

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0055

WASTE DISCHARGE REQUIREMENTS
FOR
JOHN TAYLOR FERTILIZERS CO.
YUBA CITY FACILITY
ENHANCED BIOREMEDIATION PROJECT
SUTTER COUNTY

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

1. John Taylor Fertilizers Co. (Discharger), a wholly-owned subsidiary of Wilbur-Ellis Company submitted a *Report of Waste Discharge* (RWD) on 10 November 2003 and a *Revised RWD* on 6 February 2004, which proposes in situ biological treatment of volatile organic compounds and nitrate by injecting Hydrogen Releasing Compound (HRC™) into groundwater at its Yuba City facility.
2. The facility (Site) is at 900 North George Washington Boulevard in Yuba City (APN 019-010-041, N121° 40' W39° 08') and is a retail agricultural chemical distribution business owned and operated by the Discharger. The property (hereafter referred to as Site) is identified on a vicinity map on Attachment A, and shown in detail on Attachment B, both of which are attached hereto and made part of this Order by reference.
3. The Site was in agricultural production until 1973, when John Taylor Fertilizers Co. purchased the property and built the agricultural chemical distribution facility. The Discharger has owned and operated the business at the Site since 1973. Wilbur-Ellis Company purchased the stock of the John Taylor Fertilizers Co. in 1999.
4. In 1998, during the course of the due diligence investigation preceding the stock transfer, the Discharger installed three shallow monitoring wells. The investigation found that the groundwater contained the volatile organic compounds (VOCs) 1,2-dichloropropane (1,2-DCP) and 1,2,3-trichloropropane (1,2,3-TCP) that are often associated with certain fumigants. The Discharger handled these fumigants in bulk at this facility between 1973 and about 1985. In 1998, MW-3 contained 11,000 ug/L of 1,2-DCP and 1,100 ug/l of 1,2,3-TCP, and MW-2 contained 320 mg/L nitrate as nitrogen (NO₃-N). In 2003, MW-3 contained 2,100 ug/l of 1,2-DCP and 340 ug/L of 1,2,3-TCP, and MW-2 contained 70 mg/L of NO₃-N. Background concentrations of NO₃-N in the shallow upgradient monitoring well (MW-1A) typically range between 26 and 39 mg/L, and in the deeper upgradient monitoring well (MW-1B) between 19 and 26 mg/L. The maximum contaminant level for NO₃-N in drinking water is 10 mg/L. The Discharger is monitoring on-site and off-site monitoring wells pursuant to existing Monitoring and Reporting Program (MRP) No. R5-2004-0815, which continues to be in effect.

5. Data obtained from grab groundwater investigations and downgradient monitoring wells show that the 1,2-DCP and 1,2,3-TCP originate in the shallow aquifer (the A-zone, from about 10 to 27 feet below ground surface [bgs]) near the former fumigant tank and enter the second groundwater aquifer (the B-zone, from about 55 to 75 bgs) downgradient of the facility. The plume extends about 2,000 feet southeast of the site in the direction of groundwater flow. Tetrachloroethene (PCE), trichloroethene (TCE), and toluene are also detected in the B-zone at concentrations of about 0.5, 2, and 1.8 ug/L, respectively. Groundwater flow direction is consistently southeasterly, and groundwater elevation varies seasonally between 10 and 20 feet bgs. The Discharger estimates that groundwater velocity is between 0.04 and 6 feet per year, based on review of stratigraphy recorded in boring logs.
6. There are about 60 domestic water supply wells within or near the footprint of the plume downgradient from the facility, and most of these wells obtain water from the B-zone. The Discharger has tested all downgradient domestic wells where access has been granted, and a number of these wells contain detectable amounts of 1,2-DCP and/or 1,2,3-TCP. The results of those tests have been reported to the property owner/occupants. At the Discharger's expense, the Discharger has supplied bottled water to the downgradient neighborhood, including properties where the domestic wells did not contain 1,2-DCP or 1,2,3-TCP. In 2002, the Discharger replaced water supply wells at 3051 and 3081 Industrial Drive with supply wells that obtain water from about 300 feet bgs. In December 2003, the Discharger made a written commitment to the City of Yuba City to finance and install infrastructure to deliver municipal water to specified downgradient properties and to destroy the domestic water supply wells at those properties. The Discharger plans to install the infrastructure and deliver municipal water to these properties in summer of 2004, pending approval from the City of Yuba City.
7. In October 2000, the Discharger implemented an in situ pilot study by injecting HRC™ into the A-zone beneath a 1,000 square-foot area near MW-3 where the 1,2-DCP concentrations were highest. HRC™ is a proprietary compound composed primarily of polylactate which promotes growth of microorganisms that degrade the VOCs. The Discharger has documented the progress of the pilot study with quarterly monitoring for a variety of metals, metabolic acids, gases, VOCs, and VOC breakdown products. The biologically produced breakdown products of 1-chloropropane and 2-chloropropane began appearing 15 months after the injection and returned to non-detectable concentrations three years after the injection, coinciding with the exhaustion of the HRC™. The HRC™ was consumed before the concentrations of VOCs were completely degraded. The strong decreasing trends in VOC concentrations suggest that with additional HRC™, the degradation will continue.
8. In November 2001, the Discharger removed about 2,000 cubic yards of soil between ground surface and groundwater that was contaminated with 1,2-DCP, 1,2,3-TCP, and nitrate. Confirmation sampling showed that the Discharger removed the 1,2-DCP and 1,2,3-TCP down to non-detectable levels as a result of the excavation.
9. As described in the *Revised RWD* and shown on Attachment B, the Discharger proposes to inject four pounds of HRC™ per vertical foot in the approximately 15-foot thick A-zone aquifer through 73 injection points spaced about five feet apart. The application quantity and spacing is

based on the combined stoichiometric demand of the target constituents and other oxidized compounds, and on experience obtained from the Discharger's pilot study. The treatment zone is expected to extend about 15 feet downgradient of the injection area, based on the results of the pilot study. Remediation of the B-zone aquifer cannot commence until the B-zone water supply wells are destroyed.

10. The Discharger also proposes to inject HRC™ off-site on properties adjacent to the southern Site boundary if the landowners grant permission. At such time, the Discharger will provide a workplan for supplemental HRC™ injection. Subject to the approval or conditional approval of the Executive Officer, this supplemental injection is authorized by and subject to the requirements of these WDRs.
11. The Discharger will install two additional A-zone monitoring wells within the injection grid, and an A-zone and B-zone monitoring well downgradient of the injection grid. Progress of the groundwater treatment will be monitored by eight A-zone wells (MW-1A, MW-2A, MW-3A, MW-6A, MW-7A, MW-8A, MW-9A, and MW-10A), and two B-zone wells (MW-1B, and MW-10B) as described in the attached MRP No. R5-2004-0055.
12. Baseline concentrations of dissolved metals (arsenic, chromium, copper, iron, and manganese), general parameters (alkalinity, ammonia, ammonium, chloride, nitrate, sulfate, and total dissolved solids), and total organic carbon will be obtained prior to HRC™ injection from monitoring wells MW-2A, MW-3A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10A, and MW-10B. The Discharger will propose baseline concentrations for these parameters, based on the pre-injection sampling results. Background concentrations will be obtained from upgradient monitoring wells MW-1A and MW-1B concurrently with the enhanced bioremediation project.
13. Microbiological degradation of VOCs such as 1,2-DCP and 1,2,3-TCP, and nitrate occur under anoxic conditions brought about by the microbial metabolism of the lactate which is slowly released by the HRC™. Lactate is oxidized, and the oxidized compounds such as oxygen, nitrate, and VOCs are reduced to carbon dioxide, nitrite, nitrous oxide, nitrogen gas, chloropropane, propene, ethane, methane, and chloride. In addition, temporary geochemical changes that occur as a result of anaerobic conditions include an increase in ferrous iron, dissolved manganese, and alkalinity and a decrease in sulfate. Geochemistry is expected to return to baseline conditions after the lactate is consumed and aerobic conditions return. The Discharger will routinely monitor for these and target constituents until geochemistry returns to baseline conditions as required in the attached MRP No. R5-2004-0055.
14. The Discharger has proposed a Contingency Plan, which will be implemented if, during the enhanced bioremediation project, an exceedance greater than 10% of baseline concentrations of chloride or total organic carbon is found in downgradient monitoring wells MW-10A or MW-10B. This allows the Discharger time to verify trends and assess the extent of an excursion before the groundwater limitation is exceeded. If chloride or total organic carbon is confirmed to exceed 10% of baseline concentrations in monitoring well MW-10A or MW-10B, the Discharger will conduct supplemental monitoring of the well exhibiting the exceedance to establish a trend and will statistically compare the trend data with trends exhibited in the corresponding

background well MW-1A or MW-1B. If a trend of exceedances is statistically confirmed, the Discharger will implement the Contingency Plan described in the Revised RWD. The Contingency Plan includes evaluating the lateral extent of the exceedance, and then restoring aerobic conditions by oxygenating groundwater or hydraulically containing the treatment zone by pumping, depending upon the nature and extent of the exceedance.

15. The enhanced bioremediation project and its associated monitoring will continue until breakdown and reaction products resulting from the HRC™ injection return to baseline conditions.

REGULATORY CONSIDERATIONS

16. The injection to 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.
17. 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.
18. Surface water drainage is to the Live Oak Canal which drains to the Sacramento River. The designated beneficial uses of the Sacramento River between Shasta Dam and the Colusa Basin Drain are municipal and domestic supply; agricultural supply; industrial service supply; power generation; navigation; water contact recreation; non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold freshwater species; spawning, reproduction and/or early development of warm and cold freshwater species; wildlife habitat; and navigation.
19. The designated beneficial uses of underlying groundwater are municipal and domestic supply, agricultural supply, and industrial service and process supply.
20. Immediately surrounding land uses are commercial, industrial, and agricultural.
21. State Board Resolution No. 68-16 (hereafter Resolution 68-16 or the “Antidegradation Policy”) requires the Regional 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 present and potential 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 No. 68-16 since (1) the purpose is to accelerate and enhance remediation of

groundwater pollution by several waste constituents and such remediation will benefit the people of the state; (2) the degradation is limited in scope and duration; (3) best practicable treatment and control, including adequate monitoring and contingency plans to assure protection of water quality, are required; and (4) the discharge will not cause water quality objectives to be exceeded beyond the treatment area or the duration of the enhanced bioremediation project as described in Finding Nos. 9, 10, and 15.

22. 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. R5-2004-0055 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharged the waste subject to this Order.

23. 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.

24. 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).

25. 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). Section 20090(d) allows exemption for a project to clean up a condition of pollution that resulted from an unauthorized release of waste based on the following:

- a. The cleanup and abatement action is under the direction of a public agency;
- b. Wastes removed from the immediate place of release will be discharged according to the Title 27 regulations; and

- c. The remedial actions intended to contain wastes at the place of release shall implement the Title 27 regulations to the extent feasible.
26. 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.
27. All the above and the supplemental information in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
28. The Discharger and interested agencies and persons were notified of the 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.
29. 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, John Taylor Fertilizers Co., and its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following while conducting the above-described groundwater treatment:

[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. 9 and 10 is prohibited.

B. Discharge Specifications

1. 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.
2. Discharge of HRC™ shall be limited to the project scope described in Finding Nos. 9 and 10.

C. Groundwater Limitations

1. During the enhanced bioremediation project, the Discharger shall not cause an increase of chloride or total organic carbon greater than 20% above baseline concentrations in MW-10A or MW-10B.
2. Effective upon completion of the enhanced bioremediation project, amendments and byproducts shall not exceed baseline concentrations in the treatment zone.

D. Provisions

1. The Discharger shall notify Board staff a minimum of one week prior to the injection of HRC™.
2. Prior to the injection of HRC™, the Discharger shall install monitoring wells MW-8A, MW-9A, MW-10A and MW-10B as shown on Attachment B and proposed in the Revised RWD. The Discharger shall obtain baseline groundwater samples from these wells in addition to MW-2A, MW-3A, MW-6A, and MW-7A, and, if still operational, the domestic well at 3105 Industrial Drive. Groundwater samples shall be analyzed for all of the compounds listed in the attached MRP No. R5-2004-0055.
3. The Discharger shall comply with the attached MRP No. R5-2004-0055, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
4. 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).”
5. The Discharger may inject additional HRC™ on properties identified as 3081, 3105, and 3137 Industrial Drive, as shown on Attachment B, under the following conditions:
 - a. The property owner grants the Discharger permission;
 - b. The domestic wells on the property have been destroyed;
 - c. The Discharger submits a work plan identifying the application points, quantity of HRC™ proposed, and proposed schedule; and

- d. The Executive Officer approves or conditionally approves the work plan.
6. 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. Within **60 days** after injection of HRC™, the Discharger shall submit an Implementation Report that shall include a description of field activities, including well installations, boring logs, quantities and locations of HRC™ injected, results of pre-injection groundwater sampling, and a table of proposed baseline concentrations.
 - b. If additional HRC™ is injected as described in Provision D.5, then within **60 days** after injection, the Discharger shall submit a Supplemental HRC™ Injection Report, including all relevant elements listed in Provision D.6.a.
 7. In the event that chloride or total organic carbon is detected at concentrations greater than 10% above baseline concentrations in MW-10A or MW-10B, the Discharger shall immediately notify Regional Board staff of the exceedance and obtain a confirmation sample from that well within **7 days** of receiving the results, and transmit the results to Board staff within **7 days** of receipt. The Discharger shall then undertake the following:
 - a. If the results confirm that chloride or total organic carbon concentrations in MW-10A or MW-10B exceed 10% above baseline concentrations, the Discharger shall evaluate trends by obtaining additional samples from the affected well and from the corresponding upgradient well MW-1A or MW-1B at about **30 days** and at about **60 days** following receipt of the confirmation sample and transmit the results to Board staff within **7 days** of receipt of each set of sample results.
 - b. If the results show that chloride or total organic carbon concentrations in MW-10A or MW-10B are statistically greater than upgradient concentrations, as determined by an approved EPA statistical method, then **within 30 days** of transmitting the results to Board staff as described in Provision D.6.a, the Discharger shall submit a work plan to implement the Contingency Plan described in the 6 February 2004 *Revised RWD* and in Finding 14.
 - c. Within **30 days** after staff concurrence with or conditional approval of the work plan, the Discharger shall implement the work plan.
 - d. Within **60 days** after implementation of the Contingency Plan, the Discharger shall submit a Contingency Plan Implementation Report.

8. 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.
9. 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.
10. 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.
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. 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 Board.
13. The Regional Board will review this Order periodically and will revise requirements when necessary, and will consider rescinding this Order when the pilot study is completed.

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 23 April 2004.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0055

FOR
JOHN TAYLOR FERTILIZERS CO.
YUBA CITY FACILITY
ENHANCED BIOREMEDIATION PROJECT
SUTTER COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring the progress of the enhanced bioremediation project. This MRP is issued pursuant to California Water Code Section 13267. John Taylor Fertilizers Co. (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. In addition to this MRP, groundwater monitoring and reporting outlined in MRP No. R5-2004-0815 is still required. The enhanced bioremediation project consists of injecting Hydrogen Releasing Compound (HRC™) into groundwater.

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 MONITORING

As shown on Attachment B, there are 10 monitoring wells (MW-1A, MW-1B, MW-2A, MW-3A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10A, and MW-10B) associated with the enhanced bioremediation project. The domestic well at 3105 Industrial Drive is also subject to this MRP until such time as it is documented to have been destroyed. Monitoring wells MW-4A, MW-4B, MW-5B, MW-6B, and MW-10C are not associated with the bioremediation project and are not subject to this MRP. The groundwater monitoring program for the 10 wells and any wells installed subsequent to the issuance of this MRP that are related to monitoring the enhanced bioremediation project, shall follow the schedule below. Sample collection and analysis shall follow standard EPA protocol, and analyses shall be completed by a State certified laboratory. Monitoring well samples shall be obtained quarterly and analyzed for the following constituents and parameters in accordance with the following table:

Table of Constituents and Methods

Constituents	Analytical Method	Maximum Detection Limit ¹
Depth to Groundwater	---	0.01 ft
pH, electrical conductivity, dissolved oxygen, oxygen-reduction potential	field instrumentation	---
Total Organic Carbon	415, 9060, or SM 5310	1,000 µg/l
Arsenic (dissolved)	D5673, 200	10 µg/l
Total Chromium (dissolved)	D1976, D5673, 200, 6010, or SM 3000	10 µg/l

Table continued on following page

Table of Constituents and Methods, con't

Constituents	Analytical Method	Maximum Detection Limit ¹
Copper (dissolved)	D1976, D5673, 200, 6010, or SM 3000	5 µg/l
Ferrous Iron (dissolved)	200, 6020, or SM 3000	10 µg/l
Manganese (dissolved)	D1976, D5673, 200, 6010, or SM 3000	10 µg/l
Carbon Dioxide (dissolved)	SM 4500 or ASTM D1945	10 µg/l
Alkalinity	SM 2320	10,000 µg/l
Chloride	9056	5,000 µg/l
Methane (dissolved)	RSK 175M or ASTM D1945	10 µg/l
Sulfate	9056 or 300	500 µg/l
Ammonia/Ammonium	SM 4500 or 350	500 µg/l
Nitrate plus Nitrite (as nitrogen)	SM 4500 or 353	500 µg/l
Total Dissolved Solids	160	--
Volatile Organic Compounds, including 1,2-Dichloropropane	8260B	0.5 µg/l
1,2,3-Trichloropropane (1,2,3-TCP)	8260B or 504.1 or Low Level GC/MS ²	0.5 or 0.02 or 0.005 ² µg/l

¹ For nondetectable results

² 1,2,3-TCP may be analyzed with Method 8260B whenever concentrations are at or above 0.5 µg/L. When 1,2,3-TCP is not detected at a detection limit of 0.5 µg/L then in the next regularly scheduled monitoring event, 1,2,3-TCP in this well shall be analyzed by Method 504.1. Similarly, when 1,2,3-TCP is not detected at 0.02 µg/L then in the next regularly scheduled monitoring event, 1,2,3-TCP in this well shall be analyzed by Low Level GC/MS.

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.

B. Quarterly Monitoring Reports

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)**. These reports may be combined with the corresponding reports required by MRP No. R5-2004-0815. At a minimum, the reports shall include:

1. Results of groundwater monitoring.
2. 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 or lack thereof with the waste discharge requirements, 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.;
3. Calculation of groundwater elevations and discussion of seasonal trends, if any;
4. A table showing well construction details such as well number, groundwater zone being monitored, coordinates (longitude and latitude), ground surface elevation, reference elevation, elevation of screen, elevation of bentonite, elevation of filter pack, and elevation of well bottom;
5. A narrative discussion of the analytical results for all groundwater locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
6. A comparison of the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
7. Summary data tables of historical and current water table elevations and analytical results;
8. A scaled map showing relevant structures and features of the facility, the injection grid, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
9. Copies of all laboratory analytical report(s) for groundwater monitoring not previously transmitted.

C. Annual Report

An annual report shall be submitted to the Board by **1 August** of each year, commencing on **1 August 2005**. This report shall contain an evaluation of the effectiveness and progress of the remediation, and may be submitted with the corresponding quarterly monitoring report. The annual report shall contain the following minimum information:

1. Tabular summaries of all data collected during the previous year, including groundwater gradient directions;
2. A graphical representation of concentrations of 1,2-DCP, 1,2,3-TCP and nitrate in monitoring wells MW-2A, MW-3A, MW-6A, MW-7A, MW-8A, MW-9A, MW-10A, MW-10B over the period of record;

3. A graphical representation of concentrations of alkalinity, total organic carbon, dissolved iron and dissolved manganese in monitoring wells MW-2A, MW-3A, MW-6A, MW-7A, MW-8A, and MW-9A;
4. An evaluation of the performance of the HRCTM and an analysis of its effectiveness in destroying the pollutants;
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;
6. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program; and
7. If desired, a proposal and rationale for any revisions to the groundwater sampling plan frequency and/or list of analytes.

A letter transmitting the 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

23 April 2004

(Date)

INFORMATION SHEET

ORDER NO. R5-2004-0055
JOHN TAYLOR FERTILIZERS CO.
YUBA CITY FACILITY
ENHANCED BIOREMEDIATION PROJECT
SUTTER COUNTY

As the result of a 1998 property transfer due diligence investigation, the Discharger discovered 1,2-dichloropropane (1,2-DCP), 1,2,3-trichloropropane (1,2,3-TCP), and nitrate in groundwater beneath its Yuba City facility. Since then, the Discharger has found 1,2-DCP and 1,2,3-TCP in groundwater extending about 2,000 feet downgradient from the facility in the shallow groundwater zone. About 60 private domestic wells are screened in the shallow groundwater zone downgradient from the Discharger's facility. Those domestic wells have been tested where access has been granted, and a number of those wells tested contained detectable amounts of 1,2-DCP and/or 1,2,3-TCP. At the Discharger's expense, the Discharger has supplied bottled water to the downgradient neighborhood, including properties where the domestic wells did not contain 1,2-DCP or 1,2,3-TCP. The Discharger has provided the City of Yuba City a letter of commitment to install the infrastructure to bring municipal water to specified properties in the downgradient neighborhood. Water delivery could commence as early as fall of 2004.

In 2000, the Discharger implemented a pilot study injecting HRC™ into groundwater to evaluate its effectiveness in degrading 1,2-DCP, 1,2,3-TCP, and nitrate. In 2001, the Discharger removed soil containing 1,2-DCP and 1,2,3-TCP. The three-year pilot study shows significant decreases in these constituents. The decreases appear to be related both to the source area removal and the HRC™ injection.

During this enhanced bioremediation project, the groundwater limitation expressed for downgradient monitoring wells MW-10A and MW-10B prohibits an exceedance greater than 20% above baseline concentrations of dissolved metals, general parameters, or total organic carbon. The Contingency Plan is triggered if these analytes exceed 10% above baseline concentrations. This allows time for the Discharger to verify trends and assess the extent of an excursion before the groundwater limitation is exceeded.

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