

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT: Derek Beauduy
MEETING DATE: December 13, 2023

ITEM: 6

California Department of Transportation, Update on Compliance with Cease and Desist Order No. R2-2019-0007, Implementing Trash Discharge Reduction Requirements

DISCUSSION

This item provides an update on the California Department of Transportation's (Caltrans') compliance with the subject [Cease and Desist Order](#), as [amended](#) (CDO), which the Board first issued to Caltrans in February 2019 to control trash discharges. We updated the Board on Caltrans' trash control progress in the [August 2023 Executive Officer's Report](#) and with an [informational item](#) at the April 2023 Board meeting.

While Caltrans continues to implement substantial actions to control trash discharges from its Bay Area right-of-way, it has significant work to do to meet the upcoming June 30, 2024, CDO benchmark requirement to control trash from 6,000 acres of significant trash generating areas, and future benchmarks. In its recent Trash Reduction Annual Report (Annual Report), submitted this October, Caltrans' projects it will meet benchmarks through implementation of enhanced maintenance measures such as increased street sweeping, trash pickups, and homeless encampment removal; roadside vegetation that controls trash that is then removed by maintenance crews; on right-of-way structural trash controls; and off right-of-way structural controls installed through cooperative projects with local municipalities.

The Annual Report claimed approximately 1,380 acres of Caltrans' Bay Area right-of-way had achieved the full trash capture equivalency standard via implementation of enhanced maintenance measures and vegetation controls through June 2023. Caltrans used its revised on-land visual assessment protocol to verify the effectiveness of enhanced maintenance measures to keep an area at a low trash-generating level. In June and November 2023, we conducted joint field inspections with Caltrans staff to evaluate areas where Caltrans claims full trash capture equivalency due to enhanced maintenance measures and vegetation controls. Overall, the majority of the highway segments that were inspected in Contra Costa County, Sonoma County, Solano County, and Marin County were relatively clean as observed from a vehicle moving at highway speed, while some segments still had trash present along the highway shoulders, especially in landscaped areas off the pavement. This indicates enhanced maintenance measures at certain highway segments were not being conducted at a frequency sufficient to provide full trash capture equivalency.

We acknowledge the significant increase in funding and trash maintenance activities implemented since the CDO's issuance and agree that the current implementation of enhanced maintenance measures has improved trash conditions along many Caltrans highway corridors. However, Caltrans must demonstrate that the enhanced maintenance measures, on their own or in combination with other actions, meet the full trash capture equivalency standard, i.e., they are implemented at a level and frequency sufficient to control trash generation to a low rate in all areas of the associated right-of-way and appropriately

control trash that is 5 mm or greater in size. Caltrans has made progress since August in identifying additional cooperative projects, expediting on right-of-way device installation, and refining its Trash Discharge Study. However, Caltrans has significant work ahead to meet 2024 and 2026 benchmarks. This work includes the following:

- Develop a robust updated trash implementation workplan that accelerates implementation of structural trash control devices on right-of-way and off right-of-way, including faster and more-extensive on right-of-way implementation of Caltrans' new inlet-based full trash capture device and a significant pilot effort for hydrodynamic separators.
- Focus on implementing effective trash controls in "Very High" and "High" significant trash generating areas, including more extensive and focused implementation of enhanced maintenance measures and structural controls in these areas. Enhanced maintenance measures to date have been focused on bringing moderate trash generating areas to a low generation level, which makes achieving acreage-based compliance more practicable. However, this can deprioritize some of the trashiest areas of right-of-way. Caltrans must begin to assess how they can focus efforts on the trashiest areas to bring about greater water quality benefit.
- Complete actions sufficient to demonstrate the claimed benefits for enhanced maintenance measures and vegetation controls, including conducting planned discharge studies to substantiate the efficacy of enhanced maintenance measures, pilot testing highway segments to demonstrate the needed enhanced maintenance measure level and frequency to achieve full trash capture equivalency, and field verifying drainage delineation and deploying engineering controls at discharge inlet points to improve the performance of vegetation controls. This includes being able to track and report its maintenance actions, including frequency and work done, to correlate that effort with observed outcomes.
- Continue to improve Caltrans' existing on-land visual assessment protocol, or establish an equivalent effective visual assessment protocol to characterize trash levels on Caltrans right-of-way; and
- Continue to work proactively on planning, design, and construction to support the success of off right-of-way local partnership projects, including new cooperative implementation projects through an extensive drainage system evaluation to identify locations where Caltrans and municipal drainage systems are connected.

BACKGROUND

Consistent with the requirements of the Caltrans Statewide NPDES Municipal Stormwater Permit ([Order No. 2022-0033-DWQ](#)) and the [Statewide Trash Amendments](#) to the Water Quality Control Plans for Ocean Waters and for Inland Surface Waters, Enclosed Bays, and Estuaries, Caltrans must control discharges of trash from significant trash generating areas of its right-of-way by no later than 2030. The Board adopted the CDO because Caltrans had not appropriately characterized significant trash generating areas within its right-of-way or proposed an acceptable plan and schedule to timely control trash discharges via full trash capture devices or full trash capture equivalency controls. The CDO established the following enforceable right-of-way acreage of trash control benchmarks and a schedule for their achievement, as well as planning and reporting requirements sufficient to demonstrate that

Caltrans will substantially control trash discharges from the significant trash generating areas on its right-of-way by 2026, and fully control those discharges by 2030.

- 2,000 acres or more by June 30, 2020;
- 4,000 acres or more by June 30, 2022;
- 6,000 acres or more by June 30, 2024;
- 8,800 acres or more by June 30, 2026; and
- All additional significant trash generating areas of right-of-way identified by visual assessments conducted in 2022, 2025, and 2029 by December 2, 2030.

Trash control is typically accomplished via the implementation of full trash capture devices or via a combination of alternative measures equivalent to full trash capture, such as source controls to prevent the discharge of trash in the first place, and trash removal from streets and highways before it can discharge to the storm drain, such as by street sweeping or maintenance crews.

We have met monthly with Caltrans staff to discuss Caltrans' ongoing work to control trash and meet CDO benchmarks. We also met jointly with Caltrans and Save the Bay in November 2023 to discuss Caltrans' studies and progress toward meeting CDO benchmarks. Below is a summary of developments since the August 2023 Board update.

Enhanced Maintenance Measures, Trash Discharge Study, and visual assessment methodology: The [December 2022](#) and [April 2023](#) Staff Summary Reports describe Water Board staff's concerns with Caltrans' claims of compliance with the 2022 CDO benchmark of 4,000 acres of significant trash generating areas controlled for trash, because our field inspections where enhanced maintenance measures were claimed as compliant found that substantial amounts of trash remained in the right-of-way, and therefore trash controls were not implemented to a level to achieve the full trash capture equivalency standard. We also discussed shortcomings in Caltrans' proposed Level of Service visual assessment method used to verify the effectiveness of enhanced maintenance measures to keep an area at a low trash generating level. Caltrans' 2023 Annual Report proposed approximately 779 acres of significant trash generating areas that Caltrans claimed have been converted to low trash generation through implementation of enhanced maintenance measures and verified via Caltrans' on land visual trash assessment driving protocol, a method we find more acceptable compared to the Level of Service method. Our November field inspections with Caltrans staff covered about 80 percent of the 779 acres of STGA segments and surrounding right-of-way to evaluate Caltrans' projected compliance toward the 2024 CDO benchmark. We observed hundreds of filled trash bags along the highway shoulders, indicating substantial trash maintenance activities had occurred recently. Some of the highway segments we observed appeared trash-free. However, trash was present along the medians and shoulders of others, even in areas where significant trash collection had recently occurred.

As we note above, while enhanced maintenance measures provide significant benefits, Caltrans needs to demonstrate enhanced maintenance measures are consistently implemented and verified by visual assessment at a level and frequency sufficient to remove even small pieces of trash to achieve full trash capture equivalency, and to ensure that it has established a sustainable funding stream to implement the enhanced maintenance measures into the future.

Our field inspections indicate that the current effort may be insufficient to consistently turn a moderate significant trash generating areas to low trash generating, and Caltrans has not yet demonstrated the level and frequency of maintenance work needed to improve conditions to a full trash capture equivalency level. We continue to discuss with Caltrans the challenge of maintaining areas to low trash generating levels due to the continual regeneration of trash, especially in high-traffic areas. This poses a challenge to Caltrans' ability to control trash to a low level via enhanced maintenance measures and it demonstrates the importance of Caltrans developing innovative trash controls and implementing structural controls where feasible both throughout its right-of-way and in coordination with neighboring municipalities.

Our field inspections revealed the challenges Caltrans faces in fully converting some significant trash generating areas (especially very high and high trash generating areas) to low trash generating areas. Conducting maintenance frequently enough to keep up with trash generation to achieve low ratings is difficult due to the significant trash regeneration that occurs on highly travelled highways.

Caltrans is conducting a trash discharge study to demonstrate maintenance effectiveness by monitoring the amount of trash entering storm drain inlets at 40 sites in the San Francisco Bay and Los Angeles regions and 20 sites in northern California counties. We have worked with Caltrans to refine the study design to better ensure the study meets our expectations for: tracking the frequencies and intensities of maintenance activities implemented during the study; categorizing the types of trash that are effectively controlled by enhanced maintenance measures; correlating the observed trash volume with visual assessment ratings (ratings must use an acceptable visual assessment methodology); incorporating appropriate performance standards; and utilizing an adaptive management approach to identify and maintain a level and frequency of maintenance that controls trash discharge from STGAs to a low level . That includes appropriately controlling trash particles to a 5 mm level and controlling trash across the full right-of-way, such as landscaped areas that have the potential to discharge trash to the storm drain.

We will continue to work with Caltrans to ensure that enhanced maintenance measures implemented, and visual assessments conducted to confirm trash conditions will generate data to appropriately support the study's findings. If, at the study's conclusion, Caltrans demonstrates that a consistent type and frequency of maintenance actions result in full trash capture equivalency, Caltrans must then implement and report on the level and frequency of implementation over areas claimed as compliant to ensure actions achieve full trash capture equivalency. If the study concludes that the current maintenance effort is infeasible and unsuitable to achieve full trash capture equivalency, Caltrans will need to adaptively increase the maintenance performance or move toward an alternative compliance strategy, such as implementing additional control measures (e.g., full trash capture devices) in those areas of right-of-way.

While Caltrans has increased enhanced maintenance measures in recent years, it remains vital to understand the level of work needed to achieve the full trash capture equivalency standard. A key piece of information that is missing from the current maintenance protocol is what level of maintenance effort is required to bring significant trash generating areas to a low trash generation condition. We think this can be answered by pilot-testing specific highway segments to identify the required frequency and intensity of maintenance to achieve full trash capture equivalency. If the pilot study indicates the required maintenance level is infeasible and unsuitable from a worker safety standpoint, Caltrans will need to consider and implement alternative solutions (e.g., structural controls), which includes expediting implementation of the on-system projects and a substantial effort to install large-watershed scale devices such as

hydrodynamic separators, and additional efforts to identify new cooperative projects and allow the existing ones to be moved along faster and be built sooner.

On-Right-Of-Way structural control implementation: Inlet Screens and Hydrodynamic Separator (HDS) Implementation: Caltrans needs to expedite current implementation and greatly increase planned implementation of structural controls within its right-of-way. This includes the need to expand its current toolbox to incorporate new and/or currently Caltrans-unapproved devices (e.g., HDS units). The Annual Report includes a list of projects that will be advertised for construction by June 2024 that will install structural control devices to capture trash from approximately 1,100 acres of Caltrans' right-of-way. While construction may not be complete by the 2024 benchmark, the devices will be installed and controlling the discharge of trash within one to two years.

Approval of Caltrans' new trash capture housing device was a promising development last year because Caltrans claimed it could be deployed in many areas previously deemed infeasible for structural controls. Caltrans must significantly increase installation of the housing device by incorporating it where practicable on all current and future road construction projects in significant trash generating areas. Besides the implementation of the newly approved device that captures trash from relatively small areas of right-of-way (generally about an acre or less), Caltrans must expedite the evaluation, approval, and implementation of the HDS units within its right-of-way to allow large Caltrans drainage areas to be treated to achieve CDO compliance. Caltrans has an HDS pilot project planned that will install three HDS units beginning in Spring 2024. Caltrans must commit to expanding this effort and incorporating HDS units widely to treat large drainage areas of its right-of-way. Expanding the on-system structural efforts will allow Caltrans to reduce its dependence on the ongoing implementation of non-structural controls to meet future benchmarks, especially for areas where it is less practicable to frequently implement enhanced maintenance measures to achieve effective trash control due to safety concerns in a high-speed environment.

Cooperative projects: Since August, Caltrans staff has continued efforts to identify municipal partners for cooperative projects to install trash capture devices that control trash from both Caltrans and the municipality. Caltrans must continue its coordination and outreach efforts to keep current projects on schedule to meet its projection of approximately 2,045 acres of Caltrans' right-of-way treated via cooperative projects by June 30, 2024, and significantly increase the number of new projects in the pipeline to meet future benchmarks. We expect Caltrans to work proactively to identify more cooperative projects by utilizing the feasible analysis process, as required by the CDO, and performing a thorough drainage analysis to locate potential drainage connection points between Caltrans and municipal storm drain systems.

Vegetation controls: The Annual Report projects Caltrans will claim 750 acres of vegetation control credits toward the 2024 benchmark. Our joint field visits evaluated locations where Caltrans plans to claim compliance toward the 2024 benchmark based on a combination of roadside vegetation and trash pickup that they claim is sufficient to control trash prior to entering the storm drain system. In evaluating these field locations, we observed stark differences in the amounts and types of vegetation that Caltrans has determined prevent trash from migrating to drainage inlets and discharging to receiving waters. While some areas seem to have sufficient vegetation to detain trash, many areas did not have a consistent vegetative cover that would have controlled trash before it reached storm drain inlets, and there is possible trash bypass from areas where vegetation may be receiving concentrated flow from

the nearby pavement. We discussed with Caltrans staff the need for some locations to implement additional measures, such as placing permeable barriers or screens around drainage inlets that would let water through but keep trash from getting into the storm drain system. Looking to the 2024 benchmark, Caltrans will need to field verify areas claimed as compliant using vegetation controls to ensure drainage areas are properly delineated and install additional engineering measures around drainage inlets receiving concentrated flow from pavement where vegetation condition is insufficient to trap trash to a full trash capture equivalency level.

Very High and High Significant Trash Generating Areas: Per the CDO requirement, Caltrans conducted visual trash assessments of low trash generating areas within their right-of-way in Fall 2022. The reassessment of its low-rated Bay Area right-of-way identified additional High and Very High significant trash generating areas that will need to be controlled by the final compliance deadline of December 2, 2030. The Annual Report contains limited information about Caltrans' progress and/or plan to implement effective trash controls in its very high and high trash generating right-of-way that poses the most concern from a water quality standpoint. Caltrans must describe, in its upcoming trash control implementation workplan, plans to control trash discharge from its very high and high rated areas via structural control measures and/or non-structural controls.

Next Steps: Caltrans has significant work ahead to meet 2024 and 2026 benchmarks, including the following:

- Significantly accelerate the rate of installation of structural trash capture devices on its right-of-way
- Continue and expand coordination with municipalities to implement cooperative projects
- Increase maintenance activities
- Complete studies to demonstrate claimed benefits of enhanced maintenance measures, and
- Allocate sufficient long-term funding to ensure sustainability of trash control measures.

As Caltrans projections rely on enhanced maintenance measures and vegetation to control trash from over 2,550 acres by the June 30, 2024, 6,000-acre benchmark, Caltrans must continue to work to identify appropriate locations and the level of effort needed to ensure enhanced maintenance measures and vegetation controls in combination with other measures achieve full trash capture equivalency. Meanwhile, Caltrans must robustly increase installation of on-right-of-way structural trash control devices (including the newly approved inlet screen device, HDS units, and other new devices). We will also work with Caltrans to develop an effective trash control implementation workplan specifically for its very high and high trash generating highway corridors in the Bay Area.

We will continue to meet monthly to monitor Caltrans' trash control implementation progress and clearly communicate expectations to ensure effective and compliant controls are implemented that achieve full trash capture equivalency and can be counted toward CDO benchmark compliance. Additionally, the CDO requires, by December 31, 2023, submittal of an updated Trash Control Implementation Workplan that describes how Caltrans will plan, fund, and implement trash control measures sufficient to meet CDO benchmarks, and a Feasibility Study Report that assesses the feasibility of implementing trash controls over no less than 80 percent of Caltrans' significant trash generating areas in the Region. These submittals will provide us with important information to assess Caltrans' plan and efforts to identify and fund implementation of trash controls toward making up the potential shortfall in meeting the 2024 and future trash control benchmarks.