CALIFORNIA ENVIRONMENTAL QUALITY ACT
INITIAL STUDY AND PROPOSED MITIGATED NEGATIVE DECLARATION

A. PROJECT TITLE:

Adoption of General Waiver of Waste Discharge Requirements and a General Water Quality Certification for Discharges of Waste from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region.

B. LEAD AGENCY

California Regional Water Quality Control Board, North Coast Region
5550 Skylane Ave**.,** Suite A, Santa Rosa, CA 95403

C. CONTACT PERSON:

Diana Henrioulle, P.E.
Senior Water Resource Control Engineer
5550 Skylane Ave., Suite A, Santa Rosa, CA 95403
Diana.Henrioulle@waterboards.ca.gov

D. PROJECT LOCATION

This project is located in the North Coast region, which comprises all basins from the California-Oregon state line including Lower Klamath Lake and Lost River Basins draining into the Pacific Ocean to the southerly boundary of the watershed of Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties.

E. PROJECT DESCRIPTION:

1. The project consists of implementation of management measures and remediation/ cleanup/ restoration activities upon the adoption of Order No. R1-2015-0023, *General Waiver of Waste Discharge Requirements and General Water Quality Certification for Discharges of Waste from Cannabis Cultivation and Associated Activities or Operations with Similar Environmental Effects in the North Coast Region* (Order),[1] which provides a water quality regulatory structure to prevent and/or address poor water quality conditions and adverse impacts to water resources associated with cannabis cultivation on private land.

   The Order does not apply to land use activities subject to other permitting programs (e.g., industrial activities, animal waste, mining, forestry) or hazardous waste cleanup. The Order does not cover or authorize development of new cannabis cultivation sites. Dischargers must obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction

[1] The draft Order and accompanying documentation will be made available at http://www.waterboards.ca.gov/northcoast/board_decisions/tentative_orders/.

Activity (Construction General Permit, 2009-0009-DWQ) for construction projects that disturb one or more acres of land, specifically for new site preparation and development.

Any landowner or operator cultivating cannabis that results in a discharge of waste to an area that could affect waters of the state (including groundwater) will fall within one of two tiers depending on the nature of their operation and risk to water quality, with Tier 1 sites representing a lower threat to water quality, and Tier 2 sites representing a higher threat to water quality. Sites under either Tier must comply with the conditions as discussed under a. through i., below. Tier 2 dischargers must prepare and implement a water resources management plan that describes existing conditions and management practices on their site, including documentation of nutrient and pest management practices as well as a summary of all existing or potential erosional features that may be contributing sediment into onsite or adjacent waterways. Some remediation/cleanup/restoration activities may be required in Tier 2 and subject to the requirements discussed in j., below.

The Order also includes a third tier, for dischargers with sites requiring larger scale or more immediate remediation/cleanup/restoration based on past land development/management that has resulted in a discharge or threatened discharge in violation of water quality standards. Conditions may include, but are not limited to, filled watercourses or wetlands, perched fill, steep cut slopes, roads, or fill prisms that cannot be stabilized sufficiently to prevent erosion and sediment delivery to surface waters (either on or offsite), and development or drainage features located on or where they can exacerbate unstable features. Remediation/cleanup/restoration is subject to the requirements discussed in j., below.

Discharges and related controllable water quality factors from the following activities addressed under the draft Order include:

a. <u>Maintenance of developed areas and drainage features</u>
   Improper site maintenance can result in erosion and transportable sediment, site conditions that increase potential for sediment delivery, direct placement of earthen material and other wastes in or where it can enter receiving waters, creation or exacerbation of unstable features, temperature impacts, and discharge of organic materials to receiving waters. The Order includes the following conditions intended to prevent or minimize these impacts.

   i. Roads shall be maintained as appropriate (with adequate surfacing and drainage features) to avoid developing surface ruts, gullies, or surface erosion that results in sediment delivery to surface waters.

   ii. Roads, driveways, trails, and other defined corridors for foot or vehicle traffic of any kind shall have adequate ditch relief drains or rolling dips and/or other measures to prevent or minimize erosion at their respective outlets.

   iii. Roads and other features shall be maintained so that surface runoff shall drain away from potentially unstable slopes or earthen fills. Where road runoff cannot be drained away from an unstable feature, an engineered structure or system shall be installed to ensure that surface flows will not cause slope failure.

iv. Roads, clearings, fill prisms, and terraced areas (cleared/developed areas with the potential for sediment erosion and transport) shall be maintained so that they are hydrologically disconnected,[2] as feasible, from surface waters, including wetlands, ephemeral, intermittent and perennial streams.

v. Ditch relief drains, rolling dip outlets, and road pad or terrace surfaces shall be maintained to promote infiltration/dispersal of outflow and have no apparent erosion or evidence of soil transport to receiving waters.

vi. Stockpiled construction materials are stored in a location and manner so as to prevent their transport to receiving waters.

Compliance with these conditions may be accomplished with a number of management measures and practices, including but not limited to:

a) Do not sidecast when the material can enter the stream directly or indirectly. Sidecast material can indirectly enter the stream when placed in a position where rain or road runoff can later entrain and transport it to a channel that connects with the stream.

b) Grade ditches only when and where necessary, since frequent routine mechanical grading can cause erosion of the ditch, undermine banks, and expose the toe of the cutslope to erosion. Do not remove more grass and weeds than necessary to keep water moving, as vegetation prevents scour and filters out sediment.

c) Use sediment control devices, such as check dams, sand/gravel bag barriers, and other acceptable techniques, when it is neither practical nor environmentally sound to disperse ditch water immediately before the ditch reaches a stream.

d) Disconnect road drainage from watercourses (drain to hill slopes), install drainage structures at intervals to prevent erosion of the inboard ditch or gully formation at the hill slope outfall, outslope roads.

Remediation/restoration work (described in more detail in j., below) may be necessary to bring existing roads and developed areas into compliance with the conditions of the Order, and maintain those features to ensure that they remain in compliance with the conditions of the Order. This work may involve periodic operation of heavy construction equipment.

[2] Connected roads are road segments that deliver road surface runoff, via the ditch or road surface, to a stream crossing or to a connected drain that occurs within the high delivery potential portion of the active road network. A connected drain is defined as any cross-drain culvert, water bar, rolling dip, or ditch-out that appears to deliver runoff to a defined channel. A drain is considered connected if there is evidence of surface flow connection from the road to a defined channel or if the outlet has eroded a channel that extends from the road to a defined channel. (http://www.forestsandfish.com/documents/Road_Mgmt_Survey.pdf)

b. Stream crossing maintenance and improvement

Improper stream crossing design, construction, or maintenance can result in sediment discharges, erosion and transportable sediment, improper hydromodification, potential for adverse geomorphological changes, creation of habitat/migration barriers, and temperature impacts associated with riparian vegetation removal. The Order includes the following conditions intended to prevent or minimize impacts associated with stream crossings.

i. Culverts and stream crossings shall be sized to pass the expected 100-year peak streamflow.

ii. Culverts and stream crossings shall be designed and maintained to address debris associated with the expected 100-year peak streamflow.

iii. Culverts and stream crossings shall allow passage of all life stages of fish on fish-bearing or restorable streams, and allow passage of aquatic organisms on perennial or intermittent streams.

iv. Stream crossings shall be maintained so as to prevent or minimize erosion from exposed surfaces adjacent to and in the watercourse channel and on the banks.

v. Culverts shall align with the stream grade and natural stream channel at the inlet and outlet where feasible. At a minimum, the culvert shall be aligned at the inlet. If infeasible to align the culvert outlet with the stream grade or channel, outlet armoring or equivalently effective means may be applied.

vi. Stream crossings shall be maintained so as to prevent stream diversion in the event that the culvert/crossing is plugged and critical dips shall be employed with all crossing installations where feasible. If infeasible to install a critical dip, an alternative solution may be chosen,

Remediation/restoration work (as described in more detail in j., below) may be necessary to bring existing watercourse crossings into compliance with the conditions of the Order, and maintain those features to ensure that they remain in compliance with the conditions of the Order. This work may involve periodic operation of heavy construction equipment.

c. Activities in and adjacent to watercourses, wetlands and riparian zones

The Order specifies conditions intended to protect riparian zones where cultivation operations and related activities are occurring near or adjacent to a watercourse or wetland, including buffer strips and other management practices. Without these protection measures, cultivation and related activities can result in adverse temperature increases, and can result in or increase the likelihood of pollutant discharges to surface waters.

d. Spoil storage and disposal

Improper spoil storage and disposal practices can result in placement/discharge of fill and other wastes in or where it can enter surface waters, controllable sediment sources, and creation or exacerbation of unstable features. The Order includes the following conditions intended to prevent or minimize adverse impacts to receiving waters associated with spoils handling.

i. Spoils[3] shall not be stored or placed in or where they can enter any surface water.

ii. Spoils shall be adequately contained or stabilized to prevent sediment delivery to surface waters.

iii. Spoils generated through development or maintenance of roads, driveways, earthen fill pads, or other cleared or filled areas shall not be sidecast downslope in any location where they can enter or be transported to surface waters.

Appendix B to the Order includes additional BMPs intended to minimize water quality impacts associated with spoil storage and disposal.

e. Water diversion, storage, and use

Water diversion and overuse can result in depletion of water resources and potential impacts to or loss of beneficial uses. Improper construction or maintenance of storage features or facilities can result in pollutant discharge, catastrophic failure of containment features, and damage to watercourse structure and instream habitat; instream diversions or storage features can present migration barriers and result in lost instream habitat. The Order includes the following conditions intended to prevent or minimize water resource impacts associated with water diversion, storage, and use:

i. Size and scope of operation shall be such that the amount of water used shall not adversely impact water quality and/or beneficial uses, including and in consideration with other water use by operations, instream flow requirements and/or needs in the watershed, defined at the scale of HUC-12 watershed or at a smaller hydrologic watershed as determined necessary by the Regional Water Board Executive Officer.
ii. Water conservation measures shall be implemented. Examples include use of rainwater catchment systems or watering plants with a drip irrigation system rather than with a hose or sprinkler system.
iii. For Tier 2 Dischargers, if possible, develop off-stream storage facilities to minimize surface water diversion during low flow periods.
iv. Water is applied using no more than agronomic rates.[4]

[3] Spoils are waste earthen or organic materials generated through grading or excavation, or waste plant growth media. Spoils include but are not limited to soils, slash, bark, sawdust, potting soils, rock, and fertilizers.

v. Diversion and/or storage of water from a stream should be conducted pursuant to a valid water right and in compliance with reporting requirements under Water Code section 5101.
vi. Water storage features, such as ponds, tanks, and other vessels shall be selected, sited, designed, and maintained so as to insure integrity and to prevent release into surface waters in the event of a containment failure.

Compliance with these conditions may include limiting size of operation and using alternative water supplies, which may include groundwater or winter storage.

f. Irrigation runoff from cultivated areas

Runoff from cultivated areas may contain pollutants including fertilizers, pesticides, or other chemicals associated with cultivation, posing a threat to surface water and groundwaters. This runoff may also cause erosion, transport sediment, and exacerbate unstable features. The Order includes a number of conditions intended to prevent or minimize such impacts, including implementation of water conservation measures, irrigating at agronomic rates, properly applying fertilizers and chemicals, and maintaining stable soil and growth media.

The Order also specifies that tailwater return flows, if any, shall be managed so that any entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses. Appendix B to the Order includes additional BMPs intended to minimize impacts associated with irrigation runoff, such as:

a) Regularly inspecting for leaks in mains and laterals, in irrigation connections, or at the ends of drip tape and feeder lines. Repair any found leaks.

b) Recapturing and reusing tailwater where possible, through passive (gravity-fed) or active (pumped) means.

c) Constructing retention ponds for tailwater infiltration. Constructed treatment wetlands may also be effective at reducing nutrient loads in water. Ensure that drainage and/or infiltration areas are located away from unstable or potentially unstable features.

d) Using appropriate irrigation rates to avoid or minimize runoff.

e) Regularly replacing worn, outdated or inefficient irrigation system components and equipment.

---

[4] "Agronomic rates" is defined as the rates of fertilizer and irrigation water that a plant needs to enhance soil productivity and provide the crop or forage growth with needed nutrients for optimum health and growth, without having any excess water or nutrient percolate beyond the root zone.

f) Using mulches (such as wood chips or bark) in cultivated areas without ground cover to prevent erosion and minimize evaporative loss.

g) Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter

h) Employing rain-triggered shutoff devices to prevent irrigation after precipitation

i) Designing irrigation system to include redundancy (i.e, safety valves) in the event that leaks occur, so that waste of water is prevented and minimized.

g. <u>Fertilizer, soil amendments, petroleum products and pesticide/herbicide storage, use, and waste disposal</u>

Improper storage, use, and disposal of chemicals can result in pollutant migration/ transport/ discharge to surface or ground waters. The Order includes the following conditions intended to prevent or minimize the discharge of chemicals to receiving waters:

i. Fertilizers, potting soils, compost, and other soils and soil amendments shall be stored in locations where they cannot enter or be transported into surface waters and where nutrients or other elements cannot be leached into groundwater.
ii. Fertilizers and soil amendments shall be applied and used per packaging instructions and/or at proper agronomic rates (see footnote on previous page).
iii. Cultivation areas shall be maintained so as to prevent nutrients from leaving the site during the growing season and post-harvest.
iv. Any uses of pesticide products shall be consistent with product labelling and any products on the site shall be placed, used, and stored in a manner that ensures that they will not enter or be released into surface or ground waters.
v. Petroleum products and other liquid chemicals, including but not limited to diesel, biodiesel, gasoline, and oils shall be stored so as to prevent their spillage, discharge, or seepage into receiving waters. Storage tanks and containers must be of suitable material and construction to be compatible with the substance(s) stored and conditions of storage such as pressure and temperature.
vi. Above ground storage tanks and containers shall be provided with a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation.
vii. Dischargers shall ensure that diked areas are sufficiently impervious to contain discharged chemicals.
viii. Dischargers shall implement spill prevention, control, and countermeasures and have appropriate cleanup materials available onsite.
ix. Underground storage tanks 110 gallons and larger shall be registered with the appropriate County Health Department and comply with State and local requirements for leak detection, spill overflow, corrosion protection, and insurance coverage.

Appendix B to the Order includes additional BMPs intended to minimize water quality impacts associated with use/storage/disposal of chemicals.

h. Cultivation-related waste handling and disposal

Cultivation-related wastes may include, but are not limited to, empty soil/soil amendment/ fertilizer/pesticide bags and containers, empty plant pots or containers, dead or harvested plant waste, and spent growth medium. Lack of proper management practices or measures for these wastes can result in pollutant migration/transport/discharge to receiving waters, particularly to surface waters. The Order requires that cultivation-related wastes, for as long as they remain on the site, be stored at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or ground waters. Plant waste may also be composted, subject to the same restrictions with respect to manner and location,

i. Household refuse and domestic wastewater (including human waste) handling and disposal

Improper controls or disposal facilities can result in pollutant discharges to both surface water and groundwater. The Order includes the following conditions intended to prevent or minimize these discharges:

i. Disposal of domestic sewage shall meet applicable county health standards, local agency management plans and ordinances, and/or the Regional Water Board's Onsite Wastewater Treatment System (OWTS) policy, and shall not represent a threat to surface water or groundwater.
ii. Refuse and garbage shall be stored in a location and manner that prevents its discharge to receiving waters and prevents any leachate or contact water from entering or percolating to receiving waters.
iii. Garbage and refuse shall be disposed of at an appropriate waste disposal location.

Appendix B to the Order includes additional BMPs intended to minimize impacts associated with waste handling, storage, and disposal, including but not limited to designing trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater and/or providing roofs, awnings, or attached lids on all trash containers.

j. Site remediation/cleanup/restoration

The Order anticipates site remediation, cleanup, and/or restoration activities associated with Tier 2 and Tier 3 sites. Specifically, Tier 2 Dischargers must develop and implement a water resource protection plan that includes an element identifying any work needed to bring the site into compliance with the standard conditions, including stream crossings. Tier 3 Dischargers must clean up/ restore/ remediate site conditions caused by current or past land development/ management that has resulted in a discharge or threatened discharge in violation of water quality standards.

Tier 2 (to a lesser extent) and Tier 3 activities may include removing fill from watercourses or wetlands, restoring streams or wetlands, riparian vegetation planting and maintenance,

removing development or drainage features that are located on or where they can impact unstable features, stabilizing soil, controlling erosion, upgrading stream crossings, outsloping roads and installing rolling dips where safe and suitable, installing ditch relief culverts and overside drains, removing berms, stabilizing unstable areas, reshaping cutbanks, and rocking native-surfaced roads. These activities may involve periodic operation of heavy equipment, soil disturbance, creation of dust, noise, and exhaust emissions, disruption of drainage conveyances and features, activities on and near unstable features, sediment discharges, temperature impacts, disturbance and removal of vegetation, removal of invasive species, creation of spoils, short-term exceedance of water quality objectives associated with removing and replacing instream structures, disturbing vegetation and soil along streambanks and in riparian areas, and disturbing instream habitat.

The Order requires that any Tier 2 remediation or restoration work in streams or wetlands be designed by a qualified registered professional and that designs be submitted to the Regional Water Board Executive Officer for review and authorization prior to commencement of any work. The Order also requires that any site cleanup work under Tier 3 be conducted pursuant to a workplan prepared by a licensed professional and approved by the Regional Water Board Executive Officer. The Order specifies information which must be included in such a workplan, and requires, in part, that such work include application of the Standard Construction BMPs as discussed below (and provided in Appendix B accompanying the Order) and that a monitoring and reporting program be implemented to assess the effectiveness and success following implementation. Application of appropriate BMPs, as well as ensuring that remediation/cleanup/ restoration activities and stream crossing replacements are designed and implemented in accordance with plans developed by appropriate licensed professionals should ensure that such activities are conducted in a safe and appropriate manner.

The Order requires that Tier 2 and 3 dischargers monitor their sites to assess, document, make adaptive management improvements to address potential water quality impacts associated with their cultivation and/or remediation/cleanup/restoration activities, and provide periodic monitoring reports.

Anticipating that this program will result in an increased rate of site restoration and stream crossing replacement on sites across the region following Order adoption, Regional Water Board staff will implement a comprehensive activity tracking system by mapping Tier 3 cleanup sites and individual stream crossings proposed for replacement under Tier 2 water resource protection plans. Staff will draw information from Geotracker and SMARTS, the Regional Water Board's timber tracking database, and other available sources to help correlate cleanup activities and remediation or restoration work in streams or wetlands, activities proposed and underway in individual watersheds and subwatersheds. The comprehensive activity tracking system will enable the Regional Water Board to direct activity timing under this Order as necessary to limit the number of individual potential construction-related impacts occurring at any given time in any given watershed. Specifically, where remediation/cleanup/restoration activities in streams or wetlands are proposed to be implemented on several properties within a subwatershed, staff will consult with project consultants and other sources to stagger the timing of the activities.

In summary, most of the potential water quality impacts associated with marijuana cultivation and related activities involve erosion and sediment delivery and/or changes to riparian systems that may reduce shade and affect water temperatures, over-allocation of water sources, and chemical/ pollutant discharges from areas under cultivation or material/waste storage areas. It is anticipated that compliance with the conditions contained in the Order, and work implemented to bring sites into compliance with the conditions, implementing best management practices, including those specified above for work associated with remediation/cleanup/restoration activities or other work necessary to ensure that sites are brought into and maintain compliance with conditions of the Order, will serve to prevent or minimize a given site's contribution to watershed impairments as well as result in an overall net reduction in the environmental impacts associated with marijuana cultivation sites or operations with similar environmental effects within the North Coast Region.

Once adopted, the Order will be subject to a five-year review cycle, by the Regional Water Board, to determine the Order's effectiveness at reducing or eliminating pollutant loading, or impairments to waters of the state from cannabis cultivation or operations with similar environmental effects. Staff will assess program effectiveness through site and watershed-wide inspections, regional water quality monitoring efforts, and feedback from third party programs, watershed protection groups, partner agencies, and members of the public.

Staff anticipate that implementation of the Order and the regionwide cannabis cultivation waste discharge regulatory program will result in a net environmental benefit as individuals cultivating cannabis or conducting operations with similar environmental effects bring properties into compliance with the conditions. In an effort to measure and document the environmental impacts of implementation of this Order, staff activities will include but not be limited to tracking program enrollments, inspecting enrolled and unenrolled sites, reviewing aerial imagery to identify enrolled and unenrolled sites, reviewing regionwide instream trend monitoring results and monitoring data and observations made by resource protection agencies and watershed groups operating in the region, and documenting education and outreach efforts and associated contacts with members of the public including the growing community.

F. SURROUNDING LAND USES AND SETTING:

The project is located within the North Coast Region, which comprises all basins from the California-Oregon state line including Lower Klamath Lake and Lost River Basins draining into the Pacific Ocean to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma Counties. The North Coast Region encompasses a total area of approximately 19,390 square miles, including 340 miles of scenic coastline and remote wilderness areas, as well as urbanized and agricultural areas, and includes all of Del Norte, Humboldt, Trinity, and Mendocino counties, major portions of Siskiyou and Sonoma counties, and small portions of Glenn, Lake, Modoc, and Marin counties.

The North Coast Region is characterized by distinct temperature zones. Along the coast, the climate is moderate and foggy and the temperature variation is not great. For example, at Eureka, the seasonal variation in temperature has not exceeded 63°F for the period of record. Inland, however, seasonal temperature ranges in excess of 100°F have been recorded.

Precipitation over the North Coast Region is greater than for any other part of California; portions of the Region receive 150% more rainfall than the rest of California. Flows in streams in steep watersheds can rise quickly in response to rainfall and damaging floods are a fairly frequent hazard. Particularly devastating floods occurred in the North Coast area in December of 1955, in December of 1964, in February of 1986, and December of 1997. Throughout the western parts of the region, a Mediterranean climate prevails, with nearly all of the rainfall from October through May. In the east portions of the region, lower annual rainfall and modest summer precipitation is common.

Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided a wealth of fish, wildlife, and scenic resources. The mountainous nature of the Region, with its dense coniferous forests interspersed with grassy or chaparral covered slopes, provides shelter and food for deer, elk, bear, mountain lion, furbearers and many upland bird and mammal species. The numerous streams and rivers of the Region contain anadromous fish, and the reservoirs, although few in number, support both coldwater and warmwater fish. Tidelands, and marshes too, are extremely important to many species of waterfowl and shore birds, both for feeding and nesting. Cultivated land and pasture lands also provide supplemental food for many birds, including small pheasant populations. Tideland areas along the north coast provide important habitat for marine invertebrates and nursery areas for forage fish, game fish, and crustaceans. Offshore coastal rocks are used by many species of seabirds as nesting areas.

Major components of the economy are tourism and recreation, logging and timber milling, aggregate mining, commercial and sport fisheries, sheep, beef and dairy production, vineyards and wineries, and increasingly over the past several decades, marijuana cultivation.

The North Coast's unique geographic and climate conditions include dense forested areas receiving substantial winter precipitation with dry summers along with the sparse population have provided conditions favorable to marijuana cultivation. The counter culture of the 1960s led to the back-to-the-land movement of the 1970s and a wave of new settlers in rural areas of the north coast. Many of these settlers purchased lands previously used for timber harvesting and ranching uses and build their homes, established individual surface water diversions, and lived off-the-grid and beyond the scope of regulations, cultivating cannabis both on their own private properties or on nearby public lands.

A look at Google Earth over time shows a relatively recent marked increase in new development of cannabis cultivation sites on private lands, including land clearing, grading, road and stream crossing construction, and water diversion and storage. This concentration of new disturbance, in combination with ongoing impacts from already existing cultivation sites, timber harvesting and longer-time residential development appears to be leading to a new wave of cumulative impacts. Cannabis has been and continues to be cultivated widely on public lands, as well, including a reportedly growing number of illegal plantations run by foreign suppliers who have moved north of the U.S.-Mexico border where they are closer to U.S. drug markets.

According to the Office of National Drug Control Policy (2015), nearly 3.6 million plants were removed from more than 5,000 illegal outdoor grow sites in the United States during calendar year 2012. More than 43 percent of the marijuana plants eradicated in 2012 were eradicated from public and tribal lands.

The U.S. Forest Service reports that nearly 83 percent of the 1,048,768 plants eradicated from National Forests were eradicated in California. Marijuana grow sites are typically in excess of 1,000 plants per site and sometimes more than 200,000 plants.

Information from other sources reports annual removal of at least a half million cannabis plants from federal lands in 2013 and 2014, as well (Gabriel, Conservation Perils from Marijuana Cultivation on Public Lands in California presentation, December 2014). The increasing cultivation of cannabis on private lands has perhaps resulted in a slight reduction in the amount of trespass cultivation occurring on public and tribal lands over recent years, but trespass growing and associated impacts continues to be a significant component of the current and baseline condition. Yurok tribal officials reported in mid July 2015 that marijuana farms being visited during an ongoing law enforcement raid are the largest the tribe has ever seen in the Tribe's ancestral territory. The tribe also reports that in the past five years "a deluge of clandestine cannabis growers from all over the United States have moved to lands within and adjacent to the Yurok Reservation." (Lost Coast Outpost article: Multi-Agency 'Operation Yurok' Goes After Marijuana Grows Described as Largest Ever in Tribe's Territory_, Ryan Burns, Tuesday, July 14, 2015)

Cannabis cultivation practices on public lands reportedly differ in some general ways from those occurring on private lands. For example, cultivation activities on public lands often occur in remote areas with difficult access and are visually indistinct features from a birds-eye view. These are often areas where people rarely go because entry is made difficult by physical barriers such as cliff faces or dense poison oak (Mallery, 2011). For site access and supply in such remote areas, cultivators wear or cut trails into the landscape which leads to destruction of small vegetation and can introduce non-native species to new areas via seeds or spores on the cultivator's clothing or equipment. Additionally, there are often significant differences regarding chemical use practices in cannabis cultivation on public lands, as cannabis monocultures on public lands in general are especially susceptible to mold, mites, and wildlife. Many reports cite widespread usage of chemicals for cannabis cultivation on public lands. According to the Office of National Drug Control Policy (2015), law enforcement officials are increasingly encountering dumpsites of highly toxic insecticides, chemical repellants, and poisons purchased by drug trafficking organizations, and transported into the country. According to Mallery (2011), an average cultivation site of about 5 acres and 7,000 plants can contain about 20 pounds of rat poison, 30 bags of fertilizer, plant growth hormones, herbicides, fungicides, and a variety of other chemical inputs. Cultivators apply insecticides directly to plants to protect them from insect damage. Chemical repellants and poisons are applied at the base of the cannabis plants and around the perimeter of the grow site to ward off or kill rats, deer, and other animals that could cause crop damage. These toxic chemicals enter and contaminate ground water, pollute watersheds, and kill fish and other wildlife (Office of National Drug Control Policy, 2015). In particular, there are concerns regarding increasing concentrations of the rat poison Warfarin (often observed on public land cannabis cultivation) being detected in the Pacific Fisher, and it is suspected that this poison is contributing to the fisher's declining population and near-endangered status (Welsh, 2011).

Though different in some ways, development and use of land for cannabis cultivation on public and private lands share a number of similarities in environmental impacts, as well.

Growers on both public and private land reportedly engage in a variety of activities that can threaten or damage riparian and aquatic habitat, including: unauthorized diversion of water from streams; grading, terracing, dam, and road construction without permits, leading to the filling of streams through erosion and sediment deposition; deforestation and habitat fragmentation; illegal use of rodenticides, fungicides, herbicides and insecticides; use of soil amendments and fertilizers in situations where run off to surface waters may occur; discarding of trash and haphazard management of human waste; and substandard storage of hazardous materials such as diesel and gasoline. (See generally, Dana Kelly, BRINGING THE GREEN TO GREEN: WOULD THE LEGALIZATION OF MARIJUANA IN CALIFORNIA PREVENT THE ENVIRONMENTAL DESTRUCTION CAUSED BY ILLEGAL FARMS?, 18 Hastings W.-N.W. J. Envtl. L. & Pol'y 95, p. 96-98 (Winter, 2012).)

While sustainability is a purported North Coast value, much of the rural development in the North Coast has occurred largely without the benefit of any type of environmental planning, review or oversight either for site development or operation, including grading, streambed alteration, building, diversion, storage, or waste discharge permits. As a result, the planning and design is not always adequate to ensure that water resources and public health and safety are protected. Many sites have poorly located, designed, constructed or maintained roads, undersized or improperly installed stream crossings, inadequate drainage features, and poor housekeeping practices. Development at many sites includes reopening or extending old, poorly sited or constructed roads associated with historic logging activities. Some sites include development in or immediately adjacent to wetlands or surface waters. Many sites rely on surface water for plant irrigation and other onsite uses.

Even where residents are conscientious in their water use or housekeeping practices, they may not have the expertise or awareness to identify and address site features or activities that impact or may impact water resources. As a result, water quality and water resource impacts attributable to marijuana cultivation are being identified and documented throughout the North Coast Region, as well as the State of California as a whole. (See also, Joint Report to the Legislature on the Department of Fish and Wildlife and State Water Resources Control Board pilot project to address the Environmental Impacts of Cannabis Cultivation (Watershed Enforcement Team) http://www.swrcb.ca.gov/water_issues/programs/enforcement/docs/cannabis_enfrcmnt/legislative_report.pdf.) In the North Coast Region, these are seen most commonly in the form of sediment or nutrient impairments in receiving waters, widespread vegetation removal from forested lands and riparian areas, and reduced instream flows in late summer and fall as compared with historic flows.

Since the early 2000s, staff of the North Coast Regional Water Board have participated on multi-agency law enforcement task forces as well as responded to complaints of environmental damage associated with marijuana growing throughout North Coast counties. Water quality and water resource impacts are commonly identified on these investigations. Often, staff identify or document evidence of poorly designed and/or unpermitted grading and land clearing to accommodate cannabis cultivation; poorly located, constructed, and maintained roads; excavation spoils side cast; organic material buried in road prisms or earthen pads, threatening slope stability; evidence of cut and fill on extremely steep slopes; altered drainage patterns and erosional rills and gullies; instream ponds and in channel excavations; poorly compacted fills in and adjacent to stream channels; general absence of any erosion control measures; evidence of sediment delivery into watercourses; riparian vegetation clearing; potting soils and/or amendments in locations which threaten to discharge to watercourses; inadequate or nonexistent domestic waste handling/treatment/disposal measures,

including sites where wastewater and human waste is discharged from dwellings directly onto the ground; petroleum-contaminated soils; partially or wholly-diverted surface waters, resulting in diminished flows or no flows downstream; water wasteage from leaks in irrigations systems; trash in stream channels; and poorly stored fertilizers and pesticides where runoff could enter a watercourse (North Coast Regional Water Quality Control Board, 2011, 2013, & 2014). Within one month in the summer of 2015, law enforcement inspections encountered and eradicated nearly 100,000 plants on private properties within the Eel River watershed, identifying extensive stream diversions and other water resource impacts in the process (Lost Coast Outpost, 2015 A&B).

On recent watershed-wide inspections conducted jointly by the DFW, State Water Resources Control Board's Office of Enforcement and Division of Water Rights staff, and staff of the Regional Water Board, targeting private parcels with cannabis cultivationin five subwatersheds, staff confirmed discharges or threatened discharges of waste in violation of the Basin Plan, Water Code, and/or Clean Water Act on approximately 80 percent of the sites visited. As described in Bauer, et al (2015), on-the-ground data used to calibrate aerial imagery data indicate that in four subwatersheds on the North Coast, there were estimated to be between approximately 115 and 670 plants per square mile of watershed. The authors of that study suggest that surface water diversions for irrigation is contributing to low flow conditions that threaten salmonid survival in those streams. Waste discharges and water diversions associated with cultivation in the North Coast pose threats to beneficial uses.

Endangered species that depend on cold, clean water have been threatened for decades by impacts associated with past management, including persistent sedimentation and temperature impacts. With climate change and drought exacerbating conditions, the assimilative capacity of the streams habitat conditions to be conducive to these species has been reduced. As such, additional impacts from widespread unplanned, uncontrolled, and unregulated waste discharges and water diversion are more significant than ever.

Considering the scale of observable cultivation sites in the North Coast, and the lack of regulatory oversight on development, the scope of the problem is likely vast. The Order will provide an excellent framework to address water quality issues in a timely manner with the backstop of enforcement tools, where needed. Clearly, not all cannabis cultivation sites have resulted in significant environmental damage. At the same time, not all cultivators are interested in a pathway to compliance. This regulatory program will lead to a separation of those who are willing to be in compliance, offering regulatory requirements that will be protective of water resources, from those operators who are not willing to conform to water resource protections and whose sites will warrant enforcement and/or law enforcement response.

The North Coast Regional Water Board's Marijuana Cultivation Waste Discharge Regulatory Program and, more specifically, the Order, are intended to make growers aware of the impacts associated with marijuana cultivation, to take steps to ensure that their existing operations and overall properties are brought into and maintained in compliance with conditions that are protective of water quality and water resources, and, where necessary, require that improperly developed sites with conditions in violation of water quality standards be cleaned up and restored in a timely manner.

G. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project. Please see the checklist beginning on page 14 for additional information.

- ☒ Aesthetics
- ☒ Agriculture and Forestry Resources
- ☒ Air Quality
- ☒ Biological Resources
- ☒ Cultural Resources
- ☒ Geology/Soils
- ☒ Greenhouse Gas Emissions
- ☒ Hazards & Hazardous Materials
- ☒ Hydrology/Water Quality
- ☒ Land Use/Planning
- ☒ Mineral Resources
- ☒ Noise
- ☐ Population/Housing
- ☐ Public Services
- ☐ Recreation
- ☒ Transportation/Traffic
- ☒ Utilities/Service Systems
- ☒ Mandatory Findings of Significance

H. DETERMINATION

On the basis of this initial evaluation

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☒	I find that although the proposed project COULD have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☐	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Prepared By:

_____

Diana Henrioulle, Senior Water Resource Control Engineer
Date:
California Regional Water Quality Control Board, North Coast Region

CALIFORNIA ENVIRONMENTAL QUALITY ACT
ENVIRONMENTAL CHECKLIST

Section 1. AESTHETICS

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Aesthetics a), b), c), and d): Less than Significant

Discussion: Scenic vistas and resources in the north coast usually include well vegetated areas. The Order promotes protection of riparian buffers, slope and stream stabilization using bioengineering techniques, streambank restoration, and road improvements that will generally improve site vegetation. Temporary impacts on scenic vistas and resources may occur due to the presence of heavy machinery; stockpiling of spoils; removal of vegetation as necessary during restoration and prior to revegetation. Planting trees and/or retaining trees are generally regarded as positive aesthetics. In some cases the planting or retention of large woody vegetation could reduce visibility to an adjacent waterbody; however, vegetation also provides habitat for wildlife and is known to enhance water quality, which would improve the overall landscape. Existing greenhouses properly sited and located on stable areas may be in compliance with the Order, yet may impact scenic vistas. However, these are already part of the baseline condition; this Order does not cover new site development and thus impacts to scenic vistas are expected to be less than significant.

Restoration measures, modifications to water supply and water storage practices on cultivation lands, and erosion and sediment control measures may modify the existing visual character or quality of the site and its surroundings, but are not likely to result in the elimination of scenic open space.

Additionally, heavy equipment associated with management measures and remediation/cleanup/restoration activities may have the potential to create a temporary and minor source of glare, but such glare would be minimal and temporary. Artificial light augmentation may be used prior to dawn in greenhouses on sites that may be in compliance with the Order. These conditions are part of the baseline condition. This Order does not cover discharges of waste from new site development and thus is not expected to create new sources of glare.

Therefore, impacts that adversely affect scenic vistas, substantially damage scenic resources, substantially degrade the existing visual character or quality of a site or its surroundings, or create a new source of substantial light or glare that would adversely affect day or nighttime views in the area are less than significant.

Section 2. AGRICULTURAL AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the State's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping & Monitoring Program of the California Resources Agency, to non-agricultural uses?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land [as defined in PRC section 12220(g)] or timberland (as defined by PRC section 4526)?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

Agricultural and Forest Resources b), c): No Impact
Discussion: The Order does not authorize new site development. New site development is subject to regulation and oversight by local, state, and federal requirements and permits if and when required. Impacts to agricultural and forest resources associated with such new development should be considered if and as appropriate at that stage. No elements of the Order will rezone or force the rezoning of timberlands or agricultural lands, nor force the conversion of these lands to some other purpose. Local land use zoning requirements may determine that cannabis cultivation or operations with similar environmental effects is not consistent with agricultural and forest related zoning. There is nothing in this Order that precludes compliance with local zoning regulations. Silviculture activities implemented on properties that are also utilized for cultivation of marijuana are not covered by the Order, but are subject to regulation through the Regional Water Board's timber operations program. Management measures and restoration/cleanup/remediation activities on cultivation sites will not result in impacts to agricultural or forest lands.

Agricultural and Forest Resources a), d), e): Less than Significant
Discussion: The Order does not convert farmland to non-agricultural uses, result in the loss of forest land or conversion of forest land to non-forest use, or involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural use or conversion of forest land to non-forest use. The Order does not cover waste discharges associated with new site development. New site development would necessarily go through another regulatory process for which CEQA requirements will need to be met. The Order does contain riparian buffer requirements that, in some instances, will result in increased setbacks from streams. These buffers are still associated with agricultural and forest land uses and are, therefore, not conversions of use. Moreover, the riparian buffers represent a less than significant portion of the overall landscape. This Order will provide clear guidance to operators regarding compliance with applicable water quality regulations and will assist staff in identifying those operations that are not in compliance. Staff will exercise compliance assistance and/or take appropriate enforcement actions, while coordinating with other resource protection agencies. It is likely that this Order will result in a reduction in the conversion of forest and farmland as compared to baseline. In addition, implementation of the Order is not expected to result in any increase of cultivation on public lands. The purpose of the Order is to provide a structure under which cannabis cultivation on private land complies with water quality laws. As discussed above, the cultivation community is well-established in the North Coast region and there would be is no reason for a cultivator on private land to feel compelled to move to public land as a result of the water quality Waiver. Instead, the permit prioritizes various operations and that allows law enforcement to focus resources on fully illegal grow on public land. Any potential impacts associated with conversion of farmland or forest land to non-farm or non-forest use or the loss of forest land is, therefore, less than significant.

Section 3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☒	☐	☐

AIR QUALITY a), d): No Impact

DISCUSSION: Management practices and restoration/cleanup/remediation activities at cultivation sites are not expected to be on a scale large enough to result in a significant conflict with or obstruction of an applicable air quality plan or expose sensitive receptors to substantial pollutant concentrations.

AIR QUALITY b), c) and e): Less than Significant Impact with Mitigation Incorporated.

DISCUSSION: Management practices and restoration/cleanup/remediation activities at cultivation sites include earthwork and heavy equipment use, which could generate dust, particulate matter, and exhaust when implementing management measures or conducting remediation/cleanup/restoration activities, which could temporarily impact ambient air quality, and possibly create objectionable odors.

Any such impacts would be temporary, and construction BMPs included in Appendix B would minimize any impacts associated with the activities to less than significant levels. Examples of such measures include the use of moisture to reduce the transfer of particulates and dust to air, conducting operations when the air quality in the area is sufficient, and scheduling various remediation/cleanup/restoration activities to avoid a significant cumulative impact to air quality in the area (see Order Finding 35, and I.D). The emissions of air pollutants are unlikely to have a significant effect on ambient air quality.

Use of heavy equipment for road drainage installation or re-contouring of existing road prisms could result in vehicle emissions during construction. In addition, there could be a slight increase in vehicle emissions from Water Board and third-party inspections at various sites in the region. However, these impacts would be short-term, and would not result in conflicts with, or obstruction of the implementation of the applicable air quality plan.

Cannabis cultivation operations subject to the requirements of this Order may have odors associated with them, especially during the budding season. Local land use ordinances, if applicable, may place restrictions or limitations on cannabis cultivation in the vicinity of neighboring properties to minimize the nuisance associated with the odors. Many of the operators who will enroll for coverage under this Order are in rural areas, away from neighbors, and are unlikely to affect other neighbors with odors. The Order does not cover waste discharges from new site development and is not expected to result in increased odors over the existing baseline conditions.

As a result, impacts that may violate any air quality standard or contribute substantially to an existing or projected air quality violation, result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard, or creation of objectionable odors affecting a substantial number of people, are less than significant with mitigation incorporated.

Section 4. BIOLOGICAL RESOURCES

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (DFW) or United States Fish and Wildlife Service (USFWS)?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFW or USFWS?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

The North Coast Region is home to numerous threatened and endangered species that are among the beneficial uses most sensitive to excessive sediment and temperature and reduction in suitable habitat. The migration, spawning, reproduction, and early development of cold water fish such as coho salmon (*Oncorhynchus kisutch*), chinook salmon (*O.tshawytscha*), and steelhead trout (*O. mykiss*) are impacted in the North Coast Region due to water quality impairments and are central to numerous recovery efforts. The National Marine Fisheries Service (NMFS) has listed Southern Oregon/Northern California Coast (SONCC) coho salmon (1997), California Coastal Chinook salmon (1999), and Northern California steelhead (2000) as threatened under the federal Endangered Species Act. The California Fish and Game Commission also listed coho salmon as threatened in 2005.

Additionally, waterbodies covering approximately two-thirds of the area of the North Coast Region are included on the Clean Water Act Section 303(d) List of impaired waters due to excessive sediment; technical assessments and programs of implementation for these impaired waters focus on sediment and temperature control for recovery of cold freshwater habitat (COLD) defined as uses that "support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates" (NCRWQCB, 2011).

Impacts to instream biological resources from past land uses have contributed to declining populations of sensitive species as a result of habitat impacts. Such impacts in the North Coast include those from pre-Forest Practice Act logging and road construction, mining, and ranching. These activities primarily affected riparian and forest conditions as well as instream habitat. Numerous legacy features remain on the landscape and are being addressed incrementally under non-point source regulatory requirements. This Order will require dischargers to inventory, prioritize, schedule, and repair, over time, legacy features on their properties.

Widespread unregulated cannabis cultivation in the North Coast Region is currently posing a new wave of threats to cold freshwater habitat and the dependent species (Bauer, 2015). Land disturbing activities and discharges of waste from cultivation activities can lead to increased sediment loading to streams, reduced shading and water temperature increases, increased nutrient loading, reduction in large wood inputs, and direct alterations to stream morphology due to in-channel disturbances. Excessive surface water diversion can lead to dewatering of streams. Among the biological resources at risk are species that require a full year in freshwater. Dewatering can threaten the survival of entire year classes. The Order is designed to address these impacts from cannabis cultivation and lead to an improvement in water quality and conditions associated with cold freshwater habitat.

BIOLOGICAL RESOURCES a), b), c), d): Less than Significant with Mitigation Incorporated

Discussion: The baseline conditions include legacy impacts and more recent improper site development or maintenance, including improper stream crossing design, which can result in erosion and transportable sediment, create or exacerbate unstable features, and result in temperature impacts from improper hydromodification, potential for adverse geomorphological changes, creation of habitat/migration barriers, and removal of riparian vegetation.

Inadequate riparian protection measures can result in adverse temperature increases, and can result in or increase the likelihood of pollutant discharges to surface waters, or of fill/threatened fill in streams or wetlands. If conducted improperly, soil storage and disposal can result in placement of fill in or where it can enter surface waters, controllable sediment sources, and creation or exacerbation of unstable features. Water diversion, storage, and use can result in depletion of water resources and potential impacts to or loss of beneficial uses; improper construction or maintenance of storage features or facilities can result in pollutant discharge and damage to watercourse structure and instream habitat, and can create fish and wildlife migration barriers. Irrigation runoff from marijuana cultivation and other similar growing operations can result in sediment and other pollutant transport to receiving waters, and possible exacerbation of unstable features. The Order is designed to eliminate and reduce such impacts, particularly as they relate to candidate, sensitive, or special status species, riparian habitat, and/or other sensitive natural communities, and federally-protected wetlands.

Management practices and remediation/cleanup/restoration activities at cultivation sites could have adverse effects on candidate, sensitive, or special status species, riparian habitat and/or other sensitive natural communities, and federally-protected wetlands if they are implemented in sensitive areas or areas of critical habitat. Management practices and remediation/cleanup/ restoration measures at cultivation sites could also interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites. However, the results of these activities are intended to improve, rather than adversely affect these areas over time.

The pattern and range of instream flows can be affected by the timing, duration, and rate of water withdrawals. The Order contains conditions related to water storage and use that may encourage Dischargers to pursue alternate water supply to avoid direct diversions from surface streams in the summer. Increased use of management measures and practices such as water conservation measures, and increased use of off-stream storage and voluntary curtailments of water diversion, could increase dry weather instream flows, and associated habitat. This would help return dry weather flows in the watersheds to a more natural, pre-development condition. However, collection of water for storage during the rainy season may result in reductions in winter and spring flows, which could have a minor impact on salmonid species by limiting access to spawning habitat, and dewatering rearing areas. In implementing the Order, staff intends to facilitate watershed-wide coordination of diversion schedules and streamflow monitoring to inform diversion management. Generally, flow-related stresses to candidate, sensitive, or special status species are likely to be reduced by the requirements of the Order.

The Order requires development and implementation of site-specific water resource protection plans that include measures to avoid and minimize impacts on candidate, sensitive, or special status species; riparian habitat and other sensitive natural communities; and federally-protected wetlands, as well as impacts on the movement of resident or migratory fish or wildlife and migratory corridors. Such measures may include those necessary on a specific site to prevent and minimize sediment discharges from roads and developed areas, and to prevent and minimize pollutant discharges associated with cultivation and associated activities, including nutrients and pesticides.

Potential impacts to sensitive species, habitats, and wetlands due to implementation of management measures or conducting remediation/cleanup/restoration activities will be temporary and short-term. Such impacts could include increased stream temperatures as a result of decreased shade resulting from tree felling associated with equipment access to clean up sites and increases in sediment delivery from site activities. Remediation/cleanup/restoration activities necessary to bring sites into compliance with the Order could involve work to be performed within watercourses to remove fill placed during past site development or activity. The process of remediating existing impacts on wetlands and watercourses could cause hydrological impacts including interruption through the use of instream containment and diversion structures, such as cofferdams, for the protection of aquatic life and water quality. Some of the disturbances will occur in an area impacted by previous, unassociated, activities. Where correction of onsite conditions or maintenance of onsite features is necessary to attain or maintain compliance with the Order, construction BMPs, as described in Appendix B must be implemented as applicable. Specific BMPs intended to protect sensitive species and habitat include, but are not limited to project scheduling, designating no-disturbance buffer areas for sensitive species and communities while performing work, cofferdams to isolate work areas, water diversions around work areas, and general erosion and sediment control measures.

Again, the intended purpose of the Order is to improve the conditions of these sensitive areas in the long-term. The process of remediation/cleanup/restoration of any site will be temporary, and scheduled by Regional Water Board staff, as necessary, to minimize cumulative impacts within a watershed.

Collectively, the measures described above mitigate the impacts to federally-protected wetlands, riparian habitat or other sensitive natural community, and any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (DFW) or United States Fish and Wildlife Service (USFWS) to a level that is less than significant, and any potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites is mitigated to a level that is less than significant.

BIOLOGICAL RESOURCES: e) Less than Significant

Discussion: Management measures and remediation/cleanup/restoration activities at cultivation sites are not expected to be on a scale large enough to result in conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

In most instances, activities would result in benefits to protecting biological resources and habitats. Therefore, conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance and with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, is less than significant.

Section 5. CULTURAL RESOURCES

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Calif. Code Regs. title 14 section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in Calif. Code Regs. title 14 section15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

CULTURAL RESOURCES a), b), c) and d): Less than significant with mitigation incorporated
Discussion: It is unlikely that the majority of management measures and remediation/cleanup/ restoration activities at developed sites would cause a substantial adverse change in the significance of a historical or archaeological resource pursuant to section 15064.5, directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains, including those interred outside of formal cemeteries. However, where correction of onsite conditions or maintenance of onsite features is necessary to attain or maintain compliance with the Order, excavation may, at times, be required. Most of the work is anticipated to occur in areas already disrupted and the likelihood of encountering historical archaeological and paleontological resources is low. In the event that excavations in previously undisturbed areas are required as part of a water resource protection or cleanup plan, the plan shall include a cultural resources investigation and paleontological survey prior to any substantial disturbance.

The cultural resources investigation will include, at a minimum, a records search for previously identified cultural resources and previously conducted cultural resources investigations of the project parcel and vicinity. This record search should include, at a minimum, contacting the appropriate information center of the California Historical Resources Information System.

In coordination with the information center or a qualified archaeologist, a determination regarding whether previously identified cultural resources will be affected by the proposed activity must be made and if previously conducted investigations were performed. The purpose of this investigation would be to identify resources before they are affected and avoid the impact.

In the event that the ground disturbances uncover previously undiscovered or documented resources, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (Health & Safety Code, section 7050.5; Public Resource Code, section 5097.9 et seq). Thus, the potential to cause a substantial adverse change in the significance of a historical resource or archaeological resource and the potential to disturb any human remains, including those interred outside of formal cemeteries is less than significant with mitigation incorporated.

Paleontological resources include fossil plants and animals, and such trace fossil evidence of past life as tracks. Ancient marine sediments may contain invertebrate fossils such as snails, clam and oyster shells, sponges, and protozoa; and vertebrate fossils such as fish, whale, and sea lion bones. Vertebrate land mammals may include bones of mammoth, camel, saber tooth cat, horse, and bison. Paleontological resources also include plant imprints, petrified wood, and animal tracks.
In the event that significant excavation or grading of previously undisturbed soil or rock is required as part of a water resource protection plan or cleanup plan, the plan shall include provisions to avoid or minimize substantial impacts to any potentially affected unique geologic resource. If paleontological resources are encountered during project subsurface work, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. The potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature is, therefore, less than significant with this mitigation incorporated.

Section 6. GEOLOGY and SOILS

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☒	☐	☐
i) Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines & Geology Special Publication No. 42.	☐	☒	☐	☐
ii) Strong seismic ground shaking?	☐	☒	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

GEOLOGY and SOILS a); i) through iv): Less than significant with mitigation incorporated

Discussion: Activities that may trigger a landslide or exacerbate an existing landslide include the removal of support material at the toe of a slope, the addition of weight to the top of a slope, or the additional of water into the slope's subsurface. Excavation or grading at slope toes, the addition of weight such as spoil piles or irrigation ponds at the tops of slopes, and the diversion of water into the subsurface of slopes may occur on existing sites; the Order includes requirements designed to remedy unstable conditions.

It is unlikely that properly implemented management measures or remediation/cleanup/ restoration activities at cultivation sites would be on a scale significant enough to result in exposure of people or structures to geologic hazards. Activities conducted in compliance with the Order are unlikely to expose people or structures to potential substantial adverse effects involving fault rupture, strong seismic ground shaking, and seismic-related ground failure such as liquefaction.

In a situation where the Order requires a cleanup plan, larger-scale work may be involved, such as re-grading of fill prisms, removal of fill from watercourses, construction of retaining walls for soil stabilization, upgrading of stream crossings, or reshaping cutbanks. If the cleanup site is located in an Alquist-Priolo Earthquake Fault Zone or an area with substantial evidence of a known fault, the cleanup plan will consider fault rupture hazard during the siting, design, and monitoring of applicable site features in order to minimize the impact to public safety. The cleanup plan shall also consider hazards associated with strong seismic ground shaking and seismic-related ground failure, including liquefaction, during the siting, design, and monitoring of applicable site features in order to minimize the impact to public safety. Additionally, the Order requires that water storage facilities be properly located and designed to minimize failure potential and catastrophic discharge to surface waters. Proper siting, design, and monitoring of relevant improvements will minimize the impacts of fault rupture and seismic effects to less than significant levels.

The Order contains provisions to mitigate the exposure of people or structures to potential substantial adverse effects related to landslides. The Order specifies that cleanup plans will be prepared by a qualified professional. The cleanup plan shall consider 1) the presence and location of identifiable existing landslides which could be affected as a result of site activities resulting from the Order and 2) slopes which may become unstable as a result of site activities resulting from the Order. Additionally, the Order requires the removal of structures or drainage features that are located on, or that drain onto, unstable features. Further, the Order requires that irrigation runoff be controlled so as to prevent it from exacerbating unstable features and conditions.

Proper siting, design, and monitoring of relevant improvements by a qualified professional will minimize the potential impacts of the Order to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, and landslides to less than significant levels.

GEOLOGY and SOILS b and c): Less than significant with mitigation incorporated

Discussion: Improper site development or maintenance can result in erosion and transportable sediment and create or exacerbate unstable features. If conducted improperly, soil storage and disposal can result in placement of fill in or where it can create or exacerbate unstable features. Improperly sited, constructed, or maintained water storage ponds or vessels can exacerbate unstable features or fail catastrophically, causing significant erosion and/or sediment delivery to receiving waters. Irrigation runoff from marijuana cultivation and other similar growing operations can result in sediment and other pollutant transport to receiving waters, and possible exacerbation of unstable features. The Order is designed to eliminate and reduce such impacts.

Properly implemented management measures and remediation/cleanup/restoration activities to developed sites would not result in substantial erosion or the loss of topsoil. There may be situations resulting from the Order, as part of a water resource protection or cleanup plan, where portions of a given site, either temporarily or permanently, contain exposed bare soil or disturbed soil and would, therefore, be prone to erosion or loss of topsoil. However, the water resource protection or cleanup plan will contain requirements for implementation of appropriate BMPs to prevent and minimize wind and water erosion of soils. Example BMPs to minimize substantial soil erosion or loss of topsoil are presented in Appendix B of the Order. Relevant BMPs may include installation of adequate road ditch relief drains or rolling dips only where necessary since frequent routine grading can cause erosion of a ditch; usage of sediment control devices such as check dams or sand bag barriers when necessary to disperse ditch water, which would otherwise cause further erosion; and compaction and contouring of stored soil spoil piles to mimic the natural slope contours, which reduces the potential for fill saturation and failure. Proper implementation of BMPs required under this order reduce the potential for the Order to result in substantial soil erosion or the loss of topsoil to less than significant with mitigation incorporated.

In general, properly implemented management measures and remediation/cleanup/restoration activities at developed sites would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. There may be situations resulting from the Order, where actions required as part of a water resource protection or cleanup plan have the potential to be located on a geologic unit that is unstable, or that would become unstable as a result of the plan. For example, if the Order requires the removal of fill placed in a stream, there is potential that the fill could collapse and flow downstream during removal activities. However, as explained above, the Order specifies that site-specific water resource protection and cleanup plans will be prepared by a qualified professional.

The water resource protection or cleanup plan shall consider geologic units or soils that are unstable or that would become unstable. In many situations involving implementation of BMPs or cleanup, existing unstable geologic features or soils could be entirely avoided if preliminarily identified by a qualified professional. In situations where avoidance of unstable features is not possible, mitigation measures will be included as part of the plan.

To avoid soil collapse in the example situation where in-stream fill removal is required, the cleanup plan prepared by a qualified professional may potentially include the construction of a

temporary upstream cofferdam and temporary water diversion while the in-stream fill is removed. Additionally, the Order requires the removal of structures or drainage features that are located on or that drain onto unstable features. Further, the Order requires that irrigation runoff be controlled so as to prevent it from exacerbating unstable features and conditions. Finally, the Order requires that water storage facilities be properly located and designed to minimize failure potential and catastrophic discharge to surface waters, and is also defined in the project description of this document. Proper siting, design, and monitoring of relevant improvements by a qualified professional will minimize the impacts of unstable geologic features to less than significant levels.

The potential impacts of management measures required by the Order to be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse is, therefore, less than significant with mitigation incorporated.

GEOLOGY and SOILS d): Less than significant with mitigation incorporated

Discussion: In general, properly implemented management measures and remediation/ cleanup/restoration activities on developed sites would not be located on expansive soils which could create substantial risks to life or property. There may be situations where actions required as part of a water resource protection or cleanup plan have the potential to be located on expansive soils. In many cases, repairs to features including road prisms, water storage pads or ponds, swales or stream crossings damaged by expansive soils would be minor and not create a substantial risk to life or property. In some cases, a cleanup plan may involve repairs or upgrades to a feature such as a stream crossing, in which property damage resulting from expansive soils could be considered significant. However, as explained above for section 6a, the Order specifies that site-specific water resource protection plans and cleanup plans will be prepared by a qualified professional. The water resource protection plan or cleanup plan shall consider conditions such as expansive soils and include measures to minimize significant damage resulting from expansive soils if applicable. Such measures may include the removal of expansive soil and replacement with non-expansive fill, or lime treatment of expansive soil. Additionally, the Order requires that water storage facilities be properly located and designed to minimize failure potential and catastrophic discharge to surface waters. These measures will minimize the impacts of expansive soils to less than significant levels.

GEOLOGY and SOILS e): No Impact

Discussion: Management measures and remediation/ cleanup/ restoration activities at developed sites may lead to installation of septic tanks or alternate wastewater disposal systems on individual sites. However, such systems must be sited, designed, and constructed in accordance with applicable local requirements and/or the State Water Board's Onsite Wastewater Treatment System (OWTS) policy. Because the siting and design of wastewater disposal systems is governed by other existing requirements or policies, the effect of inadequate soils for wastewater disposal is not an impact for consideration under this Order.

Section 7. GREENHOUSE GAS EMISSIONS

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

GREENHOUSE GAS EMISSIONS a): Less than significant

Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites may result in minor generation of greenhouse gases over brief periods due to exhaust from heavy equipment and vehicles. The Order contains provisions for the Regional Board to stagger the timing of remediation/cleanup/restoration activities. Even without temporally staggered remediation/cleanup/restoration activities, the impact of greenhouse gas emissions associated with remediation/cleanup/restoration activities on a watershed-wide scale will be less than significant.

Indoor cultivation of marijuana can result in greenhouse gas emissions associated with power generation for running lights and exhaust fans. Indoor cultivation is part of the baseline condition. This Order applies to cannabis cultivation on private lands, and offers a pathway to compliance for operators who conform with the standard conditions. There may be a possibility that rather than conforming to the permit, some operators may move operations from outdoors to indoors. The Order is developed in a manner so as to protect privacy, thus incentivizing enrollment in the program. Further these operations are likely to be the target of ongoing law enforcement and landuse regulation efforts. These provisions will likely reduce existing impacts from indoor growing, and any shift to indoor growing and associated impacts will be less than significant.

The baseline conditions include significant amounts of trucking to supply soil, soil amendments, tanks, and other cultivation-related products and supplies to nurseries and grower supply stores, as well as to deliver these products to individual cultivation sites throughout the region. The standard conditions and BMPs, in combination with ongoing outreach and education efforts, provide guidance on means to minimize the need for new soil with each planting, which could lead to a reduction in the amount of cannabis cultivation-related trucking and associated emissions. Also, the Order does not cover waste discharges from new site development. As such, emissions associated with material and supply hauling are expected to be less than significant, and may even decline slightly, as compared to baseline.

Baseline conditions include water truck delivery of water to sites that do not have adequate onsite supplies to support their operations, thus resulting in greenhouse gas emissions. In recent years, the State Board Division of Water Rights has issued directives to water districts that rely on surface water advising that selling water to trucks that will haul the water to locations outside of their place of use and for non-emergency situations is inconsistent with their water rights. There may be water haulers that fill their trucks from legal sources of water, including wells, rainfall catchment, and municipal supplies where the water is delivered and used in a designated place of use. The Regional Water Board is aware that illegal water hauling operations exist in which water is diverted from a watercourse without, or in violation of, a valid water right. The Division of Water Rights holds enforcement authority over activities such as water trucking operations where illegal diversions are occurring. Typically, photographic evidence of the act of diversion is required for effective enforcement against an illegal diversion by a water hauler. These conditions are part of the baseline conditions and this Order does not authorize waste discharges from new development. In addition to applicable state permits, new development is required to go through local regulations which typically include requirements to demonstrate legal water supply. It is possible that implementation of the Order could result some increased use of delivery trucks as a result of encouraging water storage; however, the Order requires dischargers to document deliveries as part of the Monitoring and Reporting Program, which will help facilitate the reduction in illegal hauling operations. Any increased hauling is expected to be slight in comparison to already on going activities. Accordingly, the Order will not result in significant impacts associated with greenhouse gas emissions from water trucks.

GREENHOUSE GAS EMISSIONS b): No Impact

Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites are not expected to be on a scale large enough to result in conflict with any applicable plan, policy or agency adopted regulation for the purpose of reducing the emissions of greenhouse gases.

Section 8. HAZARDS and HAZARDOUS MATERIALS

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

HAZARDS and HAZARDOUS MATERIALS a), b), and g) Less than significant with mitigation incorporated.

Discussion: Existing conditions in the North Coast Region include thousands of cultivation sites, many that use and manage hazardous materials without any direct environmental regulatory oversight. To address this gap, the Order includes conditions requiring proper storage, handling, use, and disposal of chemicals, which are intended to reduce the potential for release of hazardous materials into the environment.

Off-the-grid indoor cultivation of marijuana typically relies on large generators to power lights and exhaust fans. Improperly contained fuels and other petroleum products, and leaks and spills associated with use and/or storage, can lead to contaminated soil and potential toxicity to public health and the environment. Indoor cultivation is part of the baseline conditions. This Order applies to cannabis cultivation on private lands, and offers a pathway to compliance for operators who conform with the standard conditions. There may be a possibility that rather than conforming to the Order, some small fraction of the operators move operations indoors. However, the Order is developed in a manner so as to protect privacy, thus incentivizing enrollment and participation in the program. Further, the cultivation community is well-established in the North Coast region, and there is evidence that the community is willing to comply with water quality requirements. Implementation of the Order is not expected to drive cultivators to move operations indoors. Further, indoor operations are likely to be the target of ongoing law enforcement and land use regulation efforts. Accordingly, new impacts from operators shifting indoors is less than significant.

Certain management measures and remediation/cleanup/restoration activities at cultivation sites could potentially result in a release of hazardous substances as a result of routine transport, use, or disposal of hazardous materials. Such hazardous substances may include oil, pesticides, or other chemicals.

There is the possibility that hazardous materials may be transported to a site and be present during remediation and restoration activities. These materials may include gasoline and diesel to fuel equipment, hydraulic fluid associated with equipment operations and machinery, asphalt and oils for road surfacing, surface stabilizers, acids, solvents, degreasers, corrosives, and antifreeze, among others. Transportation and grading equipment could leak hydraulic fluids and oils; on-site fuel storage containers for vehicles could leak; cementitious materials used for restoration measures could discharge to land or surface waters if left unprotected from wind or precipitation; relocation of existing on-site hazardous materials storage containers could result in discharges if inappropriately managed; relocation or demolition of inappropriately sited structures could result in the release of hazardous materials including, but not limited to, treated wood waste, lead-based paints, and asbestos. Any hazardous waste generated from the demolition of structures or impoundments would need to be disposed of in designated hazardous waste landfills. Cultivation sites often employ and manage fertilizers, herbicides and pesticides. Compliance activities associated with the Order could include relocation of these existing products to areas that are more protective of water quality. During relocation, the potential exists for accidental spills or leaks.

The Order includes requirements that: 1) any pesticide or herbicide product application be consistent with product labelling and be managed to ensure that they will not enter or be released into surface or ground waters (Order section I.A.8); and 2) petroleum products and other liquid chemicals be stored in containers and under conditions appropriate for the chemical with impervious secondary containment and 3) implementation of spill prevention, control, and countermeasures (SPCC) and have appropriate cleanup materials available onsite (Order section I.A.9); 4) standard construction BMPs be used during cleanup and restoration activities; and 5) plans be developed for any on-site water quality management or remediation/cleanup/restoration activities. By increasing containment measures, requiring spill prevention measures, requiring appropriate application of chemicals (e.g. application of pesticides consistent with product labelling requirements), implementation of standard construction BMPs, and development of water resource protection plans and cleanup plans, the Regional Water Board anticipates that efforts to comply with the Order would generally reduce routine transport and use of chemicals. The potential risks of exposure to hazardous materials would be small, especially with proper handling and storage procedures. Therefore, the potential for the Order to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment is mitigated to a less than significant level.

Remediation and restoration activities have the potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

For example, heavy equipment parked on an access or fire road could block emergency vehicle access and prevent vehicular evacuations. However, Appendix B includes a construction BMP regarding maintenance of emergency vehicle access.

Therefore, the potential for the Order to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan is less than significant with mitigation incorporated.

HAZARDS AND HAZARDOUS MATERIALS: c), e), f), and h) Less Than Significant
Discussion: Management measures and remediation/cleanup/restoration activities are unlikely to emit hazardous emissions or result in the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The majority of sites are not within one-quarter mile of an existing or proposed school. Sites are agricultural and only contain small quantities, if any, of hazardous chemicals. These types and quantities of potentially hazardous chemicals may include fuels, petroleum products, fertilizers, herbicides, and pesticides typically used at agricultural sites. The potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one quarter mile of an existing or proposed school is, therefore, less than significant.

Remediation/cleanup/restoration work may involve heavy machinery, but would not necessitate any heavy machinery sufficiently large, tall, loud, or intrusive to significantly impact airport operations or the safety of people working or residing in the area. The potential for these activities to result in a safety hazard for people residing or working within the vicinity of a private airstrip, within an airport land use plan or within two miles of a public airport is, therefore, less than significant.

It is unlikely that activities under the Order would expose people or structures to a significant risk of loss, injury or death involving wildland fires. It is possible that heavy equipment used during remediation/cleanup/restoration activities could combust. However, normal routine maintenance of such equipment would adequately address such concerns. The potential for the Order to expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands is, therefore, less than significant.

HAZARDS AND HAZARDOUS MATERIALS: d) No Impact
Discussion: The Order is not applicable to sites included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5, thus there is no impact.

Section 9. HYDROLOGY AND WATER QUALITY

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☒	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☒	☐	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

Improper site development or maintenance, including improper stream crossing design, can result in erosion and transportable sediment, create or exacerbate unstable features, and result in temperature impacts from improper hydromodification, potential for adverse geomorphological changes, creation of habitat/migration barriers, and riparian vegetation removal. Improperly sited development may include features constructed within and adjacent to watercourses and surface waters, altering drainage patterns and watercourse channels, or blocking or impeding natural stream flows or floodwater flows. Inadequate riparian protection measures can result in adverse temperature increases, and can result in or increase the likelihood of pollutant discharges to surface waters, or of fill/threatened fill in streams or wetlands. If conducted improperly, soil storage and disposal can result in placement of fill in or where it can enter surface waters, creation of sediment sources, and creation or exacerbation of unstable features.

Water diversion, storage, and use can result in depletion of water resources and potential impacts to or loss of beneficial uses; improper construction or maintenance of storage features or facilities can result in pollutant discharge and damage to watercourse structure and instream habitat, and migration barriers. Irrigation runoff from marijuana cultivation and other similar growing operations can result in sediment and other pollutant transport to receiving waters, and possible exacerbation of unstable features. Improper use, storage, and disposal of chemicals including fertilizers, soil amendments, pesticides, and petroleum products and other fuels and oils can result in spills or releases of toxic substances and other pollutants to receiving waters, potentially violating various water quality objectives, impacting multiple beneficial uses, and/or contributing to listed impairments in affected receiving waters. The pattern and range of instream flows and groundwater depths can be affected by the timing, duration, and rate of water withdrawals. As discussed further below, the Order is designed to eliminate and reduce such impacts.

HYDROLOGY AND WATER QUALITY: a) Less Than Significant with Mitigation Incorporated Discussion: By requiring the implementation of management measures to preserve, protect and restore riparian buffers; control discharges of sediment, nutrients, pesticides, or herbicides, the proposed Order will have an overall beneficial impact on water resources in the North Coast Region.

Nonetheless, certain management measures and remediation/cleanup/restoration activities at cultivation sites could potentially violate water quality standards or waste discharge requirements if not appropriately implemented. Compliance activities may involve periodic operation of heavy equipment, soil disturbance, disruption of drainage conveyances and features, activities on and near unstable features, disturbance and removal of vegetation, creation of spoils, short-term exceedance of water quality objectives associated with removing and replacing instream structures, and disturbing instream habitat, and cleanup or removal of toxic substances. Soils made unstable and toxic substances handled as a result of the Order have the potential to be mobilized in storm water or irrigation runoff and transported to surface waters, thus potentially violating water quality standards or waste discharge requirements. However, the Order requires implementation of standard construction BMPs including, but not limited to, temporal restrictions on construction; limitations on earthmoving and construction equipment; guidelines for removal of plants and revegetation; conditions for erosion and sediment control; and limitations on work in streams, as well as protection of riparian and wetland areas; implementation of secondary containment and SPCC plans, and use of a qualified, licensed professional for design of watercourse replacements and development and oversight of remediation/cleanup/restoration plans. Implementation of management measures and remediation/cleanup/restoration activities in accordance with standard conditions in the Order and incorporating appropriate BMPs mitigates the potential to violate water quality standards and waste discharge requirements to a less than significant level.

HYDROLOGY AND WATER QUALITY: b) Less Than Significant with Mitigation Incorporated
Discussion: The Order includes conditions on water storage and use that may result in some Dischargers seeking alternative water sources to avoid direct diversions from surface waters in the summer months. The Order includes Tier 1, associated with sites that present a lower threat to water quality by, in part, not withdrawing surface waters from May 15 through October 31. Tier 2 Dischargers may opt to install groundwater wells as a result of an analysis included within a water resource protection plan.

Additionally, Tier 3 cleanup plan requirements for removal of instream impoundments could influence project proponents to develop groundwater wells as an alternative water source. These potential changes in surface water use practices could indirectly result in increased groundwater pumping. This potential impact is mitigated by requirements in the Order to implement water conservation measures, irrigation at agronomic rates, and sizing of operations in consideration of other water use by operations in the same watershed. The Order requires all Tier 2 and Tier 3 dischargers to document monthly water use and to develop an approach to ensure that water use is not impacting water quality. Tier 1 dischargers must meet cultivation size restrictions and implement conservation practices. Such provisions of the Order mitigate the potential to substantially deplete groundwater supplies to a level that is less than significant.

HYDROLOGY AND WATER QUALITY: c) Less Than Significant with Mitigation Incorporated
Discussion: The Order contains standard conditions for site maintenance, erosion control, and drainage features that require roads and other graded site features to be maintained to avoid developing surface ruts, gullies, and surface erosion, and to have adequate ditch relief drains or rolling dips. Certain management practices, such as infiltration basins, field leveling or road maintenance, bioengineering and instream restoration, could potentially cause an alteration of the existing drainage pattern of a site.

In most cases, however, these measures would be small and installed with appropriately designed mitigation measures, which would limit any alteration of the existing drainage pattern. Therefore, the potential impacts are less than significant.

HYDROLOGY AND WATER QUALITY: d) Less Than Significant with Mitigation Incorporated
Discussion: Existing conditions in the North Coast Region include thousands of cultivation sites, many that have already altered existing drainage patterns through the alteration of streams and site runoff by clearing forested areas and construction of impervious structures. To improve this existing condition, the Order requires water quality management measures and remediation/cleanup/ restoration activities, which still have the potential to increase the rate or amount of surface runoff in a manner which could result in flooding on- or offsite. The potential for an increased rate of runoff from water quality management measures or resulting from remediation/cleanup/restoration activities is less than significant with implementation of standard erosion and sediment control BMPs.

The removal of instream impoundments as part of cleanup and restoration plans would reconnect streams to their watersheds and has the potential to temporarily increase flooding. However, the Order requires the development and implementation of cleanup and restoration plans for impoundment removals, which could include measures such as cofferdams and water diversions during removal, to mitigate the potential for flooding. Other possible mitigation measures to address increases in flooding potential include bank stabilization, riparian and floodplain restoration, establishment of natural riparian buffers, and upgradient soil-water management that promotes infiltration and flood peak attenuation.

The potential to increase the rate or amount of surface runoff in a manner that could result in flooding on- or offsite, to a level that is, therefore, less than significant with mitigation incorporated.

HYDROLOGY AND WATER QUALITY: e) Less Than Significant with Mitigation Incorporated
Discussion: As explained above, the Order contains standard conditions designed to remedy existing site features and operations that create or contribute runoff that would exceed storm water drainage systems, add substantial sources of polluted runoff, and substantially degrade water quality. In some cases, management measures such as the use of infiltration basins, field leveling, road maintenance, bioengineering, and in-stream restoration have the potential to cause or contribute to an increase in runoff. In most cases, however, these measures would be small and installed with appropriately designed mitigation measures to promote infiltration and minimize contribution of additional runoff.

Additionally, the Regional Water Board implements the NPDES program for storm water in the North Coast Region. Staff implementing this Order will consult with NPDES staff and other staff to ensure that no permitted projects result in the concentration of runoff that would exceed the capacity of planned storm water facilities, result in additional sources of polluted runoff or otherwise substantially degrade water quality.

The potential to create or contribute to an increase in runoff, which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff, or otherwise substantially degrade water quality is less than significant with mitigation incorporated.

HYDROLOGY AND WATER QUALITY: f) Less Than Significant with Mitigation Incorporated
Discussion: The Order requires that irrigation runoff (i.e., tailwater) be managed so that any entrained constituents, such as fertilizers, fine sediment and suspended organic particles, and other oxygen consuming materials are not discharged to nearby watercourses to the extent possible. Management practices to meet this condition may include construction of retention basins and infiltration of irrigation runoff which could, in turn, potentially result in some degradation to the underlying groundwater.

Implementing water conservation measures, irrigating at agronomic rates, properly applying fertilizers and chemicals, and maintaining stable soil and growth media should serve to prevent and minimize the amount of tailwater flows and the concentration of chemicals in that water. Because runoff volumes and chemical concentrations are relatively low, the intervening soil layer beneath the retention pond should serve to attenuate any residual pollutant concentrations. Therefore, the potential to substantially degrade the quality of ground water is less than significant.

HYDROLOGY AND WATER QUALITY: h) Less Than Significant with Mitigation Incorporated
Discussion: The Order does not permit new development so the placement of any structures at cultivation sites within a 100-year flood hazard area represents existing conditions upon enrollment in the Order.

It is possible that compliance with the Order could include placement of structures within a 100-year flood hazard area, which could impede or redirect flood flows. For example, switching from an instream diversion to offstream storage could result in a structure being placed within the floodplain. However, it is in these instances that coordination with project proponents and other agencies is best suited to reduce potentially significant impacts.

The Order requires the establishment of riparian buffers, which provide flood hazard mitigation benefits. Cleanup and restoration plans and elements of water resource protection plans involving watercourse crossing replacements shall include consideration of site-specific conditions or features which may warrant additional special BMPs, including the proximity to 100-year floodplains.

The potential to place structures within a 100-year flood hazard area, which would impede or redirect flood flows, is less than significant with mitigation incorporated.

HYDROLOGY AND WATER QUALITY: i) Less Than Significant
Discussion: None of the management measures in the Order contemplate the use of BMPs that would expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. Existing conditions include impoundments of various types that have not been appropriately engineered or permitted.

Retrofit or remediation and removal of these hazards has the potential to expose people or structures to risk; however, the Order requires these activities to be designed and overseen by licensed professionals as part of a plan approved by the Executive Officer of the Regional Water Board, and incorporating standard construction BMPs. Additionally, remediation and removal activities will be temporary. Due to 1) the temporary nature of repairs to and removals of various impoundments and 2) the implementation of such activities under the supervision of a licensed professional; the potential to expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam is mitigated to a level that is less than significant.

HYDROLOGY AND WATER QUALITY: g) No Impact
Discussion: The implementation of provisions in the Order would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. The Order does not contain provisions for relocation of existing housing or the construction of new housing. As such, there would be no impact.

HYDROLOGY AND WATER QUALITY: j) Less than Significant
Discussion: None of the management measures identified in the Order contemplate the use of BMPs that would cause inundation by seiche, tsunami, or mudflow. Implementation of provisions in the Order is unlikely to cause or result in impacts by inundation via seiche, tsunami, or mudflow. The North Coast Region contains a vast segment of coastline which could be impacted by tsunamis, as well as bodies of water with shoreline areas that could be affected by seiches. However, the majority of sites under the purview of the Order are not located adjacent to the ocean or bodies of water and thus would be not be affected by inundation via tsunamis or seiches. The North Coast Region does contain steep terrain which would be a source of mudflow material, and it is possible that sites under the purview of the Order could be inundated by mudflows. In the event that a site does become inundated by a tsunami, seiche, or mudflow, repairs to BMPs or features required under the Order would constitute a less than significant portion of any cleanup effort. The potential to cause or be impacted from inundation by seiche, tsunami, or mudflow is, therefore, less than significant.

Section 10. LAND USE AND PLANNING

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

LAND USE AND PLANNING: a) No Impact

Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites, as required under the Order, would not result in physical division of a community. Therefore, there is no impact.

LAND USE AND PLANNING: b) No Impact

Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites will not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. All counties in the North Coast Region, except Del Norte, Humboldt, and Siskiyou, have ordinances or policies allowing for the cultivation of indoor and outdoor marijuana. Most ordinances include specific numbers of plants allowed while some also include cultivation area as a limitation. Efforts are currently under way in Humboldt and Siskiyou Counties to develop cultivation ordinances. It is likely that most, if not all of these ordinances or policies, as well as those of individual towns or cities in the region will have differences among each other. The Order regulates the discharge of waste from marijuana cultivation and associated activities, rather than the land use activity itself, so is expected to complement, rather than conflict with any specific local plans, policies, or ordinances. The Order does not in any way authorize, endorse, sanction, permit or approve the cultivation, possession, use, sale or other activities associated with marijuana.

The Order does not preclude the need for permits that may be required by other governmental agencies for the activities listed in finding 4 of the Order, nor does it supersede any requirements, ordinances, or regulations of any other regulatory agency, including necessary certification and permitting for the application of pesticides and herbicides and proper handling and disposal of solid and domestic wastes. Therefore, there is no impact.

LAND USE AND PLANNING: c) Less Than Significant
Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites will not conflict with any applicable habitat conservation plan (HCP) or natural community conservation plan (NCCP). The Order addresses waste discharges and other controllable water quality factors associated with marijuana cultivation on private land. Staff is not aware of any HCP or NCCP in the project area. If a specific property owner is subject to an HCP or NCCP, the Order requirement would likely be consistent as it is designed to avoid and mitigate direct or indirect impacts to existing fish and wildlife habitat. Therefore, the impact is less than significant with mitigation incorporated.

Section 11. MINERAL RESOURCES

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☒	☐

MINERAL RESOURCES a), b): Less than significant
Discussion: Management measures and remediation/cleanup/restoration activities on developed sites will not result in loss of availability of a known mineral resource that would be of future value to the region and the residents of the state, or result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

Such practices or measures required by the Order are generally surficial and minor in nature, and would not preclude the future availability of any potentially present mineral resources of future value to the region and residents of the state. It is possible that access to certain areas for gravel, gold or other mineral extraction activities could be affected by compliance measures such as riparian buffers, or areas of exclusion. While possible, such management measures are unlikely to bar access completely.

Furthermore, the usage of private land for mineral resource recovery is out of the purview of the Order. Therefore, the above mineral resource-related impacts are expected to be less than significant.

Section 12. NOISE

Would the project result in:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☒

NOISE: a), b), and d), Less than Significant Impact with Mitigation Incorporated
Discussion: Management measures and remediation/cleanup/restoration activities for cultivation sites could cause exposure of persons to, or generation of: noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; excessive groundborne vibration or groundborne noise levels; or a substantial

temporary or periodic increase in ambient noise levels in the project vicinity above existing levels. Some activities include the use of heavy machinery and the movement of earth and debris, both of which can create noise and ground vibrations. Mitigation measures include the use of standard construction BMPs and operation of equipment according to a time schedule to prevent cumulative noise impacts resulting in further increased noise levels. The majority of the activities that would produce noise, such as road maintenance and bank stabilization, are not typically expected to exceed existing noise levels. Additionally, the process of cleanup or restoration of any site will be temporary. Thus the potential to cause exposure of persons to, or generation of: noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; excessive groundborne vibration or groundborne noise levels; or a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project are less than significant with mitigation incorporated.

NOISE: c) No Impact
Discussion: The implementation of management measures and remediation/cleanup/restoration activities on cultivation sites would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Noise generation is associated with the short-term, temporary use of heavy equipment rather than long-term usage.

NOISE: e), and f), Less than Significant Impact
Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites could potentially expose people residing in or working in the project area to noise for projects within the vicinity of a private airstrip or projects located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport. The use of heavy equipment to implement management measures or to conduct remediation/cleanup/restoration activities could result in temporary increases in existing noise levels, but the noise would not be excessive. Therefore, the impacts are less than significant.

Section 13. POPULATION AND HOUSING

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

POPULATION AND HOUSING: a), b), c) No Impact
Discussion: This Order does not authorize new cultivation sites, and focuses on maintenance, remediation and restoration of existing sites, which will not induce substantial population growth directly or indirectly.

Management measures and remediation/cleanup/restoration activities on cultivation sites would not displace substantial numbers of people or housing necessitating the construction of replacement housing elsewhere.

Section 14. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

PUBLIC SERVICES: a), b), c), d), e), No Impact
Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites will not result in a need for new or altered fire protection services, police protection services, schools, parks, or other public facilities.

Section 15. RECREATION

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

RECREATION: a), b), No Impact

Discussion: The Order does not pertain to recreational facilities. Management measures and remediation/cleanup/restoration activities on cultivation sites would not result in an increase in use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated; or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

Section 16. TRANSPORTATION / TRAFFIC

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

TRANSPORTATION/TRAFFIC: a) and b) Less Than Significant
Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites would not exceed the capacity of the existing circulation system or conflict with an applicable congestion management program or other standards established by the county congestion management agency for designated roads or highways. Work performed during cleanup and restoration activities would occur on private property and would not affect the existing circulation system. Mobilization for implementation of management measures or to conduct site remediation/cleanup/restoration activities may contribute temporary amounts of minor traffic to the existing circulation system, but such traffic volumes would not be significant. Therefore, the impact is less than significant.

TRANSPORTATION/TRAFFIC: c) No Impact
Discussion: Management measures and remediation/cleanup/restoration activities on developed sites would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

TRANSPORTATION/TRAFFIC: d) Less than Significant
Discussion: Management measures and remediation/cleanup/restoration activities on cultivation sites may result in minor increased hazards due to a design feature. For example, vegetation planted for slope stabilization or erosion control alongside a road may distract a driver, but such an effect would not be substantial. Or, grading to reslope a road may result from the Order, but such an action is not expected to necessitate sharp curves or dangerous intersections which substantially increase hazards. Therefore, the potential impacts are less than significant.

TRANSPORTATION/TRAFFIC: e) Less than Significant with mitigation incorporated
Discussion: Management measures and remediation/cleanup/restoration activities on developed sites are unlikely to result in inadequate emergency access or conflict with adopted policies, plans, or programs supporting alternative transportation. For example, heavy equipment parked on an access or fire road could block emergency vehicle access and prevent vehicular evacuations. However, water resource protection plans and cleanup plans under this Order must incorporate a BMP to ensure that access for emergency vehicles is maintained. Therefore, the impacts are less than significant with mitigation incorporated.

TRANSPORTATION/TRAFFIC: f) No Impact
Discussion: Management measures and remediation/cleanup/restoration activities on developed sites would not result in a conflict with adopted policies, plans, or programs supporting alternative transportation.

Section 17. UTILITIES AND SERVICE SYSTEMS

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☒	☐	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

UTILITIES AND SERVICE SYSTEMS: a), b), c), e), and g) No Impact
Discussion: The Order requires that enrolled sites be in compliance with local, county and state ordinances and/or statutes that pertain to onsite wastewater treatment, and does not assume authority or oversight of wastewater treatment itself. Many of the sites that would be subject to this Order currently have onsite wastewater treatment facilities that are in need of maintenance, and many lack a system entirely. Human waste must be handled in accordance with state and local laws, and as such, the Regional Board would work with the responsible agencies to ensure compliance with the wastewater standards set forth by those entities, likely improving the overall conditions over time. Therefore, there is no impact.

UTILITIES AND SERVICE SYSTEMS: d) Less Than Significant with Mitigation Incorporated
Discussion: Implementing management measures and remediation/cleanup/restoration activities on cultivation sites could potentially draw upon existing water resources. For example, there could be a project that involves earth moving, and to control dust pollution to protect air quality, there could be a need to use water to wet the dirt to prevent dust transport. There could also be a need to water newly planted vegetation as part of a site remediation plan. However, through the implementation of appropriate best management practices defined in the Order, as well as in the project description (Section E.1.A.-j.), the water resources would be allocated sufficiently from existing entitlements and resources to serve the project needs, and should not affect the need for new or expanded entitlements. Thus, the impacts are less than significant with mitigation incorporated.

UTILITIES AND SERVICE SYSTEMS: f) Less Than Significant with Mitigation Incorporated
Discussion: Implementation of management measures and remediation/cleanup/restoration activities on developed sites could potentially impact local landfills, through the increased disposal of solid wastes as mandated by the Order.
Currently, there are sites where waste is being generated and accumulated, but not properly disposed of or disposed in a timely manner. The Order includes conditions requiring thatwaste be handled in accordance with state and local laws. The result could cause an increased influx of materials going to local transfer stations and thence to (mostly[5]) out of Region landfills in the short term, but is not expected to occur on a scale that would impact the capacity of landfills accepting waste. Thus the impact is less than significant.

[5] As of development of this Initial Study, April 2015, there is one operating landfill in the North Coast Region, the Sonoma County Central Disposal Site; waste generated from much of the Region is outhauled to landfills in the Central Valley, Oregon, and the Bay Area.

Section 18. MANDATORY FINDINGS OF SIGNIFICANCE.

Would the project:

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☒	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

MANDATORY FINDINGS OF SIGNIFICANCE: a) Less Than Significant With Mitigation Incorporated

DISCUSSION: Implementation of management measures and remediation/cleanup/restoration activities on cultivation sites has the potential to impact the fish, wildlife and plant habitat, population, communities and their range, as well as important examples of California history or prehistory, with specific focus to items relating to the discussion in sections 4, 5, 6, and 9 above.

In order to comply with the measures required in this Order, Best Management Practices and appropriate management measures, as described above in Section E.1.a-j., would be used so as to minimize and mitigate the impacts to the characteristics defined in question 18 a). In most cases the

impacts of compliance with the Order would be temporary. As a result impacts can and will be mitigated to less than significant levels.

MANDATORY FINDINGS OF SIGNIFICANCE: b) Less Than Significant With Mitigation Incorporated

DISCUSSION: Cumulative impacts, as defined in the CEQA Guidelines,[6] refer to two or more individual effects, that when considered together, are considerable or that increase other environmental impacts. The Order has the potential to have impacts that are individually limited, but cumulatively considerable, as discussed in sections 3, 4, 6 through 9, and 12, above. Site-specific management measures and remediation/cleanup/restoration activities may potentially result in short-term, localized impacts, such as generation of dust and other particulates, disruption of localized sensitive habitat, and substantial earth movement. However, with implementation of Best Management Practices and management measures described in section E.1.a-j, and explained contextually in each of the preceding findings sections, the potential for cumulative impacts would be avoided, minimized and mitigated.

In the larger context, the remediation/cleanup/restoration requirements of the Order have the potential to create localized, short-term cumulative impacts if multiple projects are executed in the same watershed. However, staff will implement comprehensive activity tracking by mapping Tier 3 cleanup and restoration sites and individual stream crossings proposed for replacement under Tier 2 water resource protection plans. Staff may draw information from Geotracker and SMARTS, the Regional Water Board's timber tracking database, and other available sources to help correlate cleanup activities and remediation or restoration work in streams or wetlands proposed and underway in individual watersheds and subwatersheds. Comprehensive activity tracking will enable the Regional Water Board to direct activity timing under this Order as necessary to limit the number of individual potential construction-related impacts occurring at any given time in any given watershed, in order to prevent cumulatively considerable impacts from occurring.

Additionally, current baseline conditions in watersheds throughout the North Coast region have impacts associated with cannabis cultivation, which would continue along the current baselines, or further degrade without the application of the measures required in this Order. The compliance measures identified in the Order and this environmental analysis will likely improve water quality in the watersheds, and long term beneficial effects will be realized on air quality, biological resources, geology and soils, hydrology, and noise, which would continue along the current baselines, or further degrade without the application of the measures required in this Order. Thus, the cumulative impact is less than significant with mitigation incorporated.

MANDATORY FINDINGS OF SIGNIFICANCE: c) Less Than Significant With Mitigation Incorporated

DISCUSSION: Management measures and remediation/cleanup/restoration activities at cultivation sites could have the potential to cause substantial adverse effects on human beings, either directly or indirectly, as discussed in sections 3 through 6, 8, 9, above.

[6] Cal. Code Regs. tit. 14, section 15355.

Site-specific management measures and remediation/cleanup/restoration activities may result in short-term, localized, impacts, generation of dust and other particulates, disruption of localized sensitive habitat, and substantial earth movement that could potentially impact water quality, which humans rely upon, thus impacting humans. However, with implementation of Best Management Practices and management measures described in section E.1.a-j, and explained contextually in each of the preceding findings sections, the potential for impacts would be avoided, minimized and mitigated.

Current baseline conditions in watersheds throughout the North Coast region have impacts associated with cannabis cultivation on private lands. This Order is designed to improve long term water quality by providing a regulatory program designed to protect and restore water quality and the beneficial uses of water in the North Coast Region. Without the implementation of this Order, and the application of its required measures, the conditions of the watersheds in the North Coast Region would continue along the current baselines, or further degrade. Thus, staff concludes that the impacts to humans, directly or indirectly are less than significant with mitigation incorporated.

References

Bauer, Scott; Jennifer Olson; Adam Cockrill; Micheal va Hattem; Linda Miller; Margaret Tauzer; Gordon Leppig. March 18, 2015. Impacts of Surface Water Diversion for Marijuana Cultivation on Aquatic Habitat in Four Northwestern California Watersheds. PLoS one 10(3) e0120016. Doi: 10.1371/journal pone.0120016.

Botkin, D., K Cummins, T Dunne, H Regier, M Sobel, and L Talbot. 1994. Status and future of salmon of western Oregon and northern California: findings and options. The Center for the Study of the Environment, Santa Barbara, CA.

Brown, M.T. and J.M. Schaefer. 1987. Buffer Zones for Water, Wetland, and Wildlife. A Final Report on the Evaluation of the Applicability of Upland Buffers for the Wetlands of the Wekiva Basin. Prepared for the St. Johns River Water Management District by the Center for Wetlands, University of Florida, Gainesville, Florida 32611. 163 pp.

Cafferata, P., and L. Reid, 2013. Applications of long-term watershed research to forest management in California: 50 years of learning from the Caspar Creek Experimental Watersheds. California Forestry Report No. 5, The Natural Resources Agency, Sacramento, CA. 110 pp.

Castelle, A., Conolly, C., Emers, M., Metz, E., Meyer, M., Witter, M., Mauermann, S., Erickson, T., and Cooke, S. 1992. Wetland Buffers: Use and Effectiveness. Washington State Department of Ecology, Shorelands and Coastal Zone Management Program. Publication 92-10. p. 13-15.

Chagrin River Watershed Partners, Inc. 2006. Riparian Setbacks Technical Information for Decision Makers. Ohio.

Chase, V., L. Demming, and F. Latawiec. 1995. Buffers for Wetlands and Surface Waters: A Guidebook for New Hampshire Municipalities. 80 pages. Audubon Society of New Hampshire.

Collins, J., M. Sutula, E. Stein, M. Odaya, E. Zhang, and K. Larned. 2006. Comparison of Methods to Map California Riparian Areas. Final Report Prepared for the California Riparian Habitat Joint Venture. San Francisco Estuary Institute.

Correll, David. 2005. Principles of planning and establishment of buffer zones. Ecological Engineering 24 (2005) 433-439.

Chamberlin, TW, RD Harr, FH Everest. 1991. Chapter 6. Timber harvesting, silviculture, and watershed processes. Pp 181-205 in Meehan, WR (ed). Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitat. American Fisheries Society Special Publication 19.

County of Santa Clara. 2003. County of Santa Clara Riparian Corridor Study: A Background Document for the Development of a Riparian Protection Ordinance for the County of Santa Clara. Planning Office, Environmental Resources Agency.

De la Fuente, J., D. Elder, and A. Miller. 2002. Does deforestation influence the activity of deep-seated landslides? Observations from the flood of 1997 in the central Klamath Mountains, northern California. Abstracts with Programs - Geological Society of America 34: 88.

Desbonnet, A., P. Pogue, D. Reis, J. Boyd, J. Willis, and M. Imperial. 1995. Vegetated Buffers in the Coastal Zone - A Summary Review and Bibliography. Coastal Resources Center Technical Report No. 2064. University of Rhode Island Graduate School of Oceanography. Narragansett, RI 02882. 72 pp.

Detirich, W.E., D. Bellugi, and R. Real de Asua. 2001. Validation of the Shallow Landslide Model, SHALSTAB, for Forest Management. Pages 195-227 in: Land Use and Watersheds: Human Influence on Hydrology and Geomorphology in Urban and Forest Areas. American Geophysical Union.

Environmental Protection Agency. 2012. Aquatic Buffer Model Ordinance. http://water.epa.gov/polwaste/nps/upload/2002_09_19_NPS_ordinanceuments_Buffer_model_ordinance1.pdf. Retrieved May 12, 2014.

Fischer, R. A., and Fischenich, J.C. 2000. Design recommendations for riparian corridors and vegetated buffer strips. *EMRRP Technical Notes Collection* (ERDC TN-EMRRP-SR-24), U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Forest Ecosystem Management Assessment Team (FEMAT). 1993. Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Report of the Forest Ecosystem Management Assessment Team. US Government Printing Office 1993-793-071. US Government Printing Office for the US Department of Agriculture, Forest Service; US Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service; UU Department of Commerce, national Oceanic and Atmospheric Administration and National Marine Fisheries Service; and US Environmental Protection Agency. Available at: http://www.blm.gov/or/plans/nwfpnepa/FEMAT-1993/1993_%20FEMAT_Report.pdf

Freedman, P.L., K.H. Reckow, L. Shabman, J. Benaman, R. Schwer, and T. Stiles. 2008. *A New Approach to Adaptive Implementation in the TMDL Program.* Water Practice. Vol 2, No1. Water Environment Federation.

Goals Project. U.S. Environmental Protection Agency, San Francisco, CA, San Francisco Bay Regional Water Quality Control Board, Oakland, CA.

Grubbs, J., Sampson, B., Carroll, E., and Dovak. 1997. Guidelines for Stream and Wetland Protection in Kentucky. Kentucky Division of Water, Natural Resources and Environmental Protection Cabinet. p. 19.

Haneberg, W. C. 2004. A rational probabilistic method for spatially distributed landslide hazard assessment. Environmental and Engineering Geoscience X: 27-43.

Haneberg, W. C. 2000. Deterministic and probabilistic approaches to geologic hazard assessment. Environmental and Engineering Geoscience VI: 209-226.

Haneberg, W. C. 2005. PISA: probabilistic infinite slope analysis, user manual. Version 1.0. Haneberg Geoscience.

Hawes, Ellen and Smith, Markelle. 2005. Riparian Buffer Zones: Functions and Recommended Widths. Yale School of Forestry and Environmental Studies. Eightmile River Wild and Scenic Study Committee.

Keaton, J.R., and DeGraff, J.V. 1996. Surface Observation and Geologic Mapping, *in* Turner, A.K. and Schuster, R.L., *editors*, Landslides, Investigation and Mitigation, Transportation Research Board, National Research Council Special Report 247.

Keppeler, E.T. 1986. The effects of selective logging on low flows and water yield in a coastal stream in northern California. M.S., thesis, Humboldt State University. Arcata, CA.

Keppeler, E.T. 1998. The summer flow and water yield response to timber harvest. Proceedings of the Conference on Coastal Watersheds: the Caspar Creek Story. General Technical Report PSW GTR-168. USDA Forest Service, Pacific Southwest Research Station, Albany, CA.

Keppeler, E.T. and R.R. Zeimer. 1990. Logging effects on streamflow: water yields and summer low flows at Caspar Creek in northwestern California. Water Resources Research 26(7).

Klein, R. 2003. Erosion and Turbidity Monitoring Report Sanctuary Forest Stream Crossing Excavations in the Upper Mattole River Basin, 2002-2003. Prepared for Sanctuary Forest.

Klein, R.D., J. Lewis, M. Buffleben. 2011. *Logging and Turbidity in the Coastal Watersheds of Northern California.* Geomorphology.
LaHusen, R.G. 1984. Characteristics of management-related debris flows, northwestern California. Pp. 139-145 in: O'Loughlin, C.L. and A.J. Pearce (Eds.). Symposium on Effects of Forest Land Use on Erosion and Slope Stability, 7-11 May 1984, Honolulu, HI. Environment and Policy Institute, East-West Center, University of Hawaii, Honolulu, HI. 310 p

Lehre, A. K. 1987. Rates of soil creep on colluvium-mantled hillslopes in North-Central California, in Erosion and Sedimentation in the Pacific Rim (Proceedings of the Corvallis Symposium, August 1987), edited by T. R. H. Davies and A. J. Pearce, pp. 91-100, International Association of Hydrological Sciences Publication no. 165, Wallingford, Oxfordshire, UK.

Lewis, J., S. R. Mori, E. T. Keppeler, and R.R. Ziemer. 2001. Impacts of logging on storm peak flows, flow volumes and suspended sediment loads in Caspar Creek, California. In: Mark S. Wigmosta and Steven J. Burges (eds.) Land Use and Watersheds: Human Influence on Hydrology and Geomorphology in Urban and Forested Areas. Water Science and Application Volume 2, American Geophysical Union, Washington, D.C., p. 85-125.

Lisle, T.E., L.M. Reid, and N.J. Dewey. 2008. Effects of clearcut logging on channel form in a coastal redwood forest. Abstract H13C-0932, American Geophysical Union Fall Meeting, Dec 2008; San Francisco, CA.

Lost Coast Outpost. June 10, 2015. Article by Andrew Goff. 19 Greenhouses and Nearly 5,000 Marijuana Plants Raided in Blocksburg.

Lost Coast Outpost. June 26, 2015. Article by Hank Sims. 'Operation Emerald Tri-County': Live-Blogging Mendo County Sheriff's Office Teleconference on the This Week's Raids.

MacDonald, L.H., 2000. Evaluating and managing cumulative effects: process and constraints. *Environmental Management*

Mackey, B. H., J. J. Roering, and W. E. Dietrich. 2005. Determining the topographic manifestation of widespread landsliding with high resolution airborne laser swath mapping (ALSM) data, South Fork Eel River, northern California. American Geophysical Union Fall Meeting 2005: abstract #H34B-04.

Mackey, B. H., J. J. Roering, J. McKean, and W. E. Dietrich. 2006. Analyzing the spatial pattern of deep-seated landsliding - evidence for base level control, South Fork Eel River, California. American Geophysical Union Fall Meeting 2006: abstract #H53B-0619.

Madej, MA. 2001. Erosion and Sediment Delivery Following Removal of Forest Roads. Earth Surface Processes and Landforms. V. 26. pp 175-190.

Mallery, Mark. (2011). Marijuana National Forest: Encroachment on California Public Lands for Cannabis Cultivation. Berkeley Undergraduate Journal, 23(2). our_buj_7680. Retrieved from: https://escholarship.org/uc/item/7r10t66s

McCrory, P. A. 1989. Late Neogene geohistory analysis of the Humboldt basin and its relationships to convergence of the Juan de Fuca plate. Journal of Geophysical Research 94: 3126-3138.
McElfish, J., Kihslinger, R., and Nichols, S. 2008. Environmental Law Institute. Planner's Guide to Wetland Buffers for Local Governments. Washington, D.C.

Miller, D. J. 1995. Coupling GIS with physical models to assess deep-seated landslide hazards. Environmental and Engineering Geoscience 1: 263-276.

Montgomery, D. R., Schmidt, K. M., Greenberg, H., and Dietrich, W. E., Forest clearing and regional landsliding, Geology, v. 28, p. 311-314, 2000

Moore, R.D. and S.M. Wondzell. 2005. Physical hydrology and the effects of forest harvesting in the Pacific Northwest: a review. Journal of the American Water Resources Association. 41(4): 763:784.

National Marine Fisheries Service (NMFS). 1996. Coastal Salmon Conservation: Working Guidance for Comprehensive Salmon Restoration Initiatives on the Pacific Coast. U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

National Research Council. 2002. Riparian Areas: Functions and Strategies for Management. Committee on Riparian Zone Functioning and Strategies for Management. National Academy Press, Washington, D.C. 428 pp.

NRCS (Natural Resources Conservation Service). 2000. Filter Strip. Conservation Practice Standard, Code 393. Natural Resources Conservation Service, California. July 2000.

Newcombe, C.P. and J.O.T. Jensen. 1996. Channel Suspended Sediment and Fisheries: A synthesis for Quantitative Assessment of Risk and Impact. North American Journal of Fisheries Management. 16(4): 693-727.

Newcombe, C.P., and D.D. MacDonald. 1991. Effects of suspended sediments on aquatic ecosystems. North American Journal of Fisheries Management. 11:72-82.
North Coast Regional Water Quality Control Board (NCRWQB). 2006. Watershed-wide WDRs for Lands Owned by Pacific Lumber Company in Elk River. Order No. R1-2006-0039.

North Coast Regional Water Quality Control Board. July 28, 2006. Desired Salmonid Freshwater Habitat Conditions for Sediment-Related Indices.

North Coast Regional Water Quality Control Board. 2008. Order No. R1-2004-0030, Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region.

North Coast Regional Water Quality Control Board. 2009. Order No. R1-2009-0038 Categorical Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvest Activities on Non-Federal Lands in the North Coast Region

North Coast Regional Water Quality Control Board. May, 2011. Water Quality Control Plan for the North Coast Region.

North Coast Regional Water Quality Control Board. August 23, 2011. Complaint Inspection Report from Stormer Feiler, WDID No. 1B11153CNME.

North Coast Regional Water Quality Control Board. February 7, 2013. Inspection Warrant Report from Stormer Feiler, WDID No. 1B13023CNHU.

North Coast Regional Water Quality Control Board. October 20, 2014. Warrant Inspection Report from Stormer Feiler, WDID Nos. 1B14099CNHU and 1B141123CNHU.

Office of National Drug Control Policy, 2015, Marijuana on Public and Private Lands, accessed online on July 17, 2015 at https://www.whitehouse.gov/ondcp/marijuana-on-public-lands

Ogle, B. A. 1953. Geology of Eel River Valley area. Bulletin No. 164. California Division of Mines, San Francisco.

O'Loughlin, C., and R. R. Ziemer. 1982. The importance of root strength and deterioration rates upon edaphic stability in steepland forests. Proceedings of I.U.F.R.O. Workshop P.1.07-00 Ecology of Subalpine Ecosystems as a Key to Management. 2-3 August 1982, Corvallis, Oregon. Oregon State University, Corvallis, Oregon. pp. 70-78.

Pacific Watershed Associates. 2005d. Evaluation of Road Decommissioning, CDFG Fisheries Restoration Grant Program, 1998 to 2003. July 2005.

Reid, L.M. 2012. Comparing hydrologic responses to tractor-yarded selection and cable-yarded clearcut logging in a coast redwood forest. Pp. 141-151 in: Standiford, R.B.; T.J. Weller, D.D. Piirto, and J.D. Stuart. (Technical coordinators). Proceedings of the Coast Redwood Forests in a Changing California: a Symposium for Scientists and Managers. General Technical Report PSW-GTR-238. USDA Forest Service, Pacific Southwest Research Station. Albany, CA. 675 p.

Reid, L.M., N.J. Dewwy, T.E. Lisle, and S. Hilton. 2010. The incidence and role of gullies after logging in a coastal redwood forest. US Forest Service Pacific Southwest Research Station, Redwood Sciences Laboratory, 1700 Bayview Drive, Arcata, CA 95521, USA Journal of Geomorphology.

Reid, L.M. and E.T. Keppeler. 2012. Landslides after clearcut logging in a coast redwood forest. Pp. 153-162 in: Standiford, R.B.; T.J. Weller, D.D. Piirto, and J.D. Stuart (Technical coordinators). Proceedings of the Coast Redwood Forests in a Changing California: a Symposium for Scientists and Managers. General Technical Report PSW-GTR-238. USDA Forest Service, Pacific Southwest Research Station. Albany, CA. 675 p.

Reid, Leslie M. and Jack Lewis. 2007. Rates and Implications of Rainfall Interception in a Coastal Redwood Forest Pp.107-117 in: Standiford, Richard B.; Giusti, Gregory A.; Valachovic, Yana; Zielinski, William J., Furniss, Michael J., technical editors. 2007. Proceedings of the Redwood Science Symposium: What does the future hold? March 15-17, 2004, Rohnert Park, CA. General Tech. Rep. PSW GTR-194. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture.

Reid, Leslie M. and Jack Lewis. 2011. Effects of logging and potential climate change on dry-season flow in coast redwood forest. Pp 186-191 in Medley, CN; G Patterson and MJ Parker. Proceedings of the Fourth Interagency Conference on Research in the Watersheds: Observing, Studying, and Managing for Change, 26-30 September 2011. Fairbanks, AK. USGS Scientific Investigations Report 2011-5169. US Geologic Survey.

Reid, L. M., and T. Dunne. 1996. Rapid Evaluation of Sediment Budgets, pp. 164, Reiskirchen, Germany, Catena Verlag GMBH.

Reid, L.M. and T.Dunne. Sediment Budgets as an Organizing Framework in Fluvial Geomorphology. Tools in Fluvial Geomorpholy. Matias Kondof and Herve Piegay. John Wiley and Sons. West Sussex, England. 2003.

Robins, James. 2002. Stream Setback Technical Memo. Memorandum to Charles Wilson, Director, Napa County Conservation Development and Planning Department. Jones and Stokes (Consulting). October 18, 2002.

Roering, J.J., B. Mackey, and J. McKean. 2006. Deep-Seated Landslide and Earthflow Detection (DSLED): A Suite of Automated Algorithms for Mapping landslide-Prone Terrain With Digital Topographic Data. American Geophysical Union Fall Meeting 2006: abstract #H53B-0626.

San Francisco Bay Regional Water Quality Control Board. 2004. Local Government Riparian Buffers in the San Francisco Bay Area.

Semlitsch, Raymond and Bodie, Russell. 2003. Biological Criteria for Buffer Zones around Wetlands and Riparian Habitats for Amphibians and Reptiles. Conservation Biology, Volume 17, No. 5, October 2003, p. 1219-1228.

State Water Board Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options (2005).

State Water Resource Control Board. 2004. Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy).

State Water Resource Control Board. 2009. Water Quality Enforcement Policy.

State Water Resources Control Board. Order WQ 2013-0101. Conditional Wavier of Waste Discharge Requirements Order R3-2012-0011. Issued by the Central Coast Regional Water Quality Control Board.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2013/wqo2013_0101.pdf

Tappel, P.D. & Bjornn, T.C. 1983. A New Method of Relating Size of Spawning Gravel to Salmonid Embryo Survival. North American Journal of Fisheries Management 3:123-135.

U.S. Army Corps of Engineers. New England Division. 1991. Buffer Strips for Riparian Zone Management. Section 22 Vermont. p. 32.

Vermont Agency of Natural Resources. 2005. Riparian Buffers and Corridors Technical Papers. Waterbury, Vermont.26 Riparian Area Width-Regulatory Summary May 2014

Welsh, Jennifer, 2011, Pot Growers Destroying National Forests, Dated December 12, accessed online on July 17, 2015 at http://www.livescience.com/17417-marijuana-growers-national-forests.html

Wenger, Seth. 1999. A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation. Office of Public Service and Outreach, Institute of Ecology, University of Georgia.

Ziemer, R.R. 1998. Flooding and Storm Flows. USDA Forest Service General Technical Report PSW-GTR-168-Web. 1998