



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
NORTH COAST REGION
ORDER NO. R1-2026-XXXX**

**GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
COMMERCIAL LILY BULB OPERATIONS IN THE
SMITH RIVER PLAIN**



STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

GENERAL WASTE DISCHARGE REQUIREMENTS FOR COMMERCIAL LILY BULB
OPERATIONS IN THE SMITH RIVER PLAIN

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NORTH COAST
REGIONAL WATER QUALITY CONTROL BOARD
ORDER NO. R1-2026-00XX
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The California Regional Water Quality Control Board, North Coast Region finds:

I. Findings

A. Background and Purpose

- 1) The purpose of Order R1-2026-00XX General Waste Discharge Requirements (WDRs) for Commercial Lily Bulb Operations, (hereinafter Order or General Order), is to provide a water quality regulatory structure to minimize discharges of waste and to prevent adverse impacts to water resources from agricultural activities associated with lily bulbs and other similar bulb crops (hereinafter Commercial Lily Bulb Operations) on private lands within the Smith River Plain Hydrologic Subarea¹ and coastal terraces between Pyramid Point and the Oregon border (hereinafter Smith River Plain). The Smith River Plain is a low gradient coastal plain of about 63 square miles located in far northwest California and is drained by the lower Smith River corridor, tributaries, estuarine sloughs, and estuary (see Figure I.1).
- 2) As of the 2024-2025 growing season, there are approximately 1,000 acres of land currently and recently farmed for lily bulbs in the Smith River Plain (as shown in Figure I.1) with the potential to discharge wastes to surface waters and groundwater and to affect related controllable water quality factors such as riparian shade. Cultivation of lily bulbs is typically part of a three to five-year rotation² with grass-clover, which is used as grazing forage and for hay crops. The fields are used as forage for livestock for two to four years and for lily bulbs for one year. Some field preparations are done in the year prior to planting bulbs. Accounting for this crop rotation, about 160 acres are planted to lilies each year, with another 160 acres in a given year are being prepared to receive the following year's plantings.
- 3) Commercial lily bulb farming in the Smith River Plain involves soil disturbance and use of agricultural chemicals, both of which can generate discharges of waste (e.g., sediment, nutrients, pesticides³, and temperature). If not properly managed, these discharges can degrade water quality, cause or contribute to pollution and nuisance conditions, and adversely affect beneficial uses of waters of the state. These effects can occur through the loss of riparian shade (a controllable factor) and discharges from stormwater runoff flowing from agricultural lands, percolation, and runoff resulting from operational spills.
- 4) The Smith River Plain provides habitat to numerous threatened and endangered aquatic species and serves as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. A more

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thorough discussion of beneficial uses of the Smith River Plain is located in Section G.1 of these Findings.

- 5) The State Water Resources Control Board (State Water Board) and nine regional water quality control boards (Regional Water Boards) are the principal state agencies (collectively the Water Boards) with primary responsibility for the coordination and control of water quality for the health, safety, and welfare of the people of the state pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne Act, codified in Water Code Division 7). The legislature, in the Porter-Cologne Act, directed the state, through the Water Boards, to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation and to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible, and considering precipitation, topography, population, recreation, agriculture, industry, and economic development (Wat. Code §13000).
- 6) Section 303(d) of the federal Clean Water Act requires that states identify water bodies that do not meet water quality standards and the pollutants that impair them. In 2018, Tillas Slough and Delilah Creek (tributaries to the Smith River estuary) were added to the 303(d) list as impaired for copper, and in 2026, Delilah Creek was added as impaired for diuron, one of the herbicides used in lily bulb cultivation.
- 7) On August 18, 2010, North Coast Water Board staff, in coordination with the California Department of Fish and Wildlife (CDFW), conducted a one-time surface water and sediment sampling event at Rowdy Creek and Delilah Creek in response to a complaint. Samples were collected upstream and downstream of lily bulb cultivation areas and analyzed for dissolved and total copper. Sediment toxicity tests and aquatic toxicity test were performed at the CDFW Aquatic Toxicity Laboratory. No acute toxicity to freshwater organisms was observed in any samples collected above, below, or outside the cultivation drainage areas. While there was no chronic toxicity observed in three of the four samples, the sample from the downstream Delilah Creek site showed evidence of chronic reproductive toxicity. However, this test result may have been influenced by low water hardness. The sample contained 3.99 µg/L of dissolved copper, which exceeds both the acute and chronic California Toxics Rule (CTR) criteria. Sediment samples from all sites showed no statistically significant toxicity relative to control samples.
- 8) The North Coast Regional Water Quality Control Board's (North Coast Water Board's) efforts to address potential impacts of lily bulb agricultural discharges in the Smith River Plain began in 2011 with a series of stakeholder meetings to inform the development of a region-wide Agricultural Lands Discharge Program. In 2013, the Board shifted to a commodity- and subregion-specific regulatory approach and directed staff to conduct water quality monitoring in the Smith River Plain to guide the next steps for regulating lily bulb agricultural discharges. A Surface Water

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Ambient Monitoring Program (SWAMP) study conducted from 2013-2015 found pesticide concentrations – including copper fungicides – in surface waters that exceeded US EPA aquatic life benchmarks and other applicable water quality criteria. (Smith River Plain Surface Water and Sediment Monitoring Report 2013-2015, issued January 2018 (2018 SWAMP Report))⁴.

- 9) In response, the North Coast Water Board directed staff to develop a targeted, collaborative water quality management strategy. The Smith River Plain Water Quality Management Plan (2021 Management Plan)⁵ was developed and finalized in 2021 by a Watershed Stewardship Team composed of the lily bulb growers, regulatory agencies (e.g., NOAA Fisheries, CA Department of Fish and Wildlife, CA Department of Pesticide Regulation), local stakeholders (e.g., Del Norte Resource Conservation District, Agricultural Commissioner, the Smith River Alliance), academic partners, and the Tolowa Dee-ni' Nation. The 2021 Management Plan outlines voluntary grower participation in annual management practice reporting, North Coast Water Board inspections, ongoing surface water quality monitoring, and an adaptive management framework to guide iterative improvement based on monitoring results. The tracking and monitoring of the broad range of BMPs identified in the 2021 Management Plan has provided invaluable information in the development of this Order.
- 10) As part of the Adaptive Management Monitoring Program outlined in the 2021 Management Plan, a new Smith River Plain Water Quality Study was initiated in 2021 to better understand surface water quality conditions and to help inform development of the Lily Bulb Order. The Smith River Plain Surface Water Monitoring Report 2021-2024, issued September 2025 (2025 SWAMP Report)⁶ found that diuron and imidacloprid were frequently detected downstream of lily bulb fields, usually below water quality criteria but sometimes exceeding them at Lower Delilah Creek and Tillas Slough during storms. That pattern was not observed in sampling locations upstream of lily bulb agriculture. Dissolved copper levels were consistently higher downstream and during the storm season, periodically reached potentially toxic levels using instantaneous water quality criteria generated from the Biotic Ligand Model (BLM). Findings from the 2025 SWAMP Report supported a series of recommendations for the Lily Bulb Order. A more detailed discussion of the 2025 SWAMP Report findings and recommendations can be found in Section I.D of the Findings.

B. Public Participation

- 11) Development of the Lily Bulb Order was initiated in 2023 with the formation of a Technical Advisory Group (TAG). Between July 2024 and November 2025 the TAG met every other month in Del Norte County to review provisional regulatory language and provide feedback. TAG meetings were open to the public and included agendized time for public input at every meeting. TAG membership includes all 2021 Management Plan Watershed Stewardship Team members (lily

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bulb growers, regulatory agencies, local stakeholders, academic partners, and the Tolowa Dee-ni' Nation), with additional environmental nonprofit groups, partnering agencies, community organizations, and interested members of the public.

- 12) In addition to 7 public TAG meetings, staff presented information at three additional public meetings in Del Norte County to inform the community on the Lily Bulb Order and hear community concerns. On October 21, 2024, staff presented an Order development update and heard public input at a community meeting in Smith River, California, which was attended by over 80 people. On October 22, 2024, staff presented similar information to the Del Norte County Board of Supervisors at a regular Board of Supervisors meeting. Staff also presented similar information at the CEQA Scoping Meeting in Crescent City on October 22, 2024.
- 13) Many community concerns raised during 10 public meetings held between July 2024 and October 2025 extended beyond the regulatory authority of the North Coast Water Board. Accordingly, staff referred those concerns—such as pesticide application practices and air quality—to the appropriate CalEPA agencies, including the Office of Environmental Health Hazard Assessment and the California Department of Pesticide Regulation. Through a Management Agency Agreement established in 2019, the North Coast Water Board has also drawn on the CA Department of Pesticide Regulation's expertise to help develop science-based recommendations for the Lily Bulb Order. In parallel, staff have coordinated with NOAA Fisheries, the CA Department of Fish and Wildlife, the CA Coastal Commission, and the US Fish and Wildlife Service through a natural resource agency workgroup to address technical questions related to Order development.
- 14) On October 10, 2024, the North Coast Water Board published a Notice of Preparation and an Initial Study to begin soliciting input related to environmental review for the California Environmental Quality Act (CEQA), in preparation for developing a draft Environmental Impact Report (EIR). A 30-day public comment period was held for the Notice of Preparation and Initial Study. On October 22, 2024, North Coast Water Board staff held a public CEQA scoping meeting in person and virtually. Input received during the public comment period and public scoping meetings has been considered in the development of the draft EIR.
- 15) On October 8, 2025 the North Coast Water Board held an information item in Crescent City to present findings from the 2025 SWAMP Report⁷ ([Smith River Plain Surface Water Monitoring Study 2021-2024](#)) and provide an update on development of the Lily Bulb Order. Following the staff presentation, the Board heard public comment. Flyers for this meeting were developed in English, Spanish, and Hmong and distributed throughout the community. Live interpretation in Spanish was available.
- 16) On **##DATE##**, the North Coast Water Board published the draft Order and draft EIR and began a 45-day public comment period.

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- 17) The North Coast Water Board, in a public hearing held on **###DATE###**, has heard and considered all comments pertaining to the discharge and proposed Order. After considering all comments pertaining to this General Order during the **###MONTH###** public hearing, this Order was found consistent with the findings in Section I of this Order.
- 18) Any person aggrieved by this action of the North Coast Water Board may petition the State Water Board to review the action in accordance with California Water Code section 13320 and title 23 California Code of Regulations sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., within 30 calendar days of the date of adoption of this Order at the following address, except if the thirtieth day following the date of adoption falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100
Or by email at waterqualitypetitions@waterboards.ca.gov

For instructions on how to file a petition, see
(http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml)

1. Assembly Bill 2108

- 19) Assembly Bill 2108 (Statutes of 2022, Chapter 347) requires State and North Coast Water Boards to address issues of environmental justice and social equity as early as possible in North Coast Water Board permit and policy planning processes. AB 2108 specifies that North Coast Water Boards engage in equitable, culturally relevant community outreach to meaningfully involve disadvantaged and tribal communities that may be disproportionately impacted by proposed discharges of waste and ensure that outreach and engagement shall continue throughout the review and permitting processes. (Wat. Code, § 189.7, subd. (a).)
- 20) AB 2108 further requires the Water Boards when, among other actions, adopting general waste discharge requirements to make findings on anticipated water quality impacts in disadvantaged or tribal communities as a result of a permitted activity or facility, any environmental justice concerns within the Water Boards' authority that are raised regarding those water quality impacts, and available measures within the Boards' authority to address those water quality impacts. (Wat. Code, § 13149.2.)
- 21) This Order regulates commercial cultivation of lily bulbs, discharges from which may impact disadvantaged and/or tribal communities.

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- 22) The North Coast Water Board publicly noticed the Order and provided opportunities for public comment. Public notice was provided to interested persons and public agencies in the Smith River Plain. The North Coast Water Board conducted outreach in potentially affected disadvantaged and tribal communities in the form of distributed flyers in English, Spanish, and Hmong, meetings with community organizing groups such as True North Organizing, and regular meetings with the natural resources staff of the Tolowa Dee-Ni' Nation.
- 23) The North Coast Water Board has satisfied the outreach requirements set forth in Water Code section 189.7 by conducting outreach in affected disadvantaged and tribal communities.
- 24) Pursuant to Water Code section 13149.2, the North Coast Water Board reviewed readily available information and information raised to the Board by interested persons concerning anticipated water quality impacts in disadvantaged or tribal communities resulting from adoption of this Order. The Board also considered environmental justice concerns within the Board's authority and raised by interested persons regarding those impacts.
- 25) This Board anticipates that this Order may result in water quality impacts within the scope of the Board's authority. Commercial lily bulb farming in the Smith River Plain has the potential to affect water quality through soil disturbance and use of agricultural chemicals. This Order addresses potential adverse impacts to water quality by, among other things, requiring Enrollees to implement management practices related to sediment and erosion control to prevent, minimize, or eliminate discharges; implement streamside area setbacks; monitor surface and groundwater quality to evaluate the effectiveness of management practices; and, where appropriate, engage in an adaptive management process to comply with water quality objectives (WQOs).

2. Assembly Bill 52

- 26) Assembly Bill 52 (Statutes of 2014, Chapter 532), which went into effect on July 1, 2015, requires that lead agencies under CEQA, prior to release of a negative declaration, mitigated negative declaration, or environmental impact report, consult with California Native American tribes that have requested in writing to be notified of a proposed project, that are traditionally and culturally affiliated with the geographic area of a proposed project, and have requested consultation. Under the same bill, Public Resources Code section 21084.2 specifies that a project with an effect that may cause a substantial adverse change in the significance of a Tribal Cultural Resource is a project that may have a significant effect on the environment.
- 27) In April 2024, North Coast Water Board staff contacted six Tribes that were identified by the California Native American Heritage Commission as having current

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or historic lands in or near the Project Area that had requested notification of this project under AB 52. The North Coast Water Board staff identified an additional two Tribes that had not requested AB 52 notification but could be affected by the Order to solicit consultation if desired.

- 28) Of the eight Tribes notified by the North Coast Water Board, three separate tribes responded to the notice. One tribe updated their contact information and a separate Tribe deferred to the Tolowa Dee-Ni' Nation. The Tolowa Dee-Ni' Nation requested formal consultation in May 2024.
- 29) The North Coast Water Board and the Tolowa Dee-Ni' Nation initiated formal consultation in mid-2024.

C. Scope of Order

- 30) This Order regulates discharges of waste from farming activities associated with Commercial Lily Bulb Operations within the Smith River Plain Hydrologic Subarea coastal terraces between Pyramid Point and the Oregon border (Smith River Plain).
- 31) Definitions and endnotes are included in this Order to clarify terms, provide references, and supply supplemental information relevant to the requirements. Appendix I contains all acronyms, definitions, and endnotes.
- 32) For the purposes of this Order, a Commercial Lily Bulb Operation refers to land used for planting lily bulbs during any portion of the previous 5 years together with associated farm roads and agricultural structures, where at least one of the following conditions applies: (1) the landowner or operator holds a current Operator Identification Number/Permit Number for pesticide use reporting; (2) the crop and/or its product is sold; or (3) the federal Department of Treasury Internal Revenue Service form 1040 Schedule F Profit or Loss from Farming is used to file federal taxes.
- 33) Discharges from Commercial Lily Bulb Operations regulated by this Order include discharges to surface water and groundwater, through mechanisms such as stormwater runoff flowing from agricultural lands and farm roads, irrigation return flows, tailwater, and runoff resulting from operational spills. These discharges can contain wastes that could affect the quality of waters of the state and impair beneficial uses. This Order also regulates the removal or degradation of riparian vegetation resulting in the potential loss or degradation of instream beneficial uses.
- 34) This Order does not limit North Coast Water Board authority to inspect, and/or evaluate regulatory status, water quality impacts, or regulatory requirements of Commercial Lily Bulb Operations. If the North Coast Water Board determines that due to site-specific conditions a Commercial Lily Bulb Operation is not eligible for

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coverage under this General Order, or enrollment will not be protective of water quality, the North Coast Water Board may issue site-specific, individual WDRs.

- 35) This Order applies to landowners and operators of Commercial Lily Bulb Operations from which there could be discharges of waste or activities that could affect the quality of any surface water or groundwater or result in the impairment of beneficial uses. Either the owner or operator may enroll a Commercial Lily Bulb Operation under this Order. The owners or operators that enroll the respective Commercial Lily Bulb Operation are considered Enrollees under this Order and are responsible for complying with the conditions of this Order.
- 36) The Enrollee is required to provide written notice to the non-Enrollee owner or operator (if applicable) that the farm has been enrolled under the Order.
- 37) The North Coast Water Board will hold both landowners and operators of Commercial Lily Bulb Operations liable for noncompliance with this Order, regardless of whether the landowner or the operator is the party enrolled under this Order. Enforcement action by the North Coast Water Board for non-compliance related to an enrolled Commercial Lily Bulb Operation may be taken against both the owner and operator.
- 38) This Order does not preclude the need for additional permits that may be required by other governmental agencies, nor does it supersede any requirements, ordinances, or regulations of any other regulatory agency. This Order does not authorize violation of any federal, state, or local law or regulation.
- 39) This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code §§2050 to 2097) or the Federal Endangered Species Act (16 US Code §§1531 to 1544). If a "take"⁸ will result from any action authorized under this Order, the Grower shall obtain authorization for an incidental take prior to construction or operation of the project. The Enrollee shall be responsible for meeting all requirements of the applicable Endangered Species Act.
- 40) This Order does not exempt Enrollees from complying with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges to storm drain systems or other infrastructure under their jurisdiction.
- 41) Enrollees may be required to seek additional permitting from the State Water Resources Control Board or North Coast Water Board for activities not explicitly covered under this Order. Those could include, but are not limited to:
 - a) State Water Board Construction General Permit for Discharges of Storm Water Associated with Construction Activities (Construction General Permit,

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2009-0009-DWQ) for construction activities associated with new land development.

- b) Order No. R1-2019-0001, General WDRs for Dairies
 - c) State Water Board Order No. WQ 2020-0012-DWQ, General WDRs for Commercial Composting Operations.
 - d) Clean Water Act section 401 water quality certification or alternative WDRs for dredge and fill activities occurring within surface waters.
 - e) A valid water right from the State Water Board Division of Water Rights for a surface water diversion.
- 42) The North Coast Water Board acknowledges that it will take time to: (1) develop meaningful and effective Third-Party programs that facilitate compliance with this Order; (2) develop online reporting tools and templates, and (3) conduct compliance education to help Enrollees and service providers become familiar with Order requirements. The Order considers this by deferring the enrollment deadline to **DATE##** adoption plus 6 months.

D. Agricultural Practices and Pesticide Use

- 43) The California Department of Pesticide Regulation (CDPR) maintains pesticide applicator data that is submitted by Enrollees through the Del Norte County Department of Agriculture. The North Coast Water Board analyzed CDPR Pesticide Use Report (PUR) data collected between 2012-2021 for trends in pesticide use associated with lily bulb production in the Smith River Plain. The PUR data showed a decrease from an average of 14,126 lbs. of applied copper⁹ per year between 2012-2017 to an average of 5,842 lbs. per year between 2018-2021. The PUR data also indicated a phase out of copper sulfate in favor of copper hydroxide from 2015-2018. From 2018 through 2021, the amount of total copper applied per year has been relatively stable, if slightly increasing. See Table I.1 for pesticide use data for lily bulbs in the Smith River Plain.

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Table I.1: Top Ten Agricultural Chemicals by Pounds Applied on Lily Bulbs 2012-2021

Chemical (excluding Copper)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Grand Total
1,3-DICHLORO PROPENE	114,325	122,499	75,474	79,929	106,794	98,497	86,742	105,117	184,217	133,087	1,106,679
METAM-SODIUM CHLOROTHALONIL	129,373	120,283	117,649	102,882	35,719	95,393	75,993	86,461	66,357	55,719	885,829
PHORATE	3,424	5,318	2,454	4,654	3,997	2,845	3,650	3,174	3,061	1,970	34,547
ETHOPROP	1,964	1,787	1,992	1,876	2,003	1,874	1,702	1,442	1,340	1,185	17,166
DIURON	1,531	1,141	2,160	1,047	1,298	1,309	1,226	1,264	1,007	905	12,887
GLYPHOSPHATE, SUM	1,172	1,534	744	1,135	803	1,002	1,252	1,494	1,359	1,268	11,765
NAPROPAMIDE	584	1,093	397	1,038	474	698	886	676	410	860	7,116
IPRODIONE	2,412	439	436	445	190	504	314	763	387	400	6,289
	214	57	23	28	828	481	326	376	563	214	3,110
Copper-Based Chemicals	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Grand Total
COPPER HYDROXIDE	27,711	24,251	12,953	20,163	10,610	9,904	5,973	9,233	10,090	7,129	138,016
COPPER SULFATE	5,029	23,030	11,992	7,287	30	2,297	-	-	36	-	49,701
COPPER OXYCHLORIDE	-	-	-	-	276	198	288	604	414	298	2,077
COPPER DDC	852	832	369	1,705	5,075	1,569	1,502	617	2,129	117	14,767

- 44) Copper is the active ingredient in fungicides applied to control fungal diseases (e.g., Botrytis) on newly emergent and growing lily bulb plants. Lily bulb plants emerge from the ground during the early winter and are sprayed with copper-based fungicides during both the wet and dry seasons as new growth appears on plants. The discharge of copper based products applied on lily bulbs are of particular concern because low levels of dissolved copper can cause toxicity to aquatic life.
- 45) In 2024, Dr. Matthew Hurst, Logan Wolfe, and Preston Selby from California State Polytechnic University, Humboldt released findings from a study¹⁰ which investigated the effectiveness of vegetative barriers in reducing copper and sediment in stormwater runoff from lily bulb fields in the Smith River Plain. The research aimed to support lily bulb growers in implementing best management practices to protect water quality, particularly to safeguard the federally threatened Coho salmon inhabiting the Smith River watershed. Over two years, the study

sampled stormwater runoff from lily bulb fields with vegetative filter strips installed between the field and an agricultural ditch where the samples were taken. The study compared fields with filter strip to fields without a filter strip with all other management methods kept the same among the fields. The study found that grass filter strips reduced total suspended solids and total copper in runoff by about 20%, on average with a standard deviation of +/-20%. The filter strips were ineffective at reducing dissolved copper in field runoff, which is the more toxic form to aquatic life. The effectiveness of filter strips in the study diminished during December and January when soils were saturated. The study also found that copper primarily leaves fields bound to sediment particles (particulate copper), and that dissolved organic carbon (DOC) in runoff can decrease the bioavailability of copper and the associated risk of toxicity to aquatic life. The study found that conversion of lily bulb fields to pasture significantly reduced copper transport to waterways. The results of the study, in general, highlight the need for further research on effective mitigation strategies to improve water quality runoff, such as inter-row seeding, grassed waterways, or more robust filter strips.

- 46) The scientific literature consistently identifies vegetated buffer width between watercourses and agriculture as a key determinant of pollutant reduction, with wider vegetated buffers providing greater and more reliable water-quality benefits. Reviews commonly cite effective buffer widths in the range of 10–30 m (approximately 33–100 ft)¹¹, particularly because wider buffers enhance removal of dissolved pollutants while also trapping sediment-bound contaminants. Cole et al. (2020)¹² report that narrower buffers of approximately 7.5 m (~25 ft) are effective at reducing sediment and sediment-associated pollutants, whereas wider buffers of 15 m (~50 ft) or greater are more effective for reducing soluble pollutants, with performance influenced by soils, slope, and hydrology.
- 47) Under the 2021 Management Plan, all lily bulb growers agreed to voluntarily implement a suite of water quality management practices designed to reduce pesticide and nutrient runoff, erosion, and direct discharge of pollutants to surface waters. These practices fall into three general categories: source reduction, source control, and pollutant interception. Source reduction includes Integrated Pest Management (IPM) plans, selection of low-risk pesticides, pesticide sampling and analysis, pesticide mixing/loading setbacks, and timing applications considering weather forecasts to minimize runoff potential. Source control practices include soil amendments to bind pesticides, use of cover crops, contour farming, precision land forming to improve drainage, and maintenance of vegetated filter strips and riparian buffers. Pollutant interception involves practices such as field isolation—directing runoff onto pastures or filter strips—and installation of flow dissipaters and grade stabilization structures to reduce erosion.
- 48) Under the 2021 Management Plan, growers self-monitor and report on the implementation and effectiveness of these practices through an annual reporting program. North Coast Water Board staff conduct periodic on-farm inspections and

review grower documentation to verify compliance and provide feedback.

E. Monitoring and Reporting

- 49) This Order requires the implementation of a Monitoring and Reporting Program (MRP) pursuant to Water Code section 13267 that is intended to determine the effects of waste discharges on water quality; to verify the adequacy and effectiveness of the Order's conditions; to evaluate Enrollee compliance with the terms and conditions of the Order; to initiate adaptive management as needed; and to support an assessment of the long-term effectiveness of the Order.
- 50) This Monitoring and Reporting Program conforms to the goals of the Nonpoint Source (NPS) Policy as outlined in The Plan for California's Nonpoint Source Pollution Program by: (1) tracking, monitoring, assessing, and reporting program activities; (2) ensuring consistent and accurate reporting of monitoring activities; (3) targeting NPS Program activities at the tributary watershed level; (4) coordinating with public and private partners; and (5) tracking implementation of management practices to improve water quality and protect beneficial uses.
- 51) An Enrollee covered under this Order must comply with Attachment A: Monitoring and Reporting Program. For Individual Enrollees, water quality monitoring under this Order assesses the individual's compliance with this Order's requirements. For Enrollees in a Coalition, water quality monitoring assesses compliance at a larger scale. However, adaptive management in response to exceedances of Water Quality Benchmarks¹³ is required individually by each Enrollee.
- 52) The monitoring and evaluation required in this Order is not intended to determine the individual sources of pollutants causing an exceedance of a Water Quality Benchmark. When an exceedance occurs, this Order requires Enrollees to implement adaptive management to establish individual compliance with the Order as described in Section II.H. As necessary, the Executive Officer may issue site-specific monitoring and reporting requirements pursuant to Water Code section 13267 to better identify the source(s) of a Water Quality Benchmark exceedance. Additionally, Enrollees may elect to perform site-specific edge-of-field monitoring to demonstrate individual compliance. If monitoring results show there are no exceedances of a Water Quality Benchmark, the applicable fields are not required to implement adaptive management requirements to establish individual compliance.

Pesticides in Surface Water

- 53) Between August 2013 and June 2015, the North Coast Water Board's Surface Water Ambient Monitoring Program (SWAMP) sampled surface water and sediment in the Smith River Plain for standard water quality parameters, nutrients, pesticides, dissolved copper and zinc, and toxicity to assess impacts from

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Commercial Lily Bulb Operations¹⁴. Sampling stations were located upstream and downstream of agricultural operations. A total of 17 pesticides (including isomers and degradants) were detected in downstream monitoring stations in the Smith River Plain. Pesticide concentrations from the surface water samples from this study exceeded water quality thresholds at two of the five downstream monitoring sites. In March 2015 diuron exceeded USEPA Office of Pesticide Programs (OPP) Freshwater Aquatic Life Benchmarks for Pesticide Registration in Delilah Creek¹⁵. Imidacloprid and permethrin were also detected in concentrations exceeding the USEPA's Office of Pesticide Programs Aquatic Life Benchmarks¹⁶ in a sample that had a positive toxicity test result¹⁷. Additionally, dissolved copper was detected in every surface water sample with 6 of 27 sample results exceeding the California Toxics Rule (CTR) Freshwater Aquatic Life Criteria for dissolved copper concentrations¹⁸. The results of this study demonstrate that agricultural pesticide active ingredients are present in surface waters of the Smith River Plain.

Toxicity testing documenting the survival (acute toxicity) and reproductive capacity (chronic toxicity) of the test species *Ceriodaphnia dubia* in surface water samples was performed on samples collected from six locations in the Smith River Plain from 2013-2015. In 10 of 25 samples, these tests demonstrated statistically significant reductions in reproductivity (positive for chronic toxicity), including three tests in which the "control" location upstream of lily bulb agriculture (Upper Rowdy Creek) was positive for chronic toxicity. In another 2 samples, a positive acute toxic response was documented, with 1 of the samples demonstrating no test species survival.

To determine the cause of the 2015 observed acute toxic response, three samples that exhibited chronic or acute toxicity were further tested utilizing a toxic identification evaluation (TIE). The TIEs uncovered a confounding result in the toxicity test results. The prevalence of positive chronic toxicity results (10 of 25) in samples collected throughout the study area (except Tillas Slough, which has higher conductivity) including the control site, suggests that the extremely low water hardness and conductivity in the tributaries are interfering with the ability of the test species to reproduce, producing false positives, or toxic responses when toxic conditions do not exist. For example, TIE evaluations of the reduced reproduction observed in upper Rowdy Creek and lower Delilah Creek on June 23, 2015, pointed to low conductivity and low hardness as a contributor of toxicity with no suggestion of other toxicants.

Low conductivity and low hardness water such as that in the tributaries of the Smith River Plain can negatively affect the reproduction rates of *C. dubia* in the testing environment. When the test species are reared in water with conductivity and hardness levels that are greater than the sample water, their reproductive rates can be adversely affected. Toxicity testing procedures for evaluating the toxicity of surface water must take into consideration the conductivity and hardness of the source water and its effect on the test species.

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A TIE was conducted as a follow up to positive acute toxicity results in the March 11, 2015 sample from lower Delilah Creek. The TIE identified the presence of both a metal and a non-polar organic compound (pesticide) as the drivers behind the acute toxic response in which there was no test species survival. Chemical analysis of the surface water sample associated with the acute toxic response in 2015 documented that two current use pesticides, imidacloprid and permethrin, were detected in concentrations exceeding the USEPA's Office of Pesticide Programs Aquatic Life Benchmarks and that dissolved copper concentrations exceeded the CTR Freshwater Aquatic Life Criteria for acute toxicity.

- 54) In 2022, Dr. Matthew Hurst and colleagues from the Chemistry and Geology Departments at Cal Poly Humboldt released findings from a study¹⁹ that investigated the bioavailability and speciation of copper in the Smith River Plain. The research aimed to assess copper levels in waterways affected by agricultural runoff from the Easter lily bulb industry and their potential impact on juvenile Coho salmon, a federally threatened species reliant on these habitats. The study found that copper concentrations were elevated downstream of agricultural fields compared to upstream and background levels in the Smith River, indicating that current lily bulb cultivation practices increase copper in tributaries. Physical speciation revealed a significant portion of copper in particulate form, especially in Delilah Creek, likely due to sediment runoff. Importantly, bioavailability measurements showed that the toxic form of copper (Cu^{2+}) remained well below thresholds known to impair salmon olfactory function and behavior, primarily because dissolved organic carbon (DOC) and other ligands in the water bind copper and reduce its bioavailability. The study also found high dissolved copper concentrations were usually accompanied with high DOC concentrations, which would work to reduce the bioavailability of copper and reduce its toxicity. However, low DOC levels during dry seasons may reduce this buffering capacity, potentially increasing copper toxicity risk.
- 55) Dissolved copper can have an acutely toxic effect to fish through exposure of the gill. Even at low levels, dissolved copper can inhibit or destroy neuron (nerve) cells and impair two important sensory and behavioral response systems: olfaction (sense of smell)²⁰ and the lateral line²¹. Fish use their sense of smell to identify predators and prey, assess potential mates, avoid pollutants, detect migratory cues, and navigate to their natal streams from the ocean. The lateral line is the visible line along the side of a fish consisting of a series of sense organs, which fish use to detect movement, pressure, and vibration in the surrounding water. When these senses are impaired, fish growth suffers and may lead to mortality. Water chemistry can affect the toxicity of copper when metal ions (e.g., Ca^{2+}) compete with copper for binding sites on gills and other cells, or when other inorganic and organic constituents bind to copper ions reducing their bioavailability. The toxicity of copper is closely related to water hardness, alkalinity, pH and dissolved organic carbon (DOC) in the water. Water hardness refers to the presence of dissolved

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metal ions such as calcium and magnesium. Hardness in the Smith River is generally quite low, based on samples taken by the North Coast Water Board. Low hardness increases the bioavailability of copper and copper toxicity to aquatic life because there are fewer calcium and magnesium ions to compete with copper for binding sites on the gills and other biological surfaces, allowing more free copper ions to be absorbed by aquatic organisms.

- 56) As part of the Smith River Plain Water Quality Management Plan, North Coast Water Board staff in the Surface Water Ambient Monitoring Program (SWAMP) sampled surface water between 2021-2024. Analytes were selected based on their known use in lily bulb production, toxicity profiles, prior study results²², and input data needs for the US EPA endorsed Biotic Ligand Model (BLM) – a metal bioavailability model that uses receiving water body characteristics and monitoring data to develop site-specific water quality criteria. Synthetic pesticide chemicals (diuron, ethoprop, and imidacloprid) were detected at all downstream monitoring stations with only Lower Delilah Creek (8 exceedances) and Tillas Slough (2 exceedances) recording water quality criteria exceedances (See Figure A.1 for monitoring station locations).

The pattern of synthetic pesticide concentrations seems to align with typical environmental fate and transport. Diuron and imidacloprid concentrations downstream of lily bulb fields rise sharply during major storm events (typically October–May), peaking early in overland flow before diluting as streamflow increases. Following storms, moderate levels likely persist due to continued shallow groundwater discharge, with low detections year-round indicating ongoing baseflow transport. Imidacloprid exceedances align with imidacloprid application rates, and both pesticides show strong correlations with large storm events.

Potential copper toxicity (toxicity unit >1) was predicted by the BLM at all downstream stations at least once and in approximately 40 percent of samples, with predictions of chronic toxicity twice as common as acute. The BLM predicted a risk of toxicity most frequently in samples collected from Lower Delilah Creek (54% of samples) and Tillas Slough (33% of samples during freshwater conditions). The model results were driven by elevated dissolved copper and depressed pH, and the highest risk of toxicity predicted by the BLM was in samples collected during the storm season. Predicted chronic toxicity closely tracked normalized copper application rates²³, with Delilah Creek exhibiting both the highest copper use and the most frequent toxicity predictions.

- 57) On September 26, 2024, as part of the 2021-2024 SWAMP study, Regional Board staff sampled two locations north of the Smith River Plain on the coastal terrace near Highway 101 at locations that receive runoff from lily bulb fields. One set of samples was collected in Gilbert Creek at Highway 101 and another set was collected in a small coastal drainage that runs to the ocean at Clifford Kamph Memorial Park. While these locations are outside of the Smith River Plain proper,

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they are both within the Smith River Plain hydrologic subarea and therefore within the scope of this Order. Gilbert Creek runs east to west to the north of this small lily bulb growing area, while the other drainage is to the south and receives most of the surface runoff. There are about six fields that are used for lily bulb cultivation in this area and at the time of the sampling event in September 2024, four of those fields were planted to lilies.

Both sets of samples were analyzed for the same set of parameters as the rest of the samples collected as part of the SWAMP study. The analysis included the suite of select current use pesticides, general field parameters, dissolved copper, and a complete set of BLM input parameters. At the time of sampling, flow in Gilbert Creek was estimated between 1-5 cubic feet per second (cfs) and flow in the coastal drainage at Clifford Kamph Memorial Park was estimated between 0.1-1 cfs. There was no precipitation in the preceding 24 hours. Only one pesticide, diuron, was detected out of all the pesticide sample results at a concentration of 0.054 ug/L at the Clifford Kamph Memorial Park site. This concentration is well below the chronic Water Quality Benchmark of 0.83 ug/L for diuron. Dissolved copper was measured at 0.44 ug/L at the Gilbert Creek location and at 1.47 ug/L at the Clifford Kamph Memorial Park location. The results for dissolved copper and the BLM parameters were input into the BLM model to generate acute and chronic instantaneous water quality criteria to compare to the dissolved copper results. Both sample results for dissolved copper were below the BLM generated chronic criteria of 1.94 ug/L (Gilbert Creek) and 5.14 ug/L (Clifford Kamph Memorial Park).

- 58) In addition to presenting monitoring data, the 2025 SWAMP Report includes analyses conducted by North Coast Water Board staff to assess pesticide toxicity risk relative to pesticide application rates/timing and precipitation patterns. Staff's analysis of water quality data from the 2025 SWAMP Report suggests a strong association between both rate of pesticide application and occurrence of major storm events with predicted bioavailability of dissolved copper and synthetic pesticide exceedances of water quality criteria.
- 59) Based on these findings from the 2025 SWAMP Report, North Coast Water Board staff recommends reducing diuron, imidacloprid, and copper application rates in watersheds with exceedances of water quality criteria and predicted copper toxicity; identifying and implementing management practices that reduce synthetic pesticide and copper transport (e.g., increasing soil organic carbon content); and investigating mechanisms that contribute to depressed pH in receiving waters near lily bulb cultivation areas. Staff recommended that surface water monitoring should remain focused on storm-season sampling, with emphasis on capturing both initial overland flow and post-storm baseflow periods, particularly in tributaries with elevated application rates and exceedances of relevant water quality criteria. These recommendations were incorporated into the Surface Water Monitoring Program in the Monitoring and Reporting Program.

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- 60) This Order requires surface water monitoring for diuron, imidacloprid, ethoprop, and dissolved copper, as specified in Attachment A: Monitoring and Reporting Program (MRP). Except for diuron, the Water Quality Benchmarks used to drive adaptive management and measure compliance with surface water Receiving Water Limitations in this Order are consistent with the values applied in analyzing dataset presented in the 2025 SWAMP Report²⁴. A detailed discussion of these Water Quality Benchmarks, including the use of the Biotic Ligand Model (BLM) for dissolved copper, is provided in Section G.1 of these Findings.

Nutrients in Surface Water

- 61) The North Coast Water Board's SWAMP Program implemented monitoring in the Smith River Plain in 2013 and 2015 to evaluate water and sediment quality conditions, which included analysis of samples for nutrients. The results for nutrients were compared to USEPA guidance criteria. The nutrient criteria guidance is grouped by 'ecoregions' for the entire country that states may use as a starting point for the criteria for their water quality standards. The criteria are called Ecoregional Nutrient Criteria for Rivers and Streams. Ecoregion II includes most of the great mountain ranges that are located west of the Great Plains. This large, disjunct region is characterized by forests, high relief terrain, steep slopes, perennial streams, and a general lack of cropland agriculture. While the Smith River Plain is included in this ecoregion, it does not match the characteristics of the ecoregion in general. However, water quality results from 2013-2015 were compared to these guidance criteria as a benchmark to provide some context. The comparison showed that nitrogen levels exceeded the ecoregional nutrient criteria in every sample collected in Delilah and Morrison Creeks and Tillas Slough. Phosphorus exceeded the criteria in one instance in Delilah Creek and in three of six samples in Tillas Slough.
- 62) According to a response to a 2018 Water Code Section 13267 Order, lily bulb growers indicated that nitrogen is applied at planting, during the spring, and through the manure of grazing cattle. This Order monitors the potential for discharge of nitrogen to surface water primarily through Irrigation and Nitrogen Management Plans (INMPs) which require Enrollees to (1) report nitrogen application and crop removal rates; (2) sample soil and irrigation water for nitrate concentrations; and (3) identify management practices to minimize or prevent discharge of excess nitrogen to surface or groundwater. This Order requires certification of the INMP and adaptive management for Enrollees who over-apply nitrogen as defined by exceeding a target calculated ratio of nitrogen applied to nitrogen removed. Section I of this Order defines the adaptive management triggers for the potential over-application of nitrogen.
- 63) Phosphorus is used as a fertilizer in Commercial Lily Bulb Operations. Phosphates sorb to positively charged surfaces in soil so controlling and monitoring for the

discharge of phosphorus in this Order is achieved through sediment and erosion management practices and monitoring.

Pesticides in Groundwater

- 64) CDPR maintains a Groundwater Protection List in sections 13144, 13145, and 13149 of the California Food and Agricultural Code. Pesticides labeled for agricultural, outdoor institutional or outdoor industrial use that are designated as having the potential to pollute groundwater and have been detected in groundwater or soil pursuant to section 13149 of the Food and Agricultural Code are on the CDPR 6800(a) list.
- 65) The CDPR Human Health Assessment Branch (HHAB) has developed Human Health Reference Levels (HHRLs) for pesticides on the 6800(a) list. Residues measured in groundwater exceeding these reference levels indicate a health concern and should be sent to HHA for further evaluation.
- 66) The CDPR Groundwater Protection Program (GWPP) obtains groundwater monitoring data for pesticides and their degradates through its own sampling program and from sampling conducted by other public agencies. Between 2012 and 2021, the GWPP has reported one unconfirmed detection of a 6800(a) listed pesticide (Simazine) on the Smith River Plain. However, Simazine use was not reported in CDPRs Pesticide Use Report data in the previous five years.
- 67) The North Coast Water Board released a report in 2015 for the Smith River Plain which included groundwater monitoring results from seven sites to evaluate the extent and concentration of contaminants in shallow groundwater that may be attributed to agricultural applications. These samples were analyzed for dissolved copper, and 328 pesticides and pesticide residues. Among the 328 pesticides analyzed are those that were previously detected in groundwater (e.g., 1,2-Dichloropropene), those identified as pesticides of concern (e.g., Methyl Isothiocyanate, which is a break down product of metam sodium), and those commonly used in high quantities in Del Norte County between 2010 and 2013 (e.g., 1,3-Dichloropropene). The analysis of dissolved copper resulted in one detection of dissolved copper (5.7 ug/L) which was well below the US Environmental Protection Agency's and California Department of Public Health's drinking water standard (1,300/1,000 µg/L, respectively). Analysis for the 328 pesticides and pesticide residues only documented two detections of 1,2-Dichloropropane (1,2-D) which was below the US Environmental Protection Agency's and California Department of Public Health's drinking water standard of 5 µg/L. See page 10 of the Smith River Plain 2015 Groundwater Interim Monitoring Report for tabulated results²⁵.
- 68) In April 2025, North Coast Water Board staff sampled 9 private domestic wells within the current and historic lily bulb cultivation area in the Smith River Plain.

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Drinking water samples were analyzed for 94 pesticide residues utilizing a domestic well sampling program offered by the CA Department of Pesticide Regulation. North Coast Water Board staff worked with the lily bulb growers, the Technical Advisory Group for the Lily Bulb Order development, and local community groups to identify volunteers for domestic well sampling. Pesticides were detected in 6 of the 9 domestic wells sampled. Of the eight pesticides detected, all but one – used in forestry and highway rights-of-way – had been applied on lily bulbs between 2012 and 2023. The pesticides detected include diuron, imidacloprid, mefenoxam, napropamide, thiamethoxam, ACET, simazine, and tebuthiuron. Four pesticides (diuron, imidacloprid, napropamide, and mefenoxam) were reported as being used on lily bulbs in the most recent Pesticide Use Reports from 2023. Three quarters of all pesticide detections (75%) were reported at trace concentrations²⁶ and none exceeded established human health levels²⁷.

- 69) This Order requires monitoring of pesticides in groundwater through: (1) individual and regional groundwater trend monitoring to evaluate agricultural impacts on groundwater; (2) adaptive management in response to exceedances of pesticide Water Quality Benchmarks in groundwater; and (3) drinking water well sampling to notify well users of exceedances of a human health level with respect to pesticides. Pesticides included in groundwater monitoring in this Order were all current-use lily bulb pesticides that were detected during the April 2025 domestic well sampling effort (diuron, imidacloprid, napropamide, and mefenoxam). These requirements are located within Attachment A: Monitoring and Reporting Program.

Nitrate in Groundwater

- 70) Elevated levels of nitrate in drinking water can have significant negative health effects on sensitive individuals. The nitrate water quality objective for groundwater is the maximum contaminant level (MCL) of 10 mg/L (milligrams per liter) for nitrate plus nitrite as nitrogen (or 45 mg/L of nitrate as nitrate) established by the California Department of Public Health (Cal. Code Regs. tit. 22, § 64431). The MCL was set to protect the most at-risk groups – infants under six months old and pregnant women. Sources of nitrate in groundwater can include leaching of excess fertilizer, confined animal feeding operations, septic systems, and wastewater discharge to land (e.g., domestic, commercial, and industrial). Besides infiltration, pathways of nitrate to groundwater may also include unprotected well heads, improperly abandoned wells, and lack of backflow prevention on wells.
- 71) The North Coast Water Board released a 2015 Groundwater Monitoring Report for the Smith River Plain which included monitoring results from seven sites within the lily bulb growing area to evaluate the extent and concentration of contaminants in shallow groundwater that may be attributed to agricultural applications. Samples collected in a one-time sampling event from the seven wells were analyzed for nitrate (as nitrogen). Nitrate concentrations in the groundwater ranged from 4.8

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mg/L to 12.7 mg/L across all wells tested. Three irrigation wells exceeded the California Department of Public Health MCL of 10 mg/L for nitrate. Nitrate concentrations in the three Drinking Water Supply Wells ranged from 4.7 mg/L to 6.72 mg/L. See page 9 of the Smith River Plain 2015 Groundwater Monitoring Interim Report for tabulated results²⁸.

- 72) In April 2025, North Coast Water Board staff sampled nine (9) private domestic wells within the current and historic lily bulb cultivation area in the Smith River Plain using a domestic well sampling program offered through the California Department of Pesticide Regulation. Nitrate concentrations in these wells ranged from 1.8 mg/L – 5.9 mg/L.
- 73) This Order requires monitoring of nitrate in groundwater through: (1) individual and regional groundwater trend monitoring to evaluate agricultural impacts on groundwater and (2) drinking water well sampling to notify well users of exceedances of the nitrate MCL of 10 mg/L. These requirements are located within Attachment A: Monitoring and Reporting Program.

F. Coalitions

- 74) The North Coast Water Board encourages Enrollees to participate in Coalitions or programs (e.g., certification program, watershed group, water quality coalition, monitoring coalition, or other third-party effort) to facilitate and document compliance with this Order. Third-party programs (hereinafter Coalitions) can be used to manage fee payments to the State Water Board, implement compliance education, monitoring and reporting, management practices and/or water quality improvement projects. This Order authorizes the use of grower Coalitions for the above efforts. Specific Coalition requirements can be found in Attachment C: Grower Coalition Requirements.
- 75) This Order requires Enrollees to provide the Coalition with contact information of the person(s) authorized to provide access to the enrolled property for inspections. This requirement provides a procedure to enable Board staff to contact Enrollee representatives so that it may more efficiently monitor compliance with the provisions of this Order.

G. Regulatory Framework

- 76) This Order requires Enrollees to comply with all applicable state and federal water quality standards, plans, and policies, and to prevent nuisance conditions. These standards are established through state and federal regulations, including the North Coast Water Board Basin Plan, which identifies the specific Water Quality Objectives (WQOs), beneficial uses, and implementation plans applicable to discharges of waste and the waterbodies that receive such discharges. The State Water Board has also adopted additional plans and policies that may apply to

discharges of waste to surface waters or groundwater from Commercial Lily Bulb Operations.

1. North Coast Water Board Plans and Policies

Basin Plan

- 77) The Basin Plan is the North Coast Water Board's water quality control planning document. It designates beneficial uses and WQOs for waters of the state, including surface waters and groundwater. The Basin Plan was duly adopted by the North Coast Water Board and approved by the State Water Board, the Office of Administrative Law, and the USEPA, as necessary. The Basin Plan includes plans and policies, including TMDLs. The latest version of the Basin Plan can be found on the North Coast Water Board's website (https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/).

Beneficial Uses

- 78) Pursuant to the Basin Plan, Board plans and policies (including State Water Board Resolution No. 88-63 Sources of Drinking Water Policy), and consistent with the Clean Water Act, Table I.2 shows the existing and potential beneficial uses of surface waters in the Smith River Plain:

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Table I.2: Existing and Potential Beneficial Uses in the Smith River Plain

Beneficial Use	Abbreviation	Project Area Except Rowdy Creek	Rowdy Creek Watershed
Agricultural Supply	AGR	Existing	Existing
Aquaculture	AQUA	Potential	Potential
Commercial and Sport Fishing	COMM	Existing	Existing
Cold Freshwater Habitat	COLD	Existing	Existing
Tribal Beneficial Use	CUL	Existing	Existing
Estuarine Habitat	EST	Existing	-
Subsistence Fishing	FISH	Existing	Existing
Freshwater Replenishment	FRSH	Existing	Existing
Industrial Service Supply	IND	Existing	Existing
Marine Habitat	MAR	Existing	-
Migration of Aquatic Organisms	MIGR	Existing	Existing
Municipal and Domestic Supply	MUN	Existing	Existing
Navigation	NAV	Existing	Existing
Hydropower Generation	POW	-	Potential
Industrial Process Supply	PRO	Potential	Potential
Rare, Threatened, End.Species	RARE	Existing	Existing
Non-Contact Water Recreation	REC-2	Existing	Existing
Water Contact Recreation	REC-1	Existing	Existing
Spawning, Reproduction, and/or Early Development	SPWN	Existing	Existing
Wildlife Habitat	WILD	Existing	Existing

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- 79) The beneficial use most sensitive to groundwater degradation in the Smith River Plain is Municipal and Domestic Supply, while the beneficial uses most sensitive to surface water degradation are Cold Freshwater Habitat and Tribal Cultural Resources. This Order uses Water Quality Benchmarks that are protective of these most sensitive beneficial uses and, therefore, protective of all beneficial uses of water within the Smith River Plain. A more thorough discussion of Water Quality Benchmarks is located in Section G.1 of these Findings.
- 80) The tributaries of the Smith River Plain contain much of the Smith River watershed's habitat with high intrinsic potential for coho salmon, supporting both natal and non-natal rearing. Tributaries and sloughs near the estuary provide critical refuge for juveniles and fry displaced during high-flow events, increasing survival, productivity, and life-history diversity. Because the middle and upper Smith River watershed is dominated by steep gradients and high flows, the low-gradient tributaries near the estuary and within the lily bulb cultivation area play a disproportionate role in supporting coho salmon resilience and recovery. Although estuarine and coastal-plain habitats represent a small portion of the overall watershed area, they are vital to the productivity of anadromous fish populations, as all salmonids utilize estuarine environments prior to ocean entry.
- 81) At least 26 species of fish have been observed in the Smith River Plain and estuary. The Smith River Plain provides habitat to threatened and endangered species including coho salmon, eulachon, tidewater goby, and longfin smelt²⁹. Spring- and fall-run Chinook Salmon, Coho Salmon, and Coastal Cutthroat Trout utilize the lower Smith River, its coastal tributaries, sloughs, and estuary throughout the year. One or more of these species is typically present in areas potentially affected under this Order at any given time. Low-gradient freshwater and brackish habitats such as sloughs, backwaters, off-channel ponds, and tidal wetlands are among the most productive rearing areas for juvenile salmonids in the Pacific Northwest, including within the Smith River Plain.
- 82) The 2014 Coho Salmon Final Recovery Plan from NOAA identified Rowdy Creek, Ritmer Creek, Delilah Creek, Yontocket Slough, and Morrison Creek in the Smith River Plain as some of the highest intrinsic potential habitat for coho salmon in the 762 square mile Smith River watershed³⁰. These tributaries are designated essential fish habitat (EFH) under the Magnuson-Steven Fishery Conservation and Management Act (MSFCMA) for Pacific salmon (Chinook and coho) and the estuary is designated EFH for Pacific salmon and Pacific groundfish. EFH is designated for species managed in Fishery Management Plans and is defined as the habitat necessary for managed fish to complete their life cycles. Estuaries, including the Smith River Estuary, are considered Habitat Areas of Particular Concern and are high priorities for EFH conservation³¹. Preserving high-quality water and improving degraded water quality in the Smith River Plain is essential to the support and recovery of threatened and endangered species.

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- 83) The National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) has classified the Smith River population of coho salmon as a core, functionally independent population, which is considered at a high risk of extinction and likely below the depensation threshold.
- 84) On December 17, 2018, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA NMFS) issued a letter to the four lily bulb growers remaining at that time that addressed pesticide impacts on Southern Oregon Northern California Coast (SONCC) coho salmon related to lily bulb agricultural operations in the Smith River Plain. The letter communicated concerns regarding elevated concentrations of dissolved copper and other pesticides detected in streams below lily bulb fields, which exceed U.S. Environmental Protection Agency (EPA) Aquatic Life Benchmarks. The letter referenced the Endangered Species Act (ESA) (16 U.S.C. § 1531 et seq.) and NMFS regulations at 50 CFR 223.203 under section 4(d) of the ESA, which prohibit the unlawful "take" of threatened species, including harm defined as acts that significantly impair essential behavioral patterns of listed fish. NOAA NMFS directed the lily bulb growers to implement best management practices such as increasing no-spray buffers and restoring riparian zones to reduce pesticide runoff into tributaries critical for coho salmon habitat. The letter further encouraged cooperative development of a Smith River Plain Water Quality Management Plan and Safe Harbor Agreements to facilitate regulatory compliance and contribute to species recovery.
- 85) The U.S. Fish and Wildlife Service (USFWS) adopted the Tidewater Goby Recovery Plan³² (Recovery Plan) in 2005, outlining key actions for improving the species' status sufficiently to warrant downlisting from endangered to threatened, and ultimately delisting. The Recovery Plan includes the Smith River estuary in its North Coast Recovery Unit, noting that the Smith River estuary contains roughly 500 acres of potentially suitable habitat with historical and recent observations of tidewater goby presence, particularly in Tillas Slough. The Recovery Plan recommended, in part, regular monitoring of tidewater goby populations and habitat conditions to track status and hydrologic changes, management of estuarine and lagoon hydrology to preserve brackish conditions essential for goby breeding and survival, and the reestablishment of Tillas Slough populations from Lake Earl.
- 86) The Smith River and estuary serve as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. These uses include, but are not limited to, fishing, boating, river access, training, swimming and diving, prayer and meditation, religious ceremony and medicinal doctoring, plant gathering, basketry, eeling, shellfish gathering, and food preparation.

Water Quality Objectives

- 87) Water Code section 13241 provides that the North Coast Water Board is

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responsible for establishing water quality objectives which, in the North Coast Water Board's judgment, are necessary for the reasonable protection of the beneficial uses and for the prevention of nuisance. Establishing water quality objectives involves first, designating beneficial uses; and second, selecting the water quality constituents or characteristics and limits or levels on those constituents and/or characteristics necessary to protect the beneficial uses. These objectives can be expressed in numeric (measurable limits or concentrations of a pollutant) or narrative (the desired condition of the waterbody in qualitative terms) form.

When it is necessary to derive numeric values in order to develop discharge limitations that implement narrative water quality objectives or to evaluate compliance with narrative water quality objectives, the Board may consider "all relevant and scientifically valid evidence", including site-specific data, scientific peer-reviewed literature, and numeric values established in other state or federal laws, regulations, plans, policies, or guidelines, or developed and published by other governmental or non-governmental agencies and organizations. (Basin Plan, Section 3.5.1.) "When water quality objectives are established in a basin plan in narrative form, it is appropriate for a regional water board to exercise its professional judgment, relying on scientific studies, to establish numeric limits." (State Water Board, Order WQ 2023-0081, p. 28.)

- 88) Section 3 of the North Coast Water Board's Basin Plan contains water quality objectives for groundwater and surface waters. These include objectives for chemical constituents, which incorporate promulgated maximum contaminant levels (MCL); pH; sediment; turbidity; and, in relevant part, the following narrative water quality objectives for pesticide and toxicity:

"Pesticides. Waters shall not contain any individual pesticide or combination of pesticides in concentrations that cause nuisance or adversely affect beneficial uses. There shall be no bioaccumulation of pesticide concentrations in bottom sediments or aquatic life that cause nuisance or adversely affect beneficial uses. In no case shall waters designated for use as domestic or municipal supply (MUN) contain concentrations of pesticides in excess of the numeric limits established in title 22 and as prospectively incorporated in 3.4.3 Chemical Constituents."

"Toxicity"³³. Waters shall not contain toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the synergistic effect of multiple substances."

- 89) The USEPA has adopted the National Toxics Rule and the California Toxics Rule (CTR), which, when combined with the Basin's Plans beneficial use designations, constitute water quality standards that apply to certain inland surface waters or enclosed bays and estuaries within the state. The CTR contains federal water

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quality criteria for priority pollutants, including for copper. The CTR aquatic life criteria for copper varies based on hardness and are expressed as dissolved concentrations.

- 90) The Biotic Ligand Model (BLM) is the current EPA recommended method for determining copper concentrations protective of aquatic life on a site-specific basis and has been adopted by the State of Idaho Department of Environmental Quality and the State of Oregon Department of Environmental Quality to develop state-wide, site-specific water quality criteria for copper. The BLM predicts metal toxicity to aquatic life by estimating how much of a dissolved metal actually binds to sensitive biological sites (biotic ligands) such as fish gills or invertebrate membranes. The model calculates the concentration of a metal at the biotic ligands by simulating how site-specific water chemistry factors influence the chemical form and bioavailability of the metal. The BLM represents a refinement of the hardness-based CTR criteria.

In California, the State Water Board is developing a proposed water quality control policy to establish methods, protocols, and procedures for Regional Water Quality Control Boards to develop, adopt, and implement site-specific water quality objectives for copper and zinc based on the BLM. The BLM uses a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature.

Using these ten parameters, the BLM generates an Instantaneous Water Quality Criterion (IWQC). The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. Exceedances of the IWQC mean that dissolved copper bioavailability was predicted to occur at a potentially toxic level for the sample in question. Due to the unique water chemistry of the Smith River Plain, risk of toxicity is predicted to occur at a lower dissolved copper concentration by the BLM compared to the hardness-based CTR at the monitoring stations downstream of lily bulb agriculture. Use of this scientifically-valid and more sensitive method is appropriate in this Order to drive the Adaptive Management Program and evaluate compliance with Receiving Water Limitations, given the particular beneficial uses to be protected in the Smith River Plain, including tribal and aquatic life beneficial uses; the water quality objectives reasonably required for that purpose; the need to prevent nuisance; and the provisions of Section 13241, including environmental characteristics in the Smith River Plain, and economic considerations, discussed in further detail in Section I.H of the Findings. (Wat. Code, § 13263, subd. (a).)

- 91) This Order establishes Water Quality Benchmarks for both surface water and

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groundwater, which are based on water quality objectives. Water Quality Benchmarks for surface water are established for both acute and chronic exposure conditions. Exceedance of a Water Quality Benchmark for surface water is determined by considering both concentration and frequency within a Water Year. An acute Water Quality Benchmark is exceeded when the acute concentration is exceeded once within a Water Year, and a chronic Water Quality Benchmark is exceeded when the chronic concentration is exceeded twice within a Water Year.

- 92) Water Quality Benchmarks for groundwater are also established for both acute and chronic exposure, where water quality values are available. Exceedance of a Water Quality Benchmark for groundwater is determined by considering both concentration and frequency of the exceedance where both acute and chronic values are available. An acute Water Quality Benchmark is exceeded when the acute concentration is exceeded once within a Water Year, and a chronic Water Quality Benchmark is exceeded when the chronic concentration is exceeded in two consecutive Water Years.
- 93) The Water Quality Benchmarks are either equivalent to the applicable Basin Plan numeric water quality objective or a numeric interpretation of the pesticide and toxicity narrative water quality objectives for surface water and the toxicity narrative quality objective for groundwater. Non-exceedance of a Water Quality Benchmark demonstrates attainment of the corresponding water quality objective and compliance with Receiving Water Limitations in Section II.C of this Order. Conversely, exceedance of a Water Quality Benchmark indicates that discharges may be causing or contributing to an exceedance of a water quality objective. As discussed in Section II.H of this Order, exceedance of a Water Quality Benchmark triggers the Adaptive Management Program; following the time schedule under the Adaptive Management Program, further exceedances may indicate that discharges are causing or contributing to an exceedance of a water quality objective in violation of the Receiving Water Limitations, which may result in further investigative action and/or progressive enforcement.
- 94) Water Quality Benchmarks for surface water and groundwater monitoring pesticide parameters were determined by reviewing all available pesticide water quality values, including U.S. EPA aquatic life benchmarks, and, exercising best professional judgment consistent with scientific evidence, selecting the most protective (i.e., lowest) values for relevant beneficial uses. In general, the most sensitive beneficial uses for surface waters were Cold Freshwater Habitat and Tribal Cultural Uses and for groundwater was drinking water. Water Quality Benchmarks staff determined were appropriate to drive adaptive management are generally consistent with the State Water Board's numeric guidelines for listing impaired waters under Section 303(d) of the Clean Water Act used to assess data where only narrative water quality objectives have been adopted. Tables I.3 and I.4 present relevant Water Quality Benchmarks for required water quality monitoring constituents for this Order as well as conditions for determining whether an

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exceedance of an acute or chronic Water Quality Benchmark has occurred.

Table I.3 Water Quality Benchmarks for Surface Water, Benchmark Exceedances, Beneficial Uses Protected, and Sources

Parameter	Benchmark (ug/L)	Benchmark Exceedance	Use Protected	Source or Reference³⁴
Diuron	Acute: 87.5 Chronic: 0.83	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.	Cold Freshwater Habitat	USEPA Aquatic Life Benchmarks
Ethoprop	Acute: 3.15 Chronic: 0.37	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.	Cold Freshwater Habitat	Acute: USEPA Aquatic Life Benchmarks Chronic: USEPA Chronic Noncancer HHBs for Pesticides
Imidacloprid	Acute: 0.385 Chronic: 0.01	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.	Cold Freshwater Habitat	USEPA Aquatic Life Benchmarks
Dissolved Copper	Toxicity Unit ³⁵ <1 (acute and chronic)	Two exceedances of the Chronic BLM-IWQC ³⁶ in a Water Year -OR- single exceedance of the Acute BLM-IWQC.	Cold Freshwater and Estuarine Habitats	Biotic Ligand Model

Table I.4 Water Quality Benchmarks for Groundwater, Benchmark Exceedances, Beneficial Uses Protected, and Sources

Parameter	Benchmark (ug/L)	Benchmark Exceedance	Use Protected	Source or Reference ³⁷
Diuron	Acute: 1028 Chronic: 2.0	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	Municipal Drinking Water	<u>Chronic</u> : USGS Health Based Screening Level (HBSL) for one-in-a-million cancer risk estimate <u>Acute</u> : CDPR Human Health Reference Level (HHRL)
Imidacloprid	Acute: 283 Chronic: 500	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	Municipal Drinking Water	<u>Acute</u> : DPR Human Health HHRL <u>Chronic</u> : USEPA Chronic Human Health Benchmarks for Pesticides (HHBPs)
Mefenoxam	Acute: 3000 Chronic: N/A	A single exceedance of the Benchmark	Municipal Drinking Water	USEPA One-Day or Acute HHBP
Napropamide	Chronic: 710	2 consecutive exceedances of the chronic Benchmark	Municipal Drinking Water	USEPA Chronic or Lifetime HHBP
Nitrate	10 (mg/L)	A single exceedance of the Benchmark	Municipal Drinking Water	USEPA Maximum Contaminant Level (MCL)

Temperature Policy

- 95) The Basin Plan includes the Policy for the Implementation of the Water Quality Objectives for Temperature in the North Coast Region (Temperature Policy), which specifies that activities resulting in water temperature increases shall be addressed on a case-by-case basis to reduce impairments and prevent further impairment. The Temperature Policy directs staff to examine and address temperature when developing regulatory orders or permits. At a minimum, any program or permit shall take actions to achieve temperature objectives and implement temperature TMDLs, including EPA-established TMDLs. To attain and maintain the water quality objectives for temperature, The North Coast Water Board and its staff implement programs and collaborate with others in such a manner as to prevent, minimize, and mitigate temperature alterations associated with sediment discharges and

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controllable water quality factors. Controllable water quality factors affecting water temperature include any anthropogenic activity which results in the removal of riparian vegetation, sediment discharges, impoundments and other channel alterations, reduction of instream summer flows, and the reduction of cold-water sources. The Temperature Policy directs the North Coast Water Board to implement actions to achieve Water Quality Objectives using all available tools, including WDRs.

- 96) This Order implements the Temperature Policy through requirements and prohibitions within Streamside Areas which: (1) allow the natural establishment and abundance of native riparian vegetation; (2) allow sufficient native riparian vegetation to minimize and control discharge of sediment, nutrients, and pesticides to surface waters; (3) install and/or maintain a minimum width of riparian vegetation and vegetated buffers to achieve site-specific potential effective shade and prevent discharges of sediment, nutrients and pesticides to surface waters; and (4) allow essential functions supporting beneficial uses (e.g., sediment filtering, woody debris recruitment, streambank stabilization, nutrient cycling, pollutant filtering, and shading).

Groundwater Protection

- 97) The Policy Statement for Groundwater Protection in the North Coast Region, Resolution No. R1-2022-0040, acknowledges the North Coast Water Board is committed to the protection of high-quality groundwater and the restoration of degraded groundwater to support all beneficial uses now and in the future, especially given increasing reliance on groundwater in the North Coast Region. Groundwater supplies in the Smith River Plain are currently beneficially used for: (1) drinking water, sanitation, and hygiene consistent with the Human Right to Water described in North Coast Water Board Resolution No. R1-2019-0024; (2) agriculture and industry which are major economic drivers in the region, (3) Native American ceremonies and traditions; (4) aquaculture operations; and (5) replenishment of flows to streams (e.g., contribution to instream flows) to maintain beneficial uses of surface water, especially cold freshwater habitat, migration of aquatic specifics, wildlife habitat, and spawning, reproduction, and early development of fish.
- 98) This Order is consistent with the Policy Statement for Groundwater Protection in the North Coast Region by requiring compliance with Receiving Water Limitations, implementation of groundwater protection management practices, groundwater monitoring, and adaptive management where current practices are not adequate to control, minimize, or eliminate agricultural discharges to groundwater.

Other North Coast Water Board Policies

- 99) This Order is consistent with the approach and best practices identified in Basin Plan policies for the control of excess sediment discharge and delivery by requiring Enrollees to inventory sediment discharge sites on the Commercial Lily Bulb Operation, implement sediment and erosion control management practices, monitor management practice effectiveness, and implement adaptive management where current practices are not adequate to control, minimize, or eliminate excessive sediment discharge.

2. Water Code Considerations

- 100) The California Water Code (Water Code) grants authority to the State Water Board with respect to state drinking water, water rights and water quality regulations and policy, and establishes nine North Coast Water Boards with authority to regulate discharges of waste that could affect the quality of waters of the state and to adopt water quality regulations and policy.
- 101) Water Code section 13260(a) requires that any person, citizen, or domiciliary discharging waste or proposing to discharge waste, other than into a community sewer system, that could affect the quality of the waters of the state, file a report of waste discharge (ROWD) to obtain coverage under WDRs or a waiver of WDRs. Waste, person, citizen, and domiciliary are defined in Water Code section 13050. For purposes of this Order, the eNOI is considered a ROWD.
- 102) Water Code section 13263(a) requires waste discharge requirements to implement any relevant water quality control plans that have been adopted and to take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241. Relevant plans and policies are discussed throughout. See sections G.1 in the Findings for a discussion of beneficial uses and water quality objectives.
- 103) Water Code section 13241 requires North Coast Water Boards to consider several factors, including “economic considerations” when establishing water quality objectives to ensure the reasonable protection of beneficial uses and prevent nuisance. Economic Considerations findings are included below.
- 104) Pursuant to Water Code section 13263(g), no discharge of waste into the waters of the state, whether or not the discharge is made pursuant to WDRs, shall create a vested right to continue to discharge. All discharges of waste into waters of the state are privileges, not rights.
- 105) Pursuant to Water Code section 13263(i), the North Coast Water Board may prescribe general WDRs for a category of discharges if the discharges are produced by the same or similar operations, involve the same or similar types of waste, require the same or similar treatment standards, and are more appropriately

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regulated under general WDRs than individual WDRs. Discharges from Farming have certain common characteristics, such as similar land disturbing activities, use of nutrients and pesticides, agricultural practices, and agricultural road networks that require similar best management practices to control, minimize, and/or prevent discharges of waste. These types of discharges are more appropriately regulated under general WDRs.

- 106) This Order is consistent with Water Code section 13267 through the Monitoring and Reporting Program and through provisions of the Order that allow access via inspections. Water Code section 13267 states in relevant part:

“(b)(1) In conducting an investigation..., the North Coast Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or, discharging, or who proposes to discharge waste within its region... shall furnish, under penalty of perjury, technical or monitoring reports which the North Coast Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the North Coast Water Board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports.

(b)(2) when requested by the person furnishing a report, the portions of a report that might disclose trade secrets or secret processes may not be made available for inspection by the public but shall be made available to governmental agencies... However, these portions of a report shall be available for use by the state or any state agency in judicial review or enforcement proceedings involving the person furnishing the report.

(c) In conducting an investigation..., the North Coast Water Board may inspect the facilities of any person to ascertain whether... waste discharge requirements are being complied with. The inspection shall be made with the consent of the owner or possessor of the facilities or, if consent is withheld, with a warrant issued pursuant to... Title 13 (commencing with §1822.50) of Part 3 of the Code of Civil Procedure.”

- 107) Water Code section 13268 provides that any person who fails to furnish a technical or monitoring program or who falsifies any information provided in a technical or monitoring report, pursuant to Water Code section 13267, may be subject to administrative civil liability in an amount not to exceed \$1,000 per day of violation. If the matter is referred to the Attorney General for judicial enforcement, a higher liability of \$5,000 per day of violation may be imposed. Higher penalties may also be imposed for any person that knowingly commits any violation in section 13268 of the Water Code.

108) Water Code section 13350 provides that any person who discharges waste in violation of WDRs may be (1) subject to administrative civil liability imposed by the North Coast Water Board or State Water Board in an amount of up to \$5,000 per day of violation, or up to \$10 per gallon of waste discharged; or (2) subject to civil liability imposed by a court in an amount of up to \$15,000 per day of violation, or up to \$20 per gallon of waste discharged. The actual calculation and determination of administrative civil penalties must be consistent with the State Water Board Water Quality Enforcement Policy (Enforcement Policy) and the Porter-Cologne Act.

3. Nonpoint Source Policy

109) The State Water Board's Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program adopted on May 20, 2004 (NPS Policy) requires regulation of nonpoint source pollution³⁸ in California through WDRs, waivers of WDRs, or discharge prohibitions (Water Code §13146; Gov. Code §11353).

110) The federal Clean Water Act (CWA) requires states to develop a program to protect the quality of water resources from the adverse effects of nonpoint source (NPS) water pollution. The NPS Policy is the State Water Board framework for addressing NPS pollution and requires each of the nine North Coast Water Boards to regulate NPS pollution, including agricultural discharges, via WDRs, Waivers of WDRs, or a prohibition. The NPS Policy states that North Coast Water Board implementation programs for NPS pollution control must include five key elements, as follows:

Key Element 1: An NPS control implementation program's ultimate purpose shall be explicitly stated. Implementation programs must, at a minimum, address NPS pollution in a manner that achieves and maintains water quality objectives and beneficial uses, including any applicable antidegradation requirements.

Key Element 2: An NPS control implementation program shall include a description of the management practices and other program elements that are expected to be implemented to ensure attainment of the implementation program's stated purpose(s), the process to be used to select or develop management practices, and the process to be used to ensure and verify proper management practices implementation. The North Coast Water Board must be able to determine that there is a high likelihood that the program will attain water quality requirements. This will include consideration of the management practices to be used and the process for ensuring their proper implementation.

Key Element 3: Where the North Coast Water Board determines it is necessary to allow time to achieve water quality requirements the NPS control implementation program shall include a specific time schedule, and corresponding quantifiable milestones designed to measure progress toward reaching the specified requirements.

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Key Element 4: An NPS control implementation program shall include sufficient feedback mechanisms so that the North Coast Water Board, Enrollees, and the public can determine whether the program is achieving its stated purpose(s) or whether additional or different management practices or other actions are required.

Key Element 5: Each North Coast Water Board shall make clear, in advance, the potential consequences for failure to achieve an NPS control implementation program's stated purpose.

111) This Order constitutes an NPS Implementation Program for discharges regulated by this Order. This Order is consistent with all key elements of the NPS Policy as described below:

- a) The ultimate purpose of this Order is explicitly stated in Section I: Background and Purpose. This Order includes requirements to meet applicable water quality objectives and beneficial uses, including any applicable State Water Board Resolution 68-16 (Antidegradation Policy) requirements. Further, discussion of this Order's implementation of antidegradation requirements is given below. This Order is consistent with Key Element 1.
- b) The North Coast Water Board is generally restricted by Water Code section 13360 from prescribing the particular manner of compliance with an order requirement. However, it may set forth receiving water limitations and performance standards and require Enrollees to report on what practices they have or will implement to meet those receiving water limitations and performance standards. Examples of the types of practices that Commercial Lily Bulb Operations may implement to meet program goals and objectives have been described and evaluated in the Environmental Impact Report. This Order requires each individual operation to develop a Farm Evaluation that will describe its management practices in place to protect surface water and groundwater quality. This Order also requires Enrollees to comply with an Adaptive Management Program in response to: (1) exceedances of a Water Quality Benchmark or Receiving Water Limitation, (2) where management practices are not properly implemented, or (3) as directed by the Executive Officer. The Adaptive Management Program includes iterative adaptive management for improved management practices to address Water Quality Benchmark or Receiving Water Limitation exceedances. The requirements of this Order are consistent with Key Element 2.
- c) The North Coast Water Board acknowledges that, given existing water quality conditions and the time needed to develop and implement actions to address discharges, it may be necessary to allow time to achieve Receiving Water Limitations in this Order. The Adaptive Management Program

required by this Order includes a time schedule and specific quantifiable milestones for implementing required management practices and meeting Receiving Water Limitations as soon as practicable. The Adaptive Management time schedule requirements in this Order are consistent with Key Element 3.

- d) To provide feedback on whether program goals are being achieved, this Order requires surface and groundwater quality monitoring to evaluate the effectiveness of implemented management practices. This feedback will allow iterative implementation of practices to ensure that program goals are achieved. The North Coast Water Board finds the level of surface and groundwater quality monitoring required by this Order will result in sufficient data collection and reporting to allow for meaningful feedback on the effectiveness of management practices, while also avoiding unwarranted or excessive time and costs on Enrollees. The feedback mechanisms required by this Order are consistent with Key Element 4.
- e) This Order establishes the following consequences where requirements are not met: (1) the Coalition or Enrollees will be required, in an iterative process, to conduct additional monitoring and/or implement management practices where water quality objectives are not being met; (2) Enrollees will be required, where the Coalition fails to meet the requirements of this Order, to enroll in the Order individually, and (3) the North Coast Water Board will initiate progressive enforcement action through its Enforcement Policy where the iterative management practices process is unsuccessful, program requirements are not met, or time schedules are not met. Section II of this Order describes the consequences for failure to meet requirements through the North Coast Water Board's Enforcement Policy and is consistent with Key Element 5.

4. Statement of Policy with Respect to Maintaining High Quality Waters in California (Antidegradation Policy)

112) Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal antidegradation policy. In 1968, the State Water Board adopted the Statement of Policy with Respect to Maintaining High Quality of Waters in California, Resolution No. 68-16 (Antidegradation Policy).³⁹ The State Antidegradation Policy is deemed to incorporate the Federal Antidegradation Policy where the federal policy applies under federal law.⁴⁰ The State Antidegradation Policy establishes a state policy to regulate the granting of permits and licenses for the disposal of wastes into the waters of the state so as to achieve the highest water quality consistent with maximum benefit to the people of the State.⁴¹ The federal and state policies generally require that the existing quality of water bodies be maintained, unless degradation is justified through specific findings.⁴²

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113) The Antidegradation Policy, by its terms, applies only to high-quality waters of the state. High quality waters are those surface waters or areas of groundwater that have a baseline water quality better than required by water quality control plans and policies. The baseline water quality considered in making the appropriate findings is generally the best quality of the water since 1968, the year of the adoption of the Antidegradation Policy.⁴³ This determination is made on a waterbody-by-waterbody and constituent-by-constituent basis. In the context of diffuse discharges regulated by a general order, the State Water Board provided the following guidance on determining whether a discharge impacts high quality waters:

“When assessing baseline water quality for a general order, we find a general review and analysis of readily available data is sufficient. . . . North Coast Water Boards should not delay the implementation of a regulatory program in order to conduct a comprehensive baseline assessment and analysis—especially where, as here, the general order imposes essentially the same iterative approach for management practices and other requirements regardless of whether or not the receiving water is high quality⁴⁴.”

114) If a discharge will degrade high quality water, the discharge is allowable if there is a finding that any change in water quality (1) will be consistent with maximum benefit to the people of the State, (2) will not unreasonably affect present and anticipated beneficial uses of such water, and (3) will not result in water quality less than that prescribed in state policies. Maximum benefit determinations should be made on a case-by-case basis, with consideration given to various factors, including economic and social costs, tangible and intangible, of the proposed discharge, as well as the environmental aspects of the proposed discharge, including benefits to be achieved by enhanced pollution controls, and implementation of feasible alternative treatment or control methods. Both costs to the discharger and affected public must be considered.⁴⁵

115) Additionally, the Board must find that any activities that result in discharges to such high quality waters are required to use the best practicable treatment or control of the discharge necessary to avoid pollution or nuisance and to maintain the highest water quality consistent with the maximum benefit to the people of the State. Best practicable treatment or control (BPTC) determinations should consider relative benefits of proposed treatment or control methods to proven technologies; performance data; alternative methods of treatment or control; methods used by similarly situated dischargers; and/or promulgated best available technology or other technology-based standards. The costs of the treatment or control should also be considered and would be considered in determining the “maximum benefit to the people of the State.”⁴⁶

116) North Coast Water Board staff completed a general baseline water quality assessment for surface and groundwater in the Smith River Plain based on readily

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available data. The primary constituents of concern for groundwater include nitrates and pesticides. The primary constituents of concern for surface water include nutrients, pesticides (synthetic compounds and dissolved copper), and turbidity. Focusing on these constituents of concern, the North Coast Water Board evaluated water quality using all available data from multiple data sources maintained in the following management systems: CEDEN, GeoTracker, CDPR's SURF database, CDPR's well testing program, and GAMA⁴⁷. Existing water quality in the Smith River Plain is outlined in the Findings above. This Order accounts for the fact that at least some surface water and groundwaters in the Smith River Plain are considered high-quality for one or more constituents of concern per the Antidegradation Policy.

- 117) Commercial lily bulb farming in the Smith River Plain involves soil disturbance and use of agricultural chemicals, both of which can generate discharges of waste. If not properly managed, these discharges can degrade water quality, cause or contribute to pollution and nuisance conditions, and adversely affect beneficial uses of waters of the state. The North Coast Water Board anticipates that the requirements of this Order will prevent degradation of high-quality waters over time. Since implementation of the 2021 Management Plan, in which all lily bulb growers agreed to voluntarily implement a suite of water quality management practices designed to reduce pesticide and nutrient runoff, erosion, and direct discharge of pollutants to surface waters, concentrations of synthetic pesticides and dissolved copper have decreased. Additional measures required under this Order are anticipated to further reduce discharge pollutant loadings over time. The North Coast Water Board cannot find, however, that there will be no degradation of high-quality waters under the requirements of this Order. In particular, the North Coast Water Board anticipates degradation of some high-quality waters during the period of time that Dischargers are working to achieve compliance with receiving water limitations via the iterative implementation of management practices. As appropriate controls and management practices are implemented, the degradation is expected to be limited and, in many cases, reversible. The Order authorizes degradation only up to the level of the objectives and requires implementation of controls such that discharges will not cause or contribute to exceedances of those objectives within a discrete time schedule. While the North Coast Water Board makes findings authorizing degradation of high-quality waters under this Order, it will, wherever feasible, require controls to prevent and reverse degradation by working with dischargers and third parties to ensure controls are implemented in an iterative manner as technology evolves and advances.
- 118) The North Coast Water Board finds that any limited degradation that may occur from discharges to high-quality surface and groundwater water bodies even following implementation of all applicable management practices designed to control discharges is to the maximum benefit of the people of the State. In setting the requirements of this Order, the Board has considered the social and economic

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significance of the commercial lily bulb industry in the Smith River Plain, including its contribution to agricultural production and associated economic activity in Del Norte County. At the same time, the Board recognizes that Tribal representatives and other community members have stated that the commercial lily bulb industry does not broadly support the local community and that the economic benefits are not shared equitably. Some of the benefits are externalized, relative to where the lily bulbs are grown and environmental and cultural impacts occur⁴⁸.

- 119) The North Coast Water Board also recognizes the social and environmental costs associated with the commercial lily bulb industry, including impacts on aquatic life, tribal uses, recreational uses, and local residents, **[expand on social and environmental costs]**⁴⁹. The Smith River Plain provides habitat to numerous threatened and endangered aquatic species and serves as crucial environmental trust resources for cultural, ceremonial, and subsistence beneficial uses for the Tolowa Dee-ni' Nation. This Order addresses these costs by, among other provisions, requiring compliance with Receiving Water Limitations through the Adaptive Management framework and robust surface water monitoring to verify compliance.
- 120) This permitting approach is to the maximum benefit of the people of the state because alternative methods of regulation, such as immediate compliance with Receiving Water Limitations or imposition of additional, specific discharge prohibitions, may result in immediate cessation of discharges, threatening the benefits associated with this agricultural activity.
- 121) The Board finds this Order and the requirements herein to be, on balance, supportive of environmental and water quality benefits, local employment, and the community. For these reasons, any limited degradation that may occur as a result of Commercial Lily Bulb Operations, despite implementation of measures required by this Order, is consistent with the maximum benefit to the people of the state.
- 122) As detailed in above Findings, the Basin Plan assigns 20 beneficial uses to surface and ground water in the Smith River Plain. This Order protects beneficial uses by meeting water quality objectives, at a minimum, which is set as the floor of the Antidegradation Policy. Waste discharges must be reduced and water quality improved to achieve water quality objectives and protect beneficial uses. Waste discharges must not cause or contribute to exceedances of water quality objectives either immediately or through a specific time schedule.
- 123) The North Coast Water Board further finds that the permitted discharges will be controlled by BPTC. The North Coast Water Board cannot dictate the manner of compliance with water quality orders (Wat. Code, section 13360), and no single set of management practices is appropriate for every field. Rather, BPTC must be implemented through a combination of practices that sometimes may be site specific that will ensure that discharges meet water quality objectives and eliminate

unreasonable degradation. This Order requires Farm Evaluations, Irrigation and Nitrogen Management Plans, management practice tracking, and surface and groundwater water quality monitoring and reporting that are designed to ensure that degradation is prevented or minimized and that management practices are protective of water quality. The Order relies on implementation of practices and treatment technologies that constitute BPTC/best efforts, based to the extent possible on existing data. Management measures and monitoring may be modified as data are assessed and reported and whenever site evaluations show that measures need to be improved to meet water quality standards.

5. Sources of Drinking Water Policy

- 124) The Sources of Drinking Water Policy (Policy) (SWRCB Resolution No. 88-63) established the principle that all surface and ground waters within the State are considered suitable or potentially suitable for the municipal and domestic supply ("MUN") beneficial use with certain exceptions. Exceptions applicable to groundwater include: where there is contamination (unrelated to the pollution incident) that cannot reasonably be treated for domestic use; where groundwater contains total dissolved solids ("TDS") exceeding 3,000 milligrams per liter and is not reasonably expected to supply a public water system; and where there is insufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.
- 125) The Policy acknowledges North Coast Water Boards have discretion to separately evaluate whether bodies of water are presently or potentially suitable for MUN designation. North Coast Water Boards shall also assure that the beneficial uses of municipal and domestic supply are designated for protection wherever those uses are presently being attained, and assure that any changes in beneficial use designations for waters of the State are consistent with all applicable regulations adopted by the Environmental Protection Agency

6. Human Right to Water

- 126) On February 16, 2016, and April 23, 2019, the State Water Board and the North Coast Water Board adopted resolutions (Resolution No. 2016-0010 and R1-2019-0024, respectively) identifying the human right to water as a top priority and core value of the State Water Board and Regional Water Quality Control Boards (collectively the Water Boards) in association with Water Code section 106.3. The resolutions stated the Water Boards will work "to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations." This Order promotes that policy by requiring the Enrollees to meet water quality objectives, as applicable, designed to protect human health and ensure that water is safe for domestic uses.

7. Statewide Precedential Order

- 127) The State Water Board Irrigated Lands Regulatory Program sets forth precedential requirements for all Regional Irrigated Lands in DWQ 2018-0002 In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Enrollees Within the Eastern San Joaquin River Watershed (Statewide Precedential Order).
- 128) Lily bulb cultivation is irrigated agriculture; therefore, Enrollees regulated under this Order are part of the State and North Coast Water Board Irrigated Lands Regulatory Program and subject to the Statewide Precedential Order requirements that the State Water Board designated as precedential. This Order maintains consistency with the Statewide Precedential Order requirements by including conditions related to Enrollee outreach events, Farm Evaluations, sediment and erosion controls, irrigation and nitrogen management, record keeping, groundwater quality monitoring for Enrollees, and the option for grower coalition(s). Additionally, this Order requires monitoring and reporting to verify and provide feedback on the degree and effectiveness of implementation of these precedential requirements.
- 129) Specifically, this Order implements Statewide Precedential Order requirements through: (1) Irrigation and Nutrient Management Plans; (2) Drinking Water Supply Well Monitoring; (3) Groundwater Quality Trend Monitoring; (4) Compliance education; and (5) Groundwater Protection Plans that include Groundwater Protection Targets as described in Attachment A.

Groundwater Vulnerability Areas

- 130) Precedential requirements set forth in the Statewide Precedential Order establish “high and low vulnerability” groundwater basins for threat from nitrates. The Statewide Precedential Order requires that the development of Groundwater Protection Formulas and certification of irrigation and nutrient management plans be prioritized in “high vulnerability” groundwater basins which are defined in the Statewide Precedential Order as areas “where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities.”
- 131) The North Coast Water Board adopted the Groundwater Basin Evaluation and Prioritization Resolution No. R1-2021-0006⁵ which identifies priority groundwater basins having a relatively high threat from salts and nutrients and that would benefit from salt and nutrient management planning. The North Coast Water Board is required to update these priority basins every five years per the State Water Board Resolution No. 2009-0011, Recycled Water Policy. The Smith River Plain is categorized as a Priority 2 groundwater basin under the Groundwater Basin Evaluation and Prioritization Resolution.

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- 132) In 2000, in response to Executive Order D-5-99, State Water Board staff created a map where published hydrogeologic information indicates soil or rock conditions that may be more vulnerable (or susceptible) to groundwater contamination: “Hydrogeologically Vulnerable Areas⁵⁰.” The map was created using Department of Water Resources (DWR) and US Geological Survey (USGS) data to identify areas where geologic conditions are more likely to allow recharge at rates substantially higher than in lower permeability or confined areas of the same groundwater basin. The Smith River Valley Groundwater Basin was included in this 2000 map.
- 133) This Order establishes the Smith River Plain as a ‘high vulnerability’ groundwater basin for the purposes of the relevant Statewide Precedential Requirements due to its Priority 2 groundwater basin status, its classification as a ‘Hydrogeologically Vulnerable Area,’ and 3 of 7 groundwater samples with documented exceedances of the nitrate MCL in the 2015 Smith River Plain Groundwater Interim Monitoring Report⁵¹.
- 134) As more data becomes available through monitoring and reporting under this Order, and no sooner than five years following Order adoption, the North Coast Water Board’s Executive Officer may re-classify the Smith River Plain groundwater vulnerability status if data indicates that discharges from lily bulb cultivation are not causing or contributing to exceedances of water quality objectives, or a trend of degradation of groundwater that may threaten applicable basin plan beneficial uses.

8. California Environmental Quality Act

- 135) For the purpose of adoption of this Order, the North Coast Water Board is the lead agency pursuant to the California Environmental Quality Act (CEQA) (Pub. Res. Code §21000 et seq.).
- 136) On October 10, 2024, the North Coast Water Board sent a Notice of Preparation (NOP), which included an Initial Study, to public agencies and persons with potential interest in the project. Copies of the NOP and Initial Study were available for review at the North Coast Water Board Santa Rosa office. Additionally, the NOP and attached Initial Study were posted at the North Coast Water Board’s webpage (<http://www.waterboards.ca.gov/northcoast/>) and an announcement of its availability was sent to individuals that subscribed to electronic mailing lists relevant to the proposed Lily Bulb Order. The NOP and the attached Initial Study are available online at: <https://ceqanet.lci.ca.gov/2024100484>
- 137) On October 22, 2024, the North Coast Water Board held a hybrid scoping meeting to solicit input from agencies and interested parties on issues to be addressed in the EIR. The scoping meeting included a description of the meeting purpose, proposed requirements, presented an overview of the environmental review process and preparation of the EIR, and included a public comment period.

- 138) During the public comment period for the Initial Study the North Coast Water Board received written and oral comments from Northcoast Environmental Center, California Farm Bureau, California Department of Fish and Wildlife, California Coastal Commission, Save California Salmon, Lily Bulb Growers (Rob Miller, Matthew Westbrook, Don Crockett), Sharon Tanner and Brian McNaughton, Native American Heritage Commission, Phoebe Lenhart, Richard Blair, Alicia Williams, Gil Vargas, Carl Page, John Roberts, Janelle Kobalt, Josefina Barrantes (Environmental Protection Information Center), Regina Chichizola (Save California Salmon), Andrew Orahoske, Katie Rian (California Department of Fish and Wildlife), and Candice Vargas.
- 139) Prior to the adoption of this Order, and after considering public comment, the North Coast Water Board certified a final Environmental Impact Report (EIR) that identifies the potential environmental impacts associated with this Order and identifies mitigation measures to reduce the potential environmental impacts.
- 140) This Order relies on the environmental impact analysis contained in the final EIR to satisfy the requirements of CEQA. The final EIR identified, disclosed, and analyzed the potential environmental impacts of the Order. The potential compliance activities undertaken by the regulated Enrollees in response to this Order fall within the range of compliance activities identified and analyzed in the final EIR. Therefore, all potentially adverse environmental impacts of this Order have been identified, disclosed, and analyzed in the final EIR. If it is determined that an Enrollee filing for coverage under this Order could create impacts not identified in the final EIR, individual WDRs would be prepared for that Enrollee and additional CEQA analysis performed, which would likely tier off the final EIR as necessary. (See Cal. Code Regs., tit.14 §15152). [PLACEHOLDER for Findings from Final Environmental Impact Report].

H. Cost Considerations

- 141) Water Code section 13241 requires the North Coast Water Board to consider certain factors, including economic considerations, in the adoption of water quality objectives. Water Code section 13263 requires the North Coast Water Board to take into consideration the provisions of Water Code section 13241 in adopting waste discharge requirements. The following findings discuss the anticipated cost of compliance with the Order⁵². Several assumptions were required to be made for these analyses and there are several inherent limitations and uncertainties, discussed below.
- 142) When establishing monitoring and reporting requirements under Water Code section 13267, the North Coast Water Board must ensure that the burden, including costs, of the reports bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. Many of the costs considered below are costs associated with the monitoring and reporting

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requirements of this Order. Enrollees can reduce their costs by joining a Third-Party Program for water quality monitoring and reporting in lieu of individual monitoring and reporting.

- 143) The monitoring and reporting requirements of this Order allows the North Coast Water Board to identify agricultural waste discharges with a higher risk of degrading water quality so that those discharges may be promptly minimized or prevented. Monitoring and reporting of nitrogen application and groundwater quality, protect human health by informing the North Coast Water Board of discharges that may affect the quality of water designated as municipal and domestic supply and by allowing assessment of the extent to which the water quality objectives are being met.
- 144) The North Coast Water Board needs these reports to document and ensure compliance with this Order. The North Coast Water Board finds that the burden of the requirements of the Order bears a reasonable relationship to the benefits of the requirements.

1. Cost of Compliance with the Order

- 145) The cost of compliance with the Order under existing conditions includes the costs associated with water quality fees, monitoring and reporting, and any management practices that may need to be implemented pursuant to the Order requirements. These costs are described further below.

Water Quality Fees

- 146) The State Water Board sets a Water Quality Fee Schedule, which includes agricultural and Irrigated Lands Regulatory Programs throughout the state, as specified in California Code of Regulations, title 23, section 2200.6. All enrolled Commercial Lily Bulb Operations must pay the State Water Board fees on an annual basis. Although the State Water Board fees may change from year to year, the fee categories/schedule for the 2025/2026 fiscal year is shown below.
- a) If an Enrollee is a member of a group that has been approved by the North Coast Water Board or North Coast Water Board's Executive Officer to manage fee collection and payment, then the annual fee shall be \$1.50 per acre for all enrolled parcels.
 - b) If an Enrollee is not a member of a group that has been approved by the North Coast Water Board or North Coast Water Board's Executive Officer to manage fee collection and payment, then the annual fee shall be: \$37.40 per acre up to 300 acres plus \$18.71 per acre over 300 acres with a minimum fee of \$710.

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147) In Regions that have implemented Irrigated Lands Orders with Third-Party Programs or Grower Coalitions, most Enrollees have elected to enroll through those entities. Coalitions in Irrigated Lands Regulatory Programs manage fee collection, conduct representative surface and groundwater monitoring, provide compliance education, and assist Enrollees with general Order requirements. The North Coast Water Board anticipates that most Enrollees under this Order will also elect to enroll through a Coalition.

Compliance with Order Requirements

148) All Enrollees must comply with requirements to implement and adapt management practices related to sediment and erosion control; irrigation, pesticide, and nutrient management; and Streamside Area setbacks. This Order provides Enrollees flexibility in selecting management practices and requires Enrollees to monitor and report discharges and implement management practices to minimize or prevent discharges of waste.

149) Enrollees may be required to implement improved or additional management practices, as necessary, and report on the water quality-related outcomes of their management practice implementation. Enrollees must, ultimately, implement management practices that result in compliance with the Order.

150) Management practices associated with irrigation, nutrient and pesticide use, and sediment and erosion control are already being implemented by lily bulb growers in the Smith River Plain. This may be due to requirements imposed by other regulatory agencies (e.g., pesticide tracking and reporting by the Department of Pesticide Regulation and Agricultural Commissioners) and through voluntary actions supported by the 2021 Management Plan.

151) Implementation of management practices may also have direct net cost benefits to a Commercial Lily Bulb Operation (e.g., irrigation and nutrient management can result in less fertilizer costs and reduced water/pumping costs for irrigation; sediment and erosion management minimize or prevent erosion of valuable topsoil).

152) The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has developed standard agricultural management practices to address irrigation and nutrient management, pesticide management, and sediment and erosion control management, some of the more common of which are discussed below. Implementation of many of these practices would result in compliance with multiple requirements of the Order. Table I.5 provides estimated costs of management practices/scenarios Enrollees may implement to meet the requirements in the Order, as reported by USDA, NRCS.

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- a) Grassed Waterway– involves installing a shaped or graded channel with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. Runoff is conveyed from terraces, diversions, or other water concentrations without causing erosion or flooding. Water quality is protected and/or improved. Costs range between \$2,000 and \$3,000 per acre.
- b) Contour Farming – this practice is installed on the entire field. A survey is completed by trained and certified Federal, State, local personnel or consultant to determine and "stake" contour row arrangement. Permanent row markers are established to ensure that this practice is maintained for the life of this practice. All field operations including disking, bedding, planting, and cultivation are performed on the contour which is near perpendicular to the field slope. Costs range between \$15 to \$20 per acre.
- c) Filter Strip – involves establishing a strip or area of herbaceous vegetation that removes contaminants from overland flow. Filter strips can be established anywhere environmentally sensitive areas need to be protected from sediment, or other suspended solids, and dissolved contaminants in runoff. Costs range between \$200 to \$300 per acre.
- d) Integrated Pest Management (IPM) program – involves implementing a site-specific combination of pest prevention, pest avoidance, pest monitoring, and pest suppression strategies. An IPM approach seeks to prevent or mitigate offsite pesticide risks to water quality from leaching, solution runoff and adsorbed runoff losses; and prevent or mitigate on-site pesticide risks to pollinators and other beneficial species through direct contact; among other goals. Costs range between \$50 and \$100 per acre.
- e) Nutrient Management – involves managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments. The practice is implemented to minimize agricultural nonpoint source pollution of surface waters and groundwater, among other reasons. Costs associated with this practice include soil testing, analysis, and implementation of the nutrient management plan and recordkeeping. Costs range between \$10 and \$320 per acre.
- f) Riparian Vegetation Buffer – involves establishment of an area of predominantly trees and/or shrubs located adjacent to and up-gradient from waterbodies. The practice may be implemented to reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff and reduce excess nutrients and other chemicals in shallow groundwater flow; reduce pesticide drift entering the waterbody; restore riparian plant communities; create shade to lower or maintain water temperatures to improve habitat for aquatic organisms; or to provide other benefits. Costs

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vary based on whether riparian buffer vegetation is established through seeding, cuttings, bare-root plantings, or small or large containers. For scenarios where land is taken out of production to establish the riparian vegetation buffer, foregone income is considered. Costs range between \$3,000 to \$5,500 per acre.

- g) Retention/Detention Basin – involves constructing a basin with an engineered outlet, formed by excavating a dugout, constructing an embankment, or a combination of both. The purpose of the retention/detention basin is to capture and detain pollutant-laden runoff, or other debris for a sufficient length of time to allow it to settle out in the basin. Costs are estimated between \$6,000 to \$13,000 per basin.
- h) Vegetated Treatment Area – involves permanent herbaceous vegetative area or channel installed down slope from a planted area. Stormwater runoff is directed into the VTA to capture dissolved pollutants. This practice addresses water quality degradation due to uncontrolled pesticide runoff that can flow into surface waters or leach into ground water. Costs are estimated between \$10,000 and \$12,000 per acre.

153) These potential costs were considered when the water quality protection requirements were developed for the Order.

Table I.5: Estimated Costs⁵³ of Management Practices/Scenarios for Water Quality Protection

Management Practice	Typical Scenario Size	Unit Cost	Total Cost (low)	Total Cost (High)
Grassed Waterway (412)	1 acre	\$2000-\$3000/acre	\$2,000	\$3,000
Contour Farming (330)	10 acres	\$15-\$20/acre	\$150	\$200
Filter Strip (393)	1 acre	\$200-\$300/acre	\$200	\$300
Integrated Pest Management (IPM) program (595)	40 acres	\$50-\$100/acre	\$2,000 g	\$4,000
Nutrient Management (590)	40 acres	\$10-\$320/acre	\$400	\$12,800

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Management Practice	Typical Scenario Size	Unit Cost	Total Cost (low)	Total Cost (High)
Riparian Vegetation Buffer (391)	1.5 acres	\$3,000-5,000/acre	\$4,500	\$7,500
Retention Basin (638)	Basin	Each	\$6,000	\$13,000
Vegetated Treatment Area (635)	1 acre	\$10,000-\$15,000/acre	\$10,000	\$15,000

Monitoring and Reporting

154) All Enrollees are required to conduct surface water and groundwater monitoring and reporting either individually or as part of a Coalition effort. All Enrollees are required to report management practice implementation annually in their Farm Evaluation and report nitrogen applied and removed, in the Irrigation and Nitrogen Management Plan (INMP). Refer to Attachment A for monitoring and reporting requirements and Tables I.6-11 for estimated costs.

Table I.6: Estimated Cost of Surface Water Monitoring Requirements

Parameter	Annual Cost (Analytical + Materials and Labor) per Monitoring Station	Per Acre Cost (assumes 1000 acres) per Monitoring Station	Per Acre Cost for 7 Monitoring Stations
Dissolved Copper	\$300	\$0.30	\$2.10
BLM Field Parameters	\$150	\$0.15	\$1.05
BLM Lab Parameters (optional)	\$600	\$0.60	\$4.20
Imidacloprid	\$900	\$0.90	\$6.30
Diuron	\$900	\$0.90	\$6.30
Ethoprop	\$900	\$0.90	\$6.30

Table 1.4 estimates the total annual cost of surface water monitoring requirements (per monitoring site) given a sampling frequency of three times per year. Collecting BLM lab

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parameters are **optional**; Enrollees or the Coalition may instead use tributary-specific default values for BLM Analysis given in Table A.5 in Attachment A: Monitoring and Reporting Program. Assuming seven monitoring sites and 1000 enrolled acres, the estimated cost per acre for surface water monitoring for Enrollees in a Coalition is **\$22.05**. If the default BLM lab parameters are not used, and instead BLM lab parameters are collected, the total cost is estimated to be **\$26.25 per acre**.

For Individual Enrollees, assuming monitoring of one site, the total of surface water monitoring is **\$3,150** per year. If the default BLM lab parameters are not used, the total cost is **\$3,750** per year. Per acre costs are variable by farm size.

Table I.7: Estimated Cost of Groundwater Trend Monitoring Requirements

Parameter	Annual Cost per location	Per Acre Cost (3 sites, 1000 acres)
Nitrate	\$750	\$2.25
Pesticides	\$1550	\$4.65

Table I.7 estimates the total cost of Groundwater Trend Monitoring Requirements. The total annual cost for Individual Enrollees would be **\$2,300**. The total annual per-acre cost for Enrollees in a Coalition would be **\$6.90** per acre.

Table I.8 estimates total cost of representative monitoring requirements for Enrollees in a Coalition and Individual Enrollees. Cost estimates assume the use of default values, where possible, for BLM analysis.

Table I.8: Estimated Cost of Groundwater Trend Monitoring Requirements

Task	Total Estimate for Individual Enrollees	Total Cost per acre for Enrollees in a Coalition
Surface Water Monitoring	\$3,150	\$22.05
Groundwater Monitoring	\$2,300	\$6.90
Total	\$5,450	\$28.95

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Table I.9 estimates farm-specific monitoring annualized over five years. Table I.10 provides those estimates for Enrollees in a Coalition.

Table I.9: Estimated Annualized Monitoring and Reporting Costs over Five Years for Individual Enrollees

Task	Cost Estimate	Requirements
Drinking Water Supply Well Monitoring (nitrates)	\$110 per well	Annual sampling for three years for nitrates and once every five years after that.
Drinking Water Supply Well Monitoring (pesticides)	\$200-1050 per well.	Sampling every five years for 6800(a) listed pesticides that the Enrollee has applied.
INMP Requirements	\$250 per farm	Includes annual soil and irrigation water testing and INMP certification ¹⁵ .
Annual Compliance Form	\$250-\$500	Includes management practice reporting, nitrogen reporting, outreach attendance, CEQA mitigation measure monitoring, and annual water quality monitoring results.
Trend Monitoring Report	\$250-500	Includes water quality results for five-year monitoring requirements and trend analysis.

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Table I.10: Estimated Annualized Monitoring and Reporting Costs Over Five Years for Enrollees in a Coalition

Task	Cost Estimate	Requirements
Drinking Water Supply Well Monitoring (nitrates)	\$110 per well	Annual sampling for three years for nitrates and once every five years after that.
Drinking Water Supply Well Monitoring (pesticides)	\$200-1050 per well.	Sampling every five years for 6800(a) listed pesticides that the Enrollee has applied.
INMP Reporting	\$2.50 per acre	Includes annual soil and irrigation water testing and INMP certification ¹⁶ .
Annual Compliance Report	\$12.50 per acre	Includes annual management practice reporting and annual water quality monitoring results.
Trend Monitoring Report	\$5.00 per acre	All elements and requirements as detailed in the MRP.

Technical Reports and Planning Documents

155)As part of Order compliance, Individual Enrollees and Coalitions on behalf of their enrolled members are required to submit the following technical reports and planning documents:

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Table I.11: Estimated Annualized Technical Reports and Planning Document Costs Over Five Years

Task	Cost Estimate	Requirements
Water Quality Monitoring Workplan (Individual Enrollees)	\$5000	Workplan that details how Enrollee shall comply with monitoring and reporting requirements as detailed in Attachment A: MRP.
Water Quality Monitoring Workplan (Coalition)	\$5000-\$10,000	Workplan that details how Coalition shall comply with monitoring and reporting requirements as detailed in Attachment A: MRP.
Groundwater Protection Plan (Coalition)	\$5,000-\$10,000	Coalition may elect to propose a Groundwater Protection (GWP) Formula to the Executive Officer as described in Attachment A: Section V.
Water Quality Management Plan (WQMP) for Surface Water	\$10,000-\$20,000	Enrollee or Coalition must submit a WQMP as part of Adaptive Management requirements that quantifiably demonstrate that practices implemented will meet Receiving Water Limitations of Order. Note: cost estimate includes WQMP development only. See Table I.3 for estimates of implementing management practices for water quality protection.
WQMP for Groundwater	\$10,000-\$20,000	Enrollee or Coalition must submit a WQMP as part of Adaptive Management requirements that quantifiably demonstrate that practices implemented will meet Receiving Water Limitations of Order. Note: cost estimate includes WQMP development only. See Table I.3 for estimates of implementing management practices for water quality protection.
Hydrogeological Evaluation of Groundwater Impacts	\$10,000-\$20,000	Enrollee or Coalition must submit a determination of parcels that may be causing or contributing to exceedance of Receiving Water Limitations in groundwater monitoring well.

I. Enforcement for Noncompliance

156) It is the policy of the State Water Board that every violation results in the appropriate enforcement response consistent with the priority of the violation established in accordance with the State Water Board Water Quality Enforcement

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Policy. This Policy acknowledges that enforcement prioritization enhances the Water Boards' ability to leverage their scarce enforcement resources and to achieve the general deterrence needed to encourage the regulated community to anticipate, identify, and correct violations. To that end, the Water Boards rank violations, then prioritize cases for discretionary enforcement action to ensure the most efficient and effective use of available resources.

- 157) The first step in enforcement prioritization is to determine the relative significance of each violation or series of violations at a particular facility. Significance should be determined by analyzing the severity of impacts to beneficial uses, the level of disregard for regulatory program requirements, and deviation from applicable water quality control plan standards or permit or order conditions. Class A priority violations are those violations that potentially pose an immediate and substantial threat to beneficial uses and/or that have the potential to cause significant detrimental impacts individually or cumulatively to human health or the environment.
- 158) The second step in enforcement prioritization involves establishing case priorities for discretionary enforcement actions against specific individual entities, and determining the appropriate remedial tool. Discharges identified as Class A will be further analyzed for the extent of impact to beneficial uses when Regional Water Boards prioritize cases and determine whether and how to proceed with enforcement.

The State Water Board Water Quality Enforcement Policy re-affirms the principle of progressive enforcement. Progressive enforcement is an escalating series of actions that allows for the efficient and effective use of enforcement resources to: (1) assist cooperative Enrollees in achieving compliance; (2) compel compliance for repeat violations and recalcitrant violators; and (3) provide a disincentive for noncompliance. Progressive enforcement may begin with notification of violations and compliance assistance, followed by enforcement orders compelling compliance, culminating in a complaint for civil liabilities. Progressive enforcement is not appropriate in all circumstances and is not considered a requirement when swift or immediate enforcement is needed or justified to address a particular violation.

- 159) Any instance of noncompliance with this Order constitutes a violation of the Water Code. Such noncompliance is grounds for enforcement action, and/or termination of coverage for waste discharges under this Order, subjecting the Enrollee to enforcement under the Water Code for further discharges of waste to surface or groundwater. Possible violations of Water Code section 13260 include failure to obtain required regulatory coverage. Possible violations of this Order include but are not limited to: failure to implement Order requirements; failure to implement adaptive management; failure to comply with receiving water limitations within the discrete time schedule; falsifying information or intentionally withholding information

required by applicable laws, regulations, or an enforcement order; failure to monitor or provide complete and accurate information as required; failure to pay annual water quality fees; or failure to submit required reports on time.

J. General Findings

- 160) Failure to prevent conditions that create or threaten to create pollution or nuisance will be sufficient reason to modify, revoke, or enforce this Order, as well as prohibit further discharge.
- 161) Water Code section 13260 subdivision (d) requires persons subject to waste discharge requirements to pay any annual fee established by the State Water Board.
- 162) The Executive Officer may make non-substantive changes to this Order to correct typographical errors or to maintain consistency within this Order or between the Order and its Attachments, e.g., to conform changes made during this Order development process that were inadvertently not carried through this entire Order. The Board will provide public notice of the non-substantive changes.
- 163) The Findings of this Order and the administrative record of the North Coast Water Board relevant to the General Waste Discharge Requirements for Lily Bulb Cultivation, were considered in establishing these waste discharge requirements.

II. Requirements

IT IS HERBY ORDERED that pursuant to Water Code sections 13260, 13263, and 13267, the Enrollee, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

Enrollees shall comply with all prohibitions, specifications, provisions, and other requirements described below unless otherwise noted.

A. Coverage Requirements

Requirements for Coverage

- 1) These General WDRs apply to discharges or potential discharges of waste from Commercial Lily Bulb Operations in the Smith River Plain (defined as the Smith River Hydrologic Subarea and the coastal terraces between Pyramid Point and the Oregon border) as described in Section I: Findings. Owners and/or operators of Commercial Lily Bulb Operations in the Smith River Plain are required to seek coverage under this Order.
- 2) An Enrollee may obtain coverage under this Order either individually or by enrolling in an approved Coalition. By joining a Coalition, the Enrollee agrees to be represented by the Coalition. Any Order requirements not fulfilled by the Coalition are the responsibility of the Enrollee. Consistent with the Water Board's Policy for Implementation and Enforcement of the NPS Policy, Enrollees are ultimately responsible for Order compliance, independent of the status of compliance measures being taken by Coalitions.

Obtaining Coverage and Electronic Notice of Intent

- 3) Enrollment in this Order requires the submittal of the electronic Notice of Intent (eNOI) (see Attachment E) pursuant to Water Code section 13260. Submittal of all other technical reports pursuant to this Order is required pursuant to Water Code section 13267. Failure to submit technical reports or the attachments in accordance with the time frames established by this Order, applicable Monitoring and Reporting Program (MRP) documents, or failure to submit a complete technical report (i.e., of sufficient technical quality to be acceptable to the Executive Officer); may subject the Enrollee to enforcement action pursuant to Water Code sections 13261, 13268, or 13350. Enrollees and Coalitions must submit technical reports in the format specified by the Executive Officer.
- 4) To obtain coverage under these General WDRs, Enrollees must submit an eNOI form with all required information including but not limited to: Assessor Parcel Numbers (APNs) covered by enrollment; Landowner(s); Operator(s); Contact

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information; and Coalition membership, if applicable.

- 5) eNOIs shall be updated within 30 days of a change in property ownership, Enrollee contact information, email contact information, or change in the parcels farmed by an Enrollee.
- 6) Property owners or operators shall complete an eNOI and enroll in the Order either individually or through an approved Coalition before **#DATE**. If the North Coast Water Board determines that coverage under this Order is not appropriate for any property owner or operator, the Executive Officer will inform the party in writing and may request that the party submit a Report of Waste Discharge (ROWD) to obtain an individual permit for the discharge of waste.
- 7) Coverage under this Order is not transferable to any person except after the completion of a new eNOI and submittal to the North Coast Water Board, and written approval by the North Coast Water Board's Executive Officer.
- 8) This Order regulates both landowners and operators but does not require enrollment by both parties. If the Enrollee is not the landowner, the Enrollee shall provide written notice of the Order and its requirements to any landowner whose parcel is covered by this Order. Both landowners and operators are responsible for complying with the requirements of this Order, regardless of whether the landowner or the operator is the enrolled party.

Termination of Coverage

- 9) Enrollees may terminate coverage under this Order by providing a 30-day written notice to the North Coast Water Board's Executive Officer and, if applicable, notice to the Coalition. At a minimum, the written notice must include the reason for terminating coverage (e.g., transfer of ownership, Enrollee applied for and obtained individual WDRs, discharge was discontinued, etc.). The Enrollee shall continue to comply with this Order until the North Coast Water Board notifies the Enrollee in writing that coverage has been terminated. Termination of coverage must occur prior to **July 1st** of each year to avoid billing in the next fiscal year.
- 10) For Enrollees enrolled through a Coalition, coverage under this Order is automatically terminated if confirmation of membership in the Coalition is not received from the Coalition during the annual Participant List submittal required by Attachment A: MRP, or if the Coalition indicates that the Enrollee is no longer enrolled through the Coalition. To obtain individual coverage, the Enrollee shall re-submit an eNOI.
- 11) Any instance of noncompliance with this Order is grounds for enforcement action, and/or termination of coverage for waste discharges under this Order, subjecting the Enrollee to enforcement under the Water Code for subsequent discharges of

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waste to surface or groundwater.

Fees

- 12) Enrollees shall pay an annual water quality fee to the State Water Board in compliance with the WDRs fee schedule set forth in California Code of Regulations, title 23, section 2200.6. The Coalition is responsible for collecting these fees from their enrolled members and submitting fees to the State Water Board.
- 13) A Coalition may require its enrolled Members to pay any relevant fees necessary to comply with monitoring and reporting conditions of this Order or comply with monitoring and reporting requirements individually.

B. Prohibitions

- 1) Discharge of waste from Commercial Lily Bulb Operations in a manner or location other than that described in the Findings of the Order or the Notice of Applicability (NOA) is prohibited.
- 2) Discharge of waste classified as “hazardous,” as defined in California Code of Regulations, title 23, section 2521, or classified as “designated,” as defined in Water Code section 13173, is prohibited.
- 3) The discharge of waste (e.g., fertilizers, fumigants, pesticides) into groundwater via backflow through a water supply well or down a groundwater well casing is prohibited.
- 4) Discharge of debris, soil, silt, sand, bark, plant waste, sawdust, rubbish, refuse, oil or petroleum products, or other organic/earthen material or solid waste from any Commercial Lily Bulb Operation in quantities that are deleterious to beneficial uses or that violate Receiving Water Limitations is prohibited. Additionally, none of the materials listed above shall be stockpiled within the Streamside Area, or where wastes could be discharged into surface waters.
- 5) The use of soil amendments containing septage, liquid waste oil, grease, hazardous waste, or municipal solid waste, except for biodegradable waste meeting the definition of “compost” as defined in Public Resources Code section 40116 is prohibited.

C. Receiving Water Limitations

- 1) Wastes discharged from Commercial Lily Bulb Operations in the Smith River Plain, including sediment, pesticides, and nutrients, shall not cause or contribute to an exceedance of applicable water quality objectives for surface waters or groundwater, unreasonably affect applicable beneficial uses, or cause or contribute

to a condition of pollution, contamination, or nuisance (as defined in Water Code §13050). Applicable water quality objectives include but are not limited to objectives for chemical constituents, including promulgated maximum contaminant levels (MCLs), pH, sediment, turbidity, and narrative objectives for pesticide and toxicity⁵⁴. The Basin Plan narrative water quality objectives for toxicity and pesticides are implemented through numeric interpretations established by the Water Quality Benchmarks for surface water and groundwater set forth in Tables I.3 and I.4 of the Findings.

- 2) Receiving Water Limitations are effective immediately except where an Enrollee is implementing an approved Water Quality Management Plan under the Adaptive Management Program for a specified parameter in accordance with an approved time schedule authorized pursuant to Section H of this Order.

D. Management Practice Requirements

- 1) Enrollees shall implement Management Practices to prevent, minimize, or eliminate the discharge of waste to surface waters and groundwater and to achieve compliance with Receiving Water Limitations of this Order (Section II.C). Management Practices may be implemented on an individual farm, Enrollee, or Field⁵⁵ basis, or collectively over multiple farms or Fields to serve multiple Enrollees discharging to a common location.
- 2) All Enrollees shall, at a minimum, implement Management Practices necessary to:
 - a) Prevent, minimize, or eliminate erosion and sediment discharge from all farm areas and appurtenant roads;
 - b) Prevent, minimize or eliminate the discharge of all agricultural ⁵⁶ pollutants to surface waters and groundwater;
 - c) Prevent, minimize, or eliminate overapplication of nitrogen and the percolation of nitrogen into groundwater;
 - d) Protect wellheads from surface water intrusion; and
 - e) Implement proper handling, storage, disposal, and management of fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals.

Enrollees may refer to Attachment B: Management Practices for a representative menu of applicable Management Practices to achieve the water quality management goals outlined above. Alternatively, Enrollees may propose and implement Management Practices that are effective at addressing the water quality management goals listed above.

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- 3) To eliminate, minimize, or reduce the discharge of sediment, Enrollees shall prioritize all Controllable Sediment Discharge Sources⁵⁷ for implementation of practices, maintenance, and repair.
- 4) All Management Practices shall be properly designed, installed⁵⁸, maintained, and promptly repaired to prevent, minimize, or eliminate the discharge of waste. Maintenance of management practices shall include their periodic inspection to evaluate effectiveness and prioritize repair.
- 5) When effectiveness evaluation, monitoring data, or inspections indicate that the implemented management practices have not been effective in preventing discharges from causing or contributing to exceedances of Water Quality Benchmarks or from violating Receiving Water Limitations in Section II.C, Enrollees must improve or implement additional management practices, as specified in Section II.H Adaptive Management.
- 6) Enrollees shall comply with applicable mitigation measures in Attachment E: CEQA Mitigation Measures during construction of Ground-Disturbing Management Practices. These mitigation measures shall be reported in accordance with the reporting requirements of Attachment A: Monitoring and Reporting Program.
- 7) Enrollees shall report all management practices annually in a Farm Evaluation in accordance with Attachment A: Monitoring and Reporting Program. Enrollees shall annually certify in their Farm Evaluation that maintenance and periodic inspection of management practices were completed. A copy of the Farm Evaluation shall be maintained at the Enrollee's primary place of business and shall be submitted to North Coast Water Board staff on request. The Coalition is required to submit Farm Evaluations to the North Coast Water Board on request.

E. Streamside Area Requirements

- 1) For the purposes of this Order, a Streamside Area is comprised of two contiguous components: a Riparian Vegetation Area and a Vegetated Buffer in which different requirements are applied. A Streamside Area is defined as the area between the waterside edge of vegetation at ground level⁵⁹ and where the field-side edge of the Vegetated Buffer meets the Farm Area. The Riparian Vegetation Area extends from the waterside edge of vegetation to the Vegetated Buffer in Perennial and Ephemeral/Intermittent Streams. The Vegetated Buffer is measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the waterside edge of vegetation in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs. Enrollees may refer to Section IV. of Attachment D: Methodologies and Procedures for an example of a Streamside Area.

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- 2) Enrollees shall refer to Table II.1 in determining widths for implementation of Streamside Area management practices.

Table II.1: Streamside Area Minimum Horizontal Width (feet) as Measured from Waterside Edge of Vegetation

Streamside Area component	Perennial Stream	Ephemeral/ Intermittent Stream	Hydrologically Connected Undesignated Channel	Unfarmed Wetland⁶⁰	Hydrologically-Connected⁶¹ Lake, Pond, or On-Stream Reservoir
Riparian Vegetation Area	25	15	N/A	N/A	N/A
Vegetated Buffer	25	10	10	50	50
Total Streamside Area width	50	25	10	50	50

Riparian Vegetation Requirements

- 3) Enrollees shall implement the following management practices in the Riparian Vegetation Area of all Streamside Areas:
- a) Allow the natural establishment and abundance of native riparian vegetation to minimize or prevent discharge of sediment, nutrients, and excess temperature to surface water.
 - b) Existing riparian vegetation may not be removed for activities appurtenant to the lily bulb operation except for: (1) restoration and planting of vegetation that is native to California and naturally occurs in the local HUC-8 watershed; (2) work necessary for protection of public health or safety, including fire fuel management as required by California Fire Code section 304.1.2. and/or local ordinances; (3) streamside area restoration outside of jurisdictional waters of the United States or waters of the State⁶², or (4) removal of riparian vegetation as part of necessary maintenance of existing watercourse crossings⁶³ and linear utilities, control of invasive species, and permitted surface water diversions⁶⁴; or (5) other restoration and/or maintenance projects subject to the prior approval of the Executive Officer.
 - c) Allow essential functions supporting beneficial uses such as sediment

filtering, woody debris recruitment, streambank stabilization, nutrient cycling, pollutant filtering, and shading (e.g., to achieve site potential effective shade⁶⁵).

Vegetated Buffer Requirements

- 4) Enrollees shall install and/or maintain⁶⁶ Vegetated Buffers to minimize or prevent discharges of sediment and nutrients to surface waters. Vegetated buffers shall be the minimum width (feet) listed in Table 5 and shall be measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the Waterside edge of vegetation to the Farm Area in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs.
- 5) The following activities are not allowed within a Vegetated Buffer:
 - a) Construction and/or installation of new permanent structures appurtenant to lily bulb operations. (e.g., agricultural roads and buildings). Maintenance and/or reconstruction of existing permanent structures within the existing footprint is allowed.
 - b) Storage of chemicals, oil, or petroleum products.
 - c) Placement of construction materials, trash rubbish, refuse, plant waste, or other organic or earthen material or solid waste.
- 6) Vegetated buffers may be used for vehicle, or equipment use and turn around provided Enrollees manage and maintain a minimum of 90 percent vegetated cover on Vegetated Buffers between **November 1- May 1** of each year to minimize, control, or prevent discharges of sediment, nutrients, and pesticides to surface waters.

Riparian Vegetation Area Restoration Alternative

- 7) In lieu of meeting the Riparian Vegetation Area minimum widths for Perennial and Ephemeral/Intermittent streams in Table 5, an Enrollee may mitigate the difference in area available for natural succession of riparian vegetation between riparian vegetation existing at the date of Order adoption and Table 5 requirements. Mitigation must be accomplished through restoration and protection of native riparian vegetation at another location within the same sub-watershed (HUC-12) with similar or greater ecological value and function.
- 8) The proposed Restoration Area (length and width) shall be no less than 200 percent of the difference between existing Riparian Vegetation Area and Table 5 requirements. The proposed Restoration Area shall be placed into a conservation easement with sufficient financial resources to fund 20 years of riparian vegetation

maintenance and replacement of vegetation that does not survive.

- 9) Enrollees choosing this option shall implement restoration and protection within the Restoration Area(s) and have the Restoration Area(s) placed within a conservation easement within five years of the date of Order adoption.
- 10) Enrollees selecting a Streamside Area Restoration Alternative must submit a proposal to the Executive Officer for review and approval by **#DATE**. The proposal must include all information necessary to indicate that the proposed Restoration Alternative will satisfy the above requirements. Restoration projects that discharge materials or pollutants into waters of the state must be authorized by the North Coast Water Board prior to implementation through an applicable permitting program (e.g., 401 Water Quality Certification).

F. Compliance Education

- 1) Enrollees shall participate in compliance education⁶⁷ annually that focuses on: (1) actions necessary to attain compliance with the water quality goals of this Order; and (2) practices to prevent or minimize the discharge of sediment, pesticides, and nutrients to surface water and groundwater. Enrollees shall document annual compliance education in the Annual Compliance Form as specified in Attachment A.

G. Monitoring and Reporting Requirements

- 1) Enrollees shall comply with all monitoring requirements specified in Attachment A: Monitoring and Reporting Program (MRP). Required monitoring includes Drinking Water Supply Well Monitoring, Surface Water Monitoring, and Groundwater Trend Monitoring, as applicable. Monitoring may be conducted at the individual or Coalition level as applicable, and shall be conducted in accordance with the methods, frequencies, and locations specified in the MRP.
- 2) Enrollees shall comply with all reporting requirements specified in Attachment A: Monitoring and Reporting Program (MRP). Required reporting includes submission of an Annual Compliance Report and a 5-year Water Quality Trend Monitoring Report. Enrollees participating in an approved Coalition may satisfy reporting obligations through the Coalition, which shall submit required reports on behalf of its members and may elect to submit a Groundwater Protection Plan in accordance with Section C.V of the MRP.
- 3) The North Coast Water Board's Executive Officer may require the Coalition to provide direct reporting data for its Enrollee members upon request. The Coalition shall provide this information within 30 days of the request.

H. Adaptive Management Program

Surface Water Adaptive Management Program

- 1) The Adaptive Management Program for surface water establishes an iterative process to ensure surface water quality conditions achieve Receiving Water Limitations (Section II.C of this Order) within a certain time schedule. Adaptive Management requirements apply to lily bulb Fields within a crop production cycle, defined as any period in which the Field is not in permanent pasture (≥ 90 percent ground cover). A crop production cycle includes field preparation, bulb growing, harvest, and the post-harvest period until permanent ground cover is re-established.
- 2) Field(s) may be temporarily exempted from the Adaptive Management Program requirements in the years that they maintain 90% or greater planted ground cover between **November 1-May 1** of each year (e.g., Fields planted to hay crops, forage, fallowed, or used for grazing) and the pesticides for which Adaptive Management was triggered are not applied. Applicable Field(s) shall be subject to Adaptive Management in the next year they experience ground disturbing activities, get planted to lily bulbs, or apply the applicable pesticide(s).
- 3) At any point during implementation of the Adaptive Management Program, an Enrollee may elect to implement an individual Sampling Plan to directly demonstrate that applicable Water Quality Benchmark(s) identified in Table A.4 of Attachment A: MRP for the exceeded parameter are being met at Edge-of-Field Discharge Point(s) when the Field is next planted to lily bulbs to exempt that Field from Adaptive Management requirements. If this option is selected, the Enrollee shall follow all monitoring and reporting requirements as outlined in Section IV.A of Attachment A: MRP.
- 4) The Executive Officer may require any Enrollee or group of Enrollees to enter, or stay in, the Adaptive Management Program where there is evidence that a Field is threatening to discharge waste. Upon notification by the Executive Officer, Enrollee(s) shall follow the general Adaptive Management Program outlined below.
- 5) The Adaptive Management Program is activated when a Water Quality Benchmark as identified in Table A.4 of Attachment A: Monitoring and Reporting Program (MRP) is exceeded at a downstream monitoring station. Table A.3 and Figure A.1 in Attachment A: MRP identify the tributary area associated with each downstream monitoring station. Upon activation or continuation of the Adaptive Management Program, all Fields planted to lily bulbs at the time the sample was collected and located within the tributary area of the affected monitoring station shall be subject to the Adaptive Management Program.
- 6) Samples collected from monitoring stations in the tributary watersheds listed in

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Table II.2 below have already exceeded Water Quality Benchmarks as documented in the 2021–2024 Smith River Plain Surface Water Monitoring Study and reported in the 2025 SWAMP Report (see Findings #56-59). All Fields that drain to the receiving waters identified in Table II.2 shall enter **Tier 1 Adaptive Management** for the parameter(s) listed upon enrollment in this Order. Enrollees shall comply with Tier 1 Adaptive Management requirements during the first year each applicable Field is planted to lily bulbs.

Table II.2: Tributaries in Adaptive Management Upon Order Enrollment

Receiving Water/Watershed	Parameter(s)
Delilah Creek	Imidacloprid, Dissolved Copper
Ritmer Creek	Dissolved Copper
Morrison Creek	Dissolved Copper
Mello Creek	Dissolved Copper

- 7) Receiving Water Limitations are effective immediately except where an Enrollee is implementing an approved Water Quality Management Plan under the Adaptive Management Program. The Adaptive Management Program functions as a time schedule ending with Tier 2 implementation (described below), after which continued Water Quality Benchmark exceedances may constitute a violation of Receiving Water Limitations of this Order.
- 8) Enrollees shall implement the tiered Adaptive Management framework described below and in Table II.3 for each parameter that exceeds a Water Quality Benchmark. Upon an initial Benchmark exceedance, applicable Fields shall enter Tier 1 Adaptive Management and be subject to Tier 1 requirements during the next crop production cycle. If no Benchmark exceedance occurs during a monitoring year in which the Field is planted to lily bulbs, the Field shall no longer be subject to the Adaptive Management schedule; however, Tier 1 management practices shall be maintained in all subsequent crop production cycles.

If, at any time while a Field is subject to Tier 1 requirements, an additional Water Quality Benchmark exceedance occurs at the downstream monitoring station for the same parameter, the Field shall be subject to Tier 2 requirements during the next crop production cycle. Tier 2 requirements shall be maintained in all subsequent crop production cycles. Any Water Quality Benchmark exceedance occurring after Tier 2 requirements have been implemented may constitute a violation of Receiving Water Limitations of this Order. See Attachment D:

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Methodologies and Procedures for an Adaptive Management flowchart that describes this process.

Table II.3: Adaptive Management Tier Requirements for Surface Water

Adaptive Management Tier	Tier Requirements
Tier 1: Initial Water Quality Benchmark Exceedance	Option 1 — Grower-Prepared Water Quality Management Plan (WQMP) The Enrollee develops and implements a WQMP that incorporates at least one of the following practices on each Field covered by the plan: • Treat-and-Control Management Practices • Watercourse Setback • Pesticide Application Performance Standard Option 2 — Certified WQMP A Qualified Professional designs and certifies the WQMP, including a quantitative demonstration that the practices implemented on each Field will be sufficient to ensure that discharges from the Field do not exceed Receiving Water Limitations at the downstream monitoring location.
Tier 2: Subsequent Water Quality Benchmark Exceedance	Certified WQMP

Grower-Prepared WQMP

- 9) Enrollees may choose, as one of two Tier 1 Adaptive Management compliance options, to develop and implement a Grower-prepared WQMP. The Grower-prepared WQMP must be submitted by **January 1st** to the Executive Officer for review and approval in the calendar year that the Field will be entering its next crop production cycle⁶⁸. Once approved, the Grower-prepared WQMP must be implemented in the year that the Field is planted to lily bulbs. At a minimum, the Grower-prepared WQMP shall identify the pollutant exceeding the Receiving Water Limitations in Section II. C of this Order and include the following:

- a) Field Map: A map of the Field(s) with all irrigation and stormwater discharge

locations labeled. The WQMP may cover all Fields or be submitted for individual Fields. The Field Map shall identify where practices will be implemented in each Field.

- b) Practices Identified: For each Field covered by the Grower-prepared WQMP, the Enrollee shall identify and implement at least **one** of the following management practices:
- i) **Treat and Control Management Practices**
Implement Management Practice(s) that will minimize or eliminate the discharge of the exceeded parameter from the Field. Tier 1 Management Practices treat⁶⁹, divert, infiltrate, reuse, contain, retain, or reduce the volume of storm water runoff from a given Field.
 - ii) **Watercourse Setback**
Fields that are hydrologically connected to receiving waters may implement a Watercourse Setback⁷⁰. The setback shall be measured from the watercourse at the waterside edge of vegetation at ground level⁷¹ and shall meet the minimum width to the planted area of the lily bulb Field that is designated in Table II.4 by watercourse type. If selected, this setback must be implemented at all edges of a planted Field that drain to the watercourse. The Watercourse Setback shall maintain at least 90 percent ground cover between **November 1 and May 1** and follow all applicable design and maintenance standards consistent with NRCS practices for conservation cover and critical area planting⁷².

Table II.4. Required Widths of Vegetated Watercourse Setback by Watercourse type

Perennial Stream	Ephemeral/ Intermittent Stream	Hydrologically Connected Undesignated Channel
100 ft	100 ft	30 ft

- iii) **Attainment of Active Ingredient Application Performance Standard.**
Enrollees may refer to Table II.5 to meet tributary- and parameter-specific performance standards for active ingredient application amount. The attainment of the active ingredient application rate must be met at the tributary level. If the Enrollee elects this option for Adaptive Management Compliance, the application amount shall be reported in the Annual Report (See Attachment A: MRP). Where multiple growers are applying pesticides within a given tributary, the performance

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standard application amount is prorated based on total lily bulb acres cultivated.

Table II.5: Annual Active Ingredient Application Amount (lbs./year) Performance Standard by Tributary

Active Ingredient and Normalized Rate	Ritmer Creek	Delilah Creek	Rowdy Creek	Unnamed Creek	Morrison Creek	Mello Creek	Kamph Park Creek
Elemental Copper (0.5 lbs./acre/year)	376	447	10877	87	798	203	70
Imidacloprid (0.01 lbs./acre/year)	7.5	89	22	1.7	16	4	1.4
Diuron (0.05 lbs./acre/year)	38	45	1088	9	68	20	7
Ethoprop (0.3 lbs./acre/year)	226	268	6526	52	479	122	42

Certified WQMP for Surface Water

- 10) The Certified WQMP is developed as an Adaptive Management response to results from Surface Water Monitoring (as described in Attachment A: MRP). The Certified WQMP includes management practices designed to address specific constituents of concern in a manner that accounts for the characteristics and conditions of each individual lily bulb Field or operation. It provides a quantitative demonstration that the management practices implemented will result in discharges, or the lack thereof, that achieve applicable Water Quality Benchmarks in surface waters. The Certified WQMP may be submitted individually or submitted by the Coalition on behalf of multiple Enrollees.
- 11) Each Certified WQMP shall be prepared under the direction of, and certified by, a Qualified Professional. The Certified WQMP shall be submitted by January 1 to the Executive Officer for review and approval in the year that the applicable Field(s) is entering its next crop production cycle.
- 12) The WQMP shall describe and provide a schedule for the implementation of management practices to meet the Receiving Water Limitations of this Order.
- 13) At a minimum, the WQMP shall identify the pollutant exceeding the applicable Water Quality Benchmark and include:

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- a) Field Map: A map of the Field(s) with all irrigation and stormwater discharge locations labeled. The Surface Water WQMP may cover multiple Fields or individual Fields, as applicable.
 - b) Site Analysis: A description of the average frequency of crop rotation and other crop(s) or uses of Field(s) when not planted to lily bulbs and all management practices being implemented on the site to prevent, minimize, or eliminate the discharge of the exceeded constituent.
 - c) Adaptive Management: All the management practices that will be implemented on the Field(s) in the next year it is planted to lily bulbs. Management practices must be improved in each subsequent year adaptive management is required.
 - d) Quantitative Demonstration: The assessment shall evaluate the location, size, and pollutant reduction capacity or volume retention capacity of each management practice for the 1-inch 24-hour storm under wet antecedent moisture conditions (AMC III⁷³). The quantitative demonstration shall be supported by water quality data collected in the field that directly reflects the performance of the implemented management practices under actual operating conditions. Supporting water quality data shall not rely solely on literature reviews, modeling assumptions, or generalized performance estimates, but must include monitoring results sufficient to demonstrate that the implemented practices are effective at reducing pollutant loads and achieving water quality benchmarks. Edge-of-Field sampling may be used but is not required. For example, in lieu of Edge-of-Field sampling, a Surface Water WQMP may include monitoring results from receiving waters located upstream and downstream of the lily bulb Field (monitoring locations subject to approval by the Executive Officer).
 - e) Effectiveness: The WQMP shall include an effectiveness monitoring plan to ensure the proper maintenance and continued performance of all existing and future management practices.
 - f) Schedule of Implementation: The WQMP shall include a schedule of management practice implementation not to exceed two crop production cycles of the Field, unless otherwise approved by the Executive Officer.
- 14) The Certified WQMP must be prepared and certified in one of the following ways:
- a) The WQMP is developed and certified by a Qualified Professional and submitted as part of the Annual Compliance Report to the North Coast Water Board; or
 - b) The WQMP is prepared and certified in an alternative manner to a Qualified

Professional and approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the WQMP meets the objectives and requirements of this Order.

- 15) The Certified WQMP shall be submitted to the Executive Officer for review and approval. Upon approval, the Enrollee shall implement the WQMP on a continuous basis. The WQMP shall be updated if there is a change to site configuration or management practices. The Executive Officer may require that the WQMP be updated at five-year intervals and shall notify the Enrollee at least one year prior to the end of each five-year period if an update is required. Any required update shall be certified by a Qualified Professional and shall describe all additional management practices implemented to achieve Receiving Water Limitations in either surface waters or groundwater.

Groundwater Adaptive Management

- 16) The Adaptive Management Program is activated for impacts to groundwater quality based on the following conditions:
 - a) A Water Quality Benchmark indicated in Table A.7 of Attachment A: Monitoring and Reporting Program is exceeded in either a Groundwater Trend Monitoring well or a Drinking Water Supply Well; or
 - b) If nitrogen Applied-to-Removed (A/R) rates in any Field exceed the township Groundwater Protection Targets (GWP Targets) in a single crop year once GWP Targets are established.
- 17) The Adaptive Management Program for Groundwater is implemented as described in this section and summarized in Table II.6. Enrollees shall refer to Table II.6 for a consolidated summary of program triggers, requirements, and response actions.

Table II.6: Adaptive Management Requirements for Groundwater

Adaptive Management Program Trigger	Summary of Requirements
Exceedance of Water Quality Benchmark	Step 1: Enrollee or Coalition submits a Hydrogeological Evaluation of Groundwater Impacts to identify which parcels and Enrollees are subject to the requirement to submit a WQMP for Groundwater. Step 2: Enrollee(s) must develop and implement a Water Quality Management Plan for Groundwater
Exceedance of township GWP Target	Enrollee must attend an education event, implement additional measures to reduce nitrogen application, and report on those measures. Upon repeated exceedances of the township GWP Target, the Enrollee must get an Irrigation and Nutrient Management Plan certified by a Qualified Professional.

Exceedance of Water Quality Benchmark for Groundwater

- 18) If a parameter identified in Table A.7 of Attachment A: MRP exceeds a Water Quality Benchmark, the Coalition, or the owner of the parcel on which the monitoring well is located, shall submit to the Executive Officer for review and approval a Hydrogeological Evaluation of Groundwater Impacts. The Hydrogeological Evaluation shall be prepared under the responsible charge of a hydrogeologist and shall be completed prior to the development of a Water Quality Management Plan for Groundwater.
- 19) At a minimum, the Hydrogeological Evaluation of Groundwater Impacts shall:
 - a) Identify the monitoring well(s) with Water Quality Benchmark exceedances and describe the relevant hydrogeologic setting, including aquifer characteristics, groundwater flow direction, and hydraulic connectivity;
 - b) Delineate the potential area contributing to the monitoring well exceedance, based on available hydrogeologic information and groundwater flow conditions;
 - c) Identify all parcels within the contributing area that have applied the exceeded parameter within the previous five years and that may reasonably affect groundwater quality at the monitoring well; and

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- d) Evaluate whether the exceedance is likely attributable to current or historical agricultural practices associated with identified properties.
- 20) The Executive Officer shall use the Hydrogeological Evaluation of Groundwater Impacts to determine which Enrollees, as owners or operators, are required to develop and implement a Water Quality Management Plan for Groundwater in accordance with Section II.H of this Order.
- 21) An individual Enrollee may submit a Non-Contribution Demonstration to the Executive Officer for review and approval demonstrating that the Enrollee's Field(s) did not cause or contribute to the Water Quality Benchmark exceedance. The Non-Contribution Demonstration shall include quantitative, parameter-specific information relevant to the exceeded parameter, including, as applicable, Irrigation and Nutrient Management Plans and individual pesticide use report information, and shall be prepared under the responsible charge of a Professional Geologist or Professional Engineer.

Water Quality Management Plan (WQMP) for Groundwater

- 22) The Water Quality Management Plan for Groundwater requires implementation of a series of steps to achieve compliance with the Receiving Water Limitations of this Order, including defining the nature and extent of groundwater impacts, identifying sensitive receptors including agricultural and drinking water wells and interconnected surface waters, conducting continued monitoring, and implementing corrective actions where natural attenuation is not sufficient to achieve Receiving Water Limitations within a reasonable timeframe (20 years). The WQMP for Groundwater may be prepared for multiple Enrollees or individual Enrollees, as applicable.
- 23) Each WQMP for Groundwater shall be prepared under the direction of, and certified by, a Professional Geologist or a Professional Engineer. The WQMP for Groundwater shall be submitted by **January 1** to the Executive Officer for review and approval in the year that the applicable Field(s) is entering its next crop production cycle.
- 24) At a minimum, the WQMP for Groundwater shall include the following:
- a) The WQMP shall describe the nature, extent, and mobility of constituent(s) exceeding Water Quality Benchmark(s) in groundwater and identify all current and reasonably anticipated sensitive receptors, including agricultural or drinking water wells, and surface water bodies.
 - b) The WQMP must include a map of all the Field(s) identified in the Hydrogeological Evaluation for Groundwater that are covered by the WQMP with all sensitive receptors labeled.

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- c) The WQMP shall delineate the extent of impact with a hydrogeologic investigation sufficient to characterize the impacted area and potential migration pathways.
- d) A monitoring network shall be established within the extent of impact and maintained to evaluate groundwater quality conditions and compliance with Receiving Water Limitations, as demonstrated by comparison to the applicable Water Quality Benchmark.
- e) If groundwater quality is demonstrated to be stable or naturally attenuating toward Receiving Water Limitations within a reasonable timeframe (i.e., 20 years), the Groundwater WQMP may rely on monitoring and attenuation but shall continue until compliance is documented.
- f) If Water Quality Benchmarks are exceeded and are not expected to attenuate within a reasonable timeframe (e.g., in the case of continuing application of the constituent), the Groundwater WQMP shall propose and implement corrective actions to reduce or control sources and prevent further impact to sensitive receptors, with management practice implementation and monitoring continuing until Receiving Water Limitations are achieved, unless otherwise approved by the Executive Officer.
- g) The Groundwater WQMP shall include a schedule of implementation not to exceed 20 years unless otherwise approved by the Executive Officer.

Exceedance of GWP Target in a Township

- 25) If nitrogen Applied-to-Removed (A/R) rates in any Field exceed the township GWP Target in a single crop year, those Fields are subject to Adaptive Management focused on irrigation and nutrient management practices. Enrollees with Fields that exceed the township GWP Target shall:
- a) Attend at least one compliance education event addressing applicable nutrient management practices;
 - b) Implement additional measures to reduce nitrogen application and minimize potential leaching to groundwater⁷⁴; and
 - c) Report the management improvements in the Irrigation and Nutrient Management Plan (INMP) for the next crop year in which the Field is planted to lily bulbs.
- 26) If an Enrollee exceeds the township GWP Target for a Field planted to lily bulbs in two consecutive lily bulb production cycles, the Enrollee shall develop, implement, and submit an Irrigation and Nutrient Management Plan (INMP) in accordance with Section V of the MRP that is certified by a Qualified Professional. The Enrollee

shall have their INMP certified by a Qualified Professional each year, until compliance with the GWP Target is achieved.

I. Provisions

Noncompliance

- 1) Enrollees shall comply with all conditions of this Order. Noncompliance is a violation of the Porter-Cologne Water Quality Control Act (Water Code, § 13000 et seq.) and grounds for: (1) enforcement action; (2) termination, revocation and reissuance, or modification of these waste discharge requirements; or (3) denial of an Order renewal application, or a combination thereof. Coalition(s) shall also comply with all relevant conditions of this Order on behalf of the Enrollees enrolled through their program(s).
- 2) Enrollees shall report any noncompliance that may endanger human health or the environment. Information shall be provided orally to the North Coast Water Board office and the Office of Emergency Services within twenty-four (24) hours of when the Enrollee becomes aware of the incident. A written report shall also be provided within five business days of the time that the Enrollee becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance.

Enforcement

- 3) All Enrollees, regardless of whether they enroll individually or through a Coalition and any non-Enrollee owner or operator, bear ultimate responsibility for complying with this Order. The North Coast Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to comply with any provisions of this Order may subject Enrollees to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code sections 13323, 13268, and 13350; a Time Schedule Order issued pursuant to Water Code section 13300 or 13308; issuance of a Cease-and-Desist Order pursuant to Water Code section 13301; Cleanup and Abatement Order pursuant to Water Code section 13304; or referral to the California Attorney General for recovery of judicial civil liability. Enrollees shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment.
- 4) For Coalition(s), failure to comply with the applicable terms and conditions of this Order or the Coalition requirements in Attachment C may result in revocation of approval to act as a Coalition or any other remedy provided by law. Affected

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Enrollees would be required to join an approved Coalition, meet requirements for Enrollees not represented by a Coalition, or obtain coverage under other applicable general or individual WDRs.

Inspection and Entry

- 5) Consistent with Water Code section 13267, subdivision (c), Enrollees and Coalition(s) shall allow the North Coast Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a) Enter the premises regulated by this Order, or the place where records are kept under the conditions of this Order,
 - b) Have access to and copy records kept under the conditions of this Order,
 - c) Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
 - d) Sample or monitor for the purpose of ensuring compliance with this Order, or as otherwise authorized by the Water Code, any substances or parameters at locations regulated under this Order.

Records Retention

- 6) Enrollees and Coalitions, as appropriate, shall retain copies of all reports required by this Order and the associated MRP. Records shall be maintained for a minimum of ten years from the date of the sample, measurement, report, or application. Records may be maintained electronically, and the Coalition must store backup files in a secure, offsite location managed by an independent third-party entity. This period may be extended during the course of any unresolved litigation or when requested by the North Coast Water Board's Executive Officer.
- 7) Enrollees and Coalitions shall provide copies of any or all records when requested by North Coast Water Board staff. Electronic submittals are acceptable.

Electronic Reporting

- 8) Enrollees and Coalition(s), as appropriate, shall submit reports and information required for North Coast Water Board Executive Officer approval under this Order in an electronic format⁷⁵ via email to NorthCoast@Waterboards.ca.gov.

Claims for Exemption from Public Disclosure

- 9) If the Coalition and/or an Enrollee asserts that all or a portion of a report submitted

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pursuant to this Order is subject to an exemption from public disclosure (e.g., due to proprietary or trade secret information), the Coalition and/or Enrollee must provide an explanation of how those portions of the reports are exempt from public disclosure. The Coalition and/or Enrollee must clearly indicate on the cover of the report (typically an electronic submittal) that all or a portion of the report is exempt from public disclosure, submit a complete report with those portions that are asserted to be exempt in redacted form, submit separately (in a separate electronic file) unredacted pages (to be maintained separately by staff). North Coast Water Board staff will determine whether any such report or portion of a report qualifies for an exemption from public disclosure. If staff disagrees with the asserted exemption from public disclosure, staff will notify the Enrollee prior to making such report or portions of such report available for public inspection.

Signature and Certification

- 10) All documents and reports requested herein shall be signed and dated by a duly authorized representative and shall contain a statement by the Enrollee, or as appropriate by an authorized representative of the Enrollee (e.g., Third-Party representative), certifying under penalty of perjury under the laws of the State of California, that the report is true, complete, and accurate. The document and/or report shall be submitted under the title: "General Waste Discharge Requirements for Commercial Lily Bulb Operations in the Smith River Plain Hydrologic Subarea."

Violation of Law and Property Rights

- 11) This Order does not authorize violation of any federal, state, or local laws or regulations.
- 12) This Order does not convey property rights of any sort, or exclusive privileges, nor does it authorize injury to private property or invasion of personal rights.

Modification, Revocation, Termination

- 13) This Order may be modified, revoked and reissued, or terminated. The filing of a request by an Enrollee for an Order modification, rescission, or reissuance, or an Enrollee's notification of planned changes or anticipated noncompliance, does not stay any Order condition. Causes for modification include, but are not limited to, the violation of any term or condition contained in this Order, a material change in the character, location, or volume of discharge, a change in land application plans, or the adoption of new regulations by the State Water Board, North Coast Water Board (including revisions to the Basin Plan), or federal government.

III. Certification

I, Valerie Quinto, Executive Officer do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California North Coast Regional Water Quality Control Board, on **#DATE**.

Valerie Quinto
Executive Officer
California Water Quality Control Board,
North Coast Region

Appendix I: Acronyms, Definitions, and Endnotes
Appendix II: Figures
Attachment A: Monitoring and Reporting Program
Attachment B: Management Practices
Attachment C: Grower Coalition Requirements
Attachment D: Methodologies and Procedures
Attachment E: CEQA Mitigation Measures
Attachment F: Forms and Templates

Appendix I: Acronyms, Definitions, and Endnotes

I. Acronyms and Abbreviations

Acronym/Abbreviation	Term
Antidegradation Policy	State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality Waters in California
Basin Plan	Water Quality Control Plan for the North Coast Basin
BLM	Biotic Ligand Model
BLM-IWQC	Biotic Ligand Model Instantaneous Water Quality Criteria
CalFIRE	California Department of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Pesticide Regulation
CDPH	California Department of Public Health
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
C _N	Nitrogen Removal Coefficient
CSDS	Controllable Sediment Discharge Sources
CRHR	California Register of Historical Resources
CWA	Clean Water Act
DDW	State Water Board, Division of Drinking Water
DWR	Department of Water Resources
EIR	Environmental Impact Report
ESJ Order	Eastern San Joaquin Order (State Board Order WQ 2018-0002).

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Acronym/Abbreviation	Term
ELAP	Environmental Laboratory Accreditation Program
Enforcement Policy	State Water Board Water Quality Enforcement Policy
eNOI	Electronic Notice of Intent
GPS	Global Positioning System
GWP	Groundwater Protection (see GWP Formula, GWP Values, GWP Targets)
HUC	Hydrologic Unit Code
ILRP	Irrigated Lands Regulatory Program
INMP	Irrigation and Nitrogen Management Plan
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/L	Milligrams per Liter
MRP	Monitoring and Reporting Program
NCRWQCB	North Coast Regional Water Quality Control Board
Nitrogen AR	Nitrogen Applied and Removed
NOA	Notice of Applicability
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NPS Policy	State Water Board Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program
NRCS	Natural Resources Conservation Service

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Acronym/Abbreviation	Term
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
QAPP	Quality Assurance Project Plan
North Coast Water Board	North Coast Regional Water Quality Control Board
RFP	Request for Proposal
ROWD	Report of Waste Discharge
SGMA	Sustainable Groundwater Management Act
State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
Temperature Policy	Policy for the Implementation of the Water Quality Objectives for Temperature
Trend Monitoring Report	Water Quality Trend Monitoring Report
µg/L	Micrograms per Liter
UCCE	University of California Cooperative Extension
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
Water Code	California Water Code
WDRs	Waste Discharge Requirements
WQMP	Water Quality Management Plan

II. Definitions

The following definitions apply to Order No. R1-202X-00XX and its associated attachments, including the MRP. The terms are arranged in alphabetical order. All other terms not explicitly defined here for the purposes of this Order, the Additional Findings and Regulatory Considerations, and the MRP have the same definitions as defined by Water Code Division 7 or are explained within the Order or MRP documents.

Abandoned Well. A well is considered “abandoned” when it has been destroyed in accordance with local and state well standards. An abandoned well is not synonymous with an “inactive well” (see also Inactive Well).

Active Well. A water well that is in operation/use.

Adaptive Management. The iterative process of evaluating monitoring results, programmatic performance, and new scientific information to guide modifications to management practices and implementation schedules, with the goal of achieving water quality objectives and protecting beneficial uses. Adaptive management relies on data collected through surface water and groundwater trend monitoring and other relevant sources of information including effectiveness of implemented management practices.

All-Season Road. An agricultural road that is part of the permanent road network and is designed for year-round use. These roads have a surface that is suitable for maintaining a stable operating surface throughout the year.

Antidegradation. The State Water Board established a policy to maintain high quality waters of the State - Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California." Resolution No. 68-16 requires existing high-quality water to be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of water, and will not result in water quality less than that prescribed in the policies. When authorizing the discharge of waste into waters of the state, North Coast Water Boards are required to comply with Resolution No. 68-16. Permits or regulatory orders issued by the North Coast Water Board must result in the best practicable treatment or control of the discharge necessary to assure pollution or nuisance will not occur and maintain the highest water quality consistent with maximum benefit to the people of the state. Resolution No. 68-16 has been approved by the USEPA to be consistent with the federal antidegradation policy (40 CFR 131.12).

Appurtenant. Belonging to, pertinent to, or used for the Commercial Lily Bulb Operation.

Appurtenant Field Road. An agricultural road used for Commercial Lily Bulb Operations which connects or is used to access lily bulb fields under the ownership or

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control of the landowner or operator.

Authorized Representative. An individual, agency, or entity who acts on behalf of another individual, agency, or entity (such as an approved Third-Party program staff, Enrollee, or consultant retained by an approved Third-Party program acting on behalf of an individual Enrollee or the North Coast Water Board).

Basin Plan. The Basin Plan is the North Coast Region's Water Quality Control Plan. The Basin Plan describes how the quality of the surface and groundwater in the North Coast Region should be managed to provide the highest water quality reasonably possible. The Basin Plan includes beneficial uses, water quality objectives, and a program of implementation.

Beneficial Uses. The Basin Plan establishes the beneficial uses of surface water and groundwater to be protected in the North Coast Region. Beneficial uses for the Smith River Plain can be found in Section I.E.7 of this Order.

Biotic Ligand Model (BLM). The BLM is the current EPA recommended method for determining copper concentrations protective of aquatic life on a site-specific basis and has been adopted by the State of Idaho Department of Environmental Quality and the State of Oregon Department of Environmental Quality to develop state-wide, site-specific water quality criteria for copper.

Biotic Ligand Model Instantaneous Water Quality Criteria (BLM-IWQC). A criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection.

Commercial Lily Bulb Operation. A Commercial Lily Bulb Operation is land planted in lily bulbs or a similar bulb crop within a 5 year period (including appurtenant field roads, agricultural structures, and areas used for activities appurtenant to the Commercial Lily Bulb Operation) with one or more of the following characteristics: (1) The landowner or operator holds a current Operator Identification Number/Permit Number for pesticide use reporting; (2) The crop and/or its product is sold; or (3) the federal Department of Treasury Internal Revenue Service form 1040 Schedule F Profit or Loss from Farming is used to file federal taxes.

Concentration. The relative amount of a substance mixed with another substance. An example is 5 mg/L of nitrogen in water or 5 ppm (parts per million).

Controllable Sediment Discharge Sources (CSDS). Areas discharging or having the

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potential to discharge sediment to waters of the state in violation of water quality standards or other requirements of this Order caused or affected by human activity and may feasibly and reasonably respond to management practices.

Cover Crop. (See Ground Cover).

Discharge. A release of a waste to waters of the state, either directly to surface waters or through percolation to groundwater. Wastes from irrigated agriculture include but are not limited to earthen materials (soil, silt, sand, clay, and rock), inorganic materials (metals, plastics, salts, boron, selenium, potassium, nitrogen, phosphorus, etc.) and organic materials such as pesticides. Discharges from Commercial Lily Bulb Farms regulated by this Order include discharges to surface water and groundwater, through mechanisms such as stormwater runoff flowing from irrigated lands, irrigation tailwater, percolation or pollutants to groundwater, and runoff resulting from operational spills. These discharges can contain wastes that could affect the quality of waters of the state and impair beneficial uses.

Discharge Point. A discharge point is defined as a location where surface water discharges, which are in hydrologic connection to off-farm surface waters, leave the Enrollee's property. A discharge point is any hydrologically connected discharge that is not an agricultural drainage structure as defined above.

Disturbance. When natural conditions have been modified in a way that may result in waste discharge to waters of the state from the site. Disturbed areas are where natural plant growth has been removed, whether by physical, animal, or chemical means, or natural grade has been modified for any purpose. Disturbance includes all activities whatsoever associated with developing or modifying land for agricultural related activities or access. Disturbance activities include, but are not limited to, construction of roads, buildings, water storage areas; excavation, grading, and site clearing. Disturbance includes crop areas, storage areas where soil or chemicals (e.g., pesticides, fertilizers, compost, or biosolids) are located.

Drinking Water Supply Well. Any groundwater well that is connected to a residence, workshop, or place of business that may be used for human consumption, cooking, or sanitary purposes that is located within an enrolled Assessor Parcel Number (APN). This includes all domestic wells located within the enrolled APN, not limited to the leased property or within the farm boundary. This definition includes "dual-use" wells that are used for both irrigation and domestic purposes. The State Water Resources Control Board (State Water Board), Groundwater Ambient Monitoring and Assessment (GAMA) Program defines an individual well serving a single residential connection as a "private domestic well." For the purposes of this Order, a "private domestic well" is a Drinking Water Supply Well if it is located on the enrolled parcel and there are drinking water users of that well.

Edge-of-Field. Edge of the Farm Area producing crops including the Appurtenant Field

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Roads. Point in land where the surface water drains out of the Farm Area producing areas. See also Discharge Point.

Enrollee. The owner and/or operator of the Commercial Lily Bulb Operation discharges or has the potential to discharge waste that could directly or indirectly reach waters of the State and affect the quality of any surface water or groundwater. See also Landowner, Operator.

Ephemeral Stream. A Class III watercourse. A body of flowing water that contains water for only part of the year, but more than just after rainstorms and as snowmelt as shown in the NHD shapefile. In the absence of diversion, water is flowing less than three months during a typical year and the stream does not support riparian vegetation or aquatic life. Ephemeral watercourses typically have water flowing for a short duration after precipitation events or snowmelt and show evidence of being capable of sediment transport.

Erosion. The gradual destruction of land surface by wind or water, intensified by land-clearing practices related to farming, residential or industrial development, road building, or logging.

Exceedance. A reading using a field instrument or a detection by a California State-certified analytical laboratory where the detected result is above an applicable water quality standard for the parameter or constituent.

Farm Area. The planted area and appurtenant structures, field roads, maintenance areas, mixing and loading sites, and appurtenant storage yards on a Commercial Lily Bulb Operation.

Field. A term to describe a contiguous planted area that is farmed in lily bulbs in any particular year for the purposes of monitoring, reporting and adaptive management. A Field is a contiguous block of planted lily bulbs not separated by Appurtenant Field Roads or waterbodies. Where this Order scales requirements by Management Unit, Enrollees may report data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, (3) and the same management practices. See Management Unit.

Ground Cover. Ground cover refers to the following practices: (1) Cover crop can be grasses, legumes, forbs, or other herbaceous plants established in planted fields for livestock grazing, for production into hay and forage crops, or provide seasonal or year-round ground cover for conservation purposes. (2) Conservation cover is establishing and maintaining perennial vegetated cover to protect soil and water resources on lands needing permanent protective cover that will not be used for forage production. (3) Effective soil cover includes mulching, straw mulching, plant residues or other suitable materials produced off site to the land surface. Mulching is used on bare, exposed soil surfaces that are deemed to be potential critical erosion areas. In most cases, mulch will

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consist of grain straw residue, but may include wood chips, leaves, composted yard waste, etc. (NRCS Conservation Practice Standards 2016⁷⁶).

Ground Disturbing Management Practices. These measures could include but are not limited to practices to prevent erosion of exposed soil and stockpiles, including watering for dust control, establishing perimeter silt fences, and/or placing fiber rolls; minimizing soil disturbance areas; implementing practices to maintain water quality, including silt fences, stabilized construction entrances, and storm drain inlet protection; limiting construction to dry periods; and revegetating disturbed areas.

Groundwater. The supply of water found beneath the Earth's surface, usually in aquifers which can supply wells and springs.

Groundwater Protection Formula, Values and Targets. The Groundwater Protection (GWP) Formula generates GWP Values, expressed as either nitrate-N loading numbers or concentrations of nitrate in water (e.g., mg/L), reflecting the influence of total applied nitrogen, total removed nitrogen, recharge conditions, and other relevant and scientifically supported variables that influence the potential average concentration of nitrate in water expected to reach groundwater in a given township over a given time period. GWP Values are calculated based on reported INMP data and reflect discharge estimates from the bottom of the root-zone. GWP Targets considers GWP Values to establish the nitrogen loading rate necessary to comply with the Antidegradation Policy and Basin Plan.

High-Water Mark. That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

High Vulnerability Groundwater Basin. Defined in the ESJ Order as areas "where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities." For the purposes of this Order, 'high vulnerability areas' are defined as the priority groundwater basins having a relatively high threat from salts and nutrients and would benefit from salt and nutrient management planning as defined in Groundwater Basin Evaluation and Prioritization Resolution No. R1-2021-0006.

Hydrologically Connected. Farm areas with a continuous surface flow path to a natural stream channel during a storm runoff event (also referred to as hydrologic connectivity). Connectivity usually occurs through drainage structures, drainage inlets, road ditches, gullies, and channels.

Hydrologically-Connected Undesignated Channel. Channels not part of the NHD

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dataset that are hydrologically-connected to off-farm surface waters. Includes agricultural ditches.

Inactive Well. A well is considered “inactive” when it has been taken out of service but has not been destroyed (see Abandoned Well definition). An inactive well must not allow impairment of water quality within the well and/or groundwater encountered by the well.

Individual Enrollee. An Enrollee in the Lily Bulb Order who is not part of a Coalition. The Individual Enrollee is responsible for conducting all monitoring individually and reporting directly to the North Coast Water Board.

Intermittent Stream. A Class II watercourse. A body of flowing water that contains water only during or after a local rainstorm or heavy snowmelt as shown in the NHD shapefile. In the absence of diversions, water is flowing for three to nine months during a typical year, provides aquatic habitat for non-fish aquatic species, fish always or seasonally present within 1,000 feet downstream, and/or water is flowing less than three months during a typical year and the stream supports riparian vegetation.

Invasive Species. Organisms (plants, animals, or microbes) that are not native to an environment and that, once introduced establish, quickly reproduce and spread, and cause harm to the environment, economy, or human health. U.S. Department of Agriculture, Natural Resource Conservation Service website: EnviroAtlas Hydrologic Unit Codes Fact Sheet⁷⁷. For guidance on identifying species of concern, see the Cal-IPC website: Plants A to Z⁷⁸.

Irrigation. Applying water to land areas to supply the water and nutrient needs of plants.

Irrigation Management Practices. Management practices designed to improve irrigation efficiency and reduce the amount of irrigation return flow or tailwater, and associated degradation or pollution of surface and groundwater caused by discharges of waste associated with irrigated lands.

Irrigation and Nitrogen Planning Specialist. A Certified Crop Advisor (CCA) who has completed the California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy’s (ASA) International Certified Crop Adviser (ICCA) Coalition and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take the CDFA Irrigation and Nitrogen Management Training for Grower Self-Certification, pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education. More information can be found at [CDFA FREP Training](https://www.cdfa.ca.gov/is/ffldrs/frep/training.html) (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).

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Landowner. An individual or entity who has legal ownership of a parcel(s) of land. See also Enrollee, Operator.

Leaching. In agriculture, leaching is the loss of water-soluble plant nutrients from the soil, due to the percolation of rain and irrigation water. Leaching may also refer to the salinity control practice of applying a small amount of excess irrigation to drain down salts from the root soil profile to avoid salts from building up in the soil. In the natural environment leaching contributes to groundwater contamination. As water from rain, flooding, or other sources seeps into the ground, it can dissolve chemicals and carry them into the underground water supply.

Load. The mass of a substance discharged over a given amount of time, for example 10 mg/day or 5 kg/day.

Major Storm Event. A Major Storm Event is defined as a storm that is forecasted to produce at least one inch of precipitation within a 24-hour period and is preceded by a minimum of 72 consecutive hours with less than 0.1 inches of precipitation. A Major Storm Event has ended after at least 48 consecutive hours during which no more than 0.1 inches of precipitation has occurred in any 24 hour period. See Attachment D for guidance.

Management Unit. Where this Order allows reporting by Management Unit, Enrollees may report data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, and (3) the same management practices. Management Units can be defined by the Enrollee in a manner consistent with the farming operation so long as the Enrollee tracks which Field(s) comprise each Management Unit. See Field.

Method Detection Limit. The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero in accordance with USEPA Definition and Procedure for the Determination of the Method Detection Limit, Revision 2. The laboratory establishes the MDL values based on the analytical test method and the types of calibrated laboratory equipment that are used.

Monitoring. Observing and checking a feature or factor over time to determine compliance with this Order or other regulatory requirements. Monitoring in this Order includes but is not limited to surface water or groundwater sampling and analysis to evaluate water quality in connection with agricultural activities, and inspecting operations, management practice implementation and effectiveness, maintenance of on-site records, and management practice reporting.

Nitrogen Applied. Total nitrogen applied includes nitrogen in any product, form, or concentration including, but not limited to, organic and inorganic fertilizers, slow-release products, compost, compost teas, manure, extracts, nitrogen present in the soil, and

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nitrate in irrigation water; it is reported in units of pounds of nitrogen per crop, per acre for each commercial lily bulb Field or nitrate loading risk unit.

Nitrogen Removed. Nitrogen Removed includes all nitrogen taken from the Field in harvested or other materials. Other materials may include leaf material, bulbs, and any other source of nitrogen removed from the field.

Nitrogen-Removal Coefficient (CN). Percent of nitrogen content in the dry matter of plant tissue. The CN multiplied by the weight of plant material removed from the Fields, can be used to estimate the nitrogen removed from the marketable portion of a crop.

Nonpoint Source (NPS) Pollution. The Basin Plan states that nonpoint sources of water pollution are generally defined as sources which are diffuse (spread out over a large area). Nonpoint sources of pollution are not subject to NPDES permitting. The wastes are generally carried off the land by runoff. Common nonpoint sources of pollution are activities associated with agriculture, timber harvest, certain mining, dams, and saltwater intrusion.

Nitrogen Management Practices. Management practices designed to reduce the nitrogen loss from agricultural lands, which occur through edge-of-field runoff or leaching from the root zone.

Operator. Person responsible for or otherwise directing farming operations in decisions that may result in a discharge of waste to surface water or groundwater, including, but not limited to, a farm/ranch manager, lessee, or sub- lessee. If enrolled, the operator is responsible for ensuring compliance with this Order and for any discharge of waste occurring on or from the operation. See also Enrollee, Landowner.

Operation. A distinct farming business, generally characterized by the form of business organization, such as a sole proprietorship, partnership, corporation, and/or cooperative. A farming operation may be associated with one-to-many individual farms/ranches.

Perennial Stream. A stream that holds water throughout the year. Also known as a Class I watercourse. In the absence of diversions, water is flowing for more than nine months during a typical year, fish always or seasonally present onsite or includes habitat to sustain fish migration and spawning, and/or a spring, an area where there is concentrated discharge of ground water that flows at the ground surface (a spring may flow any part of the year and does not have a defined bed and banks).

Pesticide. Any substance intended to control, destroy, repel, or otherwise mitigate a pest. The term pesticide is inclusive of all pest and disease management products, including insecticides, herbicides, fungicides, nematicides, rodenticides, algicides, etc.

Planted Area. The area of the Farm Area that is planted in lily bulbs; a subset of the

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Farm Area. Planted area does not include appurtenant structures or field roads.

Pollutant. The man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water, including dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

Pollution. Any alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (1) the waters for beneficial uses, (2) facilities which serve these beneficial uses. Pollution may include contamination.

Quality Assurance Project Plan. A Quality Assurance Project Plan (QAPP) integrates all technical and quality aspects of a project, including planning, implementation, and assessment.

Qualified Professional. An individual licensed in California under the Professional Engineer Act (e.g., Professional Engineer), Geologist and Geophysicist Act (e.g., Professional Geologist, Certified Engineering Geologist, or Certified Hydrogeologist), and Land Surveyors' Act (e.g., Professional Land Surveyor); a California Registered Professional Forester (RPF); or a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD), a certified soil scientist registered through the American Society of Agronomy; Certified Professional in Erosion and Sediment Control (CPSEC)TM/Certified Professional in Storm Water Quality (CPSWQ)TM registered through EnviroCert International, Inc.; a or professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET). A Qualified Professional must only perform work they are qualified to complete, consistent with applicable licensing and registration restrictions, and must certify any work completed. See Business and Professions Code sections 6700-6799, 7800-7887, and 8700-8805, respectively.

Quality of the Water. The "chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use" as defined in the California Water Code Sec. 13050(g).

Receiving Waters. Surface waters or groundwater that receive or have the potential to receive discharges of waste from irrigated lands.

Riparian Vegetation. The vegetation (including dead, dying, or decaying vegetation) along a watercourse that is distinguished from other vegetation by its dependence on the combination of soil moisture and other environmental factors provided by a watercourse.

Sediment and Erosion Control Practices. Practices used to prevent and reduce the amount of soil and sediment entering surface water in order to protect or improve water

quality.

Site-Specific Potential Effective Shade. The shade equivalent to that provided by topography and potential vegetation conditions at a site. Shade controls that are effective at correcting temperature impairments also operate to prevent impairments and provide other water quality protections such as bank stability and filtering sediment and other waste discharges.

Source of Drinking Water. Any water designated as municipal or domestic supply (MUN) beneficial use in a North Coast Water Board Basin Plan and/or as defined in State Water Board Resolution No. 88-63.

Stormwater. Stormwater runoff, snow melt runoff, and surface runoff and drainage, as defined in 40 CFR 122.26(b)(13).

Stormwater Runoff. Precipitation water in excess of what can infiltrate the soil surface and be stored in small surface depressions.

Streamside Area. The area between the waterside edge of riparian vegetation (or the nearest edge of the High-Water Mark if riparian vegetation is not present) and the field side edge of a vegetated buffer. A vegetated buffer is not synonymous with a filter strip, which may be used as part of farming practices (e.g., equipment turn-around) and disturbed for tilling, planting, or other practices.

Surface Runoff. Precipitation, snow melt, or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions, a major transporter of nonpoint source wastes in rivers, streams, and lakes.

Tailwater. Runoff of irrigation water from the lower end of an irrigated field.

Toxicity Unit. A toxicity unit (TU) is a simple ratio of the measured concentration of dissolved copper to the BLM-generated criteria and is calculated by dividing the measured value by the modelled criteria. See Attachment D: Methodologies and Procedures for more information on how the 'TU' is calculated and used. See also, Biotic Ligand Model.

Coalition. An organization or entity that is approved to represent Enrollees under this Order and is obligated to fulfill the following responsibilities: (1) collect fees from Enrollees and submit payments to the State Water Resources Control Board; (2) manage communications between Enrollees and the North Coast Water Board; (3) provide compliance education resources for Enrollees; and (4) fulfill monitoring and reporting requirements including but not limited to submitting monitoring workplans and necessary technical material, conducting regional surface water and groundwater monitoring, and connecting Enrollees to resources that can assist the preparation and implementation of Water Quality Management Plans.

Third-Party Program. The set of requirements under this Order that a Coalition is allowed to perform on behalf of the Enrollees enrolled in that Coalition.

Total Maximum Daily Load (TMDL). The calculation of the maximum amount of a particular material that a waterbody can assimilate on a regular basis and still support beneficial uses designated for that waterbody.

Trend. A general direction in which something is developing or changing. See also Water Quality Trend.

Unfarmed Wetland. Any wetland not currently farmed or historically farmed in the lily bulb crop rotation upon enrollment in the Order. An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

Vegetated Buffer. A narrow, permanent strip of dense perennial vegetation (including riparian vegetation) where no crops are grown and which is established parallel to the contours of and perpendicular to the dominant slope of the land applications area for the purposes of slowing water runoff, enhancing water infiltration, trapping pollutants bound to sediment and minimizing the risk of any potential nutrients or pollutants from reaching surface waters. A vegetated buffer is not synonymous with a filter strip, which may be used as part of farming practices (e.g., equipment turn-around) and disturbed for tilling, planting, or other practices

Watercourse Setback. A setback area adjacent to a watercourse, including streams, creeks, and other designated or undesignated channels, whether perennial, intermittent, or ephemeral, that is required to be maintained in vegetative cover in accordance with this Order for purposes of Adaptive Management. This term is distinct and independent from Streamside Areas established to implement the Temperature Policy. The Watercourse Setback is measured from the waterside edge of vegetation to the planted area of the lily bulb field.

Waste. "Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal" as defined in the California Water Code Sec. 13050(d). "Waste" includes irrigation return flows and drainage water from agricultural operations containing materials not present prior to use. Waste from irrigated agriculture includes earthen materials (such as soil, silt, sand, clay, rock), inorganic materials (such as metals, salts, boron, selenium, potassium, nitrogen, phosphorus), and organic materials such as pesticides.

Water Quality Benchmark. A concentration based on relevant water quality criteria

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that is the numeric translation of applicable Water Quality Objectives. Water Quality Benchmarks are defined in Section G.1 of the Findings and included in Attachment A: Monitoring and Reporting Program. Water Quality Benchmarks for surface water are established for both acute and chronic exposure conditions. Exceedance of a Water Quality Benchmark is determined by considering both concentration and frequency within a Water Year. An acute Water Quality Benchmark is exceeded when the acute concentration is exceeded once within a Water Year, and a chronic Water Quality Benchmark is exceeded when the chronic concentration is exceeded twice within a Water Year. Receiving Water Limitations in Section II.C of this Order reference compliance with all water quality objectives, some of which are translated through Water Quality Benchmarks. Attainment of Water Quality Benchmarks demonstrates attainment of the corresponding Water Quality Objective and compliance with Receiving Water Limitations. Conversely, exceedance of a Water Quality Benchmark indicates that discharges may be causing or contributing to an exceedance of a Water Quality Objective and are, therefore, in violation of Receiving Water Limitations of the Order. Water Quality Benchmarks for groundwater are protective of applicable Water Quality Objectives. Attainment of Water Quality Benchmarks for groundwater in this Order demonstrate compliance with Receiving Water Limitations.

Water Quality Objective(s). “Limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specified area,” as defined in Sec. 13050(h) of the California Water Code. Water Quality Objectives may be either numerical or narrative and serve as Water Quality Criteria for purposes of section 303 of the Clean Water Act.

Water Quality Standard. Provisions of State or Federal law that consist of the beneficial designated uses or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular waterbody, and an antidegradation statement. Water quality standards include water quality objectives in the North Coast Water Board’s Basin Plan, water quality criteria in the California Toxics Rule and National Toxics Rule adopted by USEPA, and/or water quality objectives in other applicable State Water Board plans and policies. For groundwater with the beneficial use of municipal or domestic water supply, the applicable drinking water standards are those established by the USEPA or California DDW, whichever is more stringent. Under Sec. 303 of the Clean Water Act, each State is required to adopt water quality standards.

Water Quality Trend. A change in time of a measured chemical constituent that represents an aspect of the quality of the water (e.g., increasing, stable, or decreasing concentration of a constituent). The analysis of a water quality trend predicts the behavior of water quality parameters and overall water quality in the time domain.

Waters of the State. “Any surface water or groundwater, including saline waters, within the boundaries of the State” as defined in the California Water Code Sec. 13050(e).

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“Waters of the state” includes all “waters of the U.S.” Any significant accumulation of water above the ground surface, such as lakes, ponds, rivers, streams, creeks, springs, wetlands, and canals.

Water Year. A Water Year is defined as October 1st through September 30th of each year.

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III. Endnotes

The following endnotes apply to Order No. R1-202X-00XX only. Endnotes for the MRP shall be provided at the end of Attachment A: Monitoring and Reporting Program. Endnotes are arranged in order that they appear in the document.

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- ¹ The California Interagency Watershed Map of 1999 (final version Calwater 2.2.1 updated in 2014) was the State of California's working definition of watershed boundaries prior to the development of the federal Hydrologic Unit Code (HUC) system. The purpose of the Calwater dataset was to standardize the boundary delineation, coding, and naming of California watersheds by government agencies. Calwater divides the State into ten Hydrologic Regions (HR). Each HR is progressively subdivided into six smaller, nested levels: the Hydrologic Unit (HU, major rivers), Hydrologic Area (HA, major tributaries), Hydrologic Sub-Area (HSA), Super Planning Watershed (SPWS), and Planning Watershed (PWS).
- ² Lily bulb crop rotation can sometimes have longer or shorter crop rotation cycles than three-to-five years.
- ³ For the purposes of this Order, pesticides include insecticides, herbicides, and fungicides.
- ⁴ 2018 SWAMP Monitoring Report: [180101-FINAL SWAMP REPORT Smith River.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/180116/180101-FINAL%20SWAMP%20REPORT_Smith%20River.pdf)
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/180116/180101-FINAL%20SWAMP%20REPORT_Smith%20River.pdf
- ⁵ See Smith River Plain Water Quality Management Plan: [Smith River Plain Water Quality Management Plan Public Review Draft February 2021](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmqmtplan.pdf).
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmqmtplan.pdf
- ⁶ [2025 SWAMP Report Smith River Plain Surface Water Monitoring Report 2021-2024](https://waterboards.ca.gov/northcoast/board_info/board_meetings/10_2025/10_08/pdf/1/1-smith-report.pdf)
https://waterboards.ca.gov/northcoast/board_info/board_meetings/10_2025/10_08/pdf/1/1-smith-report.pdf
- ⁷ [Smith River Plain Surface Water Monitoring Study 2021-2024](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2025/25_SWAMP_MR_SRPWM.pdf)
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2025/25_SWAMP_MR_SRPWM.pdf
- ⁸ Under section 9 of the ESA, it is illegal to import, export, or take endangered species for any purpose, including commercial activity. The term “take” means to harass, hunt, shoot, capture, trap, kill, collect, wound, harm, or pursue an ESA-listed species, or attempt any of these activities. See [Protective Regulations for Threatened Species under the Endangered Species Act: Section 4\(d\) | NOAA Fisheries](https://www.fisheries.noaa.gov/national/endangered-species-conservation/protective-regulations-threatened-species-under-endangered#:~:text=Under%20section%209%20of%20the,attempt%20any%20of%20) for more information.
(<https://www.fisheries.noaa.gov/national/endangered-species-conservation/protective-regulations-threatened-species-under-endangered#:~:text=Under%20section%209%20of%20the,attempt%20any%20of%20>

[20these%20activities.\)](#)

⁹ Pounds of copper itself, not pounds of a copper containing compound.

¹⁰ Hurst, M., Wolfe, L., & Selby, P. (2024). The Effects of Vegetative Barriers on Copper in Runoff from Lily Bulb Fields. California State Polytechnic University – Humboldt. Final Report submitted to the California State University - Agricultural Research Institute (CSU-ARI) and Southern California Coastal Water Research Project. Date: 8/15/2024

¹¹ Fischer, R.A., Martin, C.O., Ratti, J.T., & Guidice, J. (2000). Improving Riparian Buffer Strips for Water Quality and Wildlife. U.S. Army Engineer Research and Development Center (ERDC).

¹² Cole, L.J., Stockan, J., & Helliwell, R. (2020). Managing riparian buffer strips to optimise ecosystem services: A review. *Agriculture, Ecosystems & Environment*, 296, 106891.

¹³ See Tables I.3 and I.4 in the Findings for a consolidated list of Water Quality Benchmarks.

¹⁴ See [rb1_smith_river_jan2018.pdf \(ca.gov\)](#)
(https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/reglrpts/rb1_smith_river_jan2018.pdf)

¹⁵ At the Sarina Road SWAMP Monitoring location

¹⁶ See [Aquatic Life Benchmarks and Ecological Risk Assessments for Registered Pesticides | US EPA](#) for US EPA Aquatic Life Benchmarks
(<https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/aquatic-life-benchmarks-and-ecological-risk>)

¹⁷ Toxicity was determined using methods developed by the UC Davis Aquatic Health Program Laboratory.

¹⁸ See the 2018 SWAMP Report: [180101-FINAL SWAMP REPORT Smith River.pdf \(ca.gov\)](#)

¹⁹ Hurst, M., Bright, P., Villalta, E., & Wolfe, L. (2022). The Bioavailability of Copper in the Smith River Plain. California State University - Agricultural Research Institute (ARI) and the Tolowa Dee-ni' Nation. Cal Poly Humboldt, Arcata, CA. August 15, 2022.

²⁰ Sandahl, J. F., M. J. B. Miyasaka, N. Koide, and H. Ueda. "A Sensory System at the Interface between Urban Stormwater Runoff and Salmon Survival." *Environmental Science & Technology*, vol. 41, no. 8, 2007, pp. 2998-3004.

²¹ Olivari, Francisco A., Pedro P. Hernández, and Miguel L. Allende. "Acute Copper Exposure Induces Oxidative Stress and Cell Death in Lateral Line Hair Cells of Zebrafish Larvae." *Brain Research*, vol. 1244, 2008, pp. 1-12.

²² Visit the North Coast Lily Bulb page to access prior studies:
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily

²³ Normalized application rates were determined by dividing application rates for each

tributary watershed by the tributary area in acres.

- ²⁴ The Water Quality Benchmark for diuron and imidacloprid in this Order are consistent with the USEPA Aquatic Life Benchmarks. The Aquatic Life Benchmark for diuron was updated in 2025. The 2025 SWAMP Report compared diuron and imidacloprid detections using benchmarks derived from UC Davis studies.
- ²⁵ View the [Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf \(ca.gov\)](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)
[https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)
- ²⁶ Trace concentrations are concentrations between the Method Detection Limit and the Reporting Limit.
- ²⁷ Established health levels are drinking water standards developed by the CA Department of Pesticide Regulation, the CA State Water Board, and the US EPA. Concentrations below these levels are considered protective against both acute and chronic human health impacts from pesticide exposure
- ²⁸ See [Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf \(ca.gov\)](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)
[https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith River Plain 2015 Groundwater Interim Monitoring Report.pdf](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/pdf/151209/Smith_River_Plain_2015_Groundwater_Interim_Monitoring_Report.pdf)
- ²⁹ Smith River Management Plan, 2021.
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/pdf/2021/smithmgmtplan.pdf
- ³⁰ National Oceanic and Atmospheric Administration (NMFS). 2014. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*). National Marine Fisheries Service. Arcata, CA. 1841p
- ³¹ See [Essential Fish Habitat on the West Coast | NOAA Fisheries](https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast)
<https://www.fisheries.noaa.gov/west-coast/habitat-conservation/essential-fish-habitat-west-coast>
- ³² 2005 Tidewater Goby Recovery Plan
https://ecos.fws.gov/docs/recovery_plan/051207.pdf
- ³³ Portions of the Basin Plan's narrative toxicity objective have been superseded by the Statewide Aquatic Toxicity Provisions. (See Staff Report for State Policy for Water Quality Control: Toxicity Provisions, Appendix E, pp. 413-414.
https://www.waterboards.ca.gov/water_issues/programs/state_implementation_policy/docs/2021/2021-toxicity-staff-report.pdf)
- ³⁴ Water Quality Benchmarks were derived from water quality criteria are generally consistent with the State Water Board's guidelines for listing impaired waters under Section 303(d) of the Clean Water Act. As a general approach, North Coast Water Board staff reviewed all available pesticide water quality criteria and selected the

most protective (i.e., lowest) values for relevant beneficial uses of surface waters and groundwater in the Smith River Plain. In surface waters, Water Quality Benchmarks (except the acute benchmark for ethoprop and the BLM-derived benchmarks for copper) are sourced from USEPA Aquatic Life Benchmarks. The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. For groundwater Water Quality Benchmarks, the North Coast Water Board relies on the applicable Drinking Water Maximum Contaminant Level (MCL), if available. If an MCL is not available, the North Coast Water Board has selected the best available Drinking Water Standard available. Human Health Reference Levels (HHRL) are identified by California Department of Pesticide Regulation's Human Health Assessment Branch. Pesticide concentrations measured in water exceeding these reference levels indicate a health concern. They are not legally enforceable standards but can be used to identify pesticide levels in drinking water that could pose a human health risk. USEPA Chronic or Lifetime Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of chronic non-carcinogenic effects over a lifetime of exposure, assuming that 20% of the exposure to a given pesticide is from water and additional exposure is derived from another source such as food, air, or dermal contact. USEPA Acute or One-day Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of acute or up to one-day non-carcinogenic effects, assuming that the entire exposure to a given pesticide is from drinking water. Health-Based Screening Levels (HBSLs) are federal, non-enforceable water-quality benchmarks developed by the United States Geological Survey. The HBSL concentration level for diuron, for example, represents a one-in-one million cancer risk range.

³⁵ The toxicity unit (TU) is a simple ratio of the measured concentration of dissolved copper to the BLM-generated criteria and is calculated by dividing the measured value by the modelled criteria. See the 'Dissolved Copper Results' section below for more information on how the 'TU' is calculated and used.

³⁶ The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality

threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection.

³⁷ Water Quality Benchmarks were derived from water quality criteria are generally consistent with the State Water Board's guidelines for listing impaired waters under Section 303(d) of the Clean Water Act. As a general approach, North Coast Water Board staff reviewed all available pesticide water quality criteria and selected the most protective (i.e., lowest) values for relevant beneficial uses of surface waters and groundwater in the Smith River Plain. In surface waters, Water Quality Benchmarks (except the acute benchmark for ethoprop and the BLM-derived benchmarks for copper) are sourced from USEPA Aquatic Life Benchmarks. The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. For groundwater Water Quality Benchmarks, the North Coast Water Board relies on the applicable Drinking Water Maximum Contaminant Level (MCL), if available. If an MCL is not available, the North Coast Water Board has selected the best available Drinking Water Standard available. Human Health Reference Levels (HHRL) are identified by California Department of Pesticide Regulation's Human Health Assessment Branch. Pesticide concentrations measured in water exceeding these reference levels indicate a health concern. They are not legally enforceable standards but can be used to identify pesticide levels in drinking water that could pose a human health risk. USEPA Chronic or Lifetime Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of chronic non-carcinogenic effects over a lifetime of exposure, assuming that 20% of the exposure to a given pesticide is from water and additional exposure is derived from another source such as food, air, or dermal contact. USEPA Acute or One-day Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of acute or up to one-day non-carcinogenic effects, assuming that the entire exposure to a given pesticide is from drinking water. Health-Based Screening Levels (HBSLs) are federal, non-enforceable water-quality benchmarks developed by the United States Geological Survey. The HBSL concentration level for diuron, for example, represents a one-in-one million cancer risk range.

³⁸ The Clean Water Act does not specifically define nonpoint source pollution, except by stating that nonpoint source is anything that is not considered a point source. A

point source is defined under federal regulation as “any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

³⁹ The Antidegradation Policy:

https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf

⁴⁰ State Water Board Order WQ 86-17 (*Fay*), pp. 16-19.

⁴¹ *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (2012) 210 Cal.App.4th 1255, 1262.

⁴² State Water Board Order 2015-0075 (*Los Angeles MS4*), p. 23.

⁴³ While the baseline for the application of the state antidegradation policy is generally the highest water quality achieved since 1986, baseline water quality may be a lower level if that lower level was allowed through a permitting action that was consistent with applicable antidegradation policies, or where a water quality objective for a particular constituent was adopted after 1968, the baseline for that constituent is the highest water quality achieved since the adoption of the objective. State Water Board Order 2015-0075 (*Los Angeles MS4*) pp. 23-24, fn. 82.

⁴⁴ In the Matter of Review of Waste Discharge Requirements General Order No. R5-2012-0116 for Growers Within the Eastern San Joaquin River Watershed that are Members of the Coalition, SWRCB Order No 2018-0002 (2018):
https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2018/wqo2018_0002_with_data_fig1_2_appendix_a.pdf.

⁴⁵ Questions and Answers Resolution, No. 68-16, State Water Board (Feb. 16, 1995), pp. 5-6.

⁴⁶ Questions and Answers Resolution, No. 68-16, State Water Board (Feb. 16, 1995), pp. 5-6.

⁴⁷ The State of California maintains multiple publicly accessible environmental monitoring databases and data systems that provide surface water and groundwater quality information, including: the California Environmental Data Exchange Network (CEDEN) for statewide surface water quality data (<https://ceden.org/>) ; GeoTracker, an online data access system of the State Water Resources Control Board (<https://www.waterboards.ca.gov/oil-gas/geotracker/>) ; the California Department of Pesticide Regulation’s Surface Water Database (SURF) (<https://www.cdpr.ca.gov/environmental-monitoring/surface-water/>) and Well Inventory Database for pesticide well sampling data (<https://calpip.cdpr.ca.gov/wellInventoryDatabase.cfm>) ; and the Groundwater Ambient Monitoring and Assessment (GAMA) Program’s online groundwater

quality tools (<https://www.waterboards.ca.gov/gama/>) .

- ⁴⁸ The total gross production value of the commercial lily bulb industry is estimated to be and total jobs in Del Norte County are estimated to be .
- ⁴⁹ Note that highlighted items in this Draft Order reflect additional information to be collected in the revision phase, either as response to written comment, or through additional investigation.
- ⁵⁰ https://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf
- ⁵¹ See Monitoring and Reporting Findings for summary of the 2015 Smith River Plain Groundwater Monitoring Report.
- ⁵² Note that this section reviews costs of compliance to the Enrollees in this Order. There are broader economic considerations not quantified in this section. For example, implementing this Order may result in positive economic impacts on the broader community through water quality benefits to tourism, recreation, or fishing.
- ⁵³ Estimated costs are generated from NRCS Conservation Practice Codes that can be referenced in the NRCS Field Office Technical Guide.
<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>
- ⁵⁴ See the North Coast Basin Plan for applicable water quality objectives. [North Coast Basin Plan June 2025 Edition](https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/250703/06_25_BP.pdf)
https://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/250703/06_25_BP.pdf
- ⁵⁵ See Appendix I for definition of a Field, which has a distinct geography the Lily Bulb Order uses for planted areas of lily bulb agriculture.
- ⁵⁶ Agricultural pollutants can include, but is not limited to fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals and wastes associated with agricultural activities.
- ⁵⁷ See Appendix 1 for definition.
- ⁵⁸ Engineered management practices shall be designed and installed in compliance with plans and specifications prepared by a civil engineer.
- ⁵⁹ The waterside edge of vegetation means the line on the bank that is established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Enrollees may refer to the definition of Waterside edge of vegetation in Appendix I and/or Attachment D: Methodologies and Procedures for examples.
- ⁶⁰ This Order does not authorize agricultural activities or work in an Unfarmed Wetland. Enrollees must seek coverage through the 401 Water Quality Certification and Wetlands Program (see https://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality

[certification/](#)) for discharges of dredged or fill material to waters of the state (e.g., agricultural development or agricultural activities in Unfarmed Wetlands). An Unfarmed Wetland is any wetland not currently farmed at time of adoption of the Order. [An area is wetland](#) if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. (See https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/2021/procedures.pdf).

- ⁶¹ In this case, Hydrologically Connected refers to the lake or reservoir being Hydrologically Connected to the stream, not the Farm Area.
- ⁶² Streambank restoration within waters of the United States or waters of the state requires separate regulatory coverage under either Clean Water Act section 404/401 or alternative waste discharge requirements. See [Water Quality Certification](#) (https://www.waterboards.ca.gov/northcoast/water_issues/programs/water_quality_certification/)
- ⁶³ Maintenance of existing watercourse crossings without the need for additional permitting by the North Coast Water Board is limited to removal of vegetation impacting the use and function of the crossing (e.g., preventing vehicle access across the crossing or limiting the flow of water through the crossing infrastructure), clearing and maintaining watercourse function using hand tools or the manual placement of energy dissipating rock.
- ⁶⁴ Installation of surface water diversion infrastructure requires a valid water right from the State Water Board Division of Water Rights and may require additional permit coverage from the North Coast Water Board through an approved 401 Water Quality Certification or alternate waste discharge requirements.
- ⁶⁵ The level of effective shade provided by vegetation when the vegetation is growing at potential. For any given location, this term is called "site- specific potential effective shade."
- ⁶⁶ [NRCS Technical Note on Riparian Buffer Design and Species Considerations](#) (<https://www.nrcs.usda.gov/plantmaterials/idpmstn7248.pdf>) and Dewalle, David. (2010). Modeling Stream Shade: Riparian Buffer Height and Density as Important as Buffer Width1. JAWRA Journal of the American Water Resources Association. 46. 323 - 333. 10.1111/j.1752-1688.2010.00423.x.
- ⁶⁷ Compliance education sources include formal classroom training, individual meetings with a qualified trainer, printed materials, and/or internet-based training with an approved Coalition, University of California Cooperative Extension (UCCE), Natural Resources Conservation Service (NRCS), Resource Conservation Districts (RCDs), Regional or State Water Boards, Department of Pesticide Regulation,

California Department of Fish and Wildlife, California Department of Food and Agriculture, or other organizations as approved by the Executive Officer.

Compliance education requirements are consistent with “outreach and education” requirements in the Statewide Precedential Order.

⁶⁸ For example, if the Field is to be prepped and planted to lily bulbs in the summer/fall of 2028, then the WQMP is due to the North Coast Water Board on January 1, 2028.

⁶⁹ Treatment Control Management Practices are the implementation of one or more mechanical, chemical, biologic, or any other treatment technology. Treatment control Management Practices must be designed by a qualified professional and must monitor pollutant concentration entering and exiting the treatment system.

⁷⁰ See definition in Appendix I

⁷¹ The waterside edge of vegetation means the line on the bank that is established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. Enrollees may refer to the definition of Waterside edge of vegetation in Appendix I and/or Attachment D: Methodologies and Procedures for examples.

⁷² Refer to relevant NRCS Conservation Practice Codes that can be referenced in the NRCS Field Office Technical Guide. <https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>

⁷³ See [Runoff Volumes Standard Operating Procedure \(Rainfall and runoff\) SOP](https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/512.pdf) (https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/512.pdf)

⁷⁴ See INMP Worksheet for examples of groundwater protection management practices

⁷⁵ [Guidance for electronic submittal](https://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/2014/ECM_Letter-Guidelines.pdf) (https://www.waterboards.ca.gov/northcoast/publications_and_forms/available_documents/pdf/2014/ECM_Letter-Guidelines.pdf).

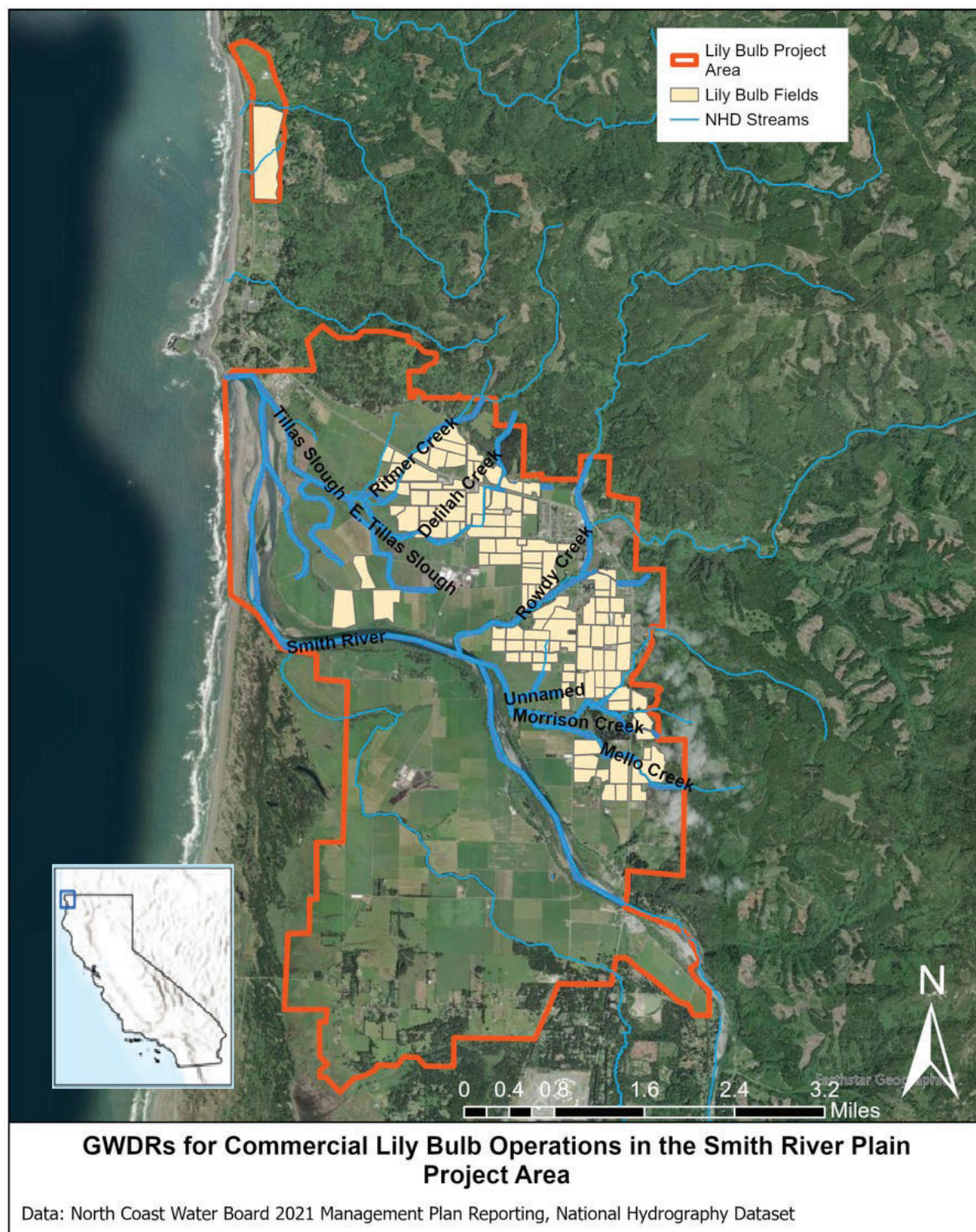
⁷⁶ Natural Resources Conservation Service: [Conservation Practice Standards Information](https://www.nrcs.usda.gov/getting-assistance/conservation-practices) (<https://www.nrcs.usda.gov/getting-assistance/conservation-practices>).

⁷⁷ See the [EnviroAtlas Hydrologic Unit Codes Fact Sheet](https://enviroatlas.epa.gov/enviroatlas/datafactsheets/pdf/Supplemental/HUC.pdf) (<https://enviroatlas.epa.gov/enviroatlas/datafactsheets/pdf/Supplemental/HUC.pdf>).

⁷⁸ See the [Cal-IPC website: Plants A to Z](https://www.cal-ipc.org/plants/profiles/) (<https://www.cal-ipc.org/plants/profiles/>).

Appendix II: Figures

Figure I.1: Fields used for lily bulb cultivation as reported in 2024 and major coastal tributaries of the Smith River Plain



Attachment A: Monitoring and Reporting Program

I. Summary

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code section 13267, which authorizes the North Coast Water Board to require the preparation and submittal of technical and monitoring reports. The Executive Officer may modify this MRP as necessary or appropriate. This MRP establishes monitoring and reporting requirements for both Individual Enrollees and Coalitions acting on behalf of their enrolled members to evaluate compliance with the provisions of the General Order and to determine whether state waters receiving discharges from enrolled parcels are achieving applicable water quality goals. See Section I.E of the Order for additional findings regarding this MRP.

This MRP establishes specific monitoring, reporting, and electronic data deliverable requirements for Coalition Members and Individual Enrollees. This Monitoring and Reporting Program (MRP) consists of the following elements: (1) Surface Water Monitoring; (2) Groundwater Trend Monitoring; (3) Drinking Water Supply Well Monitoring; and (4) Reporting.

- 1) Surface Water Monitoring: The objectives of the Surface Water Monitoring program are to: (1) monitor synthetic pesticide and dissolved copper concentrations in surface waters downstream from Commercial Lily Bulb Operations; (2) evaluate if discharges from Commercial Lily Bulb Operations are causing or contributing to exceedances of Water Quality Benchmarks in surface waters receiving those discharges or otherwise adversely affecting beneficial uses; and (3) support improvement of on-farm management practices through an iterative Adaptive Management process designed to achieve the Receiving Water Limitations and conditions of this Order.
- 2) Groundwater Trend Monitoring: The objectives of Groundwater Trend Monitoring are to: (1) determine current water quality conditions of groundwater relevant to Commercial Lily Bulb Operations, (2) develop long-term groundwater quality information with respect to the pollutants of concern that can be used to evaluate the regional impacts of lily bulb farming and its practices on groundwater quality and beneficial uses, and (3) support improvement of on-farm management practices through an iterative Adaptive Management process designed to achieve the Receiving Water Limitations and conditions of this Order.
- 3) Drinking Water Supply Well Monitoring: The purpose of the Drinking Water Supply Well Monitoring Program is to identify potential human health impacts from nitrate and pesticides and notify groundwater well users of nitrate or pesticides concentrations above a Maximum Contaminant Level (MCL) or human health level for drinking water wells located on parcels commercially farmed for lily bulbs.
- 4) Reporting: Reporting requirements consist of an Annual Compliance Report and a Water Quality Trend Monitoring Report submitted to the North Coast Water Board

by either the Individual Enrollee or the Coalition on behalf of its members. Annual Compliance Reports include an inventory of management practices implemented by Enrollees, Enrollee outreach event attendance, CEQA Mitigation Monitoring, and water quality monitoring results. The Water Quality Trend Monitoring Report includes actions taken to meet Receiving Water Limitations and Order conditions, including but not limited to, revised or additional management practices implemented along with an evaluation of monitoring data to identify spatial trends and patterns.

II. Master Schedule

- 1) A schedule of Monitoring and Reporting is provided in Table A.1 below. All Enrollees shall participate in the monitoring requirements, below. The Coalition may perform Surface Water Monitoring and Groundwater Trend Monitoring on behalf of its enrolled Members.
- 2) Enrollees or the Coalition may request an extension of a deadline in this MRP by submitting a Request for Extension to the Executive Officer 60 days prior to the deadline. The request shall include an explanation of the anticipated inability to meet the deadline and a proposed time schedule to come into compliance with this MRP.

Table A.1: Water Quality Monitoring Master Schedule

Requirement	Frequency	Parameters	Where to Report
Surface Water Monitoring (see Section IV.A)	3 times per Water Year during the wet season	Dissolved Copper and pesticides	Annual Compliance Report and Trend Monitoring Report
Groundwater Trend Monitoring (see Section IV.B)	Annually in October	Nitrate and pesticides	Annual Compliance Report and Trend Monitoring Report
Drinking Water Well Sampling (See Section IV.C)	Annually or once every five years in accordance with Section IV.C of this MRP	Nitrate and pesticides	Submitted to GeoTracker

Table A.2: Reporting Master Schedule

Requirement	Elements of Report	Submittal deadline to North Coast Water Board and Frequency
Water Quality Monitoring Workplan (see Section III)	Responsible party and scope; surface water monitoring locations; groundwater monitoring network design; sampling methods, frequency, and analysis; data evaluation and trend methods; Quality Assurance Project Plan (QAPP); and optional crop nitrogen removal coefficient.	By #DATE .
Annual Compliance Report (see Section V.A)	Farm Evaluation, Irrigation and Nutrient Management Plan, annual water quality monitoring results, and CEQA Mitigation Measures	By #DATE , and by <u>March 1st</u> annually thereafter. Note that the Annual Water Quality Monitoring results are not due until the year after the Workplan is approved.
Water Quality Trend Monitoring Report (Trend Monitoring Report) (see Section V.B)	All receiving water surface and groundwater monitoring results for the previous five years with an accompanying trend analysis.	Within <u>five years</u> of approval of Water Quality Monitoring Workplan and every five years by <u>March 1st</u> thereafter.

III. Water Quality Monitoring Workplan

- 1) By **DATE**, Individual Enrollees (e.g., not in a Coalition) shall submit a Monitoring and Reporting Workplan, for Executive Officer review and approval, which describes how they will implement the monitoring and reporting requirements of this MRP. Once approved, the Individual Enrollees shall implement the approved Workplan and report results. Individual Enrollees shall conduct all monitoring and reporting for all enrolled parcels.
- 2) By **DATE**, Coalitions, on behalf of their members, shall submit a Monitoring and Reporting Workplan, for Executive Officer review and approval, that describes how it implements the monitoring and reporting requirements of this MRP. Once approved, the Coalition and its members shall implement the approved Workplan and report results.
- 3) The Workplan shall include all elements necessary to meet the monitoring, reporting, and quality assurance requirements of this MRP for both Surface Water Monitoring and Groundwater Trend Monitoring. All applicable requirements are located in Sections IV-V of this MRP.
- 4) Mapping and Documentation: The Workplan shall include a map(s) and GPS coordinates of all proposed monitoring locations required under this MRP. Monitoring locations must also specify access routes, ingress/egress points, and potential hazards. The map(s) may be an aerial photograph(s), topographic map, LiDAR-derived shaded relief map, Google Earth image, or equivalent, that depicts features at 1-inch = 50 feet or larger scale and clearly delineates all monitoring points required in this MRP. The map(s) may also be transmitted digitally as a set of geographic information system (GIS) files such as points, lines, polygons, and rasters in commonly accessible formats such as shapefiles and GeoTIFFs.
- 5) Data Evaluation and Methodology: The Workplan shall include methodology(ies) to evaluate trends in groundwater monitoring data and receiving surface water data.
- 6) Quality Assurance: The Workplan shall include a Quality Assurance Project Plan (QAPP) that outlines procedures used to ensure the data collected and analyzed meet requirements of this MRP. The QAPP shall be consistent with guidance provided by the State Water Resources Control Board (State Water Board) regarding Quality Assurance/Quality Control.
- 7) Surface Water Monitoring: This MRP specifies Surface Water Monitoring locations in Section IV.A. However, the Coalition or Individual Enrollee may propose additional or alternate locations in the Workplan accompanied by a map(s), description, and GPS coordinates of all proposed monitoring locations. The Workplan shall describe sampling methods, frequency, and analytical procedures consistent with the requirements of Section IV.A of this MRP. All data collection and analysis for surface water monitoring shall adhere to the approved Quality Assurance Project Plan (QAPP) included in the Workplan.

- 8) Groundwater Trend Monitoring: The Workplan shall include a map(s) and GPS coordinates of all proposed groundwater trend monitoring wells that meet(s) the requirements of Section IV.B of this MRP. The Workplan shall consider the following criteria for identifying Groundwater Trend Monitoring wells in areas that may be at higher risk of nitrate impacts to groundwater quality from lily bulb agriculture:
- (1) existing water quality data;
 - (2) depth to groundwater with consideration given to selecting wells that best represent the groundwater zones most likely to be affected by lily bulb farming and where appropriate to evaluate potential nitrate migration to deeper aquifer; and
 - (3) presence of wells in locations that are not influenced by other potential nitrogen sources (e.g., dairies) so that monitoring results reflect nitrate impacts associated with lily bulb farming.
- 9) The Coalition may choose to propose a crop removal coefficient (C_N) in the Workplan. Total Nitrogen Removed is determined by multiplying an Enrollee's crop yield by this coefficient (C_N), which represents the amount of nitrogen in the harvested crop. The Coalition may propose a C_N coefficient determined through testing of nitrogen removed, literature review, or recent research for converting crop yield to nitrogen removed. If no crop removal coefficient is proposed, the North Coast Water Board will determine the coefficient. Enrollees shall use this crop removal coefficient to determine nitrogen reporting as described in Section V of this MRP.
- 10) Drinking Water Well Sampling as described in Section IV.C of this MRP does not need to be included in the Workplan, as each Enrollee shall determine eligible drinking water wells on their enrolled parcels and conduct sampling in accordance with Section IV of this MRP.

IV. Monitoring Requirements

A. Surface Water Monitoring

- 1) Overview: Surface Water Monitoring must provide sufficient data to: 1) determine whether surface waters downstream of Commercial Lily Bulb Operations meet applicable Water Quality Benchmarks; 2) trigger adaptive management where existing practices are insufficient to prevent, minimize or eliminate discharges which cause or contribute to exceedances of Water Quality Benchmarks in receiving waters; and 3) track trends in surface water quality associated with discharges from lily bulb operations. Surface waters shall be monitored for the parameters and at the frequency listed in Table A.3.
- 2) Locations: Surface water monitoring stations shall be as far downstream of lily bulb operations¹ in each tributary as possible considering site accessibility. Surface water monitoring stations, including corresponding GPS coordinates and station descriptions, are identified in Table A.3 and shown on Figure A.1. Individual Enrollees and/or the Coalition may propose new or alternate monitoring stations for approval by the Executive Officer to address changes in lily bulb operations, monitoring access constraints, or the need to differentiate monitoring locations among Enrollees within a tributary area. The Executive Officer may add, remove, or reassign monitoring stations as necessary due to changes in enrollment, access, or monitoring objectives.

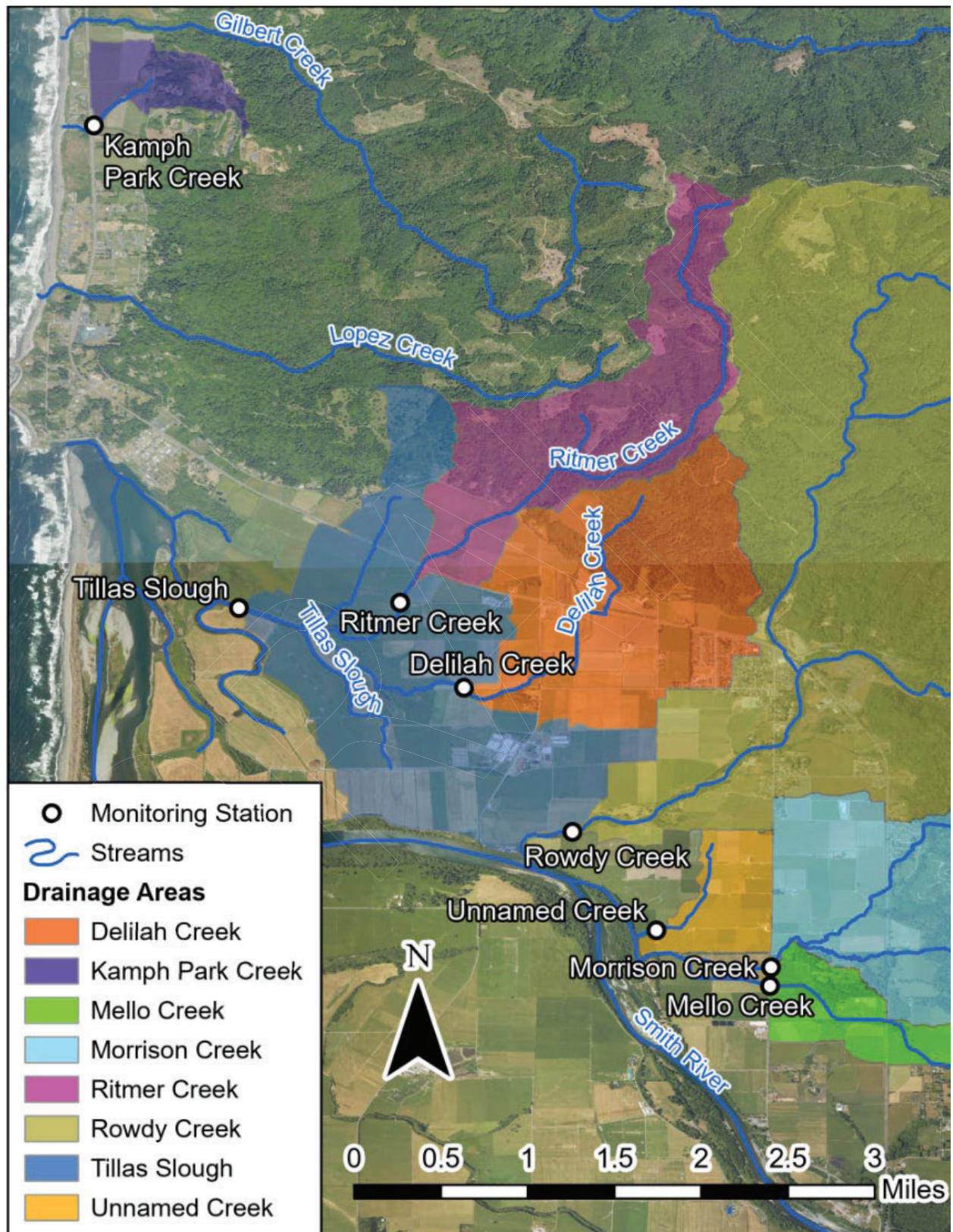
Table A.3: Surface Water Monitoring Locations

Tributary	Description	GPS Coordinates
Tillas Slough	Upstream side of culvert crossing near relic irrigation pumps	41.93313°, -124.19067°
Ritmer Creek	Upstream side of culvert crossing on Ranch Road	41.93379°, -124.17721°
Delilah Creek	Low water ford downstream of large spruce tree	41.926645°, -124.171889°
Unnamed Creek	~500 feet downstream of small bridge unnamed creek south of Rowdy Creek	41.906370°, -124.155814°
Morrison Creek	Upstream side of culvert crossing on Fred Haight Drive	41.90329°, -124.14628°
Mello Creek	Channel on east side of Fred Haight Drive about 300 feet south of culvert crossing	41.90132° -124.14635°

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Tributary	Description	GPS Coordinates
Rowdy Creek	Right bank accessed off levee road	41.91466°, -124.16284°
Kamph Park Creek	Unnamed creek at location downstream of Highway 101 near Post mile 44.69 with a drainage area of ~150 acres	41.973210°, --124.203566°

Figure A.1: Surface Water Monitoring Stations with Watersheds



- 3) **Frequency:** Surface water monitoring shall be conducted three times per Water Year² with two sampling events occurring during a Major Storm falling between November 1 and April 30 and one sampling event within 7 days following the end of a Major Storm. The two Major Storm sampling events shall occur at least 30 days apart. Collection of samples during a Major Storm event shall occur within 24 hours following the first inch of precipitation once a Major Storm begins. Additionally, collection of samples from the Tillas Slough monitoring station shall occur on the ebb tide. Refer to Attachment D Section 1 for determining the occurrence of a Major Storm.
- 4) **Parameters:** Surface waters shall be monitored for synthetic pesticides, dissolved copper, and other water quality parameters needed to evaluate water quality relative to the Water Quality Benchmarks listed in Table A.4. Water Quality Benchmarks for dissolved copper shall be determined using the BLM. Enrollees and/or a Coalition have two options for evaluating dissolved copper:
- a) **Option 1:** Collect only the parameters required in Table A.5 and use the tributary-specific default values provided in Table A.5 for all other parameters;
or
 - b) **Option 2:** Collect all parameters listed in Table A.6 to independently run the BLM to generate instantaneous water quality criteria to determine whether the Water Quality Benchmark has been exceeded. For a copy of the BLM software and user's guide please contact Kathryn Gallagher (gallagher.kathryn@epa.gov).

Table A.4: Surface Water Monitoring Parameters, Frequency, and Water Quality Benchmarks³

Parameter	Analytical Method	Water Quality Benchmark	Water Quality Benchmark Exceedance
Dissolved Copper (<i>and associated BLM input parameters; see Table A.5 or A.6</i>)	EPA Method 1640	Toxicity Unit ⁴ <1	Two exceedances of the Chronic BLM-IWQC ⁵ in a Water Year -OR- single exceedance of the Acute BLM-IWQC.
Diuron	EPA Method 632	Acute 87.5 ug/L Chronic 0.83 ug/L	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.
Imidacloprid	EPA Method 525	Acute 0.385 ug/L Chronic 0.01 ug/L	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.
Ethoprop	EPA Method 525	Acute 3.15 ug/L Chronic 0.37 ug/L	Two exceedances of the chronic Water Quality Benchmark in a Water Year -OR- a single exceedance of the acute.

Table A.5: Option 1, BLM Constituent Analytes and tributary-specific default values for BLM Analysis (parameters to measure indicated with *italics*)

Parameter (mg/L)	Ritmer Creek	Delilah Creek	Rowdy Creek	Unnamed Creek	Morrison Creek	Mello Creek	Kamph Park Creek⁶
<i>Dissolved Copper</i>	EPA Method 1640	EPA Method 1640	EPA Method 1640	EPA Method 1640	EPA Method 1640	EPA Method 1640	EPA Method 1640
<i>pH</i>	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure
<i>Temperature</i>	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure
<i>Specific Conductivity</i>	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure
<i>Salinity</i>	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure	Field measure
Alkalinity	20	14	43	19	20	17.7	24
Calcium	5.2	6.0	4.8	4.8	4.9	4.7	4.1
Dissolved Organic Carbon	1.0	1.8	0.8	1.4	1.2	1.6	3.1
Magnesium	2.3	3.8	6.3	2.4	2.3	2.5	3.4
Potassium	0.9	1.2	0.7	1.0	1.0	1.0	1.5
Sodium	8.4	7.0	3.9	4.8	4.9	4.6	11
Sulfate	4.4	3.8	2.3	3.0	2.5	3.4	2.7
Sulfide	0	0	0	0	0	0	0
Chloride, Total	9.4	9.9	3.9	5.5	5.5	5.4	17

Table A.6: Option 2, BLM Constituent Analytes to collect for BLM Analysis

Parameter	Analytical Method	Parameter	Analysis Type
Dissolved Copper	EPA Method 1640	Dissolved Organic Carbon	SM 5310B
pH	Field Measure	Magnesium	EPA Method 200.7
Temperature	Field Measure	Potassium	EPA Method 200.7
Specific Conductivity	Field Measure	Sodium	EPA Method 200.7
Salinity	Field Measure	Sulfate	EPA Method 300.0
Alkalinity	EPA Method 2320B	Sulfide	SM 4500S2
Calcium	EPA Method 200.7	Chloride, Total	EPA Method 300.0

- 4) Results: If a Water Quality Benchmark is exceeded for any applicable parameter in Table A.4, all Fields in the tributary area that are planted to lily bulbs in the year the sample was collected shall follow the Adaptive Management Program requirements in Section II.H of this Order.
- 5) Reporting: The results of Surface Water Monitoring shall be reported annually in the Annual Compliance Report and evaluated for trends every five years in the Trend Monitoring Report as described in Section V of this MRP.

Edge-of-Field Monitoring for Adaptive Management Program (Optional)

- 6) Enrollees may implement an individual Sampling Plan to directly demonstrate that applicable Water Quality Benchmarks identified in Table A.4 for the exceeded parameter are being met at Edge- Of- Field Discharge Point(s) in the lily bulb Field. If Water Quality Benchmarks are being met, that Field is exempted from Adaptive Management requirements despite continued exceedances at the downstream monitoring station. If this option is selected, the Enrollee must comply with the following requirements:
 - a) Sampling Plan: By **March 1st** of the year the applicable Field(s) are planted, the Enrollee shall develop and submit an individual Sampling Plan to the Executive Officer for review and approval that identifies all Edge-of-Field

Discharge Point(s) for the applicable Field(s) in the Adaptive Management Program. The Sampling Plan shall include a Field description; the number and location of individual sampling points to adequately characterize the majority of the discharge from the Field based on its typical discharge patterns; a map of the Field(s) with drainage patterns and planned sampling points identified; and a QAPP section with a description of sample collection procedures and a description of how samples will be handled, transported, and received by the laboratory.

- b) Sampling Requirements: Enrollees shall refer to Tables A.4-A.6 for the list of parameters that need to be analyzed and the appropriate types of analyses. Enrollees must sample their Edge-of-Field Discharge Point(s) concurrent with the sampling at the downstream monitoring station. Enrollees shall refer to sampling and handling instructions in Attachment D: Methodologies and Procedures.
- c) Sampling Analysis: A laboratory that is certified by the State Water Board's Environmental Laboratory Accreditation Program (ELAP) shall conduct all laboratory analyses according to standard methodologies (e.g., USEPA methods and/or Standard Methods for the Examination of Water and Wastewater). Laboratory analytical methods must be included in the QAPP section. The QAPP section shall include the laboratory's Standard Operating Procedures (SOPs).
- d) Reporting: Individual Enrollees shall upload all data collected in the Edge-of-Field Sampling Plan in an electronic CEDEN compatible format⁷ to GeoTracker. Coalition Members may submit their Edge-of-Field Sampling data to the Coalition, which shall report data to the North Coast Water Board by watershed and Anonymous Field ID in the Annual Report.
- e) Results: If sampling indicates that Water Quality Benchmarks are being met at the edge-of-field, the Field is not subject to Adaptive Management requirements, even if the downstream monitoring station has exceeded a Water Quality Benchmark. Once this demonstration has been achieved, an Enrollee must continue to implement their approved Edge-of-Field Sampling Plan to demonstrate compliance or an alternate method approved by the Executive Officer. If the Water Quality Benchmark is not met at the edge-of-field location and the corresponding downstream surface water monitoring station also exceeds a Water Quality Benchmark for the same parameter within the same Water Year, the Field in question shall be escalated in Adaptive Management (e.g., if the Field was in Tier 1, the Field must escalate to Tier 2). The Enrollee shall select and implement the appropriate Adaptive Management requirement during the next crop production cycle.

B. Groundwater Trend Monitoring

- 1) **Overview:** The objective of Groundwater Trend Monitoring Program is to characterize groundwater quality in areas where lily bulbs are cultivated. This section establishes the minimum sampling and reporting requirements for Groundwater Trend Monitoring, which may be conducted either by an Individual Enrollee or by a Coalition on behalf of its members.
- 2) **Locations:** Each Enrollee shall designate at least one representative monitoring well to characterize groundwater quality associated with all enrolled parcels. This requirement may be satisfied by an existing monitored Drinking Water Well (see Section IV.C), provided the well location and screen interval are representative of current groundwater quality conditions and suitable for evaluating aggregated regional impacts from Commercial Lily Bulb Operations in accordance with the groundwater trend monitoring objective.
- 3) **Workplan:** The Individual Enrollee or Coalition on behalf of its Members, shall include in the Water Quality Monitoring Workplan a proposal for representative monitoring well(s) that includes the following details:
 - a) GPS coordinates;
 - b) California state well number (if known);
 - c) Total well depth;
 - d) Top and bottom depths of well casing perforations;
 - e) A copy of the water well drillers log (if available);
 - f) Depth of standing water (static water level), if available (this may be obtained after implementing the Coalition); and
 - g) Well seal information (type of material, length of seal).
- 4) Complete construction and location details may not be available for all groundwater trend monitoring wells. In such cases, Enrollees shall provide well information to the maximum extent practicable to allow the Executive Officer to determine that the well is suitable for meeting the objectives of the Groundwater Trend Monitoring Program.
- 5) **Sampling and Parameters:** Monitoring wells shall be sampled annually within the month of October. Samples shall be analyzed for the parameters identified in Table A.10 as well as the following field parameters: pH, conductivity (at 25° C), temperature and Total Dissolved Solids (TDS).

Table A.7: Groundwater Monitoring Parameters, Water Quality Benchmarks. Benchmark Exceedances and Analytical Methods

Parameter	Benchmark (ug/L)	Benchmark Exceedance	Analytical Method
Diuron	Acute: 1028 Chronic: 2.0	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	EPA 632
Imidacloprid	Acute: 283 Chronic: 500	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	EPA 632
Mefenoxam	Acute: 3000 Chronic: N/A	A single exceedance of the Benchmark	EPA Method 525
Napropamide	Chronic: 710	2 consecutive exceedances of the chronic Benchmark	EPA Method 525
Nitrate	10 (mg/L)	A single exceedance of the Benchmark	SM4500-NO3-E

- 6) **Analysis:** Groundwater samples shall be collected using proper sampling methods, chain-of custody, and quality assurance/quality control protocols. Laboratory analyses for groundwater samples shall be conducted by an ELAP-certified laboratory according to the USEPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses shall be performed in accordance with the latest edition of Test Methods for Evaluating Solid Waste, SW-846, USEPA, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories can be found on the Water Board's ELAP website (https://www.waterboards.ca.gov/drinking_water/certlic/labs/index.html).
- 7) **Results:** If a parameter in Table A.7 exceeds a Water Quality Benchmark, Enrollees and the Coalition shall refer to Section II.H of the Order for Adaptive Management Requirements. Results of Groundwater Trend Monitoring shall be included annually in the Annual Compliance Report (see Section V) and evaluated for trends every five years in the Trend Monitoring Report (see Section V).

C. Drinking Water Supply Well Monitoring

- 1) **Overview:** The purpose of Drinking Water Supply Well monitoring is to: (1) identify drinking water wells that have nitrate concentrations that exceed the Maximum Contaminant Level (MCL) of 10 mg/L (milligrams per liter) of nitrate+nitrite as N; (2) identify drinking water wells that have pesticide concentrations above Water Quality Benchmarks (see Table A.7); and (3) and notify any users of those wells of the potential for human health impacts.
- 2) **Required Wells:** Enrollees shall monitor all private Drinking Water Supply Wells located on an enrolled parcel. Enrollees may use monitored Drinking Water Supply

Wells to satisfy Groundwater Trend Monitoring requirements provided that the well is representative in accordance with Section IV.B.

- 2) Parameters: Enrollees shall conduct annual Drinking Water Supply Well sampling for nitrate and any pesticides identified in Table A.7 that the Enrollee has applied on any of their enrolled parcels in the previous five years. Enrollees are not required to monitor for pesticides in Table A.7 that were not applied on their enrolled parcels.
- 3) Frequency: Enrollees shall conduct sampling of all private Drinking Water Supply Wells for three consecutive years. In lieu of one or more of these initial three annual sampling events, Enrollees may submit existing monitoring results from Drinking Water Supply Wells collected within three years prior to enrollment under this Order, provided that analyses for nitrates and pesticides were performed using USEPA-approved methods and by an ELAP-certified laboratory.
- 3) Sampling Location: Samples shall be collected at or near the well head before the pressure tank and prior to any well head treatment. In cases where this is not possible, the water sample shall be collected from a sampling point as close to the pressure tank as possible, or from a cold-water spigot located before any filters or water treatment systems.
- 4) Submittal Deadlines: The initial sampling event must be completed in time to allow for the results to be submitted electronically to the State Water Board's GeoTracker database by **#DATE** and annually by **March 1st** thereafter.
- 5) Results: If the concentration of any parameter listed in Table A.7 exceeds either 5 mg/L of nitrate or a pesticide chronic Water Quality Benchmark in any of the first three annual samples, the Enrollee shall continue conducting annual Drinking Water Supply Well sampling for that parameter. If the concentration remains below 5 mg/L of nitrate and all pesticide chronic Water Quality Benchmarks, the Enrollee may reduce the sampling frequency to once every five years, unless a subsequent exceedance occurs. If these levels are exceeded at any time, annual sampling shall resume and continue until concentrations remain below 5 mg/L of nitrate and pesticide chronic Water Quality Benchmarks for three consecutive years. The Executive Officer may, at any time, require an alternative sampling frequency based on evaluation of trend data for the well.
- 6) Exceedances of Water Quality Benchmark: If water in any well that is used for drinking water exceeds the Water Quality Benchmark listed in Table A.7 of the MRP, the Enrollee shall provide written notice to the drinking water well users within 10-days of learning of the exceedance and send a copy of the notice to the North Coast Water Board. The copy of the notice shall also include a report of number of people the Drinking Water Well supplies. If the Enrollee is not the owner of the parcel enrolled in the Order, the Enrollee may provide notice instead to the owner within 24 hours of learning of the exceedance, and the owner shall provide notice to the drinking water well users within nine days and send a copy of the

notice to the North Coast Water Board. The Enrollee shall also be subject to groundwater Adaptive Management requirements as specified in Section I.H of this Order, which includes developing and implementing a certified Water Quality Management Plan for groundwater.

- 7) Notification: At a minimum, the Enrollee or non-Enrollee owner shall notify drinking water well users of the exceedance by providing them a copy of a Drinking Water Notification Template approved by the Executive Officer in a language accessible to the well users. Enrollees may contact the North Coast Water Board for receiving language assistance⁸. The template shall be signed by the Enrollee or non-Enrollee owner certifying notice has been provided to the users. A copy of the signed template shall be sent to the North Coast Water Board and retained by the Enrollee or non-Enrollee owner.
- 8) Laboratory Analyses: Drinking Water well sample analysis shall be conducted by an Environmental Laboratory Accreditation Third-Party (ELAP)-certified laboratory according to the USEPA approved methods; unless otherwise noted, all monitoring, sample preservation, and analyses shall be performed in accordance with the latest edition of Test Methods for Evaluating Solid Waste, SW-846, USEPA9, and analyzed as specified herein by the above analytical methods and reporting limits indicated. Certified laboratories and program information can be found on the Water Board's ELAP website (https://www.waterboards.ca.gov/drinking_water/certlic/labs/index.html).
- 9) Data Submittal: All Drinking Water Supply Well monitoring data, including any existing data, shall be submitted electronically to the State Water Board's GeoTracker database by the testing laboratory. The data submitted shall include the Assessor's Parcel Number (APN) where the Drinking Water Supply Well is located and the coordinates (latitude and longitude) of the Drinking Water Supply Well.
- 10) Ceasing Sampling: Sampling may cease if a drinking water well is taken out of service or no longer provides drinking water because replacement water is being supplied. Enrollees shall keep any records (e.g., photos, bottled water receipts) establishing that the well is not used for drinking water.

V. Reporting Requirements

- 1) Enrollees shall comply with all reporting requirements and schedule outlined in Table A.2.
- 2) Individual Enrollees shall create a GeoTracker user account. Instructions for setting up an account and the process of claiming a site, formatting, and uploading data, and other technical information can be found under “ESI Overview” and “Getting Started” sections on the State Water Board’s website¹⁰. Drinking water well monitoring data and all analytical data required of Individual Enrollees shall be uploaded to GeoTracker in an Electronic Deliverable Format (EDF). Additionally, all monitoring reports, and correspondence shall be in searchable Portable Document Format (PDF) and shall be uploaded annually to GeoTracker.
- 2) Coalition Members shall submit all required data through the Coalition except for the Certified WQMP and the Drinking Water Well Sampling data, which shall be submitted directly to the North Coast Water Board and uploaded to GeoTracker respectively. The Coalition shall submit all required information as detailed in this section on behalf of its enrolled Members to the North Coast Water Board. Data required of Coalitions on behalf of their enrolled members shall be submitted to the North Coast Water Board in accordance with the requirements set forth in the following sections.
- 3) Information collected through the MRP shall be reported in the Annual Compliance Report as described in Section V.A of this MRP. Sample results from Surface Water Monitoring and Groundwater Trend Monitoring shall be analyzed for trends every five years in the Trend Monitoring Report as described in Section V.B of this MRP.

A. Annual Compliance Report

- 1) Individual Enrollees shall complete and upload their Annual Compliance Report to GeoTracker by **#DATE**, and by **March 1st** annually thereafter. A Coalition may upload one Annual Compliance Report on behalf of their enrolled members by **#DATE** and by **March 1st** annually thereafter.
- 2) The Annual Compliance Report for Individual Enrollees shall consist of the following elements (as also described in detail below in this section):
 - a) Farm Evaluation: Inventory of management practices to control the discharge of sediment, pesticides, and nutrients from the Farm Area and identification of wells, watercourses, and appurtenant structures. The Farm Evaluation also includes Adaptive Management reporting.
 - b) Irrigation and Nutrient Management Plan: Inventory of management practices to control the movement of nutrients to groundwater and reporting of Nitrogen Applied and Removed.

Attachment A: Monitoring and Reporting Program

- c) Compliance Education Event Attendance: The Enrollee shall report on the annual compliance education event attended in the previous year.
 - d) CEQA Mitigation Monitoring: The Enrollee shall report on the CEQA mitigation measures in Attachment E employed to comply with the provisions of the Order in the previous year.
 - e) Annual Water Quality Monitoring Results: Results from Surface Water Monitoring , Edge-of-Field monitoring (if applicable), and Groundwater Trend Monitoring. Drinking Water Well sampling is uploaded separately to GeoTracker in accordance with Section IV.C and does not need to be included in the Annual Compliance Report.
- 4) The Annual Compliance Report that a Coalition may submit on behalf of its enrolled Members shall consist of:
- a) The Participant List: The Participant List shall include the Owner/Operator name, address, and total number of enrolled acres of all enrolled Members of the Coalition. The Participant List shall also identify Enrollees who are no longer Members of the Coalition and include a reason for non-participation including, but not limited to: (1) No longer farming/sold farm, or (2) Plan to enroll in the Order as an Individual Enrollee. Finally, the Participant List shall indicate which Fields are in the Adaptive Management Program as described in Section II.G of the Order, the parameters being addressed, Tier of Adaptive Management, Fields not currently meeting Water Quality Benchmarks, and how many years each Field has been in the Adaptive Management Program for each applicable parameter.
 - b) Management practice implementation and adaptive management data from the most recently submitted Farm Evaluations: Enrollees shall submit information from their Farm Evaluations, which the Coalition shall report by an Anonymous Field ID.
 - c) Nitrogen reporting from the most recently submitted INMPs: The Coalition shall report INMP information by Anonymous Field ID and Township, Range, Section.
 - d) Outreach Attendance: The Coalition shall report outreach event attendance for its enrolled Members by Member ID in accordance with Section II of this Order.
 - e) CEQA Mitigation Monitoring: The Coalition shall report the mitigation measures in Attachment E their members implemented to comply with the provisions of the Order. These mitigation measures shall be reported to the Coalition by the Enrollees and aggregated and submitted to the North Coast Water Board by Anonymous Field ID.

- f) Annual Monitoring Report: Results from Surface Water Monitoring , Edge-of-Field monitoring (if applicable), and Groundwater Trend Monitoring. Drinking Water Well sampling is uploaded separately to GeoTracker in accordance with Section IV.C.

Farm Evaluation

- 5) All Enrollees shall complete an annual Farm Evaluation to inventory the management practices currently implemented on their Commercial Lily Bulb Operation and to identify any additional practices needed to prevent discharges that could cause or contribute to exceedances of water quality objectives or violate the Receiving Water Limitations in Section II.C. The Farm Evaluation shall include all Fields in lily bulb rotation, including fields planted to lily bulbs, fallow fields, and fields producing other crops that are part of the rotation. Fields may be exempt from Farm Evaluation reporting once they have been out of lily bulb production for five years or more.
- 6) Enrollees shall complete a Farm Evaluation each year for all enrolled Fields. Where this MRP requires reporting by Field, Enrollees may aggregate data for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, and (3) the same management practices. Any Fields that are aggregated for reporting purposes in this way shall be referred to in the INMP as a Management Unit and shall be defined, labeled and consistent across all INMP and Farm Evaluation reporting.
- 7) Enrollees may use the use the Farm Evaluation Template on the North Coast Water Board's website, or an alternative template which meets all below requirements. At a minimum, the Farm Evaluation Template will require the following:
 - a) Owner/Operator Identification: The name, business address, mailing address, email address, phone number of the owner and operator (if different from owner).
 - b) Commercial Lily Bulb Operation Identification: Location(s) of parcel(s) that are part of the Farming operation¹¹, including: (1) the address, (2) the Assessor Parcel Numbers (APNs), (3) the Township, Range, and Section (TRS) of each enrolled APN; (4) the self-appointed Field ID¹² of each enrolled APN, if applicable, and (5) the total acreage under cultivation for each APN.
 - c) Well Identification: The number of (1) irrigation wells, (2) Drinking Water Supply Wells, and (3) abandoned or inactive wells located within each enrolled APN. Each well shall be given a unique Well ID.
 - d) Farm Map: A Farm Map shall include all enrolled parcels and may be an aerial photograph, topographic map, LiDAR-derived shaded relief map,

Google Earth image, or equivalent that depicts features at 1-inch = 50 feet or larger scale. The farm base map(s) shall include a north arrow, scale bar, legend for any symbology, and labels on the following appurtenant features on all enrolled parcels:

- i) Field ID(s),
 - ii) Fields planted to lily bulbs. For all other fields, indicate land use (e.g., another crop, fallow, grazing, etc.).
 - ii) Farm buildings¹³ and equipment yards,
 - iii) Nutrient or pesticide handling and mixing sites, storage facilities, staging areas; and
 - e) Management Practices: A list of management practices implemented within each Field to minimize and prevent erosion and the discharge of pollutants from the Farm Area, agricultural roads, and Streamside Areas. Enrollees shall report whether the minimum Streamside Area widths in Table II.1 are being met in each applicable Field and, and specify where minimum Streamside Area width is not being achieved, if applicable.
 - f) Irrigation and Nutrient Management: (1) A list of management practices implemented within each Field to minimize or prevent discharges of nutrients to surface waters and to minimize leaching of nitrogen past the root zone, (2) Primary and secondary irrigation methods for each APN, and (3) irrigation management practices to minimize or prevent surface run-off or groundwater leaching.
 - g) Adaptive Management Reporting (if applicable): For all Fields in the Adaptive Management Program, the Enrollee must report Adaptive Management Tier, indicate which parameter Adaptive Management is addressing and report the selected Adaptive Management Compliance Option as specified in Section II.G of the Order.
 - h) Certification of Maintenance: The Enrollee shall certify on their Farm Evaluation that all management practices are designed, installed, maintained, and promptly repaired in accordance with Section II of the Order.
- 7) The Coalition may submit Farm Evaluation data in the Annual Compliance Report in lieu of Enrollee submittal of their individual Farm Evaluations to the North Coast Water Board. The following data from the prior year's Farm Evaluations shall be reported to the North Coast Water Board for each Field in an Excel Workbook format and be accompanied by a quality assessment of the collected information (e.g., missing data, potentially incorrect/inaccurate reporting), and a description of corrective actions to be taken regarding any deficiencies in the quality of data

submitted, if such deficiencies were identified:

- a) Anonymous Enrollee ID and Field number.
- b) Anonymous APN Number
- c) Township, and Range, of Field. Drainage area Field is located (see Figure A.1)
- d) Irrigation method.
- e) Irrigation practices.
- f) Pesticide water quality management practices.
- g) Sediment and erosion control management practices.
- h) Nitrogen management practices.
- i) Number of irrigation wells (both active and inactive).
- j) Number of drinking water wells on the parcel.
- k) Adaptive Management Tier and Compliance Option (if applicable), and parameter for which Adaptive Management is being implemented.

Irrigation and Nitrogen Management Plan

- 8) Annually, Enrollees shall prepare, implement, and get certified¹⁴ an Irrigation and Nitrogen Management Plan (INMP) for each Field that is either planted to lily bulbs, or planted to another crop that receives an external source of nitrogen¹⁵. The INMP shall be annually submitted to the North Coast Water Board for the previous crop year as part of the Annual Compliance Form. Alternatively, Enrollees may submit their INMP to the Coalition who shall submit Enrollee data to the North Coast Water Board annually in accordance with Section V of this MRP. A copy of the INMP shall be located at the Enrollee's farming operations headquarters or primary place of business. The Enrollee must provide the INMP to North Coast Water Board staff, if requested.
- 9) Where this MRP requires reporting by Field, Enrollees may aggregate data for a portion of a Field or for multiple Fields provided that the reported area has (1) the same fertilizer inputs, (2) the same irrigation management, and (3) the same management practices. These "Management Units" shall be defined, labeled and consistent across all INMP and Farm Evaluation reporting.
- 10) Enrollees shall use the INMP Template approved by the North Coast Water Board's Executive Officer. At a minimum, the INMP shall include the following information:

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- a) Crop Year.
 - b) Owner/Operator name.
 - c) Assessor Parcel Number (APN).
 - d) Total acreage for each APN identified.
 - e) Planted acreage for each APN identified.
 - f) Irrigation method(s).
 - g) Crop Yield (tons/planted acre)
 - h) Nitrogen Applied (lbs./acre) from the following sources:
 - i) All applied water
 - ii) Synthetic Fertilizers, and/or
 - iii) Organic Amendments (e.g., manure, compost, etc.)
 - i) Documented compliance education received or attended during the previous year in accordance with Section II.I of this Order.
- 11) Enrollees shall use this information to calculate the Applied/Removed (A/R) ratio for nitrogen, and an Applied-Removed (A-R) difference for nitrogen, as defined in the equations in Table A.8. These shall be submitted either to the Coalition or in the Annual Compliance Report in accordance with the schedule outlined in Table A.2. Additionally, every third reporting year, Enrollees shall average the past 3 years of their AR Reporting across their farmed lily bulb Fields and provide a 3-year A/R Ratio and A-R Difference either to the Coalition or in the Annual Compliance Report as defined in the equations in Table A.8.

Table A.8: Nitrogen Reporting Equations

Description	Equation
The A/R ratio is the ratio of total Nitrogen Applied to Nitrogen Removed (including all harvested materials)	$\text{A/R Ratio} = \frac{\text{Nitrogen Applied (lbs./acre)}}{\text{Nitrogen Removed (lbs./acre)}}$
For each Field for which three consecutive years of A/R ratio is available, the multi-year A/R ratio shall be reported as the ratio of total nitrogen applied to total nitrogen removed (calculated below) for the three prior consecutive years	$\text{A/R}_{3 \text{ year}} \text{ Ratio} = \frac{A_n + A_{n-1} + A_{n-2}}{R_n + R_{n-1} + R_{n-2}}$ Where n = current reporting cycle A = Nitrogen Applied R = Nitrogen Removed
The A-R difference is the difference of total Nitrogen Applied and the total Nitrogen Removed	$\text{A-R Difference} = \text{Nitrogen Applied (lbs./acre)} - \text{Nitrogen Removed (lbs./acre)}$
The multi-year A-R difference shall be reported as the numerical difference between total nitrogen applied and total nitrogen removed for the three prior consecutive years.	$\text{A-R}_{3 \text{ year}} \text{ Difference} = [A_n + A_{n-1} + A_{n-2}] - [R_n + R_{n-1} + R_{n-2}]$ Where n = current reporting cycle A = Nitrogen Applied R = Nitrogen Removed
Total Nitrogen Removed is determined by multiplying an Enrollee's crop yield by a crop-specific nitrogen coefficient, (C_N) which represents the amount of nitrogen in the harvested crop. The Coalition may submit a C_N coefficient in accordance with Section V.C of this MRP. If no C_N coefficient is available, Enrollees shall report Crop Yield in place of Nitrogen Removed.	$\text{Nitrogen Removed (lbs./acre)} = \text{Crop Yield (tons/acre)} \times C_N \text{ (lbs./tons)}$

11) The INMP shall be certified in one of the following ways:

- a) Certified by an Irrigation and Nitrogen Planning Specialist¹⁶. The specialist that certifies the INMP must be capable of answering questions relevant to the INMP and should be fully competent and proficient by education and experience in the Field(s) of study covered by certification relevant to the development of an INMP; or
- b) Self-certified by the Enrollee who attends a California Department of Food and Agriculture (CDFA), or other Executive Officer approved Third-Party training for INMP certification. The Enrollee must retain written documentation of their attendance in the Third-Party training; participate and obtain documentation of such participation in any continuing education required by CDFA; and make such documentation available to the North Coast Water Board on request; or
- c) Self-certified by the Enrollee that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS) or the University of California Cooperative Extension. The Enrollee must retain written documentation of the recommendation provided and make such documentation available to the North Coast Water Board on request; or
- d) Self-certified by the Enrollee if no Nitrogen is applied to the Field; or
- e) Certified in an alternative manner approved by the Executive Officer. Such approval will be provided based on the Executive Officer's determination that the alternative method for preparing the INMP meets the objectives and requirements of this Order.

13) The Coalition may submit data as described below from the prior year's Irrigation and Nitrogen Management Plans (INMP) and additional calculations as described below in three tables in Excel workbook format in lieu of Enrollee submittal of individual INMPs to the North Coast Water Board.

14) The Coalition shall calculate the values as described in Table A.8 and convert them to per acre values for inclusion into three tables as described below and the calculated values shall be reported to the North Coast Water Board as part of the Annual Compliance Report.

- a) Table 1: Individual Field-Level AR Data by Anonymous Enrollee ID: One entry is made for each Field reported:
 - i) Anonymous Enrollee ID: Each Anonymous Enrollee ID may be associated with more than one Field.
 - ii) Nitrogen applied via fertilizers (lbs./acre).

- iii) Nitrogen applied via organics and compost (lbs./acre).
 - iv) Nitrogen applied via water (lbs./acre).
 - v) Total Nitrogen applied (lbs./acre) [sum of nitrogen from fertilizer, organics/compost, and all applied water].
 - vi) Nitrogen removed per acre (lbs./acre).
 - vii) A/R ratio as defined in calculations in Table A.10.
 - viii) A-R difference (lbs./acre) as defined in calculations in Table A.10.
 - ix) 3-year A/R ratio if available as defined in calculations in Table A.10.
- b) Table 2: Individual Field-Level AR Data Table: An entry for a Field may be repeated if there is more than one Anonymous APN ID associated with the Field or Management Unit.
- i) Anonymous APN ID: List on a separate line each Anonymous APN ID assigned to parcels the Field overlays completely or partially.
 - ii) Associated groundwater basin or sub-basin.
 - iii) Township, range and section of each anonymous APN ID.
 - iv) Nitrogen applied via fertilizers (lbs./acre).
 - v) Nitrogen applied via organics and compost (lbs./acre).
 - vi) Nitrogen applied via irrigation water (lbs./acre).
 - vii) Total Nitrogen applied (lbs./acre) [sum of nitrogen from fertilizer (iv), organics/compost (v), and irrigation water (vi)]
 - viii) Nitrogen removed per acre (lbs./acre).
 - ix) A/R ratio as defined in calculations in Table A.10.
 - x) A-R difference (lbs./acre) as defined in calculations in Table A.10.
- c) Table 3: Township-Level Aggregated AR Data Table:
- i) Township and range.
 - ii) Total acreage: sum for all the acreage within the township (acres).
 - iii) Total nitrogen applied via fertilizer: sum for all acreage in township (total lbs.).

- iv) Total nitrogen applied via organics and compost: sum for all acreage in township (total lbs.). Total nitrogen applied via irrigation water: sum for all acreage in township (total lbs.).
 - v) Total nitrogen applied (total lbs.) [sum of nitrogen from fertilizer, organics/compost, and all applied water)].
 - vi) Total nitrogen removed for all acreage in acreage (total lbs.).
 - vii) A/R ratio for township as defined in calculations in Table A.10.
 - viii) A-R difference for township (total lbs.) as defined in calculations in Table B.4.
- 15) Beginning the third year of reporting, the Coalition shall report a three-year running total for both the A/R ratio and the A-R difference (A/R3 year and A-R3 year) by township in accordance with the equations in Table A.8.

Compliance Education Event Attendance

- 16) The Enrollee shall either submit in their Annual Compliance Report or to the Coalition as part of its Annual Compliance Report, compliance education event attendance information. At a minimum, the outreach event records shall include:
- a) Date of annual event attended,
 - b) Type of event (e.g., in-person meeting, online video, printed materials), and,
 - c) Brief description of topics covered.

CEQA Mitigation Monitoring

- 17) The Enrollee shall either submit in their Annual Compliance Report or to the Coalition as part of its Annual Compliance Report, a report on the CEQA mitigation measures in Attachment E employed to comply with provisions of the Order. The CEQA Mitigation Monitoring reported in the Annual Compliance Report shall include information on the implementation of CEQA mitigation measures (mitigation measures are described in Attachment E of the Order), including the measure implemented, identified potential impact the measure addressed, parcel(s) where of the mitigation measure was employed, and any steps taken to monitor the ongoing success of the measure.

Annual Water Quality Monitoring Results

- 18) The Annual Water Quality Monitoring results submittal shall include all Surface Water Monitoring, Groundwater Trend Monitoring, and Adaptive Management Program Edge-of-Field Sampling (if applicable) from the past crop year. Individual Enrollees shall upload all data into GeoTracker. The Coalition may submit data on

behalf of its enrolled Members to the North Coast Water Board. Submittal deadlines are provided in the Master Schedule in Section II of this MRP.

- 19) All analytical data required of Individual Enrollees shall be uploaded to GeoTracker in an Electronic Deliverable Format (EDF). Additionally, monitoring data, monitoring reports, and correspondence shall be in searchable Portable Document Format (PDF) and shall be uploaded annually to GeoTracker. Data required of Coalitions on behalf of their enrolled Members shall be submitted to the North Coast Water Board in accordance with the requirements set forth in the following sections.

Surface Water Monitoring and Groundwater Trend Monitoring Data Submittal

- 20) The Enrollee or Coalition shall submit results using a template on the North Coast Water Board website or an alternate template approved by the Executive Officer. Data shall be submitted in an electronic format and include the following for the required reporting period:
- a) Excel workbook containing all surface water data.
 - b) Excel workbook containing all groundwater monitoring data.
 - b) Electronic copies of all field sheets.
 - c) Electronic copies of all applicable laboratory analytical reports shall be submitted once per year with the Annual Compliance Report.
 - e) For chemistry data, analytical reports shall include, at a minimum, the following:
 - i) A lab narrative describing quality control failures.
 - ii) Analytical problems and anomalous occurrence.
 - iii) Chain of custody and sample receipt documentation.
 - iv) All sample results for contract and subcontract laboratories with units. Reporting Limits and Method Detection Limits.
 - v) Sample preparation, extraction, and analysis dates.
 - vi) Results for all quality control samples including all field and laboratory blanks, lab control spikes, matrix spikes, field and laboratory duplicates, and surrogate recoveries.
- 21) If any data is missing from the annual report, the submittal shall include a description of what data is missing and when it will be submitted to the North Coast Water Board.

Adaptive Management Program Edge-of-Field Data Submittal (if applicable)

- 22) Enrollees in the Adaptive Management Program who have elected to conduct Edge-of-Field Sampling shall submit data to the Coalition, which shall include these results in its Annual Compliance Report submittal to the North Coast Water Board. Individual Enrollees must submit Edge-of-Field sampling data directly to the North Coast Water Board.
- 23) The following information shall be reported for each applicable Field:
 - a) Site description, including a map showing Field boundaries, drainage patterns, and Monitoring points
 - b) Analytical results submitted in a tabular format
 - c) Any exceedance(s) of Water Quality Benchmark
 - d) Data interpretation including assessment of compliance and/or noncompliance with Water Quality Benchmarks
 - e) Copy of chain of custody, submitted electronically
 - f) Associated laboratory and field quality control samples results, with summary of precision and accuracy
 - g) Quality control data interpretation, including assessment of data quality objectives

B. Water Quality Trend Monitoring Report

- 1) The Water Quality Trend Monitoring Report (Trend Monitoring Report) shall be submitted in accordance with the Master Schedule. The Trend Monitoring Report shall either be submitted to GeoTracker by individual Enrollees or submitted to the North Coast Water Board by the Coalition on behalf of their enrolled Members.
- 2) The Trend Monitoring Report shall cover Surface Water Monitoring and Groundwater Trend Monitoring from the previous five calendar years and shall include the following components:
 - a) A signed transmittal letter shall accompany each report. The transmittal letter shall be submitted and signed in accordance with the requirements of Section II.I of the Order, Provisions
 - b) Title page.
 - c) Table of contents.
 - d) Executive summary.

- e) Monitoring objectives and design.
- f) Sampling site/monitoring well descriptions and rainfall records for the time period covered under the Trend Monitoring Report.
- g) Location map(s) of sampling sites/monitoring wells. An accompanying GIS shapefile or geodatabase of monitoring site and monitoring well information must include site code and name (for surface water only) and Global Positioning System (GPS) coordinates (for all Surface Water monitoring locations and wells used for Groundwater Trend monitoring). GPS coordinates must be provided as latitude and longitude in the decimal degree coordinate system (at a minimum of five decimal places). The map(s) must contain a level of detail that ensures they are informative and useful. The datum must be clearly identified on the map. The source and date of all data layers must be identified on the map(s). All data layers/shapefiles/geodatabases included in the map shall be submitted with the Trend Monitoring Report.
- h) Results of all surface water and groundwater analyses arranged in tabular form so that the required information is readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with the data collection requirements of the MRP.
- i) The report shall include a discussion of compliance with the data collection requirements of the MRP. If a required component was not met, an explanation for the missing data shall be included. Results shall also be compared to water quality objectives and benchmarks.
- j) Sampling and analytical methods used.
- k) Electronic laboratory data reports of chemical results must include analytical results, as well as associated quality assurance data including method detection limits, reporting limits, matrix spikes, matrix spike duplicates, laboratory blanks, and other quality assurance results required by the analysis method. The Enrollee or Coalition may ask the laboratory to provide assistance with evaluation of their QA/QC data, provided that the Enrollee prepares the summary table or narrative description of the results for the Trend Monitoring Report.
- l) Summary of exceedances of all Water Quality Benchmarks occurring during the reporting period. In the event of exceedances of Water Quality Benchmarks for pesticides or an increasing trend of pesticide concentration in any monitoring location, county pesticide use data from Pesticide Use Reports must be included in the Trend Monitoring Report and analyzed with respect to the pesticide of concern.
- m) Actions taken to address water quality objective exceedances that have

occurred, including but not limited to information collected in the Adaptive Management Program over the past five years.

- n) Evaluation of monitoring data to identify spatial trends and patterns.
 - i) The Enrollee or Coalition shall evaluate its monitoring data in the Trend Monitoring Report to identify potential trends and patterns in surface water and groundwater quality that may be associated with waste discharge from enrolled parcel(s). As part of this evaluation, the Enrollee or Coalition must analyze all readily available monitoring data that meet quality assurance requirements to determine deficiencies in monitoring for discharges from Commercial Lily Bulb Operations and whether additional sampling locations are needed. If deficiencies are identified, the Enrollee or Coalition must propose a schedule for additional monitoring or source studies.
 - ii) Wherever possible, the Enrollee or Coalition should utilize tables or graphs that illustrate and summarize the data evaluation.
 - iii) Conclusions and recommendations.

C. Groundwater Protection Plan

- 1) The objective of the Groundwater Protection Plan (GWP Plan) is to protect and improve groundwater quality by ensuring that nitrogen applied to lily bulb Fields does not cause or contribute to nitrate concentrations in groundwater that exceed water quality objectives or violate the State's Antidegradation Policy. The GWP Plan is developed using INMP and Groundwater Trend Monitoring information and establishes a framework for quantifying and managing nitrogen loading to groundwater through development of township-level Groundwater Protection Formulas (GWP Formulas), Groundwater Protection Targets (GWP Targets), and a nitrogen removal coefficient (C_N) for lily bulbs. It is intended to identify areas where nitrate over-application is occurring and guide implementation of adaptive management and best management practices to reduce nitrogen discharges to groundwater. The Groundwater Protection Plan (GWP Plan) may be developed and submitted by the Coalition. If the Coalition elects not to do so, the North Coast Water Board shall establish the GWP Formulas, GWP Targets, and C_N coefficients.
- 2) By **July 1st**, seven years following initial INMP reporting, the Coalition may choose to submit a GWP Plan that establishes a nitrogen removal coefficient (C_N) and proposes GWP Formulas and GWP Targets. The Coalition shall notify the North Coast Water Board by **January 1** prior to the submission deadline if they do not plan to submit a GWP Plan.
- 3) **C_N Removal Coefficient:** Total Nitrogen Removed is determined by multiplying an Enrollee's crop yield by a crop-specific nitrogen coefficient (C_N) which represents the amount of nitrogen in the harvested crop. The Coalition may propose a C_N

coefficient determined through nitrogen removed testing, literature review or recent research for converting crop yield to nitrogen removed.

- 4) GWP Formula and Targets: In the GWP Plan, the Coalition may propose a Groundwater Protection Formula (GWP Formula) to the Executive Officer. The purpose of the GWP Formula is to generate a Groundwater Protection Value (GWP Value), expressed as either a nitrogen loading number or a concentration of nitrate in water (e.g., mg/l) as appropriate, reflecting the total applied nitrogen, total removed nitrogen, recharge conditions, and other relevant and scientifically supported variables that influence the potential average concentration of nitrate in water expected to reach groundwater in a given township over a given time period. The Coalition shall use the GWP Formula to compute GWP Values for each township. The GWP Values shall be subject to public review and comment and Executive Officer approval. GWP Values shall be developed and included in an updated GWP Plan no later than one year from Executive Officer approval of the GWP Formula.
- 5) Groundwater Protection (GWP) Targets by Township: The purpose of the GWP Targets is to set a Nitrogen Applied and Removed (A/R or A-R value) that results in a nitrogen discharge to groundwater that is compliant with the Antidegradation Policy and meets the water quality objective. The first year following approval of the GWP Values, the Coalition shall develop Groundwater Protection Targets (GWP Targets) for each township for which a GWP Value was computed the prior year. The GWP Targets shall be reviewed and subject to approval by the Executive Officer after an opportunity for public review and comment. The GWP Targets shall be reviewed and revised as necessary every five years. GWP Targets will be used to identify Enrollees who may be contributing to nitrate leaching to groundwater. Enrollees with Nitrogen Applied and Removed over the GWP Target will need to notify the North Coast Water Board and perform adaptive management as directed in this section to limit the over application of nitrogen.
- 6) Following approval of GWP Targets, the Coalition shall report annual and 5-year average nitrogen loading rates for each township in the Trend Monitoring Report and compare the actual loading rate with the township's GWP Targets. If nitrogen Applied-to-Removed (A/R) rates in any Field exceed the township GWP Target in a single crop year, those Fields are subject to the Adaptive Management Program for groundwater that focused on irrigation and nutrient management practices. Enrollees with Fields that exceed the township GWP Target shall refer to Section II.H in the Order related to groundwater adaptive management requirements.

VI. Modifications to the Monitoring and Reporting Program

- 1) The Executive Officer may revise the monitoring parameters, schedule, locations, or frequencies as necessary to reflect changes in enrollment, trends in pesticide use, or implementation of management practices. For example, changes in pesticide use practices or emerging pesticides of concern may prompt modifications to monitoring parameters at the Executive Officer's discretion.
- 2) This MRP allows Enrollees or the Coalition to request modifications to monitoring schedules and/or frequencies after no less than 2 Trend Monitoring cycles in cases where: (1) the Enrollee or Coalition has demonstrated overall compliance with requirements of the Order; and (2) monitoring data indicate that the Enrollee or group of Enrollees are not causing, contributing to, or threatening an exceedance of applicable water quality objectives or a condition or pollution or nuisance; or unreasonably affecting applicable beneficial uses. The request must be supported by applicable water quality monitoring data and applicable information to indicate Enrollee compliance with Order requirements (e.g., Farm Evaluation data, inspection reports, or information supplied by the Enrollee or Coalition).
- 3) The Executive Officer may revoke reduced monitoring frequencies and re-instate monitoring schedules indicated in the MRP for Enrollee(s) who no longer meet the conditions for which reduced monitoring was granted.

VII. MRP Endnotes

- ¹ Monitoring stations shall be as far downstream of lily bulb operations that is possible, considering site accessibility.
- ² A Water Year is defined as October 1st through September 30th of each calendar year.
- ³ See Section G.1 in the Findings for a discussion on Water Quality Benchmarks and sources of these Benchmarks. Laboratory analyses should have the detection limit and reportable detection limit lower than corresponding numeric water quality objectives or water quality guidelines. Change of laboratory method with approval of the North Coast Water Board may be required to meet the reporting limits requirement.
- ⁴ The toxicity unit (TU) is a simple ratio of the measured concentration of dissolved copper to the BLM-generated criteria and is calculated by dividing the measured value by the modelled criteria.
- ⁵ The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection.
- ⁶ These values are based on one sample event.
- ⁷ Compatible CEDEN formats available at http://www.ceden.org/ceden_datatemplates.shtml.
- ⁸ Request language services here: [Public Request for Language Services | California State Water Resources Control Board](https://www.waterboards.ca.gov/about_us/public_participation/language-access.html)
https://www.waterboards.ca.gov/about_us/public_participation/language-access.html
- ⁹ [Test Methods for Evaluating Solid Waste, SW-846](https://www.epa.gov/hw-sw846) (<https://www.epa.gov/hw-sw846>).
- ¹⁰ [GeoTracker electronic submittal of information](https://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/)
(https://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).
- ¹¹ All parcels that have been planted to lily bulbs anytime in the five years previous to enrollment are considered part of the Commercial Lily Bulb Operation for purposes of this Order. Parcels may be unenrolled after they have not been planted to lily bulbs for over five years.
- ¹² Fields are defined as areas of similar agrochemical, nutrient, and irrigation management for purposes of reporting.
- ¹³ Farm buildings include equipment storage sheds, farmworker housing, and processing buildings.
- ¹⁴ INMPs shall be certified either by a by a certified irrigation and nitrogen planning specialist or self-certified by the Enrollee. A certified irrigation and nitrogen planning specialist is a Certified Crop Advisor (CCA) who has completed the

California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy's (ASA) International Certified Crop Adviser (ICCA) Third-Party and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take the [CDFA Irrigation and Nitrogen Management Training for Grower Self-Certification](https://www.cdfa.ca.gov/is/ffldrs/frep/training.html), pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).

- ¹⁵ External sources of nitrogen do not include livestock manure. For example, if a Field is planted to forage crops or irrigated pasture and only receives nitrogen through grazed livestock manure, an INMP is not required for that Field.
- ¹⁶ An Irrigation and Nitrogen Planning Specialist is a Certified Crop Advisor (CCA) who has completed the California Nitrogen Management exam through The California Department of Food and Agriculture (CDFA), the University of California – Davis, the American Society of Agronomy's (ASA) International Certified Crop Adviser (ICCA) Third-Party and/or the CCA – Western Region (WR) Board and takes the required continuing education credits. Enrollees may self-certify their INMP if they take [the CDFA Irrigation and Nitrogen Management Training for Grower Self-Certification](https://www.cdfa.ca.gov/is/ffldrs/frep/training.html), pass the Irrigation and Nitrogen Management Training and Exam and maintain the certification through continuing education (<https://www.cdfa.ca.gov/is/ffldrs/frep/training.html>).

Attachment B: Management Practices

Attachment B provides guidance on Management Practices that may be implemented to comply with Section II.D (Management Practice Requirements) of this Order. Alternatively, Enrollees may propose and implement Management Practices that provide equivalent or greater protection of water quality to meet the requirements of the Order. Enrollees are responsible for the design, implementation, maintenance, and repair of Management Practices to ensure their continued effectiveness in achieving the water quality goals of this Order.

The Management Practices in Table B.1, below, are listed by category to achieve compliance with the following requirement from Section II.D in the Order:

All Enrollees shall, at a minimum, implement Management Practices necessary to:

- a) Prevent, minimize, or eliminate erosion and sediment discharge from all farm areas and appurtenant roads;
- b) Prevent, minimize or eliminate the discharges of all agricultural pollutants, including synthetic pesticides and copper-based fungicides to surface waters and groundwater;
- a) Prevent, minimize, or eliminate overapplication of nitrogen and the percolation of nitrogen into groundwater;
- c) Protect wellheads from surface water intrusion; and
- d) Implement proper handling, storage, disposal, and management of fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals.

Design specifications for Management Practices listed in Table B.1 can generally be found through the NRCS Conservation Practice Standards¹, and the Handbook for Forest, Ranch, and Rural Roads.²

¹ [Conservation Practice Standards | Natural Resources Conservation Service](https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards)
<https://www.nrcs.usda.gov/resources/guides-and-instructions/conservation-practice-standards>

² [Updated Handbook for Forest, Ranch and Rural Roads | Pacific Watershed Associates](https://www.pacificwatershed.com/roadshandbook)
<https://www.pacificwatershed.com/roadshandbook>

Table B.1: Management Practices by Category and Descriptions

Sediment and Erosion Control Management Practices
<i>Management practices to prevent, minimize, or eliminate erosion and sediment discharge from all farm areas and appurtenant roads.</i>
<i>Field Practices</i>
Filter Strip – A vegetated strip is maintained adjacent to a drainage ditch or waterway to filter pollutants.
Field Size Reduction – Field sizes are reduced to lessen the amount of stormwater runoff from the field.
Flow Dissipaters – Flow dissipaters are used to minimize erosion at discharge points, usually constructed out of riprap or concrete.
Contour Farming – Fields are planted on the contour to reduce runoff.
Precision Land Forming – Fields are graded to increase irrigation efficiency and improve drainage control and minimize erosion.
Row Arrangement – Crop rows are graded, directed and at a length to optimize rain and irrigation water.
Cover Crop – Vegetation is planted in fields to minimize the area of bare soil, thereby reducing the potential for erosion.
Enhanced Soil Infiltration – Soil water penetration has been increased through the use of amendments, deep ripping and/or aeration.
Critical Area Planting – Permanent vegetation is established in areas that are expected to have high erosion rates or in areas that would otherwise prevent the establishment of vegetation.
Soil amendments – Amendments, such as compost, mulch or other organic matter are added to the soil to improve soil structure and reduce erosion.
In Furrow Dams – In furrow dams are installed to increase infiltration and settling out of sediment prior to entering the tail ditch.
Field Border – Borders (including berms) are installed at the low end of fields to capture runoff and trap sediment.
Plant Residue Tillage Management – Plant materials are left on the soil surface to reduce runoff and erosion.
Vegetative Barrier – Vegetation is planted to slow or reduce surface runoff by promoting detention and infiltration.
Grassed Waterway – Grass is maintained in drains and ditches to reduce erosion and filter pollutants.

Sediment and Erosion Control Management Practices <i>Management practices to prevent, minimize, or eliminate erosion and sediment discharge from all farm areas and appurtenant roads.</i>
Stormwater Diversion – Structures or embankments are installed to keep stormwater on lily bulb field headlands.
Field Isolation – Runoff from lily bulb fields flows onto a pasture or other vegetated area where it is dispersed, filtered and infiltrated before reaching surface waters.
Grade Stabilization Structure – Drop spillways or check dams are installed to stabilize the grade and control erosion.
<i>Appurtenant Agricultural Roads</i>
Road Erosion Control – Rocking, paving, compaction, seasonal vegetation, or ground cover (e.g., straw) during the wet season are used to prevent erosion on the road surface.
Road Sediment Control – Waterbars, grading, rolling dips, etc. are used to prevent and minimize sediment transport off of road surfaces.
Proper Culvert Sizing and Maintenance – Culverts are sized correctly to pass the 100-year storm flows. Culverts are inspected regularly and maintained to ensure structural integrity, proper function, and to minimize erosion downstream.
Road Maintenance – Pre- and post-storm inspections are conducted, erosion sites are identified, and a prioritized inventory of erosion sites is developed and updated from which to schedule and implement fixes.
<i>Appurtenant Farm Areas</i>
Agricultural Pond Maintenance – Agricultural ponds are maintained to prevent erosion and failure of dams, embankments, and spillways. Ponds are regularly inspected, and necessary preventative maintenance is performed.
Livestock Management – This practice encompasses several possible measures related to managing pasture to protect water quality, such as stable stream crossings that protect bed and banks, alternate water for livestock, rotational grazing, and fencing or other barriers that limit access to riparian zones.

Pesticide Management Practices <i>Management practices to prevent, minimize or eliminate the discharges of pesticides to surface water and groundwater</i>
Integrated Pest Management Plan – A pesticide management plan has been developed that considers available pest control techniques to keep pesticide use at a level that minimizes risk to water quality.

Pesticide Management Practices <i>Management practices to prevent, minimize or eliminate the discharges of pesticides to surface water and groundwater</i>
Use of Low Risk Pesticides – Lower risk pesticides have been selected to minimize risk to water quality based on toxicity, runoff potential, and leaching potential.
Pesticide Sampling and Analysis – Stormwater runoff from fields is sampled and analyzed for pesticide concentrations to assess effectiveness of management practices.
Pesticide Mixing/Loading Setbacks – Setbacks are maintained adjacent to waterways and other sensitive areas for pesticide application, mixing, and loading.
Soil Amendments – Amendments are added to the soil to bind pesticides, thereby reducing offsite movement and/or reducing their toxicity.
Sprayer Shields – A shield on the spray boom is used to reduce drift.
Irrigation Water Management – The volume, frequency, and application rate of irrigation water is planned to minimize runoff.
County Pesticide Permit Compliance – All applicable pesticide regulations and handling and application directions are being followed.
Crop Rotation – Crops are rotated seasonally in a sequence to reduce use of pesticides and fertilizers and to reduce erosion.
End of Row Shutoff When Spraying – The pesticide sprayer is shut off at the end of the row and kept off in the turnaround.
Avoid Surface Waters When Spraying - Pesticides are not sprayed in and around surface waters where they can contact surface waters directly considering, among other things, wind direction and strength
No Spray Buffer Zone – Areas where spraying does not take place from between the downwind edge of the application area and an identified sensitive area.
Drift Control Agents – Additives are used to increase droplet size to reduce drift.
Monitor Climatic Conditions – Wind speed and direction, temperature, and relative humidity are monitored and considered in planning pesticide applications.
Application Timing and Rain Forecasting – The rain forecast is monitored to anticipate storm events that produce runoff pesticide application are planned to lengthen the amount of time prior to a storm event.
Pesticide Applicator Adjustments – Spray nozzle pressure and height and droplet size are adjusted to better target the pesticide application, minimize drift, and improve the efficiency of applications, which can all reduce the amount of pesticide required.

Nitrogen Management Practices
<i>Management practices to prevent, minimize, or eliminate overapplication of nitrogen and the percolation of nitrogen into groundwater.</i>
Nutrient Application at Agronomic Rates – Nutrients are applied at rates to meet crop needs while reducing nutrient runoff and infiltration to groundwater.
Nutrient Budget – Nutrients applied versus nutrients removed (nutrient balance) is calculated to arrive at a nutrient application rate that minimizes excess application of nutrients.
Soil Testing – Nitrogen concentration in soils is measured and applications are adjusted accordingly.
Irrigation Water Testing – Nitrogen concentrations in irrigation water are measured and fertilizer nitrogen applications are adjusted accordingly.
Use of Beneficial Cover Crops – Cover crops that fix and utilize nitrogen are used to minimize nitrogen applications and leaching to groundwater.

Wellhead Protection and Good Housekeeping
<i>Management practices to protect wellheads from surface water intrusion; and management practices for the proper handling, storage, disposal, and management of fertilizers, fumigants, pesticides, herbicides, rodenticides, and other chemicals.</i>
<i>Wellhead Protection</i>
Wellhead Protection – An area around the wellhead is delineated where certain activities are limited in order to protect the wellhead from contamination.
Backflow Prevention - Install and maintain backflow prevention devices on irrigation wells.
Abandoned or Inactive Wells - Properly destroy permanently inactive groundwater wells
<i>Good Housekeeping</i>
Proper Disposal of Pesticides – Pesticides containers are triple rinsed before disposal and rinse water is mixed and applied according to label requirements. Pesticides are considered hazardous waste and disposed of accordingly.
All Applicable Pesticide Storage, Handling, and Use Laws are followed – State and local laws relating to the proper handling, storage, and use of pesticides are followed. Pesticide storage areas are well-maintained with proper signage.

Attachment C: Coalition Requirements

Attachment C outlines the approval process and requirements for a Grower Coalition (Coalition) under this Order. Coalitions are programs or entities approved by the North Coast Water Board's Executive Officer to assist Enrollees in compliance with this Order. Coalitions collect and submit State Board fees on behalf of Enrollees, manage communication between Enrollees and the North Coast Water Board, conduct monitoring and reporting on behalf of their members in accordance with the MRP, and provide education and outreach resources to Enrollees.

A Coalition may be approved by the North Coast Water Board's Executive Officer following adoption of this Order in accordance with expectations and requirements in this Attachment. Once approved, the Coalition will be listed on the North Coast Water Board's Lily Bulb Program website⁹⁵.

I. Coalition Requirements

A. General Provisions

- 1) A Coalition that is approved to represent Enrollees under this Order shall fulfill the following responsibilities:
 - a) Collect fees from its Enrollee members and submit payment to the State Water Resources Control Board,
 - b) Manage communications between its Enrollee members, the North Coast Water Board, and State Water Board,
 - c) Provide compliance education resources for its Enrollee members; and
 - d) Fulfill monitoring and reporting requirements as specified in Attachment B: Monitoring and Reporting Program for Enrollees in a Coalition on behalf of its members, including but not limited to submitting monitoring workplans and necessary technical material, conducting regional surface water and groundwater monitoring, notifying Enrollees of Adaptive Management thresholds triggered⁹⁶, notifying Enrollees if they are statistical outliers for nitrogen application, and connecting Enrollees to resources that can assist the preparation and implementation of Water Quality Management Plans.
- 2) The Coalition may work with multiple entities or programs to meet one or more of the above requirements provided the Coalition has binding agreements (e.g., through contractual obligations, Memorandums of Agreement) that clearly define roles and responsibilities within each entity to meet all Coalition requirements.
- 3) The North Coast Water Board may revoke the status of an approved Coalition and require its enrolled Enrollees to enroll either individually or in another approved coalition if the Coalition fails to meet requirements of this Order after initial

approval.

- 4) Prospective Coalition entities shall follow the procedures outlined below in Sections B and C to become an approved Coalition for this Order. Prospective Coalition(s) shall obtain written approval from the North Coast Water Board's Executive Officer prior to assisting Enrollees with compliance with this Order.

B. Minimum Qualifications

A prospective Coalition wishing to act as a representative on behalf of enrolled Enrollees shall meet the minimum qualifications below:

- 1) Effectiveness of scale and scope – The Coalition's program must be of sufficient scale and scope relative to its intended purpose to maximize Enrollee participation, Order implementation effectiveness, and Order compliance.
- 2) Administrative Capacity – The Coalition must have a well-defined and robust governance and administrative structure with clearly defined roles and responsibilities. The Coalition must have necessary administrative capabilities to manage Enrollee data, collect fees, conduct Enrollee outreach, and assist Enrollee with self-reporting requirements. The Coalition must demonstrate sufficient technical, managerial, and financial capacity to successfully achieve its goals and objectives.
- 3) Membership and fee accounting – The Coalition must track and provide ongoing accounting of its Enrollee membership and fees to document Enrollee compliance. The Coalition must have clearly stated membership eligibility requirements and report them to the North Coast Water Board as needed to document compliance.
- 4) Physical presence – The Coalition should have a physical presence in the Smith River Plain, including staff and a headquarters that can assist its Enrollees on continual and as-needed bases. If the Coalition manager does not have or plan to have a physical presence in the area, they must demonstrate they can effectively establish, maintain, and engage with core membership.
- 5) Transparency and accountability – The Coalition must have meaningful and clearly stated goals, objectives, and associated performance metrics relevant to the Order requirements that are the focus of the program. The Coalition must provide regular assessments of its performance relative to its stated goals and objective based on meaningful performance metrics. This includes reporting of water quality data and farm-level data as needed to document compliance with this Order.
- 6) Data management and Record Keeping – The Coalition must upload data as required by this Order to the Water Boards' various data management systems (e.g., CEDEN, GeoTracker, etc.). The Coalition must have the capacity to manage and retain data for ten years and comply with record-keeping requirements in Section II.I (Provisions) of the Order.

- 7) Coordination – The Coalition must consider and coordinate with other Third-Party programs/groups or local entities as may be appropriate to create consistency; leverage the efforts, infrastructure, and expertise of others; and streamline the Coalition to maximize effectiveness.
- 8) Compliance education – The Coalition must include continuing education opportunities as appropriate either directly through the Coalition or through coordination with other technical service providers or local entities to ensure its Enrollees obtain technical skills and assistance necessary to achieve compliance with the limits and requirements established in this Order. The Coalition must conduct Membership compliance education to inform Enrollees about the monitoring results relative to meeting objectives and goals of this Order.
- 9) Development of Required Technical Material – The Coalition must have capability to develop and implement, or contract detailed technical documents as specified in Attachment A of the Order including but not limited to: Water Quality Monitoring Workplan(s), Trend Monitoring Reports, a Quality Assurance Project Plan (QAPP), annual water quality and management practices reporting, and Groundwater Protection Plan(s).
- 10) Conducting Water Quality Monitoring – The Coalition must have the capability to develop or contract group surface water and groundwater quality monitoring programs in accordance with the requirements in Sections III and IV of the Attachment B of the Order

C. Request for Proposal Process and Establishing Approved Coalition

- 1) Within three months after adoption of the Order, the North Coast Water Board will release a Request for Proposals (RFP). Coalition applicants shall apply within the stated deadline of the RFP to be considered.
- 2) Coalition proposals will be evaluated on a case-by-case basis relative to their ability to document compliance with this Order as part of a Request For Proposal process and as further informed by a forthcoming Coalition program expectations document.
- 3) The North Coast Water Board's review of Coalition program proposals will consider the Minimum Qualifications outlined above relative to overall Coalition effectiveness, with an emphasis on approving Coalitions that can effectively assist their Enrollees in complying with the requirements of this Order.
- 4) Included in the RFP submittal, the Coalition applicant shall submit documentation of its organizational or management structure. The documentation shall identify persons and/or entities responsible for ensuring that Coalition requirements are fulfilled. This documentation shall be made readily available to Enrollees.
- 5) In evaluating whether to approve a new Coalition, the Executive Officer will consider the following factors:

- a) The ability of the applicant to carry out the identified Coalition responsibilities.
 - b) Whether the applicant is a legally-defined Third-Party applicant (i.e., non-profit corporation; local or state government; Joint Powers Authority) or has a binding agreement among multiple entities that clearly describes the mechanisms in place to ensure accountability to its Enrollees.
 - c) If the applicant plans to use subsidiary group(s) or partnering entities to assist with Coalition program requirements, whether the applicant has binding agreements with those entities to ensure any Coalition program responsibilities carried out by the entities, including the collection of fees, are done transparently and with accountability.
 - d) Whether the applicant has a governance structure that includes a governing board of directors composed in whole or in part of Enrollees, or otherwise provides Enrollees with a mechanism to direct or influence the governance of the applicant through appropriate by-laws.
 - e) Whether the applicant has membership eligibility requirements and follow-up consequences that are triggered, including revocation of membership eligibility, to address the following scenarios where Enrollees are no longer in good standing: (1) Non-payment of fees; (2) Non-submittal of information; (3) Non-participation in education/outreach or site visits; or (4) Failure to implement / adapt management practices.
- 6) If the Executive Officer determines that the applicant has the capacity to satisfactorily carry out the stated responsibilities, the North Coast Water Board's Executive Officer will issue a Notice of Applicability to the Coalition for its enrolled members and, if appropriate, a Monitoring and Reporting Program specific to the new Coalition and its Enrollees. The new Coalition shall comply with the relevant terms and conditions of this Order and any applicable Monitoring and Reporting Program upon receipt of the letter of approval.

D. Coalition Requirements

- 1) Approved Coalitions shall comply with all requirements of Coalitions as outlined in the Order and Attachment B: Monitoring and Reporting Program for Enrollees in a Coalition.
- 2) Approved Coalitions shall be prepared to accept enrollments by **DATE**.
- 3) By **DATE**, and annually thereafter, the Coalition shall submit to the North Coast Water Board a list of all its Enrollee members. The list shall specifically identify any new Enrollees, or any Enrollees terminated since the last reporting period. As part of the membership list submittal, the Coalition shall identify Enrollees who have failed to fulfil the requirements of this Order as specified in Attachment B: Section V.A

- 4) By **DATE**, the Coalition shall submit a scope of work for a Water Quality Monitoring Workplan. By **DATE**, the Coalition shall submit a Water Quality Monitoring Workplan (Workplan) in accordance with Attachment A: Monitoring and Reporting Program.
- 5) The Coalition shall respond promptly to North Coast Water Board requests for any of the information the Coalitions are required to maintain, which may include but is not limited to: (1) Enrollee contact information; (2) Enrollee reports (e.g., Farm Evaluations, INMPs), (3) compliance education attendance lists, and (4) water quality monitoring locations.

⁹⁵ Visit the Lily Bulb Program webpage: [Lily Bulbs | California Northcoast Regional Water Quality Control Board](https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/)
https://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/lily/

⁹⁶ See Section II.H of the Order for a list of Adaptive Management triggers.

Attachment D: Methodologies and Procedures

I. Guidance for Determining Major Storm Events

Attachment A: Monitoring and Reporting Program requires two Surface Water Monitoring events per year during a Major Storm Event, and at least one within 7 days following a Major Storm Event. This section provides guidance on determining a Major Storm Event, measuring precipitation, obtaining official forecasts, and examples of forecasts.

A Major Storm Event is defined as a storm that is forecasted and produces at least one inch of precipitation within a 24-hour period and is preceded by a minimum of 48 hours producing less than 0.25 inches of precipitation. A Major Storm Event has ended when no more than 0.25 inches of precipitation has been produced within a 48-hour period.

Collection of samples during a Major Storm event shall occur within 24 hours following the first inch of precipitation.

Precipitation forecasts shall be obtained from the National Weather Service Forecast Office of the National Oceanic and Atmospheric Administration (NOAA) for the town of Smith River, CA (41.93°N 124.14°W). Regional Water Board staff recommend using the following link to obtain precipitation forecasts information.

<https://www.weather.gov/wrh/WxTable?LAT=41.9286&LNG=-124.1460&DAYS=7&INT=6>

Precipitation shall be recorded using a rain gauge located on land tributary to the specified monitoring stations (See Section IV of Attachment A: Monitoring and Reporting Program) and on the coastal side of Highway 101. The rain gauge shall be installed and maintained using guidance found at the following website.

https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/5111.pdf

II. Sample Collection and Handling Instructions

Enrollees shall follow the below procedures to comply with water quality monitoring requirements in this Order:

- 1) Identify the sampling parameters required to be tested and the number of locations that will be sampled.
- 2) Request the laboratory provide the appropriate number of sample containers, types of containers, sample container labels, blank Chain of Custody forms, and sample preservation instructions.
- 3) Prior to sampling, record information about the planned sampling event into Field Sheets and Chain-of-Custody forms. This information should include the Enrollee name along with the sample location identifier and sample container types and number to be filled. Field measurement data and observations shall be recorded as they are collected.
- 4) Collect samples in accordance with the following instructions:
 - a) Sampling from an Edge-of-Field discharge point, drainage ditch, or swale: sample from a consistently flowing part of the concentrated flow. If the discharge point is too small or shallow, install a barrier device in the channel or deepen a small area so you are able to sample directly into the bottles. Allow sufficient time to pass after disturbing the bottom so that any solids stirred up do not contaminate your sample.
 - c) Sampling From a Stormwater Detention / Retention Basin or Other Treatment Device: sample at the outlet of the structure. Collecting samples from stagnant or slowly moving water inside a pond will not yield a representative sample as the pollutants might not be adequately mixed. Stormwater basins may hold stormwater for long periods of time.
 - d) Sampling From a Well: locate a valve or cold water tap as near to the well as possible, preferably prior to any storage/pressure tanks or physical/chemical treatment system that might be present. Open the valve (turn on pump if needed), monitor and record pH, specific conductance and temperature of the groundwater removed during purging at 5-minute intervals. Once these parameters have stabilized within 10 percent over 10 minutes, the well has been purged. Observe and record the rate and volume of water purged using a graduate bucket and stopwatch. Remove any hose that may be present before sample collection and reduce the flow to a low level to minimize sample disturbance. Collect samples directly into the laboratory supplied containers.
- 5) All monitoring instruments and equipment shall be calibrated and maintained in accordance with manufacturers' specifications to ensure accurate measurements.

- 6) Use only the sample containers provided/specified by the laboratory to collect and store samples. Use of any other type of containers could cause sample contamination.
- 7) Prevent sample contamination by not touching or putting anything into the sample containers before collecting samples.
- 8) Not overfill sample containers. Overfilling can change the analytical results. g. Secure each sample container cap without stripping the cap threads.
- 9) Label each sample container. The label shall identify the date and time of sample collection, the person taking the sample, and the sample collection location or discharge point. The label should also identify any sample containers that have been preserved.
- 10) Use the appropriate sample shipping method to the laboratory. The laboratory should receive samples within 48 hours of the physical sampling (unless otherwise required by the laboratory to meet all method hold times). The options are to either deliver the samples to the laboratory, arrange to have the laboratory pick them up, or ship them overnight to the laboratory.
- 11) Carefully pack the sample container into an ice chest or refrigerator to prevent breakage and maintain temperature during shipment; frozen ice packs or ice is placed into the shipping container to keep the sample close to 4° C (39° F) until arriving at the laboratory (do not freeze samples).
- 12) Complete a Chain of Custody form with each set of samples. The Chain of Custody form shall include the discharger's name, address, and phone number, identification of each sample container and sample collection point, person collecting the samples, the date and time each sample container was filled, the analysis that is required for each sample container, and both the signatures of the persons relinquishing and receiving the sample containers.
- 13) Designate and train personnel for the collection, maintenance, and shipment of samples in accordance with the above sample protocols and laboratory-specific practices.

III. Streamside Area Examples

A Streamside Area is comprised of two contiguous components: a Riparian Vegetation Area and a Vegetated Buffer in which different requirements are applied. A Streamside Area is defined as the area between the waterside edge of vegetation and where the field side edge of the Vegetated Buffer meets the Farm Area. The Riparian Vegetation Area extends from the waterside edge of vegetation to the Vegetated Buffer in Perennial and Ephemeral/Intermittent Streams. The Vegetated Buffer is measured from the Riparian Vegetation Area to the Farm Area along Perennial and Ephemeral/Intermittent Streams, and from the waterside edge of vegetation in Hydrologically Connected Undesignated Channels, Unfarmed Wetlands, and Hydrologically Connected Lakes, Ponds, or On-Stream Reservoirs. See also Appendix I: Acronyms, Definitions, and Endnotes for definitions of terms related to the Streamside Area.

For the purposes of this Order, the waterside edge of vegetation is the line on the bank established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. The purpose of establishing the Streamside Area at the waterside edge of vegetation is to identify where riparian vegetation that provides shade begins.

Figure D.1 is an example of a Streamside Area on a Perennial Stream. The Riparian Vegetation Area extends 25 ft. from the waterside edge of vegetation in the Perennial Stream. The requirements specific to the Riparian Vegetation Area are given in the Streamside Area Section of the Order. Contiguous to the Riparian Vegetation Area is a Vegetated Buffer, which must extend at least 25 ft. until it hits the Farm Area. Headlands and equipment turn-around areas are allowed within the Vegetated Buffer provided the applicable requirements given in the Streamside Area section of the Order are followed.

Figure D.2 shows an example of a Streamside Area on an Ephemeral/Intermittent Stream. Figure D.3 shows an example of a Streamside Area on a Hydrologically-Connected Undesignated Channel.

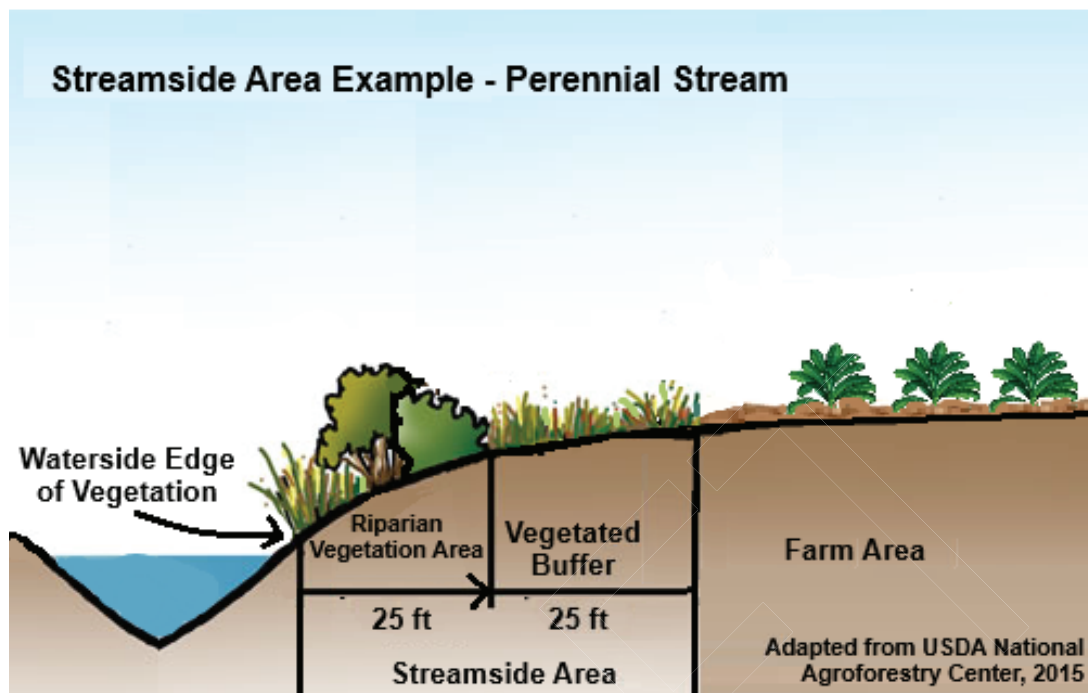


Figure D.1: Streamside Area on a Perennial Stream

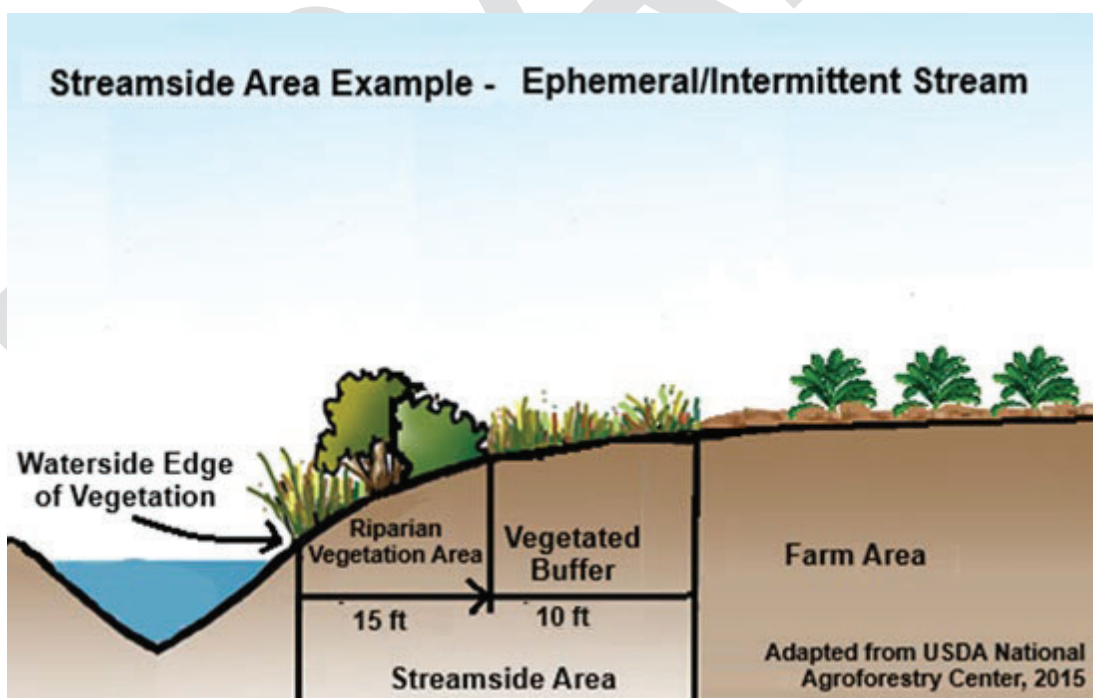


Figure D.2: Streamside Area on Ephemeral/Intermittent Stream

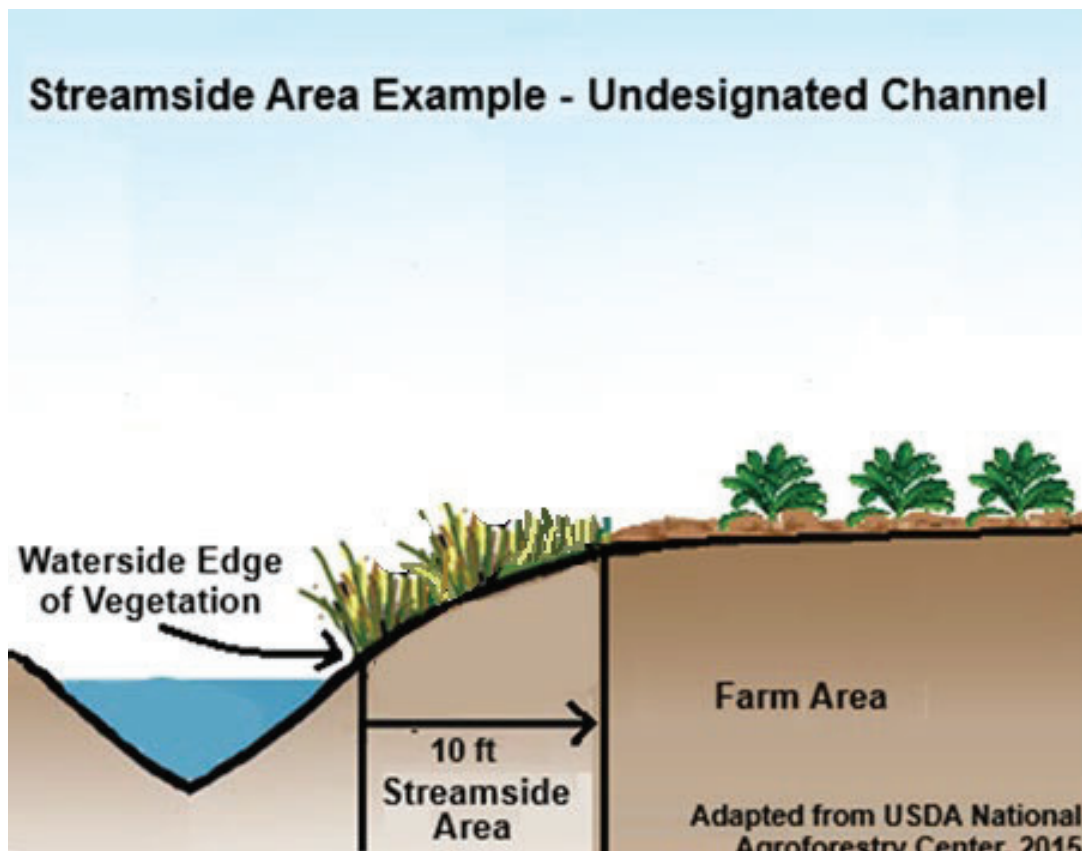
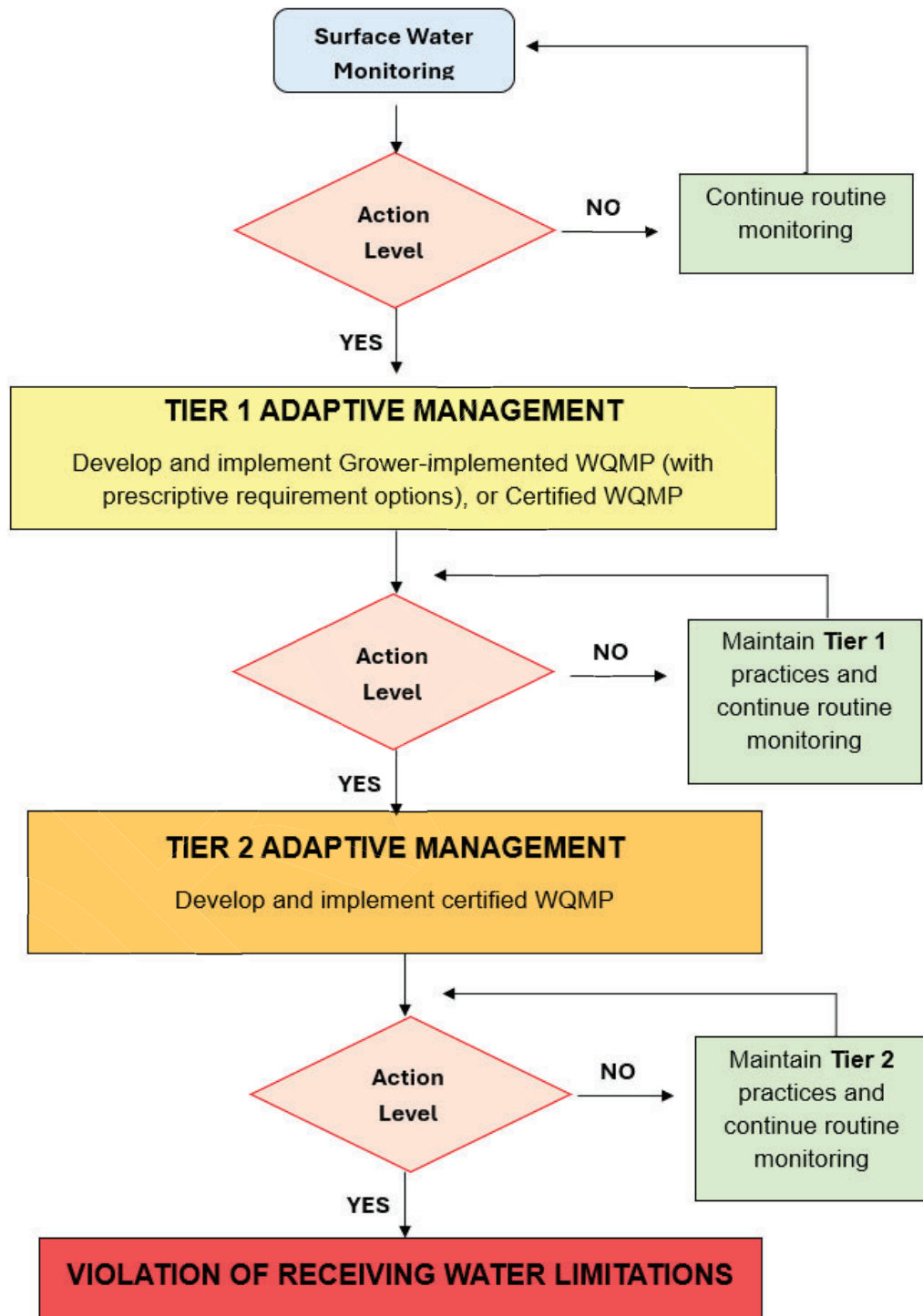


Figure D.3: Streamside Area Example, Undesignated Channel

IV. Adaptive Management Flowchart for Surface Water



Attachment E: CEQA Mitigation Measures

The following mitigation monitoring and reporting program (MMRP) summary table includes the mitigation measures identified in the California Regional Water Quality Control Board, North Coast Region (North Coast Water Board) draft environmental impact report (EIR) for the proposed Order project in accordance with the California Environmental Quality Act (CEQA). For each mitigation measure, this table identifies monitoring and reporting actions that must be carried out and the monitoring schedule.

Enrollees are responsible for complying with all mitigation measures in the final EIR and this MMRP summary table. Enrollees must determine whether their proposed activities (e.g., management practices) are subject to individual mitigation measures and, if applicable, take the necessary actions to ensure the mitigation measures are fully implemented. In some cases, this may involve hiring a professional (e.g., biologist, archaeologist) and becoming familiar with applicable laws and regulations.

Enrollees who enroll individually in the Order must report their compliance with mitigation measures in the Annual Compliance Report (ACR), which is submitted as part of their overall compliance reporting for the Order. The Coalition shall submit this information to the North Coast Water Board on behalf of its Enrollee Members. As the CEQA Lead Agency, the North Coast Water Board is ultimately responsible for ensuring compliance with the mitigation measures identified in the Final EIR. The North Coast Water Board will accomplish this through review of ACRs to confirm that reported actions fully meet the requirements of the applicable mitigation measures. The North Coast Water Board will also confirm mitigation measure compliance during periodic inspections of individual fields.

The MMRP will be made available to Enrollees, and they may use the checklist to help document their compliance with applicable mitigation measures. The North Coast Water Board may also use the MMRP checklist to confirm and document compliance

Mitigation, Monitoring and Reporting Program (MMRP) Summary Table

FEAR

Order No. R1-20XX-XXXX
Lily Bulb Order

Mitigation Category	Mitigation Measure	Monitoring and Reporting Action and Schedule (Responsible Party in Parenthesis)
Ag and Forestry Resources	N/A	N/A

Biological Resources: BIO-1	Where construction/installation, maintenance and/or management practices could impact sensitive vegetation communities (e.g., riparian habitat or wetlands adjacent to the construction area) and special-status species, as defined and listed in Section VII and Appendix D, Enrollees must use the least impactful effective management practice to avoid impacts to such species and habitat. Enrollees of the General Order must implement the following measures to reduce potential impacts to levels that are less than significant. • Avoid and minimize disturbance of riparian, wetlands, and other sensitive vegetation communities. • Avoid and minimize disturbance to areas containing special-status plant or animal species. • Where construction in areas that may contain sensitive biological resources and aquatic resources cannot be avoided through the use of alternative management practices, conduct an assessment of habitat conditions, and the potential for presence of sensitive vegetation communities (e.g., riparian and wetland habitat) or special-status plant and animal species prior to construction. This may include the hiring of a qualified biologist to identify riparian and other sensitive vegetation communities (e.g., conduct a biological assessment, and/or wetland delineation), and/or habitat for special-status plant and animal species.	Confirm that the least impactful effective management practice is selected to avoid impacts to biological resources. Schedule: During design of management practice(s). (Enrollee) Where areas potentially containing sensitive biological resources cannot be avoided, confirm performance of habitat and species assessment. Schedule: Prior to construction / installation of management practice(s), if applicable. (Enrollee) Confirm that maintenance or repair activities will not disturb any special-status species. Prior to undertaking proposed activity. (Enrollee) For activities proposed during nesting season, confirm performance of survey for nesting birds and avoidance of nests / young. Schedule: Prior to undertaking proposed activity, if applicable. (Enrollee) Test accumulated sediments in control features with disposal at an appropriate facility, if warranted. Schedule: Prior to undertaking proposed activity, if applicable. (Enrollee) In the event avoidance of sensitive biological resources is not feasible, confirm additional CEQA review and appropriate consultation with CDFW. Schedule: Prior to undertaking any construction / installation or other activities that could adversely affect sensitive biological resources (Enrollee and NCRWQCB)
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Biological Resources: BIO-1 cont'd.	• When conducting maintenance or repair on facilities such as sediment basins, or other facilities that may provide habitat for species, ensure that such activities will not disturb any special-status species that may be present. If conducting maintenance or repair activities during the nesting season (generally February 1 to September 15), inspect the facilities to ensure that nesting birds are not present within or adjacent to areas where such activities will occur. If nests or young are identified in such areas, conduct the activities outside of the nesting season. • Runoff management features should be designed and routinely maintained to minimize the spread and propagation of invasive species, such as reed canary grass (<i>Phalaris arundinacea</i>). • Accumulated sediments in control features shall be tested prior to removal, with disposal at an appropriate facility, if warranted. Where adverse effects on sensitive biological resources cannot be avoided, undertake additional CEQA review and develop a restoration or compensation plan in consultation with the California Department of Fish and Wildlife to mitigate the loss of the resources	
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Order No. R1-20XX-XXXX
Lily Bulb Order

Biological Resources: BIO-2	Riparian Habitat, Wetlands, and Lake and Streambed Alteration Notification Compliance. Culvert upgrades and replacement may be a management practice used to achieve the objective of Storm-Proofing Appurtenant Agricultural Roads for Surface Water Protection. Enrollees shall notify CDFW and comply with the Lake and Streambed Alteration Agreement, if issued. Enrollees shall obtain permits from the Regional Water Quality Control Board and Army Corps of Engineers pursuant to the Clean Water Act, if applicable	CDFW shall be notified pursuant to Fish and Game Code section 1600 et seq. for Project activities affecting lakes or streams and associated riparian habitat and shall comply with the Lake and Streambed Alteration Agreement, if issued. Enrollees shall obtain permits from the Regional Water Quality Control Board and Army Corps of Engineers pursuant to the Clean Water Act, if applicable (Enrollee) Schedule: Prior to construction of management practices.
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Hydrology and Water Quality: HWQ-1	Implement Construction Best Management Practices for Erosion Control Enrollees must implement the following measures during construction activities for the implementation of the Proposed Project Management Practices for Water Protection under the General Order, or must implement alternative measures that are demonstrated to be equally or more effective: • Implement practices to prevent erosion of exposed soil and stockpiles, including watering for dust control, establishing perimeter silt fences, and/or placing fiber rolls. • Minimize soil disturbance areas. • Implement practices to maintain water quality, including silt fences, stabilized construction entrances, and storm drain inlet protection. • Where feasible, limit construction to dry periods. • Design practices and routinely maintain practices to minimize the spread and propagation of invasive species, such as reed canary grass (<i>Phalaris arundinacea</i>). • Revegetate disturbed areas. The performance standard for these erosion control measures is to use the best available technology that is economically achievable. These measures may be included in SWPPP requirements, as appropriate.	Confirm that Best Management Practices are included in contract documents, if any. Schedule: During preparation of contract and specifications. (Enrollee) Confirm that all BMPs are implemented fully, and that erosion control measures use the best available technology that is economically achievable. Schedule: During construction / installation of applicable management practices. (Enrollee) Confirm that BMPs are designed and routinely maintained to minimize the spread and propagation of invasive species, such as reed canary grass. Schedule: during construction and ongoing maintenance (Enrollee)
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Hazardous Materials: HAZ-1	Hazardous Materials Spill Prevention, Control, and Counter-Measures for Land Disturbance Activities General Order enrollees or their contractors must maintain/implement the following: • A list of hazardous materials present on site during construction, to be updated as needed along with product safety data sheets and other information regarding storage, application, transportation, and disposal requirements; • A hazardous materials communication plan, which lists contacts for emergency services, hazardous materials spill response agencies, and wildlife agencies, as well as protocols for communication in the event of a spill; • Standards for secondary containment of hazardous materials stored on site; • Spill response procedures based on product and quantity. The procedures must include spill response/clean-up materials to be used, location of such materials within the construction site, and disposal protocols. • Test accumulated sediments in control features for hazardous materials prior to removal, with disposal at an appropriate facility, if warranted.	Confirm that measure is included in contract documents, if any. Schedule: During preparation of contract and specifications. (Enrollee) Confirm list of hazardous materials, standards for secondary containment, and spill response procedures are on site/documentated. Schedule: Prior to land disturbance activities. (Enrollee) Confirm preparation of a hazardous materials communication plan that includes all information identified in the mitigation measure. Schedule: Prior to land disturbance activities. (Enrollee) Test accumulated sediments in control features prior to removal, with disposal at an appropriate facility, if warranted. Schedule: prior to removal of accumulated sediments (Enrollee)
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Cultural Resources: CUL-1	For proposed actions or management practices that involve modifications to previously undisturbed soils (i.e., below the levels of current agricultural practices, or in areas that have not previously been cultivated or developed) or a structure that may qualify as a historical resource, the following steps must be taken to avoid and/or reduce potential impacts on significant cultural resources: The Enrollee must retain an archaeologist who meets the U.S. Secretary of Interior's professional standards as an archaeologist to conduct a records search at the regional Information Center of the California Historical Resources Information System (CHRIS). The record search must determine if cultural resources have previously been identified in the proposed disturbance area and whether the proposed disturbance area has previously been subject to archaeological pedestrian survey. The professional archaeologist must contact the NAHC to request a search of the Sacred Lands files and a list of tribes with a traditional and cultural affiliation with the proposed disturbance area. The archaeologist must contact the tribes identified by the NAHC to request information about sites and resources that may not have been identified during the record search process, including TCRs, and whether the tribes have any concerns about the proposed action. If a pedestrian survey has not previously been conducted on the property, a survey must be conducted by a qualified archaeologist. All identified archaeological sites and historic buildings and structures must be recorded on California Department of Parks and Recreation 523 Site Record forms.	Confirm that the measure is included in contract documents, if any. Schedule: During preparation of contract and specifications (Enrollee) Confirm that construction workers are fully aware of all requirements pertaining to cultural resources and receive basic training on how to identify potential cultural resources. Schedule: Prior to construction / installation of applicable management practices. (Enrollee) For applicable activities, confirm retention of a qualified archaeologist to conduct a records search, contact tribes, and conduct pedestrian survey, as necessary. Schedule: Prior to construction / installation of applicable management practices.(Enrollee) Confirm any identified archaeological sites, and historic buildings and structures, are recorded on proper forms. Schedule: Prior to construction / installation of applicable management practices. (Enrollee) If historical resource(s) are identified within the proposed disturbance area, confirm avoidance of those resource(s) to the extent feasible. Schedule: Prior to construction / installation of applicable management practices. (Enrollee) If historical resource(s) cannot be avoided, confirm preparation of a data recovery plan and submittal to NCRWQCB. Schedule: Prior to construction / installation of applicable management practices. (Enrollee)
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Cultural Resources: CUL-1 continued	If the historical resource(s) cannot be completely avoided, the qualified archaeologist must develop and implement a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the historical resource(s) that may be impacted by the proposed activity. The data recovery plan must be prepared and submitted to the Regional Water Board for approval, and the data recovery plan must be approved by Regional Water Board prior to any excavation taking place that may impact the resource(s). Regional Water Board must ensure that data recovery plans for Native American archaeological sites have the opportunity be reviewed by consulting tribes.	Confirm that submitted data recovery plan adequately provides for recovery of scientifically important information about historical resource(s) to be impacted, and that consulting tribes are provided opportunity to review. Schedule: Prior to commencement of any excavation activities.(NCRWQCB) If approved, confirm that data recovery plan is properly and fully implemented. Schedule: During and potentially after construction / installation, if applicable. (Enrollee) In the event that cultural resources are encountered, ensure that work stops immediately. Schedule: During construction / installation, if necessary. (Enrollee) Ensure all accidentally discovered cultural resources are evaluated for inclusion in the CRHR and that avoidance measures or appropriate mitigation measures are implemented for historical resources. Schedule: During construction / installation, if necessary. (Enrollee)
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Order No. R1-20XX-XXXX
Lily Bulb Order

Cultural Resources: CUL-1 continued	Archaeological sites known to contain human remains must be treated in accordance with the provisions of Section 7050.5 of the Health and Safety Code (see Mitigation Measure CUL-3). For any artifacts removed during project excavation or testing, the professional archaeologist must provide for the curation of such artifact(s). For structure(s) evaluated as a historical resource(s) that cannot be avoided, reconstruction of the structure(s) at an off-site location, consistent with the Secretary of the Interior's Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings, may be an appropriate minimization measure that may be implemented in addition to, or as part of, the data recovery plan. 1)Provisions must be made by the enrollee or third party for the accidental discovery of historical or unique archaeological resources during construction of applicable management practices, pursuant to CEQA Guidelines 15064.5(f). If cultural resources are uncovered during construction, work must immediately cease within 50 feet of the finds and the materials must be evaluated by a qualified archaeologist. If the finds are determined to be a historical or unique archaeological resource, avoidance measures or appropriate mitigation (e.g., data recovery, documentation, and curation) must be implemented.	See CUL-1.
Cultural Resources: CUL-2	See Mitigation for CUL-1 above	See CUL-1.

Cultural Resources: CUL-3	Comply with State Laws Pertaining to the Discovery of Human Remains. If human remains are discovered during construction, the requirements of Health and Safety Code section 7050.5 must be followed. Potentially damaging excavation must halt on the construction site within a minimum radius of 100 feet of the remains, and the county coroner must be notified. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code section 7050.5[p]). If the coroner determines that the remains are those of a Native American, the NAHC must be contacted by phone within 24 hours of making that determination (California Health and Safety Code section 7050[c]).	Confirm that measure is incorporated in contract documents, if any. Schedule: During preparation of contract and specifications. (Enrollee) Confirm that construction workers are fully aware of all requirements pertaining to human remains. Schedule: Prior to construction / installation of management practices or other activities involving ground disturbance. (Enrollee) In the event that human remains are encountered, confirm that work is stopped immediately and California Health and Safety Code requirements are followed and the county coroner is contacted. Schedule: During construction / installation, if applicable. (Enrollee) Confirm that any discoveries of human remains are evaluated and addressed properly as outlined in the measure. Schedule: During construction / installation, if applicable (Enrollee)
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Cultural Resources: CUL-3	Pursuant to the provisions of PRC section 5097.98, the NAHC must identify a most likely descendent (MLD). No photographs will be taken of any human remains, unless required for identification purposes and with permission from Tribal representatives. There shall be no further excavation or disturbance of the site, or any nearby area reasonably suspected to overlie adjacent human remains until the following occurs: 1. The Permit Holder will immediately contact the Del Norte County Coroner (Coroner). Del Norte County Coroner 650 5th Street, Crescent City CA. 95531 Phone: 707-464-4191 2. If the Coroner determines the remains to be Native American: a. The Coroner will contact the Native American Heritage Commission (NAHC) within 24 hours. b. The NAHC will designate a Most Likely Descendant (MLD) [CCR 15064.5(e)(1)(B)]. c. The designated MLD will meet with the Permit Holder as soon as feasible, to make a recommendation on the treatment of the remains and associated artifacts. The MLD designated by NAHC must have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. The enrollee must work with the MLD to ensure that the remains are removed to a protected location and treated with dignity and respect. Ground disturbing activities must not resume until these requirements are met.	See CUL-3 above.
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Order No. R1-20XX-XXXX
Lily Bulb Order

Tribal Cultural Resources: TCR-1	See Cultural Resources (CUL-1 through CUL-3) above.	
Tribal Cultural Resources: TCR-2	Implement tribal cultural viewshed protection measures Low-profile design and naturalistic contours. Design above-ground elements (including berms and basin edges) to maintain low profiles, use naturalistic grading, and minimize visual contrast with surrounding landforms. Material and finish controls. Use non-reflective materials and finishes for any above-ground structures, appurtenances, or signage to minimize glare and visual contrast. Vegetation retention and screening. Retain existing screening vegetation where feasible and restore disturbed areas with native vegetation appropriate to the local setting. Where vegetation establishment is part of design or permitting compliance, prioritize revegetation methods that support both ecological function and the continuity of the TCL's visual setting. Lighting limitations. Avoid new permanent nighttime lighting associated with Management Practice implementation. If lighting is necessary for safety, use the minimum intensity required and fully shield fixtures to direct light downward and away from culturally important views.	Confirm that measure is incorporated in contract documents, if any. Schedule: During preparation of contract and specifications. (Enrollee) Confirm that construction workers are fully aware of all requirements pertaining to the viewshed. Schedule: Prior to construction / installation of management practices or other activities involving ground disturbance. (Enrollee)
Tribal Cultural Resources: TCR 3	See Mitigation Measures BIO-1, HWQ-1, and HAZ-1 above.	

Attachment F: Forms and Templates

Contents

- I.** Notice of Intent
- II.** Request for Termination
- III.** Drinking Water Well Information Form
 - a. Drinking Water Well Information Form Instructions
 - b. Drinking Water Well Notification Templates
 - c. Nitrate Fact Sheet
- IV.** Irrigation and Nitrogen Management Plan
 - a. Irrigation and Nitrogen Management Plan Instructions

North Coast Regional Water Quality Control Board

LILY BULB ORDER NOTICE OF INTENT

To obtain regulatory coverage and comply with Waste Discharge Requirements General Order for discharges from Commercial Lily Bulb Operations within the Smith River Plain, Order R1-2026-XXXX.

You must complete the entire form. Please send the completed, signed form to the North Coast Regional Water Quality Control Board (North Coast Water Board). Instructions for filling out and sending this form start on page 4.

Enrollment Type

- ☐ **I am enrolling in the Order individually.** By checking this box, I acknowledge that I must fulfill all Monitoring and Reporting requirements in Attachment A: Monitoring and Reporting Program.
- ☐ **I am enrolling in the Order through an approved Coalition.** By checking this box, I acknowledge that I must fulfill all Monitoring and Reporting requirements for Enrollees in a Coalition in Attachment A: MRP.

1. Owner Information

1a. Landowner First Name:	1b. Landowner Last Name:
1c. Landowner Phone Number:	1d. Landowner Email:

1e. Landowner Mailing Address: _____

1f. Is the landowner also the operator of the commercial lily bulb operation? Yes No
(If you checked Yes, skip Operator Information 2a through 2d)

2. Operator Information

2a. Operator First Name:	2b. Operator Last Name:
2c. Operator Phone Number:	2d. Operator Email:

2e. Operator Mailing Address: _____

Lily Bulb Operation Information

Name of Operation (DBA) if applicable: _____

3. Parcel Information

Please list parcels for which you would like to obtain regulatory coverage (*attach additional sheets as necessary*).

Assessor's Parcel Number (APN)	Watershed ³	APN Acres	Farmed Acres

4. Map of Operation

Attach a map of the lily bulb operation that includes all enrolled parcels with parcel boundaries. A map may be an aerial photograph, topographic map, LiDAR-derived shaded relief map, Google Earth image, or equivalent that depicts features at 1-inch = 50 feet or larger scale. The base map(s) shall include a north arrow and label.

³ Refer to Figure A.1 for a map of watersheds in the Smith River Plain.

Owner Notification and Certification

If the facility is currently leased or operated by someone other than the owner, this section must be signed by the operator.

I certify that the owner of the parcel(s) I am enrolling has been notified of these General Waste Requirements and that I have been designated by the owner as the "Enrollee".

Operator's Printed Name: _____

Signature: _____

Title: _____ Date: _____

Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the Order, including the implementation of the Monitoring and Reporting Program, will be complied with."

Enrollee Printed Name*: _____

Enrollee Signature: _____ Date: _____

Submittal of NOI Form

1. Fees

[Irrigated Lands Fee information can be found at:](https://www.waterboards.ca.gov/water_issues/programs/agriculture/)

(https://www.waterboards.ca.gov/water_issues/programs/agriculture/)

2. Submittal

This NOI must be completed for existing lily bulb operations and submitted to the North Coast Water Board no later than #**DATE**, or, prior to enrollment by new, expanding, or reoperating previously inactive lily bulb operations.

If enrolling in a Coalition, please submit this completed NOI form and appropriate enrollment fee (when applicable) to the Coalition.

If enrolling individually, please submit this completed NOI Form and appropriate enrollment fee (when applicable) to the following address:

North Coast Regional Water Quality Control Board
ATTN: Lily Bulb Order
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95401

Email: NorthCoast@waterboards.ca.gov

DRAFT

North Coast Regional Water Quality Control Board

LILY BULB ORDER REQUEST FOR TERMINATION

Request to Terminate Coverage of Commercial Lily Bulb Operations under General Order R1-2026-00XX.

Submission of this form constitutes an official notification to the North Coast Regional Water Quality Control Board (North Coast Water Board) that the lily bulb operation identified below, and all associated APNs, has elected to terminate coverage under the Lily Bulb Order. To officially terminate your enrollment, this form must be completed, physically signed by the individual Owner and/or Operator (herein 'Responsible Party') listed on the operation eNOI and received by the North Coast Water Board.

By submitting this Notice of Termination form, ALL parcels associated with the Responsible Party enrolled in the Lily Bulb Order will be terminated.

Owner/Operator Information

1. Complete this section if currently enrolled in a Coalition:

Responsible Party:	
Member ID (if enrolled through Coalition):	
Phone Number:	
Email:	
Business Mailing Address:	

2. Complete this section if currently enrolled Individually:

Order No. R1-2024-0056

Lily Bulb Order

Request for Termination

Responsible Party:	
WDID:	
Phone Number:	
Email:	
Business Mailing Address:	

Reason for Termination

No longer farming commercially as of (month, day, year): ____/____/____

Change in ownership as of (month, day, year): ____/____/____

Have you notified the new owner of their requirement to send a Notice of Intent to the North Coast Water Board? ____ Yes ____ No

Change in Operator as of (month, day, year): ____/____/____

Have you notified the new operator of their requirement to send a Notice of Intent to the North Coast Water Board? ____ Yes ____ No

Certification

I certify under penalty of law that the submitted information is to the best of my knowledge true, accurate, and complete.

Responsible Party Signature: _____

Printed Name: _____ Date: _____

Submitting Form

Please send this form by mail to:

North Coast Regional Water Quality Control Board

Attn: Lily Bulb Order

5550 Skylane Boulevard. Suite A

Santa Rosa CA, 95403

Or you may send by email to: NorthCoast@waterboards.ca.gov

INSTRUCTIONS FOR DRINKING WATER WELL INFORMATION FORM

*Note: Fields with an asterisk are the minimum data required for GeoTracker entry. The [GeoTracker link and instructions](https://www.waterboards.ca.gov/ust/electronic_submittal/) can be found online at: (https://www.waterboards.ca.gov/ust/electronic_submittal/).

Enrollee Information

- 1a. Enrollee Name*: Name of person who is enrolled in the Lily Bulb Order.
- 1b. Enrollee Email*: Valid email address for Enrollee.
- 1c. Enrollee Phone*: Provide working phone number for Enrollee.
- 1d. Coalition: Identify whether enrolled in a Coalition
- 1e. Member Mailing Address*: Mailing address of the enrolled member
- 1f. Property Address: Address of the enrolled parcel if different from the mailing address.
- 1g. Is the Enrollee also the owner? If yes, skip 2a-2d below. If no, please provide landowner information.
- 1h. Is the Enrollee (including family) the only consumer of the drinking water?

In the event of nitrate + nitrite as nitrogen or pesticide exceedance - if yes, notify North Coast Water Board; if no, notification required to all users and the North Coast Water Board within 10 days.

Landowner Information

- 2a. Landowner Name: Provide name of landowner of enrolled parcel(s).
- 2b. Landowner Mailing Address: Provide a valid mailing address for the landowner of the enrolled parcel(s).
- 2c. Landowner phone: Provide valid phone number for landowner of enrolled parcel(s).
- 2d. Landowner email: Provide valid email for landowner of enrolled parcel(s).

Drinking Water Well Information

Well Name/Field Point Name*: Provide a specific name for each well. Name should clearly identify well for future sampling events (not to exceed 10 characters). If water is collected after a treatment system provide TRT- at beginning of Well Name (e.g., TRT-SEwell)

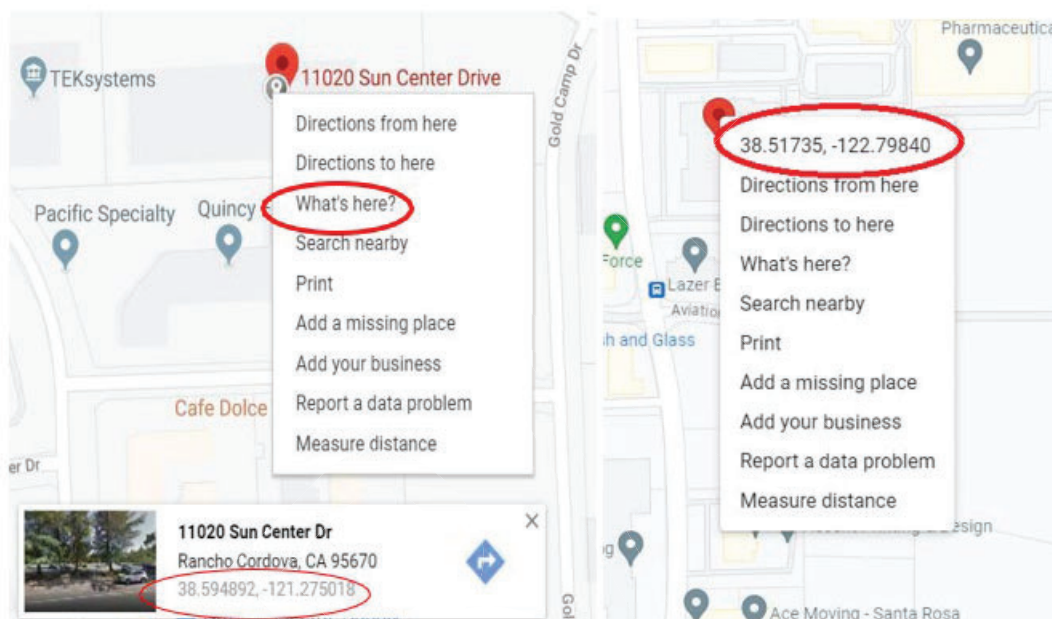
An "X" should be placed in the column to the left of the Well Name/Field Point Name field if the well has previously been sampled. This column will be used for previously

Instructions Reporting for Drinking Water Well Information Form

sampled wells (within the last 5 years) for data entry or during year 2 of sampling to help the laboratory identify previously sampled wells.

Longitude and Latitude can be found by using a cell phone or computer. Longitude and Latitude must be provided in decimal degrees. To determine your coordinates, while using google maps **on a computer**, type in the address and search. Once the address is displayed on the map, using your mouse, right click the pin drop select What's here? A display box should appear near the bottom of the screen (left). In some versions, the latitude and longitude will appear on the top of the box (right).

In this case of the property on the left, latitude = 38.594892, longitude = -121.275018.



On your cell phone - using google maps drop a pin (by placing finger on map and hold in place where the drinking water well is located). When a dropped pin box comes up at the bottom of the screen, scroll down to pin symbol for latitude and longitude information.

County*: The county the enrolled parcel is located.

APN*: An Assessor's Parcel Number (APN) is a unique number that is assigned to each tract of land in a county by the Tax Assessor. Please provide the APN of the enrolled parcel with the drinking water well.

DRINKING WATER WELL INFORMATION FORM

Complete entire form if you have a drinking water well on an enrolled Assessor's Parcel Number (APN) and submit it with your well samples to an Environmental Laboratory Accreditation Program laboratory for required data entry into the State's GeoTracker. The Enrollee is responsible for uploading the data into GeoTracker if the laboratory will not submit directly to GeoTracker.

1. Enrollee Information

(Personal information will not be available to the public, only APN and well sample data will be available to view through the GeoTracker database) – *Note: fields with asterisk are required to be filled out.

1a. Enrollee Name*

1b. Enrollee Email*:

1c. Enrollee Phone*:

1d. Coalition Enrollment?*

1e. Member's Mailing Address*:

1f. Property Address (if different from mailing address):

1g. Is the Enrollee also the landowner:

- ☐ YES (if Yes, skip 2a-2d below)
- ☐ NO

1h. Is the Enrollee (including family) the only consumer of the drinking water

- ☐ YES
- ☐ NO (if no, notification to all consumers and the North Coast Water Board is required if nitrate or pesticide exceedance is identified)

2. Landowner Information

(Fill out if Enrollee is not the landowner)

2a. Landowner's Name:

2b. Landowner's Mailing Address:

2c. Landowner's Phone:

2d. Landowner's Email:

3. Drinking Water Well Information*:

Drinking Water Well
Information Form

List all drinking water well on Irrigated Lands Regulatory Program enrolled parcel(s) below.

(Note: If well was previously sampled and data is entered into GeoTracker, place an "X" in column to the left of the Well Name/Field Point Name.)

X	Well Name / Field Point Name (required)	Latitude	Longitude	County (required)	Assessor Parcel Number (APN) (required)

4. Certification

"I certify under penalty of law that to the best of my knowledge and belief, this document and any attachments submitted is, true, accurate, and complete and was prepared by me or under my direction or supervision. I am aware that there are significant penalties for knowingly submitting false information."

Signature (required) Date

DRINKING WATER NOTIFICATION TEMPLATE

At a minimum, the Enrollee or non-Enrollee owner shall notify drinking water well users of the exceedance by providing them a copy of a Drinking Water Notification Template approved by the Executive Officer. The template shall be signed by the Enrollee or non-Enrollee owner certifying notice has been provided to the users. A copy of the signed template shall be sent to the North Coast Water Board and retained by the Enrollee or non-Enrollee owner.

Please complete template on next page for any Drinking Water Well that exceeds the Nitrate MCL of 10 mg/L. Provide a copy of this Drinking Water Notification Template to all users of the drinking water well within 10 days of learning of the exceedance and submit a copy to the North Coast Water Board.

For exceedances of a Water Quality Benchmark for pesticides, please complete the template on the page after and submit a copy to the North Coast Water Board.

North Coast Regional Water Quality Control Board
ATTN: Lily Bulb Order Drinking Water Well Notification
5550 Skylane Blvd STE A
Santa Rosa CA 95403-1072

NITRATE EXCEEDANCE NOTIFICATION
Do Not Drink Your Water

Use Only Bottled Water Until Further Notice

Failure to follow this advisory could result in serious illness.

Test Result: ____ mg/L

Nitrate in your well was found to exceed the drinking water standard of 10 mg/L established for safe drinking water.



- **Pregnant women are at increased risk** for potential health effects and should not drink water with high levels of nitrate. Drinking water with high nitrate levels may also cause serious complications in pregnancy.
- **Do not give the water to infants.** Infant formula and other edible products should be prepared with bottled water or other water with low levels of nitrate. Infants are at increased risk to become seriously ill or even death from consumption of high levels of nitrate.
- **Do not boil your water.** Boiling your water may increase nitrate levels.

This notification was provided by:

Assessor's Parcel Number (APN):

County:

Name (of Landowner/Operator):

Date: Signature:

Coalition (if applicable):

Member ID:

- ☐ No one drinks or cooks with this well water.
- ☐ Notification has been provided to the user(s) or appropriate landowner(s).
- ☐ Replacement water has been provided to the user(s).

Please submit a signed copy of this notification to the **North Coast Water Board**:

NITRATE FACT SHEET

What is nitrate?

Nitrate can occur naturally in surface and groundwater at levels that do not cause health problems. However, levels of nitrate in excess of the standard drinking water are dangerous, especially for infants and pregnant women. Nitrate contamination in groundwater is generally associated with septic systems, confined animal feeding operations, or fertilizer use.

What health concerns are associated with nitrate in drinking water?

High nitrate levels can interfere with the ability of red blood cells to carry oxygen to the tissues of the body, producing a condition called methemoglobinemia. This is of greatest concern in infants; clinical effects on infants ingesting high levels of nitrate are often referred to as the "blue baby syndrome." Symptoms include shortness of breath and blueness in the skin. Symptoms in infants can develop rapidly, with health deteriorating over a period of days. If symptoms occur, seek medical attention immediately. High nitrate levels may also reduce the oxygen-carrying ability of the blood in pregnant women and increase the risks for complication in their pregnancies.

What can consumers do to reduce exposure to nitrate in drinking water?

Use bottled water until an appropriate treatment system is in place.

Drinking water may be treated to remove nitrate. Home filters such as Brita filters do not remove nitrate from drinking water, but other systems can be used to remove nitrate. Please consult the [State Water Board's residential water treatment approved list](https://www.waterboards.ca.gov/drinking_water/certlic/device/Documents/wtd2017/76Registered%20Models%20for%20Nitrate%20listing%20081117_WITH%20LINKS%20TO%20PDS.pdf) (https://www.waterboards.ca.gov/drinking_water/certlic/device/Documents/wtd2017/76Registered%20Models%20for%20Nitrate%20listing%20081117_WITH%20LINKS%20TO%20PDS.pdf).

Boiling water is not a solution, as it can concentrate the nitrate level.

Do not make infant formula with drinking water that contains nitrate levels above 10 mg/L.

Can nitrate-contaminated water be used to bathe babies and children?

Yes. Babies and children can be bathed in water with high levels of nitrate. Showers may also be taken. Nitrate is only a concern for ingestion (eating and drinking). Nitrate is not absorbed through your skin. People who install filter systems for nitrate often install them just for their kitchen sink faucet, because they use that faucet for their cooking and drinking water.

Can nitrate-contaminated water be used to wash fruits and vegetables before they are eaten?

Generally, fruits and vegetables can be washed with water with high nitrate levels. The amount of water used for this purpose is small, and if the fruits and vegetables are wiped or blotted dry after washing, there should be no health risk. The water should not be used for cooking.

For more information

Or, for more information about nitrate in wells used for drinking water, visit the Groundwater Information Sheet regarding Nitrate online (www.waterboards.ca.gov/gama/docs/coc_nitrate.pdf).

PESTICIDE EXCEEDANCE NOTIFICATION

Test Result: _____ units: _____

The following pesticide was found in a concentration in your well that exceeds a human health level.

Pesticide: _____

Refer to the table below for human health levels and a brief description below.

Parameter	Benchmark (ug/L)	Benchmark Exceedance	Source or Reference^{xcvii}
Diuron	Acute: 1028 Chronic: 2.0	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	<u>Chronic</u> : USGS Health Based Screening Level (HBSL) for one-in-a-million cancer risk estimate <u>Acute</u> : CDPR Human Health Reference Level (HHRL)
Imidacloprid	Acute: 283 Chronic: 500	2 consecutive exceedances of the chronic Benchmark or a single exceedance of the acute.	<u>Acute</u> : DPR Human Health HHRL <u>Chronic</u> : USEPA Chronic Human Health Benchmarks for Pesticides (HHBPs)
Mefenoxam	Acute: 3000 Chronic: N/A	A single exceedance of the Benchmark	USEPA One-Day or Acute HHBP
Napropamide	Chronic: 710	2 consecutive exceedances of the chronic Benchmark	USEPA Chronic or Lifetime HHBP
Nitrate	10 (mg/L)	A single exceedance of the Benchmark	USEPA Maximum Contaminant Level (MCL)

HHRL: The Human Health Reference Levels (HHRLs) are identified by DPR's Human Health Assessment Branch. For some pesticides and degradates, HHA calculated acute and chronic HHRLs. Residues measured in groundwater exceeding these reference levels indicate a health concern.

MCL: The Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are federally enforceable standards.

Chronic or Lifetime HHBP: USEPA Chronic or Lifetime Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of chronic non-carcinogenic effects over a lifetime of exposure, assuming that 20% of the

exposure to a given pesticide is from water and additional exposure is derived from another source such as food, air, or dermal contact.

Acute or One-Day HHBP:: USEPA Acute or One-day Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of acute or up to one-day non-carcinogenic effects, assuming that the entire exposure to a given pesticide is from drinking water.

This notification was provided by:

Assessor's Parcel Number (APN):

County:

Name (of Landowner/Operator):

Date:Signature:

Coalition (if applicable):

Member ID:

- ☐ Notification has been provided to the user(s) or appropriate landowner(s).
- ☐ Replacement water has been provided to the user(s).

Please submit a signed copy of this notification to the **North Coast Water Board**:

^{xcvii} Water Quality Benchmarks were derived from water quality criteria are generally consistent with the State Water Board's guidelines for listing impaired waters under Section 303(d) of the Clean Water Act. As a general approach, North Coast Water Board staff reviewed all available pesticide water quality criteria and selected the most protective (i.e., lowest) values for relevant beneficial uses of surface waters and groundwater in the Smith River Plain. In surface waters, Water Quality Benchmarks (except the acute benchmark for ethoprop and the BLM-derived benchmarks for copper) are sourced from USEPA Aquatic Life Benchmarks. The BLM Instantaneous Water Quality Criteria or BLM-IWQC is a criterion developed using a set of ten parameters to account for complex chemical reactions associated with copper in the environment: pH, Dissolved Organic Carbon (DOC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulfate (SO₄), Potassium (K), Chlorine (Cl), Alkalinity, and Temperature. The IWQC is used as a water quality threshold for dissolved copper for that specific site and sampling event only. The model's output also includes a toxicity unit (numerical value) to represent the relative risk of copper toxicity in the waterbody at the time of sample collection. For groundwater Water Quality Benchmarks, the North Coast Water Board relies on the applicable Drinking Water Maximum Contaminant Level (MCL), if available. If an MCL is not available, the North Coast Water Board has selected the best

available Drinking Water Standard available. Human Health Reference Levels (HHRL) are identified by California Department of Pesticide Regulation's Human Health Assessment Branch. Pesticide concentrations measured in water exceeding these reference levels indicate a health concern. They are not legally enforceable standards but can be used to identify pesticide levels in drinking water that could pose a human health risk. USEPA Chronic or Lifetime Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of chronic non-carcinogenic effects over a lifetime of exposure, assuming that 20% of the exposure to a given pesticide is from water and additional exposure is derived from another source such as food, air, or dermal contact. USEPA Acute or One-day Human Health Benchmarks for Pesticides (HHBPs) are non-enforceable advisory values in drinking water protective of acute or up to one-day non-carcinogenic effects, assuming that the entire exposure to a given pesticide is from drinking water. Health-Based Screening Levels (HBSLs) are federal, non-enforceable water-quality benchmarks developed by the United States Geological Survey. The HBSL concentration level for diuron, for example, represents a one-in-one million cancer risk range.

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HECTOR BEDOLLA, CHAIR | VALERIE QUINTO, EXECUTIVE OFFICER

5550 Skylane Blvd., Suite A, Santa Rosa, CA 95403 | www.waterboards.ca.gov/northcoast

Irrigation and Nitrogen Management Plan (INMP) Worksheet

Coalition ID (provided by Coalition): _____

If you are not enrolled in a Coalition, leave blank.

Nitrogen Management Unit ID (if applicable): _____ Total Farm Area Acres: _____

Enrollee Name: _____ GeoTracker ID# (if applicable): _____

Was this parcel or Nitrogen Management Unit identified as a statistical outlier by the Coalition or North Coast Water Board last year?

☐ Yes ☐ No

Crop Year (Harvested): _____

Instructions:

Fill out the INMP Worksheet. The INMP must be certified under the following conditions: (1) the Lily Bulb Operation is located within a high vulnerability groundwater area, or (2) the Enrollee was notified that they are a statistical outlier. Complete instructions are located at the back of the worksheet.

1. Parcel Management

APN	Watershed	Parcel Acres	Farm Area Acres

Total Farm Area Acres: _____

Comments:

2. Irrigation Pre-Season Planning

Crop Evapotranspiration (ET, inches):

Anticipated Crop Irrigation (inches):

Irrigation Water N Concentration (ppm or mg/L, as NO₃ -N):

3. Irrigation Method

(Check one for Primary; if applicable, check one for Secondary)

Primary Secondary¹

- ☐ Drip
- ☐ Micro Sprinkler
- ☐ Furrow
- ☐ Sprinkler
- ☐ Border Strip
- ☐ Flood

¹ A secondary irrigation system could be used for crop germination, frost protection, crop cooling, etc.

4. Irrigation Efficiency Practices (Check all that apply)

- ☐ Laser Leveling
- ☐ Use of ET in scheduling irrigations
- ☐ Water application schedule to need
- ☐ Use of moisture probe (e.g., tensiometer)
- ☐ Soil Moisture Neutron Probe
- ☐ Pressure Bomb
- ☐ Other: _____

5. Harvest/Yield Information

Production Unit (e.g., tons): _____ Converted to lbs.: _____

Harvested Yield (lbs/acre): Expected: _____ Actual: _____

6. Nitrogen Efficiency Practices (Check all that apply):

- ☐ Split Fertilizer Applications

- ☐ Irrigation Water N Testing
- ☐ Soil Testing
- ☐ Tissue/Petiole Testing
- ☐ Fertigation
- ☐ Foliar N Application
- ☐ Cover Crops
- ☐ Variable Rate Applications using GPS
- ☐ Other:

7. Nitrogen Applied and Nitrogen Sources:

Sources	Recommended/ Planned N (A)	Actual N (B)
Soil – Available N in Root Zone (Annualized, lbs/ac)		
N in Irrigation Water* (Annualized, lbs/ac)		
Organic Amendments* (Manure/Compost/Other, lbs/ac estimate)		
Dry/Liquid Fertilizer N* (lbs/ac)		
Foliar Fertilizer N* (lbs/ac)		
Total Nitrogen Applied (lbs/ac)		

8. Nitrogen Removed*:

Nitrogen Removed	Harvest Yield x Crop Removal Coefficient** (C_N)	Nitrogen Removed (lbs/acre)
Harvest Yield (lbs/acre)		

*Nitrogen Removed includes nitrogen removal via harvest and nitrogen sequestered in permanent wood of perennial crops. This is incorporated into the Crop Removal Coefficient which calculates the nitrogen removed in one season per pound per acre of winegrapes harvested.

**The North Coast Water Board will provide you a C_N

Total Nitrogen Applied (lbs./acre): _____

Total Nitrogen Removed (lbs/acre): _____

Irrigation Nutrient Management Plan Certification

Check a box below:

- ☐ This INMP does not need to be certified (skip Certification).
- ☐ This INMP does need to be certified.

Certification:

The person signing this Irrigation and Nitrogen Management Plan (INMP) certifies, under penalty of law, that the INMP was prepared under his/her direction and supervision, that the information and data reported is to the best of his/her knowledge and belief, true, accurate, and complete, and that he/she is aware that there are penalties for knowingly submitting false information. Where the person signing the INMP is not the Enrollee, he/she may rely on the information and data provided by the Member and is not required to independently verify the information and data.

The person signing the INMP below further certifies that he/she used sound irrigation and nitrogen management planning practices to develop irrigation and nitrogen application recommendations and that the recommendations are informed by applicable training for meeting the crop's agronomic needs while minimizing nitrogen loss to surface water and groundwater. Where the person signing the INMP is not the Enrollee, he/she is not responsible for any damages, loss, or liability arising from subsequent implementation of the INMP by the Member in a manner that is inconsistent with the INMP's recommendations for nitrogen application. **This certification does not create any liability for claims for environmental violations.**

The person signing this document is:

- ☐ Certified INMP Specialist (e.g., Certified Crop Adviser who has completed CDFA training)

- ☐ Self-Certified by Enrollee who has completed the CDFA training program
- ☐ Self-Certified by the Enrollee who follows NRCS or UC site-specific recommendations (documentation required)
- ☐ I do not apply nitrogen

I, _____, certify this INMP in accordance with the statement above.

_____ Signature _____ Date

If the certifier is not the Enrollee, the Enrollee additionally agrees as follows:

I, _____, Enrollee, have provided information and data to the certifier above that is, to the best of my knowledge and belief, true, accurate, and complete, that I understand that the certifier may rely on the information and data provided by me and is not required to independently verify the information and data, and that I further understand that the certifier is not responsible for any damages, loss, or liability arising from subsequent implementation of the INMP by me in a manner that is inconsistent with the INMP's recommendations for nitrogen application. I further understand that the certification does not create any liability for claims for environmental violations.

_____ Signature _____ Date

Irrigation and Nitrogen Management Plan (INMP) Worksheet Instructions

Complete an Irrigation and Nitrogen Management Plan (INMP) Worksheet for every parcel or Nitrogen Management Unit enrolled in the Order. All INMP Worksheets must be kept on farm and made available upon request during inspections by the North Coast Regional Water Quality Control Board (North Coast Water Board).

Each section heading below (in bold) corresponds to the section heading on the INMP Worksheet. The numbered references correspond to each numbered box on the INMP Worksheet.

Irrigation and Nitrogen Management Plan

Enter the Enrollee ID generated by your Coalition and name of the Owner or Operator enrolled in the Order.

Indicate if the parcel(s)/Nitrogen Management Unit you are writing the plan for was identified as a **Statistical Outlier** by the North Coast Water Board for the previous crop year. The North Coast Water Board conducts a statistical analysis on the data provided from individually enrolled Enrollees for the nitrogen applied and nitrogen removed (based on yield) to determine statistical outliers and will notify those Enrollees. If the parcel/Nitrogen Management Unit was identified as a statistical outlier by the North Coast Water Board in the previous crop year, mark "Yes".

Enter the **Crop Year (Harvested)**. Information on INMP Worksheets should be based on the calendar year in which harvest was completed. If the crop was harvested in November of 2028, enter '2028' in this space.

1. Parcel Management

Use this table to account for all parcels for which the plan applies. Multiple parcels, portions of parcels, or Nitrogen Management Units (not to exceed 640 acres) may be included in a single plan if they all have the same: crop, fertilizer inputs, irrigation management, and nitrogen management practices.

Enter the **Assessor's Parcel Number (APN)** and **County** for each parcel associated with your plan.

Enter the Farm Area acres for each parcel or portion of parcel to which this plan applies. Farm Area acres incorporate all of the Farm Area (The planted area and appurtenant structures, maintenance areas, mixing and loading sites, and appurtenant storage yards on a Lily Bulb Operation). For example, if the parcel is 10 acres, but the Farm Area only includes 5 acres, record 5 acres in that box. Sum the Farm Area acres from each parcel for the Total Acres covered under the plan Use the Comment/Notes box to provide any further information that may be pertinent to the worksheet (e.g., nitrogen use efficiency, nitrogen removal rates, reasons for substantial differences between plan and actual numbers, etc.).

2. Irrigation Pre-Season Planning

Crop Evapotranspiration. Enter the potential crop evapotranspiration (ETc) in inches anticipated for the season. Evapotranspiration rates are provided by geographical location and multiplied by a crop- specific coefficient to estimate the amount transpired by your crops.

Anticipated Crop Irrigation. Enter the amount of irrigation water in inches expected to be applied over the course of the season.

Irrigation Water N Concentration. Enter the concentration of nitrogen in the irrigation water used on your crop as parts per million (ppm) or milligrams per liter (mg/L). The concentration of nitrogen in your irrigation water can be obtained from sources such as local district testing, laboratory analysis, or other sources. These results can be reported as either Nitrate as N, nitrate-nitrogen, or NO₃-N.

Irrigation Method. Check the box to indicate the irrigation method used the most for crop irrigation (primary irrigation) during the growing season for the parcel/Nitrogen Management Unit under this plan. If applicable, indicate any secondary irrigation systems. Secondary irrigation systems include those used for crop germination, crop cooling, or salinity management.

Irrigation Efficiency Practices* (5). Check all boxes that apply to indicate irrigation efficiency practices used on your parcels during the season. Indicate if, to your knowledge, the parcels have been laser leveled.

3. Harvest/Yield Information

Production Unit. This is the standard unit in which you measure your harvest for the parcels identified under **Parcel Management**. **You will need to convert this number to lbs per acre later.**

Harvested Yield. This includes all crop yield harvested for the season. For pre-season planning, fill in the Expected Yield for the season. The Expected Yield should be reported on a per-acre basis for the parcel or Nitrogen Management Unit covered by the plan. Expected Yield expectations will guide nitrogen management decisions and will inform the **TOTAL NITROGEN Recommended** to be used in the Nitrogen Management section below. Enter actual harvested Yield in the next box following harvest in lbs. per acre.

4. Nitrogen Efficiency Practices

Nitrogen Efficiency Practices. Check all boxes that apply to indicate any nitrogen efficiency practices used on your parcels during the season.

Nitrogen Applied and Nitrogen Sources

Recommended/Planned N (Column A): Complete the boxes in the Nitrogen Sources section in **Column A** based on the anticipated Nitrogen Sources required to obtain the Expected Yield. Use crop recommendations from CDFA, UCCE, NRCS, commodity organizations or site-specific knowledge to appropriately estimate the amount of nitrogen (N) necessary. Use Recommended/Planned N totals for each source of N and schedule applications for the crop year. Use additional tools/spreadsheets to plan timing

for each application. Proper scheduling of N applications and irrigations is essential for efficient nitrogen management.

Recommended / Planned TOTAL NITROGEN: All Nitrogen Sources in this section should be the total for **Recommended / Planned TOTAL NITROGEN (14A)**.

5. Recommended / Planned TOTAL NITROGEN: Sum all values from Column A.

Complete the following sections based on the nitrogen source:

Soil – Available N in Root Zone. Represents nitrogen in the soil root zone that is available to the crop during the growing season. Enter the amount of residual soil nitrogen based on soil samples or other available data.

N in Irrigation Water. Enter the amount of nitrogen applied via irrigation water over the course of the crop year in pounds per acre. For planning, this value is calculated based on the **Anticipated Crop Irrigation** and the **Irrigation Water N Concentration**. For the Actual N column, this value is calculated based on the *actual* crop irrigation and irrigation water N concentration. To calculate N in irrigation water, use the following formula:

$$\text{N concentration (ppm or mg/L)} \times \text{inches of irrigation applied} \times 0.226$$

Nitrate as nitrogen is also referred to as Nitrate as N, nitrate-nitrogen, or $\text{NO}_3\text{-N}$.

Organic Amendments. Organic Amendments include any nutrient applications from sources that do not have a guaranteed nutrient content, such as compost and manure applications. Applied organic amendments should be reported as the amount of nitrogen available to the plant during the crop year, in pounds per acre.

Dry/Liquid Fertilizer N. The Dry/Liquid Fertilizers include any nitrogen-containing product with a guaranteed nutrient content. This number should be reported as the amount of nitrogen applied as pounds per acre; this may be different than the amount of fertilizer applied which may include other nutrients.

Foliar Fertilizer N. Foliar nitrogen applications include any nitrogen-containing product applied to the crop canopy or above ground plant parts, and should be reported in pounds per acre.

Actual N (Column B): Fill in the **Actual N (Column B)** based on actual applied nitrogen amounts. This should be completed after the crop is harvested for each of the nitrogen sources outlined above. Use the Recommended/Planned N schedule to guide nitrogen applications throughout the growing season. Actual application amounts and timing can be adjusted based upon changing conditions (weather, pest damage, expected yield, tissue samples, etc.). The information in this column should reflect the actual application during the Crop Year. Refer to the Nitrogen Source section above for additional instructions and definitions.

Actual TOTAL NITROGEN: Actual applied Nitrogen Sources. Actual TOTAL NITROGEN: Sum of all values from Column B.

Nitrogen Removed

Harvested Yield. This includes all crop yield harvested for the season in lbs/acre.

Harvest Yield x Crop Removal Coefficient (C_N).** Use this box to multiply the harvested yield by the crop removal coefficient. Nitrogen Removed includes nitrogen removal via harvest and nitrogen sequestered in permanent wood of perennial crops. This is incorporated into the Crop Removal Coefficient which calculates the nitrogen removed in one season per pound per acre of winegrapes harvested. The North Coast Water Board will provide you a C_N.

Nitrogen Applied and Removed Totals

Enter your total Nitrogen Applied (from 6) and Nitrogen Removed (from 7) in lbs./acre.

6. INMP Certification

INMPs must be certified for the following conditions: (1) for parcels in a **High Vulnerability Area** (HVA) to groundwater must be certified. Please contact the North Coast Water Board for more information regarding the vulnerability to groundwater of your parcels, and (2) If the Enrollee was identified as a statistical outlier by the North Coast Water Board in the previous year. The person certifying the plan must complete the **INMP Certification** section including signature, date, and method of certification. Any plan certifier should also initial the INMP Worksheet page in the box in the bottom right corner.

Any INMP requiring certification must be certified by an Irrigation and Nitrogen Management Specialist, such as:

Crop Advisers certified by the American Society of Agronomy (CCA). Any Certified Crop Adviser who certifies an INMP must also have completed the nitrogen management training program offered by the University of California Agriculture and Natural Resources (UCANR) and the California Department of Food and Agriculture (CDFA).

Certified Professional Soil Scientists (CPSS)

Certified Professional Agronomists (CPAg)

Technical Service Providers (TSP) certified in nutrient management in California by the Natural Resources Conservation Service (NRCS)

Certified Agricultural Irrigation Management Specialists (CAIS) certified by The Irrigation Association.

Additionally, plans may be self-certified by the Enrollee if:

The certifying Enrollee has attended the California Department of Food and Agriculture (CDFA) or other approved training program for INMP certification. The Member must retain written documentation of their attendance in the training program.

The certifying Enrollee adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS Nutrient Management Plan) or the University of California Cooperative Extension (UCCE). The Member must retain written documentation of the recommendation.

If you do not apply nitrogen fertilizer:

You must state that you do not apply nitrogen fertilizer to the vineyard on your INMP Worksheet

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