



Department of Toxic Substances Control

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MCAS EL TORO
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August 23, 2000

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DRAFT TECHNICAL MEMORANDUM, VERIFICATION OF PERCHLORATE AT
INSTALLATION RESTORATION PROGRAM (IRP) SITE 1, EXPLOSIVE
ORDNANCE DISPOSAL RANGE, MARINE CORPS AIR STATION (MCAS)
EL TORO

Dear Mr. Gould:

The Department of Toxic Substances Control (DTSC) reviewed the referenced document dated June 2000 and received by this office on June 12, 2000. The document presents the results of an evaluation of perchlorate in soil and groundwater at IRP Site 1.

After review of the document, DTSC has the following comments.

General Comments

1. The document should be signed and stamped by a professional engineer registered in the State of California who is responsible for the quality of the work conducted. Additionally, since geological interpretation is included in the document (i.e., boring logs, potentiometric map, cross-sections, etc.), the document should also be signed and stamped by a geologist registered in the State of California.
2. A spell check should be conducted to revise "ordinance" to "ordnance" throughout the document.

Specific Comments

1. Section 1 - Introduction: The third sentence states, "The evaluation was conducted in response to regulatory comments provided in Appendix A." Appendix A includes DTSC comments on the *Draft Report Evaluation of Perchlorate in Groundwater* (Bechtel National, Inc., April 1999) forwarded on May 18, 1999.

Please note that the evaluation does not address all of the comments included in the DTSC letter dated May 18, 1999. Additionally, use of this verification study to address these comments was not discussed with DTSC prior to performing the work. Please revise this sentence accordingly.

2. Section 2.1 - Geophysical Survey: Last paragraph states, "Various anomalies detected throughout Site 1 appear linear in alignment suggesting locations of former trenches."

It is not clear whether the soil samples collected at the site were deep enough to sample the bottom of the trenches or potential leaching of contaminants from the trenches. Please clarify.

3. Section 2.2 - Monitoring Well Installation: Table 2-1 shows the top of casing measurements of the new wells.

The text does not mention whether the new wells were surveyed by a civil engineer. Please clarify.

4. Section 2.3 - Monitoring Well Development and Sampling: Earth Tech references a different contractors' (Bechtel National Inc.) Standard Operating Procedures (SOPs).

Please include a narrative of the work conducted (along with the signatures/stamps of the supervising engineer and geologist responsible for overseeing the work) to provide some assurance that the SOPs were followed.

5. Section 2.3 - Monitoring Well Development and Sampling: This section mentions that samples were collected.

Please include a narrative of the sampling procedures followed.

6. Section 2.3 - Monitoring Well Development and Sampling: According to this section, turbidity, pH, temperature, electrical conductivity, oxidation-reduction potential, flowrate, extracted volume, and water level were monitored during well purging.

Please include copies of the well development logs. These logs are important because the groundwater sampling logs indicate that the groundwater was extremely turbid, which suggests that the wells were not properly developed. In addition, the sampling logs indicate that the wells were purged dry. This should have been discovered during well development and the sampling procedures modified to sample low recharging wells.

7. Section 2.4 - Soil Sampling: This section provides a summary of soil sample collection.

Please elaborate on the sample collection and laboratory analytical methods used. Also, please include a narrative of the field sampling activities rather than just a statement that Bechtel National Inc. SOPs were followed. Additionally, include copies of the chain-of-custody forms, name of the analytical laboratory, analytical reports, quality assurance (QA)/quality control (QC) information, and the analytical reporting limits.

8. Section 2.4 - Soil Sampling: The third paragraph states, "Twenty-eight soil samples were collected from depths of approximately 1.5 to 4.0 feet below ground surface (bgs) at anomalous locations identified by the geophysical survey." These samples were analyzed for volatile organic compounds (VOCs) and other unspecified constituents.

Please list the laboratory analyses that were conducted. Additionally, please provide rationale for the sampling depths. For example, were samples collected at the bottom (where waste could have been deposited) or below (where waste would have leached/migrated) the anomalous areas?

9. Section 3.3 - Sample Validation: Please include copies of the following data to support the sample validation process.

- Chain-of-custody reports.
- Laboratory report explaining the reason for diluting the samples and the associated elevated reporting limits. The explanation should be included with the laboratory QA/QC results and evaluation.

- Summary report of the third party data validator (who, what, where, when).
10. Section 4.4 - Perchlorate in Groundwater: Please include the chain-of-custody forms and analytical reports for the groundwater sampling and analyses. Additionally, include the QA/QC report from the analytical laboratory explaining the reason for sample dilution.
 11. Section 4.4 - Perchlorate in Groundwater: Please include a narrative of the procedure used to collect groundwater samples. The equipment used to monitor groundwater parameters (including the methods and schedule to calibrate the equipment), measure depth to groundwater, measure quantity of groundwater purged should be listed and discussed.
 12. Section 4.4 - Perchlorate in Groundwater: Section 2.4 states that 55 soil samples were collected during well bore drilling.

Please clarify if perchlorate was analyzed and detected in soil samples corresponding to locations where perchlorate was detected in the groundwater.

13. Section 5 - Conclusions: The second bullet states, "Perchlorate in groundwater at concentrations exceeding the state and federal PALs [Provisional Action Levels] is localized near MW201."

This statement is premature. Further characterization is required to define the lateral extent of perchlorate in soil and groundwater.
14. Section 5 - Conclusions: The fourth bullet states, "Perchlorate was detected in soil at shallow depths (less than 5 feet), however the concentrations were less than the residential or industrial PRGs [Preliminary Remediation Goals]."

This conclusion does not consider that the concentration of perchlorate may increase with depth. Also, if the soil samples were not collected at the bottom of the anomalies (holes or trenches), the soil samples may have missed the constituents that were disposed in the holes or trenches.
15. Appendix E - Groundwater Sampling Logs: The sampling logs show that the groundwater was very turbid during purging which may indicate that the wells were not adequately developed.

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Please provide an explanation for why the purge water was so turbid yet the turbidity decreased significantly after the sample was collected. For example, the sampling log for well 01-MW-204 shows that the turbidity after three well volumes was over 1,000 nephelometric turbidity units (NTUs), yet decreases to 8.09 NTUs after sampling. Also, please identify the equipment that was used to measure groundwater parameters.

If you have any questions, please call me at (714) 484-5395.

Sincerely,



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