

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

ORDER NO. R8-2016-0049

WASTE DISCHARGE REQUIREMENTS
FOR
***IN SITU* REMEDIATION OF GROUNDWATER**
FORMER TRIUMPH PROCESSING– EMBEE DEVISION, INC.
2136 South Hathaway Street Santa Ana

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Water Board), finds that:

1. Discharges of petroleum hydrocarbon compounds, volatile organic compounds (VOCs), heavy metals, pesticides, perchlorate, 1,4-dioxane and other types of contaminants have degraded groundwater at various sites throughout the Santa Ana Region, and have impacted or are threatening to impact beneficial uses of groundwater.
2. Groundwater cleanups at such sites may be accomplished via physical removal and treatment of site contaminants, or may employ the addition (discharge) of chemicals and other reactive materials (amendments) to soil and groundwater (*in situ*), to promote remediation. A person or entity applying or proposing to discharge such amendments to soil or groundwater to promote groundwater remediation within a specified treatment zone is referred to as a Discharger. For purposes of this Order, the Discharger is identified as Former Triumph Processing-Embee Division (Embee).
3. *In situ* treatment includes processes such as oxygen enhancement, chemical oxidation, chemical reduction, biostimulation (addition of nutrients to enhance biodegradation), bioaugmentation (introducing appropriate bacteria), and biogeochemical transformation. The application of such amendments can be active, with hydraulic control of the treatment zone as the amendments are added to the extracted groundwater and recirculated through the subsurface, or passive, with the amendments injected into the treatment zone without hydraulic control.
4. This Order includes Waste Discharge Requirements (WDRs) to regulate the specified discharge for in situ bioremediation/reduction of the specified waste constituents, namely VOCs, hexavalent chromium, and perchlorate in groundwater at the Site. Although the California Water Code (CWC) Section 13263(i) and Regional Board Order R8-2013-0029 previously established criteria to be met in order to prescribe general WDRs, the Regional Water Board finds that, due to the comingled nature of the plume of groundwater contamination in the vicinity of the Site (i.e. multiple sources of contamination), and a lack of appropriate locations to meet the specific requirements of the Compliance Points, individual WDRs are being prescribed herein to regulate the discharge at the Site.
5. The requirements for this *in situ* treatment program were developed based upon the proposed scope of work, background information, and site specific data presented in the Report of Waste Discharge (ROWD), *WDR Permit Application Package, Triumph Processing-Embee Division, Inc.* (dated January 13, 2016) and in electronic submittals to

Regional Water Board staff from January to June 2016.

6. The discharge covered by this Order has a site specific groundwater monitoring and reporting program, **Monitoring and Reporting Program No. R8-2016-0049**, that complies with requirements prescribed in this Order and will be subject to change by the Executive Officer.
7. For purposes of this Order, the covered discharge includes injection of chemical amendments with the following specifications into the **Existing Interim Measure Area** of the Site (attached Figure 2): A total of 268,800 gallons of solution is permitted to be injected into 56 injection wells during the remediation period. The injection volume per each well is 4,800 gallons of solution, including 480 gallons of Soybean Oil (10% by volume solution), 192 pounds (lbs) Sodium Bicarbonate (0.48% solution), 9.6 gallons of P & G Dawn Ultra Original (Surfactant [0.2% by volume solution]), 9.6 gallons of Accelerite[®] (0.2% by volume solution), 10 lbs of Calcium Polysulfide (0.025 % solution). The solution will be injected into 41 injection wells screened in the shallow water-bearing zone, IW-3A to IW-43A – screened approximately 10 to 30 feet below ground surface (bgs) and 15 injection wells in the deep water-bearing zone, IW-19C to IW43C (only odd well numbers) and IW-61C to IW 63C (screened approximately 50 to 60 feet bgs). The injection will be conducted at a flow rate of 1 to 5 gallons per minute (gpm) and a maximum injection pressure of 10 pounds per square inch (psi).
8. For purposes of this Order, the covered discharge includes injection of chemical amendments with the following specifications into the **Expansion of Interim Measure Area** at the Site (attached Figure 2): A total of 345,600 gallons of solution is permitted to be injected into 32 injection wells during the remediation period. The injection volume per each well is 10,800 gallons of solution, including 1,080 gallons of Soybean Oil (10% by volume solution), 432 lbs Sodium Bicarbonate (0.48% solution), 21.6 gallons Surfactant (0.2 % by volume solution), 21.6 gallons of Accelerite[®] (0.2% by volume solution), 5 lb of Rhodamine Tracer (55 ppm solution), and 0.13 gallons of KB-1 plus. The solution will be injected into 17 injection wells screened in the shallow water-bearing zone, IW-44A to IW-60A (screened approximately 11 to 31 or 30 to 45 ft bgs) and 15 injection wells screened in the deep water-bearing zone, IW-44C, IW-46C to IW-54C, and IW56C to IW-60C (screened approximately 45 to 70 feet bgs). The injection will be conducted at a flow rate of 1 to 5 gpm, and a maximum injection pressure of 10 psi.
9. For purposes of this Order, the covered discharge includes injection of chemical amendments with the following specifications into the **Pilot Study Area** at the Site (attached Figure 2): A total of 3,000 gallons of solution is permitted to be injected into 6 injection points. The injection volume per each injection point includes 50 gallons of Soybean Oil (10% by volume solution), 20 lbs Sodium Bicarbonate (0.48% solution), 1 gallon Surfactant (0.2% by volume solution), 1 gallon of Accelerite[®] (0.2% by volume solution), and 10.4 lbs of Calcium Polysulfide (0.25% solution). The solution will be injected into six injection points, “a” through “f” (depth of 50 to 55 feet bgs). The injection will be conducted at a flow rate of 2 to 5 gpm, and an injection pressure of 1 psi per foot of depth (i.e. maximum of 55 psi).
10. The proposed discharge of chemical amendments affects the quality of waters of the state (i.e. groundwater), and is therefore subject to WDRs, in accordance with California Water Code (CWC) Section 13263. With proper management as required by this Order; however, the potential effects will be localized, of short duration, and are not expected to unreasonably impair any existing or prospective beneficial uses of groundwater.

11. State Water Resources Control Board (State Water Board) Resolution No. 68-16 requires that in regulating the discharge of waste, the high quality waters of the State shall be maintained unless it is demonstrated that any change in quality will be consistent with the 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 water quality control policies. The temporary degradation allowed by this Order, within the *in situ* treatment zone, is consistent with Resolution No. 68-16 because (a) the purpose of discharging amendments to the groundwater is to accelerate and enhance remediation of groundwater pollution, and such remediation will benefit the people of the State; (b) the degradation is limited in scope and duration; (c) best practicable treatment and control, including adequate monitoring and hydraulic control to assure protection of water quality, are required by this Order; and (d) the proposed discharge is not anticipated to cause water quality objectives (WQOs) to be exceeded beyond the observation monitoring well network, and potential increases in concentrations above WQOs within the zone of distribution are expected to be temporary, and not result in any long-term deleterious effects on water quality.
12. This Order is consistent with State Water Board Resolution No. 92-49: "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Section 13304 of the Water Code" by conforming with section III(F)(2)(b). This Order is also consistent with other applicable water quality policies and procedures, and regulations adopted by the State Water Board.
13. The Regional Water Board, acting in accordance with CWC section 13244, adopted a revised Water Quality Control Plan for the Santa Ana River Basin (hereinafter Basin Plan) on March 11, 1994. The Basin Plan was subsequently approved by the State Water Board on July 21, 1994. Subsequent revisions to the Basin Plan have also been adopted by the Regional Water Board and approved by the State Water Board as recently as February 2016. The Basin Plan identifies beneficial uses and WQOs for waters within the Santa Ana Region, including Groundwater Management Zones (GMZs). The requirements contained in this Order are consistent with the Basin Plan
14. In accordance with Section 2200, Title 23 of the California Code of Regulations (CCR), a discharger for whom WDRs have been prescribed is required to submit an annual fee to the State Water Board. The annual fee is based on (1) the threat to water quality and (2) the complexity of the discharge, in accordance with the ratings in the annual fee schedule contained in section 2200. It is expected that the discharge covered by this Order will have a threat to water quality of Category 3 and a complexity rating of B, for a combined rating of 3-B. Category 3 is the lowest threat to water quality category, and Category B is the middle complexity rating, for dischargers that have a physical, chemical or biological treatment system, and do not meet the higher complexity rating definition for Category A. Discharges with a rating of 3-B contain pollutants that could degrade water quality or cause a minor impairment of designated beneficial uses within the treatment zone of the receiving groundwater.
15. The Regional Water Board is the lead agency pursuant to the California Environmental Quality Act (CEQA; Public Resources Code, Section 21100 et seq.). The issuance of WDRs for the cleanup of defined groundwater contamination plume(s) at existing facilities is exempt from CEQA in accordance with Section 15301, Article 19, Chapter 3, Division 6, Title 14 of CCR. Additionally, the actions authorized by these WDRs are expected to cause only minor alterations to land, and as such, are exempt from CEQA in accordance with Section

15304, Article 19, Chapter 3, Division 6, Title 14 of CCR.

16. The WDRs prescribed under this Order are not intended to alter or supersede any existing requirements of local governmental agencies.
17. The Regional Water Board has notified interested agencies and persons of its intent to prescribe WDRs for the discharge associated with Embee's *in situ* bioremediation/reduction program, and has provided them with an opportunity to submit their written views and recommendations.
18. The Regional Water Board in a public meeting held on September 16, 2016 heard and considered all comments pertaining to the prescribed WDRs.

IT IS HEREBY ORDERED that, pursuant to Section 13263 of the CWC, Embee is authorized to discharge under this Order and, in order to meet the provisions contained in Division 7 of the CWC, and regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. The discharge of wastes in a manner other than as described in this Order is prohibited.
2. The discharge of treated or untreated solid or liquid waste to a navigable waters or tributaries of navigable waters is prohibited, unless that discharge is covered under separate NPDES permits issued by the Regional Board.
3. The use of any amendment other than compounds mentioned in Sections 4, 5, and 6 above is prohibited.
4. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.
5. Discharges to groundwater and the surrounding geological formation that are conducted in a manner that increases the mobility and/or extent of the contaminant plume through fracturing of the geologic formation are prohibited. Additionally, fracturing of an aquitard that separates two distinct water-bearing zones is prohibited under any condition.

B. DISCHARGE LIMITATIONS AND SPECIFICATIONS

1. The amendment injection program shall be designed and implemented in such a manner as to minimize or prevent the surfacing of wastes or an overflow of wastes or chemicals used in the treatment process. Any injection that results in excessive surfacing of waste shall be discontinued, and measures shall immediately be taken to eliminate further surfacing.
2. The discharge of amendments shall not cause total dissolved solids (TDS) to exceed the concentrations specified in Table 4-1 of the Basin Plan for the Orange County Groundwater Management Zone (GMZ), at any location outside the observation monitoring well network defined in the Monitoring and Reporting Program issued by the Executive Officer.
3. The discharge of amendments shall not cause nitrogen as nitrate-nitrogen ($\text{NO}_3\text{-N}$) to

exceed the concentrations specified in Table 4-1 of the Basin Plan for the Orange County GMZ, at any point outside the observation monitoring well network defined in the Monitoring and Reporting Program.

4. The discharge of amendments shall not cause the pH of the receiving groundwater to exceed the range of 6 to 9, at any point outside the observation well network defined in the Monitoring and Reporting Program.
5. The discharge of amendments shall not cause the remediation-target constituents, including their intermediate degradation products, to exceed background concentrations at any location outside of the observation monitoring well network defined in the Monitoring and Reporting Program.
6. The discharge of amendments shall not cause any other applicable WQOs specified in the Basin Plan to be exceeded in the affected groundwater at any point outside the observation monitoring well network defined in the Monitoring and Reporting Program.
7. The discharge shall not cause groundwater to contain taste or odor producing substances at concentrations that cause a nuisance or adversely affect beneficial uses at any location outside the observation monitoring well network defined in the Monitoring and Reporting Program.
8. The discharge of amendments to property that is not owned or under the control of the Discharger is prohibited. The property under the control of the Discharger includes the horizontal borders of the treatment zone where the Discharger holds an agreement with the overlying property owner for purposes of investigation and remediation.
9. The discharge of amendments shall not cause the concentrations of chemical constituents of the receiving groundwater designated as domestic and municipal supply to exceed State or Federal Drinking Water Standards at any location outside the observation monitoring well network.
10. The monitoring program shall address changes in geochemistry that may alter the oxidation/reduction state of one or more constituents and consequently result in the production of non-desirable compounds such as hexavalent chromium, during the oxidation or reduction process in the *in situ* remediation under these WDRs.
11. The Executive Officer is hereby authorized to revise the information included in the Monitoring and Reporting Program, as deemed appropriate.

C. PROVISIONS

1. Neither the treatment nor the discharge of waste shall create a pollution, contamination or nuisance, as defined by Section 13050 of the CWC.
2. A copy of this Order shall be available at all times to operating personnel.
3. The Discharger shall allow Regional Water Board staff to:
 - (a) Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order,

- (b) Have access to and copy, at reasonable times, any records that must 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 purposes of assuring compliance with this Order or as otherwise authorized by the CWC, any substances or parameters at any location.
4. A Discharger who intentionally or negligently violates this Order shall be liable civilly in accordance with CWC Section 13350.
5. The CWC provides that any Discharger failing or refusing to furnish technical or monitoring program reports, as required by this Order, or falsifying any information provided in the monitoring reports, is guilty of a misdemeanor and is subject to a civil liability in accordance with CWC Section 13268.
6. The Discharger shall report any noncompliance that may endanger health or the environment. Any such information shall be provided orally or by email to: info8@waterboards.ca.gov to the Regional Water Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral or the e-mail report has been received within 24 hours.
7. The Discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting 'from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
8. The Discharger shall furnish, under penalty of perjury, technical monitoring program reports; such reports shall be submitted in accordance with specifications prepared by the Executive Officer, which specifications are subject to periodic revisions as may be warranted (CWC Section 13267). This includes the Monitoring and Reporting Program that the Executive Officer issues to each Discharger, in accordance with this Order.
9. Where the Discharger becomes aware that it failed to submit any relevant facts in a ROWD or submitted incorrect information in a ROWD or in any report to the Regional Water Board, it shall promptly submit such facts or information.
10. (a) All reports of waste discharge submitted to the Regional Water Board pursuant to CWC Section 13260 shall be signed and certified as follows:
 - i. For a corporation – by a principal executive officer or at least the level of vice president,
 - ii. For a partnership or sole proprietorship – by a general partner or the proprietor, respectively

- iii. For a municipality, state, federal, or other public agency – by either an executive officer or a ranking elected official.
- (b) All other reports required by this Order and other information required by the Regional Water Board shall be signed by a person designated in paragraph (a) of this provision, or by a duly authorized representative of that person. An individual is a duly authorized representative only if all of the following are true:
 - i. The authorization is made in writing by a person described in paragraph (a) of this provision,
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, and
 - iii. The written authorization is submitted to the Regional Water Board.
- (c) Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

11. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, State or local laws, nor create a vested right for the Discharger to continue the discharge.
12. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
13. This Order becomes effective on the date of adoption by the Regional Water Board. This Order is in effect until rescinded by the Regional Water Board. Coverage under this Order may be terminated by the Executive Officer at any time upon giving reasonable notice to the Discharger.
14. The discharger shall take all reasonable steps to comply with the requirements of the United States Environmental Protection Agency Underground Injection Control program, specified in the Code of Federal Regulation, Title 40, Part 144.12(a).

D. MONITORING AND REPORTING REQUIREMENTS

1. The Executive Officer is hereby authorized to prescribe a Monitoring and Reporting Program, as he deems appropriate.
2. The Discharger shall submit technical monitoring reports to the Regional Water Board in accordance with the Monitoring and Reporting Program specified by the Executive

Officer and shall provide other reports as requested by the Executive Officer.

I, Kurt V. Berchtold, Executive Officer, do hereby certify that the forgoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on September 16, 2016.

Draft

Kurt V. Berchtold
Executive Officer

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