

North Coast Regional Water Quality Control Board

**California Regional Water Quality Control Board
North Coast Region
Order No. R1-2026-0029
Water Code Section 13267 Investigative Order**

**Directing U.S. Army Corps of Engineers
to Submit Technical and Monitoring Reports
Pertaining to Discharges from Coyote Valley Dam**

Mendocino County

FINDINGS

The North Coast Regional Water Quality Control Board (North Coast Water Board) finds that:

1. The U.S. Army Corps of Engineers, San Francisco District, (USACE) is the owner and primary operator of Coyote Valley Dam (CVD). USACE constructed CVD as a flood control project and administers Lake Mendocino, the reservoir formed by the dam. Sonoma Water primarily facilitates releases from the dam to meet minimum instream flow requirements and support downstream beneficial uses such as domestic, municipal, industrial, and agricultural water supply. The Mendocino County Russian River Flood Control and Water Conservation Improvement District, formed to cover Mendocino County's share of construction costs, holds rights to a portion of the water stored in Lake Mendocino.
2. Elevated turbidity levels in Lake Mendocino and the Russian River downstream of CVD have been observed since soon after dam construction in 1958, with recent monitoring confirming persistent high turbidity during flood control operations and reservoir releases. These elevated levels are primarily caused by sediment mobilization during dam operations, particularly flood control releases, with additional contributions from storm events.
3. In 2008, the National Marine Fisheries Service (NMFS) issued a Biological Opinion (2008 BiOp)¹ to USACE (Discharger) and Sonoma Water in consultation

¹ National Marine Fisheries Service, Southwest Region. Endangered Species Act Section 7 Consultation Biological Opinion. (September 24, 2008).
http://www.lagunafoundation.org/knowledgebase/sites/default/files/Signed-RussianRiverFinal_BO_9-24-08.pdf

with the USACE and Sonoma Water under Section 7 of the Endangered Species Act (ESA)². NMFS initiated consultation to address the impacts of water supply, turbidity, flood control operations, and other activities on threatened and endangered salmonid species in the Russian River watershed. During this period, John Largier's March 2008 estuarine analysis³ and independent technical reviews compiled for NMFS, found that State Water Resources Control Board Decision 1610 (adopted 1986), which had mandated minimum summer flows, produced summer flows that were too high for optimal juvenile salmonid habitat and that the historical practice of artificially breaching the sandbar at the Russian River's mouth would adversely affect the listed species. Furthermore, NMFS noted that the dam's flood control operations increase turbidity and found that this increased turbidity has significant negative effects on protected salmonids, including egg-to-fry mortality and physiological stress. The 2008 BiOp determined that the proposed project was likely to jeopardize the continued existence of Central California Coast steelhead, coho salmon, and California Coastal Chinook salmon, and adversely modify their critical habitats, which led to the development of Reasonable and Prudent Measures (RPM) necessary to avoid impacts to threatened and endangered species and minimize incidental take. The Incidental Take Statement included in the 2008 BiOp requires USACE and Sonoma Water to comply with the RPMs to minimize incidental take.

4. RPM 4, as outlined in the 2008 BiOp, required the implementation of measures to assist NMFS in quantifying the incidental take of listed salmonids caused by turbid flood-control and water supply releases from CVD. RPM 4 also included a term and condition to reduce project-related turbidity requiring USACE to collect turbidity data over a 10-year period at five monitoring locations in addition to three existing U.S. Geological Survey (USGS) gauges that the agency operates downstream of CVD.
5. On September 20, 2023, USACE submitted a Russian River Turbidity Assessment and Proposed Plan (2023 Turbidity Report)⁴ intended to document the collected data and propose a plan to address turbidity impacts, aiming to

² Section 7 of the ESA requires federal agencies to consult with the U.S. Fish and Wildlife Service or NMFS to ensure actions are not likely to jeopardize listed species or adversely modify designated critical habitat.

<https://www.fws.gov/service/esa-section-7-consultation>

³ John L Largier, Assessment of the Estuarine Analysis for the Russian River Water Supply And Flood Control Biological Opinion (March 2008).

https://www.st.nmfs.noaa.gov/Assets/Quality-Assurance/documents/peer-review-reports/2008/2008_02_15%20Largier%20Russian%20River%20salmon%20BiOp%20report%20review%20report.pdf

⁴ U.S. Army Corps of Engineers, San Francisco District. Russian River Turbidity Assessment and Proposed Plan. (September 20, 2023).

https://www.spn.usace.army.mil/Portals/68/docs/Environmental/Appendix_A_Russian_River_Turbidity_Report.pdf?ver=Ky0SRe8zK8sX3z57A5QvmA%3D%3D

comply with the 2008 BiOp RPMs. However, the 2023 Turbidity Report revealed that staff turnover and equipment issues prevented USACE from fully completing the required data collection. Consequently, USACE provided only limited progress reports and data analyses to NMFS. The analysis identified higher turbidity levels released from the CVD dam outlet compared to standard conditions; the specific mechanisms and full downstream impact remained unclear. Furthermore, the data indicated that turbid releases from CVD created conditions harmful to coho and Chinook salmon, as well as steelhead trout, demonstrating that USACE had neither developed the required mitigation plan nor met the turbidity-minimization conditions set in the 2008 Biological Opinion.

6. The North Coast Water Board received three complaints through the CalEPA Environmental Complaint System on May 4, August 7, and December 18, 2023, alleging that the USACE's releases from CVD caused excess levels of turbidity throughout the Russian River. The complaints included several photos and videos documenting the turbid conditions along the confluence of the East and West Forks of the Russian River in Ukiah and along stretches of the Russian River south of Hopland.
7. On December 12, 2023 and June 13, 2024, during public forum at Regional Water Board Meetings, members of the public and a representative of the Potter Valley Tribe expressed concerns about elevated turbidity levels observed throughout the Russian River following releases from CVD. During the December 2023 and June 2024 North Coast Water Board public forums, commenters gave a presentation outlining how turbidity has been a known issue in Lake Mendocino since the 1970s. Commenters further described a recent citizen lawsuit alleging violations of the ESA related to releases from CVD and the USACE's failure to comply with the 2008 BiOp and resultant violations of the included Incidental Take Statement. Presenters also suggested several potential solutions, including changes in operation, modifications to CVD, and assistance from other agencies or partners to resolve the ongoing turbid conditions in Lake Mendocino and in the discharges from CVD.
8. NMFS issued a new 10-year Russian River Biological Opinion (2025 BiOp)⁵ to USACE and Sonoma Water on April 29, 2025. The 2025 BiOp requires actions to address the uncertainties surrounding the results of the 2008 BiOp and address persistently high levels of turbidity in Lake Mendocino and the Russian River downstream of CVD. Specifically, the 2025 BiOp outlines the facilitation of a Turbidity Technical Advisory Committee (TAC) consisting of staff from NMFS, California Fish and Wildlife (CDFW), Sonoma Water, North Coast Water Board,

⁵ National Marine Fisheries Service, Southwest Region. Endangered Species Act Section 7 Consultation Biological Opinion. (April 29, 2025). <https://www.sonomawater.org/media/PDF/Environment/BiologicalOpinion/2025/2025-04-29%20NMFS%20BiOp%20Russian%20River%20Watershed%20Water%20Supply.pdf>

and two outside experts to review monitoring locations and data, determine the sources and magnitude of turbidity from USACE operations, determine the magnitude and extent of turbidity impacts, and identify potential solutions. Additionally, the BiOp outlines additional engagement of the two TAC outside experts to develop sediment dynamics and turbidity models and to provide guidance on short- and long-term turbidity reduction actions.

9. The 2025 BiOp requires USACE to conduct a turbidity monitoring program. The required effort expands monitoring to seven USGS gage sites, including a new continuous monitoring location at the East Fork Russian River downstream of CVD, the West Fork Russian River at Lake Mendocino Drive Bridge, and the mainstem Russian River near Talmage. With the initial installation and data collection phases currently operational, USACE is required to perform ongoing quarterly data uploads to an online repository and submit annual reports summarizing the data and analyzing its relationship with watershed hydrologic conditions and reservoir releases. Future requirements include a long-term data maintenance and habitat impact analysis plan by April 2026, a final report assessing potential impacts on salmonid habitat to NMFS by June 1, 2028, using three years of collected data, and a potential mitigation plan in 2030 if impacts are confirmed.
10. In addition, the 2025 BiOp requires the evaluation and investigation of potential short- (RPM 1.3.1.3.5) and long-term (RPM 1.3.1.3.6) corrective actions by USACE to reduce turbidity. The most effective operational scenario(s) will be determined and implemented within the constraints of the CVD, Water Control Manual, and Operations & Maintenance manual. Under RPM 1.3.1.3.5, USACE is required to meet with the TAC within one year of the 2025 BiOp's issuance to plan these activities, review existing data, and assess the relationship between flow (and turbidity) inputs from the CVD Outlet and other turbidity monitoring sites to evaluate the effectiveness of the short-term turbidity reduction actions described below. Short-term actions include:
 - a. Ramping Rate Adjustments: Reducing flood control up-ramping rates (the speed at which releases are increased) when watershed conditions allow. This is considered the most feasible short-term action and is planned for implementation twice per year for the first three years.
 - b. CVFF Settling Ponds: Utilizing the Coyote Valley Fish Facility ponds during periods when rearing fish are not present. Preliminary estimates suggest this could reduce East Fork Russian River turbidity by up to 10% (1-2 NTU).
 - c. Service Gate Experimentation: Testing different gate positions in "Flood Control Mode." While operationally possible, this is a rare condition that involves financial trade-offs (lost power revenue for the City of Ukiah) and potential legal modifications to the 1986 Power Project Agreement.

Under RPM 1.3.1.3.6, USACE is required to pursue funding under Section 216 of the Flood Control Act of 1970 for a reconnaissance-level study to commence within three years of the 2025 BiOp's issuance. The Turbidity TAC will provide input, model potential turbidity reduction scenarios to assess outcomes, and review study results to determine a path forward. These long-term actions (4-10 years) will require separate authorization and funding for complex solutions that extend beyond current project scopes. Potential long-term solutions to be investigated include:

- a. Bathymetric Survey and Dredging Assessment: As noted in RPM 1.3.1.3.6, within two years of the 2025 BiOp's issuance, USACE will conduct a bathymetric survey of Lake Mendocino to assess siltation levels and evaluate whether dredging is a viable option for turbidity reduction. The two external experts identified by the Turbidity TAC will review the survey results and provide input on the feasibility of dredging or alternative measures to reduce turbidity in CVD outflows.
- b. Targeted Suction Dredging: Conduct targeted suction dredging near the CVD Outlet works or other areas where sediment may be mobilized.
- c. Infrastructure Modifications: Modify CVD infrastructure (e.g., the dam, outlet works, etc.) to allow variable water release locations based on prevailing conditions.
- d. Biofiltration Diversion: Divert a portion of the CVD outflow into a biofilter to reduce turbidity.
- e. Upstream Sediment Reduction: Implement measures to reduce sediment input into Lake Mendocino from upstream sources.
- f. Auxiliary Outlet Structure: Utilize an auxiliary outlet structure or device that enables discharge from less turbid reservoir depths to reduce turbidity levels downstream of CVD.
- g. Turbidity Current Management: Install physical structures within the upper reservoir to disrupt turbidity currents and enhance sediment settling within Lake Mendocino.
- h. Forebay Sediment Stabilization: Implement modifications to the outlet works forebay, such as installing structural barriers (e.g., sheet piles) to minimize sediment sloughing near the CVD Outlet.

Beneficial Uses and Water Quality Objectives

11. The Water Quality Control Plan for the North Coast Region (Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation programs for achieving objectives, and incorporates by reference the plans and policies adopted by the State Water Resources Control Board (State Water Board).
 - a. Beneficial Uses: Existing and potential beneficial uses for the Russian River include the following: Municipal and Domestic Supply (MUN); Agricultural Supply (AGR); Industrial Service Supply (IND); Industrial Process Supply (PRO); Groundwater Recharge (GWR); Navigation (NAV); Hydropower Generation (POW); Water Contact Recreation (REC-1); Non-contact Water Recreation (REC-2); Commercial and Sport Fishing (COMM); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Wildlife Habitat (WILD); Rare Threatened or Endangered Species (RARE); Migration of Aquatic Organisms (MIGR); Spawning, reproduction, and/or Early Development (SPWN), and Aquaculture (AQUA). The following Russian River Hydrologic Sub Areas have the same beneficial uses with the addition of Freshwater Replenishment (FRSH) and Shellfish Harvesting (SHELL): Lower Russian River (Guerneville, Austin Creek); Middle Russian River (Laguna, Santa Rosa, Mark West, Warm Springs, Geyserville, Sulphur Creek); and Upper Russian River (Ukiah, Coyote Valley, Forsythe Creek). Beneficial uses designated for a specific water body generally apply to its tributaries.
 - b. Basin Plan Objectives: Section 3 of the Basin Plan contains water quality objectives that are necessary for the reasonable protection of beneficial uses. The following objectives are the ones most directly applicable to turbidity and particulate discharges associated with operations at CVD:
 - i. Suspended Material: "Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses."
 - ii. Settleable Material: "Waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affect beneficial uses."
 - iii. Sediment: "The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses."
 - iv. Turbidity: "Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be

defined for specific discharges upon the issuance of discharge permits or waiver thereof.”

Legal and Regulatory Authority

12. This Order conforms to, and implements, policies and requirements of the Porter-Cologne Water Quality Control Act (Division 7, commencing with Water Code section 13000), including section 13267, and the Basin Plan adopted by the North Coast Water Board, which includes beneficial uses, water quality objectives, and implementation plans.

Water Code section 13267, subdivision (a), provides that the Regional Water Board may investigate the quality of any waters of the state within its region in connection with any action relating to the Basin Plan. Water Code section 13267, subdivision (b) provides that the Regional Water Board, in conducting an investigation, may require a discharger to furnish, under penalty of perjury, technical or monitoring program reports.

13. The reports required by this Order will assist the North Coast Water Board in its investigation into whether the Discharger has taken, or will take, necessary actions to eliminate or minimize discharges of turbidity and sediment, and to mitigate any impacts of such discharges, in order to comply with the Clean Water Act, the Porter-Cologne Water Quality Control Act, and the Basin Plan. The information obtained through these reports will enable the North Coast Water Board to evaluate the nature and extent of turbidity-related discharges from the Facility, assess potential or actual impacts to water quality and beneficial uses of surface waters in the Russian River watershed, and determine appropriate regulatory oversight. The primary intent of this Order is to facilitate an investigation into the specific causes, patterns, and extent of turbid releases from CVD, rather than to serve as a mechanism for determining immediate compliance with the Basin Plan’s numeric or narrative turbidity objectives as described in paragraph 11.B.iv above. Accordingly, compliance with this Order is defined by the timely and complete submission of the required technical reports, which may inform potential future regulatory actions needed to comply with the Clean Water Act, the Porter-Cologne Water Quality Control Act, and the Basin Plan.
14. Water Code section 13267, subdivision (b) specifies that the burden to provide the required reports, including the associated costs, must bear a reasonable relationship to the need for the reports and their benefits. This Order requires the submittal of technical reports to evaluate the impacts of turbidity and sediment on beneficial uses in the Russian River Watershed.
15. Requirements Established by Other Regulatory Actions: Several reports required by this Order are already mandated by the 2025 BiOp. For these items, this

Order aligns with existing regulatory requirements and does not impose "new" costs beyond those already required by other agency actions. These include:

- Annual Summarized Turbidity Data Reports
- Resulting Analysis of Turbidity Data
- Results and Reporting of Fish Population Trends
- Proposed Short-Term Turbidity Reduction Actions
- Potential Long-Term Turbidity Reduction Actions

These reports are necessary to understand the impacts of turbidity and sediment on salmonid spawning and rearing habitat in the Russian River Watershed, ensuring any threats to water quality from activities at CVD are properly assessed and controlled, and to determine appropriate regulatory actions needed to comply with the Clean Water Act, the Porter Cologne Water Quality Control Act, and the Basin Plan. The estimated annual cost for reporting is between \$19,000–\$72,000⁶ (external range) for the required reports.

- a. Summarized Turbidity Data Reports, Resulting Analysis of Turbidity Data: These reports are necessary to evaluate and mitigate potential water quality impacts from turbidity and sediment discharges. They must include data from the seven turbidity monitoring sites in the Russian River Watershed. External benchmarks indicate a range of \$3,000–\$7,000 per report.
- b. Results and Reporting of Fish Population Trends: Summarized fisheries monitoring reports and resulting analysis of fish population trends are necessary to evaluate the impact of turbidity released from CVD on Chinook salmon and juvenile steelhead production trends in the Upper River, ensuring population productivity persists during turbidity reduction investigations. External benchmarks for specialized fish population studies range from \$10,000–\$50,000+ per study.
- c. Proposed Short-Term and Long-Term Turbidity Reduction Actions: Assessment into these actions is necessary to evaluate, determine, and implement the most effective operational processes to reduce turbid discharges within the constraints of CVD and to assess options for short-term and long-term solutions. These investigations involve evaluating three short-term operational adjustments and conducting detailed feasibility analyses of eight long-term solutions. External benchmarks for similar corrective action plans range from \$6,000–\$15,000 per plan.

⁶ Estimates based on the "Underground Storage Tank Cleanup Fund 2023 Cost Guidelines Update" [2023 Cost Guidelines Update \(ca.gov\)](https://www.ca.gov), which are used for industry standard labor rates and report preparation; [Turbidity Benchmark Monitoring \(Dewatering\) under the Construction General Permit | US EPA](#); and ecofishresearch.com

16. Requirements Established by this Order:

- a. To specifically address the transport of turbid releases to the Russian River watershed, this Order requires a Plume Transport and Dispersion workplan, draft study, and final study. This effort is not currently required by the 2025 BiOp but is necessary for the North Coast Water Board to determine the extent of downstream impacts and to inform appropriate regulatory oversight. The estimated total cost for this study is between \$40,000–\$120,000 (external range) for the required reports.⁷
 - b. Summarized Turbidity Data Reports, Resulting Analysis of Turbidity Data: These reports are necessary to evaluate and mitigate potential water quality impacts from turbidity and sediment discharges. They must include data from one additional turbidity monitoring site located at the mainstem Russian River at or near the confluence of the East and West forks of the Russian River. External benchmarks indicate a range of \$3,000–\$7,000 per report.
17. The burden of compiling these reports, including the costs associated with collecting the information, bears a reasonable relationship to the benefits that will be obtained from having the necessary information for the North Coast Water Board to properly regulate and monitor discharges from CVD and to assess and protect water quality in the Russian River watershed related to those discharges.
18. Turbid releases from CVD can pose a significant threat to water quality and beneficial uses of the Russian River watershed. Heightened levels of turbidity pose a risk to harm endangered and threatened salmonid species, including Chinook salmon and steelhead trout. While the primary purpose of CVD is to mitigate flooding, the development of potential short-term and long-term corrective actions are essential to prevent future releases from increasing the threat to water quality and the beneficial uses of water. This Order requires additional technical reporting, as specified in paragraph 15, pursuant to Water Code section 13267.

REQUIRED ACTIONS⁸

⁷ Estimates based on the [California Water Boards 2023 UST Cost Guidelines](#), [U.S. EPA PLUMES2.0 Model Documentation](#), and [Intertek Metoc Hydrodynamic Modelling Services](#).

⁸ The required action section is derived from the Reasonable and Prudent Measures (RPMs) from the Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response (BiOp). Some sections are direct quotes, some have been revised for clarity, and some are paraphrased. Some due dates in the BiOp have already passed and were

THEREFORE, IT IS HEREBY ORDERED that, pursuant to Water Code section 13267, the Discharger shall provide the following information:

This section outlines requirements consistent with the 2025 BiOp, supplemented by specific North Coast Water Board directives issued pursuant to Water Code section 13267 authority as outlined in findings 12 through and 14 above. Language adopted directly from the 2025 BiOp is presented in standard text; North Coast Water Board specific additions or clarifications are underlined.

A. Turbidity Monitoring and Reporting (RPM 1.3.1.3.4)

1. In accordance with the 2025 BiOp requirements, USACE shall conduct turbidity monitoring or collect turbidity data at the following gage sites listed below.
 - i. **East Fork Russian River approximately 1 mile upstream of Lake Mendocino near Calpella** (Gage No. CV11461500); operated by USGS.
 - ii. **Lake Mendocino**; in the thalweg with data collection at 20-foot intervals and at 5 feet (ft) off the bottom. Sonoma Water has been collecting this data during the months required by the State Water Board, Temporary Urgency Change Orders⁹ (TUCOs). USACE will begin to collect these data in 2025, outside of the TUCO requirements.
 - iii. **East Fork Russian River downstream of CVD** (Gage No. 11462000); operated by USACE. Continuous turbidity monitoring began May 28, 2024.
 - iv. **West Fork Russian River at Lake Mendocino Drive Bridge** (Gage No. 11461000); operated by USACE. Continuous turbidity monitoring began on November 19, 2024. This gage will be periodically inactive due to low-flow or dry conditions during the summertime or drought periods.
 - v. **Mainstem Russian River at Talmage**, at or near USGS gage (Gage No. 11462080); proposed to be operated by USACE. Turbidity meter installation has not yet occurred and is dependent upon reaching agreement with the landowner and USGS or operated by USACE depending on prescribed gauging equipment. Turbidity monitoring at this location will occur continuously no later than September 15, 2025.
 - vi. **Russian River mainstem approximately 12 miles downstream of CVD near Hopland** (Gage No. 11462500); operated by the USGS.

modified accordingly to allow sufficient time to accommodate the requirements contained in this Order.

⁹ While the 2025 BiOp attributes these TUCOs to the North Coast Board, they are legally administered by the State Water Resources Control Board.

- vii. **Dry Creek downstream of Warm Springs Dam** (Gage No. 11465000); operated by the USACE. Continuous turbidity monitoring began May 22, 2024.
2. In accordance with the 2025 BiOp, USACE shall adhere to the following turbidity reporting requirements:
- i. USACE shall establish an online repository for continuous turbidity data collected. Data will be uploaded no less often than quarterly. A link will be provided to NMFS and shall also be submitted to the North Coast Water Board to access this data by October 31, 2026.
 - ii. USACE shall collect turbidity data from the seven monitoring locations listed under Required Actions A.1 across all seasons (fall, winter, spring, summer) and summarize the data by water year (October 1 through September 30). The summarized data shall be submitted to the North Coast Water Board no later than December 15 of the same year, and the resulting analysis of those data shall be provided to the North Coast Water Board for review no later than August 15 of the following year. USACE will also present the turbidity data and analysis in an annual report to be submitted to the North Coast Water Board by December 31 each year. The initial annual report shall be submitted on December 31, 2026.
 - iii. Beneficial Use Impact Assessment: USACE shall provide annual reports and analyze the new turbidity data in conjunction with watershed hydrologic conditions and reservoir release data. USACE shall summarize approximately three years of data (i.e., January 1, 2025 through December 31, 2028), assess potential impacts to salmonid rearing and spawning habitat, and provide a report to the North Coast Water Board no later than June 1, 2028.
- B. **Supplemental Turbidity Monitoring, Reporting and Plume Transport and Dispersion**
1. In addition to the monitoring required by the 2025 BiOp and outlined in Required Action A.1 above, USACE shall conduct continuous turbidity monitoring at the following location:
- i. Mainstem Russian River at or near the confluence of the East and West Forks of the Russian River.

This monitoring requirement is a directive of the North Coast Water Board pursuant to Water Code section 13267. This effort is independent of, and not required by the 2025 BiOp. Unless otherwise directed by the North Coast Water Board, USACE shall adhere to the same monitoring, data collection, and reporting protocols established in Required Actions A.1 and A.2.

2. Plume Transport and Dispersion Workplan: No later than January 31, 2027, USACE shall submit a Workplan for a Plume Transport and Dispersion Study to the North Coast Water Board for review and approval by the Executive Officer.

The purpose of the study is to characterize the transport, dispersion, and attenuation of turbidity plumes resulting from CVD releases in the Russian River in order to inform the need for any additional analysis, monitoring, or regulatory requirements.

The Workplan shall outline the proposed technical approach, modeling tools, and field data collection methods to evaluate the transport, dispersion, and mixing of turbidity plumes resulting from CVD releases within the Russian River.

The Workplan and subsequent study must be designed to address, at a minimum, the following three questions:

- i. How far does the turbidity plume travel from the source (CVD releases), and in what direction does it migrate under varying hydrologic conditions?
- ii. How does the concentration of the plume (measured in NTU or suspended sediment concentration) change in both space and time, as it moves downstream, including relative to background conditions?
- iii. What specific roles do physical processes (e.g. advection downstream by surface water flows, dispersion, settling, turbulence) play in the behavior and dissipation of the plume?

The Workplan shall include a detailed schedule of implementation. This schedule must account for the time required for data acquisition and analysis. In accordance with the schedule established in the approved Workplan, USACE shall submit the following:

- i. Draft Plume Transport and Dispersion Study: A draft report summarizing the findings and responding to the evaluation criteria in Section B.2 for North Coast Water Board Executive Officer review and comment.
- ii. Final Plume Transport and Dispersion Study: A final report addressing comments from the North Coast Water Board Executive Officer, to be submitted no later than 60 days following the receipt of comments on the draft report.

Based on the results of the study, the North Coast Water Board Executive Officer may require additional analysis, including but not limited to quantitative mixing or dilution modeling, if necessary to further evaluate plume behavior, potential water quality impacts, or compliance with applicable water quality objectives.

This requirement is a directive of the North Coast Water Board pursuant to Water Code section 13267. This effort is independent of, and not required by, the 2025 BiOp.

C. Fisheries Monitoring Associated with Turbid Discharges from CVD (RPM 1.3.1.3.4)

1. USACE shall conduct fisheries monitoring associated with turbidity released from CVD in efforts to track Chinook salmon and steelhead production trends in the Upper River, while turbidity reduction investigations occur over the next several years. This commitment to fisheries monitoring shall aid future evaluations of the magnitude and extent of turbidity impacts associated with CVD operations on ESA-listed salmonids in the Upper River, while ensuring that population productivity persists as future long-term turbidity determinations and/or potential solutions are implemented. Upper River fisheries monitoring objectives and timeframes include the following:

Relative Population Trends of Chinook Salmon (Fish-in/Fish-out) in the Upper River:

- i. **Adult Chinook Salmon Relative Abundance Above Hopland (Fish-In):** Use sonar technology (e.g., ARIS or DIDSON) to count adult Chinook salmon migrating upstream in the turbidity-influenced reach above Hopland. Species identification and sonar calibration may incorporate direct observation techniques such as snorkel surveys, digital video analysis, or other non-handling methods. Additionally, multiple sonar units may be deployed to improve resolution of spawner estimates between the CVD Outlet and Hopland.
 - ii. **Smolt Chinook Salmon Relative Abundance Above Hopland (Fish-Out):** Conduct downstream migrant trapping (e.g., screw traps) near Hopland to estimate the number of juvenile Chinook salmon emigrating from the turbidity-influenced reach upstream of Hopland. These data will provide insight into adult Chinook salmon spawning success and overall production above Hopland. Smolt abundance estimates may also incorporate mark-recapture methods.
2. **Juvenile Steelhead Habitat Use and Growth in the Upper River:**
 - i. **Coarse-Scale Juvenile Steelhead Summer Rearing Habitat Use in the Upper River:** A broad assessment of juvenile steelhead summer rearing habitat use shall be conducted through electrofishing surveys, focusing on abundance within the turbidity-influenced reach above Hopland. Multiple sampling sites upstream of Hopland will be surveyed to estimate juvenile steelhead abundance in this reach. Mark-recapture estimates shall be

attempted at each site, but if determined adequate, single-pass electrofishing catch-per-unit-effort (CPUE) may be used as an alternative.

- ii. **Juvenile Steelhead Growth Estimates in the Upper River:** In conjunction with the electrofishing surveys described above, efforts shall be made to PIT-tag individual juvenile steelhead at the beginning and end of the summer rearing season. This approach shall allow for the calculation of average growth rates by measuring size differences over the season (i.e., size at the end of summer minus size at the beginning, standardized by day). If individual PIT-tag recaptures are insufficient, size distribution comparisons of juvenile steelhead captured at the beginning and end of the summer rearing season shall be used as an alternative metric.

The fisheries monitoring associated with turbidity discharge from CVD, as described above, shall be evaluated following pilot monitoring efforts to confirm the viability of these methodologies. If pilot efforts determine these methodologies are ineffective, alternative approaches shall be proposed to NMFS for approval and will concurrently provide the North Coast Water Board a copy of any proposal submitted to NMFS. NMFS retains final authority to approve any changes to fisheries monitoring methodologies proposed. Pilot fisheries monitoring efforts will be conducted during water year 2026.

3. ESA-Listed Salmonid Avoidance and Minimization Plan (SAMP)

- i. USACE shall provide NMFS and the North Coast Water Board with an analysis of the effects to ESA-listed salmonids using data collected through salmonid and turbidity monitoring in the Upper River. This analysis shall quantify salmonid productivity (i.e., relative spawning success) and juvenile steelhead summer-rearing habitat use between the CVD Outlet and Hopland. If NMFS determines that the results indicate greater-than-anticipated impacts on ESA-listed salmonids (e.g., a substantial reduction in habitat production potential), USACE shall submit a plan to avoid or minimize these effects to NMFS and the North Coast Water Board for review no later than July 1, 2030. NMFS is responsible for issuing any final approval of the SAMP.

D. Proposed Short Term (1-4 years) Turbidity Reduction Actions/Ongoing Adaptive Management and TAC Engagement (RPM 1.3.1.3.5)

1. In accordance with the 2025 BiOp Terms and Conditions (2.9.4), USACE shall implement the short-term turbidity reduction actions outlined in RPM 1.3.1.3.5 by April 30, 2029.
2. For each short-term turbidity reduction action, a written report assessing each action's effectiveness in reducing turbidity from the CVD Outlet to

Hopland shall be submitted to NMFS and the North Coast Water Board no later than **August 15** of the calendar year following implementation.

E. Potential Long Term (4-10 years) Turbidity Reduction Actions /Feasibility Analysis and Long Term Corrective Action Plan (RPM 1.3.1.3.6)

1. Beginning **August 15, 2027**, USACE shall submit annual written reports to NMFS and the North Coast Water Board by August 15 of each year. These reports shall describe the development of potential long-term turbidity reduction actions, including Turbidity TAC activities, recommendations, investigations, and modeling efforts, consistent with RPM 1.3.1.3.6.

PROVISIONS

1. **Use of Registered Professionals:** The Discharger shall provide technical and monitoring reports prepared under the direction of appropriately qualified professionals. In preparing the technical reports, any engineering or geologic evaluations and judgments shall be performed by or under the direction of registered professionals pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. Reports submitted by or on behalf of the Discharger shall include a statement of qualifications and registration numbers of the responsible lead professional. The lead professional shall sign and affix their registration stamp to the report.
2. **Qualified Professionals:** The Discharger's reliance on qualified professionals promotes proper planning, implementation, and long-term cost-effectiveness of investigation, and cleanup and abatement activities. Professionals shall be qualified, licensed, where applicable, and competent and proficient in the fields pertinent to the required activities.
3. **Entry and Inspection:** The Discharger shall allow North Coast Water Board staff, or an authorized representative (including an authorized contractor acting as a representative of the North Coast Water Board), upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order;
 - d. Sample or monitor, at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at any location.

4. **Signatory Requirements:** The technical and monitoring reports shall be signed and certified by either a principal executive officer or the person with overall responsibility for environmental matters for the Discharger. Additional reports submitted in support of the technical report shall be signed by the principal author.
5. **Certification Statement:** Any report submitted in response to this Order shall include the following perjury statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or 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 for knowing violations."

6. **Report Submittal:** The technical and monitoring reports shall be submitted electronically to:

The Discharger shall submit a copy of monitoring reports as required by this Order in an electronic format, with transmittal letter, text, tables, figures, laboratory analytical data, and appendices in PDF format (one PDF for the entire report). The Discharger shall enter all monitoring data and monitoring reports into the State Water Resources Control Board's Geographic Environmental Information Management System database (GeoTracker) as required by California Code of Regulations, title 27, Division 3 and title 23, Division 3, Chapter 30. This Order does not require the submittal of analytical or field monitoring data in Electronic Deliverable Format (EDF) or any other machine-readable electronic data format; all data tables, monitoring results, and quantitative information need only be embedded within the PDF report. Supplemental working files such as spreadsheets, GIS files, or model outputs must be provided upon the North Coast Water Board's request, but do not substitute for the required PDF upload. All required PDF reports shall be submitted to GeoTracker by the deadlines specified within this Order. The Discharger shall notify North Coast Water Board staff of the upload via email to NorthCoast@waterboards.ca.gov.

7. **Modification of Order:** Any modifications must be requested in writing as soon as the need is recognized, but no later than 30 days prior to the deadline contained in this Order. Any modification, including a compliance date extension, may only be granted by written modification of this Order or by a letter from the Executive Officer or their delegate.

NOTIFICATIONS

1. **Enforcement Discretion:** The North Coast Water Board reserves the right to take any enforcement action authorized by law for violations of the terms and conditions of this Order. Furthermore, compliance with this Order is wholly distinct from any possible enforcement that may follow from the discharges themselves, pursuant to violations of the California Water Code or other orders issued by the North Coast Water Board or State Water Board.
2. **Enforcement Notification:** Pursuant to California Water Code section 13268, failure to submit the required technical and monitoring reports as required by Water Code section 13267, subdivision (b), or falsifying any information provided therein, may result in the imposition of administrative civil liability up to \$1,000 per violation per day.
3. **California Environmental Quality Act Compliance:** The issuance of this Order does not constitute a project with environmental impacts. The requirement to submit technical and monitoring reports and conduct studies that will inform future actions is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Title 14 of the California Code of Regulations, sections 15301 (existing facilities); 15306 (information gathering); and 15061(b)(3).
4. **Appeal Notification:** 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 Water Code section 13320 and California Code of Regulations, Title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order 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. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

It is hereby ordered:

Valerie Quinto
Executive Officer

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