



Department of Toxic Substances Control

Matthew Rodriguez
Secretary for
Environmental Protection

Barbara A. Lee, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Edmund G. Brown Jr.
Governor

April 08, 2015

Mr. John H. FitzSimons
Kearney-KPF
Patterson Planning
2515 South Road, 5th Floor
Poughkeepsie, NY 12601

SECOND NOTICE OF DEFICIENCY, POST-CLOSURE PERMIT RENEWAL APPLICATION, FORMER KEARNEY-KPF FACILITY, STOCKTON, CALIFORNIA, US EPA ID. NO. CAD981429715

Dear Mr. FitzSimons:

This Notice of Deficiency (NOD) is in response to the revised post-closure permit renewal application submitted to the Department of Toxic Substances Control (DTSC) for the former Kearney-KPF facility located in Stockton, California. The application was prepared by DUDEK and Associates, Inc. and is dated March 4, 2015.

This NOD consists of two parts, this letter, and memorandums submitted by DTSC's Geological Service Unit (GSU) and Human and Ecological Risk Office (HERO). The memorandum from GSU focuses on the groundwater monitoring plan, also referenced as the Sampling and Analysis Plan (SAP) and Statistical Evaluation Plan (EAP). The memorandum from HERO focuses on Water Quality Protection Standard (WQPS). DTSC found following deficiencies:

1. Application Part A, page 3, section 8: Permitted unit in the Kearney is groundwater treatment system. UV/OX and air stripper should be specified in the form as 'Other Treatment', process code 'T04'.
2. There are two 'Figure B-1c'. The site topographic map should be 'Figure B-1d'.
3. For the WQPS concentration limits, please be advised, as per the attached HERO memorandum, the standards should be updated. Please update data on Table B-1 in the Application and Table 1 of the SAP. HERO recommends updating the WQPS to use human health risk-based groundwater concentrations.

Mr. FitzSimons
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4. Please review attached GSU memorandum and update accordingly through Application Part B.

Please revise the Application according to all comments in the NOD. Please submit two copies of the revised Application within 30 days from the date of this letter.

If you have any questions about this letter, please contact me at hkang@dtsc.ca.gov or (916) 255-6522.

Sincerely,



Hai-Yong Kang
Office of Permitting

cc:(via e-mail)

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MEMORANDUM

TO: Hal-Yong Kang
Office of Permitting
Hazardous Waste Management
8800 Cal Center Drive, 2nd Floor
Sacramento, CA 95826-3200

FROM: Karen W. DiBiasio, Ph.D. *Karen W. DiBiasio*
Staff Toxicologist
Human and Ecological Risk Office
Brownfields and Environmental Restoration Program

DATE: December 22, 2014

SUBJECT: KEARNEY-KPF FACILITY, STOCKTON
POST CLOSURE PERMIT RENEWAL
PCA Code: 25035 Site Code: 100082 WP: 33 MPC: 6

DOCUMENT REVIEWED

Per your October 14, 2014 request, HERO reviewed the June 2014 "Post-Closure Permit Renewal Application, Former Kearney-KPF Facility" prepared by DUDEK Engineering and Environmental in Encinitas, California.

BACKGROUND

The Human and Ecological Risk Office (HERO) was requested to provide continuing toxicology and risk assessment support for the former Kearney-KPF facility in Stockton, California. The Post-Closure Permit for corrective action is based on groundwater impacted by chlorinated volatile organic compounds (VOCs) and 1,4-dioxane. This 12.6 acre site formerly manufactured high-voltage switches using silver plating and galvanizing techniques. Other operations included a foundry, beryllium annealing/molding/lathing area, machine shops, paint shops, welding shops, assembly lines and a quality control testing laboratory. Pond 1 and the adjacent dry well received acid waste stream from galvanizing which reportedly consisted of water, muriatic acid, lead, and zinc. Pond 2 North received waste from silver plating which used first trichloroethylene (TCE) then later 1,1,1-trichloroethane (1,1,1-TCA). Pond 2 South received cooling water from the foundry. TCE, 1,1,1-TCA, and

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1,1-dichloroethylene (1,1-DCE) were found in the on-site well used for extracting groundwater for cooling. In addition, tetrachloroethylene (PCE) from welding operations was discharged to ground surface near the current location of well KI-6, adjacent to southeast corner of Pond 2 North. Also, degreaser bottoms were placed on the soil in an area along the east side of pond 2. Other potential source areas include the drum storage area, the foundry sand spreading area south of the foundry, and the trash burning pit. The facility operated from 1951 until mid-1990's, with discharges to ponds and ground surface ceasing in 1986. In 1988, a RCRA Part A permit application was submitted for closure of two surface impoundments. Waste ponds were closed in 1991. Soil from pond areas had metals in excess of hazardous waste classification criteria for Total Threshold Limit Concentrations (TTLCs) and was excavated and disposed off-site; however the cleanup criteria and confirmation sample results were not provided. Pond excavations were used to bury grass, debris, wood, concrete, pipe, and tree stumps, then closed with an engineered clay cover consisting of 12 inches each of sand, compacted clay, then sandy silt from the retention/infiltration basin in the southwest corner of the site. In 1999, the site was sold to Alpine Builders, Inc. and development began for mixed commercial uses. Alpine Builders, Inc. rents space to various businesses including trucking companies, truck repair, machining, equipment storage, auto repair, and construction businesses. Currently on-site are an office building, several carports, and several manufacturing buildings (the former manufacturing plant, former warehouse, former foundry, and former galvanizing building; in addition, three raised buildings (one currently occupied) located over the former ponds and two trailers were brought on-site by Alpine for use as offices.

Groundwater sampling and remediation continues under the DTSC Post-Closure permit. Multiple zones of groundwater exist at the site. Groundwater flow in the shallow zone varies from southwest to northeast, depending on local pumping. The shallow zone of groundwater is currently at 50 ft below ground surface (bgs). Groundwater shallow zone contaminants include 1,4-dioxane, PCE, TCE, 1,1-DCE, and 1,1-dichloroethane (DCA) at concentrations above the water quality protection standards established for this site. Currently, a Land Use Covenant prohibits the use of groundwater, except for construction dewatering. Groundwater extraction and treatment began in 1993 in the deep and intermediate zones, was suspended in 1998 with the detection of 1,4-dioxane, and resumed in 2003 with the addition of ultraviolet/oxidation units to treat 1,4-dioxane. In March 2012, the groundwater extraction and treatment system was shut down to evaluate potential rebound. DTSC Geological Services Unit recommended in their October 27, 2014 memorandum to immediately resume groundwater extraction and treatment due to plume expansion and rebounding with increasing concentrations of contaminants in groundwater demonstrated in recent monitoring events.

Most recently, HERO has provided support in the development of the *Soil Gas Sampling Work Plan* in a September 19, 2013 memorandum.

SCOPE OF REVIEW

The intent of the Post-Closure Permit renewal is to convert the corrective action from groundwater pump and treat to monitored natural attenuation. Additionally, the permit incorporates a proposed process for termination of corrective action upon achievement of Water Quality Protection Standards (WQPSs).

HERO's review was limited to aspects related to human health risk assessment (HHRA) and protection of human health.

GENERAL COMMENTS

1. Feasibility of MNA: The document did not provide any evidence on the feasibility of natural attenuation of chlorinated VOCs and 1,4-dioxane in groundwater at the site. HERO defers to DTSC Geological Services Unit and DTSC Permitting Project Management Staff to ascertain that site conditions are amenable for naturally attenuating chlorinated VOCs and 1,4-dioxane.
2. Toxic Daughter Products: The document did not address the formation of degradation products during natural attenuation. HERO recommends revision to the document to incorporate discussion on formation of more toxic daughter products, such as the human carcinogen vinyl chloride.

SPECIFIC COMMENTS

1. Previous HHRA: Page 3, Section A-4, Post-Closure Notices: Please revise the text to reflect that the HHRA evaluated in 2003 by HERO (formerly HERD), was limited to exposures from soil in the ponds areas and that a Land Use Covenant was not required for the continued commercial/industrial use of the property. Previously, HERD reviewed the soil assessment reports and a soil human health risk assessment for on-site workers and off-site residents for the pond areas. HERD concluded that based on soil data, with no groundwater or soil gas evaluated in the risk assessment, land use restriction was not required for the current use of the property (HERD, 2003).
2. Groundwater Concentrations: Page 12, Section G-1(d), Nature and Extent of Plume: HERO recommends revision of the text from only discussing the most recent sampling event to including the maximum concentration detected over the four rounds of sampling in 2013. For HHRA purposes, four rounds of groundwater sampling are considered to determine reasonable maximum exposure point concentrations, not only the most recent round.
3. Statistical Evaluation: Page 17, Section G-1(l), Statistical Evaluation Plan: HERO did not review Appendix F with the complete details on the Statistical Evaluation Plan, however HERO cautions that four rounds of groundwater data, not just the most recent round, is recommended by HERO for ensuring protectiveness of human health.

4. Water Quality Protection Standards (WQPSs): Table B-1: The WQPSs are higher than current groundwater risk-based screening level (RBSL) concentrations for safe use as drinking water (DTSC Human Health Risk Assessment Note 3 and USEPA Regional Screening Levels [RSLs; November 2014] for tap water) for chloroform, 1,1-DCA, 1,2-DCA, 1,2-DCE (total), PCE, 1,1,2-TCA, TCE and 1,4-dioxane. As presented in the table below, chemicals present in groundwater during 2013 at concentrations above screening levels include chloroform, PCE, TCE and 1,4-dioxane. As long as the LUC remains in place to prohibit use of the groundwater as a drinking water source, the risks from potential exposures to groundwater chlorinated VOCs and 1,4-dioxane are below regulatory levels of concern both from potential indoor air vapor intrusion (HERO's analysis available upon request) and ingestion during domestic or other drinking water uses. HERO recommends updating the WQPSs to use human health risk-based groundwater concentrations protective for a risk of 1×10^{-6} and hazard of 1.0.

| Contaminant | WQPS* ($\mu\text{g/l}$) | RBSL ($\mu\text{g/l}$) | Maximum Groundwater Concentration in 2013 ($\mu\text{g/l}$) |
|--------------------|------------------------------|--------------------------|--|
| Chloroform | 6 | 0.22 | 4.1 |
| 1,1-DCA | 5 | 2.7 | 1.1 |
| 1,2-DCA | 0.4 | 0.17 | <0.4 |
| 1,1-DCE | 6 | 280 | 17 |
| 1,2-DCE (Total) | 70 | 36 | <0.5 |
| Methylene Chloride | 5 | 11 | 1.2 |
| PCE | 0.7 | 0.1 | 18 |
| 1,1,1-TCA | 200 | 8000 | <0.5 |
| 1,1,2-TCA | 0.6 | 0.28 | <0.5 |
| TCE | 3 | 0.49 | 7.8 |
| 1,4-Dioxane | 3 | 0.78 | 30 |

*WQPS are those recommended by Kearney KPF

CONCLUSIONS

HERO reviewed the October 14, 2014 request, HERO reviewed the June 2014 "Post-Closure Permit Renewal Application, Former Kearney-KPF Facility". HERO recommends some revisions to the document as described above, including updating the WQPSs to use human health risk-based groundwater concentrations protective for a risk of 1×10^{-6} and hazard of 1.0.

Please contact me at (916) 255-6633 or Karen.DIBlasio@dtsc.ca.gov if you have any questions.

Hai-Yong Kang
December 22, 2014
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Human and Ecological Risk Division (HERD), 2003. *Review of Kearney-KPF Facility Documents, Stockton, California*. Memorandum to Mr. Doug O'Neal from Dr. David Berry. March 28, 2003.

Reviewed by: Farah Esfandiari, MPH, Ph.D. 
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Concur: Brian Endlich, Ph.D. 
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MEMORANDUM

TO: Hai-Yong Kang, Ph.D.
Hazardous Substances Engineer
Hazardous Waste Management Program

FROM: Lora Kiger Jameson, P.G. *Lora Jameson*
Engineering Geologist, Sacramento Geological Services Unit
Brownfields and Environmental Restoration Program

INTERNAL PEER REVIEW: Dan Gallagher, P.G., C.E.G. *Lora Jameson for*
Senior Engineering Geologist, Sacramento Geological Services Unit
Brownfields and Environmental Restoration Program

DATE: April 8, 2015

SUBJECT: REVISED POST-CLOSURE PERMIT RENEWAL APPLICATION
KEARNEY-KPF, STOCKTON, SAN JOAQUIN COUNTY
25035/100082-33/43-HWMP WR: 20029077

DOCUMENT REVIEWED

Post-Closure Permit Renewal Application, Former Kearney-KPF Facility (CAD9814219715).
Prepared by Dudek and Associates, Inc. (Dudek). Revised March 2015. (Part B Application)

INTRODUCTION

The Sacramento Geological Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) has reviewed the revised Part B Application for the former Kearney-KPF facility in Stockton, California (the site). If you have any questions or comments regarding this memorandum, please contact Lora Jameson at (916) 255-6523 or lora.jameson@dtsc.ca.gov.

The current DTSC post-closure permit was issued in 2004 and included corrective action by groundwater extraction and treatment using ultraviolet oxidation and air stripping to remove volatile organic compounds (VOCs) and 1,4-dioxane from groundwater. The system was shut down in 2012 to evaluate for rebound in groundwater concentrations. In accordance with the current permit, groundwater extraction was resumed in January 2015.

An initial Part B Application was submitted to DTSC in June 2014 for renewal of the DTSC post-closure permit. GSU provided comments on the initial Part B Application in a memorandum dated November 7, 2014, with the GSU comments transmitted to the Permittee (Kearney) in the first Notice of Deficiency (NOD) dated December 19, 2014. Kearney revised the Part B Application in response to the first NOD.

The revised Part B Application:

- 1) Proposes to continue corrective action by groundwater extraction and treatment until the water quality protection standards (WQPSs) have been met.
- 2) Includes termination of groundwater monitoring after the WQPSs have been met for three years.
- 3) Provides the information necessary for implementing sampling, analysis, operations, and maintenance of the proposed monitoring programs. This information is included in the Part B Application as the following:
 - Appendix D - Water Quality Sampling and Analysis Plan (SAP), which consists of a Field Sampling Plan (FSP) and a Quality Assurance Project Plan (QAPP).
 - Appendix H – Statistical Evaluation Plan (SEP)

GSU COMMENTS AND RECOMMENDATIONS

General Comments on the revised Part B Application

- 1) Termination of groundwater monitoring. The document repeatedly states that groundwater monitoring will continue until the water quality protection standard (WQPS) is met for a period of three consecutive years, after which groundwater monitoring will be terminated at the site in accordance with 66264.90(c). This approach, as written in the Part B Application, conflicts with the RCRA groundwater monitoring regulations. See Title 22, Article 6 for more information.

Pursuant to 66264.90(c)(2), waste residues and/or contaminated environmental media remain at the site at closure. Accordingly, Kearney is required to conduct post-closure monitoring for the duration of the post-closure period when waste or contaminated media exists in the subsurface. Once corrective action is complete, the monitoring program should revert to a detection monitoring program, per 66264.100(g). Kearney should revise the Part B Application to remove all references to terminating groundwater monitoring after meeting the water quality protection standard for three years. This includes text in sections A-3 (multiple locations), C, E-1, G-1(g), M-5, and Table E-1a.

- 2) Phases of groundwater monitoring. Groundwater monitoring at the site should be split into three phases:
 - Monitoring associated with active groundwater extraction (i.e., active corrective action),
 - Rebound monitoring (i.e., a monitored phase of corrective action to verify that additional active corrective action measures are not necessary), and
 - Post-rebound monitoring (i.e., corrective action is complete and the site can return to detection monitoring):

Currently, the Part B Application includes monitoring for only the active groundwater extraction phase. The document does not include information for the rebound phase nor does it include the procedures for detection monitoring once corrective action is considered complete. This information should be added.

In addition, once in the rebound phase, there are no triggers for when groundwater extraction and treatment would need to be resumed. These triggers should be added to the program.

3) Statistics to terminate groundwater extraction. The Part B Application proposes to terminate groundwater extraction and treatment when concentrations of constituents of concern (COCs) are below their respective concentration limits (CLs) based on the procedures in the SEP. The SEP outlines three statistical approaches:

- Case 1: parametric testing with no trends in the data and less than 15% non-detects with a minimum of four measurements,
- Case 2: parametric testing with a trend in data and less than 15% non-detects with a minimum of eight measurements, and
- Case 3: non-parametric testing with confidence intervals for greater than 15% non-detects with a minimum of five measurements.

There are multiple issues with the approach presented in the Part B Application and SEP:

- The SEP describes the procedures only for terminating the active groundwater extraction phase and should be revised to include data evaluation procedures for the second and third phases (rebound and post-rebound, respectively).
- Concentration data collected while the groundwater extraction system is pumping are not representative of ambient groundwater concentrations once the groundwater extraction system is shutdown. Therefore, statistical evaluation(s) are needed for the rebound phase. Given that it took several years for rebound to be observed during the 2012-2014 study, the rebound phase should be of sufficient duration and with a sufficient number of sampling events to account for variability in groundwater flow directions and changes in groundwater elevations.
- The text does not indicate if each groundwater extraction well will be evaluated independently of other extraction wells. In addition, the text does not indicate if extraction wells can be shutdown independently. The Part B Application should be revised to allow for partial shutdown of the extraction well field, which will allow for targeted extraction in the recalcitrant areas of the site.
- The SEP does not indicate when the SEP procedures will be implemented. The SEP should identify the frequency that the statistical procedures will be followed. One option is to provide a decision tree for when the data will be evaluated statistically. Otherwise, there will be the expectation that the SEP will be implemented for each monitoring event.
- The text does not indicate if the SEP is applicable only to extraction wells or includes monitoring wells. GSU recommends that concentrations and trends in both extraction and monitoring wells be evaluated with the SEP.
- The SEP would benefit from example calculations for each of the three cases to demonstrate applicability of the statistical procedures to a site-specific data set.
- The SEP should include technical justification for the number of measurements for each case. For example, Case 1 requires a minimum of four measurements and Case 3 requires a minimum of five measurements. The basis for the difference should be provided.
- Statistical evaluations should exclude groundwater data that may be temporarily biased low due to soil vapor extraction activities conducted from December 2014 to March 2015.

- 4) Concentration limits. Kearney revised the CLs to be equal to the Maximum Contaminant Level (MCL). However, Kearney did not address the NOD comment regarding CLs, which was to revise the CLs to human health risk-based concentrations protective for a risk of 1×10^{-6} and a hazard of 1.0. Kearney should revise the Part B Application to provide CLs that are the lower of the MCLs or the risk-based values (risk of 1×10^{-6} and a hazard of 1.0). As stated in 66264.94(d), CLs greater than background shall consider proximity and withdrawal rates of groundwater users and potential health risks caused by human exposure to waste constituents. In addition, the current California notification level for 1,4-dioxane is $1 \mu\text{g/L}$ ¹, not $3 \mu\text{g/L}$ as indicated in the Part B Application.
- 5) Sources of contamination. The conceptual site model for the Kearney site shows the former ponds as being the only source of VOCs in groundwater. Other sources exist, as evidenced by the distribution of soil gas concentrations in the 1989 and 2013 soil gas surveys. The 1989 and 2013 shallow soil gas concentrations are higher adjacent to the former manufacturing building, near the location of the drain that discharged waste. The 2013 deeper soil gas data also shows the highest soil gas impacts adjacent to the former manufacturing building. In addition, the subsurface below the former manufacturing building and former plating activities have not been characterized. The conceptual site model should be updated and text in Sections A-3, B-1, G-3, and H of the Part B Application should be revised accordingly.

Releases below and adjacent to the former manufacturing building should be monitored, investigated, and remediated under the DTSC permit, consent agreement, or enforcement order with Kearney.
- 6) Risk Assessment. Multiple locations of the Part B Application discuss the results of the soil vapor survey. DTSC has not provided comments on the soil gas survey and cannot concur at this time with the conclusions regarding the absence of risk from soil and soil gas provided in Sections A-3, D-1, G-3, H, and M-4 of the Part B Application.
- 7) Compliance with WDR. Changes to the monitoring program as indicated in the Part B Application are not in accordance with the requirements set forth in RWQCB MRP 5-01-269 and RWQCB MRP R5-2003-0838. Therefore, Kearney should obtain prior RWQCB approval of such changes.

Specific Comments on the Revised Part B Application

- 8) Constituents of Concern. The Part B Application or SAP does not clearly identify the constituents of concern (COCs). Because the permit needs the reference a specific section in the Part B Application where COCs can be found, the Part B Application should be revised to clearly provide this information.
- 9) Section A-3, General Description. The first paragraph on page 3 states that the leaching to groundwater pathway is addressed. However, the document does not include this evaluation, as stated in Section G-3. Section A-3 should be revised in accordance with GSU comments on Section G-3.
- 10) Section A-3, General Description. The third paragraph on page 3 states that the groundwater extraction and treatment system was restarted in December 2014. The system was restarted in January 2015, and the text should be updated.

¹ http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/14-Dioxane.shtml

- 11) Section B-1, Facility Location. The sixth paragraph of the section states that contamination does not extend past the property boundary. However, the easternmost Shallow zone well KS-1 contains TCE above the concentration limits. The eastern extent of contamination has not been delineated and the text should be revised accordingly.
- 12) Section E-1, Cost Estimate. The sixth bullet states that Appendix IX sampling is required every 5 years during corrective action monitoring. Please note that Appendix IX includes multiple compounds, including but not limited to SVOCs other than 1,4-dioxane, pesticides, herbicides, metals, and dioxins/furans. These other compounds are not included in the Part B Application but should be added if Appendix IX compounds will be analyzed. In addition, sample bottle, preservation, and hold time information and sampling order for constituents are also missing and should be added.

Additionally, based on Table 4 of the SAP, Kearney intends to conduct analyses for a wider list of VOCs once every five years, not Appendix IX once every five years. Monitoring programs can consist of 1) constituents of concern (COCs), which are based on all possible wastes, daughter products, and byproducts that are analyzed less frequently, and 2) monitoring parameters, which are a subset of COCs that are the best indicators of a release or progress of corrective action. The SAP text should be revised to distinguish between routine monitoring parameters and COCs, which was implied in Table 4 of the SAP.

Kearney should note that Appendix IX sampling is required in three circumstances: 1) during detection monitoring verification sampling per 66264.97(k), 2) annually during evaluation monitoring per 66264.98(e)(6), and 3) annually upon completion of a corrective action program that returns to detection monitoring per 66264.97(n). In each case, the permittee may receive written permission from DTSC to change the frequency, wells, and chemicals required for Appendix IX analyses. If one of these cases apply to the Kearney site, the Part B Application should be revised to include justification for reduced Appendix IX sampling. When the site reverts to detection monitoring, the third case will be applicable to the Kearney site.

- 13) Section G-1(g), Monitoring Program Description. The last paragraph states that groundwater elevations will be measured quarterly during corrective action. However, Table G-1g indicates groundwater elevations will be measured semi-annually. The discrepancy should be corrected.

In addition, as recommended in general comment 2 above, Kearney should revise the Part B Application to include tables and text that address the two phases of corrective action and to better distinguish between the different activities that are necessary for each phase. In addition, if Kearney anticipates completion of corrective action during the 10-year duration of the permit, Kearney can include procedures for proceeding to detection monitoring. Otherwise, a permit modification will be needed to move from corrective action monitoring to detection monitoring.

- 14) Section G-1(g), Monitoring Program Description. The last paragraph states that wells in which no contaminants are detected for four consecutive sampling events will automatically be designated biannual monitoring wells. This reduction in frequency is not appropriate based on the observed prior rebound and should be removed from the document. For the active corrective action and rebound phases, a phased approach is appropriate and consider the longer time frames that were observed at the site. Section G-1(g), Table G-1g, and SAP Table 2 should be revised accordingly.

- 15) Section G-3, Vadose Zone Monitoring Plan. The first paragraph states that the 1989 and 2013 soil gas investigation shows a similar distribution of soil gas but the later event showed substantially lower concentrations. This is only true for shallow soil gas contamination at 5 feet bgs because deeper soil gas samples were not collected in 1989. Therefore, conclusions cannot be made regarding decreases in concentrations of deeper soil gas concentrations over time.
- 16) Section G-3, Vadose Zone Monitoring Plan. The second paragraph states that the source of VOCs in the vadose zone was due to partitioning from infiltrating contaminated water. While partitioning of contaminants from infiltrating water into soil gas is one phase, there are three additional mechanisms by which VOCs would remain in the subsurface: 1) VOCs dissolved into soil moisture, 2) sorption of VOCs to soil particles, and 3) accumulations of non-aqueous phase liquids from historical releases. Even though releases from plating operations have since ended, VOCs could exist in any of the four phases. The text should be revised accordingly.

As stated above in general comment 5, the soil gas impacts below and adjacent to the former manufacturing building could be addressed under a mechanism other than a post-closure permit.

- 17) Section G-3, Vadose Zone Monitoring Plan. The second paragraph states that monitoring the vadose zone provides negligible practical value. If vadose zone monitoring is not conducted under the post-closure permit, soil gas monitoring should be conducted under an order or agreement with Kearney to evaluate the nature and extent of soil gas impacts at the site and to evaluate corrective measures.

The text also states that the vadose zone will not be a source of contamination to groundwater once groundwater concentrations reach the cleanup goals. GSU disagrees with this statement.

Based on soil gas data collected in 2013 and equilibrium calculations using Henry's Law (shown below), concentrations in soil gas are greater than the equilibrium concentration in groundwater. Concentrations of TCE in the vadose zone would yield an equilibrium groundwater concentration an order of magnitude greater than what is currently detected in groundwater, whereas concentrations of 1,1-DCE in the vadose zone would yield an equilibrium groundwater concentration that is two orders of magnitude greater than what is currently detected in groundwater.

| | Maximum Soil Gas Concentration (ug/L) | Soil Gas Location with Maximum Concentration (depth) | Henry's Law Constant (unitless) (note 1) | Equilibrium Concentration in Groundwater (ug/L) (note 2) | 2014 Maximum Shallow Groundwater Concentration (ug/L) and well |
|---------|---------------------------------------|--|--|--|--|
| PCE | 43.3 | KB19 (20' bgs) | 0.7236304 | 59.84 | 23 (SMW-2) |
| TCE | 78.5 | KB18 (20' bgs) | 0.4026983 | 194.94 | 13 (KS-1) |
| 1,1-DCE | 368 | KB10 (30' bgs) | 1.0670482 | 344.88 | 31 (SMW-2) |

Notes:

- 1) From EPA Region IX RSL tables.
- 2) Equilibrium concentration in groundwater is calculated assuming concentration in groundwater (ug/L) = concentration in soil gas (ug/L) (assuming it is located immediately above the groundwater surface) ÷ Henry's Law constant (unitless).

In addition, soil concentrations indicate concentrations of PCE and TCE in soil that exceed risk-based soil screening levels for protection of groundwater (January 2015 EPA Region IX RSLs, <http://www.epa.gov/region9/superfund/prg/>). Furthermore, soil samples for

VOCs were not collected from boreholes with the highest soil gas concentrations; therefore, the actual impact to groundwater from soil may be underestimated.

| | Maximum concentration in soil (location, depth) (ug/kg) | EPA Region IX RSL Protection of groundwater risk-based soil screening level (SSL) (ug/kg) | Does concentration exceed risk-based SSL? |
|---------|---|---|---|
| PCE | 5.6 (KB03, 5') | 5.1 | Yes |
| TCE | 8.2 (KB11, 47') | 0.18 | Yes |
| 1,1-DCE | 5.4 (KB11, 47') | 100 | No |

The above are additional lines of evidence as to why contaminant mass in the vadose zone must be addressed.

- 18) Section G-3, Vadose Zone Monitoring Plan. The section incorrectly states that the site characterization has not changed since the permit renewal. The text should be revised to acknowledge the 2013 soil gas survey and the text should discuss the implication of the 2013 deep soil gas contamination at the site.
- 19) Section G-3, Vadose Zone Monitoring Plan. The last sentence of the third paragraph states that Kearney will reevaluate the December 2006 work plan for remedial alternatives of the Shallow zone. This should be identified in the draft DTSC permit as a permit condition.
- 20) Section M-4, Public Exposure. The second paragraph references information obtained from DWR, including well completion reports and a list of private wells located within one mile of the site. However, Kearney did not provide well screen intervals for public and private supply wells as previously requested by GSU. Kearney should provide DTSC with copies of the well completion reports obtained from DWR, as well as the list of private wells located within one mile of the site. In addition, Kearney should provide a map and table summarizing the 117 wells with known screen intervals. The summary table should include well name, location, address, and well construction information. To maintain confidentiality of well locations, this information can be provided to DTSC outside of the permit renewal process.
- 21) Table G-1g, Groundwater Monitoring Schedule (also included as SAP Table 2).
 - The table should be revised to identify the frequency of sampling for extraction wells if the groundwater treatment system is not operating.
 - Not all wells are shown on the table. Please revise the table to include missing wells, including those that are currently dry. The table should be comprehensive of all wells at the site. For wells that are currently dry, the water levels should be measured if the water elevations increase.
 - All wells along the property boundary that once contained contamination (for example, KS-2, KS-4, and KS-6) should be monitored on occasion. In addition, low levels of contamination reappeared in KS-4 and KS-6 during the rebound study, but these wells are not included in the program. While the site is in corrective action, all wells should be included in the program on an intermittent basis.
 - Intermediate zone wells KPU-5 and KPL-5 are not included in the monitoring program, even though concentrations in these wells rebounded during the rebound study, including 1,4-dioxane, which is currently above the WQO. These wells should be

included in the groundwater monitoring program. In addition, given the rebound exhibited at KPL-5, KD-5 should also be included in the monitoring program.

- The monitoring program does not include sampling and water level measurements for the Lower Intermediate zone. It is not clear why this zone is excluded from the revised monitoring program and should be subject to sampling.
- Numerous wells are not included in the routine groundwater elevation measurement program. A sufficient number of wells should be included to determine the rate and direction of groundwater flow within each zone and vertically between zones. For the Deep zone, only two wells are included in the measurement program, which is not sufficient for hydraulic gradient determination. In addition, the outermost wells are often excluded from the program, even though these wells are necessary to provide groundwater gradient information across the site.

- 22) SAP, FSP, Section 1, Introduction. The first paragraph states that the objective of the corrective action groundwater monitoring program is 1) to identify the WQPS and 2) affirm that COCs exceeding CLs do not migrate away from the facility while corrective action continues. The Part B and SAP text should be revised to clearly distinguish between the objectives of the document and purpose of corrective action and the corrective action monitoring program.

One objective of the document is to identify the WQPS. The objective of the corrective action groundwater monitoring program is to monitor the effectiveness of corrective action activities. The purpose of corrective action is to restore groundwater to concentrations below the CLs, not to prevent migration away from the site.

- 23) SAP, FSP, Section 2.3, Site History. The second paragraph states that the ponds were clean closed. Clean closure can occur only if no contamination remains, including groundwater contamination. The ponds were closed and waste was removed from the ponds. However, they were not clean closed. The text should be revised accordingly.
- 24) SAP, FSP, Section 6.5.2, Well Construction, Development, and Decommissioning. The last paragraph discusses well decommissioning. Please note that a permit modification will be needed to destroy a well without replacement.
- 25) SAP, FSP, Section 6.6, Inspections. Additional information regarding wellhead maintenance should be added. Activities that should be discussed include replacing well caps, cleaning and replacing gaskets and bolts of flush mounted well vaults, and verifying surface water flows away from wellheads. If the well will act as a conduit to the subsurface, maintenance repairs should be completed as soon as possible. Similar changes should be made to Section 10 of the QAPP (Operation and Maintenance).
- 26) SAP, Table 4. The bottom of Table 4 states that reporting limits are listed in Appendix E (Current Laboratory QAPP). The reporting limits are not provided in the laboratory QAPP, which is provided as Appendix D to the SAP. The Part B Application should be revised to include the method detection limits and method reporting limits.
- 27) SAP, Appendix A (DTSC Post Closure Permit RWQCB Monitoring Program). MRP R5-2003-0838 is missing from the Part B Application and should be added.