CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
ORDER NO. R5-2003-0166
WASTE DISCHARGE REQUIREMENTS
FOR
CONTIGROUP COMPANIES
FRENCH CAMP GRAIN ELEVATOR
ENHANCED BIOREMEDIATION PILOT STUDY
SAN JOAQUIN COUNTY

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

1. ContiGroup Companies (hereafter Discharger) submitted a Report of Waste Discharge on 18 July 2003 and supplemental information on 25 September 2003 for an enhanced bioremediation pilot study. The Discharger formerly owned the active grain storage and transfer facility at 9504 South Harlan Road in French Camp, Assessor's Parcel Number 193-21-003 at Township 1S, Range 6E, Section 2, Mount Diablo Base and Meridian (hereafter referred to as Site). The current owner is French Camp Grain Elevator LLC. The general location of the facility is shown on Attachment A, which is attached hereto and made part of this Order by reference.

2. Historically, liquid fumigants containing carbon tetrachloride were stored on the Site in five-gallon buckets. Carbon tetrachloride was found in groundwater in 1999. The Discharger has performed several investigations to delineate the extent of carbon tetrachloride and its breakdown product, chloroform. Three water bearing zones are identified at the Site and are monitored by 14 groundwater monitoring wells as required by Monitoring and Reporting Program (MRP) No. 5-00-858. The Site has two private supply wells that were previously used for irrigation.

3. The Discharger proposes an enhanced bioremediation pilot study using the proprietary polylactate compound Hydrogen Releasing Compound (HRC®) to degrade carbon tetrachloride and chloroform under anaerobic conditions. The pilot study will evaluate injection spacing and HRC® dosing for full-scale implementation.

4. Most of the mass of carbon tetrachloride and chloroform pollution is in the B water bearing zone, which is from about 60 to 70 feet below ground surface and varies from about 5 to 10 feet in thickness across the Site. Groundwater contains up to 1,300 micrograms per liter (µg/l) of carbon tetrachloride and up to 190 µg/l of chloroform.

5. The Discharger proposes a pilot study to evaluate injection of HRC® to bioremediate volatile organic compound pollution. Groundwater monitoring of amendments, breakdown products, and byproducts will continue until concentrations return to baseline levels, which will conclude the pilot study. The Discharger will install a new monitoring well downgradient (northwest) of monitoring well MW-3B in the B water bearing zone as an additional monitoring point to evaluate the HRC® pilot study. The Discharger proposes to inject HRC® through nine injection points into the B water

zone upgradient from monitoring well MW-3B, as shown on Attachment B, which is attached hereto and made part of this Order by reference.

6. The Discharger will inject four pounds of HRC® per linear foot of vertical depth in the water bearing zone. Regenesis, the manufacturer of HRC®, provides software to determine the dosing volume. Four pounds of HRC® per linear foot is the minimum dosage rate recommended by Regenesis.

7. The Discharger will collect baseline groundwater samples a minimum of two weeks prior to the injection of HRC® and will conduct routine monitoring of the new well and existing monitoring well MW-4B for volatile organic compounds, lactic acid, metals, and general chemistry parameters, as required in the attached MRP No. R5-2003-0166. The estimated groundwater flow velocity is 10 feet per year. The new well will be installed about eight feet downgradient of the pilot study treatment zone. The HRC® is estimated to radiate out about five feet. Based on this, the Discharger estimates that within four months the HRC® will reach the newly installed well.

8. Bench-scale testing was not performed because the most common mechanism of degradation of chlorinated compounds is reductive dechlorination where the chlorinated compounds serve as electron acceptors and carbon is the main electron donor. Injecting HRC® will stimulate growth of indigenous microorganisms by providing a carbon substrate, therefore accelerating the reductive dechlorination process. The Discharger has determined that HRC® injections will reduce pollutant concentrations because monitoring data has shown that reductive dechlorination is occurring under anaerobic conditions and carbon tetrachloride is breaking down.

9. Byproducts from the injection of HRC® may include carbon dioxide, reduced forms of sulfate such as hydrogen sulfide, and breakdown products of carbon tetrachloride, such as chloroform, methylene chloride (dichloromethane), chloromethane and chloride ion. With the exception of chloride ion, the breakdown products of carbon tetrachloride are expected to be intermediate compounds. The Discharger will monitor for these byproducts, along with the constituents listed in Finding 7, in accordance with the attached MRP No. R5-2003-0166.

10. In the event that lactic acid reaches monitoring well MW-4B above baseline concentrations during the pilot study, the Discharger will implement a pump and treat system. The Discharger will install up to 10 extraction wells screened in the B water bearing zone. Recovered water will be temporarily stored on site pending transport to the Stockton Regional Wastewater Control Facility. Recovered water will be treated using granular activated carbon and/or air stripping only if an applicable groundwater parameter concentration exceeds the concentration limit allowed by the Wastewater Control Facility. The Discharger may also submit a Report of Waste Discharge to reinject the treated water if initial results show that groundwater extraction may be a long term corrective measure.

11. The injection of chemicals into waters of the State is subject to regulation under the California Water Code. This Order authorizes the Discharger to inject HRC® into groundwater subject to specific discharge requirements.

12. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.

13. Surface water drainage is into the San Joaquin River within the legal boundaries of the Sacramento - San Joaquin Delta. The beneficial uses of the Sacramento - San Joaquin Delta are municipal and domestic supply; agricultural supply; process and service industrial supply; water contact recreation; noncontact water recreation; warm and cold freshwater habitat, migration of warm and cold freshwater species, spawning of warm freshwater species, wildlife habitat, and navigation.

14. The beneficial uses of underlying groundwater are municipal and domestic supply, agricultural supply, and industrial process and service supply.

15. Surrounding land uses are commercial and industrial.

16. State Board Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation Policy") requires the Board in regulating discharges to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in plans and policies (e.g., quality that exceeds water quality objectives). Temporal degradation of groundwater at this site due to the HRC® injection may occur. The temporary degradation allowed by this Order is consistent with Resolution 68-16 since (1) the purpose is to accelerate and enhance remediation of unacceptable concentrations of several waste constituents and such remediation will benefit the people of the state; (2) the discharge facilitates a pilot project to evaluate the effectiveness of cleanup technology in accord with SWRCB Resolution 92-49 and is limited in scope and duration; (3) best practicable treatment, including adequate monitoring and contingency plans to assure protection of water quality, are required; and (4) the injection will not cause water quality objectives to be exceeded beyond the project target area or the duration of the project as described in Finding 5.

17. Section 13267(b) of California Water Code provides that:

> In conducting an investigation specified in 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 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 the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those 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.

The technical reports required by this Order and the attached MRP No. R5-2003-0166 are necessary to assure compliance with these waste discharge requirements. The Discharger formerly operated the facility that discharged the waste subject to this Order.

18. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 74-81* (December 1981). These standards, and any more stringent standards adopted by the State or County pursuant to California Water Code Section 13801, apply to all monitoring wells.

19. Issuance of this Order is an action to assure the restoration of the environment and is, therefore, exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Section 15308 and 15330, Title 14, California Code of Regulations (CCR).

20. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Section 20005, et seq., (hereafter Title 27). The exemption pursuant to Section 20090(d), is based on the following:

    a. The Board is issuing waste discharge requirements,
    b. The discharge complies with the Basin Plan, and
    c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

21. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

22. All the above and the supplemental data and information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge. The Discharger and interested agencies and persons were notified of intent to prescribe waste discharge requirements for this discharge and provided with an opportunity for a public hearing and an opportunity to submit written views and recommendations. In a public meeting, all comments pertaining to the discharger were heard and considered.

IT IS HEREBY ORDERED that pursuant to Sections 13263 and 13267 of the California Water Code, ContiGroup Companies, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following while conducting the above-described pilot study:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991, incorporated herein.]

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. The injection of other than HRC® into groundwater is prohibited.

3. Discharge of waste classified as 'hazardous' under Section 2521 of Title 23, CCR, or as 'designated' under Section 13173 of California Water Code is prohibited.

4. Discharge of HRC® at locations or in a manner different from that described in Finding Nos. 5 and 6 is prohibited.

B. Discharge Specifications

1. This Order allows the discharge of HRC® at the Site under the conditions defined in Findings 5 and 6. No other products shall be discharged.

2. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.

C. Groundwater Limitations

1. During the pilot study, the Discharger shall not cause an increase of lactic acid above baseline concentrations in monitoring well MW-4B.

2. When the pilot study is completed, the amendments and byproducts shall not exceed baseline levels.

D. Provisions

1. The Discharger shall notify Board staff a minimum of one week prior to the injection of HRC®.

2. The Discharger shall comply with the attached MRP No. R5-2003-0166, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

3. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

4. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

    a. The Discharger shall submit a Pilot Study Implementation Report due no later than **60 days** after injection of HRC® that shall include a description of field activities, well installations, discussion of baseline concentrations, and results of the first month of monitoring.

    b. The Discharger shall submit a Pilot Study Evaluation Report no later than **14 months** after the injection of HRC®, that shall include a summary of analytical results and an evaluation of the effectiveness of the HRC® injections.

5. In the event that lactic acid is detected above the baseline concentration in monitoring well MW-4B during the pilot study, as specified in Groundwater Limitation C.1, the Discharger shall immediately notify Regional Board staff of the exceedance(s) and obtain a confirmation sample within **7 days** of receiving the results. Within **48 hours** of receiving the confirmation sample results, the Discharger shall notify Regional Board staff of the results followed by written notification within **7 days**.

6. **Within 30 days** of confirming an exceedance as described in Groundwater Limitations C.1, the Discharger shall implement the contingency plan as described in Finding 10 and submit a Contingency Plan Implementation Report **90 days** thereafter.

7. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court order

requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

8. The Discharger shall maintain records of all monitoring information including all calibration and maintenance records, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, or report. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Executive Officer.

9. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control that are installed or used by the Discharger to achieve compliance with this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are to be installed by the Discharger only when necessary to achieve compliance with the conditions of this Order.

10. The Discharger shall report any non-compliance, and/or accidental spill or release of liquid or material verbally to the Regional Board within 24 hours of the spill or release, and follow-up the verbal notification with written documentation of the spill or release within 14 calendar days of the incident.

11. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

12. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.

13. While this Order is in effect, and prior to any change in ownership of the Site or management of this operation, the Discharger shall transmit a copy of this Order to the succeeding Owner/Operator, and forward a copy of the transmittal letter and proof of transmittal to the Regional Board. Transfer of privileges granted under this Order are subject to the discretion of the Executive Officer.

14. The Discharger shall allow the Regional Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the premises regulated by the Regional Board, or the place where records must be kept under the conditions of this Order;
    b. Have access to and copy, at reasonable times, any records that shall 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; and
d. Sample or monitor, at reasonable times, for the purpose of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at this Site.

15. The Regional Board will review this Order periodically and will revise requirements when necessary.

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 17 October 2003.

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THOMAS R. PINKOS, Executive Officer

Attachments

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0166
FOR
CONTIGROUP COMPANIES
FRENCH CAMP GRAIN ELEVATOR
ENHANCED BIOREMEDIATION PILOT STUDY
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring the progress of the enhanced bioremediation pilot study. This MRP is issued pursuant to California Water Code Section 13267. ContiGroup Companies (Discharger) is required to comply with this MRP. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Groundwater sampling and reporting outlined in MRP No. 5-00-858 is still required.

All samples shall be representative of the volume and the nature of the discharge and matrix of the sampled medium. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

ENHANCED BIOREMEDIATION PILOT STUDY MONITORING

As shown on Attachment B, there are 14 monitoring wells, one proposed monitoring well, and two private supply wells. The private wells are no longer in use. Monitoring of the enhanced bioremediation pilot study HRC® injections will consist of groundwater samples collected from the newly installed monitoring well (about eight feet downgradient from MW-3B), MW-3B, and MW-4B. These analyses shall be completed by a State certified laboratory and shall follow standard EPA protocol. Monitoring well samples shall be analyzed for the following constituents and parameters and follow the schedule in the table below.

Constituents	EPA Method	Maximum Quantitation Limit[1]	Frequency
Depth to Groundwater	---	0.01 ft	Monthly[2]
Volatile Organic Compounds	8260B	0.5 µg/l	Quarterly[2]
Lactic acid[3]	IC-001	1.0 mg/l	Monthly[2]
Ferrous and Ferric Iron[3]	200, 6020, or SM 3000	0.1 mg/l	Bi-monthly[2]
Carbon dioxide (dissolved)[3]	SM 4500 or ASTM D1945	0.01 mg/l	Bi-monthly[2]
Methane (dissolved)[3]	RSK 175M or ASTM D1945	0.01 mg/l	Bi-monthly[2]
Total Organic Carbon[3]	415, 9060, or SM 5310	1 mg/l	Bi-monthly[2]
General Minerals[3,4]	Various	Various	Bi-monthly[2]
Metals[3,5]	Various	Various	Bi-monthly[2]
ORP and Dissolved Oxygen[6]	--	--	Monthly[2]

[1] For nondetectable results
[2] Monitoring of MW-4B shall begin after there is evidence of HRC® in the newly installed well (downgradient of MW-3B).
[3] Baseline samples shall be collected a minimum of two weeks prior to injection.
[4] General Minerals include alkalinity, pH, electrical conductivity, total dissolved solids, calcium, chloride, copper, iron, magnesium, manganese, sodium, sulfate, nitrate, and zinc.
[5] Metals include antimony, arsenic, beryllium, cadmium, trivalent and hexavalent chromium, cobalt, lead, mercury, molybdenum, nickel, selenium, silver, thallium, and vanadium.
[6] Oxidation-reduction potential and dissolved oxygen are field measured parameters.

Field testing instruments (such as those used to test oxidation-reduction potential and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are provided with the appropriate monitoring report.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type, and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the MRP shall also be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

Quarterly reports shall be submitted to the Board by the **1st day of the second month following the end of each calendar quarter (i.e., by 1 February, 1 May, 1 August, and 1 November**). The reports shall be submitted separately from the quarterly monitoring reports required by MRP No. 5-00-858. At a minimum, the reports shall include:

1. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; calculation of casing volume; total volume of water purged, etc.;

2. Copies of all laboratory analytical report(s);

3. Cumulative data tables containing the water quality analytical results and depth to groundwater;

4. An evaluation of the performance of the bioremediation pilot study including an analysis of its effectiveness in destroying the pollutants, and a discussion of the potential for field scale application;

5. A discussion of compliance and the corrective action taken, if any, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and

6. A discussion of any data gaps, potential deficiencies/redundancies in the monitoring system or reporting program and the anticipated date for an effectiveness evaluation of the pilot study.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of the Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

_____
(Date)

DLL

INFORMATION SHEET

ORDER NO. R5-2003-0166
CONTIGROUP COMPANIES
FRENCH CAMP GRAIN ELEVATOR
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SAN JOAQUIN COUNTY

ContiGroup Companies formerly owned the active grain storage and transfer facility at 9504 South Harlan Road in French Camp. Historically, liquid fumigants containing carbon tetrachloride were stored on site in five gallon buckets. Carbon tetrachloride polluted groundwater was found in 1999. Several investigations have been conducted to delineate the extent of carbon tetrachloride and its breakdown product, chloroform. Three water bearing zones are identified at the site with most of the mass of pollution in the B water bearing zone. The B water bearing zone is about 60 to 70 feet below ground surface and varies from about 5 to 10 feet thick across the site.

The enhanced bioremediation pilot study proposed is the injection of the proprietary polylactate compound, Hydrogen Releasing Compound (HRC®). The purpose of the pilot study is to evaluate HRC® as a remedial alternative and to determine the necessary spacing and dosage for full-scale HRC® injections. The pollutants at the site are undergoing reductive dechlorination under anaerobic conditions. Under anaerobic conditions, carbon tetrachloride and its breakdown product chloroform are degraded by indigenous microorganisms to carbon dioxide and water. The remedial process depends upon stimulating growth of the indigenous microorganisms by providing a carbon substrate in the form of HRC®.

The Discharger proposes to inject four pounds of HRC® per linear foot of vertical depth through nine injection points into the B water bearing zone upgradient from monitoring well MW-3B, which is the area with the highest concentrations. The WDRs require extensive monitoring to evaluate the effects of the proposed injection. When the pilot study is completed, the amendments and byproducts shall not exceed baseline levels.

DLL 9/24/03