CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0021

WASTE DISCHARGE REQUIREMENTS
FOR
CALIFORNIA DEPARTMENT OF CORRECTIONS
CALIFORNIA CORRECTIONAL INSTITUTION TEHACHAPI
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. The California Department of Corrections (hereafter Discharger) submitted a Report of Waste Discharge (RWD), dated 15 August 2003 and supplemental information dated October 2003 and July 2004 for a permit to discharge treated wastewater from a groundwater remediation system at the California Correctional Institution, Tehachapi (hereafter Correctional Institution). The remediation system will remove and treat groundwater polluted with gasoline constituents, including the fuel oxygenate methyl tertiary butyl ether (MTBE). The source of the gasoline constituents is a release(s) from an underground storage tank (UST) system at the Correctional Institution motor pool (hereafter Motor Pool Site).

2. The Discharger operates a correctional facility and services necessary for facility operation in Tehachapi, Kern County, in Sections 29, 30, and 32, T32S, R32E, MDB&M, as shown on Attachment A, which is incorporated herein and made part of this Order by reference.

3. As of the date of this Order, known primary constituents in petroleum products include, but are not limited to, total petroleum hydrocarbons found in gasoline, diesel, light and heavy heating oils, and motor oil; benzene; toluene; ethylbenzene; xylenes; napthalene; polynuclear aromatic hydrocarbons (PAHs); ethylene dichloride; ethylene dibromide; fuel oxygenates that include methyl tertiary-butyl ether (MTBE), tertiary-butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl tertiary-butyl ether (ETBE), tertiary-amyl methyl ether (TAME), ethanol, and methanol; and organic lead. Benzene and MTBE were detected beneath the Motor Pool Site at up to 9,000 and 170,000 micrograms per liter (µg/l) during a June 2003 groundwater monitoring event.

4. In time, other oxygenate compounds, other additives, or problematic components of fuels may become evident in groundwater or surface water. Effluent limitations have not yet been developed for all of these constituents. In the event that such limitations are developed, this Order may be reopened and effluent limitations for those compounds may be added if these compounds are not effectively regulated by this order. If this Order is reopened and new and/or more stringent effluent limits are imposed, a phase-in period may be allowed for the Discharger to adjust its treatment processes.

5. The chlorinated solvent tetrachloroethelene (PCE) has been detected in groundwater within the capture zone of the groundwater extraction system at concentrations below 10 µg/l. Although the source has not been identified, this pollution almost certainly originated on-site at nearby facilities where PCE has been used.

6. The groundwater remediation system will extract from five wells within the plume. The system has an expected flow rate of 30 gallons per minute (gpm) and a design flow rate of 60 gpm. Extracted water will be treated in a high-volume, low-profile (tray) air stripper followed by auxiliary spray aeration chambers and a dilute hydrogen peroxide polish prior to conveyance through an unlined ditch to a shallow unlined percolation area. The ditch continues downstream from the percolation area and across the property boundary to a sod farm. A second unlined ditch joins the ditch downstream from the percolation area. Based on the expected flow rate, the discharge rate is 43,200 gallons per day (gpd) (0.043 million gallons per day (mgd)) or 48.39 acre-feet per year. The expected evapotransporation rate is 4,564 gpd or 5.26 acre feet per year. The calculated infiltration rate from the percolation area is 49 gallons per minute or 27.33 acre-feet per year. The discharge area is shown on Attachment B, which is incorporated herein and made part of this Order by reference.

7. Precipitation in the Tehachapi area results from convective (thunderstorm) events during the summer and fall and frontal events during the winter and spring. Historic flooding has more commonly been associated with the higher rainfall intensities of convective events.

8. Runoff from storm events is intercepted by the unlined ditch and accumulates in the percolation area. Overflow from the percolation area does occur during storm events. During large storm events, percolation area overflow combined with surface runoff could be transported through the unlined ditch to the property boundary to an off-site sod field before infiltrating into the ground.

9. The remediation system is designed to remove known maximum gasoline constituent concentrations and the highest anticipated PCE concentrations. Calculations provided by the Discharger indicate that 1,000,000 ug/l of benzene, 1,000,000 ug/l of PCE, and 2,500 ug/l of MTBE will be concurrently removed by the remediation system.

10. Petroleum constituents and PCE in groundwater at this site adversely impact beneficial uses or pose a threat to existing and potential beneficial uses of groundwater. The constituents are undergoing remediation with oversight from this Regional Board. Remediation of the impacted groundwater includes groundwater extraction with treatment and subsequent discharge of the treated groundwater to land.

11. The information in the attached Information Sheet was considered in developing the Findings of this Order and is a part of this Order by reference.

12. Best Practicable Treatment and Control technology includes, but is not limited to, air stripping and/or activated carbon and other processes capable of dependably removing petroleum fuel

constituents and PCE to concentrations that are below the detection limits of current acceptable analytical methods. Biotreatment, UV/Ozone, ion exchange resins, and other treatment technologies may be proposed, but if utilized must achieve the same treatment standard.

13. The current acceptable analytical methods are as follows:

Constituent	**Units**	**Analytical* Method**
Total Petroleum Hydrocarbons Gasoline, Diesel, and Fuel Oil	µg/l	EPA Method 8015B/5030 & 8015B/3510 & 8260B
Benzene	µg/l	EPA Method 8021B/8260B
Toluene	µg/l	EPA Method 8021B/8260B
Ethylbenzene	µg/l	EPA Method 8021B/8260B
Xylene, Total	µg/l	EPA Method 8021B/8260B
MTBE (Methyl tert-butyl ether)	µg/l	EPA Method 8021B/8260B
Total Lead	µg/l	EPA Method 7420
Tertiary Butyl Alcohol (TBA)	µg/l	EPA Method 8260B
Di-isopropyl Ether (DIPE)	µg/l	EPA Method 8260B
Ethyl Tertiary Butyl Ether (ETBE)	µg/l	EPA Method 8260B
Tertiary Amyl Methyl Ether (TAME)	µg/l	EPA Method 8260B
1,2,-Dichloroethane (1,2-DCA)	µg/l	EPA Method 8 260B
1,2 Dibromoethane (EDB)	µg/l	EPA Method 8260B

Constituent	Units	Analytical* Method
Tetrachloroethelene (PCE)	µg/l	EPA Method 8260B
Acetone	µg/l	EPA Method 8260B

* Non-proprietary, performance based analytical methods may be used with approval of Regional Board staff.

14. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan) designates beneficial uses, establishes narrative and numerical water quality objectives, and contains implementation plans and policies for protecting all waters of the Basin. The Basin Plan incorporates by reference plans and policies of the State Water Resources Control Board (State Board). These requirements implement the Basin Plan.

15. Designated beneficial uses of groundwater within the Tehachapi area are municipal, industrial, and agricultural supply.

16. Groundwater in the alluvial aquifer beneath the Correctional Institution has been encountered at approximately 37 to 50 feet below ground surface (bgs). Non-polluted groundwater in the Cummings groundwater basin has historically been of "good" quality for domestic use and irrigation, not exceeding Department of Health Services drinking water standards. Total dissolved solids (TDS) is less than 500 milligrams per liter (mg/L) or parts per million, and chloride ranges from 10 to 30 mg/L. The groundwater is "very hard" with a total hardness as calcium carbonate of approximately 300 mg/L.

17. The permitted discharge is consistent with State Water Resources Control Board Resolution No. 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") that requires that the quality of the waters of the state be maintained unless: (a) some change in water quality is consistent with the maximum benefit to the people of the state, b) the discharge will not unreasonably affect beneficial uses or result in a violation of any applicable water quality objective, and c) the discharge will be required to meet waste discharge requirements that will result in the implementation of the best practicable treatment or control. This Order establishes requirements for the discharge of waste from the cleanup of petroleum fuel pollution in waters of the state that require treatment to non-detectable levels using specified detection limits. This Order requires application of best practicable treatment or control for the kinds of constituents addressed in this Order. Therefore, any change in water quality will be insignificant and non-detectable. In addition, this Order applies to cleanup of polluted water and such cleanups are consistent with the maximum benefit to the people of the state even if some degradation to the receiving water may occur. If the water to be treated cannot meet the requirements of this Order, the Discharger must cease the discharge, implement other measures, change the method of disposal, or take other action.

18. California Water Code (CWC) section 13267 authorizes the Board to require anyone who discharges waste that could affect the quality of water, as the Discharger does, to furnish under penalty of perjury, technical and monitoring program reports. Section 13267 states, in part, that:

> In conducting an investigation specified in [Section 133267] subdivision (a), the regional 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, or any citizen or domiciliary, or political agency or entity of this state, who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional 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 these reports, the regional 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.

19. The action to adopt this Order is categorically exempt from CEQA based on Title 14 CCR Section 15308, which exempts actions by regulatory agencies for the restoration and protection of the environment where the regulatory process involves procedures for protection of the environment. The action to regulate the clean up of petroleum fuel pollution and chlorinated solvent pollution in groundwaters is a regulatory action that restores and protects the environment. The action involves procedures for the protection of the environment, such as discharge requirements that establish effluent limitations and monitoring. Application of this exemption is limited by the factors described in Title 14 CCR Section 15300.2, subsections (b), (c), (d), (e), and (f).

20. The action to adopt this Order also is categorically exempt from CEQA based on Title 14 CCR Section 15330, which exempts minor hazardous waste or hazardous substances clean up actions. This exemption applies to minor clean up actions where treated groundwater will be disposed of to land. Application of this exemption is further limited by the factors described in Title 14 CCR Section 15300.2, subsections (b), (c), (d), (e), and (f).

21. Interested agencies and persons were notified of the intent to adopt waste discharge requirements for the discharge of groundwater from the investigation and cleanup of petroleum fuel and chlorinated solvent pollution and provided an opportunity to submit written comments and recommendations.

22. In a public meeting all comments pertaining to this permit were heard and considered.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that the California Department of Corrections, in order to meet the provisions contained in Division 7 of the CWC, and regulations and guidelines adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge other than groundwater from the investigation and cleanup of petroleum fuel from the Motor Pool Site or discharge of groundwater from the investigation and cleanup of petroleum fuel from the Motor Pool Site where the ground water contains waste constituents not addressed by this Order, is prohibited.

2. Discharge from the percolation area during dry weather is prohibited. During a stormwater runoff event, discharge from the percolation area shall not exceed the input of stormwater to the percolation area.

3. Discharge to or overflow from the percolation area shall not cause damage to the ground surface, nearby structures, roads, or other works of man, shall not inhibit use of these features, or create a safety hazard.

4. The combined flow from percolation area overflow and surface runoff downstream from the percolation area shall be confined within the ditch banks. Breaching of ditch banks to allow mixing with untreated wastewater effluent or effluent applied at the CCI WWTF spray field is prohibited.

5. Bypass or overflow of untreated or partially treated waste is prohibited.

B. EFFLUENT LIMITATIONS

1. The maximum discharge flow rate from the remediation system shall not exceed 49 gpm or 70,560 gpd.

   The discharge of effluent must comply with the following concentrations:

Constituent	Daily Units	30-Day Median	Daily Maximum
Total Petroleum Hydrocarbons (diesel)	µg/l	<50	100
Total Petroleum Hydrocarbons (gasoline)	µg/l	<50	100
Benzene	µg/l	<0.5	0.5
	Daily	**30-Day**	**Daily**

Constituent	Units	Median	Maximum
Toluene	µg/l	<0.5	10
Ethylbenzene	µg/l	<0.5	10
Xylenes (total)	µg/l	<0.5	10
Naphthalene	µg/l	<0.5	21
MTBE plus other ether oxygenates*	µg/l	<0.5	5
Tertiary Butyl Alcohol	µg/l	<10.0	12
1,2-Dichloroethane (1,2-DCA)	µg/l	<0.5	0.5
1,2-Dibromoethane (EDB)	µg/l	<0.5	0.5
Total Lead**	µg/l	<2	2
Tetrachloroethylene (PCE)	µg/l	<0.5	5
Acetone	µg/l	None	700

*** The limit applies to each individual oxygenate compound.**

****An exception to the lead limit shall be allowed if the Discharger can demonstrate that higher concentrations are a result of naturally occurring background concentrations in the water being treated. Background concentrations may be defined by using the methodology described in Title 27, California Code of Regulations (CCR), Section 20415.**

2. The discharge shall not have a pH of less than 6.5 nor greater than 8.5.

C. SOLIDS DISPOSAL

Collected screenings, sludges, and other solids removed from the treated groundwater, or generated as the result of groundwater treatment, shall be disposed of in a manner that is consistent with Title 27 CCR, Section 20164 and approved by the Executive Officer.

D. PROVISIONS

1. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2005-0021, which is a part of this Order.

2. The Discharger shall comply with all applicable "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" included as an attachment of this Order.

3. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume

operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC. Transfer shall be approved or disapproved in writing by the Executive Officer.

4. This Order does not pre-empt or supersede the authority of local agencies to prohibit, restrict, or control the discharge of groundwater or surface water cleanup wastewater subject to their control.

I, THOMAS R. PINKOS, 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, Central Valley Region, on 27 January 2005.

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THOMAS R. PINKOS, Executive Officer

JDW:1/27/05

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2005-0021

FOR
WASTE DISCHARGE REQUIREMENTS
CALIFORNIA DEPARTMENT OF CORRECTIONS
CALIFORNIA CORRECTIONAL INSTITUTION TEHACHAPI
KERN COUNTY

The Discharger shall maintain water quality monitoring systems that are appropriate for detection and corrective action monitoring. Failure to comply with this Program constitutes non-compliance with the Waste Discharge Requirements and with the California Water Code, which can result in the imposition of civil monetary liability. Effluent limitation requirements are noted in B.1 and acceptable analysis methods are described in Finding 11 of the Waste Discharge Requirements. Influent and effluent samples shall be taken concurrently to demonstrate the effectiveness of the treatment system.

INFLUENT MONITORING

Influent samples shall be collected after the last connection before the wastes enter the treatment process. Influent samples should be representative of the volume and nature of the influent. Time of collection of a grab sample shall be recorded. The following shall constitute the influent monitoring program:

Constituents	**Units**	**Sample**	**Frequency**
Total Petroleum Hydrocarbons (Gasoline)	µg/l	Grab	Monthly
Total Petroleum Hydrocarbons (Diesel)	µg/l	Grab	Monthly
Benzene	µg/l	Grab	Monthly
Toluene	µg/l	Grab	Monthly
Ethylbenzene	µg/l	Grab	Monthly
Xylenes (total)	µg/l	Grab	Monthly
Methyl tertiary-Butyl Ether (MTBE)	µg/l	Grab	Monthly
Lead (total)	µg/l	Grab	Monthly
Tertiary Butyl Alcohol (TBA)	µg/l	Grab	Monthly
Di-isopropyl Ether (DIPE)	µg/l	Grab	Monthly
Ethyl Tertiary Butyl Ether (ETBE)	µg/l	Grab	Monthly
Tertiary Amyl Methyl Ether (TAME)	µg/l	Grab	Monthly
1,2-Dichloroethane (1,2-DCA)	µg/l	Grab	Monthly
1,2-Dibromoethane (EDB)	µg/l	Grab	Monthly
Naphthalene	µg/l	Grab	Monthly
Tetrachloroethylene (PCE)	µg/l	Grab	Monthly
Acetone	µg/l	Grab	Monthly

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the discharge. Effluent samples should be representative of the volume and nature of the discharge. Time of collection of a grab sample shall be recorded. The following shall constitute the effluent monitoring program:

Constituents	Units	Type of Sample	Frequency
Flow	mgd	continuous	Monthly
Specific Conductivity	µmhos/cm	Grab	Monthly
pH	pH units	Grab	Monthly
Total Dissolved Solids	mg/l	Grab	Monthly
Total Petroleum Hydrocarbons (gasoline, diesel)	µg/l	Grab	Monthly*
Benzene	µg/l	Grab	Monthly*
Toluene	µg/l	Grab	Monthly*
Ethylbenzene	µg/l	Grab	Monthly*
Xylenes (total)	µg/l	Grab	Monthly*
MTBE	µg/l	Grab	Monthly*
Lead (total)	µg/l	Grab	Monthly*
Tertiary Butyl Alcohol (TBA)	µg/l	Grab	Monthly*
Di-isopropyl Ether (DIPE)	µg/l	Grab	Monthly*
Ethyl Tertiary Butyl Ether (ETBE)	µg/l	Grab	Monthly*
Tertiary Amyl Methyl Ether (TAME)	µg/l	Grab	Monthly*
1,2-Dichloroethane (1,2-DCA)	µg/l	Grab	Monthly*
1,2-Dibromoethane (EDB)	µg/l	Grab	Monthly*
Naphthalene	µg/l	Grab	Monthly*
Tetrachloroethylene (PCE)	µg/l	Grab	Monthly*
Acetone	µg/l	Grab	Monthly*

* 1) Analyses shall be conducted weekly for four consecutive weeks following initial discharge from the treatment system. 2) If any sample shows constituent concentrations exceeding effluent limits described in Part B.1 of this Order, the Discharger shall immediately evaluate the treatment system, resample within three days of laboratory notification and reanalyze the effluent for the detected constituent(s), and shall continue sampling the effluent on a weekly basis until the constituent(s) concentrations are below permitted levels. 3) If a constituent is not present in the influent sample, then the testing for that constituent may be discontinued, upon approval by Regional Board staff, until detected in the influent. Appropriate quantitation (or reporting) limits should be less than or equal to the daily maximum effluent limits described in Part B.1 of this Order.

PERCOLATION BASIN MONITORING

The discharger shall monitor and record water level in the percolation pond at least daily during the first month of remediation system operation, and at least once per week thereafter to insure that effluent is contained. During storm events where precipitation is recorded on the CCI property or is known to have occurred within a drainage contributing surface runoff to the percolation area, the Discharger shall monitor and record the inflow to and outflow from the percolation area at least twice per day. The Discharger shall also inspect the ditch upstream of the percolation basin to verify that effluent is contained within the ditch banks.

REPORTING

Annually, **by 1 February,** the Discharger shall submit to the Regional Board a report evaluating the effectiveness and progress of the groundwater cleanup, including at a minimum: both tabular and graphical summaries of the monitoring data obtained during the previous year; trends in the concentrations of the pollutants in groundwater monitoring wells; whether the contaminant plume is being captured by the extraction system or is continuing to spread; plans for improvements to the groundwater monitoring, extraction or treatment system; status of any other cleanup activities such as soil excavation or soil venting systems; and the anticipated date for completion of cleanup activities. The annual report shall also include the reasons for and durations of all interruptions in the operation of the treatment systems.

Quarterly monitoring reports shall be submitted to the Regional Board **by the first day of the second month following the end of the calendar quarter**.

In reporting the monitoring data, the Discharger shall arrange the data in tabular format so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly the compliance with Waste Discharge Requirements. Monitoring Reports will also include an evaluation of the ground water cleanup progress, trends, monitoring well analyses and plume containment. If this evaluation is already submitted to the Regional Board in a separate groundwater monitoring report, then the Discharger may reference the date and title of the most recent report in lieu of including it with the monitoring report required under this Order. In addition, the Discharger shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharge into full compliance with Waste Discharge Requirements.

The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Board.
The results of all monitoring done shall report:

1. a concentration, if the result is above the analytical quantitation limit,
2. “trace”, if the result is below the analytical quantitation limit but above the detection limit,
3. “ND”, if the result is below the detection limit, and
4. a discussion regarding all peaks displayed, whether a fuel petroleum fuel component or not.

(Note: The detection limit is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the true value is greater than zero. The quantitation limit is the lowest level that can be reliably achieved within the specific limits of precision and accuracy during routine laboratory operating conditions.)

The Discharger shall implement the above monitoring program immediately upon the commencement of the initial discharge covered by this Order.

Ordered by:

THOMAS R. PINKOS, Executive Officer

27 January 2005
(Date)

JDW:1/27/05

INFORMATION SHEET

ORDER NO. R5-2005-0021
WASTE DISCHARGE REQUIREMENTS
FOR CALIFORNIA DEPARTMENT OF CORRECTIONS
CALIFORNIA CORRECTIONAL INSTITUTION TEHACHAPI
KERN COUNTY

This Order is proposed as Discharge Requirements for the discharge to land for disposal of treated effluent produced during the cleanup of groundwater polluted with gasoline constituents released from an underground storage tank (UST) system at the California Correctional Institution Tehachapi "Motor Pool Site". The groundwater extraction system will likely capture a portion of a nearby chlorinated solvent plume. The treatment system has been designed to remove the gasoline constituents and the chlorinated solvent. The treated wastewater will be discharged to a shallow percolation area.

The California Correctional Institution (CCI) is located in Cummings Valley, a satellite valley to Tehachapi Valley. CCI provides on-site services necessary for facility operation on-site, including water supply, sewage treatment, and motor vehicle fueling.

The Tehachapi area has relied on imported water to supplement a dwindling groundwater resource for decades. The Tehachapi Soil Conservation District and the Tehachapi-Cummings Valley Water Conservation District developed basic groundwater and watershed studies from 1947 until 1965. Tehachapi, Cummings, and Brite groundwater basins became adjudicated as the result of lawsuits filed in the Kern County Superior Court during 1966. Cummings basin, in which the CCI facility is located, was overdrafted from 1950 to 1965, but was not overdrafted from 1965 to 1971. It was decided that the Court would establish groundwater withdrawal reductions in the event of future overdraft. The judgment determined that the safe yield of Cummings basin is 4,090 acre-feet per year and prohibited exporting groundwater from the basin. Tehachapi-Cummings Water District (TCWD), the Watermaster, implements a groundwater management plan in accordance with the judgments for each of the basins. The TCWD operates recharge and recovery projects in the Tehachapi and Cummings basins.

Cummings Valley is a fault-controlled basin (graben) in Mesozoic granitic rocks of the Sierra Nevada batholith (Tonalite of Bear Valley Springs). Based on previous site investigations, approximately 130 to 150 feet of Quaternary alluvium overlie granitic bedrock at the CCI facility. These sediments have been logged as predominantly silty sand with discontinuous silt lenses. Groundwater has been encountered in the alluvial aquifer at approximately 37 to 50 feet below ground surface (bgs).

Non-polluted groundwater in the Cummings groundwater basin has historically been of "good" quality for domestic use and irrigation, not exceeding Department of Health Services drinking water standards. Total dissolved solids (TDS) is less than 500 milligrams per liter (mg/L) or parts per million, and chloride ranges from 10 to 30 mg/L. The groundwater is "very hard" with a total hardness as calcium carbonate of approximately 300 mg/L. Groundwater within the Motor Pool

Site monitoring network is of similar quality, based on limited analyses conducted by CCI's consultant during 2003.

Surface soils in the area of the proposed wastewater discharge and infiltration areas have been mapped as Tehachapi Sandy Loam and Oakdale Sandy Loam. The Tehachapi Sandy Loam is moderately well drained, has slow subsurface permeability, and medium runoff potential. The Oakdale Sandy Loam is well drained, has medium permeability, and medium runoff potential.

Petroleum hydrocarbon fuels have been stored on the CCI facility in four areas: the boiler room, motor pool, and two maximum-security complex areas. Two underground storage tanks (USTs) were in use at the Motor Pool Site from 1954 until 1985. Two additional USTs were installed during 1985. The original USTs were removed during 1987. Subsequent investigation demonstrated that a release to subsurface soils had occurred and has defined the extent of impacted soil. During 1991, approximately 300 gallons of gasoline were removed from subsurface soil by a soil vapor extraction (SVE) system. During 1996, additional investigation of the UST systems indicated a gasoline release from the product lines. The fuel oxygenate methyl tertiary butyl ether (MTBE) was also detected during this investigation. Approximately 100 cubic yards of impacted soil were removed during product line replacement. A soil vapor extraction (SVE) system has removed gasoline constituents from subsurface soil.

Groundwater monitoring at the Motor Pool Site began during 1998. Additional monitoring wells were installed from 2000 to 2003 to define the impact. Polluted groundwater extends approximately 900 feet downgradient of the release and has a maximum width of approximately 400 feet. Impacted groundwater appears to be confined to the CCI property.

Total petroleum hydrocarbons as gasoline (TPH-g), benzene, and MTBE concentrations up to 620,000, 29,000, and 1,500,000 micrograms per liter (µg/L) (parts per billion), respectively, have been detected during the monitoring history. Benzene and MTBE were detected at concentrations up to 9,000 and 170,000 µg/L, respectively during the June 2003 monitoring event. Although the highest MTBE concentrations have been detected in shallow monitoring wells, MTBE appears to be present within the entire alluvial aquifer, since moderate concentrations were detected in a well screened at an intermediate depth, and low concentrations have been detected in a deep well screened across the alluvium/bedrock interface. The MTBE is a serious threat to the groundwater resource in the Cummings basin.

By a letter dated 9 May 2003, the Kern County Environmental Health Services Department (KCEHSD), the lead regulatory agency for the UST release, requested that CCI submit a work plan for a groundwater remediation system. CCI's consultant, AMEC Earth and Environmental, Inc. (AMEC), submitted *Interim Remedial Action Plan* (Work Plan) dated July 2003. The Work Plan proposed extraction of groundwater from existing monitoring and extraction wells near the head of the impacted groundwater plume, removal of gasoline constituents in extracted groundwater by a shallow-tray air stripper, and discharge of treated effluent to land in an area on-site. The KCEHSD and Regional Board staff concurred that the proposed remediation system was inadequate to capture and treat the entire groundwater plume. By a letter dated 3 September 2003, the KCEHSD

approved operation of the proposed system until a more complete system was installed. The letter requested that CCI submit a work plan for the installation of at least three additional extraction wells along the length of the plume within 45 days. During a meeting between the Department of Corrections, Department of General Services, Kern County Environmental Health Services Division, Regional Board, and AMEC personnel on 27 January 2004, it was agreed that two additional extraction wells would be installed within the plume and that an interim groundwater remediation system consisting of a total of three extraction wells would be operated initially. The additional extraction wells, two auxiliary spray aeration chambers and dilute hydrogen peroxide polishing to treat air stripper effluent were proposed in AMEC's *Groundwater Remediation Work Plan* dated July 2004. The additional extraction wells were installed during December 2004. AMEC installed the spray aeration chambers and peroxide polish equipment and conducted system pilot testing during the second and third quarters of 2004.

Based on discussions with AMEC and review of AMEC's *Application for Report of Waste Discharge for Land Disposal of Groundwater from Cleanup of Petroleum Pollution at Motor Pool Site...* (Report of Waste Discharge) and *Response to Verbal Request for Additional Information Concerning Application for Report of Waste Discharge...* (Supplemental Information) dated 7 October 2003, the remediation system will extract 30 gallons per minute (gpm), which is considered adequate to capture the plume. The system design flow rate is 60 gpm.

During the September 2003 monitoring event, the chlorinated solvent tetrachloroethelene (PCE) was detected at concentrations from 3.1 to 9.6 µg/L in samples collected from five monitoring wells within and adjacent to the hydrocarbon plume. The PCE source is unknown, however the CCI previously operated a commercial laundry and other facilities where PCE is typically used. Based on the presence of PCE, Regional Board staff determined that the proposed discharge of treated effluent from the groundwater remediation system was not eligible for regulation under General Order For Land Disposal Of Groundwater Or Surface Water From Cleanup Of Petroleum Pollution (Order No. R5-2003-0044) and must be regulated under waste discharge requirements written specifically for the proposed discharge.

The Discharger expects to extract and treat 30 gallons per minute (gpm) or 43,200 gallons per day (gpd) of polluted groundwater and discharge the non-polluted effluent into an unlined ditch leading to a shallow infiltration basin (percolation area). The percolation area has a surface area of 47,000 square feet and a 352,000-gallon storage capacity. Approximately 4,560 gpd will be lost by evapotranspiration. Based on a conservative infiltration rate of 0.1 inch per hour, 49 gallons per minute or 70,560 gpd should infiltrate from the percolation area. Assuming the expected system flowrate, 48.4 acre-feet per year (AF/y) will be extracted and 5.3 AF/y will be lost to evapotranspiration, leaving 43.1 AF/y to percolate back into the aquifer. The percolation area is expected to allow at least 79 AF/y to infiltrate.

The Tehachapi area receives an annual average of approximately 10 inches of precipitation per year with the majority from November through April and considerable variation from year to year. Snowfall averages up to 30 inches per year at higher elevations. Snowfall on the valley floor is light and quickly melts. Convective (thunderstorm) events create precipitation during summer and

fall while frontal events are dominant during the winter and spring. Rainfall intensities are greater during convective events. Intensities can reach 0.40 inches per hour, 1.2 inches per six hours, and 1.7 inch during 24 hours once every two years. Intensities of 1.2 inches per hour, 3.0 inches per six hours, and 4.10 inches during 24 hours can be expected once in about 100 years. Relatively well-defined stream courses containing surface runoff on the mountain slopes become more poorly defined or non-existent on alluvial fans at the mountain bases.

The shallow unlined ditch receives intermittent surface runoff upstream of the percolation area. CCI personnel have reported to Regional Board staff that the percolation area is usually empty and has been less than one-third full during the last several years. The same ditch conveys overflow downstream from the percolation area. A second unlined ditch conveying intermittent surface runoff joins the ditch downsteam of the percolation area. The combined flow is conveyed off-site in the northwest portion of property, in the vicinity of the CCI WWTF spray field.

The percolation area is expected to contain the effluent generated by the groundwater remediation system during dry weather. During severe storm events, the combined flow of stormwater runoff and effluent could overtop the percolation area and also be discharged downstream through the ditch. Regional Board staff has concluded that overflow from the percolation area is of comparable quality to stormwater runoff and is unlikely to degrade groundwater or surface water quality. Those areas inundated by the combined flow of stormwater runoff and effluent are the same areas that would be inundated by stormwater only. Degradation is possible if the ditch banks were breached in the vicinity of the WWTF spray treatment facilities.

Petroleum fuel constituents and additives in groundwater and/or surface water impact existing and potential beneficial uses of groundwater at CCI. The primary constituents of concern include total petroleum hydrocarbons in the gasoline and diesel ranges and include individual compounds such as: benzene, toluene, ethylbenzene, xylenes and polynuclear aromatic hydrocarbons: and fuel additives such as MTBE and lead. In addition, other fuel oxygenates and additives such as tertiary butyl alcohol (TBA), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), and other compounds may also be of concern. Existing groundwater treatment technology is capable of dependably removing these constituents to concentrations that are generally non-detectable by current analytical technology. Fuel oxygenates, such as MTBE and TBA, have become a more recent concern and can be removed using the same wastewater treatment technology, although they are more difficult to remove, than other fuel components, and may require larger systems and longer remedial duration. The Department of Health Services secondary drinking water standard for MTBE is 5.0 µg/L (ppb), based on the taste and odor threshold. The TBA concentration of 12 µg/L is the California Drinking Water Action level. The taste and odor threshold for DIPE has been published in the literature as 0.8 µg/L.

PCE is also a constituent of concern at the Motor Pool Site. The Department of Health Services primary drinking water standard for PCE is 5.0 µg/L (ppb), derived from health-based criteria. Existing wastewater treatment technology is capable of dependably removing PCE to concentrations that are generally non-detectable by current analytical technology.

Acetone may be formed by the breakdown of TBA. The United States Environmental Protection Agency (USEPA) Integrated Risk Information System (IRIS) Reference Dose as a Drinking Water Level is 700 µg/L. The taste and odor threshold for acetone has been published in the literature at 20,000 µg/L.

Effluent limits have been established as follows:

The maximum effluent flow limit is based on the lesser of the design flow of the groundwater remediation system, 60 gpm or 86,400 gpd and the estimated infiltration rate of the percolation area, 49 gpm or 70,560 gpd..

a. 30-Day Median Concentrations for total petroleum hydrocarbons as gasoline and diesel (TPH-g and -d), benzene, ethylbenzene, toluene, xylenes, MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB, napthalene, and PCE are established as less than the quantitation or reporting limits, that is, less than the levels that can be quantified for specified, commonly available analytical technology. The 30-Day Median Concentration for lead has been established as less than the California Public Health Goal. A "median" is used rather than an "average" or "arithmetic mean" to allow for the quantitation of a constituent in individual samples without automatically causing violation of the monthly limitation, as would occur with an 'average' or 'mean' limit. A 30-Day Median Concentration has not been established for acetone due to low toxicity, difficult treatability, and expected rapid degradation upon discharge. The Discharger will install an oxidation system to destroy TBA and acetone downstream of the air stripper. Oxidant concentration will be adjusted based on TBA and acetone concentrations.

   The current treatment technologies used for groundwater cleanup of petroleum fuel constituents and chlorinated solvents are not normally subject to sudden upset or bypass, so rapid changes in effluent quality are not expected. If detectable concentrations of petroleum fuel constituents or PCE are found, the monitoring program requires immediate evaluation of the treatment system and weekly monitoring of the effluent until less than quantitation (or reporting) limit conditions are reestablished. The effluent sampling is not a substitute for process control monitoring by the Discharger.

b. The Daily Maximum Limitations are established at or above the quantitation or reporting limits. Daily Maximum Effluent Limitations for TPH-g and -d, ethylbenzene, toluene, xylenes, MTBE, DIPE, ETBE, TAME, PCE are established to allow for some effluent quality variation without exceeding water quality objectives. The Daily Maximum for benzene is established at the reporting limit. The Daily Maximum for napthalene is established at the Taste and Odor Threshold. The Daily Maximum for TBA is established at the California DHS Drinking Water Action Level. The Daily Maximum for 1,2-DCA is established at the Primary Drinking Water MCL. The Daily Maximum for EDB is established at the reporting limit, which is higher than the Primary MCL. The Daily Maximum for lead is established at the California Public Health Goal. The Daily Maximum for acetone is established at the USEPA IRIS Reference Dose as a Drinking Water Level.

In general, there will not be more than one sample taken in a month. However, should operational problems require more frequent monitoring, the daily maximum numbers will enable a discharger to increase the frequency of monitoring while correcting the operational problems and remain in compliance with waste discharge requirements. The following table shows water quality objectives and numerical limits used to interpret the objectives for each

c. monitored constituent. The lowest of these limits for each chemical is selected as the maximum effluent limitation to comply with all water quality objectives. Where the lowest limit is lower than the analytical quantitation limit, the quantitation limit is used as the effluent limit.

Constituent	W Q Objective	Limit (µg/l)	Reference for Limit
Benzene	Chemical Constituents Toxicity Taste and odors	1.0 0.15 170	California Primary MCL California Public Health Goal Taste and Odor Threshold
Ethylbenzene	Chemical Constituents Toxicity Taste and Odors	700 300 29	California Primary MCL California Public Health Goal Taste and Odor Threshold
Toluene	Chemical Constituents Toxicity Taste and Odors	150 150 42	California Primary MCL California Public Health Goal Taste and Odor Threshold
Xylenes (sum of isomers)	Chemical Constituents Toxicity Taste and Odors	1750 1800 17	California Primary MCL California Public Health Goal Taste and Odor Threshold
Gasoline	Toxicity Taste and Odors	21 5	USEPA Superfund Provisional Cancer Slope Factor Taste and Odor Threshold
Lead (inorganic)	Chemical Constituents Chemical Constituents Toxicity	15 5000 2	California Primary MCL Water Quality for Agriculture (Ayers & Wescot) California Public Health Goal
1,2-Dibromoethane (ethylene dibromide, EDB)	Chemical Constituents Toxicity	0.05 0.0097	California Primary MCL Cal/EPA Cancer Potency Factor
1 2-Dichloroethane (ethylene dichloride, 1,2-DCA)	Chemical Constituents Toxicity Taste and Odors	0.5 0.4 7000	California Primary MCL California Public Health Goal Taste and Odor Threshold
Methyl tert -Butyl Ether (MtBE)	Chemical Constituents Chemical Constituents Toxicity Taste and Odors	13 5 13 5	California Primary MCL California Secondary MCL California Public Health Goal Taste and Odor Threshold
Di-isopropyl Ether (DIPE)	Tastes and Odors	0.8	Taste and Odor Threshold
Tertiary Butyl Alcohol (TBA)	Toxicity Taste and Odors	12 290,000	DHS Drinking Water Action Level Taste and Odor Threshold
Naphthalene	Toxicity Taste and Odors	170 21	DHS Drinking Water Action Level Taste and Odor Threshold
Tetrachloroethylene	Chemical Constituents Toxicity	5.0 0.056	California Primary MCL California Public Health Goal

	Taste and Odors	170	Taste and Odor Threshold
Acetone	Chemical Constituents Toxicity Taste and Odor	700 20,000	USEPA IRIS Taste and Odor Threshold

1. MCL = **M**aximum **C**ontaminant **L**evel as set by the California Department of Health Services.
2. IRIS = USEPA **I**ntegrated **R**isk **I**nformation **S**ystem reference dose as a drinking water level.
   California Public Health Goal as determined by the California Office of Environmental Health Hazard Assessment.

The Regional Board's action to adopt this Order is categorically exempt from the California Environmental Quality Act (CEQA) based on Title 14 CCR Section 15308, which exempts actions by regulatory agencies for the restoration and protection of the environment where the regulatory process involves procedures for protection of the environment. The Regional Board's action to regulate the clean up of petroleum fuel pollution and chlorinated solvent pollution in groundwater is a regulatory action that restores and protects the environment. The action involves procedures for the protection of the environment, such as discharge requirements that establish effluent limitations and monitoring. Application of this exemption is limited by the factors described in Title 14 CCR Section 15300.2, subsections (b), (c), (d), (e), and (f).

The Regional Board's action to adopt this Order also is categorically exempt from CEQA based on Title 14 CCR Section 15330, which exempts minor hazardous waste or hazardous substances clean up actions. This exemption applies to minor clean up actions where treated groundwater will be disposed of to land. Application of this exemption is further limited by the factors described in Title 14 CCR Section 15300.2, subsections (b), (c), (d), (e), and (f).

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