisun Pacific Marina, Port of Suisun Marina, and City of Benicia Marina, are

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located on the edge of the Marsh and are accessible to the general public. As the demand for recreation increases, there may be a need for more such facilities or expansion of existing facilities.

The vast open expanse of the Suisun Marsh is the location of many recreational activities. The Marsh is well known for waterfowl hunting. In addition, several other forms of recreation, including fishing, upland game hunting, and water sports, are also popular. Nevertheless, there are opportunities for a greater diversity and amount of public recreation in the Marsh.

The recreation values of the Marsh, particularly for duck hunting, have been a significant factor in its preservation. Private duck clubs and public agencies, such as the Department of Fish and Game, have made considerable contributions to the improvement of the Marsh habitats for waterfowl as well as other wildlife.

Recreational uses in the Suisun Marsh should be guided through the following policies:

- SM.P-35: Within the Suisun Marsh, provision should be made for public and private recreational development to allow for public recreation and access to the Marsh for such uses as fishing, hunting, boating, picnicking, hiking, and nature study.
- SM.P-36: Recreational uses in the Marsh should be located on the outer portions near population centers and easily accessible from existing roads.
- SM.P-37: Recreational activities that could result in adverse impacts on the environment for the Suisun Marsh should not be permitted.
- SM.P-38: Public access at appropriate locations shall be provided and protected along the County's significant waterways within the Suisun Marsh to the maximum extent feasible.
- SM.P-39: Additional land should be acquired within the Suisun Marsh to provide for increased public duck hunting recreational use and additional refuge areas for waterfowl during the hunting season. Acquisition priority should be given to those lands not now operated as managed wetlands.
- SM.P-40: Land should also be purchased for public recreation and access to the Marsh for such uses as fishing, boat launching, nature study, and for scientific and educational uses. These areas should be located on the outer portions of the Marsh near the population centers and easily accessible from

- existing roads. Improvements for public use should be consistent with protection of wildlife resources.
- SM.P-41: Public agencies acquiring land in the Marsh for public access and recreational use should provide for a balance of recreational needs by expanding and diversifying opportunities for activities such as bird watching, picnicking, hiking, and nature study.
- SM.P-42: Agencies administering land acquired for public access and recreational use should be responsible for maintaining the areas and controlling their use. Signing on roads leading into the Marsh and maintained litter receptacles at major public use areas should be provided by the appropriate local or state agency to prevent littering and vandalism to public and private property.
- SM.P-43: Recreational activities that could result in adverse impacts on the environmental or aesthetic qualities of the Suisun Marsh should not be permitted. Levels of use should also be monitored to ensure that their intensity is compatible with other recreation activities and with protection of the Marsh environment. For example, boat speeds and excessive noise should be controlled and activities such as water skiing should be kept at an acceptable level.

SCENIC RESOURCES

The policies set forth below provide a series of guidelines to be used by the County in its land development guidance procedures within the Suisun Marsh. It is the intent that these provisions be employed as criteria to be adhered to by all future land development which falls within the visual components of any of the designated scenic roadways. Intensive development cannot be visually absorbed into a Marsh landscape without seriously disrupting the delicate foreground and unprotected background view components. Intensive development here can also result in disruption of the local ecosystem which supports the Marsh and its unique and delicate visual character.

The following policies apply to view components of all designated scenic roadways adjacent to and within the Suisun Marsh:

- SM.P-44: The number of man-made interruptions or incidents along a scenic roadway (housing, commercial uses, signs, driveways, etc.) should be limited to maintain the current visual values as the prevalent feature of the route.

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- SM.P-45: Placement of off-site advertising along a designated scenic roadway should be prohibited, except where provisions are made, as part of a standardized, public, on-road sign program, for providing signing within the roadway right-of-way for roadway related services. Such a program could provide a series of signs of similar design, identifying food, lodging, and other road-related services by type and by the symbol or logotype of the proprietor.
 - SM.P-46: Dryland and upland within the Suisun Marsh should remain in open space use (grazing, cropland, or other extensive uses) to protect the unique visual character of the landscape.
 - SM.P-47: Existing habitats should be protected from encroachment due to their own visual value and their role in maintaining the Marsh ecosystem and its overall scenic value.
 - SM.P-48: Since such a flat and expansive natural environment tends to exaggerate vertical elements, undergrounding of utility lines is highly recommended.
 - SM.P-49: Maintenance and protection of existing windbreaks should be encouraged to provide a contrasting visual element on flatland landscapes and to call attention to distant farm development or to places where major changes occur in the alignment of a scenic roadway.

WATER DEPENDENT INDUSTRIAL USES

The following Water Dependent Industrial policies shall be applicable to the Water Dependent Industrial land use designation, shown on Figure LU-1, within the Suisun Marsh:

- SM.P-50: The upland portion of the Collinsville site, above the 10-foot contour line, presents no significant physical constraints for development and should be reserved for water-related industry use.
- SM.P-51: The low-lying-portion of the Collinsville site, below the 10-foot contour line, does present physical constraints for development and consists of critical marsh-related wildlife habitats. Nevertheless, the portion of this area that fronts on deep water should be reserved for water-related industry use.

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- SM.P-52: Reservation of the Collinsville site for water-related industry use notwithstanding, wetland restoration or enhancement of the area below the 10-foot contour line may occur, provided that the restoration or enhancement program is carried out in a manner that will not preclude use of the deep water shoreline and area above the 10-foot contour line for water-related industry use. Specifically, any wetland restoration or enhancement project should be designed not to restrict possible future development and operation of marine terminals and marine terminal berths on the deep water shoreline and the movement of waterborne cargo, materials, and products from the shoreline terminal to the upland portions of the site.
- SM.P-53: A program to prevent accidental spills of toxic and hazardous materials entering Montezuma Slough should be developed by industries constructing marine terminal facilities at Collinsville. Prior to the use of such facilities, equipment required to carry out the prevention program should be installed at the appropriate location at or adjacent to the mouth of Montezuma Slough.
- SM.P-54: The remaining areas of lowland grassland and seasonal marsh in the Collinsville site should be preserved and, whenever possible, enhanced or restored for their intrinsic value as marsh-related wildlife habitat and to act as a buffer between the Suisun Marsh and industrial and port activities. There are several land uses that could occur in this area. The existing agricultural use – cattle grazing – could be continued. Portions of the area should also be restored to wetland status, either as tidal marsh or managed wetlands. Dredged materials may be used in any wetland enhancement or restoration program when such activity will be conducted without adverse environmental impacts on the Marsh.
- SM.P-55: All future industrial development adjacent to the Suisun Marsh and within areas reserved for water-related industry should conform to the following planning guidelines:
- a. Industrial activities should not have the potential to cause significant adverse impacts on the Suisun Marsh. In particular, water quality should be maintained by ensuring that no hazardous or toxic

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materials could be introduced into the Marsh sloughs and by prohibiting activities that could alter the temperature, salinity or turbidity of the water. Construction of necessary access routes across wetlands should result in the minimum possible disturbance to the ecosystems and wildlife. Pipelines should be installed using the procedures described in the Utilities, Facilities, and Transportation section of this Chapter. Conveyor belts and railroads should be constructed on trestles, except in situations such as along the western boundary of the Collinsville water-related industry area, where a railroad may be constructed on fill in order to provide a dike separating industrial facilities from wetlands.

- b. The construction and development of any industrial facilities adjacent to and upstream from the Suisun Marsh should comply with the policies of the Water Supply and Quality section of this Chapter and all applicable State and Federal water and air quality standards.
- c. Industrial facilities should not be located directly adjacent to the Suisun Marsh. A buffer area should be provided to reduce adverse environmental impacts on the Marsh.
- d. Development of industrial sites should not result in the construction of physical barriers, such as freeways, fences, or exposed pipelines, that impede the movement of wildlife. In addition, construction of very tall structures with which wildlife is prone to collide, especially during migrations and in bad weather, should be avoided. Industrial facilities adjacent to wildlife areas that deter the landing of wildlife should also be avoided. However, the type, size, and location of structures that would be hazardous to wildlife are difficult to generalize. Therefore, decisions should be made on a case by case basis to ensure that structures in the vicinity of the Marsh are located and constructed to avoid, to the maximum extent feasible, interference with the flight or migration patterns of wildlife.

- e. Industry sites should be developed to allow the most efficient use of the shoreline. For example, in the Collinsville site, wharves constructed along the shoreline in the area reserved for water-related industry, in addition to any petroleum dock which may be needed, should be shared to the maximum extent feasible by industries locating in the water-related industry area.
- f. Storage of raw materials, fuel, or products should not be permitted at the shoreline on a permanent or long-term basis. The waterfront is too scarce and valuable a resource to accommodate uses, such as storage, that could be located farther inland.
- g. Industrial facilities should be located and designed to avoid visual intrusion on the Suisun Marsh. Where sloping land is to be used for industrial development, it should be terraced rather than leveled, and soil erosion and storm water runoff should be controlled. Buildings should have a low profile and not be highly visible against the skyline, should be well-designed and unobtrusive in appearance, and should use colors and materials compatible with the surrounding landscapes. Appropriate landscaping should be used to reduce the impact of industrial structures on views from the Suisun Marsh.
- h. Because the industrial waterfront is attractive and interesting to many people, public access to the shoreline should be provided wherever feasible, unless it will result in interference with industrial activities or hazards to the public. Public access to exceptional natural features within industrial areas should also be provided wherever feasible.

POLICIES REGULATING SEWAGE DISPOSAL SYSTEMS WITHIN THE SUISUN MARSH

Portions of the Suisun Marsh Preservation Act and the Suisun Marsh Protection Plan are directed toward maintenance of water quality through controls on individual sewage disposal systems, a responsibility of

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the Solano County Department of Resource Management, Environmental Health Services Division.

The specific requirement directed to the Solano County Department of Resource Management, Environmental Health Services Division, is found in Section 29401(c) of the Suisun Marsh Preservation Act: "Within the marsh, the Local Protection Program shall include but not be limited to ... [e]nforceable standards for the operation of septic tanks and wastewater discharges."

The rationale for this requirement and additional details are in Policy No. 5 of the Utilities, Facilities and Transportation Section of the Suisun Marsh Protection Plan [May 2012 reprint edition], which states;

5. Because septic tanks do not function properly in the wetland area, the Solano County Department of Resource Management should continue to work with landowners to phase out existing septic systems in the wetlands and require new systems that would properly dispose of wastes as required by the Solano County Department of Resource Management and the Regional Water Quality Control Board.

The Department of Resource Management, Environmental Health Services Division, has responsibilities in the Marsh to control wastewater discharges from septic systems through enforcement of Solano County Code Chapter 6.4, which establishes a comprehensive, uniform set of sewage disposal standards for Solano County.

In 1975, Solano County enacted an ordinance (No. 888) to regulate individual sewage disposal systems. In July of 2001 revisions to Solano County Code were approved as Chapter 6.4, Sewage Disposal Standards. These standards were amended again in December of 2004 and are applicable within the Suisun Marsh. Under Chapter 6.4, a permit from the Health Services Division is required to repair, modify, or construct waste disposal systems. Minimum criteria for the siting and construction of a septic tank/leachfield system include soil typing and identification, percolation rate, soil depth, depth and separation to ground water, ground slope, and adherence to setbacks, including setbacks to surface water. The use of vaults or holding tanks is allowed for specific circumstances such as for duck clubs in the Primary Management Area of the Suisun Marsh. Additional changes in the ordinance which help to improve environmental conditions include requirements for site evaluations by professional consultants to identify and mitigate separation to groundwater and the requirement for alternative type septic systems. Alternative systems provide improved effluent distribution throughout the disposal field, have high-level alarms in the dosing tank, require evidence of a maintenance contract with a service provider and ongoing monitoring, and may require pre-treatment devices that produce a higher quality effluent than effluent from conventional septic systems.

As indicated in the Marsh Plan, septic tank/leachfield systems do not operate at optimum efficiency in wetland areas and, in general, site

conditions for the Primary Management Area of the Marsh will not meet minimum requirements for the construction of a new standard-type on-site sewage disposal system. An improper sewage disposal system, once identified, shall be replaced with an on-site sewage disposal system which meets the requirements of the Solano County Code. Sites which cannot accommodate a conventional in-ground leaching system due to site conditions may be replaced with alternative type sewage disposal systems if conditions allow, or, as a last resort, may be replaced with holding tanks. The Department of Resource Management, Environmental Health Services Division, is responsible for enforcement of Solano County Code, Chapter 6.4 Sewage Disposal Standards. These standards, which implement the following sewage disposal policies, are applicable to individual sewage disposal systems in the Suisun Marsh.

- SM.P-56: Property owners within wetland areas are urged to seek Departmental assistance to alleviate potential water quality problems resulting from malfunctioning individual sewage systems.
- SM.P-57: Where it is determined that an individual sewage system does not function properly, the nuisance shall be abated and, if appropriate, the on-site sewage disposal system shall be repaired or replaced in accordance with Solano County Code, Chapter 6.4, Sewage Disposal Standards.

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