Glossary

Acre-foot—An acre of water one foot deep (approximately 326,000 gallons). The typical California family of five uses an acre-foot of water in and around the home each year.

Agricultural Lands—Refers to a land use rather than a type of wetland or related habitat; it is referred to because the way agricultural lands are managed can retain or inhibit inherent wetland characteristics.

Ahwahnee Principles—A series of land use recommendations written in 1991 by the Local Government Commission providing a blueprint for resource efficient communities paving the way for the smart growth movement and New Urbanism; spawned related Ahwahnee Principles for Economic Development and Ahwahnee Water Principles to cover other aspects of more livable communities.

Ambient—Refers to the overall conditions surrounding a place or thing. For example, ambient monitoring refers to comprehensive monitoring of water quality, biota, sediments, etc.

Anadromous—Fish that live some or all of their adult lives in saltwater but migrate to freshwater to spawn (reproduce).

Anthropogenic—Effects or processes that are derived from human activities, as opposed to natural effects or processes that occur in the environment without human influence.

Aquatic Transfer Facility—An underwater storage basin in which dredged materials can be placed temporarily before being moved to a beneficial reuse site.

Baylands—The shallow water habitats around San Francisco Bay between the maximum and minimum elevations of the tides, including tidal habitats and lands that would be tidal in the absence of levees, sea walls, or other human-made structures that block the tides. The "baylands ecosystem" includes the baylands, adjacent habitats, and their associated plants and animals.

Beneficial Reuse—The use of dredged materials for ecological restoration projects, levee rehabilitation, or other forms of construction materials instead of disposing of the material.

Beneficial Use—Uses of the waters of the state that must be protected against quality degradation, including domestic, municipal, agricultural, and industrial supply; recreation and navigation; and the preservation of fish and wildlife.

Benthos—Zone at the bottom of a body of water inhabited by mussels, clams, crustaceans, and other aquatic life.

Best Available Technology—The best economically achievable technology that reduces negative impacts on the environment.

Best Management Practice—A method, activity, maintenance procedure, or other management practice for reducing the amount of pollution entering a water body. The term originated from the rules and regulations developed pursuant to the federal Clean Water Act (40 CFR 130).

Best Development Practice—Those codes, procedures, or other land-use practices that minimize adverse environmental impacts.

Bioaccumulation—Accumulation by organisms of contaminants by ingestion or from contact with the skin or respiratory tissue.

Bioassay—A laboratory test using live organisms to measure biological effects of a substance, factor, or condition.

Bioavailability—The extent to which a compound is obtainable for biological use by organisms.

Bioconcentration—Chemicals that increase in living organisms resulting in concentrations greater than those found in the environment.

Biota—All living organisms that exist in a region.

Brackish—Somewhat salty water that is less salty than seawater.

Brine—Concentrated solution of salts.

Buffer Areas—Zones created or sustained to minimize the negative effects of land development on animals and plants and their habitats.

Carcinogenic—Capable of causing or inciting cancer.

Channelization—Straightening and deepening streams so water will move faster, a marsh-drainage tactic that can interfere with waste assimilation capacity, disturb fish and wildlife habitats, and aggravate flooding.

Conjunctive Use—The use of land, air, or water for more than one purpose or by more than one person. Conjunctive uses exist side by side or in tandem.

Conservation Easements—Areas that allow for unrestricted movement of biota by connecting protected wildlife regions to each other. These corridors are usually established by joint agreement between landowners and state or federal agencies and may be temporary or perpetual.

Contamination—The impairment of water quality by waste to a degree that creates a hazard to public health through poisoning or through the spread of disease.

Cross-media Impacts—Detrimental effects on an ecosystem caused by the movement of contaminants or pollutants from one area of the environment to another due to invasive

subsurface activities (e.g., gaseous contaminants emitted by power plants to the sky which may turn into precipitation and fall into water bodies, rivers, and streams as acid rain).

Cumulative Effects—The combined environmental impacts that accrue over time and space from a series of similar or related individual actions, contaminants, or projects. Although each action may seem to have a negligible impact, the combined effect can be severe.

DDE and DDT—Dichloro-diphenyldichloro-ethlyene and dichloro-diphenyl-trichloroethane are two formerly commonly used pesticides that are now banned in the United States.

Delta—An area formed by alluvial deposits of sand, silt, mud, and other particles at the mouth of a river.

Detritus—Small particles of organic matter, largely derived from the breakdown of dead vegetation. Detritus is an important source of food in marshes and mudflats.

Diking—A method of artificially changing the direction of a course of water or confining water.

Diversion—The act of turning the natural course of water for use in other purposes.

Draft—The measure of the portion of a ship that is below the water's surface.

Dredging—The removal of sediments from the Estuary and ocean floor.

Effluent—Wastewater discharged into the Estuary from point sources.

EIR/EIS—Environmental Impact Reports and Statements that are required by state law (California Environmental Quality Act) and federal law (National Environmental Policy Act) for major projects or legislative proposals that significantly affect the environment. EIRs (state) and EISs (federal) facilitate decision-making as they describe the positive and negative effects of the action and prescribe alternative actions.

Emerging Contaminants—Pollutants of concern about which we do not have much historical monitoring information to assess trends, and which are not captured within existing water quality regulatory frameworks, but which may be found at relatively high concentrations in sediment; a broad class of unregulated chemicals.

Endemic—A native species defined in terms of a restricted geographical range.

Endocrine Disrupting Chemicals/Compounds (EDCs)—Any substance that affects an animal's ability to reproduce and develop.

Entrainment—Occurs when small aquatic organisms are incorporated or swept along with water flow into intake structures and the machinery of the industrial facility, usually with cooling water.

Entrapment Zone—The area where salty ocean water moving upstream mixes with freshwater flowing downstream. The mixing dynamics in this zone trap nutrients, organic and inorganic materials (e.g., fish and invertebrate eggs), and other food sources. These circumstances enable considerable plant and animal growth, but an entrapment zone's success depends on its location and surrounding conditions.

Environmental Justice—Defined by California statute as "[t]he fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of all environmental laws, regulations, and policies."

Ephemeral Streams—Streams that flow only during and for a short duration after precipitation events.

Estuary—A body of water at the lower end of a river, which is connected to the ocean and semi-enclosed by land. In an estuary, seawater is measurably diluted by freshwater from the land.

Fill—Soil, sand, and debris deposited in aquatic areas, such as wetlands, to create dry land, usually for agricultural or commercial development purposes.

Floodplain—A flat area adjoining a stream or river that is constructed by the stream or river in the present climate and that receives over-bank flow at times of high discharge.

Food Web—Network of interconnected food chains and feeding interactions among organisms.

Good Condition—According to California Department of Fish and Game Code 5937, a stream is in good condition if sufficient water is allowed to pass through to keep in good condition any fish that may be planted or exist in the waterway.

Graywater—Untreated wastewater that has not been contaminated by any toilet discharge; has not been affected by infectious, contaminated, or unhealthy bodily wastes; and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. Graywater includes wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines, and laundry tubs, but does not include wastewater from kitchen sinks or dishwashers.

Groundwater Recharge—Replenishment of water that circulates in underground aquifers.

Habitat—The specific area or environment in which a particular type of plant or animal lives. An organism's habitat must provide all of the basic requirements for life and should be free of harmful contaminants.

Habitat Conservation Plans—Authorized under section 10(a)(1)(B) of the Endangered Species Act (ESA) and administered by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, these plans, known "HCPs," provide a clear regulatory mechanism to permit the incidental take of federally listed fish and wildlife species by private interests and non-federal government agencies during lawful land, water, and ocean use activities.

Impermeable Layer—Layer of clay below ground surface that can impede downward percolation of water.

Impingement—Occurs when aquatic organisms, such as adult fish and shellfish, are thrust upon fish screens and are trapped, injured, or killed.

Indicator Species—A species whose characteristics show the presence of specific environmental conditions and are representative of a certain habitat type or function.

Indigenous—Species whose origin has not been introduced from elsewhere.

Infrastructure—The basic facilities, services, and installations placed in the environment for a public purpose. These may include roadways, flood control facilities, piping, pumping facilities, storm drain facilities, wastewater treatment facilities, detention ponds, etc.

Invertebrates—Small organisms, such as clams and worms, that lack a spinal column. Many of these filter bottom sediments and water for food.

Knockdown—An activity involving the leveling or spreading of shoaled or mounded material in order to maintain a waterway rather than directly removing material from that waterway.

Leach—To pass out or through soil by water percolation.

Leaching—The removal of salts and trace elements from soil by the downward percolation of water.

Levee—Raised bank of earth built to control or confine water (also known as a dike).

Marine Debris—Includes all types of discarded human-made materials, which in this case, end up in the Estuary. The most common objects are plastic and other synthetic products that do not easily biodegrade. Large deposits of marine debris may accumulate on shorelines and reduce the value of, or eliminate, fringe marsh and upland refugia habitats. Wildlife mortality and impairment occur when marine debris entangles or is ingested by birds, mammals, fish, and other aquatic organisms.

Marsh—A wetland where the dominant vegetation is non-woody plants, such as grasses and sedges, as opposed to a swamp, where the dominant vegetation is woody plants like trees.

Mean—Midpoint between high and low.

Mercury Methylation—A naturally occurring process in aquatic ecosystems in which sulfate-reducing bacteria convert inorganic divalent mercury into methylmercury, the highly toxic form that readily accumulates in exposed organisms and biomagnifies to high concentrations in fish and wildlife atop aquatic food webs and that can be transported from the site of methylation by several processes, including resuspension of bed sediments, diffusive and tidal solute fluxes, hydrologic transport with sediment or colloids, and uptake

into mobile aquatic biota. Methylmercury can be lost by the processes of microbial and photo demethylation, burial in deposited sediment, and emigration or harvest of contaminated biota.

Mitigation—Actions taken to alleviate the negative effects of a particular project. Wetland mitigation usually takes the form of restoration, or enhancement of a previously damaged wetland, or creation of a new wetland.

Mitigation Banking—The restoration, creation, enhancement, or preservation of wetlands expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources. The objective of a mitigation bank is to provide for the replacement of the chemical, physical, and biological functions of wetlands and other aquatic resources that are lost as a result of authorized impacts. Using appropriate methods, the newly established functions are quantified as mitigation credits, which are available for use by the bank sponsor or by other parties to compensate for adverse impacts.

Mounding—Refers to dredged sediments disposed of in the water that build up instead of dispersing with currents and tides.

Mutagenic—A substance that tends to increase mutations or chromosomal alterations.

Native—Refers to those species originating naturally in a particular region.

Non-native Invasive or Nonindigenous Species—Any species or other variable biological material that enters an ecosystem beyond its historic geographic range, including such organisms that have been transferred from one country to another.

Nonpoint Source Pollution—Pollution that enters water from dispersed and uncontrolled sources, such as surface runoff, rather than through pipes. Nonpoint sources (e.g., forest practices, agricultural practices, on-site sewage disposal, automobiles, and recreational boats) may contribute pathogens, suspended solids, and toxicants. While individual sources may seem insignificant, the cumulative effects of nonpoint source pollution can be significant.

NPDES—National Pollutant Discharge Elimination System, a provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the U.S. Environmental Protection Agency, a state, or another delegated agency.

Organophosphate—Applies to a wide range of chemicals derived from phosphoric and similar acids which are used as highly effective pesticides; their toxicity to nontarget animals, including people, echoed the perils of DDT. Regulators responded, and by the mid-1990s, once-popular members of this class of agents, such as Dursban, malathion, and chlorpyrifos, were being phased out or severely restricted in their uses.

PAHs—Polycyclic or Polynuclear Aromatic Hydrocarbons. A class of complex organic compounds, some of which are persistent and cancer-causing. These compounds are formed from the combustion of organic material and are ubiquitous in the environment. PAHs are commonly formed by forest fires and by the combustion of gasoline and other petroleum products. They often reach the environment through atmospheric fallout and highway runoff.

PCBs—Polychlorinated Biphenyls. A group of manufactured chemicals, including about seventy different but closely related compounds made up of carbon, hydrogen, and chlorine. If released to the environment, PCBs persist for long periods and can biomagnify in food chains because they have no natural usage in the food web. PCBs are suspected of causing cancer in humans and other animals. PCBs are an example of an organic toxicant.

Peat—Partially carbonized vegetable tissue that forms as plants decompose in water and are deposited and compacted.

Pelagic Organism Decline (POD)—Pelagic organisms are open-water species that live in the ocean or estuaries like the San Francisco Bay-Delta. For the three-year period from 2002 to 2004, Interagency Ecological Program monitoring identified declines in numerous pelagic fish in the Bay-Delta. The abundance indices include record lows of Delta smelt and young striped bass, and near-record lows of longfin smelt and threadfin shad and other organisms, including zooplankton that are dependent on the Bay-Delta.

Performance Measure Indicators—Chosen parameters (e.g., riparian habitat, fish assemblage, stream channel condition) that can provide measurements of the current condition of a resource.

Permeable—Able to be infiltrated by water.

Phytoplankton—Tiny floating plants that are eaten by minute animals, fish larvae, and other larger organisms.

Plankton—Microscopic plants and animals that drift with the currents.

Plume—An elongated cloud of suspended sediment.

Point Source Pollution—A source of pollutants from a single point of conveyance, such as a pipe. For example, the discharge from a sewage treatment plant or a factory is a point source.

Pollutant—A harmful chemical or waste material discharged into the environment. Persistent pollutants are those that do not degrade, causing potential long-term chronic toxicity to biotas.

Pollution—Impairment of land, air, or water quality by agricultural, domestic, or industrial waste to a degree having an adverse effect on beneficial uses or the facilities that serve such beneficial uses.

POTWs—Publicly Owned Treatment Works treat municipal sewage and wastewater before discharging it into the Estuary.

Pyrethroids—Synthetic derivatives of the chrysanthemumic acids developed as insecticides to replace the organophosphates but which have been discovered to have serious environmental impacts. At concentrations found in streams, the chemicals can kill beneficial

insects and crustaceans and may even be acting “below the radar screen” to poison fish and lizards.

Recycled Water—Water that, as a result of treatment of waste, is suitable for a direct beneficial use.

Reference Site—A specific location in a water body that is unimpaired or minimally impaired and is representative of the expected biological integrity of other localities on the same water body or nearby water bodies. For dredging projects, reference sites serve as points of comparison to identify the potential effects of contaminants in material proposed for disposal. Reference sites are generally selected based on similarities to the grain size, composition, geology, and habitat of a designated aquatic disposal site.

Remediation—A way of correcting or alleviating a problem or situation. Legally, remediation is either a means of compensating for a violation of the law or for unavoidable impacts resulting from legal activities.

Restore—For the purposes of the CCMP, restoration implies improving the health of the Estuary. Rather than attempting to completely restore the Estuary to its historical state, the CCMP strives to maintain, protect, and enhance the ecological integrity of the Estuary within the given urban context. The CCMP attempts to regain as much of the altered or destroyed wetlands as possible, to establish the highest restoration or target goals, to ensure continuance of beneficial uses, and to generally provide a sustainable ecosystem.

Reverse Flows—When freshwater inflow is low and export pumping is high, the lower San Joaquin River changes direction and flows upstream.

Riparian—Habitat occurring along the bank of a natural and freshwater waterway (e.g., a river, stream, or creek) that provides for a high density, diversity, and productivity of plant and animal species.

Runoff—Water from rain, melted snow, or agricultural or landscape irrigation that flows over the land surface.

Salts—A class of compounds that includes common table salts, sodium chloride, as well as salts of concern in irrigated agriculture, e.g., the various carbonated, bicarbonates, sulfates, phosphates, and chlorides of sodium, calcium, potassium, and magnesium.

Saltwater Intrusion—The invasion of fresh surface or groundwater by saltwater. If it comes from the ocean it may be called seawater intrusion.

Savanna—A grassland area containing scattered trees and drought-resistant undergrowth.

Seasonal Wetlands—An area that is only saturated or inundated for part of the year, usually during heavy winter or spring precipitation events.

Sediment—Mud, sand, silt, clay, shell debris, and other particles that settle on the bottoms of waterways.

Sediment Budget—A sediment budget is a balance of the quantity of sediment entering and leaving a selected segment of coast or estuary.

Sediment Dynamics—The natural movement of sediment through a riverine, marine, or estuarine environment due to flow, tidal forces, currents, or wave action.

Selenium—A naturally occurring element essential to human and animal sustenance. However, selenium is toxic at little over the suggested nutritional levels. Selenium is used in a variety of products, is a byproduct of many industrial activities, and is leached from the soil and becomes agricultural runoff.

Slough—A channel through a marsh or mudflat.

Slurry—Sediments mixed with water.

Source Reduction—An approach that uses raw material substitution and technological improvements to eliminate toxic wastes at their source.

Spawn—The act of reproduction of fish, which includes egg laying and fertilization, and sometimes nest building (e.g., salmon).

Special Status Species—Federal and state classifications for plant and animal species that are either listed as threatened or endangered, are formally recognized candidates for a listing, or are declining to a point where they may be listed.

Stormwater—Discharges generated by runoff from land and impervious areas, such as paved streets, parking lots, and building rooftops, during rainfall and snow events that often contain pollutants in quantities that could adversely affect water quality. Most stormwater discharges are considered point sources and require coverage by a National Pollutant Discharge Elimination System (NPDES) permit.

Subsidence—Lowering or sinking of land caused by compaction, wind and water erosion, oxidation of peat soils, and other causes.

Subsurface Drainage—When an impermeable clay layer causes water to accumulate just beneath the land's surface. Tile drains remove water from the root zone to a stream, drainage ditch, or evaporation pond.

Subtidal—Aquatic areas and their associated physical, chemical, and biological properties that are used by organisms for their entire life cycle, including the water column, unconsolidated sediment, hard bottom, structures underlying the waters, submerged aquatic vegetation, native shellfish, and associated biological communities.

Suspended Sediments—Undissolved particles floating in water.

Sustainable Development—Balancing the fulfillment of human needs, economic and social, with protection of the natural environment so that these needs can be met not only in the present but without compromising the ability of future generations to meet their own needs.

Tailwater and Seepage—Tailwater is the excess irrigation water that runs off the surface of a field; seepage is the excess that sinks in.

TBT—Tributyltin. An organic compound used as an additive in many marine antifoulant paints used to prevent algal and barnacle growth. Tributyltin is highly toxic to many marine organisms.

THMs—Trihalomethanes are carcinogens that are byproducts of the water-disinfection process. They are formed when organic compounds found in water come into contact with chlorine used for disinfection during water treatment.

Tide—The alternating rise and fall of the ocean and bay surface that occurs twice a day, caused by the gravitational pull of the sun and moon upon the earth and by the rotation of the earth, moon, and sun.

Tile Drains—A network of pipes, formerly made of ceramic tile but now usually plastic, buried in fields below the root zone of plants. The drains are designed to collect excess water and carry it by gravity flow to one point where it can be pumped out to a canal, stream, or evaporation pond.

Toxic Hot Spot—A location in enclosed bays, estuaries, or adjacent waters where hazardous substances have accumulated in the water or sediment to levels that: 1) may pose a substantial present or potential hazard to aquatic life, wildlife, fisheries, or human health, or 2) may adversely affect the beneficial uses of the bay, estuary, or ocean waters as defined in the water quality control plans, or 3) exceed adopted water quality or sediment quality objectives.

Trace Elements—Members of the set of ninety-two naturally occurring elements (such as selenium and silver) found in low concentrations, usually less than one part per million. Trace elements can be found in rocks, soil, and water.

Transition Habitat—Areas between habitat types that are of critical importance due to their ability to modify impacts from nearby habitats (to “buffer”), and that also have intrinsic value as habitat for endangered and threatened species. They are differentiated from “buffers” (which broadly are thought of as ameliorating the effects of human activities), and transition zones, which are essentially boundaries between (usually natural) habitats.

Treatment—Wastewater treatment is divided into three steps: primary, secondary, and tertiary. Primary treatment uses screens and sedimentation tanks to remove most materials likely to float on the water or settle on the bottom. Secondary treatment uses a biological process to consume organic materials in the waste and disinfect the effluent. Tertiary treatment removes additional nutrients, suspended solids, and other pollutants.

Turbidity—The clouding of a naturally clear liquid due to suspension of fine solids. Because turbidity reduces the amount of light penetrating the water column, high turbidity levels are harmful to aquatic life.

Upland Habitat—All habitats found above the baylands ecosystem.

Urban Runoff—Uncontrolled or untreated runoff from the urban environment and from construction activities that runs off the landscape into surface waters. This runoff can include such pollutants as sediments, pathogens, fertilizers/nutrients, hydrocarbons, and metals.

Water Column—The layer of water between surface and bottom sediments. The water column contains dissolved and particulate matter and provides habitat for plankton, fish, and marine mammals.

Watershed Plan—An integrated habitat management plan using a watershed-based approach to water and wetlands protection that considers the whole hydrologic system, including other resources that address land, air, and water, to successfully manage problems for a given aquatic resource.

Wetlands—Lands that are transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Two major wetland types of concern are seasonal wetlands inundated by winter and spring rainfall and flooding, and tidal wetlands flooded daily by ocean tides.

Vector—Used here in the biotic sense, the physical means or agent by which a species is transported between regions.

Vernal Pools—Depressions that fill with rain water in the wet season and dry out in late spring. Vernal pools often contain plants that can withstand extremes in water availability.