

Chapter 6. Glossary of Technical Terms

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Note: All acronyms used in the text are defined under “List of Acronyms” found after the Table of Contents and Lists of Tables and Figures in the front of this document.

Acre-foot. The quantity of water that would cover 1 acre to a depth of 1 foot (43,560 cubic feet or 326,700 gallons).

Actual exports. Actual exports are the least of the following: the amount specified by the export limits (i.e., as percentage of inflow), available water (i.e., water available after outflow requirements are met), and permitted export pumping rate.

Adulticides. Mosquito pesticides that target adult-stage mosquitos.

Agricultural yield. A measurement of the level of crop production for a given area, generally given in tons or tons per acre.

Allowable export. The amount of water allowable for export under the 1995 WQCP; the lesser of the amount specified by the export limits (i.e., percentage of total Delta inflow) and the amount remaining after outflow requirements are met (i.e., available water).

Anadromous species. Fishes that mature in marine waters and migrate to fresh water to spawn.

Anticorrosion coating. The coating of pipelines with paint, epoxy, or other materials to prevent contact of dissimilar metals. The barrier prevents establishment of a corrosion current and corrosion of the pipe.

Appropriative water rights. Water rights held in the form of conditional permits or licenses from SWRCB, which allow the diversion of a specified amount of water from a source for reasonable and beneficial use during all or a portion of the year. In California, previously issued appropriative water rights are superior to and take precedence over newly granted rights. SWRCB’s authorizations contain terms and conditions to protect prior water right holders, including Delta and upstream riparian water users, and to protect the public interest in fish and wildlife resources. To a varying degree, SWRCB reserves jurisdiction to establish or revise certain permit or license terms and conditions for salinity control, protection of fish and wildlife, protection of vested water rights, and coordination of terms and conditions between the major water supply projects.

Aquifer. A porous soil or geological formation lying between impermeable strata that contains groundwater; yields groundwater to springs and wells.

Available water. Under the 1995 WQCP, total Delta inflow less Delta outflow requirements.

Bearing capacity. The maximum load that a structure can support, divided by its effective bearing area (the part of the structure that carries the load).

Bending load. The result when the opposite ends of an item are forced together (as when a sheet of paper is folded). Pipelines can be subject to this type of load.

Biological oxygen demand (BOD). A measure of rapidly oxidized or decayed organic materials.

Blowout ponds. Small lakes on Webb and Holland Tracts scoured in the island bottoms by intrushing floodwaters caused by levee failures in 1950 on Webb Tract and in 1980 on both islands.

Borrow area. An excavated area or pit created by the removal of earth material to be used as fill in a different location.

Bti (*Bacillus thuringiensis israelensis*). A bacterial larva that consumes first and second larval instar stages of mosquitos.

Buttress. To steady a structure by providing greater resistance to lateral forces to prevent failure. Also, an exterior pier, often sloped, used to steady a structure in this manner. See also “toe berm”.

Calibration. See “model calibration”.

Candidate species (*also candidate threatened or endangered species*). Taxa (species or subspecies) of plants and animals currently being considered for listing to be protected as special-status species by USFWS.

Carriage water. Delta outflow beyond the basic outflow required to meet water quality standards. The additional Delta outflow required (carriage water) is a function of Delta export pumping and south Delta inflow, and is necessary to maintain acceptable chloride concentrations in export water as Delta exports are increased.

Carryover storage. The amount of stored water remaining at the end of the water year (end of September) in San Luis Reservoir (for CVP and SWP) or on the Delta Wetlands reservoir islands.

Cathodic protection system. A process used to prevent pipeline corrosion by passing an electric current through the pipe. When dissimilar metals (the pipeline and soil minerals) are placed in solution together, a corrosion current is established. The cathodic protection system creates an opposite current to minimize corrosion.

Central Delta water. Used in the DeltaSOQ model to represent the source of export water from the central Delta, which includes a mixture of water from the Sacramento, Mokelumne, and Cosumnes Rivers; seawater intrusion from the western Delta; and some portion of the Sacramento River that does not flow directly to the export locations.

Central Valley Project (CVP). The federal water project in California's Central Valley operated by Reclamation.

Channel depletion. The water removed from Delta channels by diversions for irrigation and by open-water evaporation.

Color. A variable of water that reflects its organic content (primarily humic and fulvic acids).

Confirmation. See "model confirmation".

Conjunctive use. A term used to describe operation of a groundwater basin in coordination with a surface water system.

Consumptive use. Loss of water on the Delta Wetlands Project islands and other Delta islands through crop ET and open-water evaporation and use for shallow-water management for wetlands and wildlife habitat. Rainfall and channel depletion supply the consumptive-use water.

Conveyance. The flow capacity of a channel related to the hydraulic radius, used to describe the flow in channels.

Conveyance capacity. The volume of water that can be transported by a canal, aqueduct, or ditch. Conveyance capacity is generally measured in cfs.

Cubic feet per second (cfs). A measure of a moving volume of water, sometimes shortened to "second-feet".

Cultural resource. Any building, site, district, structure, object, data, or other material significant in history, architecture, archaeology, or culture.

DailySOS. A daily operations model used to confirm the adequacy of the analysis completed using DeltaSOS (which simulates the effects of regulatory standards and water management projects on the Delta on a monthly basis).

DAYFLOW. DWR's database of daily hydrologic conditions, including measured Delta inflows and exports, estimated consumptive use, and net Delta outflow. The daily data have been compiled for each water year (October 1 to September 30) beginning with 1930 and are updated annually. USGS and DWR streamflow gages are the sources of inflow measurements for the Sacramento, San Joaquin, Mokelumne, Cosumnes, and Calaveras Rivers. Yolo Bypass and several miscellaneous inflows between Sacramento and Stockton are also estimated from available streamflow gages. CVP and SWP operations records are the source of export pumping data.

DAYFLOW provides an accounting of historical Delta boundary (systemwide) hydrology that is used for evaluating flow-related conditions in the Delta.

Delta Cross Channel (DCC). An existing gated structure and channel connecting the Sacramento River at Walnut Grove to the North Fork of the Mokelumne River. The facility was constructed as part of the CVP to control movement of Sacramento River water into the central Delta and to the south-Delta export pumps. Operating criteria currently require the gates to be closed for specific periods to keep downstream migrating fish in the Sacramento River and to prevent flooding of the central Delta.

Delta Drainage Water Quality model (DeltaDWQ). A model developed for the 1995 DEIR/EIS analysis to estimate how much the Delta Wetlands islands contribute to EC, DOC, Cl⁻, and Br⁻ levels at Delta channel locations and in Delta diversions and exports under no-project conditions and under project operations.

Delta exports. The water pumped from the Delta to south-of-Delta users by DWR at Banks Pumping Plant and by Reclamation at the CVP Tracy Pumping Plant, and the amount diverted by CCWD at its Rock Slough and Old River intakes.

Delta in-balance/in-excess conditions. Conditions in the Delta, designated by DWR and Reclamation, that help determine when the Delta Wetlands Project may divert water for storage on its designated reservoir islands. When conditions are “in balance”, all Delta inflow is required to meet Delta objectives and satisfy diversions by CCWD, the CVP, the SWP, and Delta riparian and senior appropriative water users. Delta Wetlands would not be allowed to divert water when the Delta is designated as being “in balance” because no additional water would be available for diversion by the Delta Wetlands Project under new water rights; Delta Wetlands reservoir releases may be necessary to increase exports when the Delta is in balance. When DWR and Reclamation determine that Delta conditions are “in excess” and other terms and conditions are met, the Delta Wetlands Project would be allowed to divert available excess water for storage under new appropriative water rights.

Delta-Mendota Canal (DMC). The major conveyance facility of the CVP, which carries water from the Delta to as far south as the southern San Joaquin Valley.

Delta outflow criteria. Minimum water quality or flow standards for the Delta and Suisun Marsh, such as those required by the 1995 WQCP.

Delta standards. A general term referring to all applicable water quality objectives; flow requirements; and other restrictions on diversions, exports, channel flows, or gate operations.

Delta Standards and Operations Simulation model (DeltaSOS). A computer spreadsheet model developed by Jones & Stokes that simulates the effects of regulatory standards and water management projects on the Delta.

Delta Standards, Operations, and Quality model (DeltaSOQ). A modified version of the DeltaSOS model that incorporates equations that predict the water quality of agricultural drainage and Delta Wetlands reservoir island storage. This model also incorporates equations that predict the effects of agricultural drainage and Delta Wetlands discharges on EC levels and DOC concentrations in Delta channels and exports.

Design response spectrum. The specified range of ground motion in response to seismic activity that is assumed for an analysis based on historical data and local soil conditions.

Direct economic effects. Changes in the earnings of households generated by Delta Wetlands Project operations and changes in fiscal conditions (property and sales tax revenues and public costs) associated with Delta Wetlands Project operations.

Direct employment. Employment generated in businesses that are part of the Delta Wetlands Project (i.e., agriculture; recreational uses; and construction, operations, and maintenance of project facilities).

Direct fishery effects. Mortality of fish attributable to Delta Wetlands diversions, including entrainment in Delta Wetlands diversions and losses resulting from changes in habitat.

Direct income. Earnings of households generated in businesses that are part of Delta Wetlands Project operations.

Disinfection byproducts (DBP). A class of chemicals created during chlorination or other oxidation treatment processes used to disinfect municipal water supplies. Organic content and chloride (Cl⁻) and bromide (Br⁻) concentrations are the primary variables that influence the formation of DBP compounds.

Dissolved oxygen (DO). Oxygen dissolved in water that is available to supply oxidation and respiration requirements.

Diversions. Water diverted at control points, including reservoir control points. Diversions typically represent basin irrigation diversions, water transfers, municipal diversions, and exports.

Drawdown. The lowering of the water level of a reservoir or other body of water as a result of the withdrawal of water.

DWRSIM. DWR's operations planning model, used to estimate possible effects of increased demands, new facilities, or new standards on SWP operations.

Dynamic and static stability. The stability of levees under seismic movement or without seismic movement.

Eight-River Index. The sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River,

total inflow to Oroville Reservoir; Yuba River flow at Smartville; American River, total inflow to Folsom Reservoir; Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.

Electrical conductivity (EC). A general measure of dissolved minerals (i.e., salinity); the most commonly measured variable in Delta waters.

Employment multiplier. The number of jobs associated with a \$1 million change in final demand in a specified industry and a specified region.

Endangered species. Any plant or animal species or subspecies whose survival is threatened with extinction and that is included in the federal or state list of endangered species.

Entrainment. The process in which fish are drawn into water diversion facilities along with water drawn from a channel or other water body by siphons and/or pumps. Entrainment loss includes all fish not salvaged (i.e., eggs, larvae, juveniles, and adults that pass through the fish screens, are impinged on the fish screens, or are eaten by predators).

Entrapment zone. An area or zone of the Bay-Delta estuary where riverine current meets upstream-flowing estuarine currents and variations in flow interact with particle settling to trap particles. The entrapment zone generally corresponds to a surface salinity range of 2 to 10 mS/cm conductance. The entrapment zone is an important aquatic habitat region associated with high levels of biological productivity.

Erosion. A combination of processes (e.g., wind or tidal action) in which the materials of the earth's surface are loosened, dissolved, or worn away and transported from one place to another by natural agents.

Ethnography. The comprehensive, descriptive study of a particular culture.

Evapotranspiration (ET). Loss of water from the earth's surface by evaporation from soil or water and by transpiration from plants.

Evolutionarily Significant Unit (ESU). A distinctive group of Pacific salmon or steelhead.

Exotic. Not native to the region in which it is found; refers to vegetation and wildlife species.

Export limits. A specification in the 1995 WQCP. Delta exports are limited to a percentage of total Delta inflow (generally 35% during February-June and 65% during July-January).

Exports. The water pumped from the Delta to south-of-Delta users by DWR at Banks Pumping Plant and by Reclamation at the CVP Tracy Pumping Plant, and the amount diverted by CCWD at its Rock Slough and Old River intakes.

Factor of safety for slope stability (FS). A calculated number representing the degree of safety of a slope against instability. The FS is expressed mathematically as the ratio of stabilizing effects (forces or moments) and destabilizing effects acting on a potentially unstable soil mass in a slope. When the FS is greater than 1, the soil mass in the slope is, in theory, stable; when FS is less than 1, the slope is, in theory, unstable. For a given slope geometry and soil conditions, a calculated FS is associated with a unique slope failure configuration. The most critical failure configuration is associated with the minimum FS calculated in a slope stability analysis. Several agencies (such as the Association of State Dam Safety Officials and USACE) have developed criteria that provide different design FSs stipulated for various slope conditions, e.g., under long-term loading, shortly after construction, etc. These FSs are typically above 1 and are recommended or required for various conditions, including consideration of uncertainties in design and risks to life and property.

Fallow. *adj.* Relating to farmland that is not in active use for the growing of crops. *v.* To remove land from active crop production.

Farmland conversion. The process or result of changing land from agricultural use to a different (generally more intensive) land use.

Farmland of statewide importance. Land with a good combination of physical and chemical features for the production of agricultural crops.

Final demand. Sum of all purchases for final use or consumption.

Firm storage capacity. An amount equivalent to guaranteed storage capacity. Utility rates usually vary based on guarantee of service. The first priority is to meet firm demands; consequently, this demand is most expensive. Demands that can be met with less reliability are less expensive.

Freeboard. The vertical distance between a design maximum water level and the top of a structure such as a levee, dike, floodwall, or other control surface. The freeboard is a safety margin intended to accommodate unpredictable rises in water level.

Full-time equivalent (FTE) employment. A unit for measuring employment in terms of number of jobs, where one job equals 40 hours of work per week. The actual number of employee jobs supported by a business may differ based on how total work hours are divided among employees.

Future permitted export pumping capacity. A capacity that may be established for the SWP in the future. If new permit conditions are established for the SWP, the permitted export pumping rate of the SWP pumps would be increased to the physical export pumping capacity of 10,300 cfs. If that occurs, the combined permitted export pumping rate of the SWP and CVP pumps could then equal up to 14,900 cfs or 14,500 cfs.

Gas field. An area that contains closely contiguous reservoirs of commercially valuable gas.

General plan designation. A specified land use (e.g., agricultural, residential, or commercial) established for a given area by the local governing city or county in its general plan, as required by California law (California Government Code Sections 65300 et seq.).

Geotechnical. Of or pertaining to the practical application of geologic science to civil engineering problems.

Habitat evaluation procedures (HEP). A method for analyzing impacts on wildlife resources that models the preproject and postproject quality and quantity of habitats for a set of species selected to represent all wildlife.

Habitat suitability index (HSI). A rating of the overall quality of a habitat for a species calculated using a model that combines ratings of different individual habitat variables.

Habitat unit (HU). A unit of habitat value determined by multiplying habitat acreages for different areas by each area's habitat suitability index.

Historical conditions. The combination of measured inflows and exports, estimated channel depletion and Delta outflow, simulated channel flows, and measured or simulated EC and other water quality variables.

Historical Delta flows. Measured Delta inflows and exports, estimated Delta outflow, and simulated net channel flows corresponding to the inflows and exports.

Hydraulic conductivity. A measure of the capacity of a porous medium to transmit water, often expressed in centimeters per second. The hydraulic conductivity is equal to the rate of flow of water through a cross section of one unit area under a unit hydraulic gradient.

Hydraulic gradient. The rate of change in total hydraulic head per unit distance of flow measured at a specific point and in a given direction, often resulting from frictional effects along the flow path.

Hydraulic head. The force exerted by a column of liquid expressed as the height of the liquid above the point at which the pressure is measured (the force of the liquid column being directly proportional to its height).

Hydraulic radius. Channel cross-section area divided by the perimeter of the channel; used in this document to mean the effective depth of water in a channel.

Hydraulics. Study of the practical effects and control of moving water; used to refer to the relationship between channel geometry and flow, velocity, and depth of water.

Hydrology. General description of the movement of water in the atmosphere, on the earth surface, in the soil, and in the ground; used in this document to refer to rainfall and streamflow conditions.

Hydrostatic pressure. The pressure of water at a given depth caused by the weight of the fluid above it.

Income. The earnings of households associated with a given industry, consisting of employee compensation (salary and wages) and proprietor's earnings (profit and dividends) but excluding proprietor contributions to welfare and pension funds. Income is classified as direct or secondary (see "Direct income" and "Secondary income").

Income multiplier. The amount of income associated with a dollar change in final demand in a specified industry and a specified region.

Indirect employment. Employment generated in businesses supplying goods and services related to Delta Wetlands Project operations.

Indirect fishery effects. Mortality of fish attributable to other diversions that results from Delta Wetlands effects on Delta flow conditions.

Induced employment. Employment generated as a result of consumer spending by employees who are directly and indirectly affected by Delta Wetlands Project operations.

Inflow. The rate (cfs) or volume (TAF) of total streamflow entering the Delta from the Sacramento and San Joaquin Rivers, Yolo Bypass, and the eastside streams.

Intactness. The visual integrity of the natural and constructed landscape and its freedom from encroaching elements.

Interceptor-well system. A seepage-control system that would consist of actively pumped wells installed in the exterior levees of the Delta Wetlands reservoir islands in locations where substantial seepage to adjacent islands is predicted to occur.

Internal inspection. The process of evaluating pipeline stresses from within the pipeline. A robotic device commonly called a "pig" is sent along the inside of the pipeline. The pig measures the shape of the pipeline, noting where the pipeline shape is abnormal (i.e., oval instead of round) and where the pipeline has ripples that indicate that the pipeline is bent or stressed.

Interruptible demand/interruptible supply. An assumed additional demand for, and supply of, SWP water above the specified monthly demands. Interruptible supply is simulated in DWRSIM as 84 TAF/month, or 1,400 cfs/month. DWRSIM assumes that additional SWP deliveries are made to meet interruptible demand when there is unused export capacity and available water in the Delta. Interruptible delivery made when there is surplus water in the Delta, Banks Pumping Plant has excess capacity, and San Luis Reservoir is full.

Joint point of diversion. Allowance of CVP and SWP export pumping at either the Banks or Tracy pumping plants.

Kilovolt (kV). A metric unit of energy equal to 1,000 volts.

Leaching. The removal of soluble substances from soil by percolating water.

Levee crest. The top of a levee.

Level of service (LOS). A measurement of the relative amount of traffic congestion at an intersection or on a roadway. The scale of measurement ranges from "A" to "F", with "A" representing the least congestion and "F" the most congestion.

Liquefaction. The process in which loose saturated soils lose strength when subject to seismic activity (i.e., shaking).

Local water supply. In the DWRSIM model, the assumed amount of captured rainfall in areas south of the Delta that can be used to satisfy CVP and SWP demands.

Midges. Nonbiting insects that breed in ponded water and, as adults, are similar in appearance to mosquitos and can be a nuisance to humans when the insects swarm.

Midwater trawl index. The sum of the weighted catch of fish of four monthly samples (September-December) from numerous locations in the Delta and Suisun Bay. The index is assumed to be a measure of abundance when considered in relation to the catch for all other years of the sampling record (1967-1995). In the Bay-Delta estuary, the index has been developed for striped bass, American shad, delta smelt, Sacramento splittail, longfin smelt, and other species.

Mitigation. Methods to avoid, reduce, rectify, eliminate, or compensate for adverse project impacts.

Mixing. Exchange of mass between two volumes; used in this document to refer to the movement of salt or fish from one location to another caused by the tidal movement of water within the Delta channels.

Mixing zone. A localized region surrounding a discharge pipe (or diffuser) where initial mixing and dilution of a discharge with the channel water occurs.

Model calibration. Adjustments made to a model (i.e., equations or coefficient values) to provide results that more closely follow observed data; used especially during initial model development and testing.

Model confirmation. Comparative testing of model results with measured data to determine the adequacy of model simulations for describing the observed behavior of the modeled variables; used especially during model application to conditions different from those used to calibrate the model.

Mosquito abatement districts (MADs). Agencies responsible for controlling mosquitos as disease vectors and as a nuisance to humans.

Municipal Water Quality Investigations (MWQI) program. A program conducted by the DWR Division of Planning and Local Assistance that collects data on a wide variety of water quality variables in Delta inflows and exports. These data constitute some of the baseline water quality information used in this document.

National Register of Historic Places (NRHP). A register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior.

Natural Resources Conservation Service land capability classification system. The land classification system that places soils into eight classes (I-VIII) according to the limitations on agricultural use imposed by 13 specific soil and climatic criteria. The higher the class, the more restrictive the limitation. Classes I through IV are generally considered lands suitable for cultivation. Class I and II soils are defined as prime farmland.

Net flow. Long-term average of flows in a channel; used to describe the magnitude and direction of flow in a channel after flows during a tidal cycle are averaged.

Nonattainment area. An area that does not meet state and/or federal air pollution standards.

Nongame fish. Fish species not considered sport fishes by anglers; nongame fish are generally found near the lower end of the food chain.

Nonproject levees. Levees constructed and maintained by local landowners and reclamation districts.

Null zone. An area in a column of water where vertical velocity and net horizontal velocity near the bottom are zero during incoming (flood) and outgoing (ebb) tides.

Outflow. The water flowing out of the Delta into San Francisco Bay.

Outflow requirements. Specifications for the Delta in the 1995 WQCP that encompass water quality protection for agricultural and municipal and industrial uses, Suisun Marsh, and fish habitat. In standard DWR calculations of Delta operations (using DWRSIM), “outflow” represents the difference between inflow and exports; the outflow term therefore includes in-Delta consumptive use.

Overtopping. Passing of water over the top of a levee as a result of wave runup or surge action.

Passive-flow relief-well system. A system of wells that passively relieve elevated hydrostatic pressures in an aquifer by allowing flow to the surface. (Hydrostatic pressure is the pressure exerted by a liquid, such as water, at rest.)

Peak flow. The maximum discharge of a stream during a specified period of time.

Peak-hour trips. The number of traffic trips made during the hour of the day with the most traffic. Also referred to as peak-hour volume.

Peat soils. Acidic, humus-rich soils that contain a large amount of unconsolidated, semicarbonized, partially decomposed plant debris formed in an anaerobic, water-saturated environment.

Permeability. The capacity of a porous rock, sediment, or soil for transmitting a fluid.

Permitted pumping rate. A rate that may be established by USACE. USACE does not require a permit under Section 404 of the CWA for current SWP export pumping. However, USACE would require a permit if SWP export pumping were to exceed a maximum 3-day average rate of 6,680 cfs. Therefore, the maximum combined export pumping rate that does not require a USACE permit is 11,280 cfs (6,680 cfs for the SWP pumps and 4,600 cfs for the CVP pumps). The restrictions for the period of December 15 to March 15, as interpreted by DWR, allow a combined rate of 11,700 cfs in December and March and a combined maximum 3-day average rate of 12,700 cfs in January and February. (See also “future permitted export pumping capacity”.)

Phreatic. Of or pertaining to groundwater.

Phreatic surface. The surface of a body of unconfined groundwater at atmospheric pressure.

Physical export pumping capacity. The SWP export pumps have a maximum physical pumping capacity of 10,300 cfs and the CVP export pumps have a maximum physical pumping capacity of 4,600 cfs, for a combined physical export pumping capacity of 14,900 cfs. At times, the canal capacity for the CVP is reduced to 4,200 cfs, reducing the combined physical export pumping capacity to 14,500 cfs.

Piezometer. A sandpipe monitoring well used to measure the depth to the groundwater surface in the aquifer.

Pipeline balancing. The process that gas utilities use to balance the customer loads (demands) with the available supplies of natural gas. Inflows to the system must be balanced on a continuous basis against outflows from the system.

Piscivorous birds. Fish-eating birds, including cormorants, herons, egrets, grebes, and mergansers.

Planimeter. An instrument for measuring the area of a plane surface by tracing its boundary lines.

Plankton. The usually microscopic animal and plant life floating or drifting in bodies of water, used as food by fish.

Pollutant concentration. Concentration of any toxic or potentially toxic contaminant, expressed in ppt, ppm, or ppb.

Prehistory. The period of time before written history, or the study of cultures before written history or of more recent cultures lacking formal historical records.

Prime farmland. Land with the best combination of physical and chemical features for the production of agricultural crops.

Project yield. Average annual water discharged for export from the Delta Wetlands Project islands. Reported in TAF/yr.

PROSIM. Reclamation's operations planning model, used to estimate possible effects of increased demands, new facilities, or new standards on CVP operations.

QWEST. A calculated flow parameter representing net flow between the central Delta and the western Delta. QWEST criteria have previously been considered for protection of central Delta fish.

Ramping of exports. Gradual change in export pumping that may be required to moderate the effects of rapid changes.

Reclamation. Extensive drainage of low-lying marshy lands for potential practical use.

Recreation use-day. A standard unit of use consisting of a visit by one individual to an area for recreation purposes during any portion of a 24-hour period.

Recruitment. The increase in population of an organism caused by natural reproduction or immigration.

Resident species. A species that carries out its entire life cycle within a given region.

Reverse flow. The Delta outflow condition existing when in-Delta diversions or high Delta exports, in combination with low Delta inflow, cause net seaward flow to reverse so that San Francisco Bay water is moved toward the central and south Delta.

Riparian. Living on or adjacent to a water body, such as a river, lake, or pond.

Riparian habitat. Woody vegetation (trees and shrubs) that grows in soils saturated for a substantial portion of the year, especially on the edges of open water bodies (e.g., lakes, rivers, or ditches) or on levees.

Riparian water rights. Correlative entitlements to water that are held by owners of land bordering natural watercourses. California requires a statement of diversion and use of natural flows on adjacent riparian land under a riparian right.

Riprap. A stone covering used to protect soil or surfaces from erosion by water or the elements.

Rock revetment. A stone covering used to protect soil or surfaces from erosion by water or the elements.

Sacramento Valley Four-River Index (or Sacramento Valley 40-30-30 water-year hydrologic classification index). The sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Sacramento River flow at Bend Bridge, near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River flow at Smartville; and American River, total inflow to Folsom Reservoir.

Safe yield. The rate at which or amount that an aquifer may be pumped without exceeding recharge and incurring overdraft.

Salinity. Salt measured in ppt, TDS, EC units, or mg/l.

Salvage. Removal of fish from screens on diversion structures and the subsequent return of the fish to the water body.

San Joaquin Valley Four-River Index (or San Joaquin Valley 60-20-20 water-year hydrologic classification index). The sum of the unimpaired runoff as published in the DWR Bulletin 120 for the following locations: Stanislaus River, total inflow to New Melones Reservoir; Tuolumne River, total inflow to Don Pedro Reservoir; Merced River, total inflow to Exchequer Reservoir; and San Joaquin River, total inflow to Millerton Lake.

Secondary economic effects. Changes in the earnings of households and in fiscal conditions (property and sales tax revenues and public costs) associated with changes in businesses supplying goods and services related to Delta Wetlands Project operations and with spending by employees directly and indirectly affected by Delta Wetlands Project operations.

Secondary employment. Indirect or induced employment.

Secondary income. Earnings of households generated in businesses supplying goods and services related to Delta Wetlands Project operations (indirect income) and generated as a result of spending by employees directly and indirectly affected by Delta Wetlands Project operations (induced income).

Sediment. Fragmented mineral or organic material transported or deposited by air, water, or ice.

Seepage. A slow movement of water through permeable soils caused by increases in the hydraulic head. (See also “hydraulic head”.)

Seepage flux. The rate of flow of water across a given line or surface, typically expressed in gpm or cfs.

Seismicity. The frequency, intensity, and distribution of earthquake activity in a given area.

Settlement. The sinking of surface material as a result of compaction of soils or sediment caused by an increase in the weight of overlying deposits or by pressure resulting from earth movements.

Shear load. The result when force is applied perpendicular to or on opposite sides of an item (as when a sheet of paper is cut with scissors). Pipelines can be subject to this type of load.

Simulated Disinfection System (SDS). A method of determining THM formation potential. This laboratory analytical method was developed to simulate municipal water treatment facilities' actual disinfection process (and THM concentrations) more closely than other methods; it uses a much lower chlorine (Cl₂) dose and much less contact time.

Simulation. The application of a mathematical representation or model to analyze a theoretical or physical process.

Slope deformations. Changes in the shape or size of a slope.

Smolt. A juvenile chinook salmon or steelhead that has undergone physiological change enabling it to survive in saltwater.

South-of-Delta delivery deficit. Unmet demand, that is, total demand for CVP and SWP water minus total CVP and SWP deliveries. Total deliveries are calculated based on water exported from the Delta and the change in San Luis Reservoir storage. (When San Luis Reservoir storage drops, that amount is added to Delta exports to determine total CVP and SWP deliveries. When San Luis Reservoir storage increases, that amount is subtracted from Delta exports to determine total CVP and SWP deliveries.)

South-of-Delta demands. Demands for CVP and SWP contractors that export water from the Delta.

Spawning. Laying of eggs, especially by fish.

Special Multipurpose Applied Research Technology Station (SMARTS). A test facility at the DWR Bryte facility in West Sacramento that conducts a variety of peat-soil-flooding water-quality experiments under controlled static or continuous water-flow conditions.

Special-status species. Those species listed as threatened or endangered by the state and federal governments or identified as possibly warranting such protection.

Species. The basic category of biological classification intended to designate a single kind of animal or plant.

Splash berm. An extended area of facing on an island levee designed to protect against erosion of the levee crest by wave splash and runup.

Stage. Water surface elevation; the elevation above mean sea level (msl) datum.

State Historic Preservation Officer. The official in each state authorized by the state at the request of the Secretary of the Interior to implement the NHPA.

State Water Project (SWP). The water project operated by DWR that delivers water from the Sacramento Valley to southern California.

Stratigraphy. The composition, characteristics, distribution, and age relation of layered rocks and soils.

Subsidence. A local or regional sinking of the ground. In the Delta, this results primarily from peat soil being converted into gas.

Surplus Delta outflow. Outflow in excess of the amount required to meet all monthly water demands, protect Delta salinity standards, and comply with the export/inflow objectives of the 1995 WQCP.

Suspended sediment (SS). Sediments or other particulates that adsorb chemicals and block light transmission through water; a general indicator of surface erosion and runoff.

Take. A term used in Section 9 of the federal Endangered Species Act that includes harassment of and harm to a species, entrainment, directly and indirectly caused mortality, and actions that adversely modify or destroy habitat.

Threatened species. A species that is likely to become endangered in the foreseeable future and is included in the federal or state list of threatened species.

Tidal excursion. The distance between the most upstream position and most downstream position of a floating object that is released from a location at mean tide and tracked over a complete tidal cycle.

Tidal flow. Flow caused by tidal changes in stage and hydraulic gradient; describes the fluctuating flows in a channel caused by the tide.

Tidal hydraulics or tidal hydrodynamics. Water movements caused by tidal forces; used to describe the movement of water caused by tidal stage variations in San Francisco Bay.

Tidal prism. The volume of water that moves past a location as the result of a change in tidal stage; used in this document to refer to the change in volume between low tide and high tide, estimated as the upstream water surface area times the change in tidal stage.

Toe berm. The section projecting at the base of a dam, levee, or retaining wall.

Total dissolved solids (TDS). A measure of the total concentration of disintegrated organic and inorganic material or salt in water.

Transport. Movement of mass from one location to another; used in this document to refer to the movement of salt or fish from one location to another caused by net flows.

Trihalomethane (THM). A class of carcinogenic substances, including chloroform (CHCl₃) and bromoform (CHBr₃), formed from chlorination of drinking-water supplies.

Trihalomethane formation potential (THMFP). The potential for creation of THMs during chlorination or other oxidation treatment processes used for disinfection of municipal water supplies; an index of the maximum possible THM concentrations that could be produced by maximum chlorination of Delta water.

Turbidity. The reduction of light transmission in water caused primarily by the suspension of clays, silts, and other fine materials.

Ultraviolet absorbance (UVA). A physical measurement used in the study of humic acids and THM precursors, often found to be linearly related to DOC concentration. UVA may provide a measure of the humic and fulvic acid portion of total DOC in a water sample; this portion of total DOC is thought to be the precursor for THM.

Unbundled rates. The individual rates for separate service components of a particular utility. For example, natural gas utilities can be broken down into separate service components such as gas procurement, transportation, storage, and delivery with distinct rate schedules for each service. Deregulation of the utility industry has allowed this unbundling of the services to promote market competition.

Unimpaired flow. Natural tributary inflow without storage or diversions.

Unique farmland. Land with soils of lesser quality than the soils of prime farmland or farmland of statewide importance, used for the production of the state's leading cash crops.

Unity. The visual coherence, composition, and harmony of the landscape considered as a whole.

Vernalis Adaptive Management Plan (VAMP). Multiyear program for studying the survival of salmon smolts from the San Joaquin River; uses pulse flows and export restrictions.

Vividness. The visual power or memorability of landscape components that combine in visual patterns.

Volume-to-capacity (V/C) ratio. The ratio of the number of vehicles using a roadway or intersection to the maximum number of vehicles that could use the roadway or intersection.

Waste grain. Grain left in fields as residue after harvesting, which is often eaten by wildlife species.

Water demand. A monthly schedule of water deliveries specified at a point of diversion in an operations model analysis.

Waterfowl use-day. A standard unit for measuring use of an area by waterfowl; one waterfowl use-day represents use of an area by ducks, geese, and/or swans for foraging or nesting during any portion of a 24-hour period.

Water right. A grant, permit, decree, appropriation, or claim to the use of water for beneficial purposes. California has a dual system of water rights. riparian and appropriative. *Riparian water rights* are held by owners of land bordering a surface water source. *Appropriative water rights* allow the exclusive diversion of a specified amount of water from a source for a reasonable and beneficial use. (See also “riparian water rights” and “appropriative water rights”.)

Water Right Decision-1485 (D-1485). SWRCB's decision of August 1978 specifying water quality standards for the Delta and Suisun Marsh.

Water Treatment Plant (WTP) model. An EPA model used for the 1995 DEIR/EIS to estimate THM concentrations at a typical water treatment plant that may use Delta exports containing water released from the Delta Wetlands Project islands. The model consists of a series of subroutines that simulate removal of organic THM precursor compounds and formation of THM. A more detailed description of the operation of the WTP model is provided in Appendix C5 of the 1995 DEIR/EIS. The model predicts total THM concentration, then estimates the relative concentrations of each of the four types of THM molecules by using separate regression equations for each type of THM molecule.

Wetlands. Areas supporting vegetation typical of soils that are saturated for a major portion of the year.

Wheeling. Use of SWP or CVP Delta pumping facilities to pump and convey water for another party.

Williamson Act contract. A 10-year contract between a landowner and a county, established under the authority of the California Land Conservation Act of 1965, which places restrictions on the use of the private land in exchange for tax savings.

Wind fetch. An area of water over which wind blows, generating waves.

X2. The location in the Bay-Delta estuary of the 2-ppt-TDS isohaline 1 meter off the bottom; an isohaline is a line connecting all points of equal salinity.

Yield. An annual quantity of water that can be delivered to a service area from a water project on a specified delivery schedule.

Yield acceleration. Pseudostatic horizontal force that will give a calculated factor of safety of 1 in slope-stability analyses. (See “factor of safety for slope stability”.)