

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER NO. R2-2019-00xx

RESCISSION OF CLEANUP AND ABATEMENT ORDER NO. R2-2013-0023 for:

**PACIFIC ROD AND GUN CLUB AND THE CITY AND COUNTY OF SAN FRANCISCO,
SAN FRANCISCO PUBLIC UTILITIES COMMISSION**

for the property located at:

**520 JOHN MUIR DRIVE
LAKE MERCED
SAN FRANCISCO, SAN FRANCISCO COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) finds that:

SITE DESCRIPTION AND DISCHARGERS

1. The Pacific Rod and Gun Club (Club) operated a public recreation facility located on the west side of Lake Merced in San Francisco (Site) (see Figure 1). The Club occupied approximately 10 acres of land that is leased from the City and County of San Francisco. The San Francisco Public Utilities Commission (SFPUC), a public agency that is part of the City and County of San Francisco, has jurisdiction over Lake Merced, a freshwater lake that was last used for potable water purposes in 1929 and is currently classified as an emergency non-potable water supply by the SFPUC. The Club built and maintained facilities at the Site, including skeet and trap ranges, where shotguns were used to shoot pellets at clay targets. The Club operated the facilities and the ranges at the Site from 1934 until their lease expired in 2015. For the purposes of this Order, the Club and the SFPUC are jointly considered the Dischargers.

SITE CONTAMINATION

2. The two primary environmental threats at the Site were lead pellets and clay target debris incidentally deposited into the Lake and across the uplands area.
3. From 1934 until 1994, Club members and the general public discharged lead pellets from shotguns towards Lake Merced. The pellets generally travelled 300 to 400 feet from the shooting positions with a significant percentage deposited into the Lake. Based on the number of shells fired in 1989, an estimate of the amount of lead falling into the Lake was about 27 tons per year. During a cleanup dredging effort in 1985-1986, the City removed 128 tons of lead pellets from the Lake.

The potential effects of lead released at trap and skeet facilities are well documented. Direct ingestion of lead pellets and fragments may cause waterfowl deaths. In the Lake Merced area,

dabbling ducks are considered the most sensitive receptor with regard to ecologic risk. In both fresh and marine waters, lead becomes available to biota through the transformation process of oxidation. The lead pellets and fragments also contained small amounts of other metals such as tin, antimony, and arsenic.

4. Broken clay targets also were deposited into the Lake and adjoining upland areas between the ranges and the Lake. Prior to 2000, clay targets manufactured using asphaltic materials or petroleum pitch (typically containing polycyclic aromatic hydrocarbons (PAHs)) were used at the Site. Certain types of PAHs are classified as carcinogenic. Fragments of targets containing PAHs were abundant at the Site between the ranges and the Lake. Clay targets used since 2000 do not contain petroleum pitch and are designed to be biodegradable.

SITE INVESTIGATIONS AND CLEANUP ORDER

5. Site investigations conducted between 1989 and 1992 demonstrated that lead concentrations in some portions of the Site's upland soils exceeded 1000 mg/kg. Lead was also detected at one sediment sample at a concentration of 14,000 mg/kg, but water samples from the Lake showed no detectable lead and no mortality was observed among fish in the bioassay tests.
6. In 1994, the Regional Water Board issued Site Cleanup Requirements (SCR) Order No. 94-017. The 1994 SCRs required the Dischargers to cease the deposition of lead into the waters of Lake Merced and to determine the degree to which the populations of resident and migratory waterfowl were affected by the possible ingestion of lead pellets at the Site and take remedial actions if necessary. In 1994, in response to the Order, the Club prohibited the use of lead shot on the ranges (ammunition was henceforth to be either steel or bismuth). When biodegradable clay targets without asphaltic materials containing PAHs became available in 2000, the Club switched to these targets on the ranges.

SITE RISK ASSESSMENT

7. On April 16, 2012, the SFPUC submitted to the Regional Water Board the results of a supplemental investigation and health risk assessment for both human and ecological receptors from possible exposure to chemicals in soil, sediment, and surface water. The results indicated that potential human health risks were within an acceptable risk range for the occasional visitor or offsite resident, but for receptors with more frequent exposure, such as an onsite caretaker or a permanent worker, the PAHs, lead, and, to a lesser extent, arsenic in soil throughout the Site exceeded the acceptable risk range. For ecological receptors, both lead and PAHs were found to exceed probable effects levels in sediment at a majority of sampling stations, while arsenic exceeded effects levels at only a few stations. The report concluded that risk reduction and/or risk management measures to mitigate human exposure to lead, arsenic, and PAHs in soil were needed. With respect to ecological receptors, the report also recommended additional monitoring of the metals in sediment and the bioavailability of PAHs. The investigation also concluded that the elevated concentrations of lead, PAHs, and arsenic in sediment were not dissolving into surface water in the Lake, meaning that these constituents pose no risk to human health, the environment, or the beneficial uses of surface water in the Lake given its status as an emergency non-potable

water supply for the City of San Francisco.

REVISED CLEANUP ORDER

8. Given the potential human health risk from exposure to lead, arsenic, and PAHs in the Site soils, and the potential risk to benthic organisms from exposure to lead, arsenic, and PAHs in Lake sediment, the Board adopted Revised Site Cleanup Site Requirements (Order No. R2-2013-0023; hereafter, SCRs), which rescinded Order No. 94-017, in June 2013.
9. Order No. R2-013-0023 required additional remedial actions for meeting human health standards in upland soils at the Club, where a potential risk to human health associated with exposure to lead and PAHs in the upland soils was identified. The SCRs also required further evaluation of the potential risks to ecological receptors in Lake sediments, and if warranted, remediation of these sediments.

RECENT INVESTIGATIONS AND REMEDIAL ACTIONS

10. Lead concentrations in upland soil at the Club ranged up to 10,000 mg/kg, and PAH compounds up to 1,200 mg/kg. Pursuant to the 2013 SCRs, the PUC proposed, and the Water Board staff approved, cleanup goals of 80 mg/kg for lead and 0.21 mg/kg for total PAHs. The Remedial Action Plan (RAP) for the upland soil included the removal of soil containing contamination in excess of these cleanup goals, conducting soil confirmation sampling in the excavation area, and offsite disposal of the excavated material, followed by backfilling with imported soil to restore site topography.
11. Following approval of the RAP, the Gun Club vacated the Site and excavation started in the spring of 2015. A total of 88,000 tons of contaminated soil was excavated and removed from the Site. Confirmation sampling showed that in all locations, except for two where further excavation was not feasible, the cleanup goals were met, and the Site's future use is suitable for unrestricted (including residential) use.
12. The SFPUC also performed an ecological risk assessment to determine whether Lake sediments posed an unacceptable risk to benthic organisms and wildlife. Board staff approved a final ecological risk report in 2014 which found no unacceptable risk to the benthic community but identified a potential risk due to waterfowl (diving ducks in particular) from ingesting lead shot pellets. Although the Department of Fish and Game had concluded in a 1995 opinion that the exposure risk to waterfowl feeding in the Lake was low, the SFPUC decided to update the waterfowl survey. In August 2015, Board staff approved a plan to conduct a one-year survey of wildlife feeding from October 2015 to September 30, 2016.
13. On December 16, 2016, the results for the wildlife survey were submitted. A greater number of waterfowl species (16 species in total) were seen feeding at the site than had been previously observed. Three diving duck species (coots, ruddy ducks, and ring-necked ducks) were found to be potentially at risk, but it was not clear if they could ingest lead pellets given the depth and limited availability of pellets in the sediment. Significantly, no dead or stressed waterfowl were

seen near the site. The SFPUC proposed to continue observing waterfowl for another year to confirm these observations.

14. On January 31, 2019, the SFPUC submitted the results of the extended bird survey. This report concluded that there was no evidence of effects of lead poisoning to waterfowl from lead shot present in the shoreline and sediment at the Site. Water Board staff concurred with the results of the waterfowl survey.
15. Water Board staff conclude that there is a minimal risk to human health left at this site, as all soil sources have been removed, and the remaining sediment has been shown to pose no significant risk to ecological receptors. The Dischargers have therefore successfully met the cleanup objectives of Order No. R2-2013-0023 and the Water Board considers site remediation/restoration complete and the site suitable for unrestricted use. Thus, Order No. R2-2013-0023 is no longer necessary and should be rescinded.
16. The City has approved the construction of a new recreational facility at the Site. The Gun Club's lease has not been renewed and the proposed recreational facility will not include shooting facilities.

CEQA, NOTIFICATION, AND PUBLIC HEARING

17. The rescission of the Site Cleanup Requirements will have no potential for causing a significant effect to the environment and is therefore exempt from the California Environmental Quality Act (Public Resources Code § 21000 et seq.) pursuant to Title 14, Cal. Code Regs., § 15061(b)(3).
18. The Water Board has notified the Dischargers and interested agencies and persons of its intent to rescind site cleanup requirements contained in Order No. R2-2013-0023 and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
19. The Water Board, in a public meeting, heard and considered all comments pertaining to the rescission of site cleanup requirements for the site.

Order No. R2-2019-
Rescission of Cleanup and Abatement Order No. R2-2013-0023
Pacific Rod and Gun Club

IT IS HEREBY ORDERED that Order No. R2-2013-0023 is rescinded.

I, Mike Montgomery, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Region on .

Mike Montgomery
Executive Officer

Attachments:

Figure 1, Site Location Map