

**FINAL REPORT**

# Transitioning from Active Remedies to Monitored Natural Attenuation

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David Adamson  
Shahla Farhat  
Charles Newell  
***GSI Environmental Inc.***

John Wilson  
***Scissortail Environmental Solutions LLC***

## January 2025

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## ABSTRACT

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**INTRODUCTION AND OBJECTIVES:** Many impacted groundwater sites that employ active remedies have encountered challenges in reducing risk or meeting closure criteria, often due to site complexity and the role of matrix diffusion and other processes in prolonging contaminant persistence. Transitioning from active remediation to Monitored Natural Attenuation (MNA) can be a cost-effective strategy for managing these sites, particularly when constituent levels have been significantly reduced through active treatment. However, the process for implementing a Transition Assessment is still unfamiliar to many remediation practitioners. The objective of this research was to provide a clear framework for site managers to answer several specific technical questions that are important during a transition assessment.

**TECHNICAL APPROACH:** The project objectives were addressed primarily by developing a framework that is incorporated into a web-based decision support tool (TA<sup>2</sup> Tool) that better documents the technical basis for transition assessments and helps users perform a site-specific transition assessment. This tool is designed to: (1) Evaluate and summarize site complexities and implications; (2) Provide quantitative assessment of concentration and mass trends over time, including establishing whether an active remediation has plateaued; and (3) Provide quantitative information about processes that could reduce effectiveness of further active remediation (such as in-situ source treatment or continued operation of pump-and-treat systems).

**RESULTS:** The technical basis for individual modules was developed and incorporated into the final TA<sup>2</sup> Tool, including identifying the specific quantitative approaches for documenting asymptotic behavior, plume stability, site heterogeneity, remedial performance, and remediation timeframes. The final product contains 10 individual modules or “tools”, and users can engage with those modules pertinent to their site or go through all the modules for a thorough, step-by-step summary of relevant issues. *Five Quantitative Tools* include assessing asymptotic groundwater concentrations from monitoring well programs, evaluating plume stability, estimating remediation timeframes after a hypothetical source removal project, forecasting remediation performance if a particular technology is applied in the field, and projecting concentrations at downgradient points of compliance. *Four Qualitative Tools* provide information on matrix diffusion, enhanced attenuation options, geologic heterogeneity, and related projects. Finally, *One Summary Tool* metrics from the other tools and provides additional guidance on conducting site-specific transition assessments. The summary tool is designed to walk users through a site-specific Transition Assessment. It includes the Remediation Transition Assessment Index (RTAI), which is a simple metric that reflects the relative persistence of contamination at a site due to matrix diffusion and other site-specific considerations. It summarizes the results from relevant tools within the TA<sup>2</sup> Tool, assigning an RTAI value to each result. An RTAI of 5 indicates that the site is a strong candidate for transitioning to MNA or enhanced attenuation approaches (assuming it meets relevant “bright line criteria”, while an RTAI of 1 suggests that the site is a poor candidate.

The tool was applied to several different case studies to illustrate its utility in supporting transition assessments. A comparison of the TA<sup>2</sup> Tool to other Transition Assessment resources (e.g., from ITRC) was provided to highlight the consistency of this approach with existing and/or on-going efforts. Finally, several multi-site data studies were performed to help examine specific issues related to transition assessments.

**BENEFITS:** The research generated a quantitative tool for Remedial Project Managers (RPMs) to use to support a site-specific transition assessment. The goal was to establish a protocol for evaluating sites where MNA could serve as an effective transition technology for longer-term management. Consequently, it is intended to improve the technical basis for decision making and thus foster consensus among stakeholders.

**TA<sup>2</sup>: THE SERDP TRANSITION ASSESSMENT TEACHING ASSISTANT**

About

Free web-based tool to help **assess** if sites can **transition** from Active Remediation to **Monitored Natural Attenuation (MNA)**

*I want to do calculations to answer the question...*

1. Has a concentration vs time asymptote been reached at my site?

2. Is my plume still expanding?

3. How long will it take to reach cleanup goals after source remediation at my site?

4. What level of performance can I expect from an in-situ source remediation projects?

5. Can I meet my cleanup goal at a downgradient point of compliance after stopping active treatment?

*I would like to learn more about how to...*

6. Model a groundwater plume and account for matrix diffusion.

7. Enhance Monitored Natural Attenuation processes.

8. Understand how much geologic heterogeneity there is at a site.

9. Incorporate new insights from other recent SERDP Transition Assessment Projects.

*Click buttons to access modules that explore key questions for Transition Assessments*

**Summary**

10a. Step-by-Step Guide for an MNA Transition Assessment

10b. Remediation Transition Assessment Index (RTAI)

10c. Transition Assessment Checklists

**Download:**  
<https://serdp-estcp.mil/projects/details/350cbc0b-893a-43a6-8a0c-c9c057bacac0>

## EXECUTIVE SUMMARY

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### INTRODUCTION:

Many impacted groundwater sites that employ active remedies have encountered challenges in reducing risk or meeting closure criteria, often due to site complexity and the role of matrix diffusion and other processes in prolonging contaminant persistence. Transitioning from active remediation to Monitored Natural Attenuation (MNA) can be a cost-effective strategy for managing these sites, particularly when constituent levels have been significantly reduced through active treatment. However, the process for implementing a Transition Assessment is still unfamiliar to many remediation practitioners.

### OBJECTIVES:

The objective of this research was to provide an easier way for site managers to answer several specific technical questions that are important during a transition assessment, such as 1) Is the plume at my site stable (and thus a good candidate for transitioning)? 2) What is the likelihood that my site has a persistent source that will be resistant to further active treatment? 3) How can I establish if the performance of an active remedial technology has plateaued? 4) What type of contaminant removal rates can I expect after transitioning to MNA?

The project addressed this objective by developing a web-based application (the TA<sup>2</sup> Tool) that supports the decision-making process at contaminated groundwater sites. Specifically, this tool helps to document the technical basis for transition assessments and helps users perform a site-specific transition assessment. This tool is designed to: (1) Evaluate and summarize site complexities and implications; (2) Provide quantitative assessment of concentration and mass trends over time, including establishing whether an active remediation has plateaued; and (3) Provide quantitative information about processes that could reduce effectiveness of further active remediation (such as in-situ source treatment or continued operation of pump and treat systems).

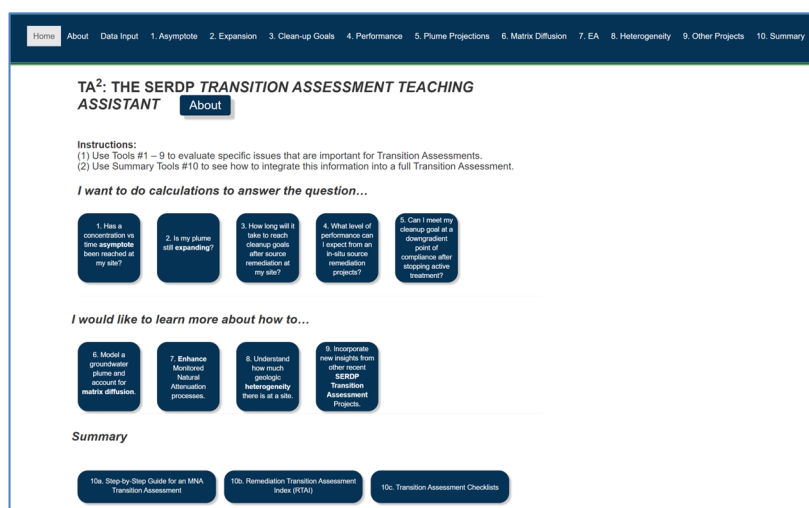
### TECHNICAL APPROACH:

The following workflow was used to address project objectives and create the primary deliverable (the TA<sup>2</sup> Tool):

- ***Develop and identify the primary learning objectives for potential end-users.*** These are the knowledge gaps and/or critical information for completing a Transition Assessment. The first objective is a quantitative assessment of concentration and mass trends that may include projecting the remediation timeframe based on the current remedial approach, demonstrating asymptotic behavior and plume stability, and estimating the attenuation rates/remediation timeframe if the current remedial approach was discontinued. The second objective is a description of site complexities and their implications for achieving remedial objectives. The final objective is to identify alternative approaches for managing the site along with their expected performance.

- ***Translate these objectives into a series of individual modules that would be the key elements of the tool's home page.*** An initial list of modules for the tool was developed and then expanded as part of an iterative process. Once this process was completed, the final version of the tool included 9 individual modules plus an overall summary module.
- ***Develop the technical basis for the individual modules.*** This included identifying the specific quantitative approaches for documenting asymptotic behavior, plume stability, site heterogeneity, etc. It also included data-driven studies on remediation performance, as well as compiling of modeling approaches, site characteristics, and relevant technologies for further evaluation.
- ***Create initial storyboards.*** These were designed to provide a starting point for the interfaces, including the basic layout, key elements that needed to be included, and data entry requirements. These helped to guide graphical design and coding.
- ***Incorporate into a suitable web-based platform to facilitate learning.*** The tool has been developed as an R Shiny app (**Figure ES-1**). This is a web-based, interactive platform where R programming is used to perform all quantitative functions and the user can view the results in a clean and simple interface that easily accommodates plots, charts, and various mapping features. The resulting tool is free and does not require the user to install software on their computer. A version of the code has been uploaded to GitHub for any user who wishes to make their own custom modifications to the tool.
- ***Case studies applications.*** Three DoD sites were identified from a longer list of candidate sites and then evaluated using individual module(s) from the TA<sup>2</sup> Tool to see how these approaches would have supported previous or expected transitions to MNA and less intensive site management approaches.

In addition, a comparison to other resources that addressed specific elements of a Transition Assessment was performed to ensure that the approaches outlined in the TA<sup>2</sup> Tool are complementary. Finally, several multi-site data studies were performed to help examine specific issues related to transition assessments.



**Figure ES-1. Home Page for TA<sup>2</sup> Tool.** Users can click on buttons to access various tools that are designed to answer specific questions or research relevant topics.

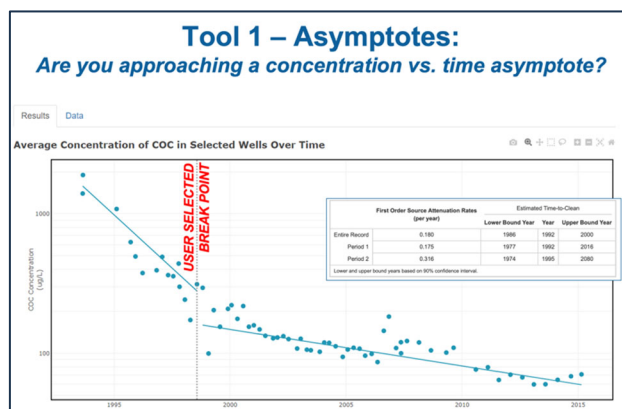
## RESULTS AND DISCUSSION:

### Tool Description

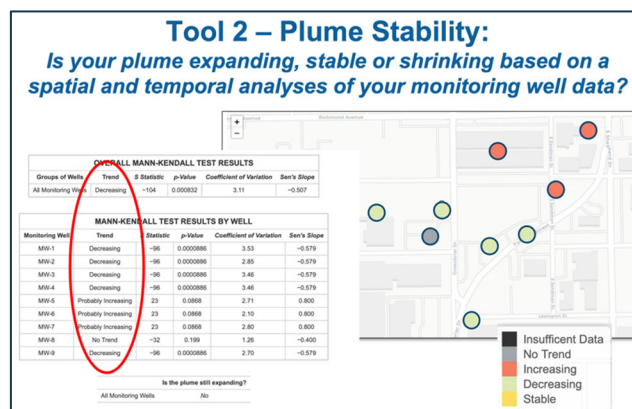
The TA<sup>2</sup> Tool is a web-based, interactive platform that includes a series of individual modules designed to answer specific questions or research relevant topics (**Figure ES-1**). Users can engage with those modules pertinent to their site or go through all the modules for a thorough, step-by-step summary of relevant issues. **Five Quantitative Tools** (**Figures ES-2 through ES-5**) include assessing asymptotic groundwater concentrations from monitoring well programs, evaluating plume stability, estimating remediation timeframes after a hypothetical source removal project, forecasting remediation performance if a particular technology is applied in the field, and projecting concentrations at downgradient points of compliance. **Four Qualitative Tools** provide information on matrix diffusion, enhanced attenuation options, geologic heterogeneity, and related projects. Finally, **One Summary Tool** (**Figure ES-7, Figure ES-8**) compiles metrics from the other tools and provides additional guidance on conducting site-specific transition assessments.

The four qualitative tools in the TA<sup>2</sup> Tool serve as resource modules and simple calculators, providing users with access to more detailed tools, protocols, guidance, and straightforward calculations. Tool 6 offers a summary of the current understanding of matrix diffusion's role in influencing long-term concentration trends and remedial performance, as well as different modeling approaches for quantifying its effects. Tool 7 describes various enhanced attenuation options for sites where MNA alone may be insufficient to manage the plume, acting as a bridge between intensive source treatments and MNA. Tool 8 provides a site-specific assessment of the geologic heterogeneity that contributes to matrix diffusion, using user-entered data from boring logs to characterize the potential impact of matrix diffusion on remediation based on simulations performed using the REMChlor-MD model. Finally, Tool 9 presents information on several other projects funded under the same SERDP Statement of Need as the TA<sup>2</sup> Tool, offering users access to additional tools, guidance, reports, and publications that highlight key findings and benefits to DoD and other interested parties.

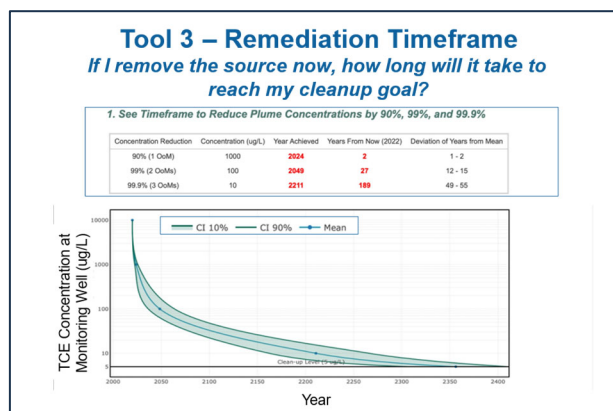




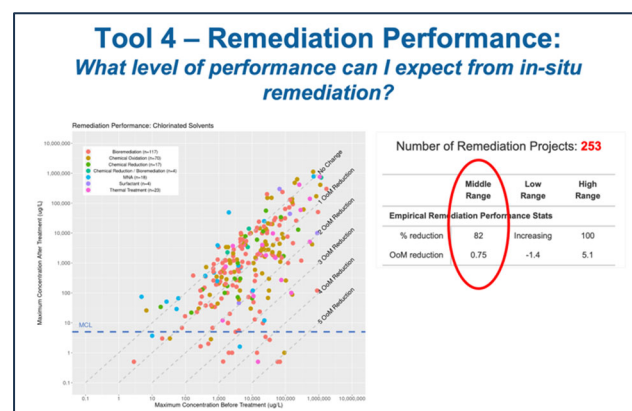
**Figure ES-2.** Tool 1 allows users to determine if asymptotic conditions are present at specific locations or across the site by calculating source attenuation rates from monitoring well concentration vs. time data and estimating the time to reach a user-specified cleanup goal.



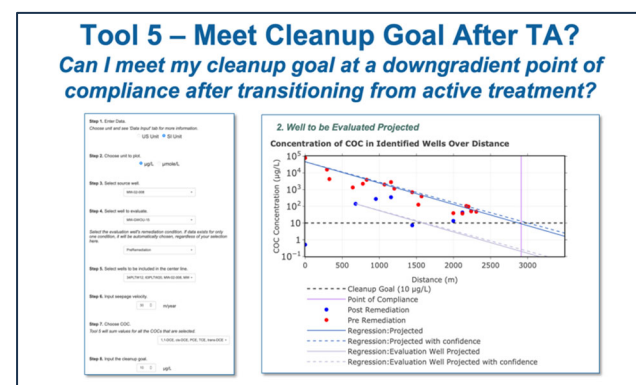
**Figure ES-3.** Tool 2 evaluates plume stability by using concentration vs. time data to calculate trends in monitoring well data, determining if increasing or decreasing trends are present, and displaying results on a base map generated from user-entered geographic coordinates.



**Figure ES-4.** Tool 3 estimates the number of years required to reduce chlorinated solvent plume concentrations by 90%, 99%, or 99.9% after complete source removal, using an empirical match to hundreds of model runs based on site-specific information.

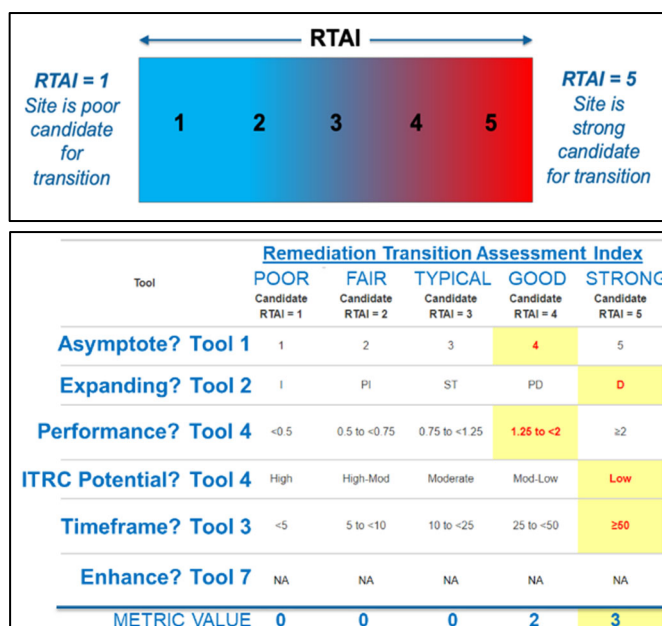


**Figure ES-5.** Tool 4 predicts the level of performance (i.e., reduction in concentration) that might be achieved at a particular site using a database of remediation performance at 235 chlorinated solvent groundwater sites, displaying relevant performance data in a "triangle chart" and estimating the performance relative to site-specific cleanup goals.



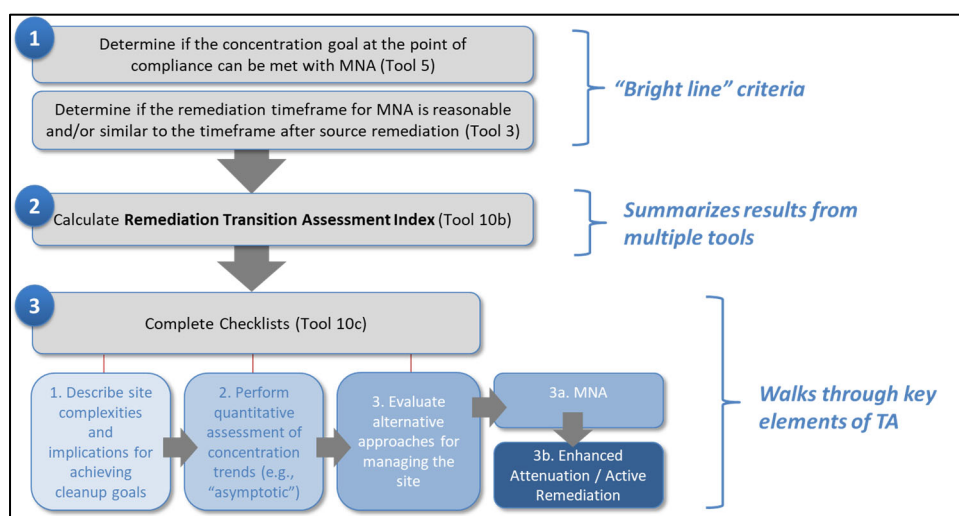
**Figure ES-6.** Tool 5 evaluates if concentration-based cleanup goals will be exceeded at a downgradient point of compliance after transitioning from active treatment to passive treatment (e.g., MNA) by estimating a site-specific attenuation rate constant and projecting the concentration vs. distance from the contaminant source.

The Tool 10 Summary is designed to walk users through a site-specific Transition Assessment. It includes the Remediation Transition Assessment Index (RTAI), which is a simple metric that reflects the relative persistence of contamination at a site due to matrix diffusion and other site-specific considerations (**Figure ES-7**). It summarizes the results from relevant tools within the TA<sup>2</sup> Tool, assigning an RTAI value to each result. An RTAI of 5 indicates that the site is a strong candidate for transitioning to MNA or enhanced attenuation approaches, while an RTAI of 1 suggests that the site is a poor candidate. As shown on **Figure ES-7**, the RTAI incorporates five key metrics: Asymptote (Tool 1), Expanding Plume (Tool 2), Forecast of Remediation Performance (Tool 4), ITRC Potential (Tool 4), Potential Remediation Timeframe (Tool 3), and Potential for Enhanced Attenuation (Tool 7). Users can see the RTAI values generated by each tool and assign an overall RTAI for the site based on the weight of evidence. The RTAI's main advantage is its ability to provide a quick, high-level assessment of a site's suitability for transitioning away from active treatment. However, it is important to note that a decision to transition to MNA should also consider the "bright line" criteria described in Tool 10 (**Figure ES-8**) and ensure that relevant site information has been adequately documented.



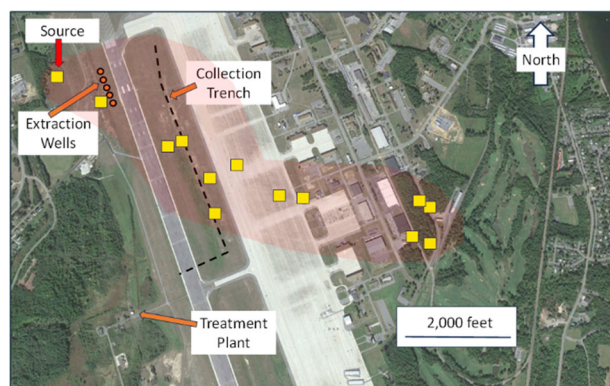
**Figure ES-7.** The Remediation Transition Assessment Index (RTAI). Top: What RTAI index means. Bottom: Example of RTAI result with 2 metrics with a Score of “4” and 3 metrics with a score of “5” giving a **final RTAI = 4.6**.

**Figure ES-8.**  
Overview of Tool  
10 (Summary  
Assessment).



## Case Study Example

**Objectives and Background:** The TA<sup>2</sup> Tool was used to evaluate several sites, including a DoD site (Plattsburgh AFB) with a chlorinated solvent plume (TCE and its breakdown products) that had been managed by a groundwater extraction system (including a collection trench) for approximately 10 years (**Figure ES-9**). In this case, the objective was to determine how the tool could have been used to support a transition assessment for this site, specifically how it would have supported the decision to transition from the existing pump-and-treat system to MNA. The plume at this site was present in a sandy aquifer with a high seepage velocity overlaying low-k clay till. At the time when the site was considering shutting off the source area extraction wells and transitioning to MNA (2015), TCE concentrations were between 10 and 100 mg/L.

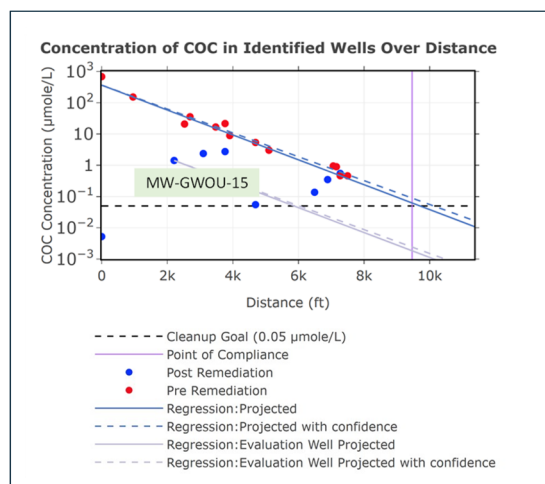


**Figure ES-9.** Site Overview. Groundwater flow is southeast from the source area. Modified from Arcadis/Bhate/AFCEC/CIBE (2022).

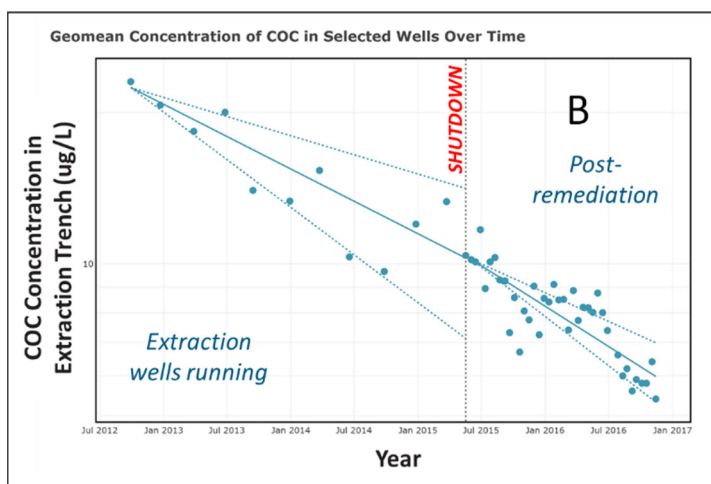
**Results:** Based on the rate and timeframe estimates in Tool 1 and Tool 3, concentrations at the site were already progressing towards acceptable levels (i.e., sub-MCL) within a reasonable timeframe. The impact of matrix diffusion on the performance of the existing technology was apparently low based on the lack of asymptotic behavior (Tool 1) and the relatively simple geology (Tool 8), and this would have meant that transitioning to more aggressive technologies may have also achieved meaningful concentration reductions (Tool 4). If only these modules had been completed, the RTAI values would have ranged between 1 and 3, meaning the site was technically not a strong candidate for transitioning to MNA due to the relatively favorable performance of the existing technology. However, the more critical metrics for this site were the declining concentration trends and plume stability (Tool 2) and the determination that the site would meet concentration goals at the point of compliance with MNA (Tool 5; Figure 10) in a reasonable timeframe (Tool 3). These would be considered “bright line” criteria for this type of site where a risk management approach is applicable. In particular, the Tool 5 assessment showed that the constituent of concern (COC) concentration was projected to attenuate rapidly with distance due to natural processes, and parallel lab-based studies showed that the observed natural attenuation rate was explainable by abiotic processes that degraded the groundwater contaminants (Figure ES-10). The concentration data collected after the extraction wells were shut down showed that the rate constant for attenuation was even faster than the rate constant before shutdown (Figure ES-11).

**Conclusions:** The results from applying the TA<sup>2</sup> Tool would have provided a technical justification for transitioning this site to MNA because the data analysis showed that natural attenuation processes were active and helping achieve site objectives. This assessment would have

been useful in supporting the decision to shut down the treatment plant and transition the site to a more passive and less resource-intensive approach.



**Figure ES-10.** Results from Tool 5 showing that calculated “pre remediation” rate constant for natural attenuation is projected to reduce concentrations from well MW-GWOU-15 below the goal at the downgradient point of compliance



**Figure ES-11.** Results from Tool 1 showing that concentrations were declining at a faster rate in the post-remediation period after the extraction wells were shut down. The slopes of the solid blue lines represent the rate constants for each period and the dotted blue lines represent the 95% confidence intervals.

## Comparison to Other Transition Assessment Resources

Several other resources are available to understand key Transition Assessment concepts and to help support a site-specific assessment. In addition to the other recently funded SERDP projects on this topic (see Tool 9 of the TA<sup>2</sup> Tool), these include Adaptive Site Management (ITRC), Enhanced Attenuation (ITRC), Pump-and-Treat Optimization (ITRC), Pump-and Treat Performance Assessments (PNNL), BioPIC (ESTCP), and MAROS (DoD/ESTCP). Each of these resources align effectively with the assessment process described here for the TA<sup>2</sup> Tool. This includes statistical assessments of the asymptotic performance of existing systems, understanding the natural attenuation capacity of the aquifer to determine if contaminant concentrations will be reduced below limits at downgradient points of compliance, and plume stability assessments. The TA<sup>2</sup> Tool has several relatively unique features, particularly its emphasis on quantifying the role of matrix diffusion on remedial performance.

## Data Studies

Several multi-site data studies were performed to help examine specific issues related to transition assessments.

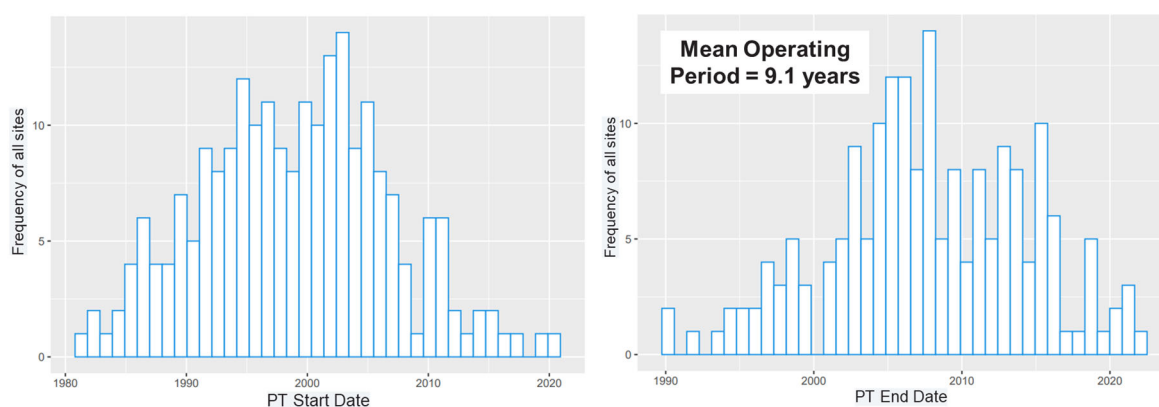
**Evaluation of Technology Transitions Over Time:** Pump-and-treat systems are still widely used, but there is a perception that these systems—once installed and operating—can never be shut



down. If this assumption were true, then sites with pump-and-treat systems would never be closed, and efforts to use site data to optimize and/or transition away from this technology would be fruitless. Because of this perception, a more thorough evaluation of whether sites with pump-and-treat systems are routinely transitioned to other technologies and/or eventually closed is a good test case for documenting the potential value of performing transition assessments.

We examined multi-site data compiled by different regulatory agencies to help illustrate trends in the use of pump-and-treat systems as a groundwater remedy. For example, USEPA reported that pump-and-treat systems were included in approximately 25% of the groundwater remedy decision documents (RODs) issued during the latest year available (2020) at Superfund sites (USEPA, 2023). The trend in the use of pump-and-treat at these sites has stabilized in recent years (three-year average of 31% from 2018 – 2020) after a period of long decline, though it is now at or below the percentage of sites that have MNA (41% in 2020) or in situ treatment (50% in 2020) listed in their decision documents as a groundwater remedy.

In a parallel evaluation, pump-and-treat systems have reportedly been used at 21% of all sites where a cleanup technology was identified in the California GeoTracker Database (1709 of 8,021). However, 73% of those sites are now listed as closed (1256 of 1709). This suggests that the majority of sites where a pump-and-treat system was installed were petroleum sites and were eventually able to shut off that system. However, only 24% (46 of 192) chlorinated solvent release sites with pump and treat systems in their record are now listed as closed. For a smaller set of sites that underwent detailed verification, we found that pump-and-treat systems were still operating at 30% of the open sites (38 of 127). Pump-and-treat systems were no longer operating at 77% (65 of 84) of the petroleum release sites and 59% (27 of 46) of the chlorinated solvent sites. Thus, even at sites that have not yet attained regulatory closure, a majority have transitioned away from the pump and treat systems. At sites where P&T systems have been shut down, the average operating period was 9.1 years (**Figure ES-12**).

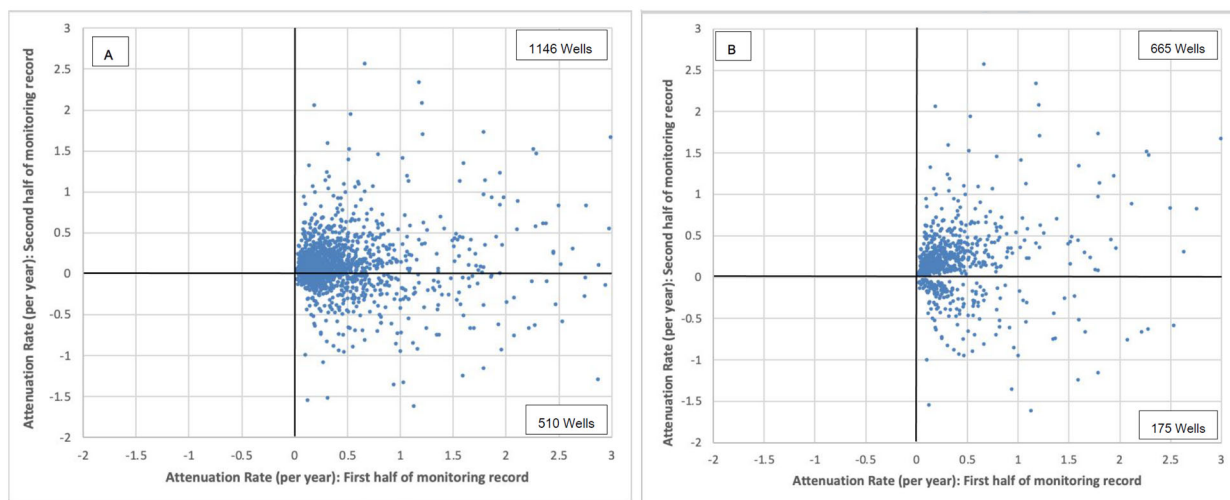


**Figure ES-12.** Distribution of Start Dates (left panel) and End Dates (right panel) for Pump-and-Treat Systems that were part of the Verification Site list (n = 243 sites).



***Evaluation of Site-Specific Temporal Monitoring Results for Predicting Remediation Timeframes:*** at sites where the goal is to reduce concentrations across the entire site to a specific level (i.e., the typical CERCLA application), where the data are used to track the overall progress of a site to reach this specific remediation goal. The time required to reach this goal is usually referred to as the “remediation timeframe”, and it is an important estimate for both active remediation strategies as well as MNA (see Tool 1 and Tool 3 of the TA<sup>2</sup> Tool). It is typically calculated using the highest-concentration (source) monitoring well, and it relies on concentration vs time data for the projection. An implicit assumption is built into this type of use of LTM data to track remediation progress, specifically that the observed trend in the past is predictive of the direction and magnitude of the future trend.

To determine if this assumption was valid, we utilized the California GeoTracker database to evaluate the power of historical groundwater monitoring results to predict future source attenuation rates. For two data sets (petroleum sites and chlorinated solvent sites), we found a small negative correlation between the first-order concentration vs.time attenuation rate observed during the earlier part of the monitoring record and the later part of the monitoring record: benzene – correlation coefficient ( $r$ ) = -0.11, MTBE –  $r$  = -0.12, TCE = -0.12. For each data set, a small negative correlation between the first-order attenuation rate observed during the earlier part of the monitoring record and the later part of the monitoring record was also observed for a subset of monitoring records exhibiting the best model fits ( $R^2 > 0.8$ ), a subset with a statistically significant ( $p < 0.05$ ) positive attenuation rate for the first half of the monitoring record (**Figure ES-13**). For the TCE data set, this negative correlation was also observed for a subset of monitoring records with no change in site remedy during the monitoring period ( $r$  = -0.22). Our analysis suggests that the historical concentration vs. time attenuation rate for a contaminant at an individual site or monitoring well is a poor predictor of the future rate at that site or well. Note that this evaluation focused solely on concentration vs. time attenuation rates (i.e., source attenuation rates) and did not evaluate changes in plume size over time or plume attenuation rates (based on concentration vs. distance trends).



**Figure ES-13.** Correlation in TCE Point Concentrations Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record Wells with Statistically Significant Positive Attenuation Rates. Panel A shows attenuation rates for 1656 monitoring records with at least 10 monitoring results and 100% detections of TCE and a statistically significant positive attenuation rates for the first half of the monitoring record. Panel B shows attenuation rates for 840 monitoring records with at least 10 monitoring results and 100% detections of TCE, a statistically significant positive attenuation rates for the first half of the monitoring record, and a statistically significant positive or negative attenuation rate for the second half of the monitoring record.

Thus, the use of observed source attenuation rates at a site to predict the remediation timeframe for that site appears to be subject to large uncertainty. In cases where the long-term monitoring data are being used as part of a Transition Assessment, it is highly recommended that the assessment accounts for this uncertainty in the remediation timeframe estimate, as well as the possibility that attenuation rates may not be consistent during different time periods. Both of these important elements are included in Tool 1 of the TA<sup>2</sup> Tool that was developed as part of this SERDP project.

## IMPLICATIONS FOR FUTURE RESEARCH AND BENEFITS:

The TA<sup>2</sup> Tool provides a framework for remedial decision-makers to evaluate different types of sites, including those with active treatment or where active source zone remediation is being contemplated. It helps determine if transitioning from an active mass removal mode to MNA is appropriate based on site conditions and/or the performance of ongoing or prospective remedial measures. By walking users through key steps and providing checklists, the tool ensures that necessary information is gathered to support a technically rigorous site-specific Transition Assessment and then integrates the results from each separate tool. Ultimately, the TA<sup>2</sup> Tool complements existing resources for site assessment and provides a sound framework to guide site management decisions about if and when to transition to MNA.

## 1. OBJECTIVES

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### 1.1 Project Objectives

At many Department of Defense (DoD) sites where an active remedy has been used, the performance of the remedy has appeared to “hit a wall” in terms of being able to actually decrease risk and/or achieve closure criteria. This is in part due to site heterogeneity and the role of matrix diffusion in enhancing contaminant persistence at these complex sites. In 2012, a key National Research Council (NRC) report identified the need to “transition from active remediation to more passive strategies and provide more cost-effective and protective long-term management of complex sites,” including conducting formal transition assessments (NRC, 2012). While the NRC effectively describes the importance of a transition assessment, it understandably did not attempt to prescribe how such an assessment should be performed. In the intervening years, there has been continued interest in understanding and applying the concept, but little has been provided in terms of guidance or tools for conducting transition assessments. Without a clear understanding of how to proceed, it may be viewed as not worth the effort. These are the knowledge gaps that this research is aiming to address, specifically by developing a framework for performing transition assessments that includes Monitored Natural Attenuation (MNA) as a key transition technology.

The objective of this research was to provide an easier way for site managers to answer several specific technical questions that are important during a transition assessment, such as 1) Is the plume at my site stable (and thus a good candidate for transitioning)? 2) What is the likelihood that my site has a “persistent source” that will be resistant to further active treatment? 3) How can I establish if performance of an active remedial technology has plateaued? 4) What type of contaminant removal rates can I expect after transitioning to MNA?

The project addressed this objective by developing a web-based decision support tool (TA<sup>2</sup> Tool) that better documents the technical basis for transition assessments and helps users perform a site-specific transition assessment. This tool is designed to: (1) Evaluate and summarize site complexities and implications; (2) Provide quantitative assessment of concentration and mass trends over time, including establishing whether an active remediation has plateaued; and (3) Provide quantitative information about processes that could reduce effectiveness of further active remediation (such as in-situ source treatment or continued operation of pump and treat systems).

The web-based tool developed as part of this project is free and publicly available. It can be downloaded at the project webpage: <https://serdp-estcp.mil/projects/details/350cbc0b-893a-43a6-8a0c-c9c057bacac0>. In parallel, a series of publications, webinars, and other tech transfer products were developed to support the adoption of this tool. These can also be found on the project webpage.

## 1.2 Project Hypotheses

The study was designed to test the following hypotheses:

1. Calculators that transform site-specific data into distilled, easy-to-understand knowledge about persistence source areas will provide key insights about if transition to MNA is merited.
2. The extensive DoD investment in understanding what has happened at remediation sites can be transformed into a semi-quantitative forecasting tool that includes key processes such as remediation technology, contaminant type, and rebound.
3. New groundwater computer models, such as ESTCP's REMChlor-MD model, now have the ability to simulate matrix diffusion impacts based on site-specific data, thereby illustrating the potential impacts of persistence sources and providing high-quality information regarding timing for transitioning to MNA. In particular, this approach is useful for sites where additional active measures to remediate the source (e.g., in situ chemical oxidation) are being considered.
4. A Transition Assessment need not be an all-or-nothing proposition; in some cases, enhanced MNA approaches can substitute for intensive, continued active remediation approaches.
5. A web-based tool will make transition assessments easier to perform, more transparent, and more convincing.

## 2. BACKGROUND

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### 2.1 Defining a “Transition Assessment”

Many contaminated groundwater sites that employ active remedies have encountered challenges in reducing risk or meeting closure criteria, often due to site complexity and the role of matrix diffusion and other processes in prolonging contaminant persistence. This has been a particular issue for the Department of Defense (DoD) and has been a focus of ongoing research initiatives funded by their two research and development arms, the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security and Technology Certification Program (ESTCP). As the DoD remediation portfolio ages, more and more active remediation projects appear to “hit a wall” in terms of being able to actually decrease the size of its impacted footprint and/or close sites. The resulting experience for many remedial project managers is that remediation can become a Sisyphean process with no clear end in sight.

In 2012, a significant National Research Council (NRC) report underscored the importance of shifting from active remediation to passive strategies for more cost-effective and protective long-term management of contaminated groundwater sites, including the use of more rigorous evaluations of existing data to support these efforts. This report, titled *Alternatives for Managing the Nation’s Complex Contaminated Groundwater Sites*, described **Transition Assessments** as a process to determine when to transition from an active treatment to a long-term, more passive treatment such as MNA (NRC, 2012). In the NRC document, the authors note that despite years of effort and considerable investment, many sites “*will require long-term management that could extend for decades or longer.*” They discuss the need for developments that can aid in “*transition from active remediation to more passive strategies and provide more cost-effective and protective long-term management of complex sites,*” including conducting formal transition assessments:

*At many complex sites, contaminant concentrations in the plume remain stalled at levels above cleanup goals despite continued operation of remedial systems. There is no clear path forward to a final end state embodied in the current cleanup programs, such that money continues to be spent, with no concomitant reduction in risks. If the effectiveness of site remediation reaches a point of diminishing returns prior to reaching cleanup goals and optimization has been exhausted, the transition to monitored natural attenuation or some other active or passive management should be considered using a formal evaluation. This transition assessment would determine whether a new remedy is warranted at the site or whether long-term management is appropriate. (NRC, 2012)*

While the NRC report effectively describes the importance of a transition assessment, it understandably did not attempt to prescribe how such an assessment should be performed. In the intervening years, there has been continued interest in understanding and applying the concept, but little has been provided in terms of guidance or tools for conducting transition assessments. In other words, we know “why”, but we don’t necessarily know “how”.

Based on our interpretation of the NRC report and other related guidance, a transition assessment is expected to include the following components:

1. A description of site complexities and their implications for achieving remedial objectives.
2. A quantitative assessment of concentration trends that may include projecting the remediation timeframe based on the current remedial approach, demonstrating asymptotic behavior and plume stability, and estimating the attenuation rates/remediation timeframe if the current remedial approach was discontinued.
3. Identifying alternative approaches for managing the site along with their expected performance.

The task of figuring out how to address each of these components is left to the site manager. Without a clear understanding of how to proceed, it may be viewed as not worth the effort. These are the knowledge gaps that we address within this study, including the introduction of a new software tool that serves as a framework for performing transition assessments with MNA as a key transition technology.

## **2.2 Challenges in Applying Active Remediation to Reduce Concentrations**

The goal of active remediation at most sites is to reduce contaminant concentrations below specific cleanup thresholds at a rate that results in more rapid site closure. However, there is increasing empirical evidence that our existing remediation technologies have limitations in the level of performance that they can achieve. For example, McGuire et al (2016) evaluated the performance of various in situ treatment technologies at 235 sites and found that the typical project reduced site-wide parent compound concentrations by approximately 0.5 to 2.0 orders of magnitude (i.e., concentration reductions of 71 – 99%). Furthermore, only 7% of the 235 sites were able to reduce concentrations below typical maximum contaminant levels (e.g., 5 mg/L for TCE) at every monitoring well after in situ remediation. While this level of performance may provide some benefit in terms of mass removal, these data suggest that post-treatment concentrations are likely to be above those required for site closure. Other remedial technologies like groundwater pump-and-treat systems or soil vapor extraction can also remove contaminant mass, but they largely focus on source control and/or containment, such that concentrations may initially decrease but then plateau as the system continues to operate and the source ages (Truex et al., 2015; Brusseau and Guo, 2014).

While there are several reasons why concentrations may plateau over time at these sites, a primary contributor is likely to be the general inaccessibility of contaminant mass in lower-permeability zones within a groundwater-bearing unit. Specifically, a large portion of the remaining mass may be associated with so-called “immobile porosity” in clays or silts due to matrix diffusion over the course of decades (i.e., the post-release period) (Sale et al., 2013). Mass in the more accessible (transmissive) portions of the site may have already been removed through extensive treatment (or flushing) of the source, but the remaining portion of mass is slowly diffusing back out of the lower-permeability soils. Because of mass transfer limitations, concentrations can plateau at sites dominated by matrix diffusion, and the use of groundwater extraction to capture mass may not be



a cost-effective approach for improving the remediation timeframe. In addition, these matrix diffusion effects make the remaining mass difficult to treat using more aggressive methods because amendments cannot be easily delivered to lower-permeability soils. Furthermore, plume development can transport significant mass beyond the source area, where the potential interaction with low-permeability materials in downgradient areas may exacerbate the problem of matrix diffusion. In some mature sites (Sale et al., 2013), concentrations near the source and in the downgradient plume may be low, meaning there is little incentive—from a cost or efficiency perspective—to attempt further source treatment. These “dilute plumes” may be characterized by a plume footprint that is typically (but not always) large and relatively stable. These sites are generally better candidates for less-intensive management strategies that focus on reducing mass discharge rates, stabilizing the plume, and protecting potential downgradient receptors. Given the treatment limitations at these sites, understanding and quantifying how natural attenuation processes are contributing to concentration trends is also critical.

In parallel, the past several years have seen the evolution of critical new thinking about when and how MNA should be applied at contaminated sites. The United States Environmental Protection Agency (USEPA, 1999) published a directive on the use of MNA and specified that it be shown that the site-specific remediation objectives can be attained *within a time frame that is reasonable compared to that offered by other more active methods*. The use of MNA is consistent with the growing appreciation that long-term and lengthy restoration processes may be inevitable (Leeson et al., 2013; ITRC, 2011). This is coupled with increased recognition of the viability of natural attenuation processes besides biological reductive dechlorination, the documentation of degradation and retention pathways for a broader number of contaminants like 1,4-dioxane, PFAS, and inorganics (Adamson et al., 2022; Newell et al., 2021; USEPA, 2007), and the development of quantitative frameworks for evaluating monitored natural attenuation as a site remedy or management approach (Danko et al., 2022).

### 2.3 The Use of MNA as a Transition Technology

MNA can be used as a remedy or site management approach, and its applicability as a transition technology will generally depend on the regulatory requirements for a particular site.

- Sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) typically have a requirement that the concentrations of all contaminants of concern must meet specific cleanup standards within a specified “reasonable timeframe”. At the site level, this requires two key things: 1) stakeholders agreeing on what is a “reasonable timeframe”; and 2) a method to calculate the remediation timeframe. While the first requirement has no firm rules or guidelines established, it can rely on established methods for estimating the remediation timeframe. These involve reviewing long-term monitoring data to determine if attenuation within the assessment period is sufficient to achieve the cleanup objective by the designated deadline. As described in the next section, this is a key element of a new tool designed to support transition assessments.

- If a site is regulated as part of the Resource Conservation and Recovery Act (RCRA) or the risk-based regulatory programs employed by many states, the typical objective is to ensure that contaminants are reduced to acceptable levels before groundwater can migrate off-site and affect receptors. Within this application of MNA, groundwater must meet a cleanup standard before it reaches a specific downgradient location (the point of compliance). To facilitate this process, fate and transport models or statistical projections are typically employed. For example, a quantitative model (the MNA Rate Constant Estimator) has been developed as part of an existing decision framework for MNA (BioPIC) (Adamson et al., 2022). An alternative projection-based approach is included in the new decision tool described in the next section.

In either case, MNA can be used alone or in combination with other remedies to achieve the site objectives. Regardless of how it is implemented, the key is demonstrating that MNA can achieve the applicable concentration-based goals (the primary line of evidence for acceptance of MNA) and that the relevant attenuation processes are well understood and sustainable (the secondary and tertiary lines of evidence for MNA).

### 3. TECHNICAL APPROACH

Figure 3-1 shows the task structure that was employed for this project.

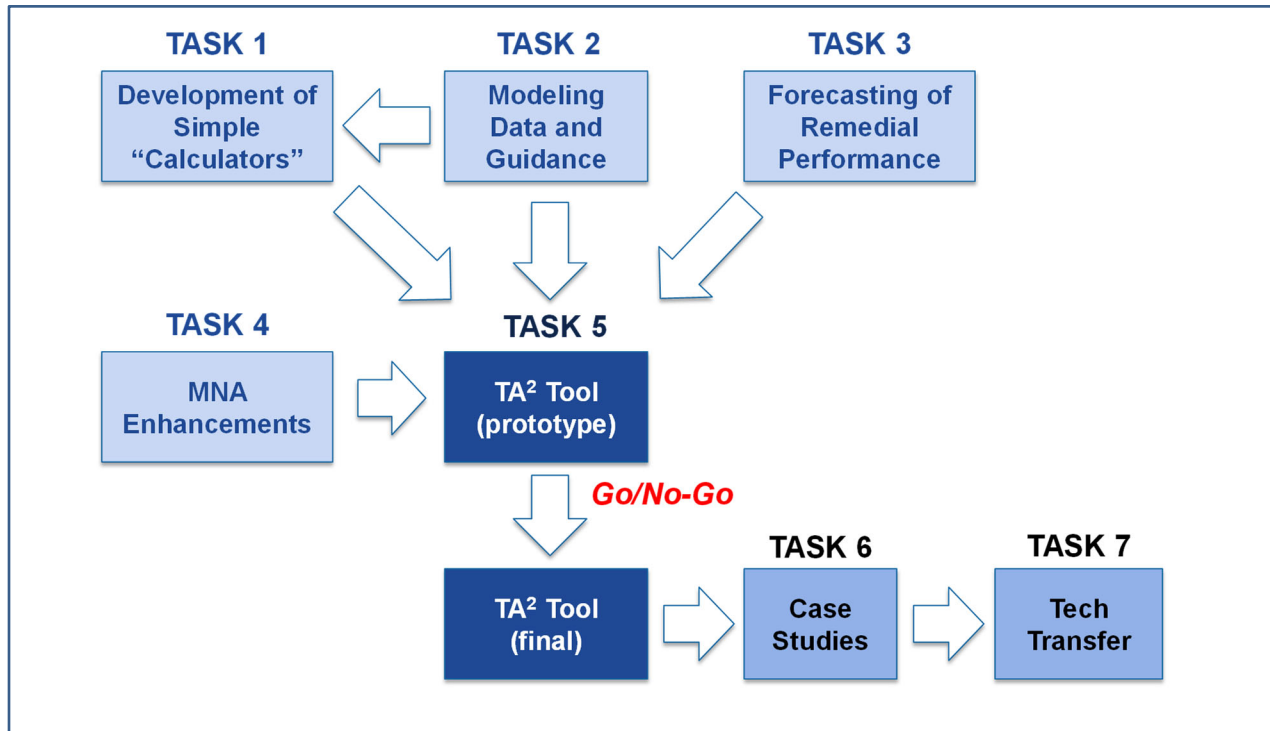


Figure 3-1. Task Structure for SERDP ER20-1429.

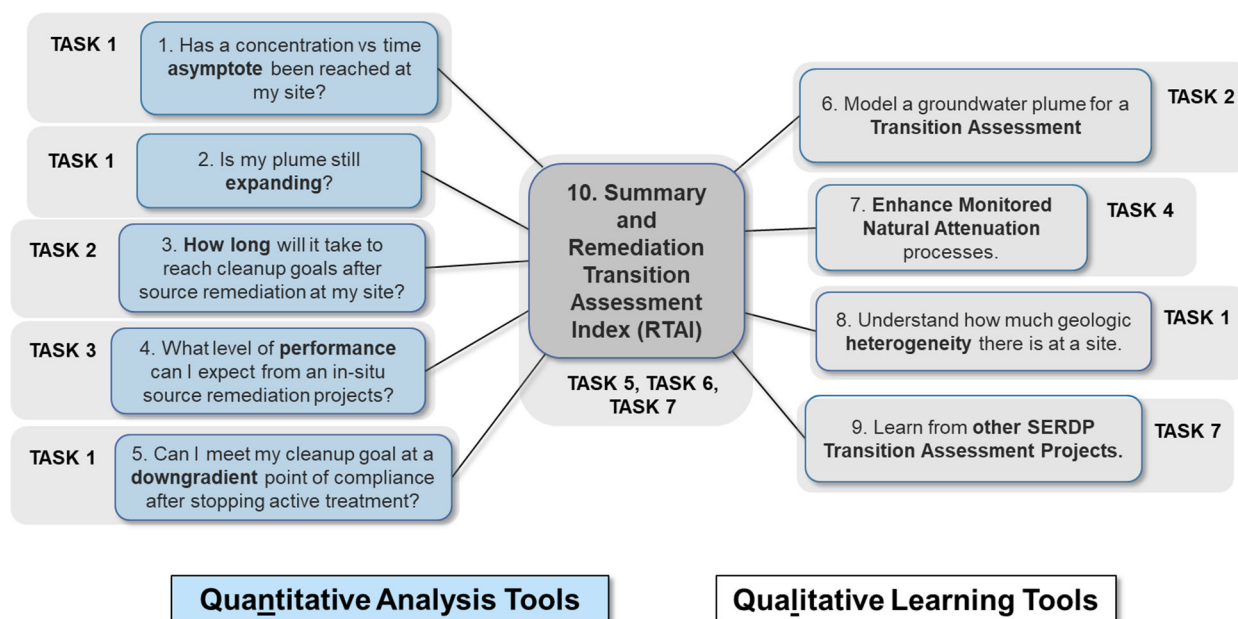
These tasks were then used to develop the following workflow:

- ***Develop and identify the primary learning objectives for potential end-users.*** These are the knowledge gaps and/or critical information for completing a Transition Assessment. The first objective is a quantitative assessment of concentration and mass trends that may include projecting the remediation timeframe based on the current remedial approach, demonstrating asymptotic behavior and plume stability, and estimating the attenuation rates/remediation timeframe if the current remedial approach was discontinued. The second objective is a description of site complexities and their implications for achieving remedial objectives. The final objective is to identify alternative approaches for managing the site along with their expected performance.
- ***Translate these objectives into a series of individual modules that would be the key elements of the tool's home page.*** An initial list of modules for the tool was developed and then expanded as part of an iterative process. Once this process was completed, the final version of the tool included 9 individual modules plus an overall summary module.

- ***Develop the technical basis for the individual modules.*** This included identifying the specific quantitative approaches for documenting asymptotic behavior, plume stability, site heterogeneity, etc. It also included data-driven studies on remediation performance, as well as compiling of modeling approaches, site characteristics, and relevant technologies for further evaluation.
- ***Create initial storyboards.*** These were designed to provide a starting point for the interfaces, including the basic layout, key elements that needed to be included, and data entry requirements. These helped to guide graphical design and coding.
- ***Incorporate into a suitable web-based platform to facilitate learning.*** The tool was developed as an R Shiny app. This is a web-based, interactive platform where R programming is used to perform all quantitative functions and the user can view the results in a clean and simple interface that easily accommodates plots, charts, and various mapping features. The resulting tool is free and does not require the user to install software on their computer. A version of the code has been uploaded to GitHub for any user who wishes to make their own custom modifications to the tool.

Initially, the first four steps of this process were to be completed before starting on the web-based tool. Early on, the project team decided to complete the coding in parallel to improve the overall workflow and avoid unexpected complications.

**Figure 3-2** shows each of the modules that were incorporated into the tool, along with a guide for how the project tasks are tied to these modules.



**Figure 3-2. Modules for the TA<sup>2</sup> Tool and Mapping to Project Tasks.**

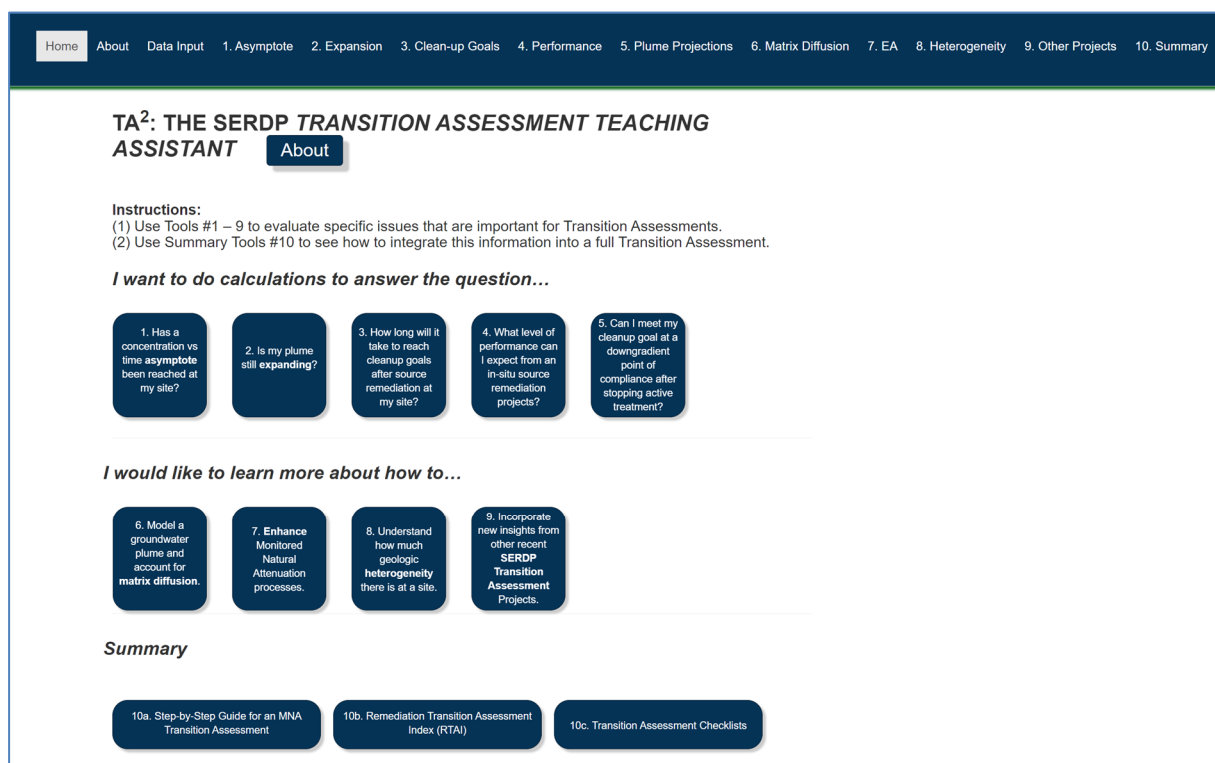
## 4. RESULTS AND DISCUSSION

### 4.1 Overview and Intended Users of the TA<sup>2</sup> Tool

The overall objective of the project was to develop a learning and decision tool to help stakeholders gather information for a site-specific Transition Assessment. This free software, the Transition Assessment Teaching Assistant (TA<sup>2</sup>) Tool, was developed to address what our project team saw as the critical learning objectives for potential end-users (SERDP, 2024; <https://serdp-estcp.mil/projects/details/350cbc0b-893a-43a6-8a0c-c9c057bacac0/er20-1429-project-overview>).

The first learning objective is to help users perform a quantitative assessment of concentration and mass trends that may include projecting the remediation timeframe based on the current remedial approach, demonstrating asymptotic behavior and plume stability, and estimating the attenuation rates/remediation timeframe if the current remedial approach was discontinued. The second learning objective focuses on describing site complexities and their implications for achieving remedial objectives. The final objective is to identify alternative approaches for managing the site along with their expected performance.

These objectives were translated into a series of individual modules (tools) are the key elements of the home page (**Figure 4-1**). This includes the 9 individual modules plus an overall summary module, as described in detail in Section 4.2. The technical basis for the individual modules was then developed, including identifying the specific quantitative approaches for documenting asymptotic behavior, plume stability, site heterogeneity, etc.



**Figure 4-1. Home Page for TA<sup>2</sup> Tool.** Users can click on buttons to access various tools that are designed to answer specific questions or research relevant topics.

The tool provides a framework for remedial decision makers to evaluate different types of sites, including where active treatment (e.g., pump and treat) as well as sites where active source zone remediation is being contemplated. It also includes a description of enhanced MNA alternatives at sites where MNA alone may not be sufficient to control risk. As shown in Figure 3, the tool can be used to answer specific questions that have a primarily quantitative basis or to provide focused qualitative information for researching specific topics. Users can engage with those individual modules that might be pertinent to an individual site assessment, or they can go through all the modules to perform a more thorough, step-by-step summary of the relevant issues for their site.

The tool has been developed as an R Shiny app (version 1.8.0) (Chang et al., 2023). This is an interactive platform where R programming is used to perform all quantitative functions and the user can view the results in a clean and simple interface that easily accommodates plots, charts, and various mapping features in a Web browser. The resulting tool is free and does not require the user to install R software (R Core Team, 2023) or R code on their computer. In addition to the Shiny web-browser interface, a version of the codes has been uploaded to GitHub ([https://github.com/GSIEnvironmental/5648\\_TA2-Transition-Assessment-Assistant\\_1a](https://github.com/GSIEnvironmental/5648_TA2-Transition-Assessment-Assistant_1a)) for users interested in making custom modifications to the tool. These codes are readily accessible and can be executed on users' local machines. A list of various R package libraries used in this R shiny



platform can also be found on GitHub. Over 40 packages are utilized in this platform, with some of them being customized to meet specific requirements.

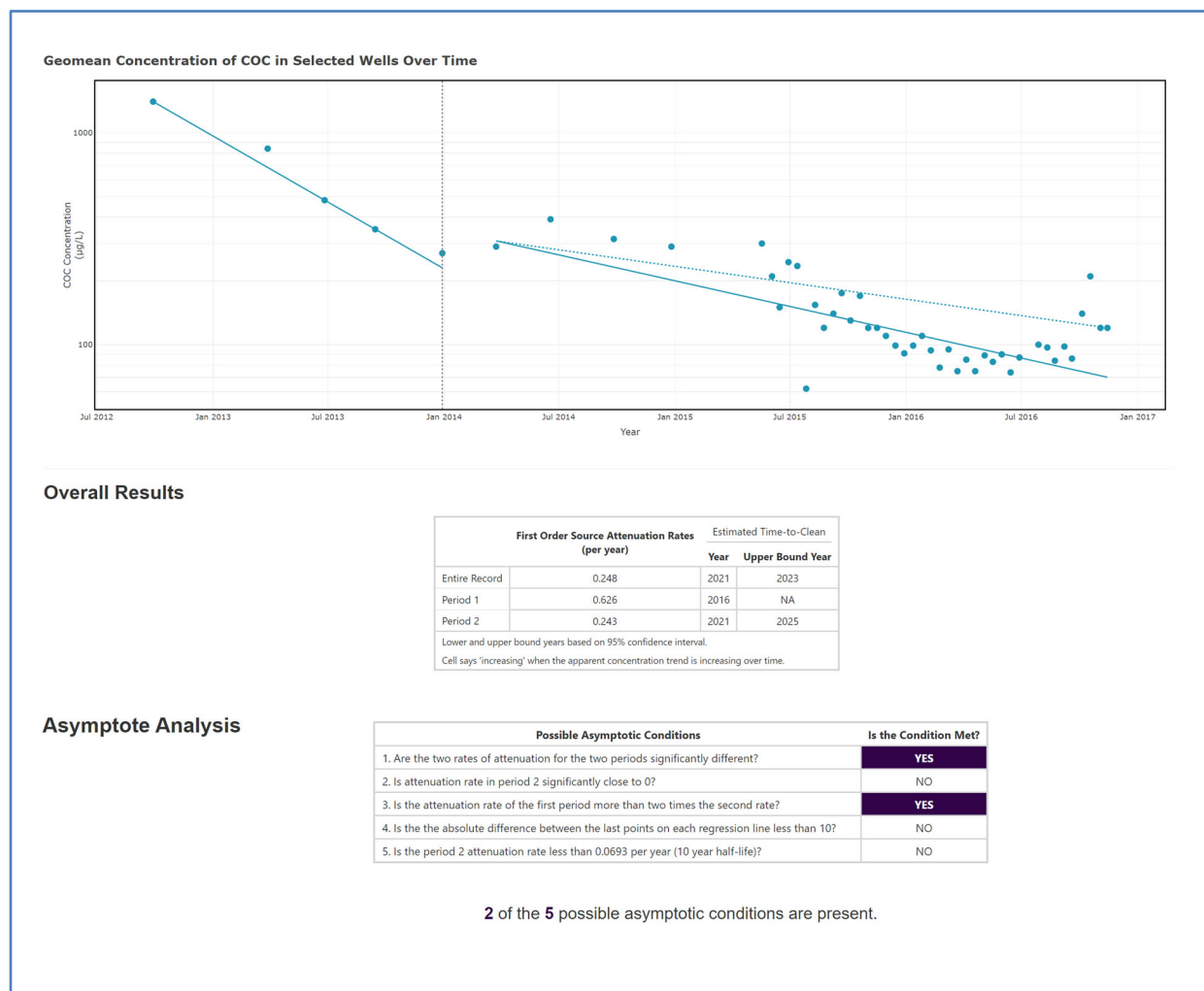
Within the framework of the TA<sup>2</sup> application tool, an integrated data input tab has been developed to facilitate the seamless uploading and editing of monitoring well concentration time series and location data. This tab serves as a critical component, enabling users to import pertinent information from an Excel file. To ensure compatibility and streamline the data entry process, a tailored template has been developed within this tab. This template is designed to accommodate the unique requirements and formats pertinent to the TA<sup>2</sup> Tool, which helps to ensure efficiency and accuracy in data handling and analysis. The data tab is rendered with each module and the user is typically prompted to enter other relevant site-specific data by either uploading an Excel file or modifying the data tab on the screen by hand, and the results are automatically generated in each module. Help buttons (icons marked with an “?”) are provided within the individual tools to guide users on how to answer questions or select representative parameter values.

The following sections describe the modules contained within the app, and the project webpage includes a Technology Guide that provides additional information on its structure and application.

## 4.2 Detailed Description of Individual Modules in the TA<sup>2</sup> Tool

### 4.2.1 Quantitative Tools

**Tool 1** uses concentration vs. time data from site monitoring wells to help determine if asymptotic conditions are present at particular locations or across the site (**Figure 4-2**). This is a crucial component of understanding if performance has plateaued at wells where an active treatment is in place (e.g., a groundwater extraction well located within a source area). The tool accomplishes this by calculating source attenuation rates from a monitoring well’s concentration vs. time data (assuming a first-order relationship with a designated confidence interval), and then estimating the time to reach a user-specified cleanup goal if that attenuation rate were to continue. The user can select a “change point” within the monitoring record to see if there is evidence that the rate has changed over time. This type of change point analysis has proven successful in evaluating MNA and documenting the technical basis for transitioning sites (e.g., Ferrey et al., 2024). For example, a relatively rapid attenuation rate may be observed early in the monitoring period, followed by a leveling off as most of the accessible mass has been removed. The user can then manually select the date when this change appears to have occurred (based on visual interpretation) or use a date suggested automatically by the tool (based on a binary segmentation protocol). Once this change point has been entered, the tool will then calculate a rate for the early period and a rate for the later period, and then go through five lines of evidence for whether these rates are consistent with asymptotic conditions (e.g., are the two rates of attenuation significantly different?). If the collective results suggest that the performance of the existing remediation approach is asymptotic and will result in long remediation timeframes, then this serves as a technical justification for performing a transition assessment.

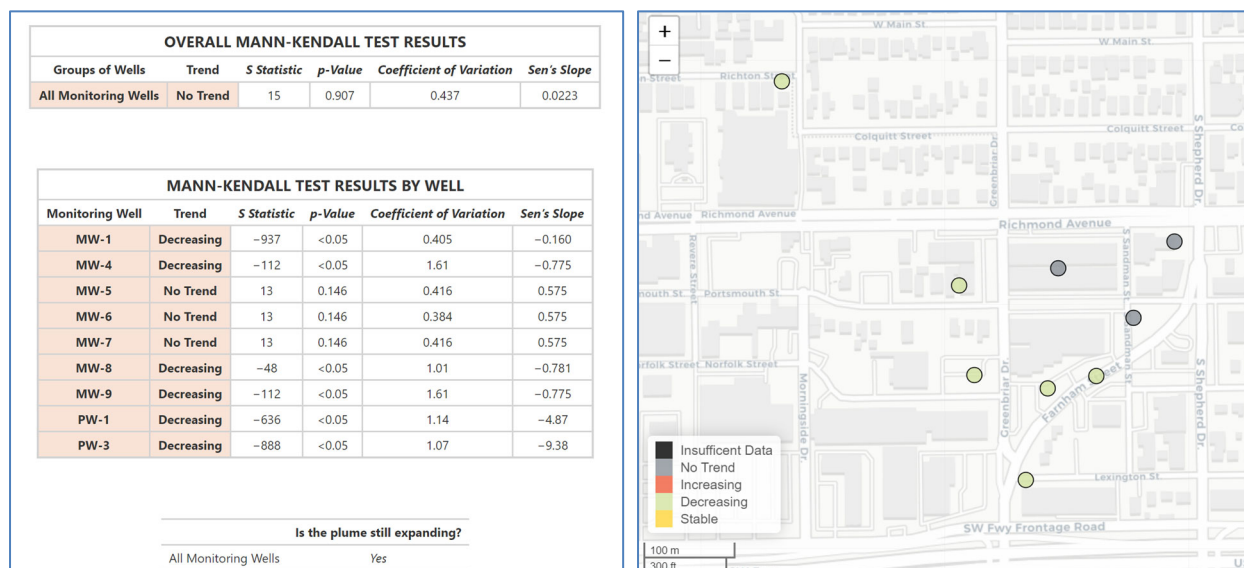


**Figure 4-2. Example of an Asymptote Analysis Using Concentration vs. Time data in Tool 1 of the TA<sup>2</sup> Tool.** The source attenuation rate and corresponding remediation timeframe can be estimated for different periods of the monitoring record, and the tool then evaluates several lines of evidence for asymptotic behavior.

**Tool 2** focuses on plume stability by using concentration vs. time data to calculate trends in the data for site monitoring wells (**Figure 4-3**). The user has the option to evaluate well data separately or evaluate after aggregating data into different groups, such as: (1) Source wells; (2) Mid-plume wells; and (3) Downgradient wells (or any other grouping of wells).

The tool then uses a non-parametric statistical trend test (Mann-Kendall Test) to determine if increasing or decreasing trends are present. A stable or decreasing trend for individual downgradient wells, or the entire group of downgradient wells, suggests that attenuation within the plume is contributing to a stable or shrinking plume footprint. This is a primary line of evidence for natural attenuation when MNA is used as a remedy and/or as a risk management strategy.

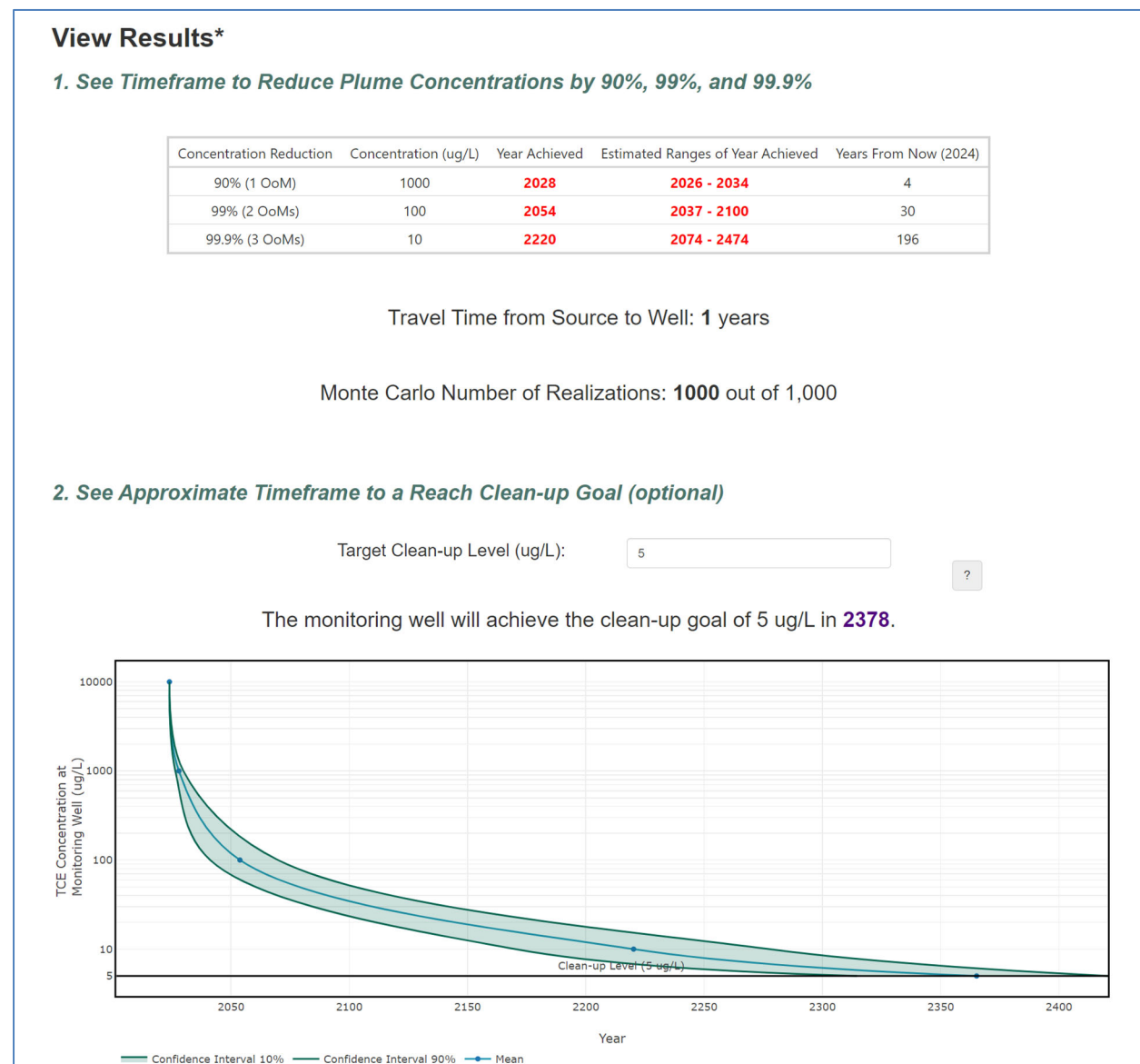
Concentration trend results for individual wells are displayed on a base map that is automatically generated from the user-entered geographic coordinates. The tool will also evaluate the mass trend for groups of wells using the concentration vs. time data and the representative areas for the wells. A site-wide trend can be established by selecting all wells, and a stable or decreasing site-wide trend suggests that the plume is attenuating.



**Figure 4-3. Example of a Plume Stability Analysis in Tool 2 of the TA<sup>2</sup> Tool.** Trend analysis is performed for individual or groups of wells, and results are automatically plotted by location based on user-entered coordinates.

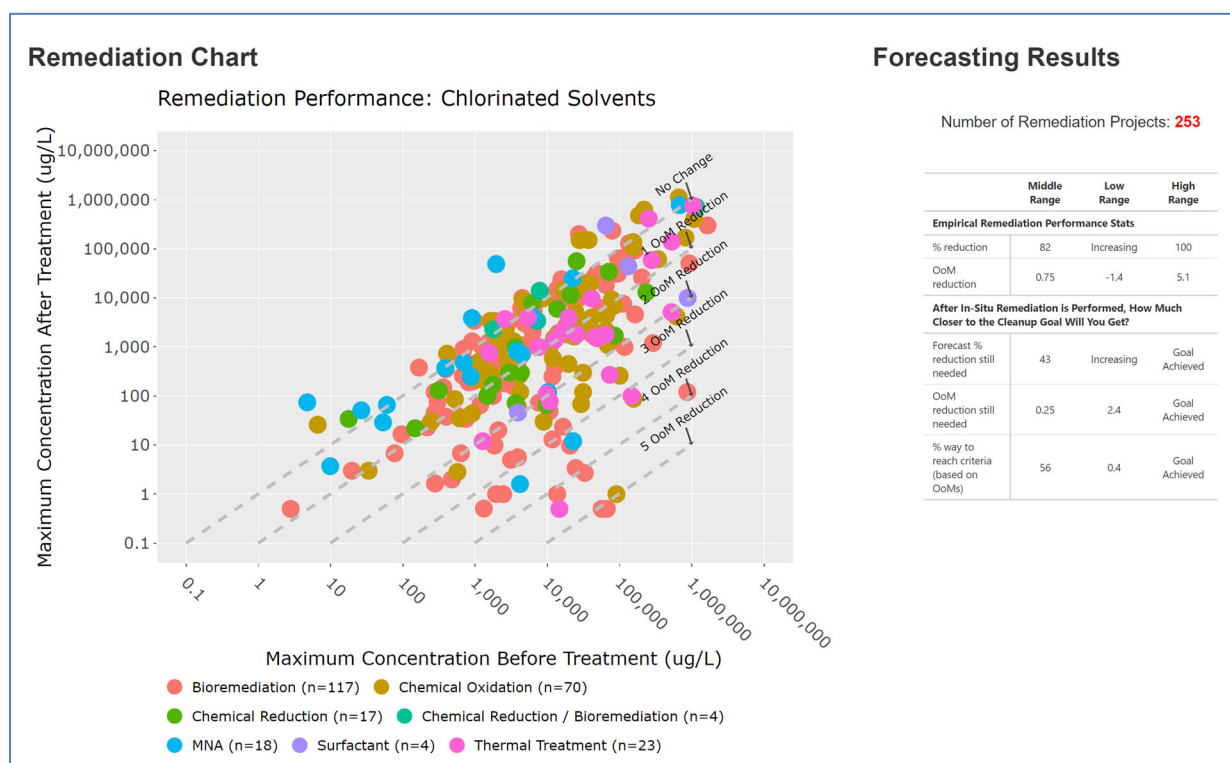
**Tool 3** is a simple tool that will estimate the number of years it will take to reduce the concentration in a chlorinated solvent plume monitoring well by 90%, 99%, or 99.9% after complete source removal (**Figure 4-4**). This information is then used to predict the remediation timeframe (the year when the cleanup goal concentration is reached) for the site as a result of completely removing the source. The basis for this tool was developed by the late Dr. Bob Borden (Borden and Cha, 2021) and it relies on tens of thousands of simulations generated using the REMChlor-MD model (Falta et al., 2018). The tool provides an empirical match based on site-specific information. The model has also been linked to a probabilistic simulation package within R Shiny which uses a Monte Carlo approach to assess how uncertainty in the input parameters affects the timeframe estimates. The overall goal is to better document the influence of matrix diffusion on achieving the cleanup goal. For instance, the remediation timeframe estimate from Tool 3 can be compared to the remediation timeframe estimate from Tool 1 to understand if source removal provides benefits. If not, it means that matrix diffusion processes are significant enough where a transition from an active remediation strategy to a more passive approach is merited. Having this information readily

available before an active remedy is implemented, could assist site stakeholders select more appropriate remedies and improve effective risk communication with regulators and the public.



**Figure 4-4. Example of Remediation Timeframe estimates after complete source removal in Tool 3 of the TA<sup>2</sup> Tool.** The time to reach concentration goals is estimated from RemCHLOR-MD simulations that are based on site-specific hydrogeologic parameters to account for the effects of matrix diffusion. A Monte Carlo approach is used to account for uncertainty in the parameter values.

**Tool 4** leverages the extensive ESTCP investment in understanding what has happened at remediation sites to create a semi-quantitative forecasting tool for understanding what level of performance (i.e., reduction in concentration) might be achieved at a particular site (**Figure 4-5**). This is then used to predict whether the selected technology would be able to obtain the concentration reduction needed to achieve a site-specific cleanup goal. It is based on the database of remediation performance at 235 chlorinated solvent groundwater sites described in McGuire et al. (2016). Users select the contaminant type(s), maximum concentration range, and technologies that they wish to evaluate, along with a site-specific starting concentration and cleanup goal. The tool displays the relevant performance data in a “triangle chart” that includes the before-treatment concentrations (x-axis) and after-treatment concentrations (y-axis) for each site. The higher-performing sites are those that have achieved a higher Order of Magnitude (OoM) reduction in concentration, meaning that they plot on the lower right portion of the graph. A table at the right of the chart shows how close one would be expected to get to the site-specific cleanup goal based on the performance range of the selected technology. This is important for setting expectations on whether a given technology typically achieves the degree of concentration reductions that might be required at the site being assessed, which can then be used as part of a cost-benefit analysis of performing additional source remediation.

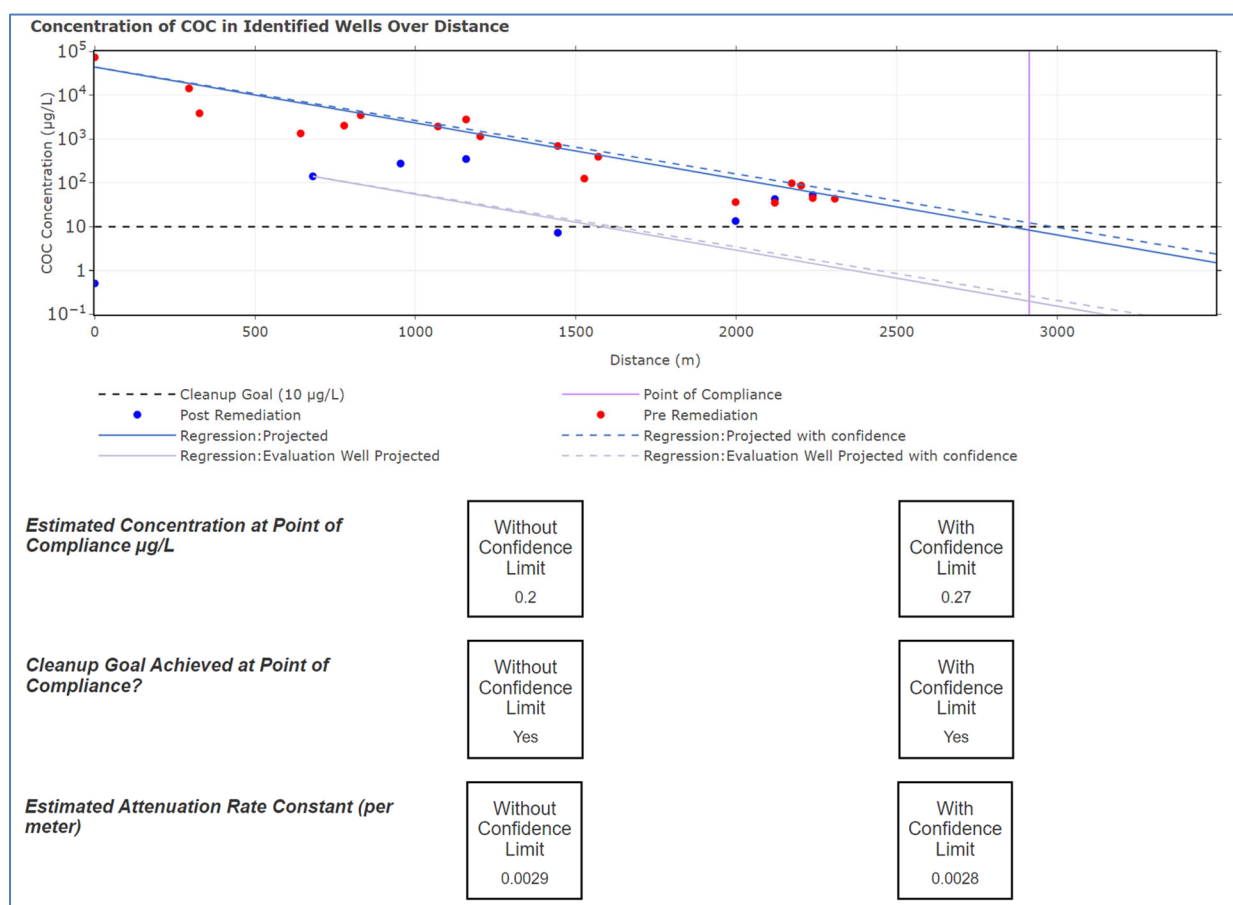


**Figure 4-5. Example of the Remediation Performance Forecasting Results in Tool 4 of the TA<sup>2</sup> Tool.** Each symbol on the chart represents a site where in situ remediation has occurred based on the concentration before treatment (x-axis) vs the concentration after treatment (y-axis).

**Tool 5** uses site monitoring data to evaluate if concentration-based cleanup goals will be exceeded at a downgradient point of compliance (e.g., site boundary) after transitioning from active treatment (e.g., pump-and-treat) to passive treatment (e.g., MNA) (**Figure 4-6**). This is a key criterion for sites where MNA is being used as part of a risk-based management strategy. The tool includes several different options to estimate a site-specific attenuation rate constant, and then uses this rate constant to project the concentration vs. distance from the contaminant source. The predicted concentration at the downgradient point of compliance is then compared to the concentration goal to see if the natural assimilative capacity along the aquifer flow path can achieve the concentration goal.

For example, the tab labeled “Use Pre-Remediation Rate Constant” lets the user project concentrations with distance based on a rate constant that is derived from the pre-remediation period. It first plots the logarithm of the concentration of contaminants from the period before active treatment began against the distance from the source well. Ideally, the data from the plume centerline should plot near a straight line. The user edits the data to exclude low concentrations that are obviously not along the plume centerline. The tool then fits a linear regression to the natural logarithm of concentrations of contaminants on distance from the source. The slope of the regression is the rate constant for natural attenuation in concentrations with distance from the source. This rate constant includes the contributions of degradation and dispersion. This rate constant can be used to forecast the concentration with distance from the well of concern after the end of active treatment. This graph showing this projection is also included on this Tool 5 tab, and it uses the well locations and data selected by the user. To allow the user to address uncertainty in the rate constant, Tool 5 will calculate the slower one-tailed confidence interval on the rate constant for attenuation at a level of uncertainty selected by the user. The user can then see how the slower confidence interval impacts the projected concentrations along the flow path on the same graph. Similar approaches are provided within Tool 5 for using rate constants estimated from lab-based (or even field-based) assays, as well as rate constants derived from post-remediation data.





**Figure 4-6. Example of a Concentration vs. Distance Projection in Tool 5 of the TA<sup>2</sup> Tool.**

The natural attenuation rate is calculated based on pre-remediation data (other options are available) and then used to determine if the cleanup goal will be achieved at the downgradient point of compliance.

#### 4.2.2 Quantitative Tools

**Tool 6** is a summary of our current understanding on the role of matrix diffusion in influencing long-term concentration trends and remedial performance at contaminated groundwater sites, as well as different modeling approaches for better quantifying the effects of matrix diffusion. This includes a detailed case study from a large pump-and-treat site where concentrations plateaued over time in extraction wells, and modeling showed that these effects were related to matrix diffusion. This module also compares eight different modeling approaches for estimating the impact of matrix diffusion on remediation, including lower-effort (screening-level) modeling approaches vs. more detailed simulations using numerical models. A key portion of this module is the step-by-step description of how REMChlor-MD can be applied to support Transition Assessments. REMChlor-MD is a free model that helps answer the question “what benefits will



a hypothetical remediation project provide?”, making it well-suited for deciding if additional remediation is warranted at sites where complex geologic conditions might limit performance.

**Tool 7** describes different enhanced attenuation (EA) options that can be explored at sites where MNA might be insufficient to manage the plume by itself. At these types of sites, a Transition Assessment has likely identified significant technical limitations that make it unlikely that aggressive remedial measures will result in short-term achievement of site goals. This means that it makes sense to transition the site from an active mass removal phase to more passive long-term management, but some additional remediation measures may be required to meet site objectives (e.g., limit future plume growth, maintain certain concentration goals at a point of compliance). For these sites, it is important to evaluate EA approaches that may serve as a “bridge” between intensive source treatments for mass removal and MNA, as described in ITRC guidance (2008). This can include methods to reduce contaminant loading from the source (e.g., caps/covers, containment barriers, and hydraulic control) or increase attenuation capacity within the source or plume (nutrient injections, phytoremediation).

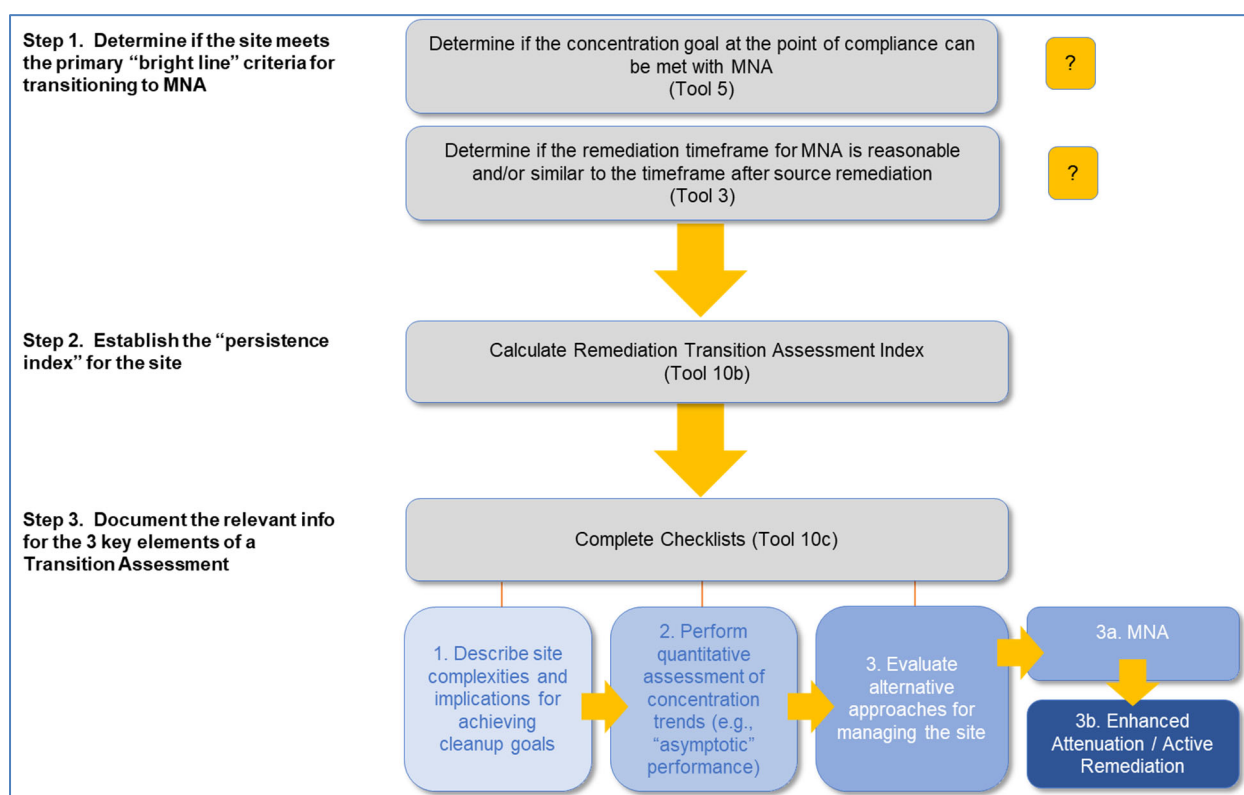
**Tool 8** provides a site-specific assessment of the geologic heterogeneity that contributes to matrix diffusion. This includes the presence of aquitards and the distribution of low-permeability layers and lenses within your plume. With this information, the impact of matrix diffusion on remediation performance and cleanup times can be categorized as Low, Moderate, or High. Users start by reviewing a menu of different hydrogeologic settings to identify the one that is most representative of the conditions for the plume at their site. They then enter data from site-specific boring logs to determine the distribution of low permeability layers/lenses that are in contact with the plume. These data are used to characterize the geologic heterogeneity at the site and the potential impact of matrix diffusion on remediation based on simulations automatically performed using the REMChlor-MD model.

**Tool 9** provides information on several other projects that were funded under the same SERDP Statement of Need (“Quantitative Groundwater Plume Characterization to Support Transition Assessments”) as the TA<sup>2</sup> Tool. These projects also aim to improve our ability to identify transition points from active to more passive remedial measures, and to allow us to better assess the impacts of interim remedial measures. The information found at these pages—which will continue to be updated as these projects progress—include tools, guidance, reports, and other publications that highlight key findings and benefits to DoD and other interested parties.

#### 4.2.3 Summary Assessment Tools

**Tool 10** walks through the key steps that should be followed when conducting a site-specific transition assessment. In this case, the primary objective is to determine if transitioning to MNA is appropriate based on site conditions and/or the performance of ongoing or prospective remedial measures by utilizing information from different modules with the TA<sup>2</sup> Tool.

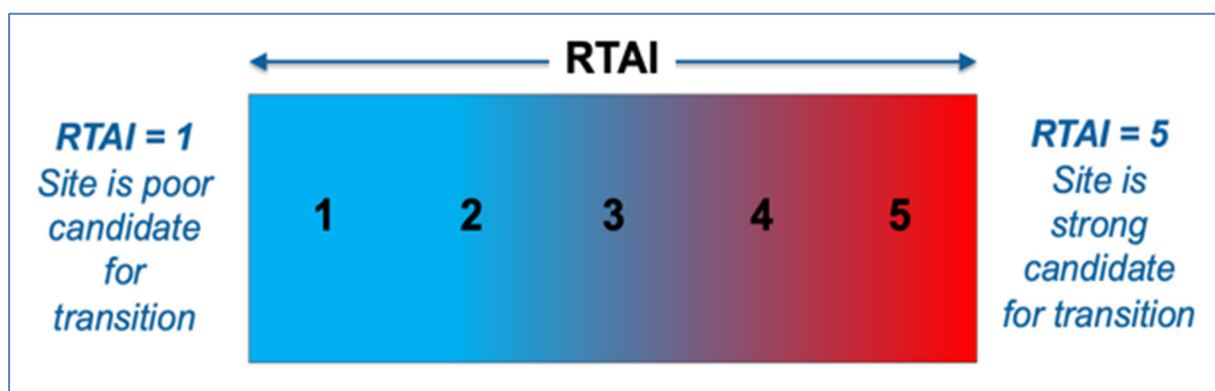
For example, **Figure 4-7** shows the step-by-step procedure that includes evaluating two primary bright line criteria that are likely to be relevant (depending on the specific site objectives) as a first step: (1) Can the relevant concentration goals be met at the point of compliance with MNA?; and (2) Is the remediation timeframe for MNA reasonable and/or similar to the timeframe if source remediation was used?. This tool also provides checklists to ensure that the user has gathered the necessary information to support a technically rigorous site-specific Transition Assessment. It further maps out how each of the other tools in this app can be used to assist in the overall assessment. These checklists are based on three key site-specific elements shown in the graphic to the right. For the purposes of this tool, we have included the initial steps of documenting site conditions and complexities, as well as the quantitative assessment of asymptotic trends and plume stability, in the Transition Assessment.



**Figure 4-7. Summary of Transition Assessment Framework Presented in Tool 10 of the TA² Tool.**

Tool 10 also integrates information from several other tools in the app into a Remediation Transition Assessment Index, or "RTAI". The RTAI serves as a simple metric that reflects the relative persistence of contamination at a site due to matrix diffusion and other site-specific considerations (**Figure 4-8**). It summarizes the results from relevant tools that have been completed by the user, and then assigns a RTAI value to each of those results. An RTAI of 5 indicates that the results suggest that the site is a strong candidate for transitioning to MNA or

enhanced attenuation approaches, while an RTAI of 1 suggests that the site is a poor candidate. The user can review the RTAI values generated by each tool and assign an overall (average) RTAI for the site based on the preponderance of evidence (**Figure 4-9**). Alternatively, the user can choose to weight specific RTAI values more heavily based on their relevancy to the site-specific drivers. Note that a user can calculate an RTAI for their site without going through the other steps in Tool 10. However, a decision to transition to MNA will likely require that the “bright line” criteria described in Tool 10 have also been met, and that relevant site information (described in the Tool 10 checklists) has been adequately documented.



**Figure 4-8. Remediation Transition Assessment Index (RTAI)**

Tool	RTAI					Rationale
	Poor Candidate RTAI = 1	Fair Candidate RTAI = 2	Typical Candidate RTAI = 3	Good Candidate RTAI = 4	Strong Candidate RTAI = 5	
1. Asymptote (Tool 1)	1	2	3	4	5	The RTAI is higher if there are more Lines of Evidence that concentrations at the site are asymptotic.
2. Is my Plume expanding? (Tool 2)	I	PI	ST	PD	D	The RTAI is higher if key downgradient/sentinel well(s) exhibit stable or declining concentration trends.
3. Expected performance (Tool 4)	<0.5	0.5 to <0.75	0.75 to <1.25	1.25 to <2	≥2	The RTAI is higher for sites where a higher concentration is needed and may not be achievable based on the expected level of performance of remediation technologies.
4. Remedial Potential (Tool 4)	High	High-Mod	Moderate	Mod-Low	Low	The RTAI is higher for sites with challenging cleanup goals and difficult conditions. It is based on a similar methodology developed by ITRC for evaluating remediation potential.
5. How long? (Tool 3)	<5	5 to <10	10 to <25	25 to <50	≥50	The RTAI is higher for sites where additional source remediation does not result in short remediation timeframes. It is based on the estimated number of years to reach the cleanup goal after source remediation.
6. Enhanced Attenuation (Tool 7)	-	-	-	✓	-	The RTAI is higher for sites where EA technologies or approaches can be easily implemented. It is based on the depth and width of the area being targeted, which are used as proxies for cost and ease of installation.
Metric	0	1	1	2	1	

**Figure 4-9. Example of how the Remediation Transition Assessment Indicator (RTAI) is estimated within Tool 10 of the TA<sup>2</sup> Tool.** A high RTAI from an individual tool (or multiple tools) supports transitioning away from active treatment.

### 4.3 How the TA<sup>2</sup> Tool Compliments Other Transition Assessment Resources

#### 4.3.1 Adaptive Site Management (ITRC)

ITRC developed guidance on remediation management of complex sites using a process labeled Adaptive Site Management that focuses on key concepts and tools and techniques to reduce uncertainty and manage the process of remediation. closure has been difficult to achieve (ITRC, 2017; Price et al., 2017). The goal was to show that meeting closure objectives at these sites may be difficult but would benefit from an adaptable, iterative evaluation process that may require modifying remedies over time. The steps outlined in the ITRC guidance are consistent with those described here for Transition Assessments, including the need to understand the complexities of a site that may influence remediation potential. There is less emphasis on specific quantitative tools or approaches to analyze site data, and quantifying exactly how site complexities influence remediation timeframes is not specifically addressed. However, the ITRC did emphasize the need for developing interim objectives that can be used to modify and/or transition away from existing remedies. They also pointed out that the concepts that apply at complex sites are also applicable to smaller or less resource-intensive sites.

#### 4.3.2 Enhanced Attenuation (ITRC)

Enhanced attenuation as a concept was comprehensively described in ITRC guidance as a bridge between active treatment and natural attenuation (ITRC, 2008). It includes a variety of techniques that can be used to reduce contaminant loadings to aquifers (or within aquifers) and/or increase attenuation rates of natural processes beyond those that might otherwise occur without intervention (Wilson et al., 2007). These concepts were directly integrated into the TA<sup>2</sup> Tool and thus are consistent with the Transition Assessment approach proposed here. They are an important element of transitions away from active treatment because they represent potentially viable remedial options for sites where MNA is insufficient to manage an entire site. As such, they can be used in combination with MNA to ensure that the natural assimilative capacity of an aquifer is not exceeded. In addition, there is increased recognition that active treatment processes such as biological reductive dechlorination can be implemented in a way that will contribute to longer-lasting effects (Horst et al., 2022). These benefits of these so-called “long-term passive phases” of remediation are based on empirical evidence that biotic and abiotic attenuation rates can remain enhanced for many years after the end of active treatment (e.g., once amendment injections have stopped). These processes can be evaluated as part of Transition Assessment, particularly when evaluating attenuation rates at sites where in situ treatment has already occurred.

#### 4.3.3 Pump-and-Treat Optimization (ITRC)

ITRC recently published technical guidance for sites where a pump-and-treat remedy is already in place or planned (ITRC, 2023). The document includes a section on “transition and termination” of these systems, which complements the approach for transition assessments described in the TA<sup>2</sup> Tool. For example, the first step in the ITRC guidance is to “identify the trigger conditions” for transitioning away from pump-and-treat, which includes an assessment of asymptotic performance and an updated CSM where matrix diffusion is a limiting factor for performance. The TA<sup>2</sup> Tool includes modules that directly support the assessment of these trigger conditions. Similarly, the second step in the ITRC guidance involves identifying the transition approach, including an understanding of whether MNA is feasible based on the assimilative capacity of the aquifer. Again, this type of assessment is directly supported through several of the modules in the TA<sup>2</sup> Tool, meaning it is well suited to support transition planning at sites with pump-and-treat systems.

#### 4.3.4 Pump-and-Treat Performance Assessments (PNNL)

Researchers from the Pacific Northwest National Lab (PNNL) published several reports related to assessing the performance of pump-and-treat systems, with a goal of understanding if a site-specific transition was warranted (Truex et al., 2015; Truex and Johnson, 2017; Truex et al., 2017). These included a structured decision framework that identified a series of decision elements (e.g., contaminant concentrations and trends, attenuation capacity of the aquifer, and future plume behavior) that can be used to support different decision outcomes (e.g., transitioning to MNA). This framework aligns nicely with the assessment process described here for the TA<sup>2</sup> Tool. For example, the PNNL reports emphasize that the natural attenuation capacity of the aquifer should be assessed to determine if it can reduce contaminant concentrations below limits at downgradient boundaries or points of compliance after shutting off extraction wells. This use of an attenuation zone (or assimilative capacity zone) provides benefits for transitioning from pump-and-treat

remedy to MNA, particularly to monitor the short-term behavior of the plume in the initial transition stages. A case study describing how this assessment framework could be applied to the remedy decision process is in Truex and Johnson (2017).

#### 4.3.5 BioPIC

BioPIC is a free decision support software developed for ESTCP that is designed to help evaluate whether MNA is an appropriate site remedy based on collecting the relevant lines of evidence for MNA (LeBron et al. 2015; Danko et al., 2021; Adamson et al., 2022; <https://serdp-estcp.mil/toolsandtraining/details/4bacf717-26a3-4a7a-a53d-bff9cf6aec77>). In assessing MNA, the objective is to adhere to established protocols while integrating recent insights that enhance the potential effectiveness of this method across a broader range of contaminants. This entails utilizing data that supports primary evidence for MNA, such as the decrease in concentration trends over time at appropriate sampling sites, as well as secondary and tertiary evidence. BioPIC was originally developed to evaluate sites with chlorinated ethenes as the primary contaminant, but it has recently been updated to include 1,4-dioxane and chlorinated ethanes. This quantitative software tool furnishes systematic guidance for gathering and assessing additional lines of evidence, including a methodology for estimating site-specific biodegradation rate constants using site data or targeted  $^{14}\text{C}$  assays, isotope fractionation data, degradation biomarkers, geochemical parameters, and co-contaminant concentrations. BioPIC shares similarities with the TA<sup>2</sup> Tool in that both assess MNA as a potential remedy, but unlike the TA<sup>2</sup> Tool, it does not directly address how to gather information to support transitioning away from existing (or proposed) active treatments due to site complexities and performance issues.

BioPIC is also being updated as part of two other projects, including one that is examining natural attenuation pathways for low concentrations of minor constituents (SERDP ER23-3904; PI Dr. Anthony Danko, NAVFAC EXWC) and another that is investigating how abiotic processes support transitions to MNA (ESTCP ER23-7881; PI Dr. Ramona Iery, NAVFAC EXWC).

#### 4.3.6 MAROS

MAROS is another free software tool that was originally developed for DoD in the late 1990's and is currently being updated as part of an ESTCP-funded project (ER22-7422). This tool focuses on optimizing remediation monitoring networks but includes evaluation of well-specific and site-wide trends with a particular emphasis on geospatial data visualizations. The current update involves transitioning the elements from the former software package to the web-based R Shiny platform (while incorporating new data visualization and analysis features), making it a good complement to the TA<sup>2</sup> Tool for sites that are in long-term management phases.

Once the update is complete, the new version of MAROS will be available for download at its ESTCP project page: <https://serdp-estcp.mil/projects/details/015c87e4-3737-43a9-9a35-dbee577cabe3/building-the-next-generation-long-term-monitoring-optimization-toolbox-revitalizing-the-maros-platform-on-the-web>.



## 4.4 Evaluation of Technology Transitions Over Time

### 4.4.1 Overview

As described previously, alternative technologies or approaches have emerged over time that offer complementary or more efficient approaches to groundwater remediation in certain situations compared to conventional technologies like pump-and-treat. Pump-and-treat systems can be effective in containing groundwater contaminants and reducing migration, they have well-recognized limitations that include high operating costs, long treatment times, and difficulty in completely removing certain contaminants in less accessible portions of an aquifer. Pump-and-treat systems are still widely used, but there is a perception that these systems—once installed and operating—can never be shut down. If this assumption were true, then sites with pump-and-treat systems would never be closed, and efforts to use site data to optimize and/or transition away from this technology would be fruitless. Because of this perception, a more thorough evaluation of whether sites with pump-and-treat systems are routinely transitioned to other technologies and/or eventually closed is a good test case for documenting the potential value of performing transition assessments.

### 4.4.1 Methods and Results

We examined multi-site data compiled by different regulatory agencies to help illustrate trends in the use of pump-and-treat systems as a groundwater remedy. For example, USEPA reported that pump-and-treat systems were included in approximately 25% of the groundwater remedy decision documents (RODs) issued during the latest year available (2020) at Superfund sites (USEPA, 2023). The trend in the use of pump-and-treat at these sites has stabilized in recent years (three-year average of 31% from 2018 – 2020) after a period of long decline, though it is now at or below the percentage of sites that have MNA (41% in 2020) or in situ treatment (50% in 2020) listed in their decision documents as a groundwater remedy. However, USEPA does not summarize if or when any changes to the selected remedies may have occurred after the decision documents were issued.

A second example is the California Geotracker database, which is a publicly accessible data management system maintained by the California State Water Resources Control Board (<https://geotracker.waterboards.ca.gov/>). Among other data, it contains extensive information on all sites that are part of the state's corrective action program, including millions of individual records dating back to the early 2000s. It has been used for many prior studies where multi-site data are used to understand patterns in groundwater conditions, contaminant occurrence, and remedial performance (Beckley et al., 2022; McHugh et al., 2022; Adamson et al., 2021). It also records information on the type of remediation technologies that have been employed at individual sites, and it provides access to site investigation reports and other administrative documents that can be used to support further evaluation of their operating histories.

For the purposes of this study, the GeoTracker Database was downloaded in December 2022. The database contained 14,156 corrective action sites with groundwater monitoring data. Of these



sites, 8,021 included information on the remediation technologies applied at the site. The technologies identified were capping (11 sites), dual phase extraction (490), ex situ biological treatment (9), ex-situ physical/chemical treatment (211), ex situ thermal treatment (5), excavation (4353), free product removal (1233), in site biological treatment (272), in situ physical/chemical treatment (2031), in situ thermal treatment (10), monitored natural attenuation (567), other (769), permeable reactive barrier (21), pump & treat (1709), and soil vapor extraction (3008). For 4,098 sites the database indicated that one remediation technology had been applied and for 3,923 sites the database indicated that two or more technologies had been applied.

Based on prior work with the GeoTracker database, we were aware that information in the database on remediation technologies was not always consistent with information provided in the site investigation reports. In particular, we have previously observed that the start date and end date for remediation technologies recorded in the database were often inaccurate. Therefore, in order to better understand the use of pump and treat as a remediation technology, we selected a subset of the 243 sites out of the 1709 where pump and treat was identified as the remediation technology for verification. For each verification site, we downloaded one or more site investigation reports from the GeoTracker website. These reports were reviewed to i) confirm use of pump and treat as a remediation technology at the site, and ii) identify the start date, current status, and end date (if applicable) of the pump and treat system. Although most pump and treat sites in the database were petroleum release sites that have attained regulatory closure, the verification sites were selected to include similar numbers of petroleum and chlorinated solvent release sites and similar numbers of open and closed sites (**Table 4-1**).

**Table 4-1. Primary Contaminant and Regulatory Status for Pump-and-Treat Sites**

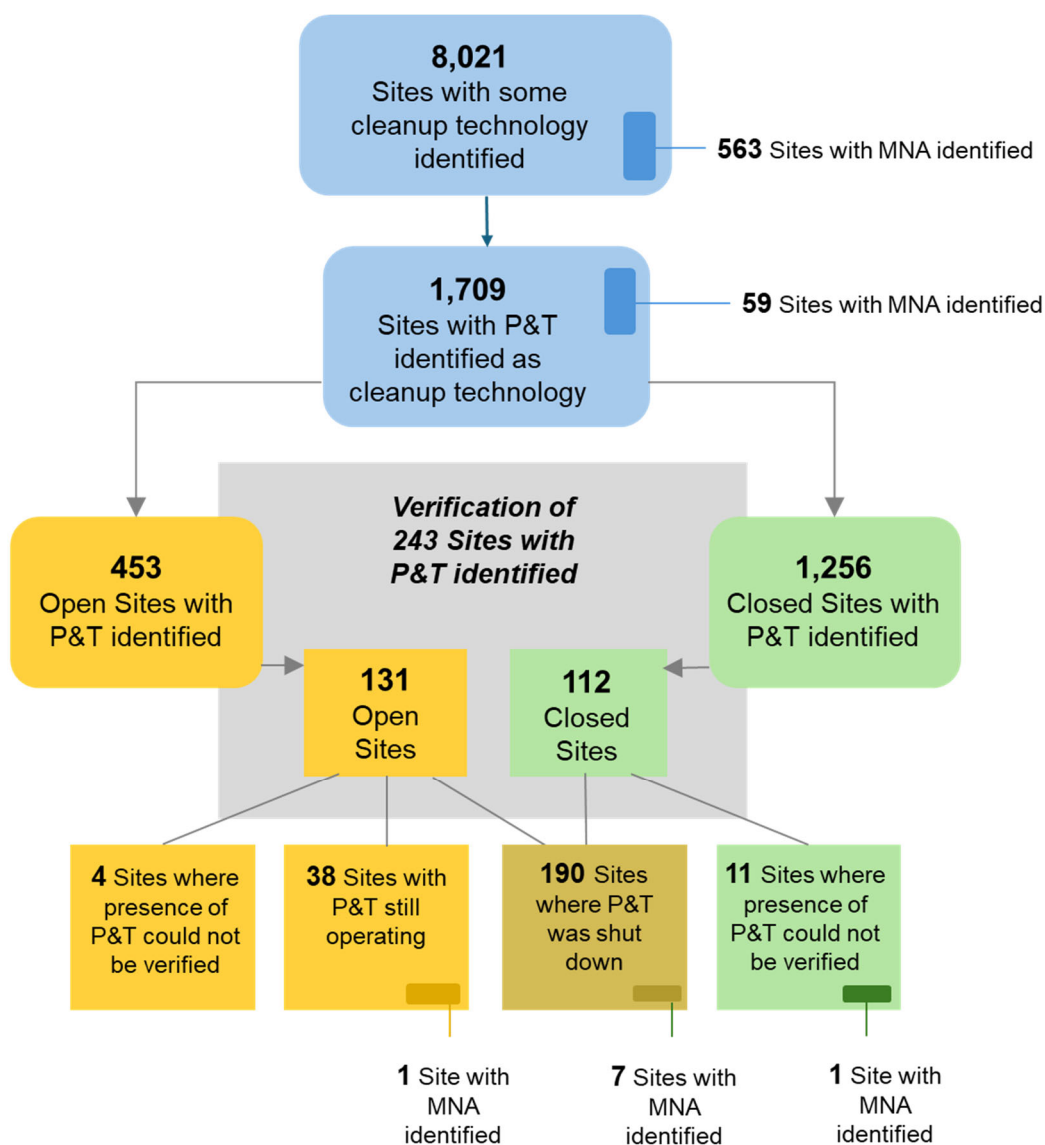
Primary Contaminant	Site Status	Verification Sites	All Sites
Petroleum	Open	84	304
	Closed	71	1176
Chlorinated Solvent	Open	46	146
	Closed	31	46
Other	Open	1	3
	Closed	10	34

The distribution of sites is displayed in **Figure 4-10**. Key findings from this evaluation include the following:

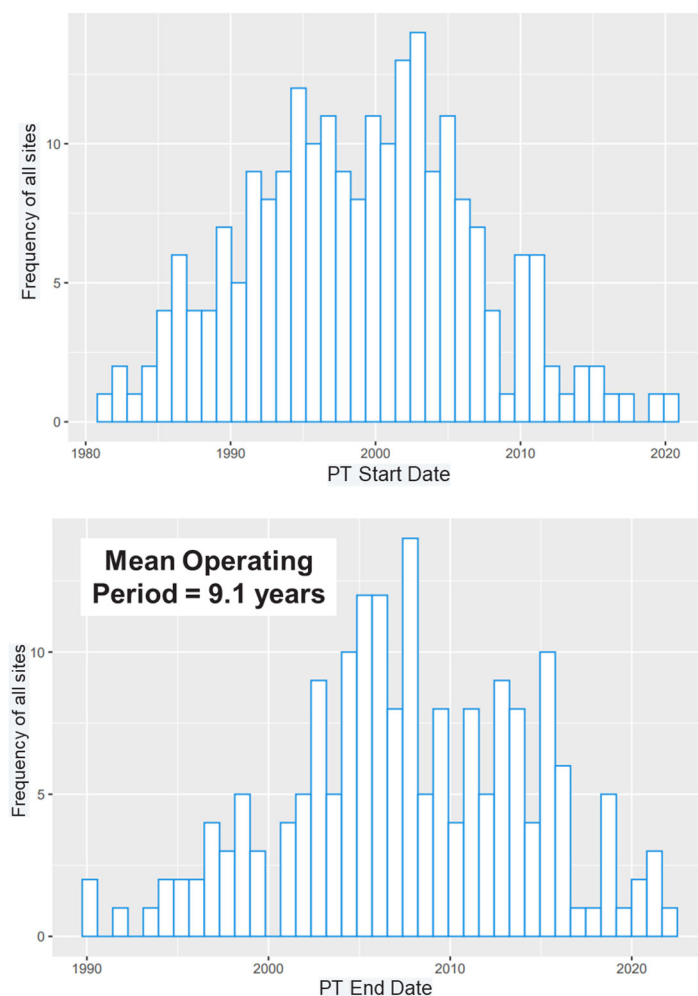
- Based on the entire dataset, pump-and-treat systems have reportedly been used at 21% of all sites where a cleanup technology was identified in GeoTracker (1709 of 8,021). However, 73% of those sites are now listed as closed (1256 of 1709). This suggests that the majority of sites where a pump-and-treat system was installed were petroleum sites and were eventually able to shut off that system. However, only 24% (46 of 192) chlorinated solvent release sites with pump and treat systems in their record are now listed as closed.

- For the 243 verification sites, we verified the use of pump and treat systems at 228 sites (94%). This included 127 open sites and 101 closed sites. As part of other site reviews, we also identified some sites with pump and treat systems documented in site investigation reports but not identified in the database as having had pump-and-treat systems. Overall, the 1709 sites identified in the GeoTracker database as having pump-and-treat systems likely represent a reasonable estimate (within +/- 10%) of the total number of sites in California that have had pump and treat systems installed.
- For the verification sites where the presence of a pump-and-treat system was confirmed, we found that these pump-and-treat systems were still operating at 30% of the open sites (38 of 127). Pump-and-treat systems were no longer operating at 77% (65 of 84) of the petroleum release sites and 59% (27 of 46) of the chlorinated solvent sites. Thus, even at sites that have not yet attained regulatory closure, a majority have transitioned away from the pump and treat systems.
- At sites where P&T systems have been shut down, the average operating period was 9.1 years (**Figure 4-11**).
- MNA is rarely identified as a remediation technology at sites where pump-and-treat systems were reportedly present (3.5%; 59 of 1709), however it is also not commonly identified as a remediation technology across all sites (7%; 563 of 8,021).
- Similarly, MNA was identified for at 3.5% of the pump-and-treat verification sites where the pump-and-treat system has already been shut down (8 of 229). This includes 4.1% of the closed sites (4 of 98) and 3.2% of the open sites (3 of 92). Only 0.8% of the pump-and-treat verification sites that are open (1 of 127) had both an operating P&T system and MNA listed as a cleanup technology.

It should be noted that there are often regulatory requirements for additional groundwater monitoring at sites where P&T systems have been shut down, including possible requirements for post-closure monitoring at sites that have been closed.



**Figure 4-10. Distribution of Sites and Identified Cleanup Technologies from GeoTracker Survey (n = 8,021 sites).**



**Figure 4-11. Distribution of Start Dates (top panel) and End Dates (bottom panel) for Pump-and-Treat Systems that were part of the Verification Site list (n = 243 sites).**

These results likely underestimate the number of sites where natural attenuation has been used because it only counts those sites where MNA is specifically listed as a cleanup technology in the California GeoTracker database. It is likely that many sites have had significant time periods with no operating active remediation system and thus, that natural attenuation was the a de facto site management approach during these time periods. For example, California State Water Resource Control Board relies on a low-threat closure policy that allows for petroleum underground storage tank sites to be closed even though residual COCs are present at levels above typical (numerical) cleanup criteria. In these cases, the site can still be closed if it meets other criteria that establish that there is low risk, under the assumption “that petroleum fuels naturally attenuate in the environment” (California State Water Resources Control Board, 2012).

## 4.5 Evaluation of Site-Specific Temporal Monitoring Results for Predicting Remediation Timeframes

*(The text in this section is largely reproduced from a project-funded study that was previously published (McHugh et al., 2023)).*

### 4.5.1 Overview

At contaminated groundwater sites where remediation is being implemented or considered, periodic monitoring of a monitoring well network is typically required to evaluate progress in site clean-up. This long-term monitoring (LTM) data can be used in several ways depending on the site objectives, including to determine if plumes are expanding or if plume behavior has changed, (e.g., Aziz et al., 2003; McHugh et al., 2014) to support an assessment of Monitored Natural Attenuation (MNA) (e.g., Wilson, 2011). Another important application is at sites where the goal is to reduce concentrations across the entire site to a specific level (i.e., the typical CERCLA application), where the data are used to track the overall progress of a site to reach this specific remediation goal. The time required to reach this goal is usually referred to as the “remediation timeframe”, and it is important estimate for both active remediation strategies as well as MNA (see Tool 1 and Tool 3 of the TA<sup>2</sup> Tool). It is typically calculated using the highest-concentration (source) monitoring well, and it relies on concentration vs time data for the projection.

However, an implicit assumption is built into the use of LTM data to track remediation progress: that the observed trend in the past is predictive of the direction and magnitude of the future trend (i.e., the observation of a decreasing concentration trend in historical monitoring data at a source well or another well is predictive of a decreasing concentration trend in the future). This is the groundwater remediation field’s version of “*past performance does indicate future results*”.

On the surface, this assumption seems intuitively reasonable. The use of a first-order source attenuation rate to represent the nature of source attenuation has been a fixture of the groundwater remediation field (e.g., Newell et al., 1996; USEPA, 1999; TNRCC, 2001; Farhat et al., 2004; Newell et al., 2005; WDOE, 2005; Wilson, 2011; McHugh et al., 2014; Adamson et al., 2022). For many individual contaminant plumes, historical monitoring data are used to estimate a first-order attenuation rate, and that observed attenuation rate is used to estimate future attenuation and to predict overall site remediation timeframes. Some researchers have proposed and utilized other source models that may be more appropriate for certain conditions, such as a power function model using a key input variable ( $\gamma > 1.0$ ) to generate a long-term concentration vs. time “tail” for source zones impacted by matrix diffusion (Farhat et al., 2018). Seyedabbasi et al. (2012) showed very different concentration vs. time trends for different time periods of a source lifecycle depending on whether the source was dominated by DNAPL dissolution, matrix diffusion, or a mix of these source processes. However, all of these alternative models still rely on the assumption that historical monitoring results inform future concentration trends.

This assumption that historical monitoring results are predictive of future trends has not, to our knowledge, been fully validated through empirical analysis. If this assumption is incorrect, then

the use of historical monitoring data to predict remediation timeframes and evaluate whether the site clean-up is “on track” may be more challenging. To investigate this issue, we analyzed sites with long groundwater monitoring records to determine if source attenuation rates are relatively constant over time, or more specifically, whether first-order concentration vs. time attenuation rates derived from the early portion of the monitoring record are correlated to the first-order rates from the later portion of the monitoring record. Our hypothesis echoed the conventional wisdom: early-period and later-period first-order attenuation rates are correlated, so that at most sites the attenuation rate does not change significantly over the lifetime of the site (realizing of course that LTM data have considerable noise that complicates estimating attenuation rates). Contaminant concentrations in groundwater at any site are the result of a complex interaction of climate, hydrogeology, groundwater geochemistry, in-situ biological processes, source architecture, and other factors. As a result, many monitoring records exhibit significant short-term variability that can add uncertainty to the estimation of the long-term trend (McHugh et al., 2011). However, when utilizing large data sets, true correlations should be apparent even in the face of other sources of variability. Note that this evaluation focuses solely on concentration vs. time attenuation rates and did not evaluate changes in plume size over time or plume attenuation rates (based on concentration vs. distance trends).

#### 4.5.2 Methods

Long-term monitoring data was obtained from GeoTracker, which is a database of corrective action sites maintained by the California State Water Resources Control Board (SWRCB). The SWRCB requires parties to report site investigation results which are then made publicly available through the database (Beckley et al., 2022). The web-based interface provides access to investigation results for individual sites and also allows users to download data sets of results for larger sets of sites (GeoTracker, 2022). GeoTracker has been used previously to evaluate high-level trends in the progress of groundwater remediation (e.g., McHugh et al., 2014, McHugh et al., 2022). For this study, the GeoTracker database was used to obtain two data sets of long-duration groundwater monitoring records: one focused on petroleum-contaminated sites and one focused on chlorinated volatile organic compound (CVOC) contaminated sites.

To obtain a data set of monitoring results for petroleum-contaminated sites, all sites with groundwater monitoring results for benzene or methyl tert-butyl ether (MTBE) within the time period of 2002 to 2017 were retrieved from GeoTracker. Because MTBE was banned from gasoline in January 2003, monitoring results for MTBE reflect remediation and attenuation of historical releases, while monitoring results from benzene could also reflect additional releases. The initial data set of 9,712 petroleum-impacted groundwater sites was further screened to identify sites with detections of one or more of these constituents during 4 or more years from 2002 to 2008 and during 4 or more years from 2009 to 2017. This step yielded 1905 benzene site and 1901 MTBE petroleum sites. For each site, the maximum site constituent concentration was determined for each 6-month period in the monitoring record to focus on apparent source attenuation rates (i.e., the driver for remediation timeframe estimates). Six-month periods were used to provide consistency across sites with quarterly or semi-annual monitoring. For each of the sites, this

yielded eight or more maximum constituent concentration results for the monitoring period between 2002 to 2008 and eight or more maximum constituent concentration results for the monitoring period between 2009 to 2017. For each site, three maximum concentration attenuation rate constants ( $k_{c-max}$ ) were calculated for: i) the full monitoring record, ii) the first half of the monitoring period (between 2002 to 2008) and iii) the second half of the monitoring period (between 2009 to 2017). Each  $k$  was calculated as the best-fit attenuation rate using least squares regression for zero-order and first-order attenuation (Newell et al., 2002):

$$[C_{max,t}] = [C_o] - k_{max-zero}t \text{ (Equation 1; zero-order attenuation)}$$

Where:

$C_{max,t}$  = Maximum constituent concentration at site for the 6-month monitoring period ( $\mu\text{g/L}$ )

$t$  = Representative time (i.e., the first day) for the 6-month monitoring period (years)

$k_{max-zero}$  = Maximum concentration attenuation rate constant (determined using regression analysis,  $\text{year}^{-1}$ )

$C_o$  = Initial concentration (determined using regression analysis,  $\mu\text{g/L}$ ). Note that the value for  $C_o$  was determined for an arbitrary “zero” time and the resulting values were not used for any subsequent analysis.

$$\text{Ln}[C_{point}] = \text{Ln}[C_o] - k_{point}t \text{ (Equation 2)}$$

Where:

$C$  = Maximum concentration measured in the groundwater sample ( $\mu\text{g/L}$ )

$t$  = Sample date (years)

$k_{point}$  = Concentration attenuation rate constant (determined using regression analysis,  $\text{year}^{-1}$ )

$C_o$  = Initial concentration (determined using regression analysis,  $\mu\text{g/L}$ ). Note that the value for  $C_o$  was determined for an arbitrary “zero” time and the resulting values were not used for any subsequent analysis.

The evaluation of attenuation rates at petroleum release sites did not attempt to control for site-specific changes in remediation technology that may have occurred within or between the two evaluation time periods. Although the GeoTracker database does provide some information on the types of remediation technologies implemented at sites, the database does not provide reliable information regarding the time periods during which specific remediation technologies were operated.

A more focused approach was used to obtain a data set from CVOC-contaminated sites while controlling for any changes in remediation technology. First, the GeoTracker database was evaluated to identify sites with monitoring wells sampled and analyzed for trichloroethene (TCE) at least 10 times with a 100% detection frequency. This yielded a data set of 6665 monitoring wells from 831 sites. For this CVOC data set, first-order source attenuation rates ( $k_{point}$ ) were calculated for each site for the full monitoring record, the first half of the monitoring record, and



the second half of the monitoring record. Each  $k_{\text{point}}$  was calculated as the best-fit attenuation rate using least squares regression for zero-order and first-order attenuation:

$$C_{\text{point}} = C_o - k_{\text{point-zero}}t \text{ (Equation 3, zero-order attenuation)}$$

Where:

- $C_{\text{point}}$  = TCE concentration measured in the groundwater sample ( $\mu\text{g/L}$ )
- $t$  = Sample date (years)
- $k_{\text{point-zero}}$  = Concentration attenuation rate constant (determined using regression analysis,  $\mu\text{g/L-year}$ )
- $C_o$  = Initial concentration (determined using regression analysis,  $\mu\text{g/L}$ ). Note that the value for  $C_o$  was determined for an arbitrary “zero” time and the resulting values were not used for any subsequent analysis.

$$\ln[C_{\text{point}}] = \ln[C_o] - k_{\text{point}}t \text{ (Equation 4; first-order attenuation)}$$

Where:

- $C$  = TCE concentration measured in the groundwater sample ( $\mu\text{g/L}$ )
- $t$  = Sample date (years)
- $k_{\text{point}}$  = Concentration attenuation rate constant (determined using regression analysis,  $\text{year}^{-1}$ )
- $C_o$  = Initial concentration (determined using regression analysis,  $\mu\text{g/L}$ ). Note that the value for  $C_o$  was determined for an arbitrary “zero” time and the resulting values were not used for any subsequent analysis.

In addition to evaluating attenuation rates for this full data set, eight sites with large numbers of monitoring wells (20 or more) were selected for detailed analysis. For each of these eight sites, site investigation reports were downloaded from GeoTracker and reviewed to identify the remediation history including remediation technologies and timeframes (**Table 4-2**).

**Table 4-2. Summary of Data Analysis Procedures**

Contaminant	Parameter	Time Periods for Comparison	Control for Site Remedy	No. of Monitoring Records
<b>Benzene and MTBE</b>	Maximum site concentration	First half of monitoring record vs. second half of monitoring record	No control for change in site remediation technology	Benzene: 1905 MTBE: 1901
<b>TCE (full data set)</b>	Monitoring well concentration	First half of monitoring record vs. second half of monitoring record	No control for change in site remediation technology	6665
<b>TCE (focused evaluation)</b>	Monitoring well concentration	First half of monitoring record vs. second half of monitoring record	Used monitoring results collected during time period with consistent site remedy	327

Next, for each monitoring well, a time window was identified during which the well was under the influence of a consistent remediation environment. Finally, the available TCE monitoring results were compiled for each monitoring well for the identified time window, and only monitoring wells with at least 10 TCE detection monitoring results were retained. This resulted in a data set of monitoring results from 327 monitoring wells at the eight sites. Attenuation rates for this data set were calculated as shown in Equation 3 and Equation 4.

Statistical Analyses: The statistical significance and 95% confidence intervals for the attenuation rates were determined using the F-test. Correlations in attenuation rates between earlier (first half of the temporal record) and later time periods (second half) were calculated using the Pearson correlation coefficient.

#### 4.5.3 Results

Evaluation of Model Fits: As an initial step in the evaluation, the two datasets (petroleum sites and chlorinated solvent sites) were evaluated using zero-order and first-order attenuation rate models. These evaluations were conducted using the first half of each monitoring record consistent with the logic that the first half of the record would be used to predict changes in the second half of the record; however, model fits were similar when applied to the full monitoring records. Consistent with prior analyses (Newell et al., 2006), the zero-order and first-order models provide similar fits for all three constituents evaluated (**Table 4-3**). For all three constituents, the first-order model provided a slightly better fit than the zero-order model although the 95% confidence intervals for the median  $R^2$  values for the zero-order and first order models overlapped in all three cases. Although the model fits were similar, we conducted our remaining analyses using only the first

order attenuation model because this model is more commonly applied to characterize concentration vs. time trends in groundwater monitoring records.

**Table 4-3. Evaluation of model fit for first-order and zero-order concentration vs. time attenuation rate models**

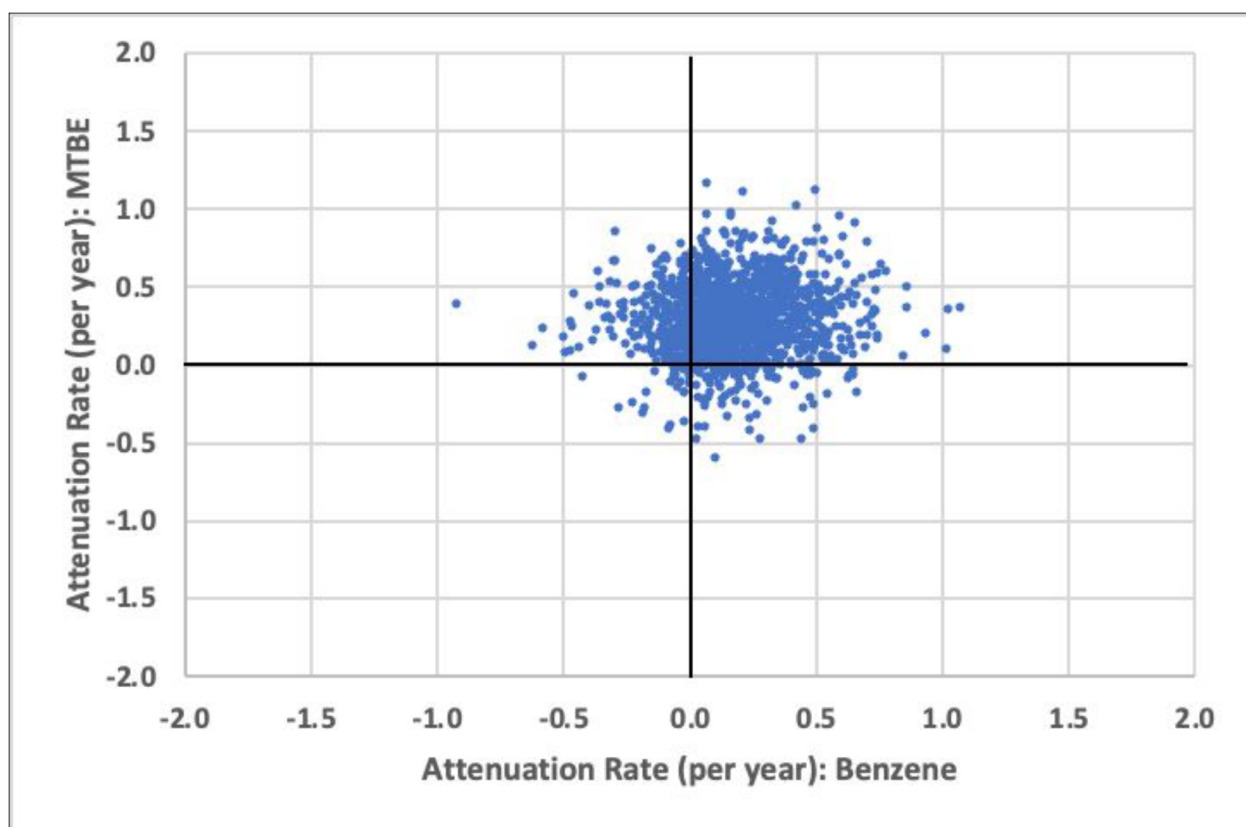
Constituent	No. of Monitoring Records	Median R <sup>2</sup> for First-Order Model (95% CI)	Median R <sup>2</sup> for Zero-Order Model (95% CI)
<b>Benzene</b>	1905	0.210 (0.195-0.233)	0.199 (0.184-0.217)
<b>MTBE</b>	1901	0.388 (0.364-0.419)	0.301 (0.283-0.326)
<b>TCE</b>	6665	0.293 (0.278-0.306)	0.289 (0.277-0.299)

Petroleum Contaminated Sites: For petroleum-contaminated sites, the site selection criteria yielded 1,905 sites for benzene and 1,901 sites for MTBE. A total of 1,487 sites met the selection criteria for both benzene and MTBE.

The general nature of the first-order decay rates at the 1,487 sites can be seen in **Figure 4-12**:

- The median  $k_{c-max}$  was 0.14/yr +/-0.01/yr (half-life = 4.9 years). 82% of sites had positive benzene maximum concentration vs. time attenuation rates (i.e., decreasing maximum site concentrations over time)
- The median  $k_{c-max}$  was 0.28/yr +/-0.01/yr (half-life = 2.5 years). 92% of sites had positive MTBE maximum concentration vs. time attenuation rates.

Across sites, there was a positive correlation between the benzene and MTBE  $k_{c-max}$  values ( $r = 0.09$ , **Figure 4-12**). A total of 1,152 of the 1,487 sites (77%) had either positive  $k_{c-max}$  values or negative  $k_{c-max}$  values for both benzene and MTBE, indicating an overall consistency in the temporal trends for these two groundwater constituents.



**Figure 4-12. Correlation in Benzene and MTBE Maximum Concentration Attenuation Rates.** Plot shows attenuation rates for 1,487 sites meeting selection criteria for benzene and MTBE. Correlation coefficient ( $r$ ) = 0.09.

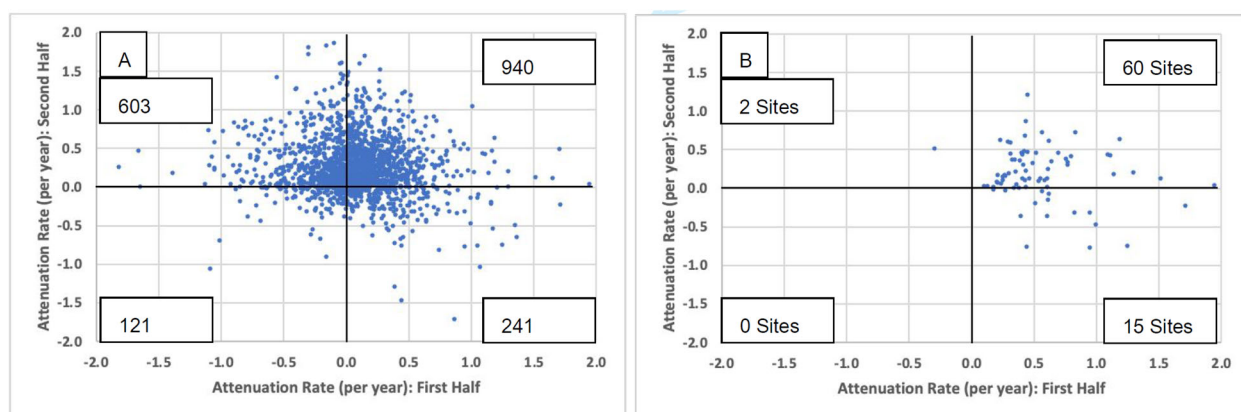
Each monitoring record was then divided into the two time periods, early (first half) and later (second half), to test the hypothesis that concentration vs. time attenuation rates at a particular site are correlated over time. Surprisingly, there was effectively no correlation between the early rates and the later rates, which did not support the original hypothesis “*past performance does indicate future results*”:

- Benzene ( $r = -0.11$ ) (small correlation but slightly negative, **Figure 4-13A**)
- MTBE ( $r = -0.12$ , **Figure 4-14A**).

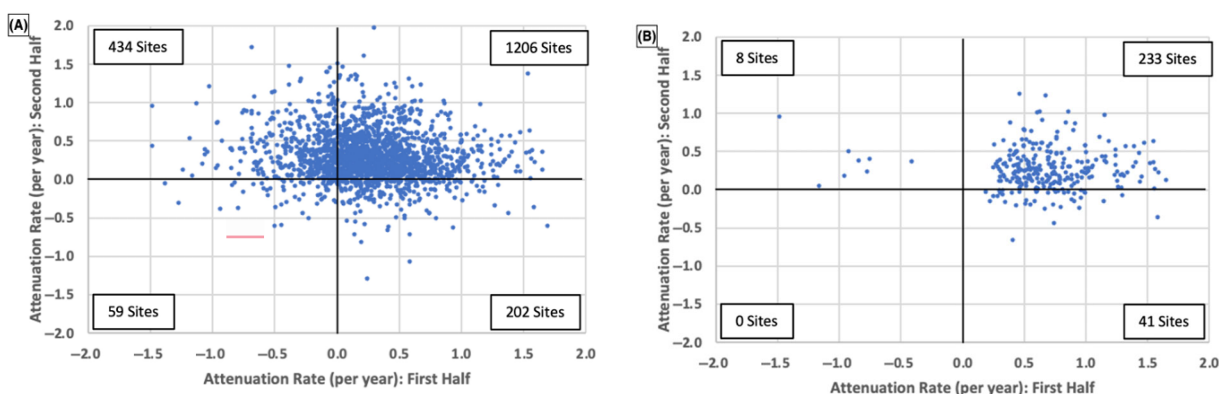
For 57% of the benzene monitoring records and 60% of the MTBE monitoring records, the first-order attenuation rate calculated for the second half of the monitoring record was outside of the 95% confidence interval for the attenuation rate calculated for the first half of the record indicating that the difference in attenuation rates between the two time periods was statistically significant.

The small negative correlation was observed even when the analysis was limited to monitoring records where the first-order attenuation model provided a good fit to the first half of the monitoring record defined by an  $R^2$  for the model fit of greater than 0.8 ( $r = -0.30$  for benzene,

**Figure 4-13B**;  $r = -0.07$  for MTBE, **Figure 4-14B**). Note that for the subset of monitoring records where the first-order attenuation model provided a good fit to the data, all of the first order attenuation rates were statistically significant ( $p=0.002$  or less). Thus, limiting the evaluation to sites with statistically significant attenuation rates does not result in a positive correlation between the early and late concentration vs. time attenuation rates. This absence of correlation is both counterintuitive and inconsistent with the groundwater field's commonly held assumption that dissolved constituent concentrations within each site source area can be represented by a first order concentration vs. time attenuation rate that can be used to forecast site remediation timeframes.



**Figure 4-13. Correlation in Benzene Maximum Concentration Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record.** Plot A shows attenuation rates for 1,905 sites with at least eight years of monitoring results. Correlation coefficient ( $r$ ) = -0.11. Plot B shows attenuation rates for the subset of 77 monitoring records where the first-order attenuation model provided a good fit to the first half of the monitoring record ( $R^2 > 0.8$ ). Correlation coefficient ( $r$ ) = -0.30.

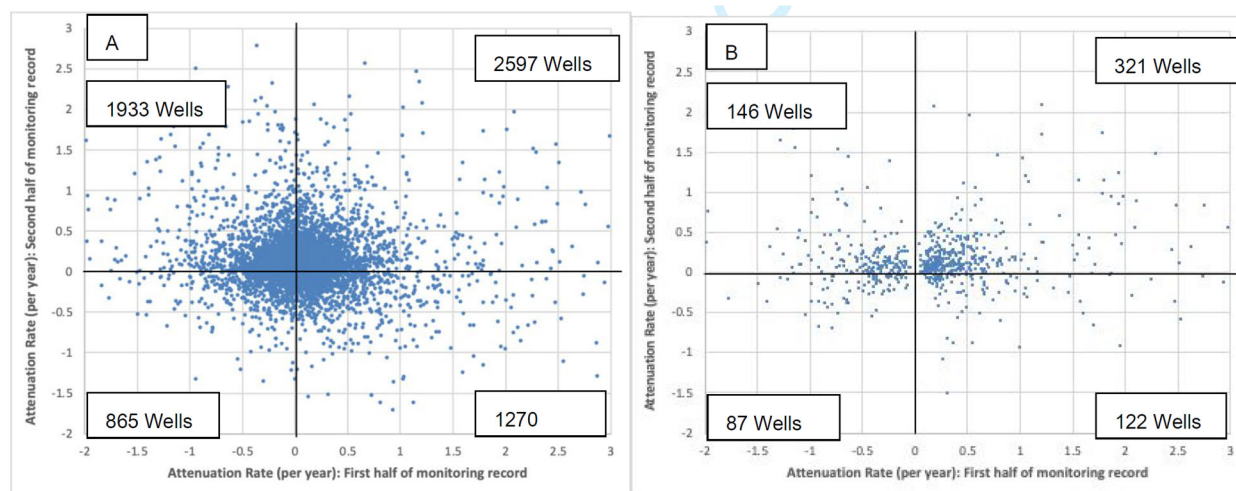


**Figure 4-14. Correlation in MTBE Maximum Concentrations Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record.** Plot A shows attenuation rates for 1,901 sites with at least eight years of monitoring results. Correlation coefficient ( $r$ ) = -0.11. Plot B shows attenuation rates for the subset of 282 monitoring records where the first-order attenuation model provided a good fit to the first half of the monitoring record ( $R^2 > 0.8$ ). Correlation coefficient ( $r$ ) = -0.07.

This evaluation of attenuation rates at petroleum hydrocarbon sites did not control for site factors that would be expected to change the maximum concentration attenuation rate, such as a change in the site remedy. Therefore, it is possible that a change in the remediation technology applied at a site between the two time periods is a confounding variable. Two or more different active remediation technologies have been implemented at most petroleum release sites in California with long monitoring records (McHugh et al., 2014). However, for many sites, the GeoTracker database does not fully document the timeframes for remedy implementation. Therefore, it was not possible to control for changes in petroleum site remediation in evaluating correlations in attenuation rates between the early and later time periods based on information available in the GeoTracker database.

**Chlorinated Solvent Sites:** The initial screening of the GeoTracker database yielded a data set of 6665 monitoring records that included 10 or more samples analyzed for TCE and a detection frequency of 100%. Using the first-order model attenuation rates for the 6,665 monitoring wells, the median  $k_{point}$  was 0.061/yr  $\pm$  0.004 (half-life = 11 years) over the full monitoring period. 70% of monitoring wells had positive attenuation rates (i.e., decreasing concentrations over time). Looking at the first-order attenuation rates for the first half of each monitoring record vs. the second half of each record, the median attenuation rate was 0.039/yr  $\pm$  0.006 (half-life = 18 years) for the first half and 0.072/yr  $\pm$  0.005 (half-life = 10 years) for the second half. Similar to the evaluation of attenuation rates at petroleum release sites, a small negative correlation was observed in TCE attenuation rates calculated for the first half vs. the second half of the monitoring record (**Figure 4-15A**,  $r=-0.12$ ). For 49% of the TCE monitoring records, the first-order attenuation rate calculated for the second half of the monitoring record was outside of the 95% confidence interval for the attenuation rate calculated for the first half of the record indicating that the difference in attenuation rates between the two time periods was statistically significant.

For the sub-set of 676 monitoring records where the first-order model provided a good fit to the first half of the monitoring record (i.e.,  $R_2 > 0.8$ ), we still observed a negative correlation in TCE attenuation rates calculated for the first half vs. the second half of the monitoring record (**Figure 4-15B**,  $r = -0.11$ ).



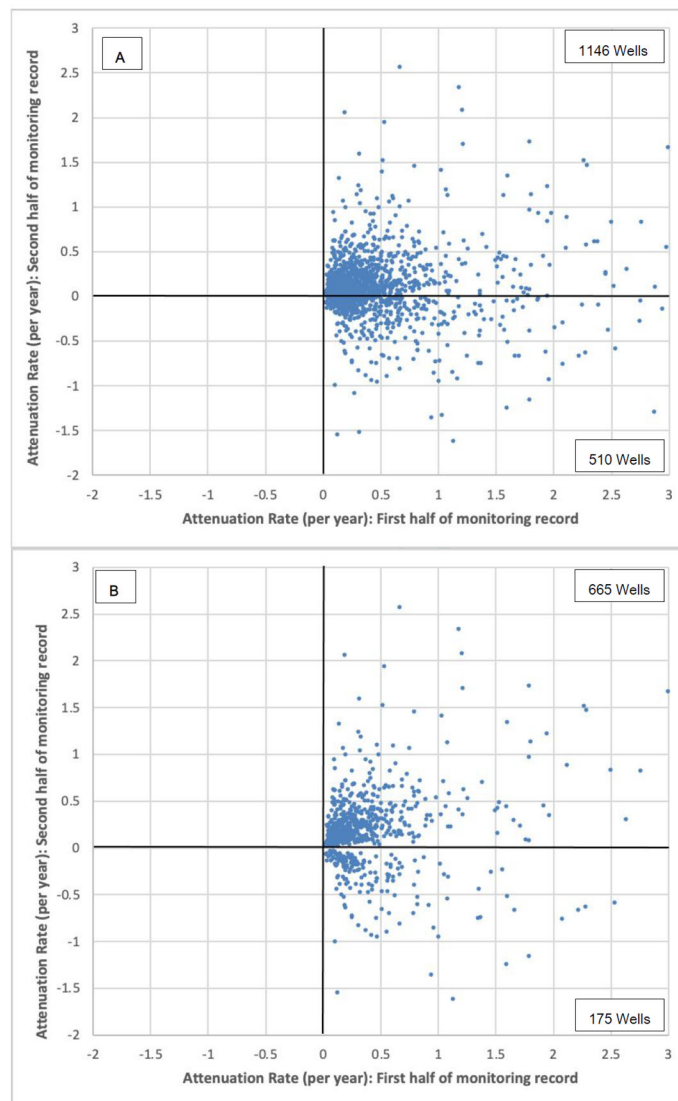
**Figure 4-15. Correlation in TCE Point Concentrations Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record.** Plot A shows attenuation rates for 6,665 monitoring records with at least 10 monitoring results and 100% detections of TCE.

Correlation coefficient ( $r$ ) = -0.12. 104 records with attenuation rates of greater than three per year or less than negative two per year not displayed on graph. Plot B shows attenuation rates for the subset of 676 monitoring records where the first-order attenuation model provides a good fit ( $R_2 > 0.8$ ) for the first half of the monitoring record. Correlation coefficient ( $r$ ) = -0.11. 32 records with attenuation rates of greater than three per year or less than negative two per year not displayed on graph.

In order to account for how monitoring records are commonly used in site decision making, we also looked at the subset of monitoring records where the attenuation rates for the first half of the monitoring records were positive (i.e., decreasing concentrations) and statistically significant ( $p < 0.05$ ). A statistically-significant decreasing concentration is commonly used as evidence that the current remedy is effective and such a monitoring record is most likely to be utilized to estimate remediation time frames. However, for this subset of 1,656 monitoring records, there was still a small negative correlation in TCE attenuation rates calculated for the first half vs. the second half of the monitoring record (**Figure 4-16A**,  $r = -0.05$ ). Looking only at the 840 monitoring records where the attenuation rate for the second half of the monitoring record was also statistically significant, a small positive correlation was observed (**Figure 4-16B**,  $r = 0.20$ ). However, for this data mining exercise, the monitoring data from the second half of the monitoring record was used as a proxy for future monitoring data collected after the estimation of a remediation time frame (or other site management prediction). In reality, it would not be possible to identify which of the

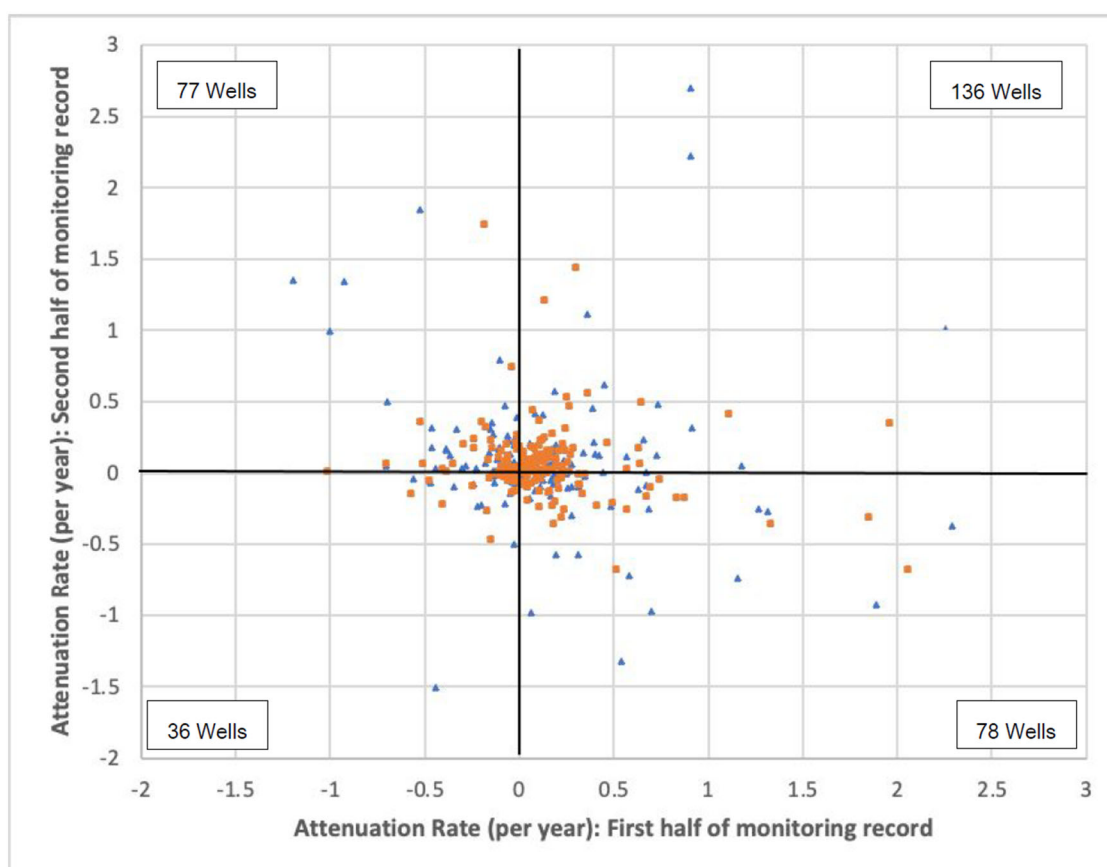


monitoring wells would exhibit statistically-significant attenuation during future monitoring. Even for this set of 840 monitoring records, 175 (21%) exhibited statistically-significant negative attenuation rates (i.e., increasing concentrations) during the second half of the monitoring record indicating that the observation of statistically-significant positive attenuation does not guarantee that concentrations in that monitoring well will continue to decrease in the future.



**Figure 4-16. Correlation in TCE Point Concentrations Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record Wells with Statistically Significant Positive Attenuation Rates.** Plot A shows attenuation rates for 1656 monitoring records with at least 10 monitoring results and 100% detections of TCE and a statistically significant positive attenuation rates for the first half of the monitoring record. Correlation coefficient ( $r$ ) = -0.05. 42 records with attenuation rate of greater than three per year or less than negative two per year not displayed on graph. Plot B shows attenuation rates for 840 monitoring records with at least 10 monitoring results and 100% detections of TCE, a statistically significant positive attenuation rates for the first half of the monitoring record, and a statistically significant positive or negative attenuation rate for the second half of the monitoring record. Correlation coefficient ( $r$ ) = 0.20. 12 records with attenuation rate of greater than three per year or less than negative two per year not displayed on graph.

As described above, a more focused evaluation was conducted at eight sites to identify monitoring records at chlorinated solvent sites that were known to be unimpacted by a change in remediation technology. The selection process yielded a data set of monitoring results from 327 monitoring wells from the eight sites. The monitoring record for each monitoring well included 10 or more samples analyzed for TCE and a detection frequency of 100%. Looking at the full monitoring records for the 327 monitoring wells, the median  $k_{\text{point}}$  was 0.06/yr (95% CI = 0.43/yr to 0.072/yr) corresponding to a median half-life of 12 years. Similar to the full data set of TCE monitoring records without control for site remedy, a negative correlation was observed between the TCE attenuation rate for the first half and second half of the monitoring record ( $r = -0.22$ , All points shown on **Figure 4-17**).



**Figure 4-17. Correlation in TCE Point Concentrations Attenuation Rates from First Half of Monitoring Record and Second Half of Monitoring Record for Focused Evaluation.** Plot shows attenuation rates for 327 monitoring records from the eight focused evaluation sites with at least 10 monitoring results and 100% detections of TCE. **Orange squares** are the subset of 191 monitoring records with at least 20 monitoring results covering at least 8 years. Correlation coefficient ( $r$ ) = -0.22. One record with attenuation rate of greater than three per year not displayed on graph.

In order to evaluate whether the apparent negative correlation in attenuation rates was an artifact of including wells with a relatively small number of monitoring events or short time periods, the attenuation rate analysis was also conducted for a subset of monitoring records with at least 20 monitoring results and a monitoring duration of at least eight years. These more stringent criteria resulted in the early and later attenuation rates determined based on at least 10 monitoring results collected over at least four years during each time period. These more stringent criteria yielded a data set of 191 monitoring wells (Orange squares on **Figure 4-17**). For this set of monitoring records, the median number of samples was 33 and the median monitoring period was 12.5 years. This smaller data set showed an overall distribution of attenuation rates similar to the larger data set of 327 chlorinated solvent monitoring wells. Looking at the full monitoring records for the 191 monitoring wells the median  $k_{\text{point}}$  was 0.05/yr (95% CI = 0.040/yr to 0.069/yr) corresponding to a half-life of 14 years. For this smaller set of 191 monitoring wells, 73% of monitoring wells had positive attenuation rates (i.e., decreasing concentrations over time). However, there was still no positive correlation between the TCE attenuation rate for the first half and second half of the monitoring record, but rather, a slight negative correlation ( $r = -0.14$ ). Together, the data from the chlorinated solvent data set also appeared to contradict the hypothesis that attenuation rates are correlated over time at a particular site.

#### 4.5.4 Discussion

The use of observed attenuation rates to evaluate remedy effectiveness and forecast remediation timeframes implies that the observed source attenuation rate based on the available monitoring period is predictive of the future attenuation rate. In other words, it assumes a positive correlation between the observed past source attenuation rate and the future source attenuation rate. Our analysis suggests that this assumption is not correct. For both benzene and MTBE at petroleum sites and TCE at chlorinated solvent sites, no positive correlations were observed between source attenuation rates for the earlier monitoring period and the attenuation rates for the later monitoring period. This pattern was observed even when limiting the analysis to monitoring records that exhibited either (or both) i) a good model fit (defined as  $R^2 > 0.8$ ) for the first half of the monitoring record or ii) a statistically significant positive attenuation during the first half of the monitoring record. For many monitoring records, the future concentration vs. time attenuation rate was outside the range predicted by the 95% confidence interval for the early time period attenuation rate.

Similar results were obtained for attenuation rates at petroleum release sites and chlorinated solvent release sites despite using different data analysis procedures for petroleum sites and chlorinated solvent sites (Table 2), suggesting that the results are not an artifact of the data analysis methods. For the chlorinated solvent site data set, small negative correlations between earlier and later attenuation rates were observed both for the full data set of 6,665 monitoring wells and for the smaller set of monitoring records reflective of time periods without change in site remediation technology. The observation of negative correlations between earlier and later attenuation rates even after controlling for changes in site remedy suggests that changes in site remedy over time do not account for the observed negative correlations in the larger data sets. Although this study

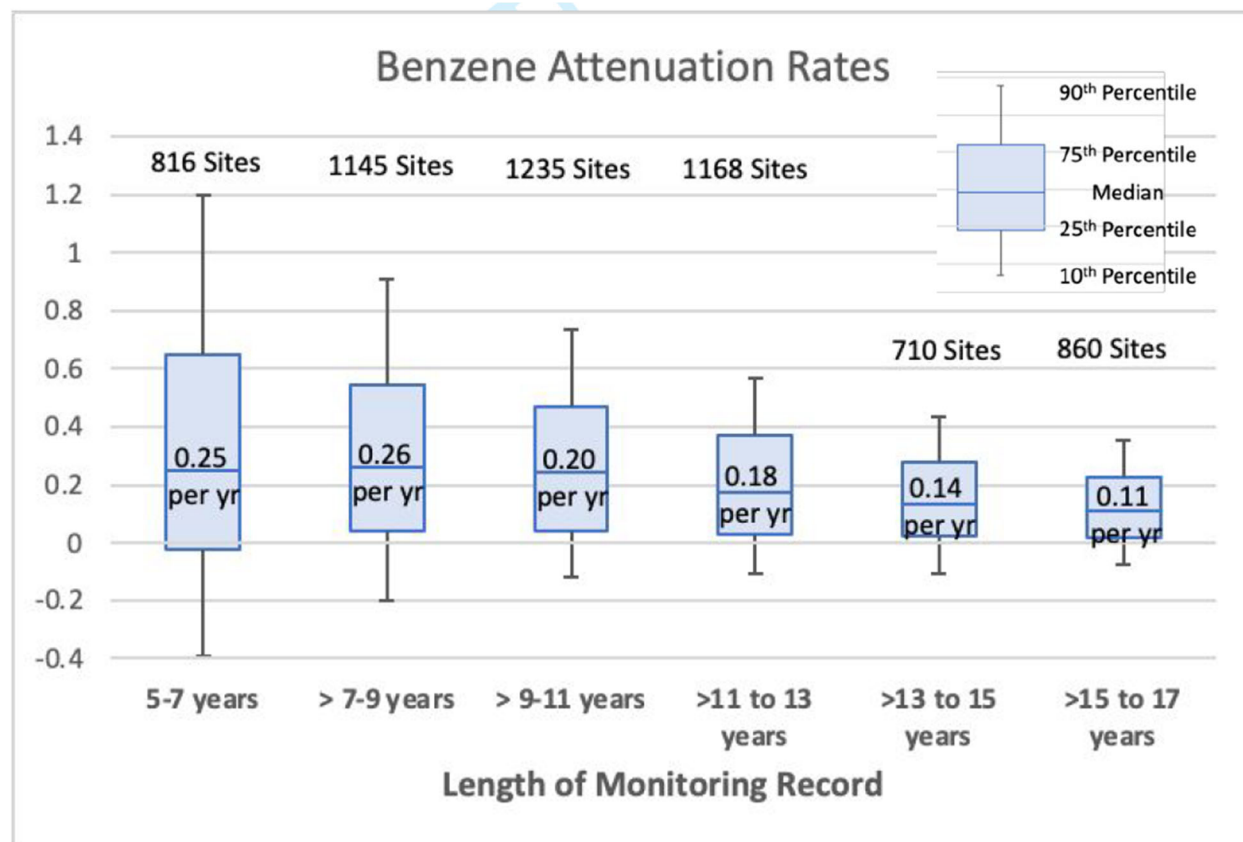
did not control for other possible changes at the site such as changes in groundwater elevation or flow direction, such changes typically cannot be predicted in advance and are beyond the control of the site manager. Therefore, these factors are unlikely to be considered when using observed concentration vs. time attenuation rates to forecast site remediation timeframes.

Researchers have long hypothesized that contaminant plume length would be correlated with site geologic factors such as soil type or depth to groundwater. However, “plume-a-thon” studies evaluating differences in plume lengths across large numbers of sites have consistently failed to identify any such correlations (Rice et al., 1995, Mace et al., 1997, Kulkarni et al., 2018). The current study did not examine plume length, but the results suggest that site characteristics are also not strongly correlated with concentration versus time attenuation rates. In other words, the absence of a positive correlation between early and late attenuation rates suggests that there are no specific site characteristics that make certain sites inherently faster to remediate than others.

Some contaminant fate processes such as matrix diffusion (Parker et al., 1994) and dissolution of soluble components from complex non-aqueous mixtures (Garg and Rixey, 1999) are likely to yield changes in concentration versus time that deviate from the first-order decay model used in this study. Researchers have proposed models other than first-order decay for source attenuation (e.g., Farhat et al., 2018; Seyedabbasi et al., 2012). If one of these alternative models were more predictive of concentration versus time at most sites, then attenuation rates calculated using a first-order decay model would be expected to change over long monitoring periods. For example, matrix diffusion processes are expected to result in a decrease over time in the observed first-order attenuation rate. In this situation, we would not expect a one-to-one correlation between early and late source attenuation rates; however, we would still expect positive correlation between the first-order attenuation rate for the early time period and the later time period because processes such as dissolution or matrix diffusion result in predictable changes in attenuation over time. While processes such as matrix diffusion may slow the rate of source attenuation over time at individual sites, attenuation models that account for such processes still predict that the sites exhibiting more rapid source attenuation during the earlier phase of attenuation would also exhibit more rapid attenuation during the later phase of attenuation. In other words, although alternative source attenuation models do not predict a one-to-one correlation between the first-order attenuation rate for the early and late time period at individual sites, they still predict a positive correlation.

The observation of a weak negative correlation between the source attenuation rate for the early time period and the later time period in all of the data sets suggests that the source attenuation rates estimated from individual monitoring records include a significant component of randomness, such that the records with the fastest and slowest attenuation rates are most likely to exhibit regression to the mean. This hypothesis is supported by an analysis of the benzene attenuation rates calculated from the full monitoring records at each site. **Figure 4-18** shows the distribution of benzene attenuation rates as a function of the length (in years) of the total monitoring record at the site. Although there is relatively little change in the median attenuation rate between shorter monitoring records and the longer monitoring records, the range of attenuation rates observed across sites decreases for the data set of longer monitoring records confirming that attenuation

rates based on shorter monitoring records (i.e., five to nine years) include a large component of randomness.



**Figure 4-18. Effect of Monitoring Record Length in the Distribution of Benzene Source Attenuation Rates.** Sites with longer monitoring records exhibit a narrower range of source attenuation rates.

The weak negative correlations between the attenuation rate for the early time period and the attenuation rate for the later time period observed in all of the data sets further suggest that the attenuation rate for an individual site estimated using the historical monitoring record for that site is not a strong predictor of future attenuation at that site. Thus, the use of the observed source attenuation rates at a site to predict the remediation timeframe for that site is subject to large uncertainty. In the case where the long-term monitoring data are being used as part of a Transition Assessment, it is highly recommended that the approach accounts for the uncertainty in the remediation timeframe estimate, as well as the possibility of differing attenuation rates during different time periods. Both of these important elements are included in Tool 1 of the TA<sup>2</sup> Tool that was developed as part of this SERDP project. The TA<sup>2</sup> Tool uses first-order fits of concentration vs. time data to predict the attenuation rate at the source (or any other monitoring

location) along with a 95% confidence interval on the slope (rate constant) to show the uncertainty in the resulting remediation timeframe estimates.

If the uncertainty in the site-specific time-to-clean estimate generated by the TA<sup>2</sup> Tool (or other statistical methods) is large (based on user judgement or stakeholder discussions), then it may be better to use generic values for rate constants. For example, as an alternative, the distribution of source attenuation rates for the same constituent from a comparable portfolio of sites could be used to understand the range of possible future attenuation rates at the individual site. The median attenuation rate from a comparable portfolio of sites may provide a better basis to predict future attenuation at an individual site than the historically observed attenuation rate from the individual site. For example, at a leaking underground storage tank (LUST) site, the median attenuation rate for benzene from a large portfolio of LUST sites is likely to be a more accurate predictor of future benzene attenuation at an individual site than the historical benzene attenuation rate for that individual site. Similarly, the distribution of benzene attenuation rates from a large portfolio of LUST sites can be used to characterize the likely range of future attenuation rates at the individual site. This would be analogous to financial markets where the historical performance of a market sector is more predictive of the future performance of an individual company within that sector than the historical performance of that individual company. This study focused on changes in concentration over time and did not evaluate whether past plume attenuation or changes in plume length at a site are predictive of future plume attenuation or changes in plume length.



## 5. CASE STUDIES

### 5.1 Overview

The objective of the case studies was to document ways that the TA<sup>2</sup> Tool can be used to support transition assessments. The scope involved identifying candidate sites, and then determining how the TA<sup>2</sup> Tool could have been used to help them analyze site-specific data. Several sites were identified (with the help of SERDP and other DoD representatives) that have ongoing remedial programs and/or have yet to transition to less active technologies. However, these sites were ultimately not selected as case studies due to a variety of factors, including: 1) a high level of complexity that would have made it challenging to evaluate given our project scope; 2) ongoing efforts or external factors that were not well documented in site reports that would have limited our ability to assess whether transitioning to MNA was justified. As a result, we did not choose these types of sites to avoid making ill-founded conclusions based on a planning-level assessment.

Instead, the project team focused on a subset of three sites where a decision to transition to MNA (and away from active treatment) had already been made by site managers. This allowed us to evaluate relevant historical data and document how that decision may have been supported by the tool (had it been available), as well as evaluating more recent data to confirm that the decision was justified. Because the remedial decisions at these sites were largely driven by compliance at a downgradient point of compliance, the focus here is on the application of Tool 5 of the TA<sup>2</sup> Tool. At the end of each case study, an example application of the Tool 10 summary (including the RTAI) is described.

### 5.2 Case Study #1 – Twin Cities Army Ammunition Plant (Site A)

#### 5.2.1 Introduction

Investigations of groundwater contamination at the Twin Cities Army Ammunition Plant (TCAAP) in Arden Hills, Minnesota started in 1983 (Ferrey et al., 2000). The water table aquifer at Site A was contaminated with PCE, TCE and their transformation products *c*DCE and *t*DCE.

In 1985, high concentrations of PCE, TCE and 1,2-DCE were discovered at the site, and an interim pump-and-treat system with one well was installed in 1988. In 1994 the interim system was replaced with a full-scale system using eight pumping wells.

Cleanup goals for Site A were specified in a Record of Decision (ROD) issued in 1997. The goal was 7.0 µg/L for PCE, 30.0 µg/L for TCE, 70 µg/L for 1,2-DCE (*cis*- plus *trans*-) and 6.0 µg/L for 1,1-DCE. No goal was specified for Vinyl Chloride because it was not detected in groundwater at Site A.

In 2000, staff of the Minnesota Pollution Control Agency (MPCA) and the Office of Research and Development of the U.S. Environmental Protection Agency (U.S. EPA) provided an evaluation of

the contribution of natural attenuation to manage the risk of groundwater pollution at two specific receptor wells that were identified for the site (Ferrey et al., 2000). The evaluation used the BIOPLUME III computer application to model concentrations of contaminants at the site, based on a rate constant for natural degradation that was extracted from the field data. Although concentrations of chlorinated alkenes at Site A remained above the cleanup goals set in 1997 in the Record of Decision (ROD), the simulations showed that chlorinated alkenes should not impact the receptor wells at concentrations above the goals.

In 2000, four of the full-scale wells were shut down and in 2008 the other four were shut down. In 2015, A Technical Memo submitted by the Responsible Party recommended changing the remedy from continued pump-and-treat to Monitored Natural Attenuation (MNA). The recommendation was based on the on-going monitoring data and the evaluation provided in Ferrey et al. (2000). The recommendation was accepted, and the ROD was amended in 2018.

The decision to transition to MNA was made based on simulations of a computer application that was calibrated for conditions at the source of contamination and a forecast of conditions in the downgradient portion of the plume. The simulation assumed uniform conditions throughout the plume. Real plumes of groundwater contamination are heterogeneous and vary over time. Tool 5 in the TA<sup>2</sup> Tool allows the user to evaluate risk to a receptor for conditions that apply to individual monitoring locations at particular points in time. To support a decision to transition to MNA, data from each available well can be evaluated.

After pumping ceases, concentrations of contamination often rebound. Tool 5 also allows the regulator or site manager to review the monitoring data as it comes in and support a decision to resume active remedy if necessary.

In this case study, Tool 5 was used to evaluate risk to identified receptor wells in four circumstances: (1) current concentrations at the site as part of ongoing monitoring of the MNA remedy (ca. 2021), (2) concentrations at the time the site owner petitioned the regulatory authority to transition from groundwater pumping to MNA (ca. 2015), (3) concentrations when a decision was made to cease active pumping in various extraction wells (between 1994 and 2008), and (4) concentrations attained at various times after the concentrations rebounded when active pumping ceased (ca. 2012).

### 5.2.2 Distribution of Contamination at Initial Site Characterization

It is not known when chlorinated solvents were disposed at Site A at the TCAAP, but aerial photographs suggest pits and trenches were used at the site to dispose of waste in the 1940s, shortly after the TCAAP was established.

The water table aquifer occurs in lacustrine silt or medium sands. The water table aquifer varies from a thickness of 15 feet to 28 feet across the site, and it is considered unconfined. It is underlain by a glacial till unit that serves as a aquitard that restricts vertical migration from the aquifer to deeper intervals. The hydraulic gradient in the shallow aquifer varies from 0.0025 to 0.005 ft/ft to

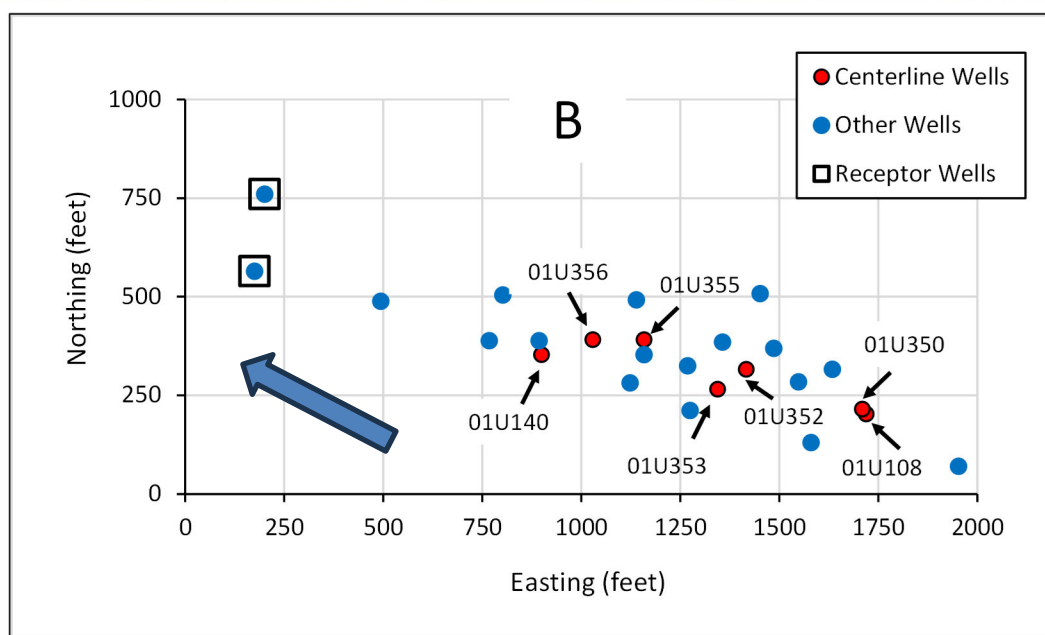
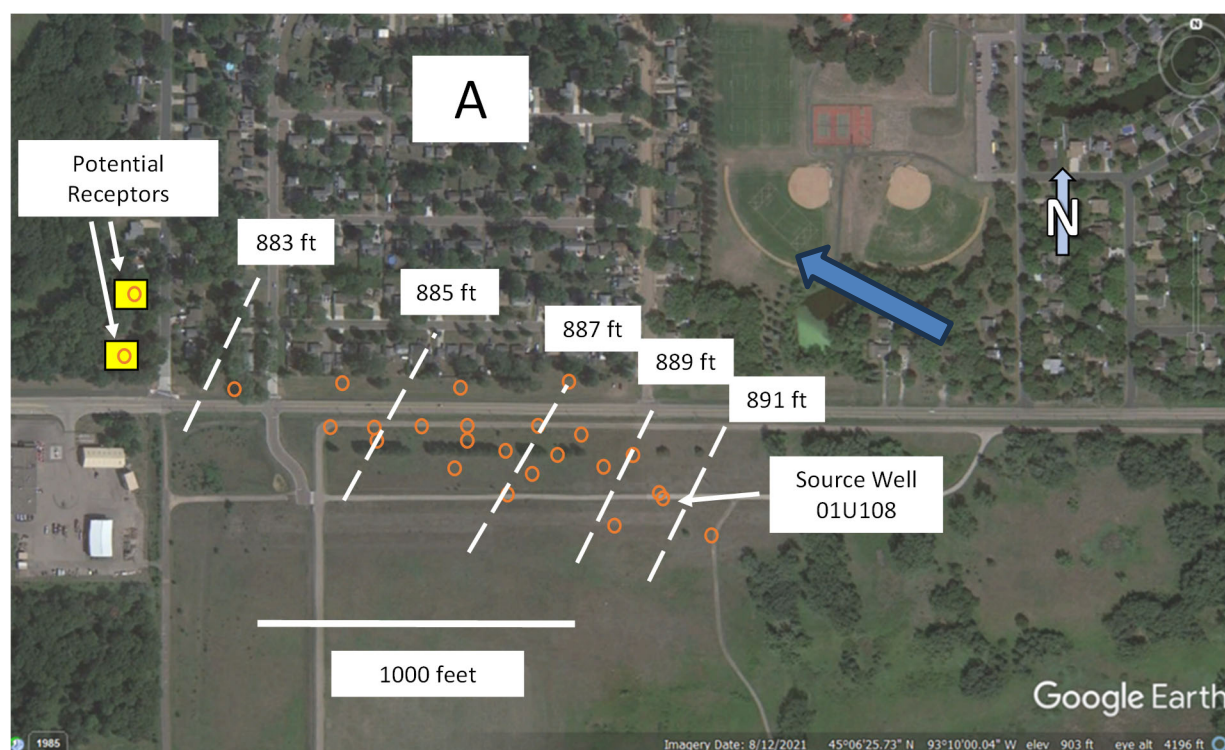
the west-northwest, with a reported hydraulic conductivity of 8.6 feet per year. If the gradient is 0.005 and the effective porosity is 0.2, the seepage velocity is estimated to be near 215 feet per year.

The most contaminated well at the site was 01U108, with concentrations of PCE exceeding 1000 µg/L in 1985, and concentrations of TCE and *c*DCE exceeding 500 µg/L. The groundwater moves off-site of the TCAAP into a residential neighborhood with private wells (Panel A of **Figure 5-1**). Two potential receptors are 1,500 feet downgradient of well 01U108. In 3/21/1994, TCE was detected in the southern potential receptor wells at 1.58 µg/L, and *c*DCE + *t*DCE was detected at 8.74 µg/L. The concentrations of PCE and 1,1-DCE were <1 µg/L and the concentration of Vinyl Chloride was < 1.9 µg/L. In the northern potential receptor well, in 1/22/1991, the concentrations of PCE, TCE, *c*DCE + *t*DCE, and 1,1-DCE were <1.0 µg/L and Vinyl Chloride was <1.9 µg/L.

The contaminant plume has been characterized with an adequate number of wells. The wells presented in **Figure 5-1** are the wells where chlorinated solvents or their transformation products were detected. The centerline wells in panel B of **Figure 5-1** are the wells with the highest concentrations along the flow path. **Table 5-1** provides the concentrations of PCE and TCE and their transformation products in the centerline wells shortly after the wells were installed. Data are provided for selected sampling dates when the detection limits for the analytes were low, and concentrations of detected analytes were relatively high.

**Table 5-1. Distribution of contamination before remediation, showing the transformation and attenuation of chlorinated alkenes with distance from the most contaminated well (01U108).**

Well	Date Sampled	Distance from Source	PCE	TCE	<i>c</i> DCE + <i>t</i> DCE	1,1-DCE	VC
		feet	µg/L	µg/L	µg/L	µg/L	µg/L
01U108	4/11/1988	0	900	550	800	<1	<1.9
01U350	9/13/1988	16	620	380	540	<1	<1.9
01U352	8/3/1994	323	0.59	3.8	110	<1	<1.9
01U353	8/3/1994	380	<1	7.9	190	<1	<1.9
01U355	6/9/1994	592	<1	1.5	220	<1	<1.9
01U356	6/9/1994	715	<1	2.4	290	<1	<1.9
01U140	9/7/1993	833	<1	0.58	110	<1	<1.9
Goal			7	30	70	6	2



**Figure 5-1. Relationship between well 01U108 (which is the most contaminated well at Site A and is located near the source of contamination), other wells at the Site, and two private domestic wells that are considered to be the potential receptors of concern in the case study.**  
Blue arrow denotes groundwater flow direction (west-northwest).

Both PCE and TCE were present in the groundwater in the most contaminated wells near the source of contamination. By the time the groundwater moved 300 feet farther downgradient, concentrations of PCE and TCE were low. The only transformation products detected in the groundwater were *c*DCE plus *t*DCE. Vinyl Chloride and 1,1-DCE were not detected. The cleanup goal for 1,2-DCE is the relevant goal to evaluate the progress of remediation at Site A.

### 5.2.3 Efficacy of Remediation by Pumping of an Extraction Well in the Source Area

Nine extraction wells have been operated at Site A. Extraction Well 01U350 was installed as an interim response action to remove the high concentrations of contaminants at the source. The well began operating in September 1988 at approximately 4 gpm and was discontinued in 1994. **Figure 5-2** shows the location of extraction well 01U350 and the associated monitoring wells 01U117, 01U102, and 01U108. Panel B of **Figure 5-2** presents the time course of concentrations of total chlorinated alkenes in extraction well 01U350. The initial concentration of 12.2  $\mu\text{mole/L}$  was quickly reduced to values below the cleanup goal for 1,2-DCE of 0.72  $\mu\text{mole/L}$ . However, the concentrations of total chlorinated alkenes stabilized and was not further reduced during pumping.

In 1994 pumping started up in eight new extraction wells further downgradient (see next section). At this time, pumping was shut down in the interim remedy extraction well 01U350. At the time pumping ceased in extraction well 01U350, the concentration of total chlorinated alkenes in the extraction well and the three monitoring wells was below the cleanup goal for 1,2-DCE.

When pumping ceased in well 01U350, the concentrations of total chlorinated alkenes rebounded to near the value before pumping began. Pumping was not started up again in extraction well 01U350 because the contaminated groundwater was in the capture zone of the full-scale pumping system farther downgradient. After rebound, the concentrations of total chlorinated alkenes then showed an extended decline in all four wells (Panels A, B, C and D of **Figure 5-2**).

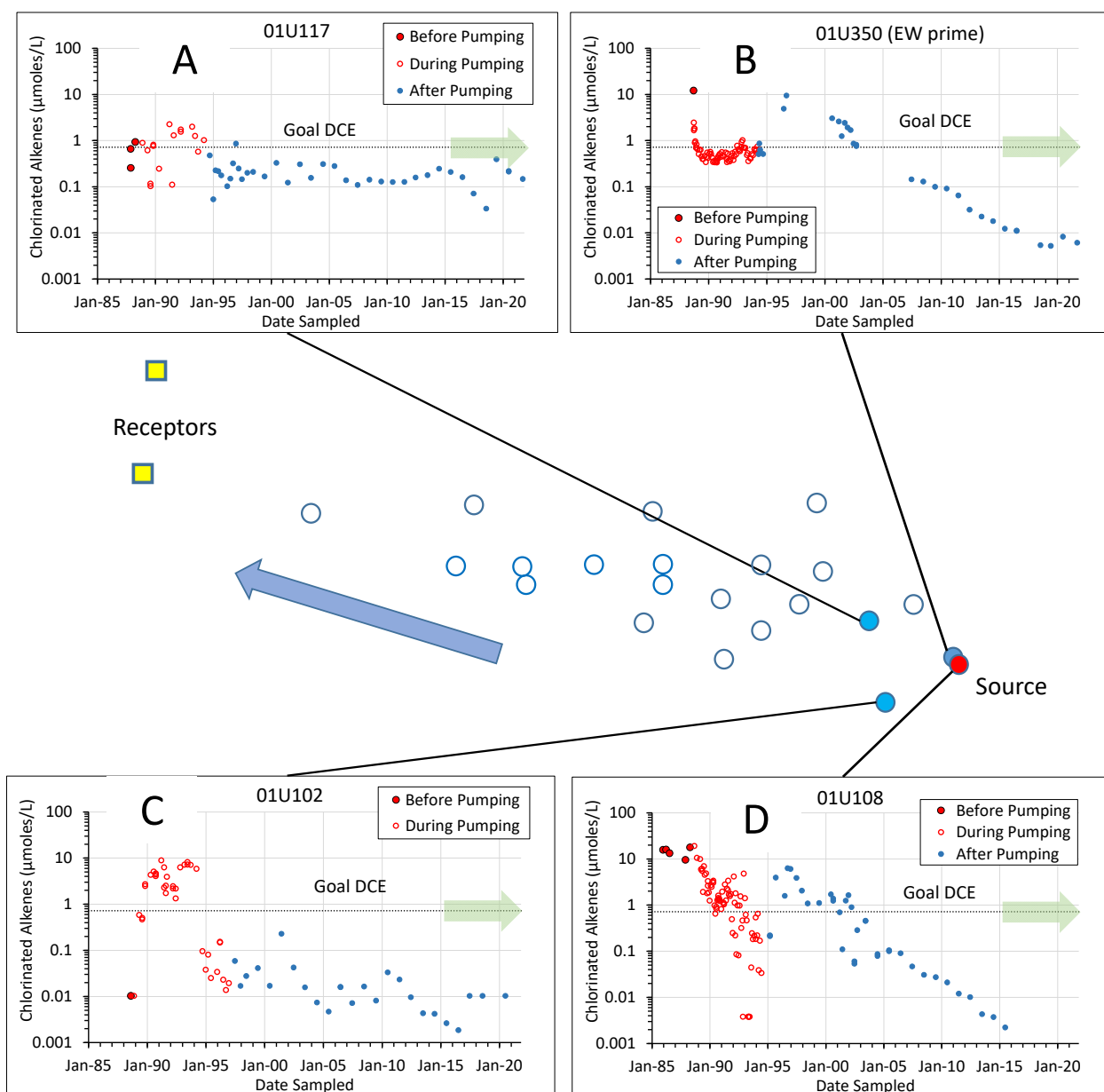
In 2015, the site owner asked the Minnesota Pollution Control Agency and the U.S. EPA to transition the remedy at Site A from pump-and-treat to MNA based on the results of these wells and the downgradient wells (discussed in subsequent sections). The green arrows in Panels A through D of **Figure 5-2** identifies the time after the proposed transition to MNA. In this time, the concentrations in these four source area extraction wells were below the cleanup goal for 1,2-DCE. At the current time, remediation by pumping of extraction well 01U350 and natural attenuation of the source had reduced the chlorinated alkenes in the known source area of the plume to concentrations below their respective cleanup goals (see **Table 5-2**).

**Table 5-2. Current concentrations of chlorinated alkenes in groundwater in wells near the former source area of the plume of contamination at Site A.**

Well	Last Date Sampled	PCE	TCE	cDCE	tDCE	1,1-DCE	VC
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
01U102	9/14/2021	<1	<1	<1	NR*, <1	<1	NR, <1
01U108	6/25/2015	0.4	<1	<1	NR, <1	<1	NR, <1
01U117	9/14/2021	1.7	<1	13	NR, <0.5	<1	NR, <1
01U350	9/14/2021	0.6	<1	0.2	NR, 0.2	<1	NR, <1
Goal		7	30	70		6	2

\*NR means not reported for that date. The value is from the latest previous sample for which a value was reported.





**Figure 5-2. Effect of Pumping near the source of contamination at Site A.**

#### 5.2.4 Efficacy of Remediation by Pumping in the “First Line” of Extraction Wells Downgradient of the Source

A second system of eight extraction wells downgradient of the source area was started up in May of 1994 with a combined pumping rate of approximately 30 gallons per minute. Four wells were in the “First Line” downgradient of the source. These “First Line” wells were shut down in September of 2008. They are depicted in **Figure 5-3**.



The northern most well (01U351) never produced water with concentrations of total chlorinated alkenes above the goal for 1,2-DCE (Panel B of **Figure 5-3**). Pumping reduced the concentrations by an order of magnitude. After pumping stopped, concentrations continued to decline.

Notice that extraction well 01U352 produced a concentration of total chlorinated alkenes of 3.6  $\mu\text{mole/L}$  just before pumping was shut down in 2008, which is above the cleanup goal for 1,2-DCE (Blue arrow in Panel A of **Figure 5-3**), but the concentrations after pumping ceased were below the goal. The adjacent extraction well 01U353 produced concentrations below the goal when pumping ceased in 2008, but concentrations rebounded to 9.8  $\mu\text{mole/L}$  in 2009 after pumping ceased (Blue arrow in Panel D of **Figure 5-3**). It is likely that the contaminated flow path shifted from well 01U352 to well 01U353 after pumping ceased.

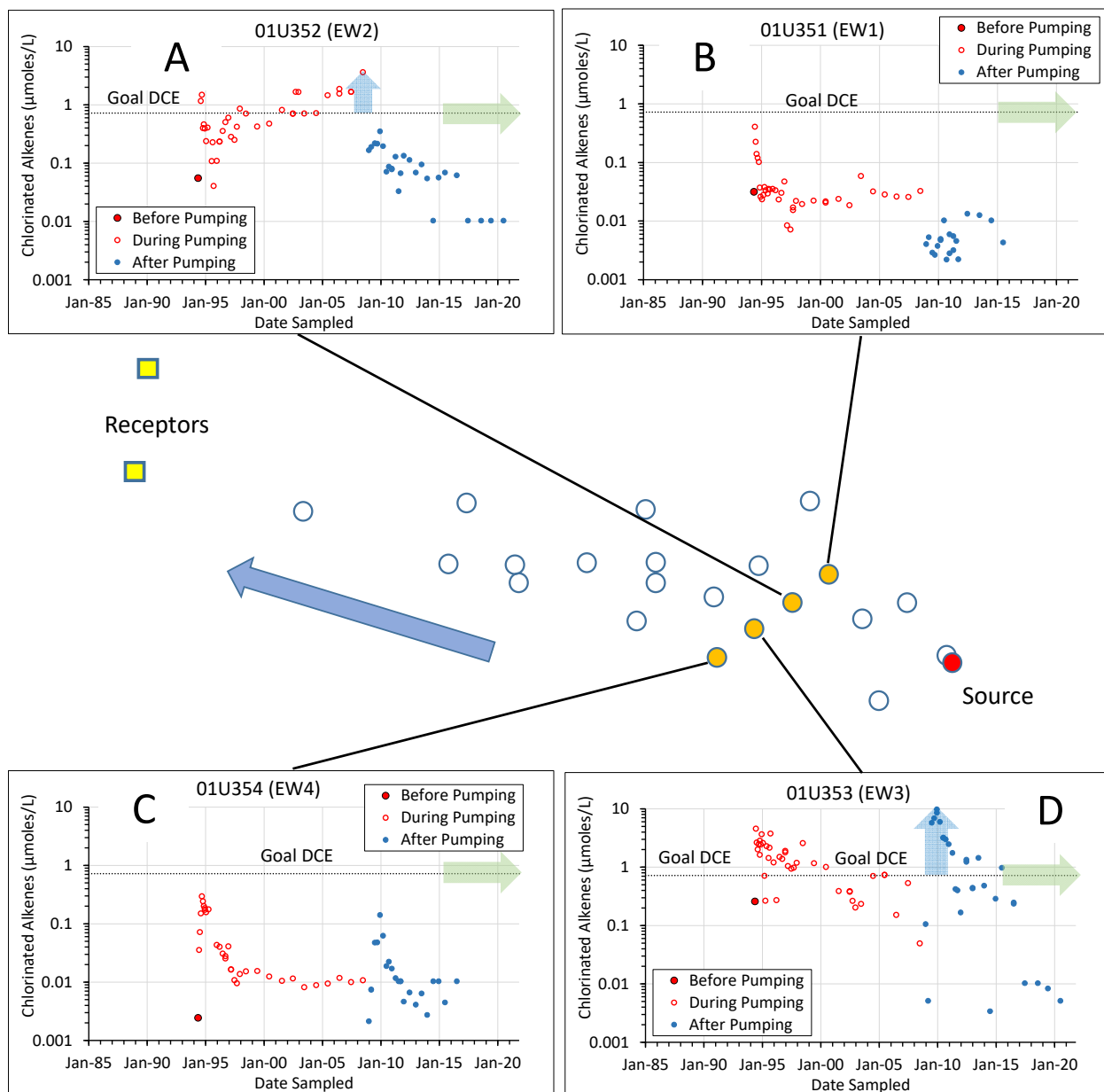
In the southernmost extraction well (01U354), pumping reduced the concentrations by an order of magnitude, but concentrations rebounded by an order of magnitude after pumping ceased (Panel C of **Figure 5-3**). However, the concentrations were always below the goal for 1,2-DCE.

The green arrows in Panels A through D of **Figure 5-3** identifies the time after the proposed transition to MNA. In this time, the concentrations were below the cleanup goal for 1,2-DCE in all four wells. **Table 5-3** provides the current concentrations of the individual chlorinated alkenes, and each is below its respective goal.

**Table 5-3. Current concentrations of chlorinated alkenes in groundwater in extraction wells in the “First Line” of extraction wells downgradient of the former source of contamination.**

Well	Date Sampled	PCE	TCE	cDCE	tDCE	1,1-DCE	VC
		$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
01U351	7/1/2016	<1	<1	0.5	NR*, <1	<1	NR, <1
01U352	6/30/2020	<1	<1	<1	NR, 1.6	<1	NR, <1
01U353	6/30/2020	<1	<1	0.5	NR, 2.1	<1	NR, <1
01U354	6/30/2020	<1	<1	<1	NR, <1	<1	NR, <1
Goal		7	30	70		6	2

\*NR means not reported for that date. The value is from the latest previous sample for which a value was reported.



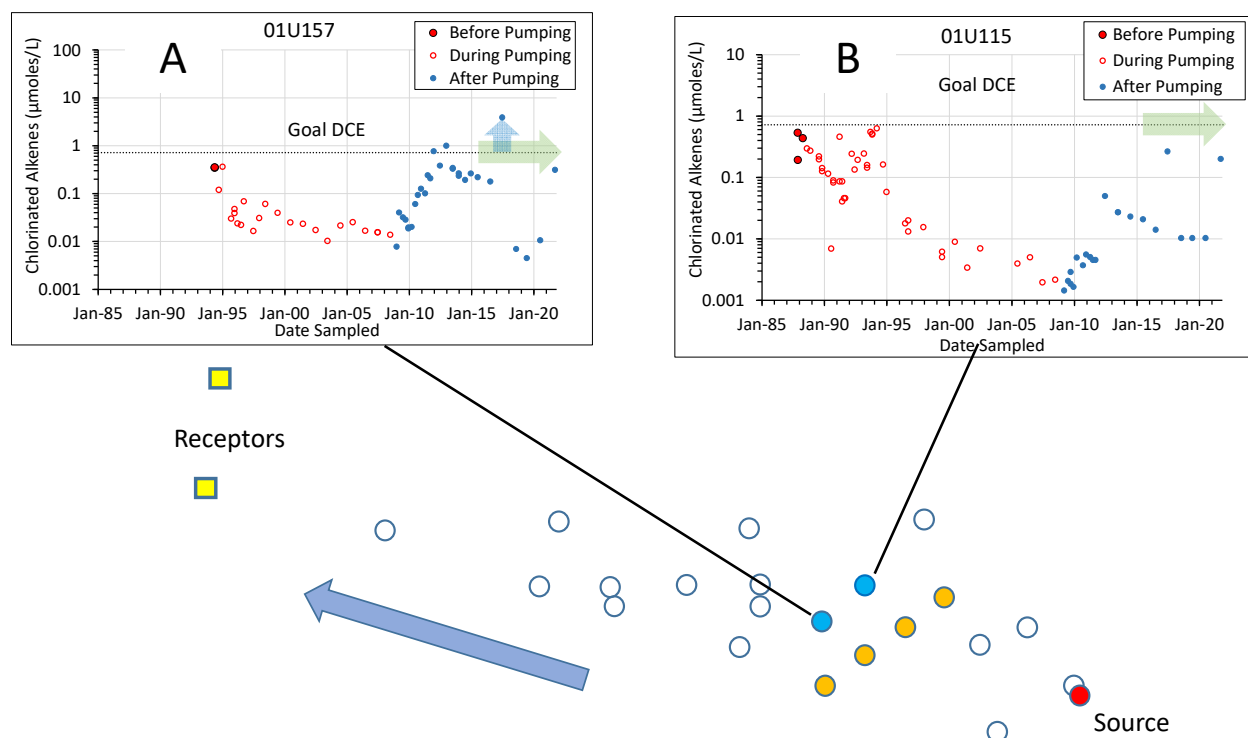
**Figure 5-3. Effect of pumping in the “First Line” of extraction wells downgradient of the source of contamination.**

#### 5.2.4 Efficacy of Remediation by Pumping in the “First Line” of Extraction Wells on Monitoring Wells Immediately Downgradient

There are two monitoring wells immediately downgradient of the “First Line” of extraction wells. In these wells, pumping of the “First Line” of extraction wells reduced the concentration of total chlorinated alkenes by two to three orders of magnitude (Panel A and Panel B of **Figure 5-4**). After pumping ceased in the “First Line” wells in 2008, the concentrations in the downgradient wells rebounded to concentrations near or above the concentration before pumping started.

The green arrows in Panels A and B of **Figure 5-4** identifies the time after the proposed transition to MNA. In 2015, when the Responsible Party requested a transition to MNA, the total concentration of chlorinated alkenes in monitoring wells 01U115 and 01U157 were below the cleanup goal. However, in well 01U157 in June 2017, the concentration of total chlorinated alkenes was 3.9  $\mu\text{mole/L}$  (blue arrow in Panel A of **Figure 5-4**). This is above the cleanup goal.

In the following sections, Tool 5 of the TA<sup>2</sup> Tool was used to determine whether it was an appropriate decision to not resume pumping of extraction wells based on the concentration of total chlorinated alkenes in monitoring well 01U157 in 2017.



**Figure 5-4. Effect of pumping in the “First Line” of extraction wells on concentrations in monitoring wells immediately downgradient.**

### 5.2.5 Efficacy of Remediation by Pumping in the “Second Line” of Extraction Wells Downgradient of the Source

Four wells in the second system of eight extraction wells were in the “Second Line” of extraction wells (**Figure 5-5**). The “First Line” of extraction wells ceased pumping in 2008. The “Second Line” of wells ceased pumping at a much earlier time, in July 2000.

In well 01U355, which is closest to the source, the highest concentration before pumping was 2.3  $\mu\text{mole/L}$  (Panel B of **Figure 5-5**). Pumping caused a two order of magnitude reduction in the concentration of total chlorinated alkenes, and the final concentrations were far below the cleanup goal for 1,2-DCE. In the two years after pumping stopped, the concentrations continued to decline, and sampling and analysis of water from well 01U355 was discontinued in 2002. When monitoring resumed in 2012, the concentrations of total chlorinated alkenes had rebounded to concentrations near the initial concentration before pumping.

The next two wells along the flow path followed essentially the same pattern as the first well (compare well 01U356 in Panel A and well 01U357 in Panel D to well 01U355 in Panel B of **Figure 5-5**). Extraction well 01U358, the well in the “Second Line” of extraction wells that was most downgradient of the source, had an extensive reduction in concentration during pumping but showed no evidence of rebound after 2012 (Panel C of **Figure 5-5**).

It is likely that the rebound in concentrations occurred in these wells earlier than 2012. The decision to stop sampling these wells in 2002 was made before the phenomenon of back diffusion was widely understood. The decision was reasonable at the time. The “First Line” of extraction wells were still pumping in 2002, and from 2000 to 2002 concentrations were at or below the goal for 1,2-DCE in all the “Second Line” of extraction wells (**Figure 5-5**). As discussed above, there were two monitoring wells between the extraction wells in the “First Line” and the “Second Line” and the concentrations in these wells were well below the goal in 2002 (Panel A and Panel B of Figure 4). Eight quarters may not be enough time to capture the effects of back diffusion on rebound of concentrations at Site A.

The green arrows in Panels A through D of **Figure 5-5** identifies the time after the proposed transition to MNA. In 2015, when the Responsible Party requested a transition to MNA, the total concentration of chlorinated alkenes in well 01U356 was 2.3  $\mu\text{mole/L}$  (the blue arrow in Panel A of **Figure 5-5**), which was above the cleanup goal for 1,2-DCE.

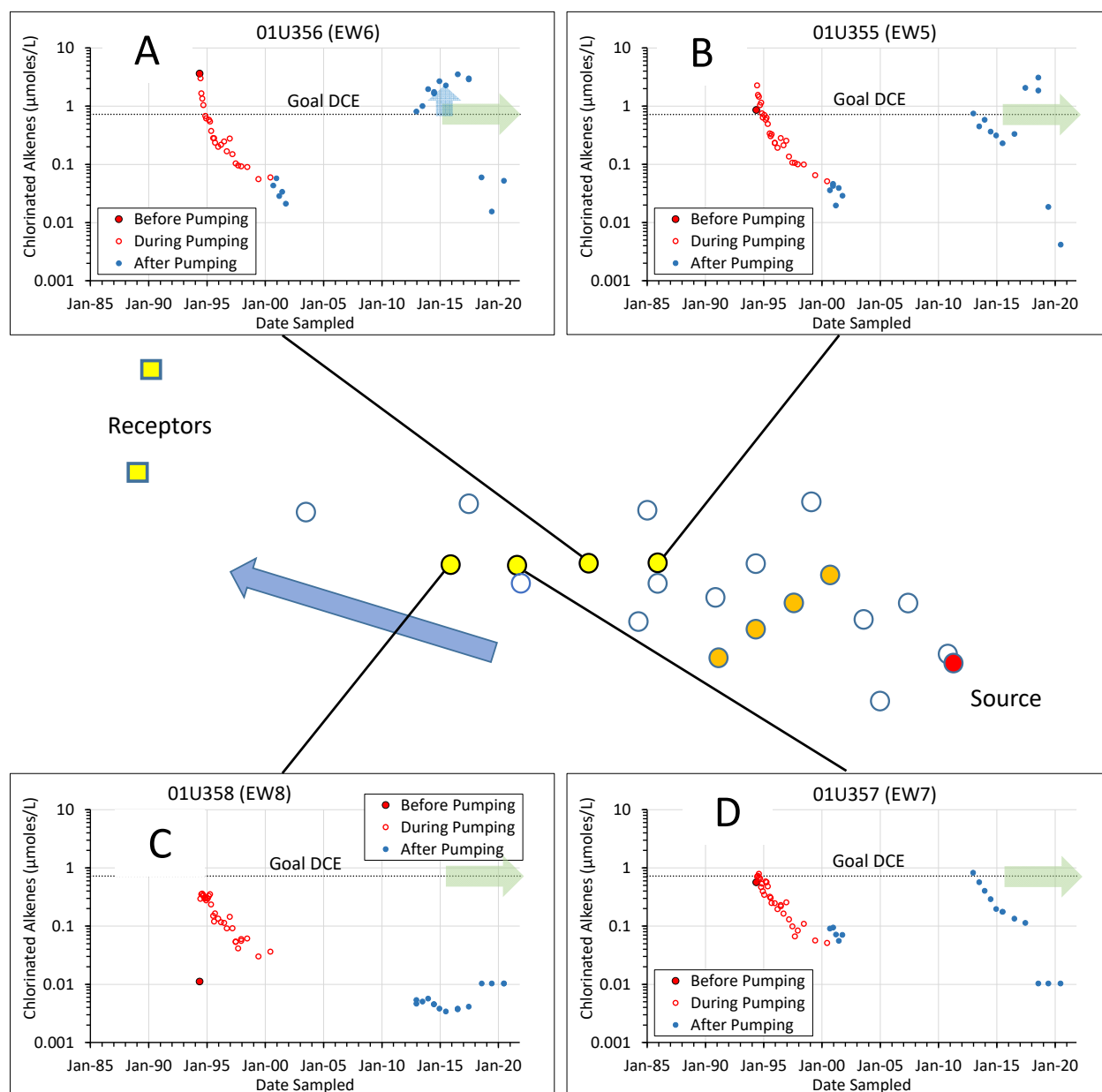
In the following sections, Tool 5 was used to determine whether it was an appropriate decision to not resume pumping of the “Second Line” of extraction wells after the rebound of concentrations in well 01U356 in 2015.

At the current time, remediation by pumping of the extraction wells and natural attenuation of the source has reduced the chlorinated alkenes in the “second line” of extraction wells to concentrations below the cleanup goals (See **Table 5-4**).

**Table 5-4. Current concentrations of chlorinated alkenes in groundwater in extraction wells in the “Second Line” of extraction wells downgradient of the former source of contamination at Site A.**

Well	Date Sampled	PCE	TCE	cDCE	tDCE	1,1-DCE	VC
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
01U355	6/25/2020	<1	<1	0.4	NR*, 0.7	<1	NR, <1
01U356	6/19/2020	<1	<1	5.1	NR, 1.3	<1	NR, <1
01U357	6/19/2020	<1	<1	<1	NR, 1.6	<1	NR, <1
01U358	6/19/2020	<1	<1	<1	NR, 0.6	<1	NR, <1
Goal		7	30	70		6	2

\*NR means not reported for that date. The value is from the latest previous sample for which a value was reported.



**Figure 5-5. Effect of pumping in the “Second Line” of extraction wells downgradient of the source of contamination.**

#### 5.2.6 Efficacy of Remediation by Pumping in the “Second Line” of Extraction Wells on Nearby Monitoring Wells

There are three monitoring wells closely associated with the “Second Line” of extraction wells. In the three wells, pumping of the “Second Line” of extraction wells reduced the concentration of total

chlorinated alkenes by roughly an order of magnitude (**Figure 5-6**). Pumping ceased in the “Second Line” of extraction wells in 2000 and in the “First Line” of extraction wells in 2008.

In general, concentrations decreased over time when both lines of extraction wells were pumping (until 2000) and were stable while only the “First Line” of wells were pumping. After pumping ceased in the “First Line” of extraction wells, the concentrations of total chlorinated alkenes rebounded in all the monitoring wells, reaching a local maximum in 2012 to 2013.

The green arrows in Panels A through C of **Figure 5-6** identifies the time after the proposed transition to MNA. In 2015, when the Responsible Party requested a transition to MNA, the total concentration of chlorinated alkenes in well 01U139 was 3.2  $\mu\text{mole/L}$  (the first blue arrow in Panel A of **Figure 5-6**). This is above the cleanup goal for cDCE.

After rebounding above the goal for cDCE, concentrations of total alkenes declined below the goal in two of the three wells (**Figure 5-6**). However, in well 01U139, the concentration of total chlorinated alkenes has remained above the goal until the current sample (10.6  $\mu\text{mole/L}$ , see second blue arrow in Panel A of **Figure 5-6**). In the following section, Tool 5 will be used to determine whether it was appropriate to not resume pumping of the extraction wells based on current concentrations of cDCE in well 01U139.

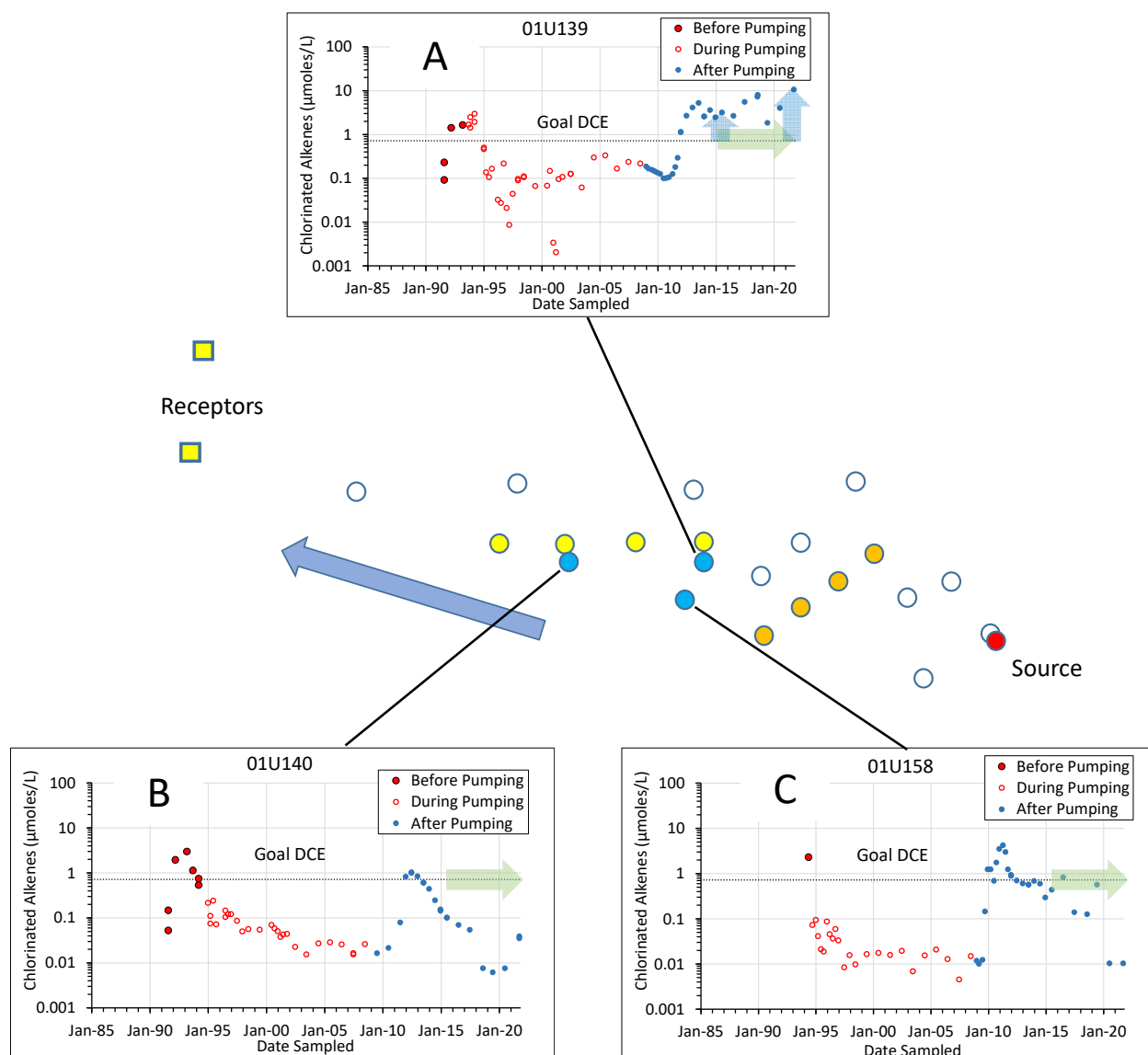
**Table 5-5** provides the current concentrations of chlorinated alkenes in the monitoring wells that were closely associated with the “Second Line” of extraction wells.

**Table 5-5. Current concentrations of chlorinated alkenes in wells in close association with the “Second Line” of pumping wells.**

Well	Date Sampled	PCE	TCE	cDCE	tDCE	1,1-DCE	VC
		$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$	$\mu\text{g/L}$
01U139	9/14/2021	<1	0.6	<b>1030</b>	NR*, <1	<1	NR, <1
01U140	9/14/2021	<1	0.2	3.3	NR, 0.95	<1	NR, <1
01U158	9/14/2021	<1	<1	<1	NR, 0.4	<1	NR, <1
Goal		7	30	70		6	2

\*NR means not reported for that date. The value is from the latest previous sample for which a value was reported.





**Figure 5-6. Effect of pumping in extraction wells on monitoring wells near the “Second Line” of extraction wells.**

### 5.2.7 Efficacy of Remediation by Pumping of Extraction Wells on Monitoring Wells in the Residential Neighborhood Adjacent to Site A.

Four monitoring wells were located in a residential area immediately north of the former TCAAP (Panel A of **Figure 5-1** and **Figure 5-7**). In three of the four wells, concentrations of total chlorinated alkenes never exceeded the cleanup goal for cDCE (Panels B, C and D of **Figure 5-7**).

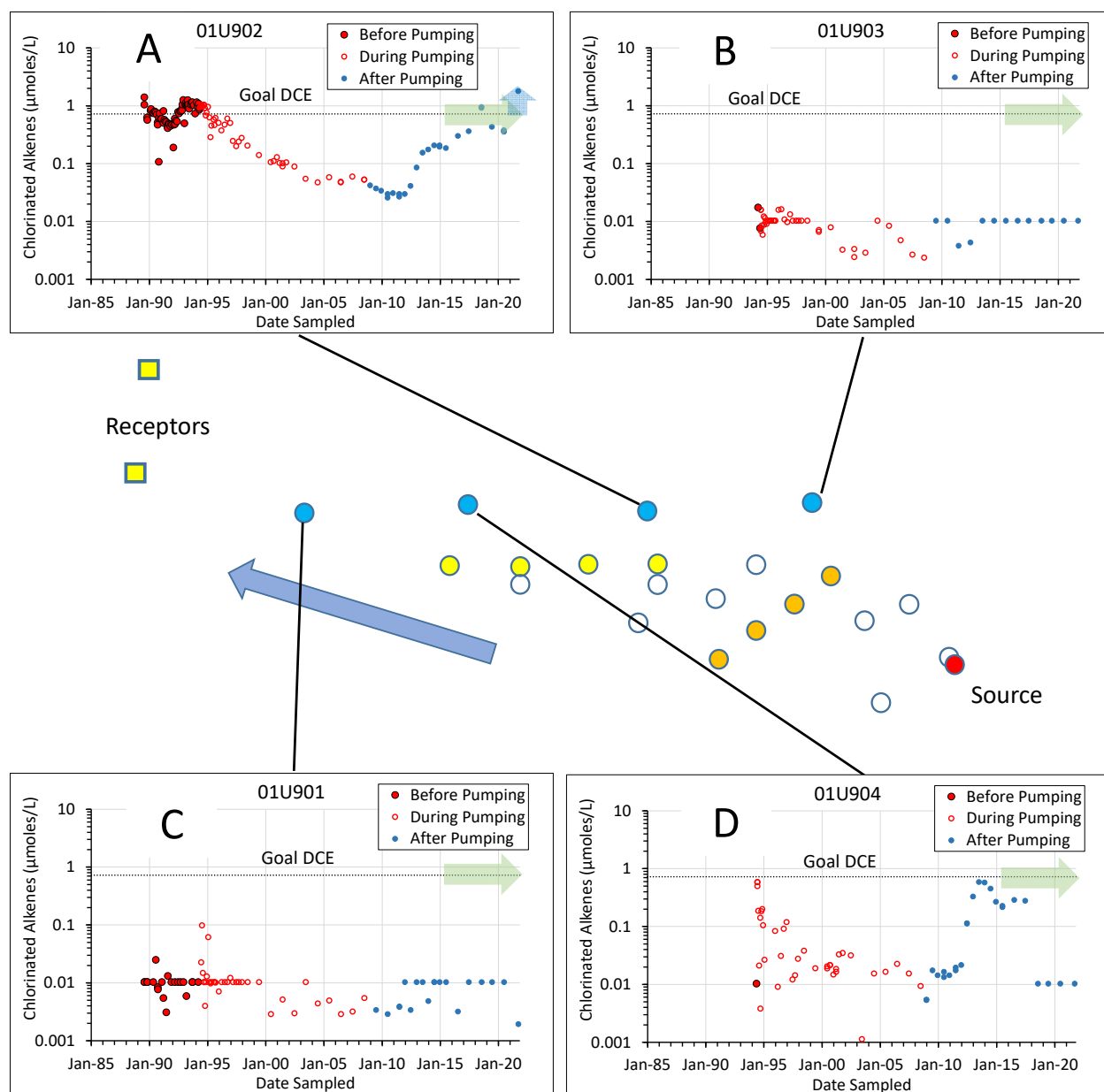
The green arrows in Panels A through D of **Figure 5-7** identifies the time after the proposed transition to MNA. After pumping ceased in the extraction wells, concentrations increased in monitoring well 01U902 (Panel A of **Figure 5-7**). At the time the Responsible Party proposed the transition, the concentration of total chlorinated alkenes was below the goal for cDCE. However, the current concentrations in well 01U902 are above the cleanup goal (blue arrow in Panel A of **Figure 5-7**). **Table 5-6** provides the current concentrations of chlorinated alkenes in the monitoring wells in the residential neighborhood adjacent to Site A.

**Table 5-6. Current concentrations of chlorinated alkenes in monitoring wells in the residential neighborhood adjacent to Site A.**

Well	Date Sampled	PCE	TCE	cDCE	tDCE	1,1-DCE	VC
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
01U901	9/14/2021	<1	<1	0.2	NR*, <1	<1	NR, <1
01U902	9/14/2021	<1	<1	<b>173</b>	NR, 1.3	<1	NR, <1
01U903	9/14/2021	<1	<1	<1	NR, <1	<1	NR, <1
01U904	9/14/2021	<1	<1	<1	NR, 0.2	<1	NR, <1
Goal		7	30	70		6	2

\*NR means not reported for that date. The value is from the latest previous sample for which a value was reported.

In the following sections, Tool 5 was used to determine whether it is appropriate to not resume pumping of the extraction wells based on current concentrations of cDCE in well 01U902.



**Figure 5-7. Effect of pumping of extraction wells on monitoring wells in the residential neighborhood adjacent to Site A.**

#### 5.2.7 Calibration of the Rate Constant for Natural Attenuation with Distance Along the Flow Path (Tool 5)

Panel A of **Figure 5-8** compares the concentration of total chlorinated alkenes in all monitoring wells at Site A when the wells were first installed to the distance of the well from the most contaminated well (01U108). Panel A of **Figure 5-8** was created from a cropped screen shot of

output of **Results** tab **Well to be Evaluated Projected** from the **Tool 5 Plume Projections** in the TA<sup>2</sup> Tool. There was a wide variation in the extent of attenuation of concentrations with distance from the source of contamination. Panel B of **Figure 5-8** depicts the distribution of the wells in plan two-dimensional space.

Concentrations can be lower with distance from the source because natural attenuation processes such as dispersion or degradation have reduced the concentrations, or the concentrations can be lower because the well is askew of the plume centerline and the well is in the margin of the plume, or because the screened interval of the well is longer than the vertical extent of the plume and the plume is diluted with clean water in the sample produced from the well. Professional judgement was used to select wells that had the highest concentrations for a given distance from the source and had screened intervals that were largely confined to the most contaminated depth interval in the water table aquifer. These seven wells will define the centerline of the plume.

These seven wells are identified in Panel A and Panel B of **Figure 5-8** with red symbols and Panel C of with black symbols. The centerline wells lie along a line extending from the most contaminated well, taken as the source of contamination, toward the two private residential wells that were identified by the Minnesota Pollution Control Agency as potential receptor wells. The receptor wells are enclosed in an open square symbol in Panel B.

None of the chlorinated alkenes were detected in the most distal potential receptor well (the northern well in Panel B). The concentration plotted for the most distal receptor well in Panel A is the detection limit for the least sensitive analyte. The relevant cleanup goal is the MAC for 1,2-DCE (70 µg/L or 0.722 µmole/L total 1,2-DCEs), as depicted in Panel A and C of **Figure 5-8**. The Point of Compliance is the distance to the southern potential receptor well.

As part of its risk evaluation, Tool 5 extracts a first-order rate constant for attenuation along the centerline wells with distance from the source, then uses the rate constant to extrapolate the concentration of contaminants at a particular well to the point of compliance, and then compares the extrapolated concentration at the point of compliance to the cleanup goal. The tab **Site-Specific Info** of **Tool 5 Plume Projections** was selected, and **Step 5** was used to select the five centerline wells. The user has the option to select from different types of rate constants, such as rate constants derived from data from either the Pre-Remediation Period, the Post-Remediation Period, or lab microcosm; in this case, the data from the Pre-Remediation Period is used to extract the rate constant.

The rate constant for attenuation along the centerline wells is illustrated in Panel C of **Figure 5-8**. Panel C of **Figure 5-8** was created from a cropped screen shot of output of **Results** tab **Pre-Remediation Period (actual)** from the **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool. The solid dark blue line (*Regression: Projected*) in Panel A and Panel C is a linear regression of the natural logarithm of the total concentration of chlorinated alkenes in the centerline wells on distance from the most contaminated well, well 01U108. The projection of the solid dark blue line indicates that when groundwater in the centerline wells reaches the point of compliance, the concentration will not exceed the MAC.

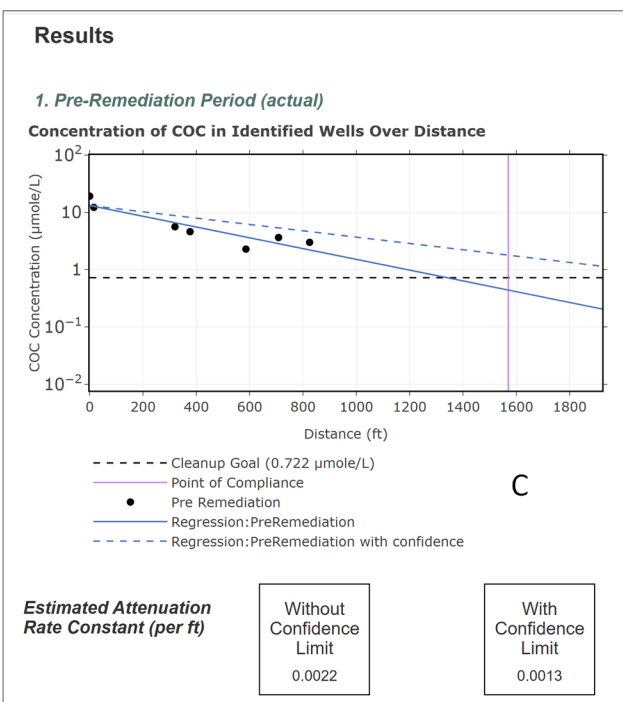
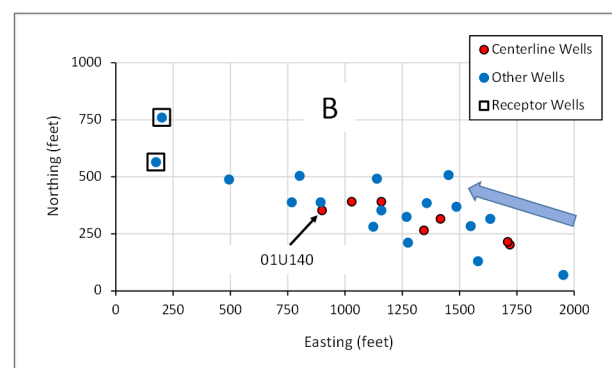
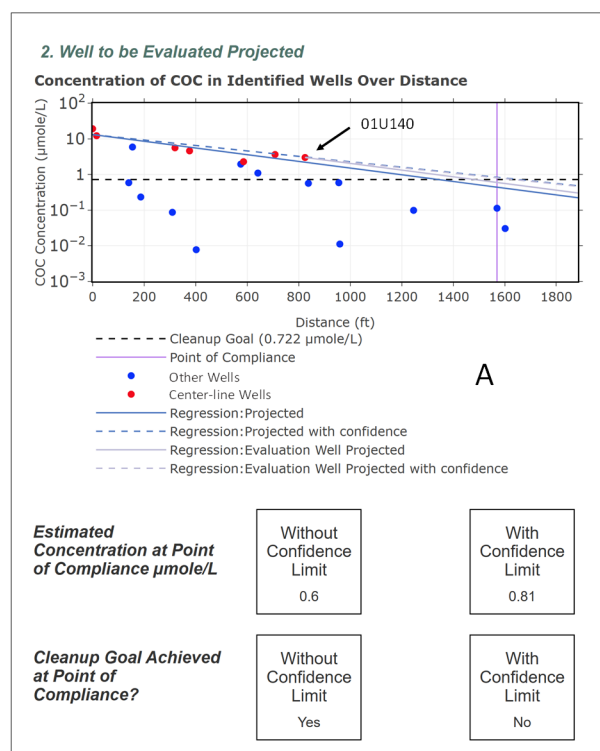
Tool 5 provides an option to evaluate the uncertainty in the projection. The tool projects the slower one-tailed confidence interval on the rate of attenuation. The tool provides the option of an 80%, 90%, 95% or 99% confidence interval. For the purposes of this case study, assume that an acceptable probability of error in the projection is 5% corresponding to a 95% confidence interval. The dashed dark blue line (*Regression: Projected with confidence*) is the 95% confidence interval on the rate of natural attenuation. The projection of the slower confidence interval in Panel A and Panel C indicates that the possibility that the concentrations will be greater than the MAC **cannot** be excluded at 95% confidence.

The well that provides the greatest risk to the receptor is not the well with the highest concentrations of contaminants. The well with the greatest risk is the well with the highest concentrations compared to the regression line for the centerline wells. When the wells were first installed, that well was 01U140 (Panel A). The solid line extending from the symbol for well 01U140 (*Regression: Evaluation Well Projected*) extrapolates the rate constant for attenuation from well 01U140. Again, the projection indicates that the concentration of contaminants in groundwater in well 01U140 will not exceed the MAC when the groundwater reaches the point of compliance. The dotted line extending from well 01U140 (*Regression: Evaluation Well Projected with confidence*) extrapolates the 95% confidence interval. Again, the possibility that the concentrations will be greater than the MAC cannot be excluded at 95% confidence.

In Panel A, the projections from the centerline wells and the projections from the well being evaluated are difficult to distinguish. Tool 5 also provides the projected concentrations in the well being evaluated at the point of compliance and compares the concentrations against the cleanup goal. See the boxes at the bottom of Panel A.

The risk evaluation provided by Tool 5 after the fact in this case study is consistent with the decision to install a pump-and-treat remedy at the site.

The projections of Tool 5 at Site A are essentially equivalent to the evaluation provided by Ferrey et al. (2002). To calibrate BIOPLUME III, they assumed a seepage velocity of 200 feet per year. A rate constant for degradation of PCE of 0.6 per year was required to make the simulation match the field data. This would be equivalent to a rate constant for attenuation with distance along the flow path of  $0.6/200 = 0.003$  per foot. The rate constant extracted using Tool 5 was 0.0022 per foot (Lower left-hand box in Panel C of **Figure 5-8**).



**Figure 5-8. Calibration of Tool 5 for the rate of natural attenuation with distance along the flow path toward the receptor.**

## 5.2.8 Risk to Potential Receptors from Concentrations in Well 01U139 Under Current Conditions

After the request was made in 2015 to transition to MNA, the highest concentration of total chlorinated alkenes in any well at Site A was in the latest sample taken from well 01U139 (10.6  $\mu\text{mole/L}$  in September 2021, see the blue arrow in Panel A of **Figure 5-9**). When pumping ceased in the “First Line” of extraction wells in 2008, concentrations in well 01U139 rebounded. They exceed the cleanup goal in 2012 and reached a local maximum in 2013. Concentrations had consistently been above the cleanup goal for 1,2-DCE for eight years leading up to the current sampling date.

Panel C of **Figure 5-9** provides output from Tool 5 as applied to the current conditions at Site A. The current concentrations at well OU139 and concentrations in other available wells are plotted as a function of distance along the flow path from the source well, 01U108. Current concentrations are plotted as blue circles. The original concentrations in the centerline wells before pumping are plotted as red circles. In general, the current concentrations are much lower than they were before active remediation, and with two exceptions, the concentrations are below the cleanup goal. However, the current concentration of total chlorinated alkenes in well 01U139 is higher than concentrations in the centerline wells at a similar distance from the source before pumping began.

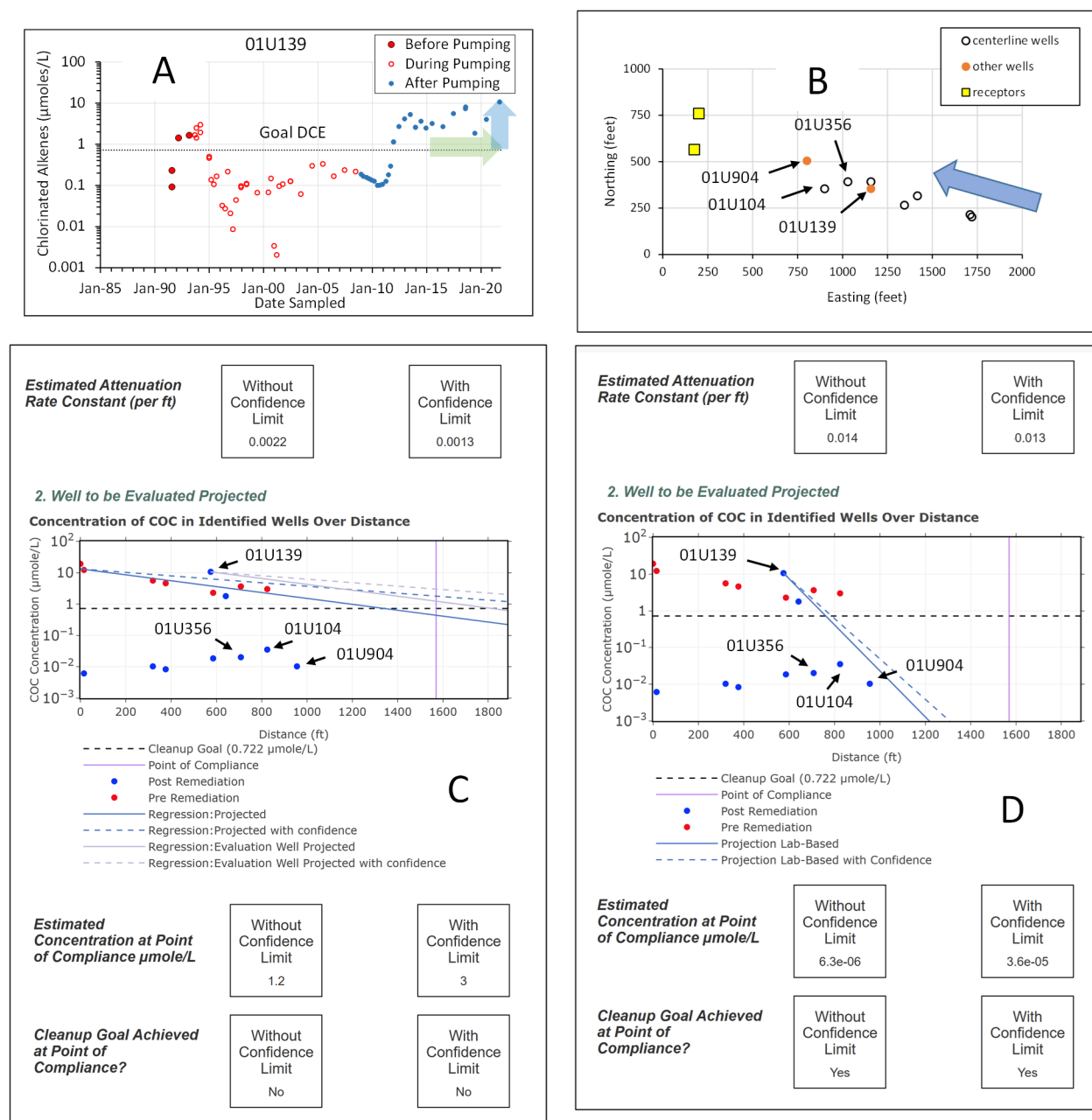
The solid blue line extending from well 01U139 projects the rate constant for attenuation with distance that was calibrated to the centerline wells. The projection assumes that the natural attenuation processes that operated before pumping will operate with the same effect after pumping ceases. The dashed blue line projects the slower 95% confidence interval on the rate constant for natural attenuation with distance. Both projections indicate that the concentration of total chlorinated alkenes will exceed the goal for 1,2-DCE when the groundwater in well 01U139 reaches the point of compliance.

Panel B of **Figure 5-9** presents the location of well 01U139 in relation to the seven centerline wells and one other relevant monitoring well in the flow path from the source to the potential receptor wells. Wells 01U356, 01U104 and 01U904 lie directly between well 01U139 and the potential receptor wells.

The downgradient receptor wells are at most 1040 feet downgradient of well 01U139 (compare Panel B). At a seepage velocity of 215 feet per year, the groundwater would move from well 01U139 to the receptor wells in five years. The concentrations of chlorinated alkenes have been high in well 01U139 for the previous eight years (compare Panel A). Contaminated groundwater from well 01U139 has had adequate time to move past the downgradient monitoring wells on Site A and impact the potential receptor wells.

At the rate constant for attenuation with distance in the centerline wells, the high concentrations of total alkenes in 2013 should have been moved from well 01U139 to wells 01U356, 01U104 and 01U904. They did not. The concentrations in well 01U356, 01U104 and 01U904 are much below the projection and much below the cleanup goal (Panel C of **Figure 5-9**).





**Figure 5-9. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U139 under current conditions.**

### 5.2.9 Rate Constants for Abiotic Degradation in Microcosm Studies on Sediment from TCAAP Site A

Microcosm studies provide another option for estimating the rate constant for natural degradation of the contaminant over time in the aquifer sediment. At this site, He et al. (2009) conducted a

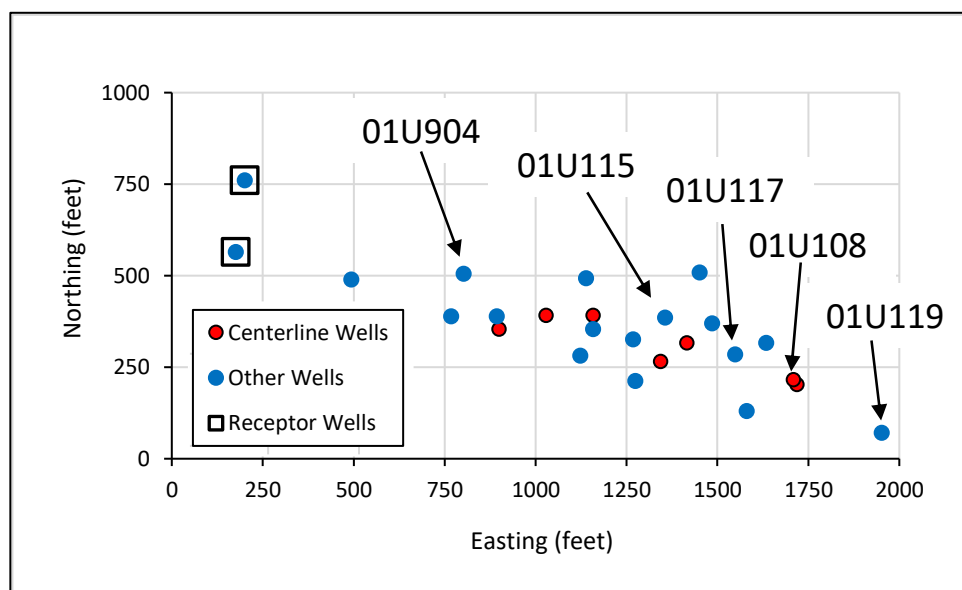
conventional microcosm study of degradation of *c*DCE in sediment collected near well 01U108. The rate constant for attenuation of concentrations over time was  $0.73 \pm 0.18$  per year (Table 3.1, He et al., 2009). The rate constant for attenuation in container controls without sediment from Site A was  $0.21 \pm 0.004$  per year. The rate constant for degradation of *c*DCE is the difference, 0.52 per year. The degradation occurred in sediment that was sterilized by autoclaving, indicating that degradation occurred though an abiotic process.

Sediment to construct the conventional microcosms was acquired in 2005. When wells at Site A were sampled in 1998, the plume was anoxic, based on nondetectable concentrations of oxygen in the contaminated wells compared to high concentrations in background wells, detectable concentrations of iron II, and relatively low values for oxidation reduction potential in the contaminated wells (Table 5-7). The location of the wells sampled for oxygen and redox indicators is provided in Figure 5-10.

**Table 5-7. Change from anoxic geochemical conditions before pumping to aerobic conditions after pumping ceased and Site A was transitioned to MNA.** Values compiled from Table 1 of Ferrey et al. (2000) and Table B.2 of He et al. (2009).

Parameter	Date	01U067*	01U119	01U108	01U117	01U115	01U904
		Background		Contaminated			
Dissolved Oxygen (mg/L)	1998	5.3		<1	<1	<1	<1
	June 2016		0.96	0.61	4.71	0.54	
Fe(II) (mg/L)	1998	<0.1		0.4	0.06	<0.1	<0.1
	June 2016		0.10	<0.03	<0.03	0.01	
ORP (mV)	1998	240		55	-104	75	114
	June 2016		223	153	243	225	

\* Upgradient well, not on map.



**Figure 5-10. Locations of wells used to characterize redox conditions at Site A.**

When the wells were sampled again 2016, after pump-and-treat and after the transition to MNA, geochemical conditions were marginally aerobic, with detectable concentrations of dissolved oxygen in all the wells, lower concentrations of ferrous iron (Fe(II)), and higher values of redox potential comparable to the clean well upgradient to the formerly contaminated wells.

Olivia Dunn in David Freedman's Laboratory at Clemson University measured the rate of abiotic degradation of *c*DCE in sediment from Site A by determining the rate of production of carbon-14 labelled transformation products from carbon-14 labelled *c*DCE (Dunn, 2023). The sediment was collected from near well 01U108 in 2021. She incubated sediment under two redox conditions: 1) aerobic conditions and 2) anoxic conditions.

In the three treatments of the Clemson microcosm study under anoxic conditions, the rate constant for degradation of *c*DCE is  $0.054 \pm 0.014$  per year,  $0.007 \pm 0.004$  per year and  $0.057 \pm 0.016$  per year at 95% confidence (Dunn, 2023, Table 3.3). The median rate constant is 0.054 per year. The Clemson microcosm system has 0.7 mL of water per 1.0 g of sediment. Natural aquifer material is near 0.124 mL/g. The rate of degradation is inversely proportional to the amount of water in contact with the aquifer solids. Correcting to a natural water content, the expected rate constant in the aquifer is  $0.054 \times 0.7 / 0.124 = 0.30 \pm 0.079$  per year at 95% confidence. The Clemson study included a control without sediment to account for the production of degradation products from radiolysis of the *c*DCE. The rate constant in the control was  $0.0055 \pm 0.0024$  per year, which is less than the significant figures in the rate constant for the microcosms with sediment. The rate constant from the Clemson microcosms (0.30 per year) is in reasonable agreement with the rate constant from the conventional microcosm study (0.52 per year).

As described above, the estimated seepage velocity of the groundwater is near 215 feet per year. Assuming no other contributions to attenuation such as sorption or dilution and dispersion, the rate constant for degradation of 0.52 per year would be equivalent to a rate constant for attenuation with distance along the flow path of  $0.52/215 = 0.0024$  per foot of travel. This is in reasonable agreement with the rate constant for attenuation with distance along the flow path of the centerline wells as projected by Tool 5 (0.0022 per foot, Pane A of **Figure 5-8**). At Site A, abiotic degradation of *c*DCE under anoxic conditions is a plausible explanation for the observed rate constant for attenuation with distance in the centerline wells.

In the three treatments in the Clemson microcosm study under aerobic conditions, the rate constant for degradation of *c*DCE is  $0.544 \pm 0.033$  per year,  $1.094 \pm 0.124$  per year and  $0.399 \pm 0.010$  per year at 95% confidence. The median rate constant is  $0.544 \pm 0.033$  per year.

Correcting to a natural water content, the expected rate constant in the aerobic sediment is  $3.1 \pm 0.19$  per year at 95% confidence. The Clemson study included a control without sediment to account for radiolysis of the *c*DCE. The rate constant in the control was  $0.0077 \pm 0.0031$  per year. The rate constant for degradation of *c*DCE under aerobic conditions would be equivalent to a rate constant with distance of  $3.1/215 = 0.014$  per foot of travel.

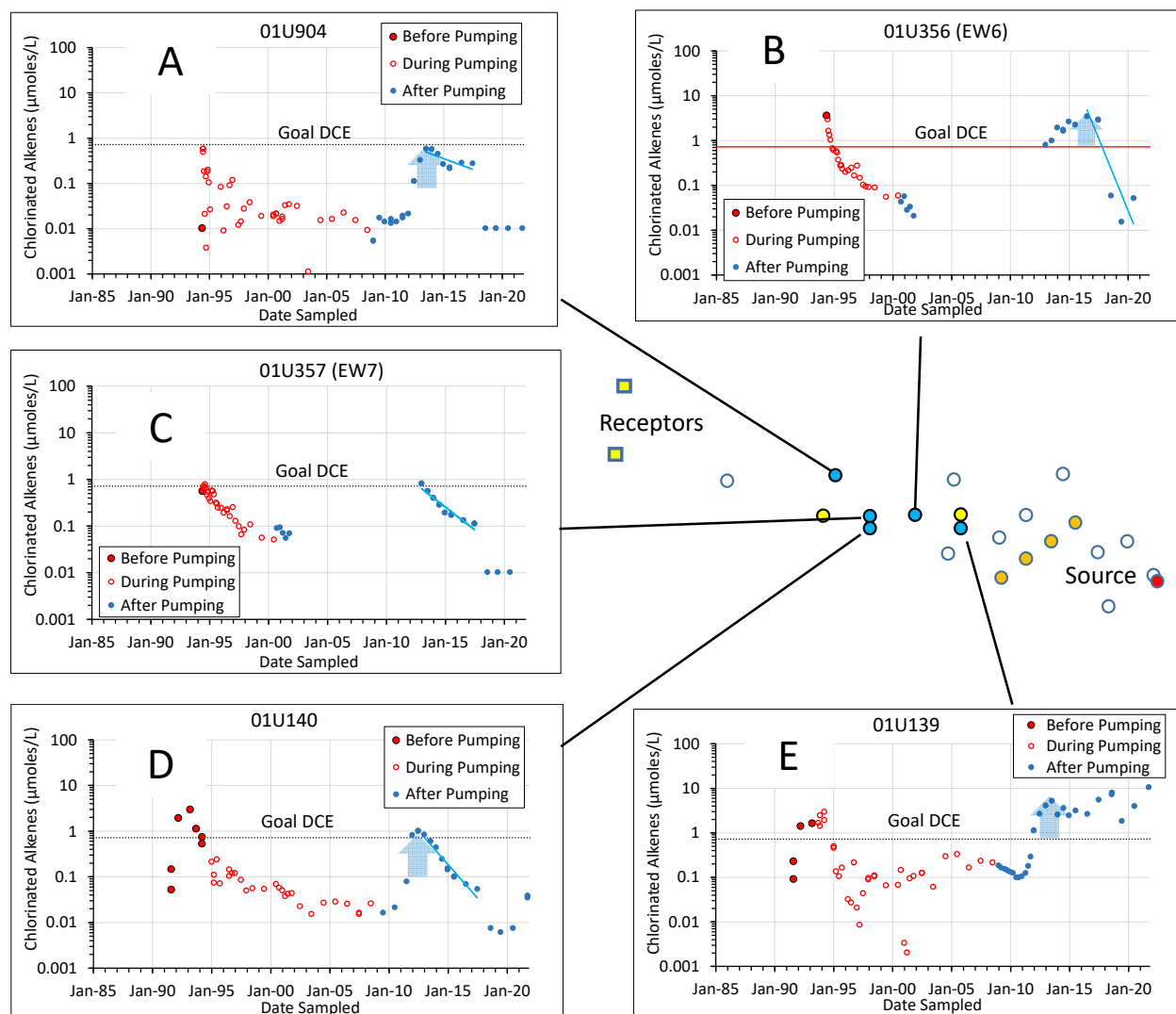
It is not understood why the rate constant for degradation of *c*DCE should be an order of magnitude faster under aerobic conditions, but this has important implications for the distribution of *c*DCE in the plume.

#### 5.2.10 The Aerobic Rate Constant for Degradation Can Explain Why High Concentrations Did Not Move Downgradient of Well 01U139

The solid blue line originating from well 01U139 in Panel D of **Figure 5-9** projects concentrations that would be expected in the downgradient wells in two to three years when the groundwater from well 01U139 reaches well 01U356 or well 01U904, based on attenuation expected from the rate constant in the aerobic microcosms. The expected concentrations are more consistent with the current concentrations if the rate constant for attenuation along the flow path is the rate constant that would be expected from the rate of degradation in aerobic microcosms.

The rate of attenuation over time in a well is a net rate that includes the rate for recruitment of new contaminated material during desorption and back diffusion, a rate of change in concentrations in groundwater moving into the capture zone of the well from upgradient, and the rate of degradation of the contaminant in the groundwater.

**Figure 5-11** compares the rebound and subsequent attenuation over time of total chlorinated alkenes in four wells in the flow path from well 01U139 to the potential receptor wells. When pumping ceased, the rate of recruitment exceeded the rate of degradation, and the concentration went up. The vertical blue arrows in Panels A, B, D and E of **Figure 5-11** identify the maximum concentration attained after rebound.



**Figure 5-11. Effect of back diffusion and degradation on concentrations after pumping ceased.**

At Site A, the microcosms studies conducted by Clemson University indicated that the rate constant for degradation over time may be ten-fold higher in aerobic material. The limited geochemical data indicate that Site A may have transitioned from an anoxic environment to an aerobic environment sometime on or before 2016. It is plausible that the peak in concentrations after rebound in Panels A, B, D and E is associated with the time when the aquifer sediment transitioned from anoxic to aerobic conditions. The fact that concentrations were increasing in early times indicated that the rate of recruitment of new contaminants to groundwater from back diffusion or desorption was greater than the rate of degradation. After the geochemistry shifted to aerobic conditions, the

concentrations started to decrease, indicating that the new rate of degradation was greater than the rate of back diffusion or desorption.

If groundwater from well 01U139 is the source of groundwater sampled by wells 01U356, 01U140 and 01U904 farther downgradient, concentrations in upgradient groundwater are unchanging or increasing (Panel E of **Figure 5-11**). The overall rate constant for attenuation over time in these downgradient wells cannot be greater than the rate constant for degradation. This is the case.

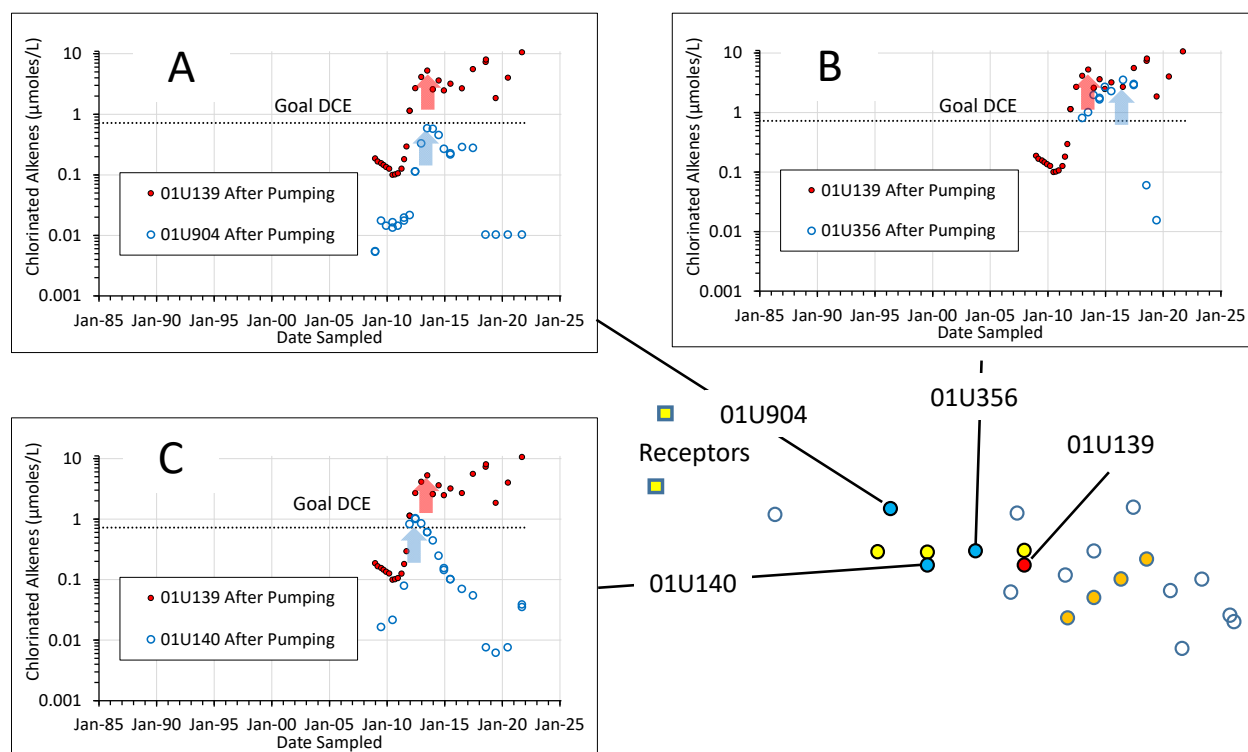
The solid blue line in Panel A through D is fit to the decline in concentrations after the maximum concentration. The rate constant for attenuation over time after the maximum rebound in well 01U904 was  $0.22 \pm 0.21$  per year at 95% confidence (Panel A), in well 01U356 the rate constant was  $1.5 \pm 1.2$  per year (Panel B), in well 01U357 the rate constant was  $0.40 \pm 0.13$  per year (Panel C), and in well 01U140 the rate constant was  $0.71 \pm 0.50$  per year (Panel D). None of the rate constants for attenuation over time are greater than the rate constant for abiotic degradation of *c*DCE in the Clemson microcosms incubated under aerobic conditions (3.1 per year). Abiotic degradation of *c*DCE in aerobic groundwater is a plausible explanation for the observed reduction in concentrations in these wells after rebound.

In well 01U139, the local maximum concentration after rebound occurred in 2013 (blue arrow in Panel E of **Figure 5-11**). Since 2013, the concentrations are reasonably stable, and there is no indication that concentrations are declining. The local maximum in 2013 occurred five years after all pumping ceased at Site A. If the water table had returned to conditions prior to pumping, the seepage velocity of groundwater would be near 215 feet per year, and groundwater from well 01U139 would reach well 01U356 in 0.6 years, well 01U140 in 1.2 years, and well 01U904 in 1.8 years.

**Figure 5-12** compares the time of maximum rebound in the three downgradient wells to the time of the local maximum of rebound in well 01U139. In well 01U904, the well farthest from well 01U139, the maximum rebound also occurred in 2013, not two years later (compare blue and red arrows in Panel A of **Figure 5-12**). In well 01U365, the well closest to well 01U139, the maximum rebound occurred in 2017, three years later, not one year later (Panel B of **Figure 5-12**). In the intermediate well, 01U140, the maximum rebound actually occurred sooner than in well 01U139 (Panel C of **Figure 5-12**). The rebound in the downgradient wells seems to have more to do with desorption and back diffusion than with migration of a front of contamination with groundwater moving along the flow path.

There is an additional possible explanation for the attenuation after rebound in the downgradient wells. As discussed, the attenuation may be due to a change in the rate constant for degradation in the time interval around 2012 to 2016. The attenuation may also be due to a shift in the flow path, carrying contamination from well 01U139 north of wells 01U356, 01U140 and 01U904 (**Figure 5-12**). This is a possibility, but it should be noted that when the “First Line” of extraction wells were shut down in 2008, the plume shifted south, not north (compare Panel A and C of **Figure 5-3**).

The simple depiction of flow along a one-dimensional flow path as provided by Tool 5 (Panel C and Panel D of **Figure 5-9**) assumes stable conditions along the flow path downgradient of the subject well, 01U139. The risk evaluation indicates there is no indication of a risk to the receptor wells under current conditions. However, the assumption of stable conditions should be verified by continued monitoring. If the rate constant for degradation can change by an order of magnitude as the site transitions from anoxic to aerobic conditions, it can change again in the future. It would be prudent to continue to monitor wells at Site A that are downgradient of well 01U139, in particular in wells 01U356 and 01U904.



**Figure 5-12. Concentration maxima in downgradient wells are not explained by the time of travel of groundwater from well 01U139 to the downgradient wells.**

#### 5.2.11 Risk to Potential Receptors from Concentrations in Well 01U902 Under Current Conditions

In the current data (2021), the only other well with concentrations of total chlorinated alkenes that are greater than the cleanup goal for 1,2-DCE is well 01U902. The concentration of *c*DCE was 173 µg/L or 1.8 µmole/L on 9/14/2021 (blue arrow in Panel A of **Figure 5-13**). After pumping ceased in the extraction wells in 2008, the concentrations continued to decline for a few years, and then in 2013 started a steady increase. The current concentration is near the maximum concentration before pumping began in 1994. In the period after the request to transition to MNA, the concentration of *c*DCE has been above the goal twice (compare green arrow in Panel A of **Figure 5-13**).

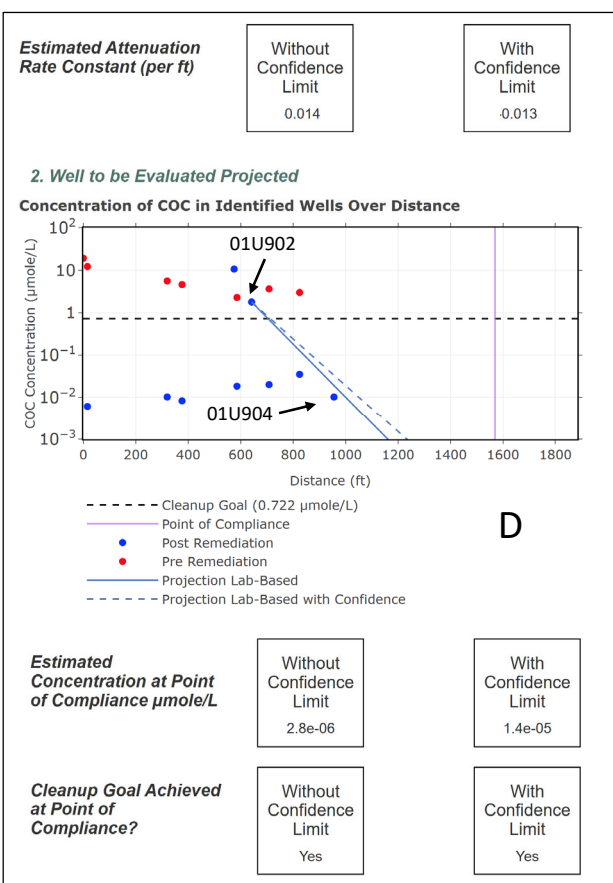
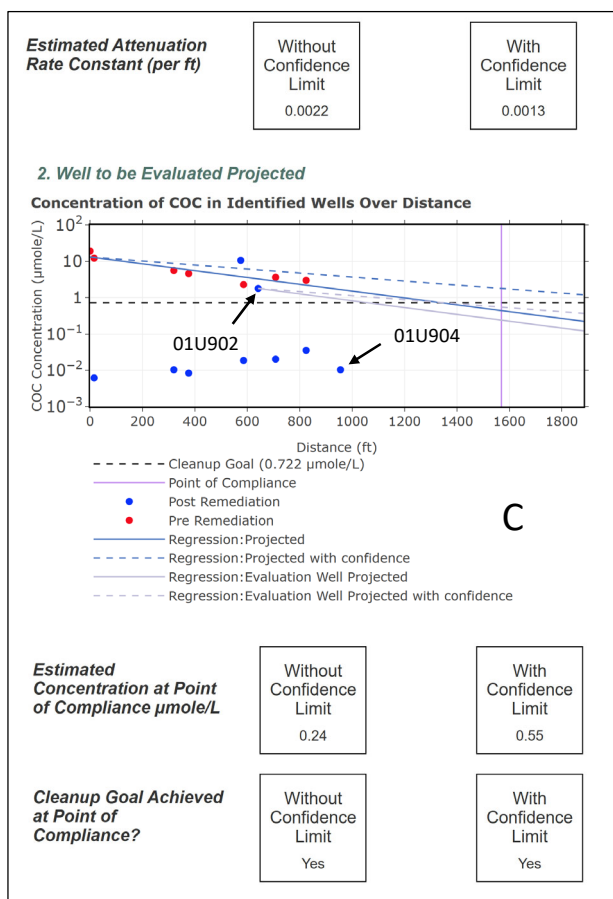
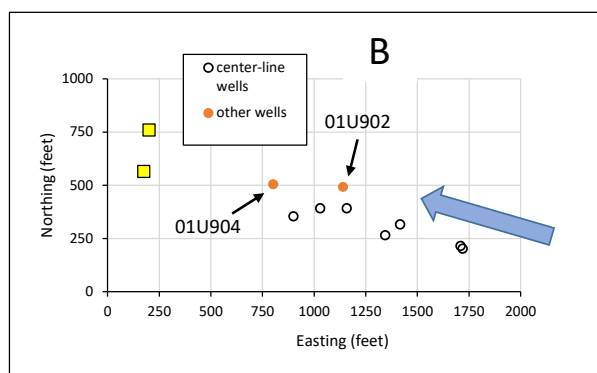
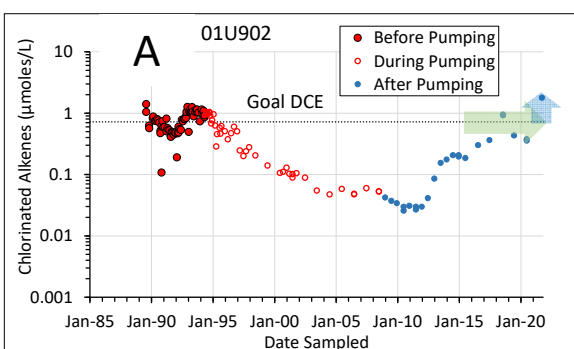


Panel C of **Figure 5-13** provides output of Tool 5 for current conditions at well 01U902. The solid blue line extending from well 01U902 (*Regression Evaluation Well Projected*) projects the rate constant for attenuation with distance that pertained before pumping began, and the blue dashed line (*Regression: Evaluation Well Projected with confidence*) projects the slower 95% confidence interval on the rate of attenuation with distance. All the projections are below the cleanup goal at the point of compliance. However, the projected concentrations at the receptors are close to the cleanup goal.

Only one of the wells sampled in 2021 lies downgradient of well 01U902 and upgradient of the potential receptor wells. That is well 01U904 (see Panel B of **Figure 5-13**). Chlorinated alkenes were not detected in well 01U904 in 2021. Concentrations are plotted as the detection limit in Panel C of **Figure 5-13**. The concentrations have been below the detection limit since 2018 (Panel D of **Figure 5-7**).

Concentrations have been near the cleanup goal in well 01U902 since 2017. The travel time of groundwater between the well 01U902 and 01U904 is 1.5 years. There is time for impacted groundwater in well 01U902 to reach well 01U904. See Panel D of **Figure 5-13**. The rate constant for degradation in aerobic microcosms (3.1 per year), when projected from the current concentration in well 01U902, can explain most of the significant reduction in concentrations when the contaminated groundwater reaches well 01U904 in 2021.

The risk evaluation indicates there is no indication of a risk to the receptor wells under current conditions, assuming rates of attenuation with distance that pertained before pumping began, or rates of degradation over time under aerobic conditions in the Clemson microcosm studies.



**Figure 5-13. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U902 under current conditions (2021).**

## 5.2.12 Risk to Potential Receptors from Concentrations at Time of Transition

The remaining evaluations will be retrospective. We will compare risk provided at times when various decisions were made to manage risk at Site A. The first set of evaluations will consider

conditions in 2015 when the request was provided to the MPCA and U.S. EPA to transition Site A from a pumping remedy to MNA.

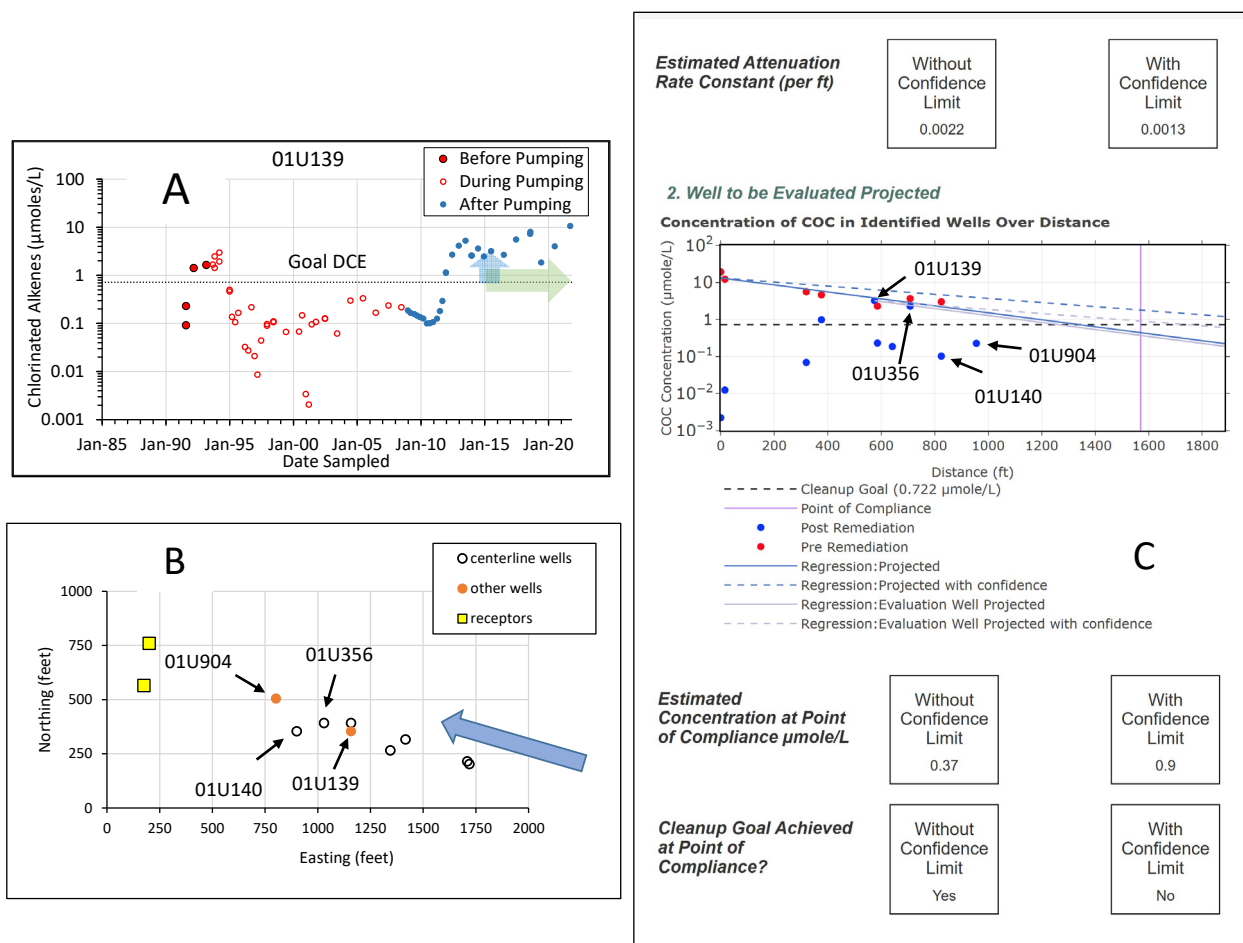
In 2015, two wells at Site A had concentrations that were significantly above the cleanup goal (01U139 and 01U356). Well 01U139 had the higher concentrations (see blue arrow in Panel A and Panel C of **Figure 5-14**). Concentrations had been above the cleanup goal since 2011 (Panel A). The concentration at the time of transition was similar to the concentration along the centerline before pumping began (Panel C).

Projections of concentrations from well 01U139 based on the rate constant for attenuation with distance indicated that concentrations would be below the cleanup goal at the point of compliance. See the line *Regression: Evaluation Well Projection* and the lower left-hand box in Panel C of **Figure 5-14**. However, the confidence interval on attenuation with distance indicated that there was **no evidence** that the concentration would be below the goal at 95% confidence. The risk of error was unacceptable. See the line *Regression Well Projection with confidence* and the lower right-hand box in Panel C.

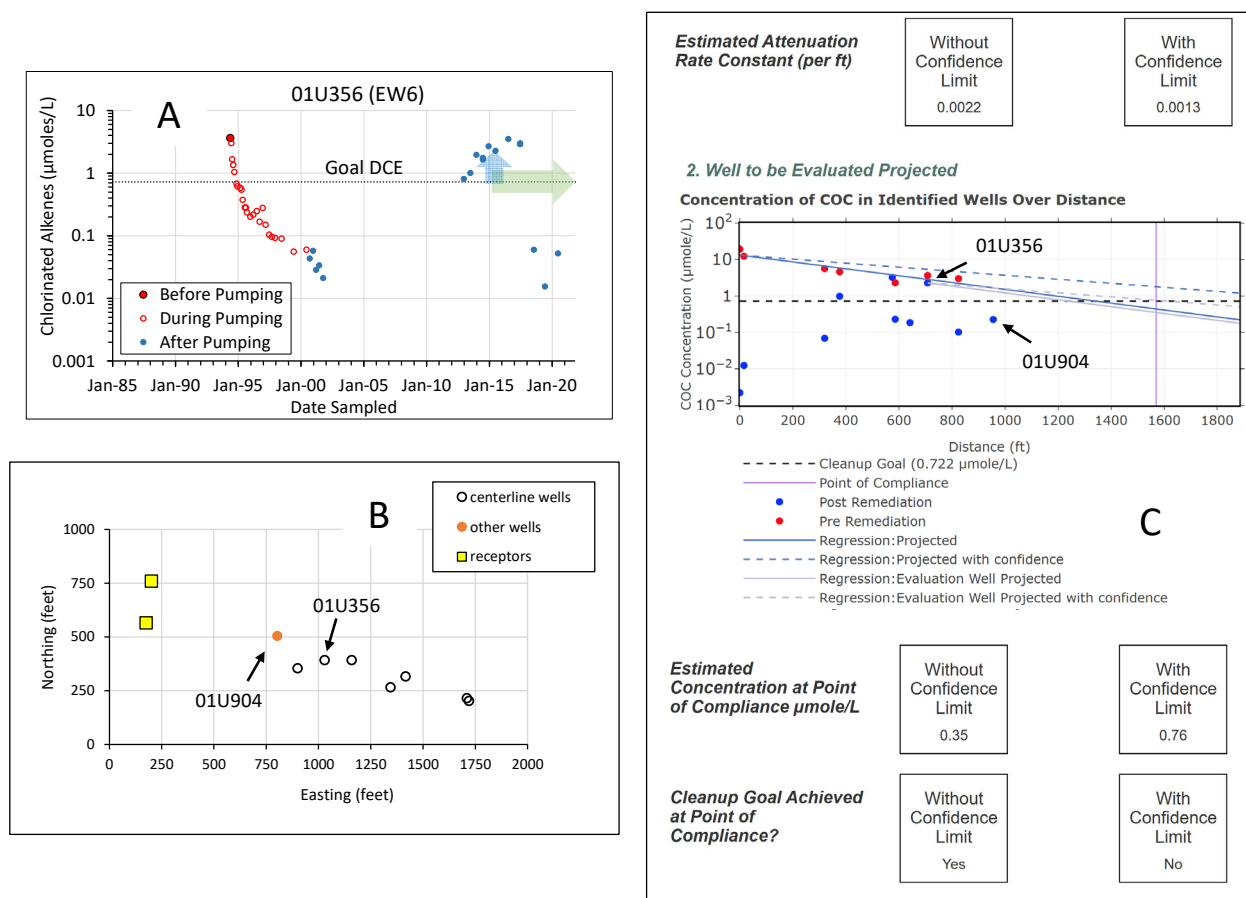
Wells 01U904 and 01U140 are midway between well 01U139 and the receptors (Panel B). The extent of attenuation in wells 01U904 is greater than what would be expected from the rate constant for attenuation in the centerline wells (projection in Panel C).

The other well with significant concentrations in 2015 was 01U356 (blue arrow in Panel A and Panel C of **Figure 5-15**). As was the case with well 01U139, the current concentration in well 01U356 was similar to the concentration along the centerline wells before pumping began (Panel C). Projections based on the rate constant for attenuation with distance indicate concentrations should be below the cleanup goal at the point of compliance (see the lines originating at the symbol for well 01U356, *Regression: Evaluation Well Projection* and the box in the lower left-hand side of Panel C). However, the confidence interval on the line (*Regression: Evaluation Well Projection with confidence*) indicates that there is *no evidence* that the concentration is below the goal at 95% confidence. The risk of error was unacceptable. Well 01U904 was the only well sampled at the time of transition that is directly downgradient of well 01U356 (Panel B). The concentration in well 01U904 was less than would be expected based on the rate constants for attenuation with distance  $s$  (Panel C).

The evaluation provided by Tool 5 of concentrations in wells 01U139 and 01U356 indicated that there was an unacceptable risk that concentration of chlorinated alkenes in groundwater in these wells might be above the cleanup goal when the groundwater reached the receptor wells. Continued monitoring was justified. However, the concentrations in the downgradient wells 01U140 and 01U904 were below the goal (Panel C of **Figure 5-14**), and the recent trend in the concentrations in these wells was down in 2015 (Panels A and C of **Figure 5-12**). The MPCA and the U.S. EPA chose to manage risk by continued monitoring and did not transition the site back from MNA to active pumping.



**Figure 5-14. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U139 in 2015 at time of transition to MNA.**



**Figure 5-15. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U356 in 2015 at time of transition to MNA.**

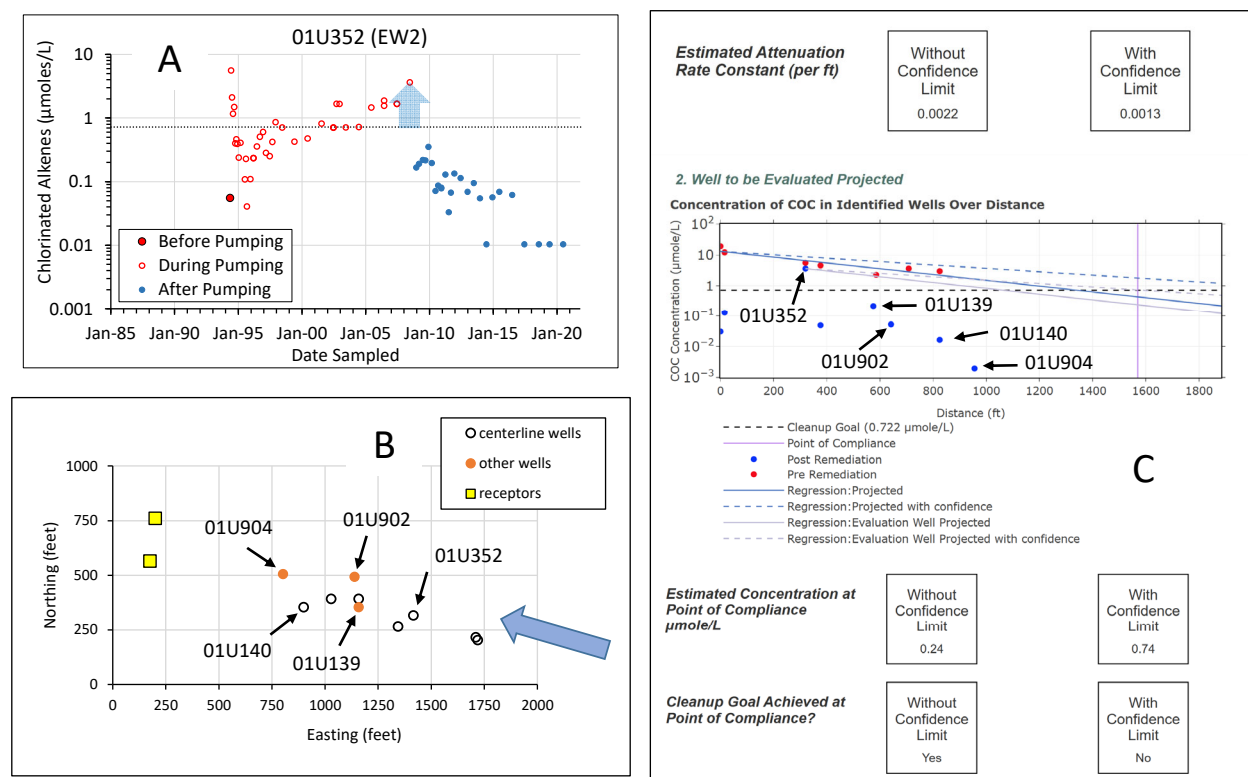
### 5.2.13 Risk to Potential Receptors from Concentrations at Time Extraction Wells Were Shut Down in 2008

The second retrospective evaluation will consider the decision to cease pumping in the “First Line” of extraction wells in 2008. At the time the wells were shut down, wells 01U352 was the only well at Site A with concentrations of total chlorinated alkenes above the cleanup goal (Panel C of **Figure 5-16**). The concentration was 3.6 µmole/L on 6/18/2008 (blue arrow in Panel A of **Figure 5-16**).

The projection of Tool 5 based on the rate constant for attenuation with distance indicated that the concentrations would be below the cleanup goal at the point of compliance; however, the projection of the confidence interval did not indicate that the concentrations would be below the goal at 95% confidence (Panel C, **Figure 5-16**). The evaluation provided by Tool 5 indicated that there was an unacceptable possibility that contaminated groundwater from well 01U352 could reach the point of compliance at concentrations above the cleanup goal. The evaluation provided by Tool 5 indicated that further detailed monitoring of the plume was indicated.

There were four wells between well 01U352 and the potential receptor wells (Panel B of **Figure 5-16**) that could be used to evaluate risk to the potential receptor wells as the chlorinated alkenes in well 01U352 migrated toward the receptor wells under the natural hydraulic gradient. In 2008, the concentrations of total chlorinated alkenes were below the MAC. The MPCA and the U.S. EPA chose to monitor these wells over time to determine if the plume was reestablished.

At one time or the other, concentrations reached or exceeded the cleanup goal in all four wells (see Panel A of **Figure 5-6** for 01U139, Panel A of **Figure 5-7** for 01U902, Panel A of **Figure 5-12** for 01U904 and Panel C of **Figure 5-12** for 01U140). The decision to conduct further detailed monitoring was justified by the subsequent migration of unacceptable concentrations of total chlorinated alkenes to the downgradient wells.



**Figure 5-16. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U352 in 2008 at the time the extraction wells were shut down.**

A first-order rate law was used to calculate the predicted concentration along the projection at the locations of the downgradient wells, assuming a rate constant for attenuation of 0.0022 per foot. The projections of Tool 5, based on the rate of attenuation in the centerline wells before remediation and the concentrations of total chlorinated alkenes in well 01U352 in 2008 (see the line *Regression: Evaluation Well Projected* in Panel C of **Figure 5-16**), provided a reasonable estimate of the

maximum concentrations obtained in the downgradient wells in the first concentration maximum after rebound.

The predicted concentrations are provided in the column titled *Maximum Concentration Predicted* in **Table 5-8**. The measured concentrations attained in the first maximum after rebound are also provided in **Table 5-8**. The measured concentrations are in reasonable agreement with the predicted concentrations. The approach used in Tool 5 provided an accurate forecast of the future behavior of the plume after pumping ceased at Site A.

**Table 5-8. Comparison of the concentrations of total chlorinated alkenes that were attained in wells downgradient to well 01U352 after active extraction ceased in 2008 to the concentrations predicted from the rate of natural attenuation along the plume centerline before active remediation.**

Well	Distance from 01U352	Maximum Concentration Predicted	Maximum Concentration Measured*	
			μg/L	Date
01U352	0		3.62	3/18/08
01U139	258	2.05	5.27	6/27/13
01U902	335	1.73	1.78	9/14/21
01U140	510	1.18	1.00	6/13/12
01U904	642	0.88	0.59	6/24/13

\* See Figure 3, Figure 6 and Figure 7.

#### 5.2.14 Risk to Potential Receptors when Concentrations Rebounded Unexpectedly

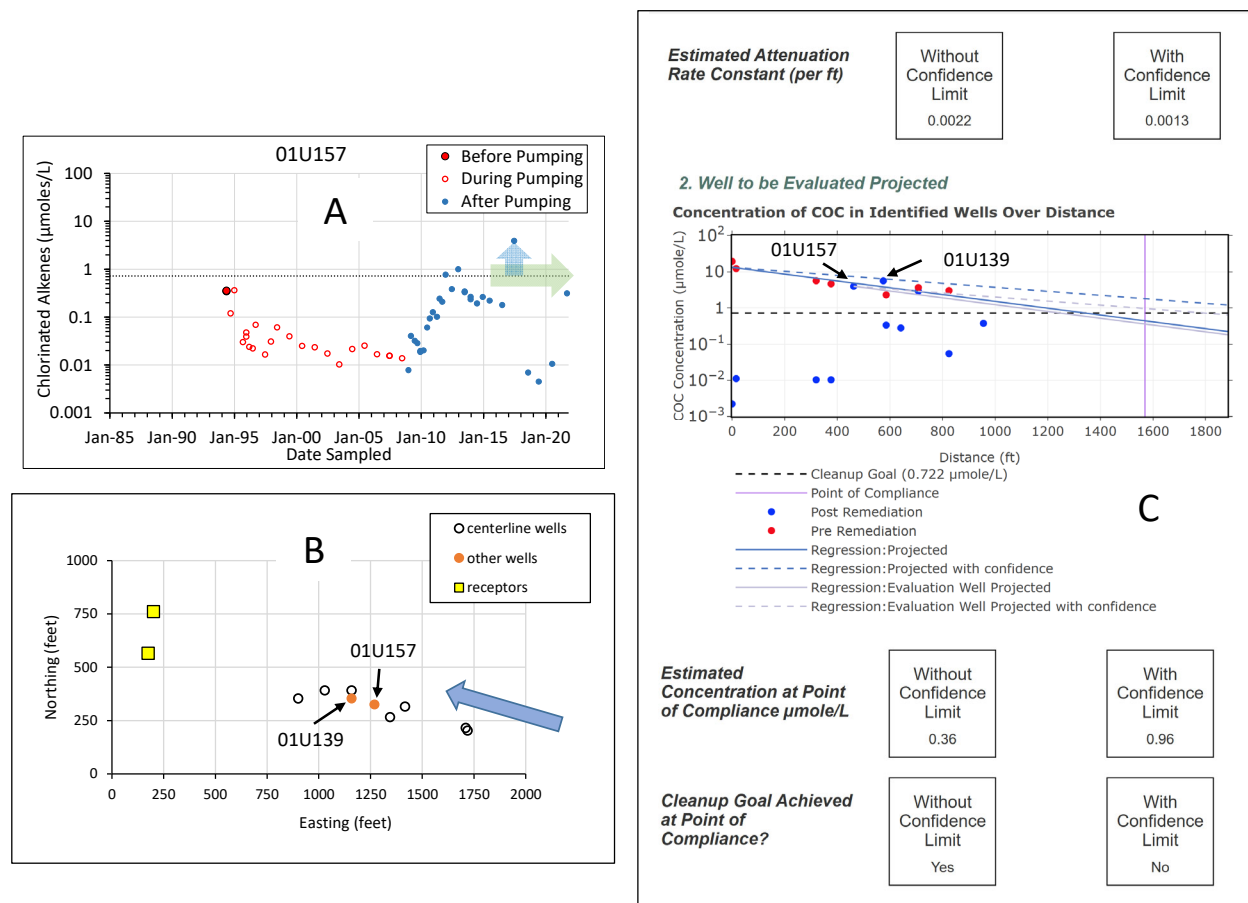
Occasionally in the monitoring record, concentrations of total chlorinated alkenes show a dramatic increase in a particular well. Tool 5 can be used to evaluate the importance of these changes. This is illustrated for well 01U157 in Panel A of **Figure 5-17**. On 6/15/2017 the concentration increased twenty-fold from the previous sample, from 0.18 μmole/L to 3.9 μmole/L.

Projections based on the rate constant for attenuation with distance indicated that concentrations of total chlorinated alkenes would not exceed the cleanup goal when the contaminated groundwater reached the point of compliance. However, the projections based on the confidence interval indicated that there was no evidence that concentrations would be below the goal at 95% confidence (Panel C, **Figure 5-17**). The risk of error was unacceptable, and continued detailed monitoring is indicated.

However, Tool 5 also reveals that well 01U157 is not the primary well of concern on that particular sampling date. Well 01U139 is of greater concern because the concentrations are higher above the projection of concentrations in the centerline wells compared to well 01U157. The concentrations in the four monitoring wells downgradient of 01U157 and 01U139 were all below the cleanup goal



(Panel C). As was the case in the previous examples, the MPCA and the U.S. EPA chose to manage risk with further monitoring.



**Figure 5-17. Risk to potential receptors from concentrations of total chlorinated alkenes in well 01U157 in 2017 when there was a spike in the concentration of total chlorinated alkenes.**

#### 5.2.14 Summary Assessment and RTAI

Site A at the TCAAP has already undergone a transition to MNA that has been incorporated into an amended ROD for the site. This was based largely on an expectation that concentrations goals would be achieved at the downgradient points of compliance when MNA was proposed. For the purposes of this case study, the following describes how the site could be evaluated using the stepwise process described in the Summary Assessment (Tool 10) of the TA<sup>2</sup> Tool.

**Step 1 – Determine if the site meets the primary bright-line criteria:** Site A met the applicable bright-line criterion for this site, which is that MNA could achieve the concentration goals by the time groundwater reached the downgradient point of compliance. Within the TA<sup>2</sup> Tool, this is

primarily accomplished using Tool 5. While shutting off various extraction wells did result in a concentration rebound in several monitoring wells, the application of Tool 5 (described above) determined that the post-remediation concentrations would not be expected to exceed the cleanup goal at the downgradient receptor location at the 95% confidence level. This included projections from the most critical monitoring well at the time of the transition and projections from monitoring wells after the transition (i.e., using the most recent concentrations after rebound). The site had a sufficient monitoring network to document concentration changes with time and distance after the transition to ensure that it was meeting long-term monitoring obligations. The other bright-line criterion (remediation timeframe estimate) was less applicable for this site because the timeframe for MNA was expected to be the same as the active remedy.

***Step 2 – Establish the Remediation Transition Assessment Index for the site:*** The RTAI is largely focused on whether site conditions and concentration trends would suggest that active source treatments are challenging to implement and/or not expected to be successful at improving remediation timeframes due to matrix diffusion and other factors. At Site A at the TCAAP, an active remedy (groundwater pump-and-treat) was already in place, and no alternative remedial technology (besides MNA) was being considered to our knowledge.

An example of possible RTAI values generated by Tool 10 in the TA<sup>2</sup> Tool for this site are shown below in **Figure 5-17b**. The results of Tool 1 yield an RTAI of 4 because a few of the extraction wells had multiple lines of evidence for asymptotic behavior, which supports transitioning to MNA. The results of Tool 2 yield an RTAI of 1 because the plume was not entirely stable due to rebound in several downgradient wells after pumping that resulted in an increasing trend in these wells. Note that this is a conservative assessment since natural attenuation was actively reducing concentrations downgradient of these wells, and most downgradient wells were already below the cleanup goal. The first RTAI value from Tool 4 (“Expected performance”) is a 2 based on a conservative assumption that a 0.5 order of magnitude reduction in current concentrations would be needed to achieve the goal concentration everywhere across the site. The second RTAI value from Tool 4 (“Remedial Potential”) is a 1 based on an assumption that there are few site constraints to implementing common alternative remedial technologies. The results of Tool 3 yield an RTAI of 3 because complete source removal would be predicted to result in a relatively moderate remediation timeframe for site-wide compliance with the cleanup goal, despite the evidence of back diffusion in the post-remediation data. Finally, Tool 7 yields an RTAI of 3 because the scale of the site would result in moderate allocation of costs and resources to implement typical enhanced attenuation options.

For site managers, the RTAI values can be averaged to get a balanced impression of whether the site is ready to transition. In this case, the average value of 2.3 suggests that this site is a “fair candidate” or “typical candidate”, which does not necessarily argue that transition is warranted. Alternatively, the site manager can use individual RTAI values that are most critical to the site-specific assessment. The latter is the most appropriate for this particular site, where the evidence for asymptotic performance of several extraction wells (i.e., the RTAI of 5 from Tool 1) was important justification for shutting them down, and the low concentrations and stability of several

(but not all) downgradient wells provided additional support. It is also important to note that the Tool 5 plume projections—which are part of the bright-line criterion in Step 1 and not part of the RTAI estimates—are the key driver at this site, and that post-remediation monitoring was used as a strategy to manage potential risk of elevated concentrations migrating to downgradient receptors.

**Step 3 – Checklists:** The purpose of this optional step is to help ensure that the site manager collects critical information and identifies site-specific drivers for the TA. The above discussion of the bright-line criteria (which were met) vs. the RTAI estimates is a good example of how this process might play out. At this particular site, there were no other technologies that were being considered besides MNA, so the RTAI values that are associated with implementing source treatment (or other alternative approaches) are less important. The conclusion that concentrations would meet goals at downgradient receptors due to observable and explainable natural attenuation mechanisms was the most important consideration. This type of information is compiled by going through these checklists and would have supported the overall conclusion.

Tool	RTAI					Rationale
	Poor Candidate RTAI = 1	Fair Candidate RTAI = 2	Typical Candidate RTAI = 3	Good Candidate RTAI = 4	Strong Candidate RTAI = 5	
1. Asymptote (Tool 1)	1	2	3	4	5	The RTAI is higher if there are more Lines of Evidence that concentrations at the site are asymptotic.
2. Is my Plume expanding? (Tool 2)	I	PI	ST	PD	D	The RTAI is higher if key downgradient/sentinal well(s) exhibit stable or declining concentration trends.
3. Expected performance (Tool 4)	<0.5	0.5 to <0.75	0.75 to <1.25	1.25 to <2	≥2	The RTAI is higher for sites where a higher concentration is needed and may not be achievable based on the expected level of performance of remediation technologies.
4. Remedial Potential (Tool 4)	High	High-Mod	Moderate	Mod-Low	Low	The RTAI is higher for sites with challenging cleanup goals and difficult conditions. It is based on a similar methodology developed by ITRC for evaluating remediation potential.
5. How long? (Tool 3)	<5	5 to <10	10 to <25	25 to <50	≥50	The RTAI is higher for sites where additional source remediation does not result in short remediation timeframes. It is based on the estimated number of years to reach the cleanup goal after source remediation.
6. Enhanced Attenuation (Tool 7)	-	-	✓	-	-	The RTAI is higher for sites where EA technologies or approaches can be easily implemented. It is based on the depth and width of the area being targeted, which are used as proxies for cost and ease of installation.
Metric	2	1	2	1	0	

**Figure 5-17b. Remediation Transition Assessment Index (RTAI) Results for Site A.** Results were obtained using Tool 10 of the TA2 Tool. Higher RTAI values support transitioning from active remedies to more passive remedies.

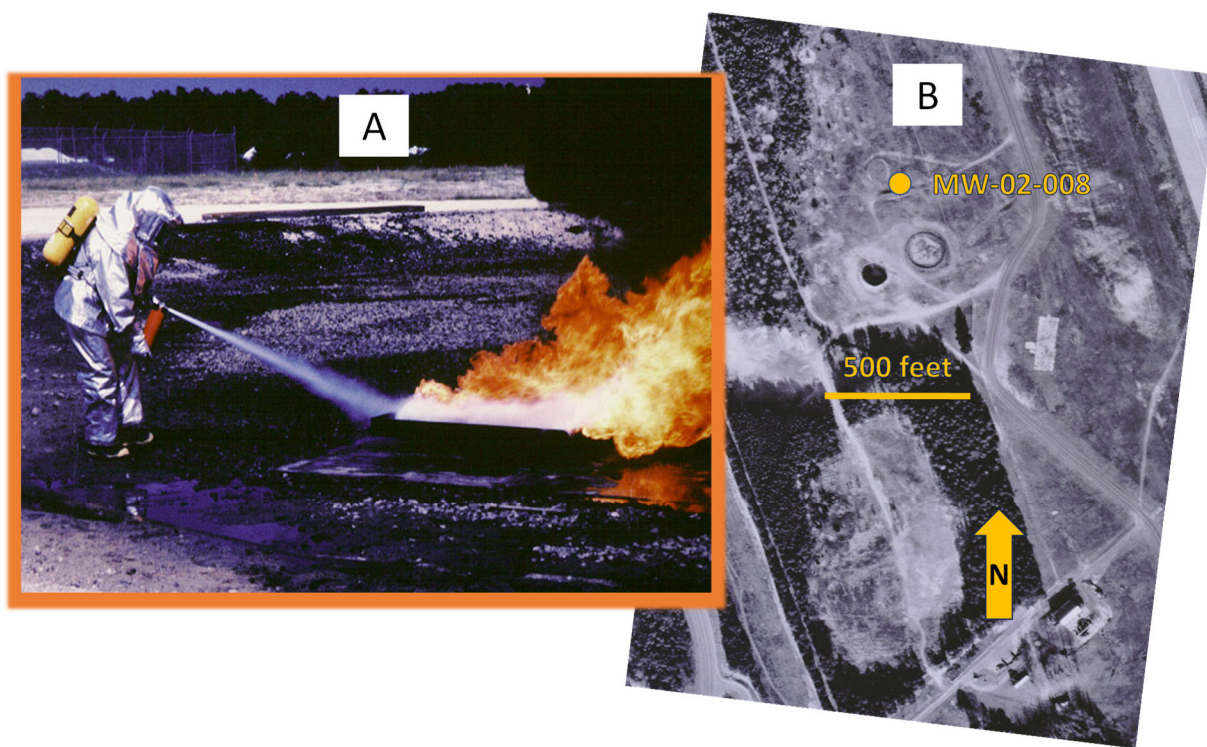
## 5.3 Case Study #2 – Former Plattsburgh Air Force Base

### 5.3.1 Introduction

The former Plattsburgh Air Force Base (PAFB) is located near the town of Plattsburgh in New York State on the shore of Lake Champlain. The Air Force base was closed in 1995 as part of the process under the Base Realignment and Closure Act (BRAC).

The FT-002 fire training area is located near the western boundary of the former Plattsburgh Air Force Base (FPM Group. 2006). Panel A of **Figure 5-18** depicts conventional fire training activities. Soil was moved to create a circular berm, and the interior was flooded with water to create a temporary pond. A mixture of jet fuel, waste oils, and chlorinated solvents was added to float on the water, and then set afire. Then the fire was extinguished as part of the training. When the training was concluded, the water and any unburned oily material was allowed to infiltrate the soil.

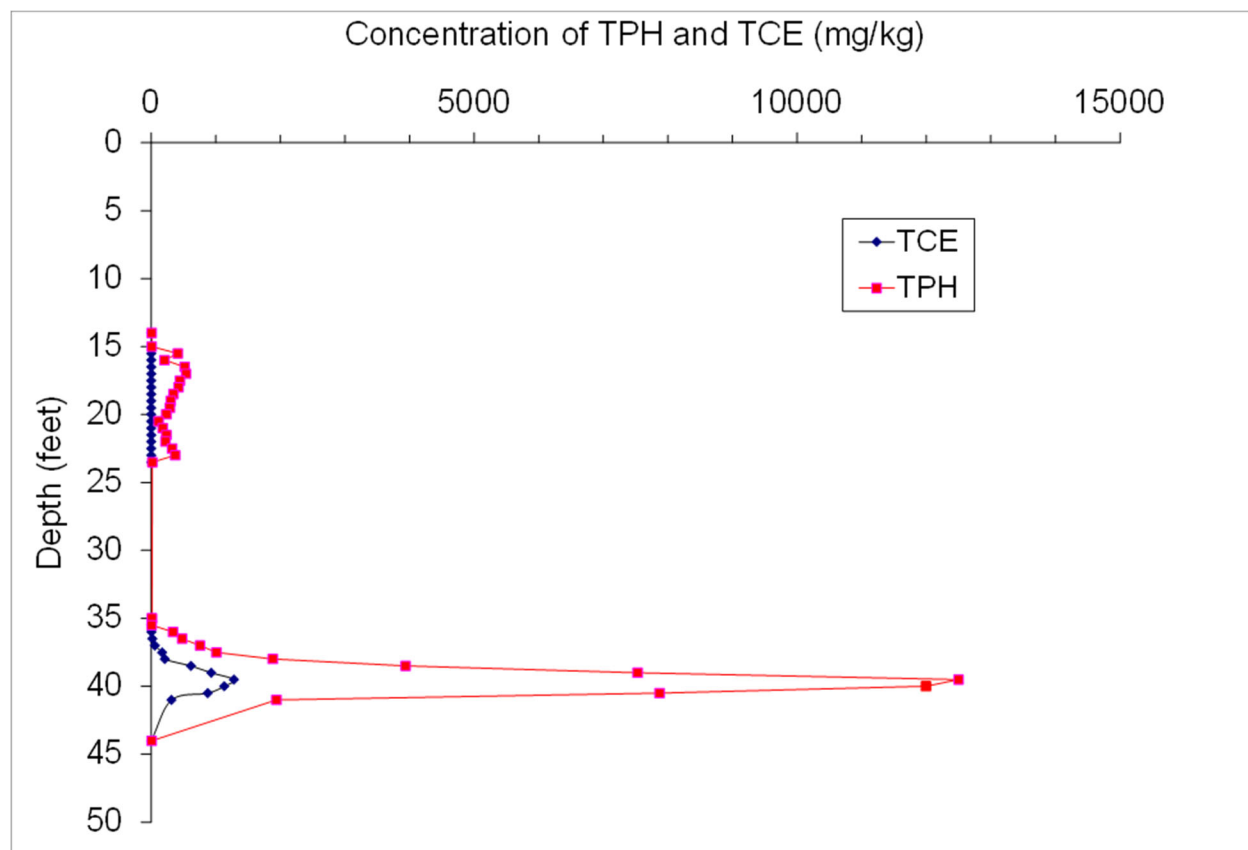
At site FT-002, there were four fire training pits. Training at FT-002 occurred in a time frame between the mid-1950s and the 1990s. The pits varied from 50 to 100 feet in diameter (FPM Group, 2006). Panel B of **Figure 5-18** is an aerial photograph of site FT-002, showing three of the four pits.



**Figure 5-18. FT-002 Overview.** Panel A depicts typical fire training activity at a fire training pit. Panel B is an aerial photograph showing the relationship between the fire training pits at the former Plattsburgh AFB and the location of the most contaminated well at the FT-002 site before active remediation began.

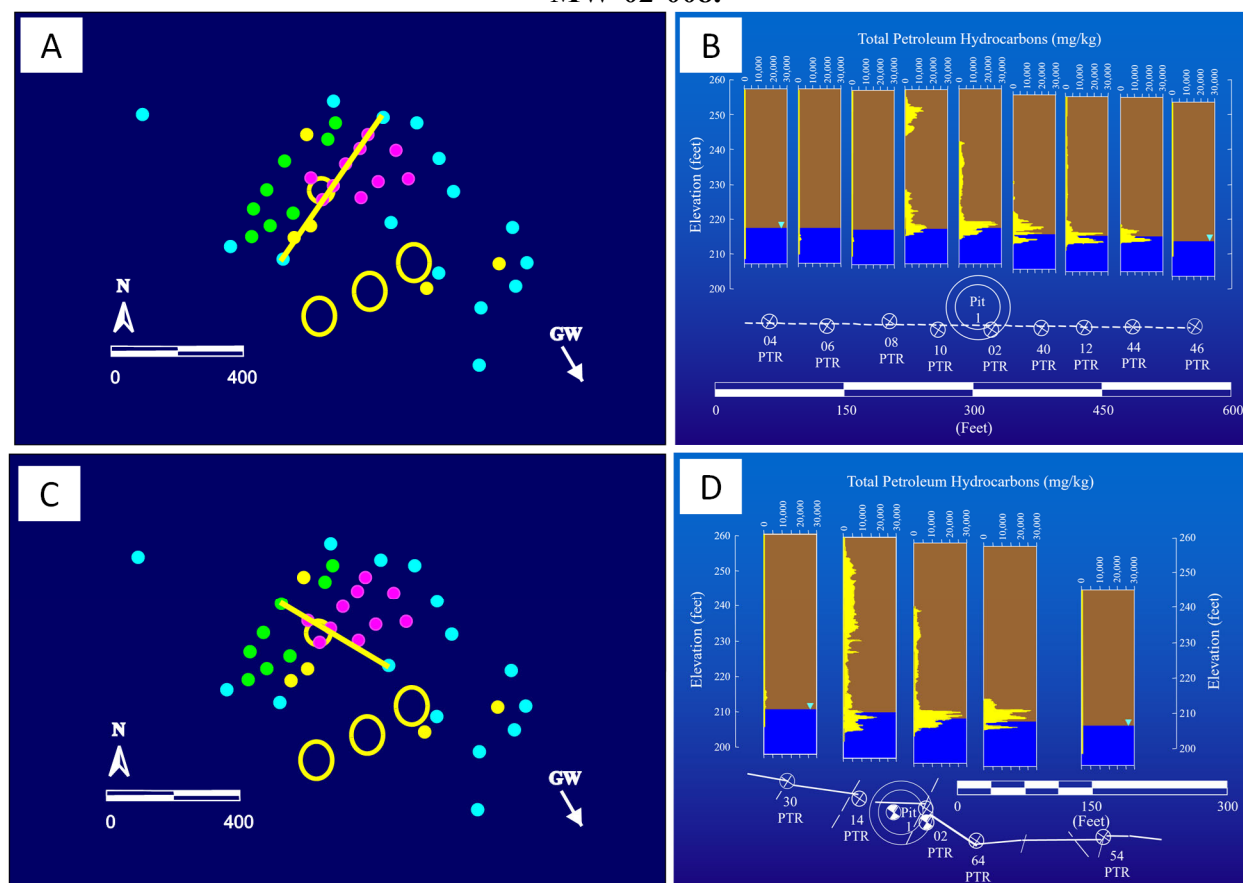
### 5.3.2 Distribution of Contamination at Initial Site Characterization

Prior to remediation, the distribution of NAPL was determined at the FT-002 site. **Figure 5-19** presents the vertical distribution of TPH and TCE in the unsaturated zone and near the water table close to the location of MW-02-008 (John Wilson Personal Communication, unpublished data). The bulk of contamination was confined to a smear zone approximately ten feet thick, centered at the water table 40 feet below ground surface. The site was surveyed with a laser-induced fluorescence cone penetrometer (**Figure 5-20**). Panel A of **Figure 5-20** depicts the locations of the berms of the four pits, and locations of penetrometer soundings. The locations with a magenta color had the highest fluorescence and had the highest concentrations of TPH. The yellow bar in Panel A is a transect of soundings that were roughly perpendicular to groundwater flow. Panel B depicts the vertical distribution of fluorescence in the transect. Data from **Figure 5-20** was used to create a calibration curve and estimate the concentration of TPH from the fluorescence. Significant concentrations of TPH at the water table were confined to an interval between 220 and 350 feet wide, perpendicular to groundwater flow. The yellow bar in Panel C depicts a transect roughly parallel to groundwater flow, and Panel D depicts the vertical distribution of fluorescence in that transect. Significant concentrations of TPH were confined to an interval between 150 and 370 feet long in the direction of groundwater flow. This mixed LNAPL object at the water table provided the perennial source of contamination of petroleum hydrocarbons and TCE to groundwater.





**Figure 5-19. Distribution of TPH and TCE in core samples from FT-002 near the location of MW-02-008.**



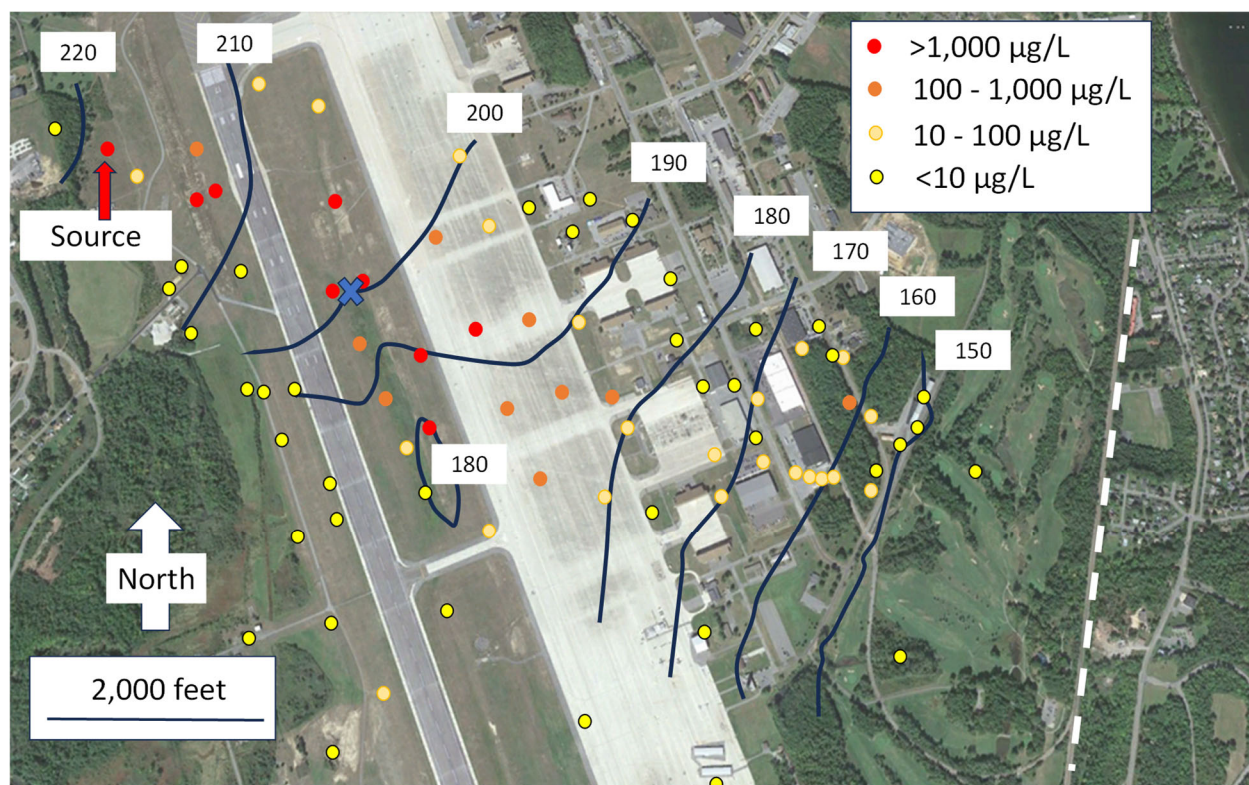
**Figure 5-20. Distribution of TPH at FT-002 as determined with a laser-induced fluorescence cone penetrometer.**

**Figure 5-21** provides the distribution of total chlorinated hydrocarbons in groundwater at the former Plattsburgh Air Force Base before active remediation. The hydraulic gradient was to the southeast, bringing contaminated groundwater underneath an open area, then the runway, then a second open area that contained a drain for storm water, then a flight line, then an industrial operations area before approaching a golf course on the eastern boundary of the former Plattsburgh Air Force Base. The dashed white line in **Figure 5-21** is the base boundary. Groundwater contamination with chlorinated solvents extended for 7,700 feet from the source at FT-002. Concentrations of total chlorinated solvents exceeding 1,000 µg/L extended 3,900 feet from the source.

A portion of the plume discharged to a wetland in the open area with the storm drain. The discharged water was collected into the storm drain and carried away as surface drainage. This area is identified by the enclosed 180-foot isopleth in **Figure 5-21**.

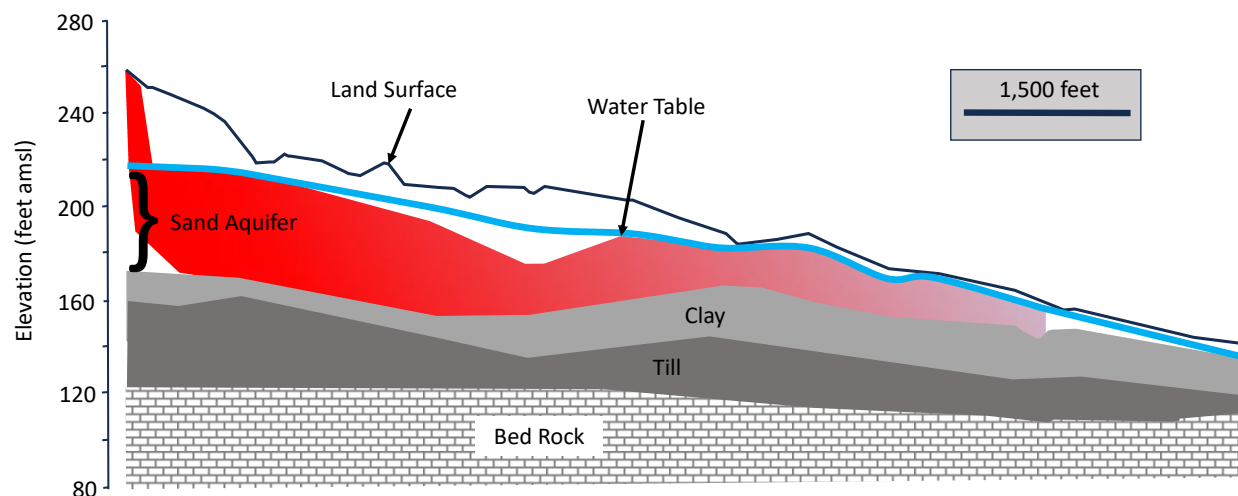
The results of a pumping test conducted near the FT-002 release site provided estimates that varied from  $1.8\text{E-}02$  to  $2.9\text{E-}02$  cm/sec (page 3-17 of URS Consultants, Inc. 2001a). The mid-point of the range is  $2.4\text{E-}02$  cm/sec. The average hydraulic gradient is near 0.0084 (**Figure 5-21**). If the effective porosity is 0.25, the seepage velocity is near 834 feet per year. It would take roughly nine years for groundwater to move from the source to the toe of the plume. Using the high end of the range of hydraulic conductivity ( $2.9\text{E-}02$  cm/sec) provides an estimated seepage velocity of 1,000 feet per year.

The plume of chlorinated solvents was confined to the water table aquifer in glacial sand (**Figure 5-22**). The contamination in the sand aquifer was separated from deeper groundwater in underlying geological materials by a layer of clay. At the FT-002 source area, the sand aquifer is approximately 50 feet thick. As the plume moved to the southeast, the sand aquifer became thinner. It is approximately 5 feet thick under the industrial operation area.



**Figure 5-21. Distribution of concentrations of total chlorinated alkenes in groundwater at PAFB prior to active remediation (1995-1999).** Black contour lines are water-table elevations in feet above mean sea level. Redrawn and modified from Figure 31 of URS Corporation (2016) overlaid on a screen capture of Google Earth Pro.





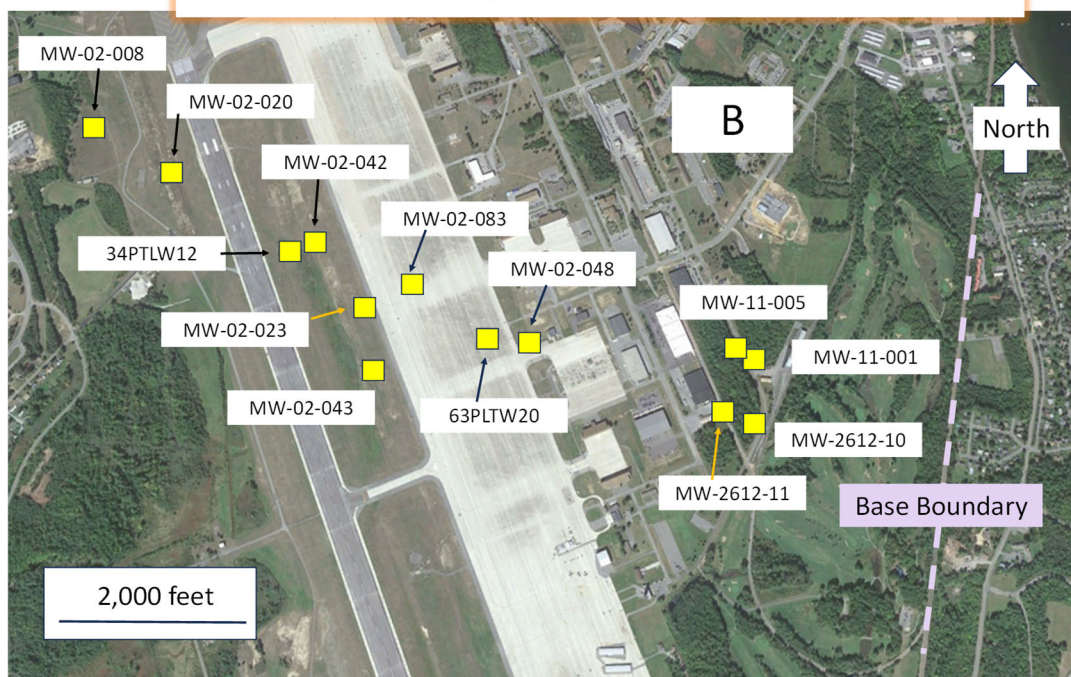
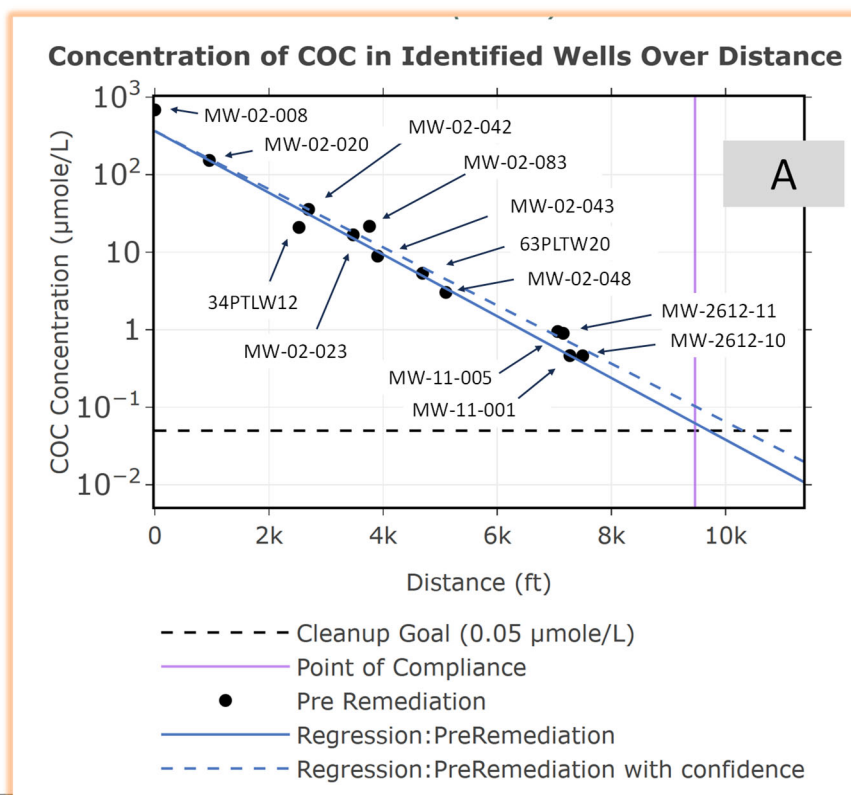
**Figure 5-22. Vertical distribution of chlorinated alkenes originating from the FT-002 site in groundwater at PAFB.** Redrawn and modified from Figure 11-4 of URS Consultants, Inc. (2001b). **Table 5-9** provides the concentrations of chlorinated hydrocarbons prior to active remediation for those wells depicted in **Figure 5-21** where the concentrations of any individual chlorinated alkene exceeded 10 µg/L. The data were obtained from Appendix B of URS Consultants, Inc. (2001c). Well locations are shown in **Figure 5-23**.

In the wells closer to the source, a substantial fraction of the TCE was reductively dechlorinated to *c*DCE and Vinyl Chloride. Starting at approximately 3500 feet from source, the extent of dechlorination was not as extensive (**Table 5-9** and **Figure 5-23**). These wells are near or under the eastern flight line. There is no obvious explanation for this difference in the extent of dechlorination. Except for one well close to the source, there was little accumulation of Vinyl Chloride. Biological reductive dechlorination of *c*DCE cannot account for the extensive attenuation of concentrations of *c*DCE along the flow path in the plume.

**Table 5-9. Concentrations of chlorinated alkenes in the wells when sampled for the baseline condition before the extraction system started up.** Wells shaded in blue were not included in the wells that were selected to define the centerline of the plume.

Well	Distance from Source (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)	cDCE+tDCE+1,1-DCE (µg/L)	Vinyl Chloride (µg/L)
MW-02-008	0	8/1/1995	ND	27,200	51,360	10
MW-02-020	956	8/1/1995	ND	2.2	14,944	870
46PLTW8	1061	8/1/1995	2.8	279	3,992	ND
MW-02-039	2086	9/4/1996	ND	1,300	50	ND
34PLTW12	2527	8/1/1995	ND	24	2,215	8.3
MW-02-042	2695	6/17/1997	ND	170	3,700	ND
MW-02-023	3477	9/10/1996	ND	1,200	820	ND
MW-02-083	3784	6/18/1997	3.7	2,700	110	ND
MW-02-043	3905	6/17/1997	ND	1,100	58	ND
63PLTW20	4711	8/1/1995	1.2	674	23.2	ND
69PLTW21	4959	6/17/1997	ND	120	6	ND
MW-02-048	5100	7/14/1999	0.6	386	9.9	ND
MW-11-008	6401	9/4/1996	ND	13	26	ND
MW-11-010	6911	9/4/1996	ND	19	18	ND
MW-11-005	7059	9/4/1996	ND	28	75	2.5
MW-2612-11	7155	7/14/1999	ND	0.5	95	0.7
MW-11-001	7287	9/4/1996	ND	ND	50	ND
MW-2612-10	7496	7/20/1999	ND	0.9	44	2.7

ND means not detected. Detection limits not reported.



**Figure 5-23. Distribution of total chlorinated hydrocarbons in wells along the centerline of the plume before remediation.** Panel B is redrawn and modified from Figure 31 of URS Corporation (2016) overlaid on a screen capture of Google Earth Pro.

### 5.3.3 Using Tool 5 to Evaluate Need for Active Remedy of Groundwater Contaminated by the FT-002 Site

For purposes of this case study, an active remedy is needed if there is a possibility that the natural flow of groundwater can carry chlorinated alkenes from the FT-002 site past the boundary of the former Plattsburgh Air Force Base at concentrations that exceed applicable regulatory standards.

Panel A of **Figure 5-24** shows the concentration of total chlorinated hydrocarbons in groundwater prior to remediation relative to the distance from the source. The figure is created from a cropped screen shot of output of **Results** tab of **Pre-Remediation Period (actual)** from **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool. The upper boundary of the population of data points represents the centerline of the plume. The wells in the centerline were identified by professional judgement. The five wells with values contained within the orange rectangular shapes were judged to not be in the centerline. The tab **Site-Specific Info** of **Tool 5 Plume Projections** was selected, and **Step 5** was used to unselect the five wells, so they were not included in the centerline. The other wells were selected to be in the centerline. Panel B of **Figure 5-24** compares the updated location of the centerline wells.

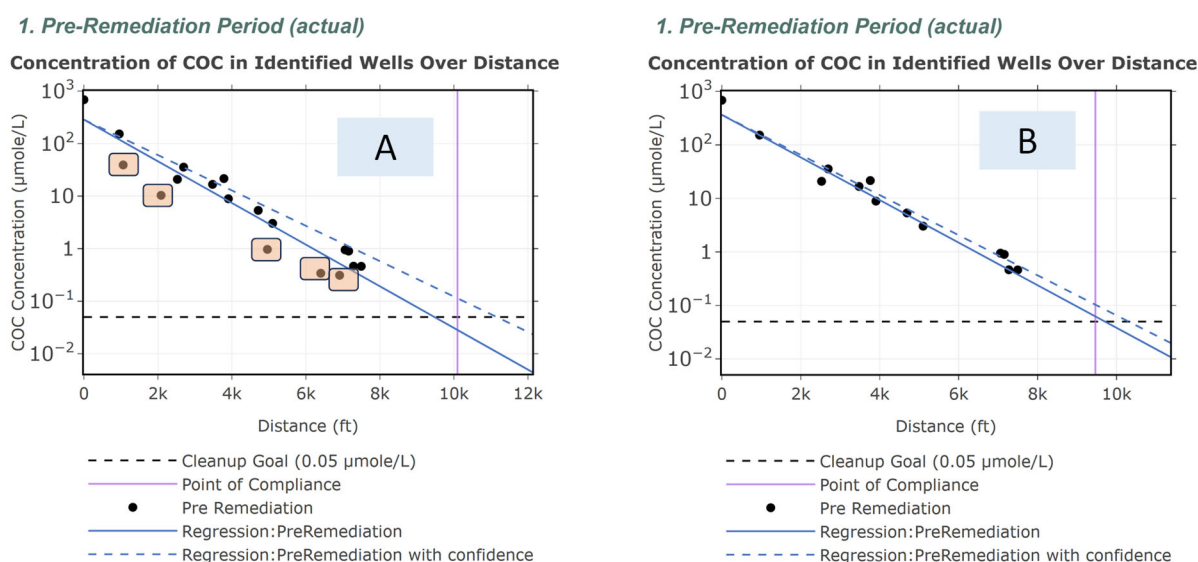
The solid lines in Panel A and Panel B of **Figure 5-24** are regression lines that were fit to the natural logarithm of concentration of chlorinated alkenes on distance from the source. If the five wells were excluded from the centerline wells, the regression line extended further to the southeast before it reached the cleanup goal. This indicates that excluding the five wells provided an estimate of possible extent of the plume that was larger than was the case when the wells were included. The exclusion of the five wells made the estimate of the extent of the plume more conservative from a risk evaluation point of view. The slope of the regression line is the first-order rate constant for attenuation. The slope of the dotted line is the one-tailed upper 95% confidence interval on the rate constant. The line calculated from the confidence interval of the rate constant is closer to the regression line in Panel B, indicating that excluding the five wells also reduced the uncertainty in the estimation of the plume centerline.

**Figure 5-23** compares the attenuation in total concentration of chlorinated alkenes with distance along the flow path (Panel A) to the location of the wells at the site (Panel B) for the centerline wells described in Panel B of **Figure 5-24** and **Table 5-9**. The plume centerline followed a linear flow path. The variation in concentrations with distance along the centerline is well described by a first-order rate law. The rate of attenuation seems to be uniform with distance along the flow line.

The Maximum Allowable Concentrations (MAC) of PCE, TCE, *c*DCE and *t*DCE in groundwater at the former Plattsburgh AFB are 5 µg/L for each compound, and the MAC for Vinyl Chloride is 2 µg/L (page 16 of 212 of Arcadis/Bhate/AFCEC/CIBE, 2022). Based on the concentration of chlorinated alkenes in **Table 5-9**, and based on the possibility that PCE and TCE might be dechlorinated to DCE, the Cleanup Goal in Tool 5 was set to 5 µg/L DCE, equal to 0.05 µmole/L. The projected concentrations in the centerline wells (the solid blue line in Panel A of **Figure 5-23**)

almost extend to the base boundary at concentrations exceeding the MAC for DCE. The dashed blue line projects the upper 95% one-tailed confidence boundary on the rate constant.

The evaluation provided by Tool 5, based on the rate of natural attenuation of chlorinated alkenes in groundwater with distance along the centerline of the flow path, indicates that it is not possible to say at 95% confidence that natural attenuation would prevent contamination in groundwater from reaching the base boundary at concentrations that exceed the MAC for DCEs. Note that this is based on the concentrations that were present in the late 1990s in the pre-remediation period. As discussed later, the situation is different in later periods (after remediation) because the source concentration has diminished to a low enough level that natural attenuation in the plume is sufficient to achieve the cleanup goal at the downgradient point of compliance.



**Figure 5-24. Distribution of total chlorinated alkenes with distance from well MW-02-008 in the plume originating from the FT-002 site.** The wells in an oval shape in Panel A are not in the centerline of the plume.

### 5.3.4 Activity to Remediate Groundwater Contamination from the FT-002 Site.

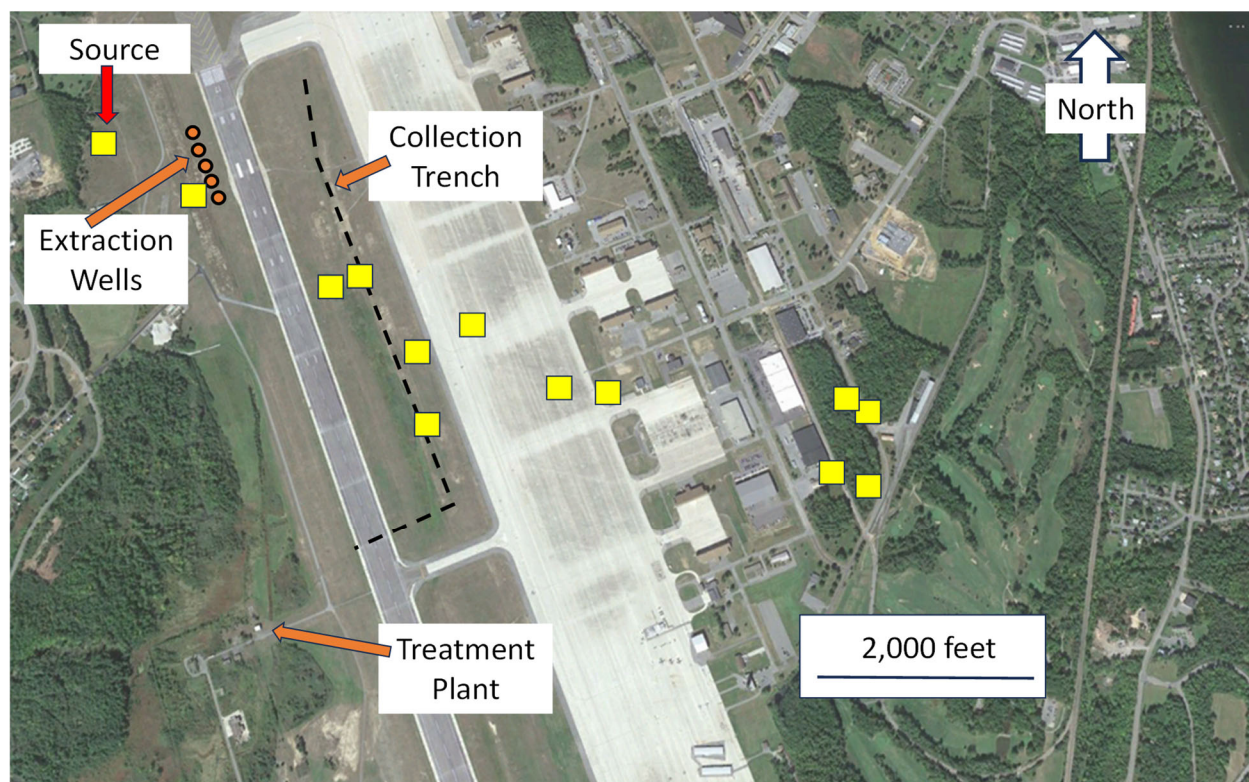
The source area contamination at the FT-002 site was remediated by a combination of free product recovery, bioventing of contaminated soils, and water table depression to enable remediation of contamination in the smear zone.

Contaminated groundwater in the western most portion of the plume was captured by five extraction wells that were installed just upgradient of the runway (**Figure 5-25**). The water was conveyed by a gravity main to the FT002/IA GW OU wastewater treatment plant. Contaminated groundwater further downgradient was captured in a collection trench, and then conveyed by gravity main to the same wastewater treatment plant (**Figure 5-25**). This trench is referred to as the Runway/Flightline



Collection Trench. The trench is installed approximately 10 and 50 feet below grade. It is composed of slotted high-density polyethylene pipe enclosed in a geotextile filter and covered in permeable stone. The flows of the contaminated groundwater were combined and treated in the FT002/IA GW OU treatment plant using air stripping, then treatment of the air with activated carbon. The treated water was discharged to surface flow (URS Corporation, 2016b).

Remediation began in 2004. In September 2014, the extraction wells were deactivated (page 18/325 URS Corporation, 2016a). The only flow provided to the treatment plant was through the Runway/Flightline Collection Trench. Because the influent to the treatment plant had met discharged standards for several cycles of monitoring, the plant was deactivated in May 2015. The untreated effluent from the collection trench was monitored for a period, and then the treatment plant was deenergized in December 2016 (Arcadis/Bhate/AFCEC/CIBE, 2022).



**Figure 5-25. Location of extraction wells, a collection trench, and a treatment plant used to collect and treat contaminated groundwater from the FT-002 site.** Redrawn and modified from Figure 2 of Arcadis/Bhate/AFCEC/CIBE (2022) overlaid on a screen capture of Google Earth Pro.

### 5.3.5 Progress of Remedy for Groundwater in the Western Portion of the Plume

Panel A of **Figure 5-26** compares concentrations of Vinyl Chloride, *c*DCE and TCE in the combined effluent of the extraction wells and the collection trench before any treatment. Initial

concentrations of Vinyl Chloride, *c*DCE and TCE were high. Data on concentrations of *c*DCE were collected before 3/18/2006, but concentrations were too high to plot at the scale provided in the primary report. The highest recorded concentration of *c*DCE was 703 µg/L on 3/29/2004. Panel B of **Figure 5-26** plots the concentrations on a logarithmic scale. The decline in concentrations of Vinyl Chloride, *c*DCE and TCE followed a first-order rate law. There was little visual evidence that the rate constants for attenuation changed over time.

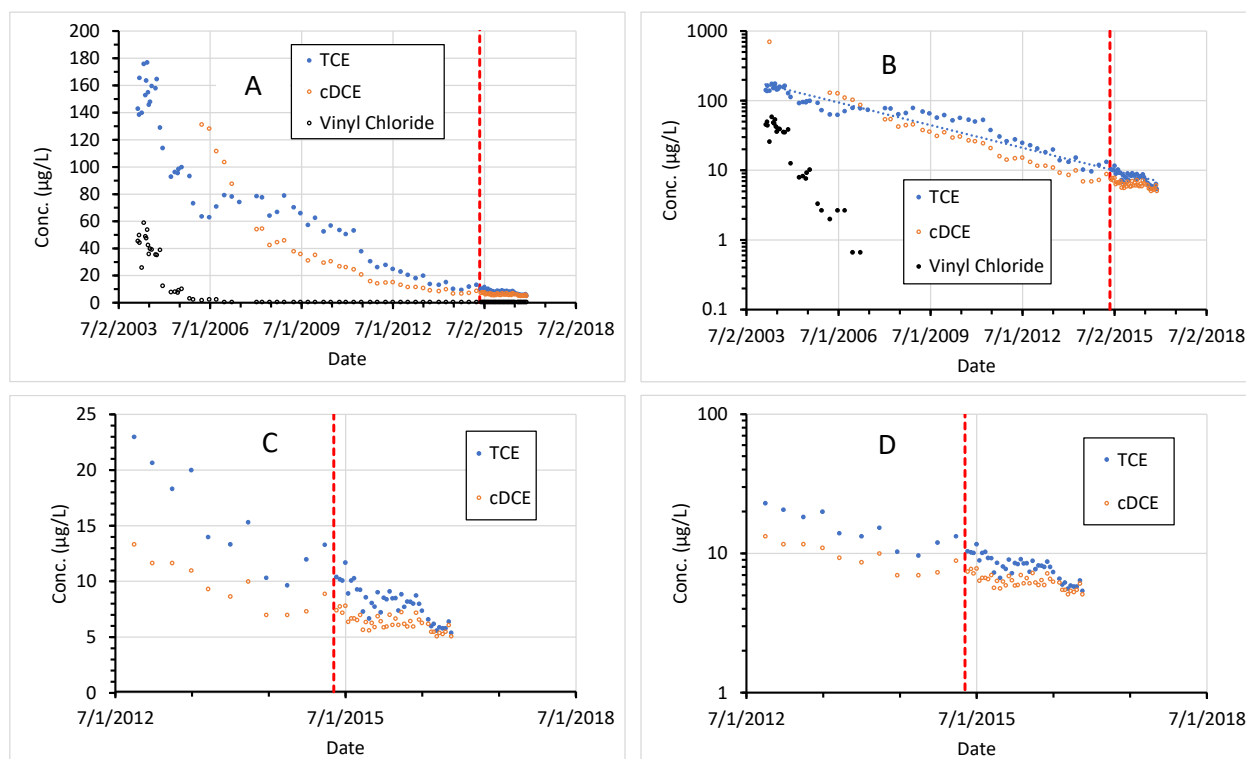
The wastewater discharge permit issued by the New York State Department of Environmental Conservation for the treatment plant allowed maximum concentrations of Vinyl Chloride, of *c*DCE and of TCE of 10 µg/L (Appendix B of URS Corporation, 2016b). The concentrations of Vinyl Chloride declined to below the MCL by 12/14/2006. After this time, the only chlorinated alkenes of concern were *c*DCE and TCE. By 6/17/2014, the concentration of *c*DCE and the concentration of TCE were at or below the discharge permit. The wastewater treatment plant was deactivated on 5/7/2015. This is represented by a dashed vertical red line in the panels in Figure 9. After the treatment plant was shut down, sampling continued for eighteen months to ensure that concentrations stayed below the permit. Data for the three years before shutdown, and the eighteen months after shutdown, are presented in Panels C and D of **Figure 5-26**. After the treatment plant was shut down the concentrations in the discharge from the collection trench stayed below the permitted concentrations, and the U.S. Air Force was no longer required to monitor the discharge of the Runway/Flightline Collection Trench.

In September 2014, the remedy for active treatment of the western portion of the groundwater plume was transitioned from active remedy (treatment of effluent collected by the trench before discharge to surface water) to a more passive remedy (discharge of the effluent without active treatment).

Groundwater in the eastern portion of the plume is collected by two other trenches. The effluent of one trench is treated in an aeration pond before discharge to surface water. The effluent of the other trench is discharged to surface water without further treatment (Arcadis/Bhate/AFCEC/CIBE, 2022). There has been no change in the remedy in the eastern portion of the plume, and conditions in the eastern portion of the plume will not be discussed further.

This case study will evaluate conditions in the western portion of the plume at the time the remedy was transitioned to strictly passive measures.





**Figure 5-26. Concentrations over time of TCE and cDCE delivered to the Treatment Plant in the combined effluent of the extraction wells and the interception trench.** Panel A is redrawn and modified from Figure 14 of URS Corporation (2016b). The dotted line represents the time when the transition occurred (extraction wells were shut off and the plant only received water from the interception trench).

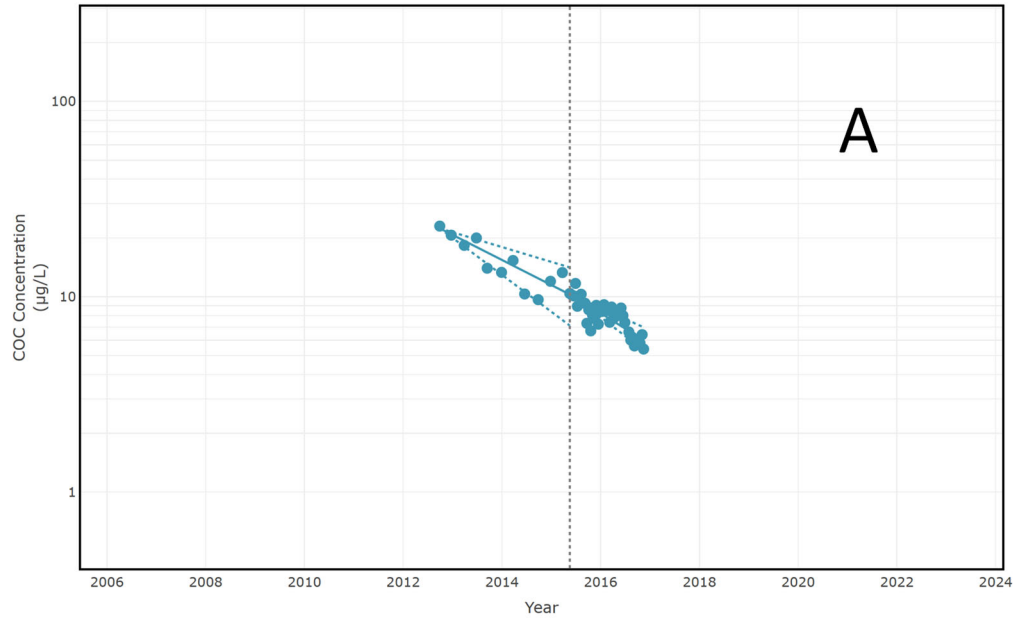
### 5.3.6 Using Tool 1 to Evaluate Continued Operation of Treatment Plant

At the time of transition, the concentrations of TCE in the combined influent were near 10 µg/L, which was the permitted concentration for discharge without further treatment (Panel D of **Figure 5-26**). A cursory examination of Panel D of **Figure 5-26** indicates that the attenuation of TCE followed a first-order rate law. Tool 1 of the TA<sup>2</sup> Tool was used to determine if there was any change in the rate constant for attenuation between the three years before the treatment plant shut down and the year and a half after the treatment plant shut down (**Figure 5-27**).

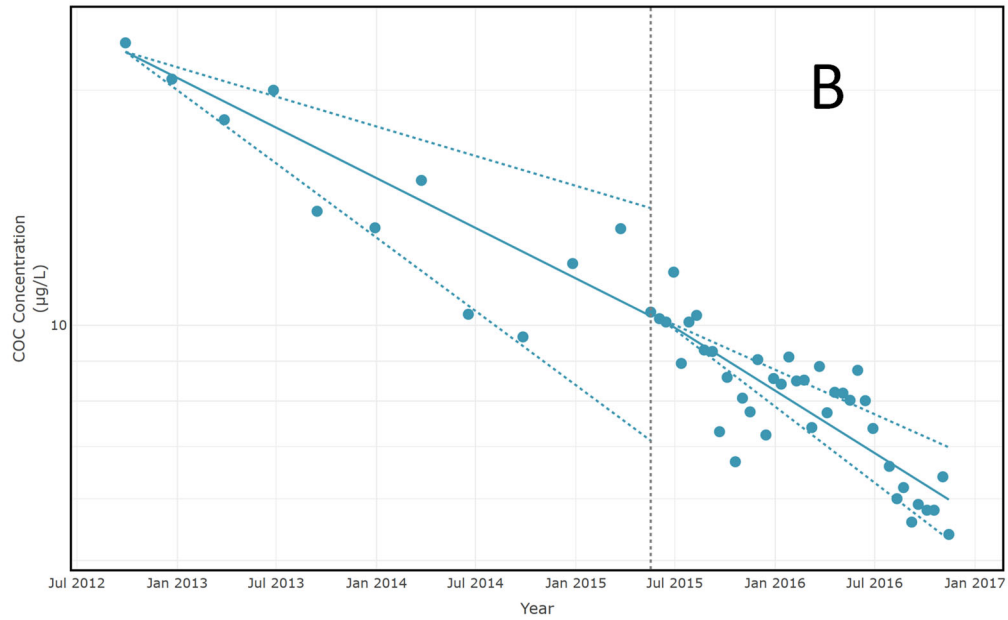
**Figure 5-27** is created from a cropped screen shot of output of the first part of the **Results** from **Tool 1**. In Panel A the Results were zoomed out to plot the units of the vertical axis. In Panel B the Results were zoomed in to provide details of the comparison. The slotted vertical line that separates the two data sets was created by clicking on the first data point collected after the treatment plant was shut down. The slopes of the solid blue lines are the rate constants for attenuation in the two time periods. The tool allows the user to select a value for the confidence level on the rate constant. For this case study a value of  $\alpha = 0.05$ , or 95% confidence, was selected.

Examination of Panel B suggests that the rate constant for attenuation after shutdown was even faster than the rate constant before shutdown. The slopes of the slotted blue lines are the 95% confidence interval on the rate constant. Notice that the slope of the upper confidence interval after shutdown is less than the slope of the line before shutdown, as summarized as one of the Lines of Evidence for Asymptotic behavior. **Figure 5-28** was created from a cropped screen shot of the second part of the **Results** from **Tool 1 Asymptote**. The second part of the **Results** from **Tool 1 Asymptote** indicates that the rate constants are different at 95% confidence. If the TA<sup>2</sup> Tool had been available, this comparison of the rate constants for attenuation over time would have been useful to support the decision to shut down the treatment plant and transition the site to passive treatment. Note that Tool 1 could have also been used to assess concentrations during the period when the extraction wells were operating to determine if the performance of the system was plateauing. In this case, there would have been few lines of evidence for asymptotic behavior.

**Geomean Concentration of COC in Selected Wells Over Time**



**Geomean Concentration of COC in Selected Wells Over Time**



**Figure 5-27. Comparison of rates of attenuation in concentrations of TCE in the discharge of the collection trench before and after the treatment plant was shut down.**

## Asymptote Analysis

Why the interest in Asymptotes? From the National Research Council, 2013:

*“Specifically, if data indicate that contaminant concentrations are approaching an **asymptote**, resulting in exponential increases in the unit cost of the remedy, then there is limited benefit in its continued operation.”*

*“If **asymptotic conditions** have occurred, a transition assessment is performed.”*

Possible Asymptotic Conditions	Is the Condition Met?
1. Are the two slopes for the two periods significantly different?	YES
2. Is the rate for period 2 significantly different than 0?	NO
3. Is the rate of the first period more than two times the second rate?	NO
4. Is the the absolute difference of last points on each regression line is greater than 10?	NO
5. Is the period 2 rate less than 0.0693 per year (10 year half-life)?	NO

**1** of the **5** possible asymptotic conditions are present.

**Figure 5-28. Evaluation provided by Tool 1 Asymptote Analysis for FT-002.** The tool goes through various lines of evidence for demonstrating whether the concentration vs. time data are exhibiting asymptotic behavior.

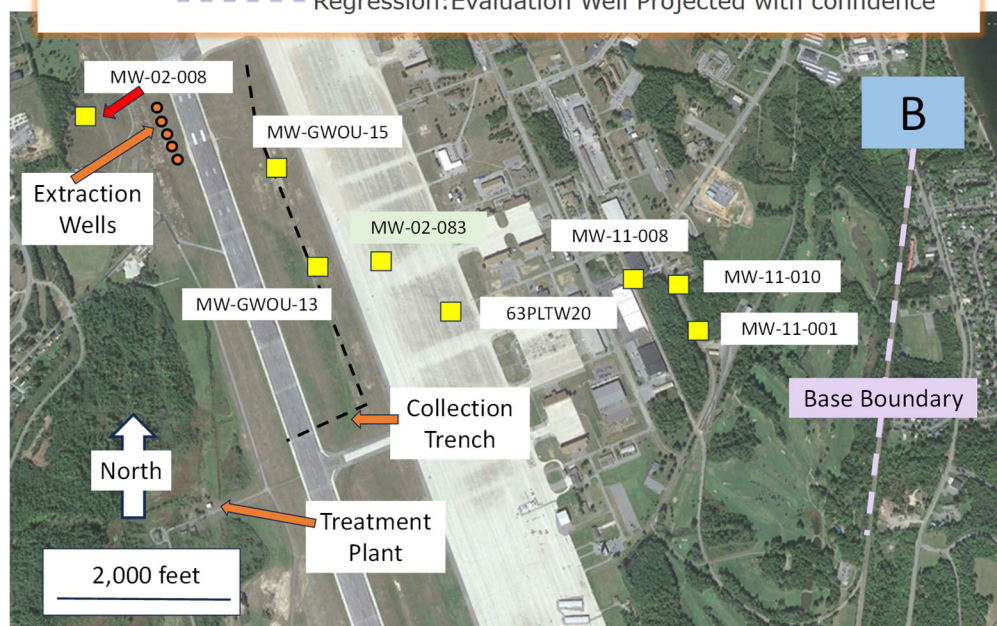
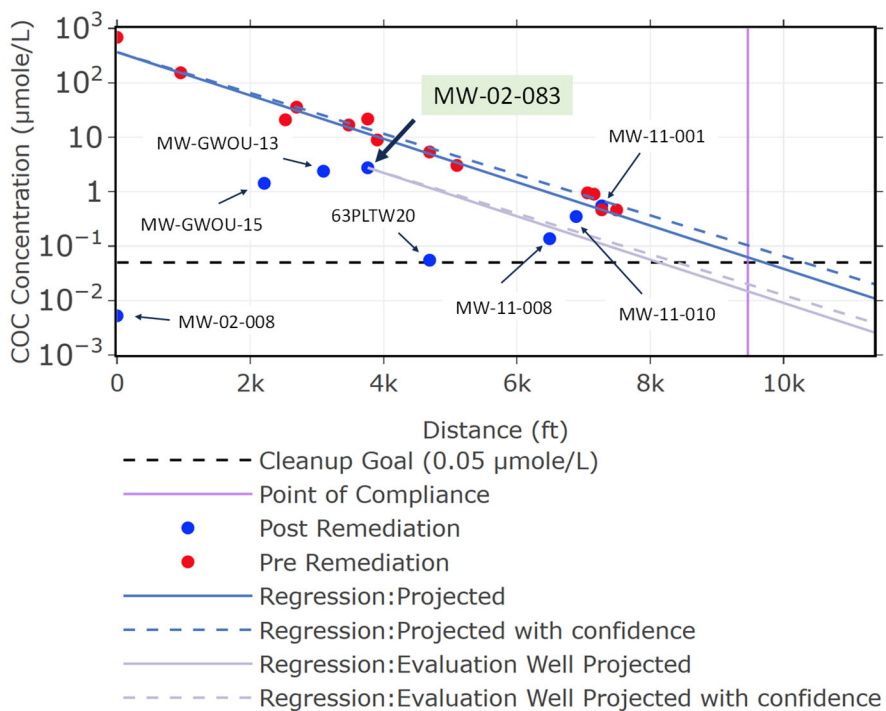
### 5.3.7 Using Tool 5 to Evaluate Need for Additional Remedy in the Western Portion of the Plume

**Table 5-10** provides data from selected wells along or near the plume centerline, when sampled in September 2015, shortly after the treatment plant was shut down. The data are taken from Table 1, Appendix A of URS Corporation (2016a). Panel A of **Figure 5-29** plots the total concentration of chlorinated alkenes in the wells against distance along the centerline flow path. Panel A of Figure 12 was created from a cropped screen shot of output of **Results 2 Well to be Evaluated Projected** from **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool. Panel B of **Figure 5-29** compares the location of the wells with respect to the treatment system for the western portion of the plume.

## 2. Well to be Evaluated Projected

### Concentration of COC in Identified Wells Over Distance

A



**Figure 5-29. Distribution of total chlorinated hydrocarbons in wells along plume centerline at time of transition to passive measures.** Panel B is redrawn and modified from Figure 2 of Arcadis/Bhate/AFCEC/CIBE (2022) overlaid on a screen capture of Google Earth Pro.

**Table 5-10. Concentrations of chlorinated alkenes in the wells when sampled just after the treatment plant was shut down and the site transitioned to passive treatment.**

Well	Distance from Source (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)	cDCE (µg/L)	tDCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)
MW-02-008	0	9/17/2015	<0.25	<0.25	0.5	<0.25	<0.5	<0.25
MW-GWOU-15	2219	9/15/2015	<0.25	38.3	53.1	37	<0.5	12.4
MW-GWOU-13	3108	9/23/2015	0.3	177	91	6.6	<0.5	1.3
MW-02-083	3784	9/23/2015	<0.25	325	17.7	7.7	<0.5	0.6
63PLTW20	4711	9/24/2015	0.3	7.0	<0.25	<0.25	<0.5	<0.25
MW-11-008	6401	9/15/2015	<0.25	0.8	5.6	7.1	<0.5	<0.25
MW-11-010	6911	9/15/2015	0.6	33	7.2	2.0	<0.5	<0.25
MW-11-001	7287	9/15/2015	<0.25	0.8	42.3	8.8	<0.5	0.9

Effective remediation at the FT-002 Site has cleaned up the original source of contamination (MW-02-008 in **Figure 5-29** and **Table 5-10**). One of wells under the flight line (63PLTW20) had reached the cleanup goal. However, substantial concentrations of TCE and the DCEs remain in the wells along the Runway/Flightline Collection Trench (MW-GWOU-13 and MW-GWOU-15) and in one of the wells under the flight line (MW-02-083). Can chlorinated alkenes in these wells reach the base boundary at concentrations that exceed regulatory standards? It is difficult to evaluate that possibility from concentration data in a table. The possibility is also related to the rate constant for attenuation with distance along the flow path, and the position of the well along the flow path.

To facilitate that comparison, Tool 5 projects the concentration at identified wells at the rate constant for attenuation along the original centerline wells. The comparison assumes that the mechanisms that provided attenuation before active remediation began will continue with the same effect after active attenuation ceases. See Panel A of **Figure 5-29** for a projection for concentrations of total chlorinated alkenes in well MW-02-083 based on the the 2015 concentrations. The projection is the solid purple line in Panel A labelled *Regression: Evaluation Well Projected*. The vertical purple line in Panel A is the location of the base boundary along the centerline flow path. Notice that the projection crosses the base boundary at a concentration below the cleanup goal of 0.05 µmole/L. Tool 5 also projects the upper confidence interval on the rate constant for attenuation with distance. The upper 95% confidence interval was selected for this evaluation. The projection is the dashed purple line labelled *Regression: Evaluation Well Projected with confidence*. Notice that the projection at 95% confidence also crosses the base boundary at a concentration below the cleanup goal of 0.05 µmole/L.

Based on evaluation provided by Tool 5, there is no evidence that chlorinated alkenes in well MW-02-083 can reach the base boundary at concentrations above the allowed regulatory standard.

The same process was used to evaluate the concentrations of total chlorinated alkenes remaining in wells MW-GWOU-13 and MW-GWOU-15 (**Figure 5-30**) in 2015 at the time of the transition. As was the case for GW-02-083, the projections at 95% confidence also cross the base boundary at a concentration below the cleanup goal of 0.05  $\mu\text{mole/L}$ .

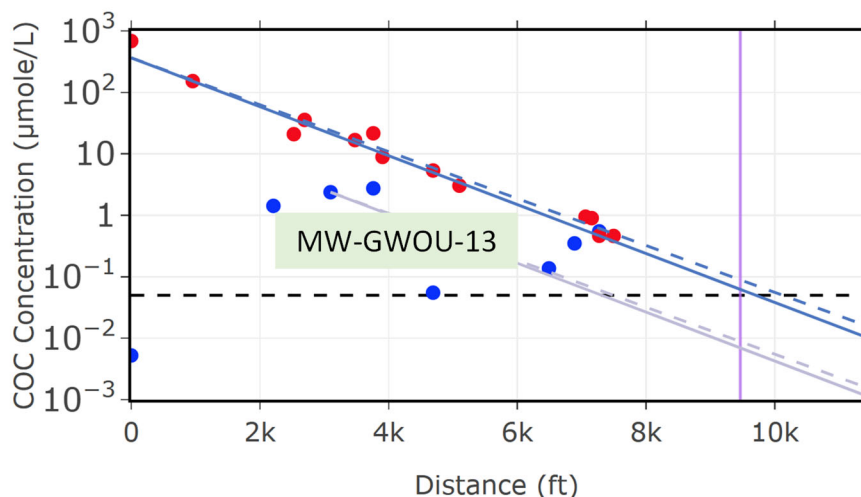
For the wells near the Runway/Flightline Collection Trench and under the Flight Line, the evaluation provided by Tool 5 indicates that further active remediation of total chlorinated alkenes in the groundwater is not necessary to prevent migration of the chlorinated alkenes past the base boundary at concentrations that are above regulatory standards,

In the industrial area on the eastern side of the plume, the extent of cleanup varied (**Table 5-10** and **Figure 5-29**). The concentrations in well MW-11-008 in 2015 was about an order of magnitude below what would have been expected before remediation. In the two other wells there is little evidence of attenuation between 1996 and 2015. The U.S. Air Force continues to maintain the passive collection trenches that prevent further migration of contamination in groundwater in this portion of the plume.



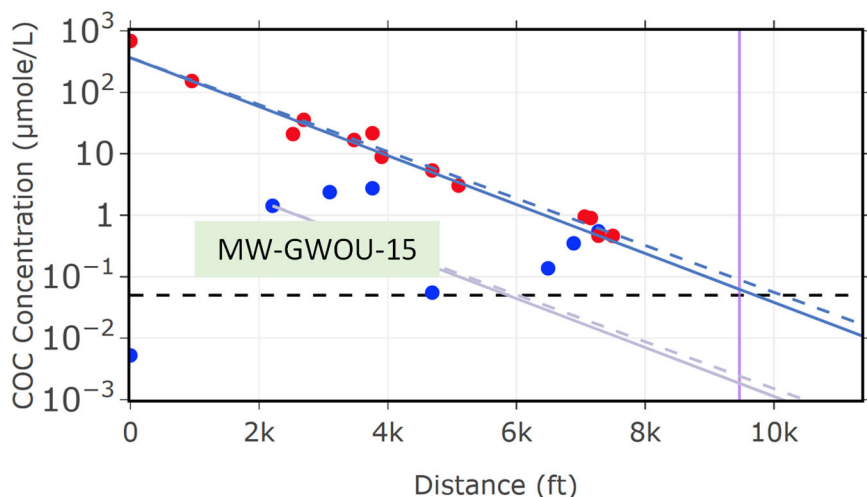
## 2. Well to be Evaluated Projected

### Concentration of COC in Identified Wells Over Distance



A

### Concentration of COC in Identified Wells Over Distance



B

- Cleanup Goal (0.05  $\mu\text{mole/L}$ )
- Point of Compliance
- Post Remediation
- Pre Remediation
- Regression: Projected
- - - Regression: Projected with confidence
- Regression: Evaluation Well Projected
- - - Regression: Evaluation Well Projected with confidence

**Figure 5-30. Projections of Concentrations of Total Chlorinated Alkenes in Wells MW-GWOU-13 and MW-GWOU-15 in 2015 after shutdown of the Treatment Plant.**

### 5.3.8 Abiotic Degradation of Chlorinated Alkenes by Aquifer Sediment Can Explain the Rate Constant for Attenuation with Distance

As part of this project, David Freedman's laboratory at Clemson University determined rate constants for abiotic degradation of *c*DCE in sediment samples from the former Plattsburgh AFB. The sediment was collected below the root zone but above the water table at the location marked by a blue X shape in **Figure 5-31**. In microcosms incubated under aerobic conditions, the rate of degradation of *c*DCE was  $0.0825 \pm 0.0213$  per year at 95% confidence (personal communication David Freedman, Clemson University). The microcosms contained 70 mL of water and 100 g dry sediment. The rate constant normalized to the water content of the sediment in the microcosm study was:

$$k_{normalized} = k_{microcosm} * \frac{\text{volume of water}}{\text{mass of sediment}} = 0.0825 \text{ y}^{-1} * \frac{70 \text{ mL}}{100 \text{ g}} = 0.0578 \text{ mL y}^{-1} \text{ g}^{-1}$$

If the water-filled porosity of aquifer sediment is 0.25, and the dry bulk density is  $2.68 \text{ g mL}^{-1}$ , the ratio of dry mass of sediment to water content in the sandy aquifer sediment is:

$$\frac{\text{mass sediment}}{\text{volume water}} = \frac{2.68(1 - 0.25) \text{ g}}{0.25 \text{ mL}} = 8.04 \text{ g mL}^{-1}$$

The rate constant that would be expected in the aquifer sediment can be calculated by multiplying the normalized rate constant by the ratio of dry sediment to water in the aquifer sediment:

$$k_{aquifer} = k_{normalized} * \frac{\text{mass sediment}}{\text{volume water}} = 0.0578 \text{ mL y}^{-1} \text{ g}^{-1} * 8.04 \text{ g mL}^{-1} = 0.46 \text{ y}^{-1}$$

In a second set of microcosms under anoxic conditions the rate constant for abiotic degradation was  $0.32 \pm 0.060$  per year corresponding to an expected rate constant in the aquifer of 1.8 per year.

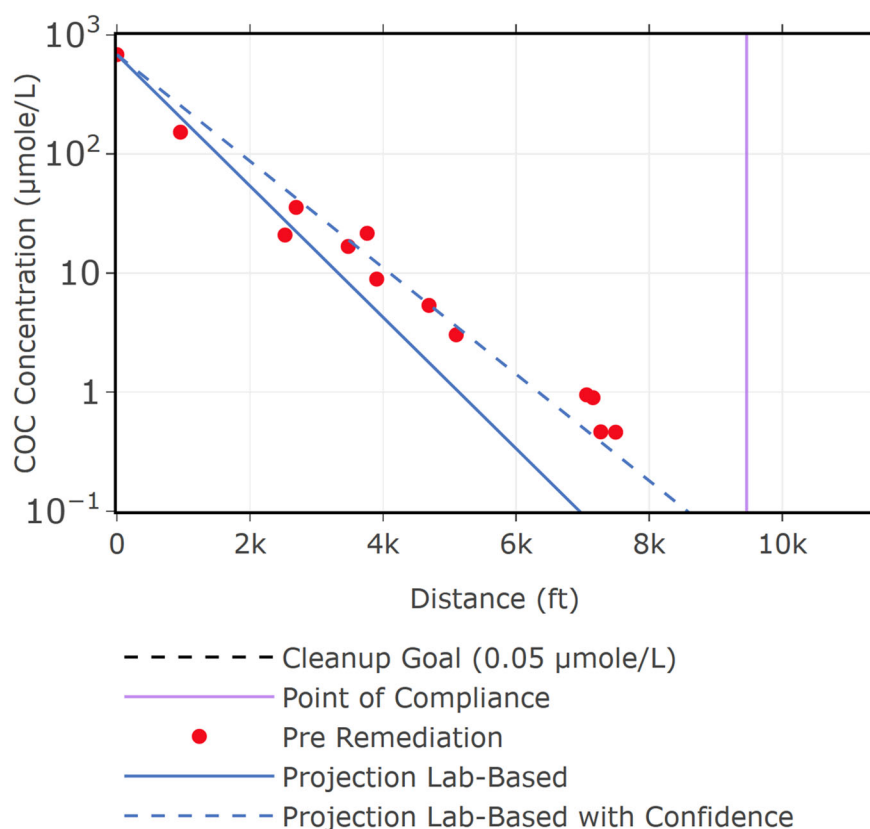
The agent of abiotic degradation of *c*DCE in the aquifer sediment is probably magnetite. The rate constant for abiotic degradation of *c*DCE should be proportional to the magnetic susceptibility of the aquifer sediment. Wiedemeir et al. (2017) reported that the magnetic susceptibility of the aquifer sediment harboring the plume of chlorinated alkenes from the FT-002 Site was  $1.2\text{E-}06 \text{ m}^3/\text{kg}$ . The average magnetic susceptibility of the sediment used in the Clemson microcosms was  $1.7\text{E-}06 \text{ m}^3/\text{kg}$  (personal communication David Freedman, Clemson University). Correcting the expected rate constants to the value of average magnetic susceptibility in the aquifer, the final estimate of the rate constant for abiotic degradation of *c*DCE in the plume at the former Plattsburgh AFB is  $1.27 \pm 0.24$  per year under anoxic conditions and  $0.33 \pm 0.085$  per year when oxygen is available in the groundwater.

The plume was anoxic when sampled, due largely to the oxygen demand of the petroleum hydrocarbons in the waste fuel used for fire training. A rate constant of 1.27 per year (>1.03 per year at 97.5% confidence) will be used to project the effects of abiotic degradation on concentrations downgradient of a particular monitoring well.

**Figure 5-31** projects the expected concentration of total chlorinated alkenes along the centerline flow path if attenuation is controlled by the rate constant for degradation in the laboratory microcosms, and the seepage velocity is 1000 feet per year. The projected concentrations along the plume centerline based on the rate constant for abiotic degradation in the laboratory microcosms are slightly lower than the actual concentrations along the plume centerline before installation of the remedy. Abiotic degradation of cDCE in the aquifer sediment can account for the rate constant for attenuation with distance along the plume centerline in the FT-002 plume.

## 2. Well to be Evaluated Projected

### Concentration of COC in Identified Wells Over Distance



**Figure 5-31. Projection of the natural attenuation of chlorinated alkenes along the flow path based on the rate constant for degradation of cDCE in laboratory microcosms.**

### 5.3.9 Summary Assessment and RTAI

At FT-002 at the former PAFB, the site had already successfully transitioned to MNA to manage portions of the site where extraction systems had previously been operating. Like the Case Study at TCAAP, this transition was largely based on an assessment that concentration goals would be achieved at downgradient points of compliance (i.e., the base boundary). Below is a summary of how the site could be evaluated using the stepwise process in the Summary Assessment (Tool 10) of the TA<sup>2</sup> Tool.

**Step 1 – Determine if the site meets the primary bright-line criteria:** Site A met the applicable bright-line criterion for this site, which is that MNA could achieve the concentration goals by the time groundwater reached the downgradient point of compliance. As described above, this is primarily accomplished using Tool 5 using a combination of pre-remediation data and/or lab assay data (to establish the expected natural attenuation rate) and post-remediation data (to project the concentration vs. distance trend after the extraction systems have been shut off). This assessment clearly showed that the goal concentrations would be met at the downgradient property with an acceptable level of confidence. The site had a sufficient monitoring network to document concentration changes with time and distance after the transition to ensure that it was meeting long-term monitoring obligations. The other bright-line criterion (remediation timeframe estimate) was less applicable for this site because the timeframe for MNA was expected to be the same as the active remedy.

**Step 2 – Establish the Remediation Transition Assessment Index for the site:** The RTAI is largely focused on whether site conditions and concentration trends would suggest that active source treatments are challenging to implement and/or not expected to be successful at improving remediation timeframes due to matrix diffusion and other factors. At this site, an active remedy (groundwater pump-and-treat) was already in place, and no alternative remedial technology (besides MNA) was being considered to our knowledge.

An example of possible RTAI values generated by Tool 10 in the TA<sup>2</sup> Tool for this site are shown below in **Figure 5-31b**. The results of Tool 1 yield an RTAI of 1 the extraction wells were exhibiting only a single line of evidence for asymptotic behavior. In fact, the rates during the post-remediation period were actually faster than those observed when the extraction systems were active. Concentration vs. time data from the extraction systems were used as part of the Tool 2 plume stability evaluation, which yielded an RTAI value of 5 because of a strong decreasing trend. The first RTAI value from Tool 4 (“Expected performance”) is a 5 based on a conservative assumption that a > 2 order of magnitude reduction in current concentrations would be needed to achieve the goal concentration everywhere across the site. The second RTAI value from Tool 4 (“Remedial Potential”) is a 3 based on an assumption that there are generally moderate site constraints to implementing common alternative remedial technologies. The results of Tool 3 yield an RTAI of 3 because complete source removal would be predicted to result in a relatively moderate remediation timeframe (23 years) for site-wide compliance with the cleanup goal. Finally, Tool 7

yields an RTAI of 3 because the scale of the site would result in moderate allocation of costs and resources to implement typical enhanced attenuation options.

For site managers, the RTAI values can be averaged to get a balanced impression of whether the site is ready to transition. In this case, the average value of 3.2 suggests that this site is a “typical candidate”, which argues that transition could be warranted, particularly if specific factors are weighted as more important than others. This was the general approach that was warranted at this site because the low concentrations and plume stability provided the most critical lines of evidence. It is also important to note that the Tool 5 plume projections—which are part of the bright-line criterion in Step 1 and not part of the RTAI estimates—are the key driver at this site.

**Step 3 – Checklists:** As noted above, there were no other technologies that were being considered besides MNA, so the RTAI values that are associated with implementing source remediation are less important. The conclusion that concentrations would meet goals at downgradient receptors due to observable and explainable natural attenuation mechanisms was the most important consideration. The optional step of going through these checklists is to confirm that all critical information is collected in support of identifying site-specific drivers for the TA, which in this case would have supported the conclusion to shut-off the extraction systems and transition to MNA.

Tool	RTAI					Rationale
	Poor Candidate RTAI = 1	Fair Candidate RTAI = 2	Typical Candidate RTAI = 3	Good Candidate RTAI = 4	Strong Candidate RTAI = 5	
1. Asymptote (Tool 1)	1	2	3	4	5	The RTAI is higher if there are more Lines of Evidence that concentrations at the site are asymptotic.
2. Is my Plume expanding? (Tool 2)	I	PI	ST	PD	D	The RTAI is higher if key downgradient/sentinal well(s) exhibit stable or declining concentration trends.
3. Expected performance (Tool 4)	<0.5	0.5 to <0.75	0.75 to <1.25	1.25 to <2	≥2	The RTAI is higher for sites where a higher concentration is needed and may not be achievable based on the expected level of performance of remediation technologies.
4. Remedial Potential (Tool 4)	High	High-Mod	Moderate	Mod-Low	Low	The RTAI is higher for sites with challenging cleanup goals and difficult conditions. It is based on a similar methodology developed by ITRC for evaluating remediation potential.
5. How long? (Tool 3)	<5	5 to <10	10 to <25	25 to <50	≥50	The RTAI is higher for sites where additional source remediation does not result in short remediation timeframes. It is based on the estimated number of years to reach the cleanup goal after source remediation.
6. Enhanced Attenuation (Tool 7)	-	-	✓	-	-	The RTAI is higher for sites where EA technologies or approaches can be easily implemented. It is based on the depth and width of the area being targeted, which are used as proxies for cost and ease of installation.
Metric	1	0	3	0	2	

**Figure 5-31b. Remediation Transition Assessment Index (RTAI) Results for FT-002.** Results were obtained using Tool 10 of the TA<sup>2</sup> Tool. Higher RTAI values support transitioning from active remedies to more passive remedies.

## 5.4 Case Study #3 – Joint Base Cape Cod (Ashumet Valley Plume)

### 5.4.1 Introduction

The Ashumet Valley Plume contains PCE, TCE and cDCE that originated from activities at FTA-1, a former Fire Training Area on the former Otis AFB (AFCEC, 2013). From 1958 to 1985 fire training exercises were conducted where flammable wastes were ignited and then extinguished. Contaminated soil and sediment at FTA-1 was excavated and treated on site by thermal remediation starting in 1995 and concluding in 1997.

The fire training activities contaminated the water table aquifer with chlorinated solvents (AFCEC, 2013), producing a plume of groundwater contamination that moved away from property now part of Joint Base Cape Cod (JBCC) to occupy aquifer sediments in a portion of the Ashumet Valley. The plume was approximately 22,000 feet long. **Figure 5-32** presents the conceptual model of the plume as it existed in 2013. The water table aquifer was in sandy glacial outwash. Groundwater moving underneath the fire training area was contaminated with chlorinated solvents. The plume of chlorinated solvents moved beneath infiltration beds for treated wastewater from a sewage treatment plant, and the treated wastewater blended with a portion of the plume of chlorinated solvents. Some portion of the contaminated groundwater discharged to Ashumet Pond, which is a flowthrough lake. The major portion continued to flow as groundwater in sediments of the Ashumet Valley, to ultimately discharge to surface water or shallow irrigation wells in cranberry bogs in the Backus River and to Mill Pond.

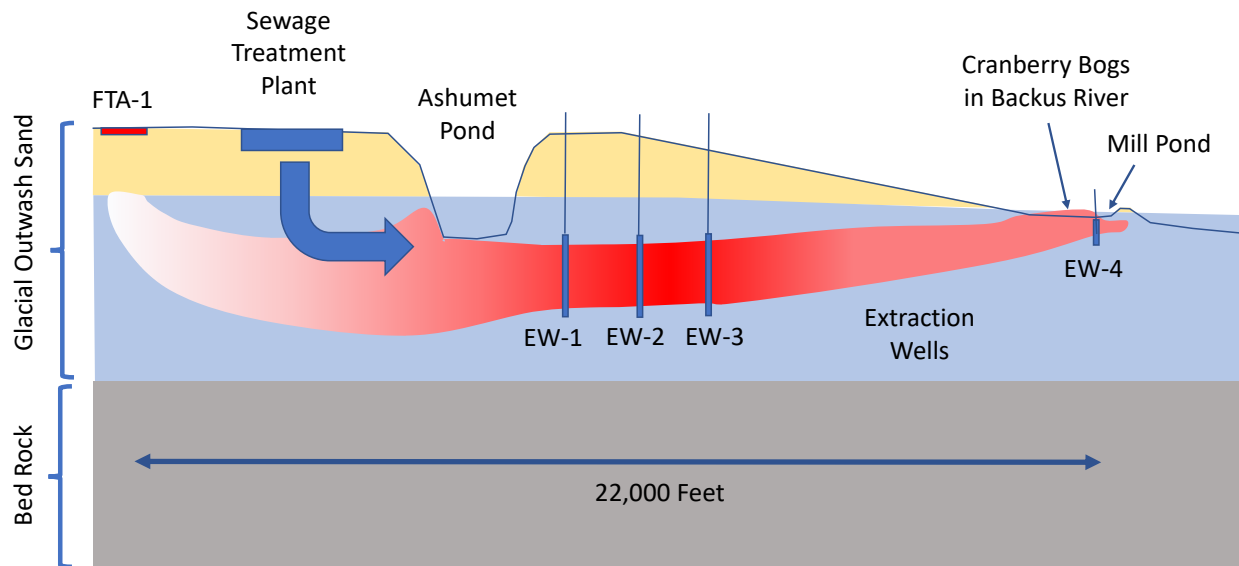
In response, the U.S. Air Force installed an extraction, treatment, and reinjection system to restore groundwater quality, prevent further migration of contamination in groundwater, and prevent transfer of contaminants to surface water. At the time this was written (2024) the extraction wells had been shut down and active remedy had been transitioned to Monitored Natural Attenuation (MNA). The design of the treatment system was based on a complex groundwater transport and fate model. The decision to shut down each individual extraction well was based in part on the observation that concentrations of the contaminants of concern (PCE and TCE) in the produced water from the extraction well were well below their MCLs and that the concentrations had reached a plateau or were declining. Extraction wells capture contaminated flow paths and blend the contaminated water with less contaminated or uncontaminated flow paths. Because the water from the extraction well is below the MCL does not mean that all the flow paths in the capture zone of the well are below the MCL.

Tool 5 in the TA<sup>2</sup> Tool allows the user to evaluate risk to a receptor for conditions that apply to individual monitoring wells at particular points in time. The risk evaluation is based on concentrations in the monitoring wells, not the extraction well. To support a decision to transition to MNA, data from each available well at the time of transition can be evaluated.

The initial set of extraction wells were installed in the “hot spot” of the plume. At the time, the plume was still expanding. Later on, an additional extraction well was installed at a lower boundary to prevent any possible further migration of the plume.



For the purposes of this case study, the extraction well at the lower boundary will be considered the receptor or the point of compliance. The case study will evaluate (1) the risk at the point of compliance if the active treatment system had not been installed, and (2) the risk at the point of compliance from contamination in groundwater upgradient of each extraction well at the time the extraction well was shut down and active treatment was transitioned to MNA.



**Figure 5-32. Conceptual model of the Ashumet Valley chlorinated solvent plume when the active remedy began.** Vertical exaggeration approximately 15:1. Redrawn from Figure 16 of AFCEC (2013).

#### 5.4.2 Distribution of Contamination at Initial Site Characterization

Tool 5 describes natural attenuation as the rate of attenuation of contaminants with distance along the centerline flow path in the plume prior to active treatment. Panel A of **Figure 5-33** provides the locations of selected monitoring wells used to determine the distribution of chlorinated alkenes in groundwater in the Ashumet Valley prior to the startup of the extraction, treatment and infiltration system.

The monitoring wells and extraction wells in the Ashumet Valley downgradient of Ashumet Pond were sampled in 1998 and 1999, prior to startup of the extraction wells. The data are identified as the baseline condition in Table 2.5 of AFCEE/MMR (2000). One well was sampled in 1994. It is identified as 95MW582X7394XX on page 20 (33 of 763) of Installation Restoration Program (1995).



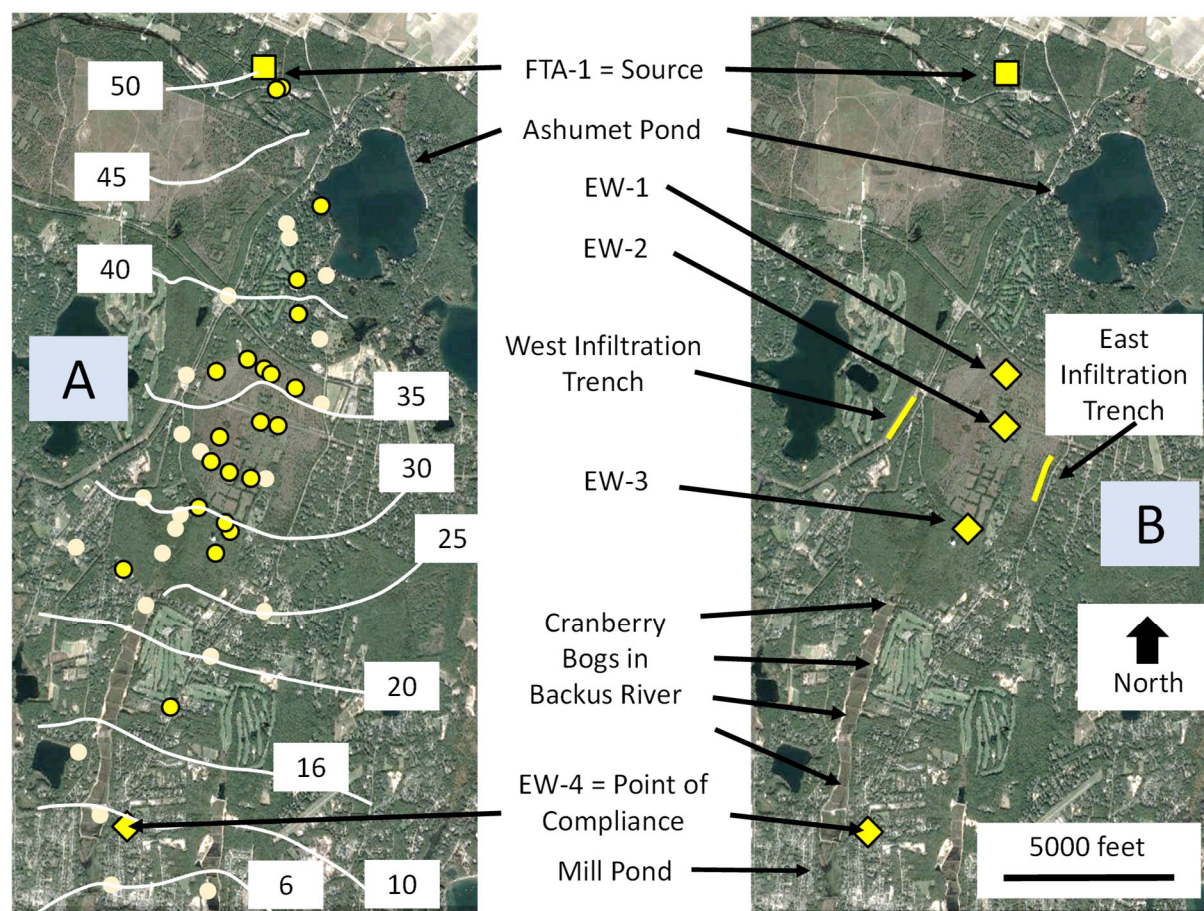
Panel A of **Figure 5-34** compares the total concentration of chlorinated alkenes in the groundwater to the distance from the source at FTA-1. Eight wells had the highest concentration of total chlorinated alkenes compared to other wells with a similar distance from the source (Panel A of **Figure 5-34**). Professional judgment was used to designate these eight wells as the centerline wells of the plume.

**Table 5-11** provides the baseline concentrations of PCE, TCE and *c*DCE in the eight centerline wells before startup of active remediation. Concentrations of *t*DCE, 1,1-DCE or Vinyl Chloride were not above their MCL, and they are not reported in AFCEE/MMR (2000). Several of the wells closer to the source showed extensive reductive dechlorination of PCE and TCE to *c*DCE, perhaps due to biological reductive dechlorination supported by the treated wastewater that mixed with the plume from the fire training area.

**Table 5-11. Concentrations of chlorinated alkenes in the centerline wells when sampled for the baseline condition before the extraction system started up.**

Well	Distance from 94MW0582C (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)	<i>c</i> DCE (µg/L)
95MW0582C	0	4/6/1994	0.5	0.7	340
95MW0212A	5337	7/27/1999	23.0	33.0	55.0
95MW1174A	6491	7/28/1999	7.7	14.0	70.0
USFW356108	8169	7/28/1999	51.0	41.0	2.2
USFW474147	9805	7/28/1999	86.0	17.0	53.0
95MW0201	10531	7/28/1999	64.0	12.0	23.0
USFW443104	13121	7/29/1999	11.0	1.8	2.1
USFW501102	15208	7/29/1999	2.8	9.3	1.4

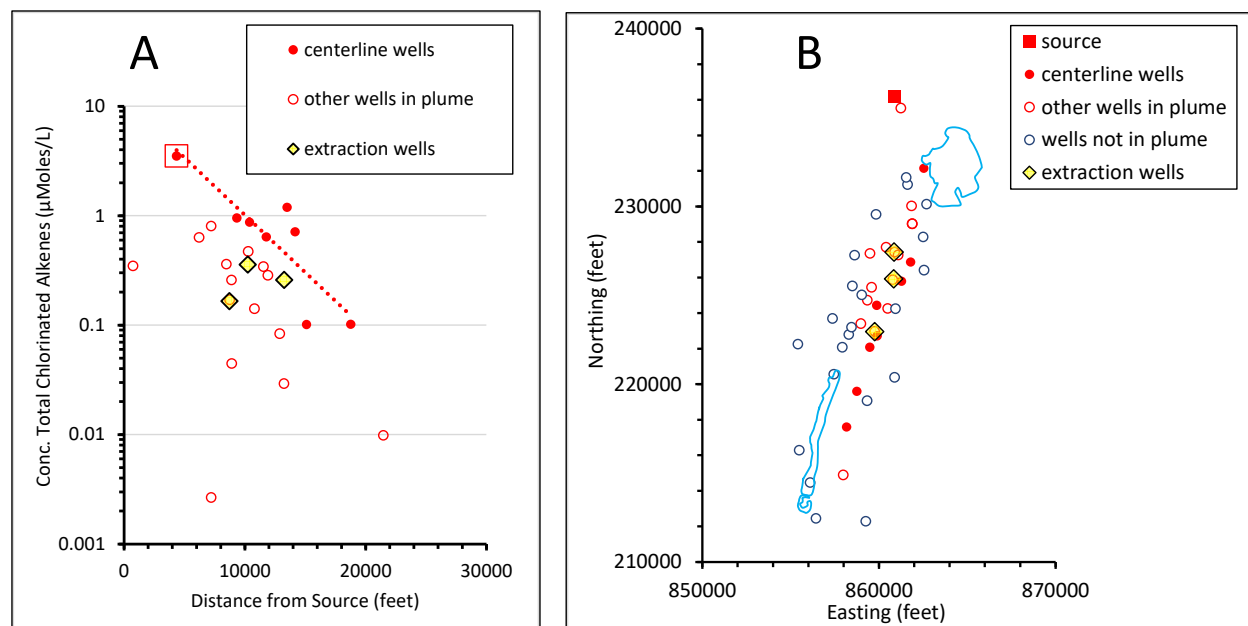
Panel B of **Figure 5-34** compares the location of the source of contamination, the centerline wells, the other wells in the plume, the wells not in the plume, and the extraction wells. The contaminated wells were bound by wells that were not in the plume. The extraction wells were located near the centerline wells with the highest concentrations of total chlorinated alkenes. Note that concentrations in the extraction wells were lower than in the centerline wells. This is probably caused by dilution of the chlorinated alkenes due to the longer screened interval of the extraction wells.



**Figure 5-33. Distribution of wells and other relevant features in the Ashumet Valley plume.**

Panel A. The yellow square is the source of contamination with chlorinated alkenes. Yellow circles are wells with chlorinated alkenes above the detection limit. White circles are wells where chlorinated alkenes were not detected. White contours are the elevation of the water table in feet.

Panel B. Distribution of the extraction, treatment and infiltration system.



**Figure 5-34. Attenuation of concentrations of total chlorinated alkenes in wells with distance from the source at FTA-1.** Panel A. Concentration data was collected in 1998 or 1999 except the data point enclosed in a red square, which was collected in 1994. Panel B. Location of the source of contamination, the designated centerline wells, the other wells in the plume, the wells not in the plume and the extraction wells.

#### 5.4.3 Schedule of Transition from Active Treatment to Monitored Natural Attenuation

The contaminated groundwater was managed by an extraction, treatment and infiltration system (ETI). The system began operation in November 1999 with three extraction wells. These wells are identified as EW-1, EW-2 and EW-3 in **Figure 5-32** and Panel B of **Figure 5-33**. The extraction wells were located in the most contaminated portion of the aquifer. The water that was produced by the extraction wells was treated and then reinjected into the aquifer using infiltration galleries (Panel B of Figure 2). In May 2007, EW-1 and EW-2 were shut down (AFCEC, 2022), “having substantially remediated the aquifer within their capture zones.” Well EW-3 was shut down in January 2022 because concentrations of chemicals of concern “within its capture zone had declined below the MCL.”

In August 2009 an additional extraction well (EW-4) was added at the distal end of the plume. Water from EW-4 was treated and discharged to the Backus River. In February 2014 EW-4 was shut down on an interim basis, and permanent shutdown was approved in December 2018 (AFCEC, 2022).

#### 5.4.4 Calibration of Tool 5 for the Rate Constant for Natural Attenuation with Distance Along the Flow Path

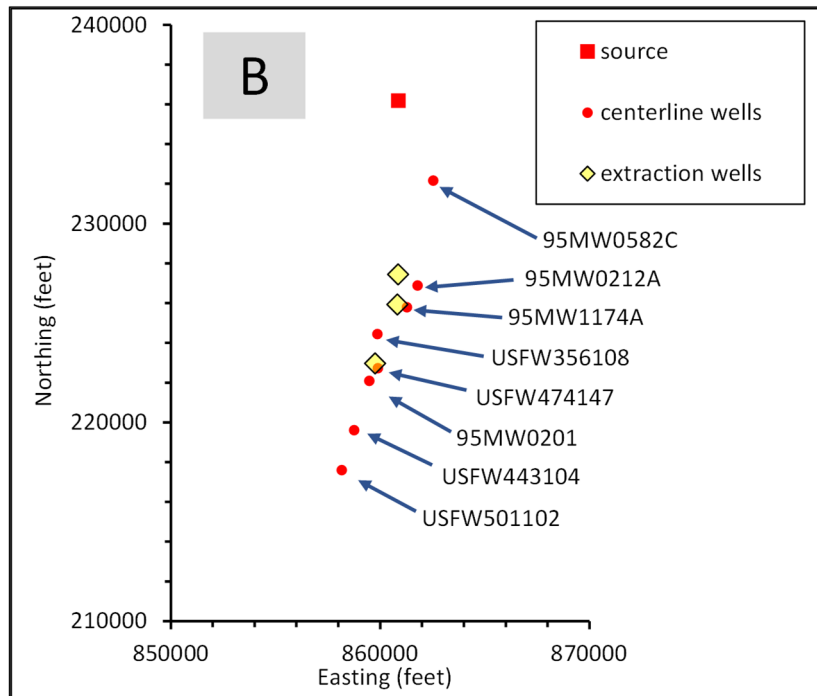
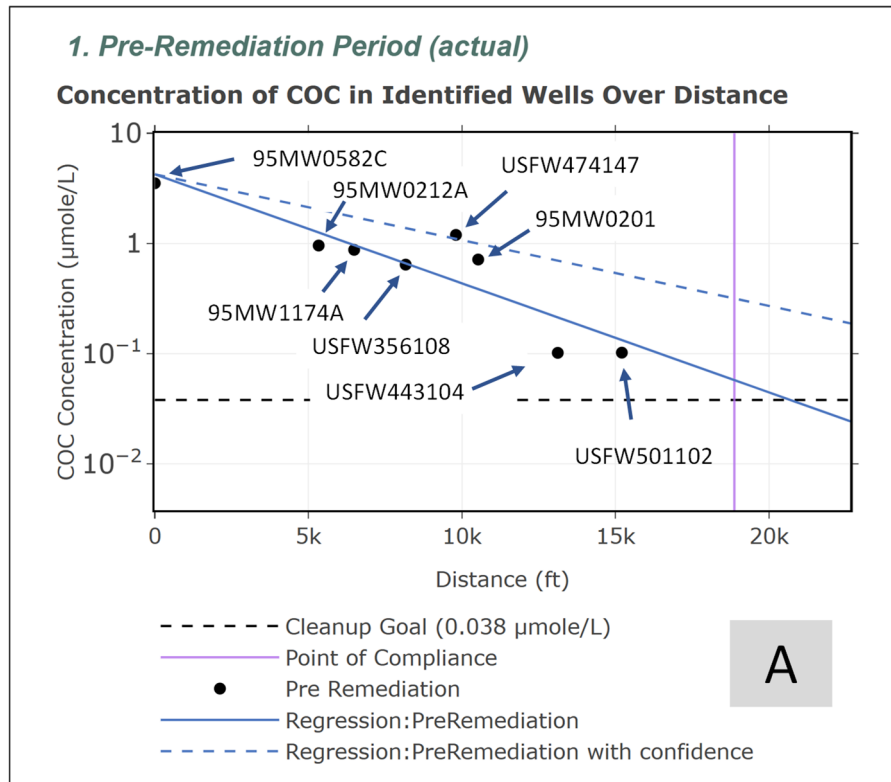
The decision support tool was calibrated to the eight wells that were selected to represent the plume centerline in 1994 to 1999. The tab **Site-Specific Info** from **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool was selected, and **Step 5** was used to select the eight wells, so they were included in the centerline.

**Figure 5-35** shows output from Tool 5 as a cropped screen shot of output of **Results 1 Pre-Remediation Period (actual)** from **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool. Panel A of the figure associates the data points with the centerline wells described in Table 1. Panel B locates the wells on a map.

The slope of the solid blue line in Panel A of **Figure 5-35** projects natural attenuation with distance along the flow path from the most contaminated of the centerline wells. There is a good distribution of wells along the flow path between the most contaminated centerline well and the point of compliance. As a first approximation, the data fit a first-order rate law for attenuation with distance along the flow path.

The dashed blue line is the slower one-tailed 95% confidence interval on natural attenuation with distance long the flow path through the centerline wells.

The vertical purple line in Panel A of **Figure 5-35** is the distance to extraction well EW-4, which is the hypothetical point of compliance for this case study. The horizontal dashed black line is the MCL for TCE, which is taken to be the cleanup goal. Based on the average rate of attenuation with distance along the flow path, the contamination in the plume in 1999 will exceed the MCL when the groundwater reaches the point of compliance.



**Figure 5-35. Calibration of Tool 5 to the centerline wells in the Ashumet Valley plume.**

#### 5.4.5 Calibration of Decision Support Tool 5 for Groundwater Seepage Velocity

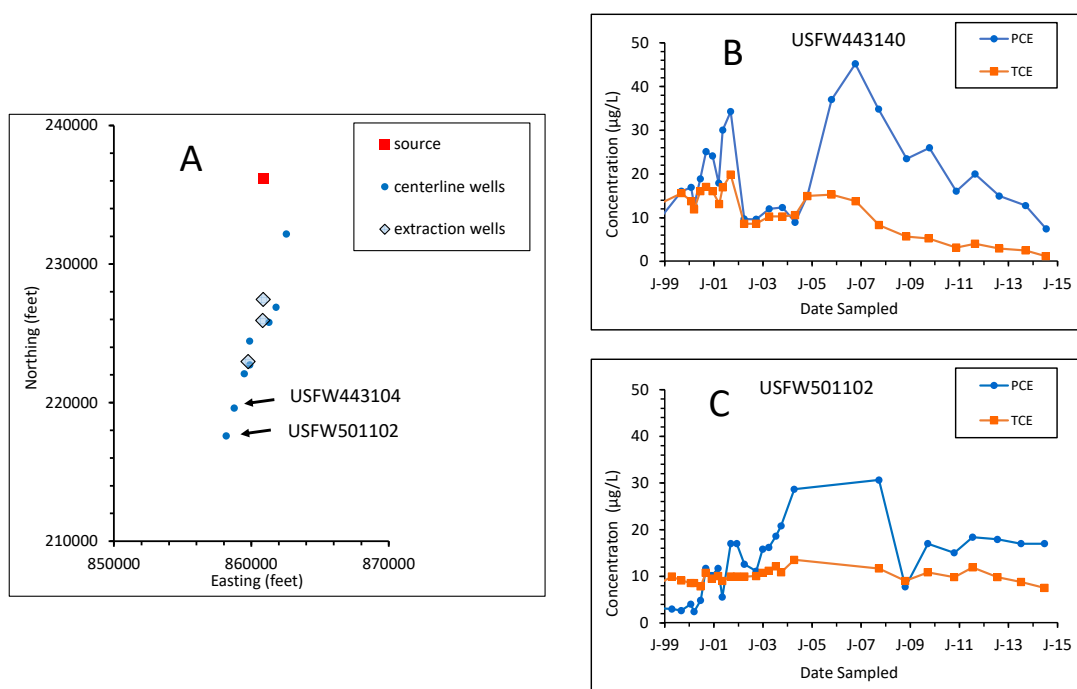
Two of the centerline wells depicted in **Figure 5-34** are downgradient of the three extraction wells and groundwater in these wells was not captured by extraction wells EW-1, EW-2 or EW-3. In Panel A of **Figure 5-36**, these wells are identified as USFW443104 and USFW501102. The monitoring record for PCE and TCE in these wells indicates increasing concentrations in early years, a maximum of concentrations and then a trend of decreasing concentrations (Panel B and Panel C of **Figure 5-36**). The peak in concentrations is in the range from 2002 to 2007.

Page 4-3 of AFCEE (1998) provides the following:

According to a number of aquifer tests, the bulk hydraulic conductivity of the MPP [Mashpee Pitted Plain] outwash sediments generally ranges from approximately 200 to 350 ft/day. This hydraulic conductivity range for MPP outwash sediments is consistent with the results of two aquifer tests conducted in the vicinity of the Ashumet Valley plume. An aquifer test conducted by the USGS near the southern portion of the Ashumet Valley plume yielded an average hydraulic conductivity of 335 ft/day ... A second aquifer test at test well PW-1 in the southwestern portion of the plume yielded an average hydraulic conductivity of 290 ft/day ...

Based on the groundwater elevations provided in **Figure 5-33**, the elevation drops 20 feet between the source at FTA-1 and extraction well EW-3, a linear distance of 13,270 feet. The hydraulic gradient is 0.0015 foot per foot. If the hydraulic conductivity is assumed to be  $(335+290)/2 = 313$  feet per day, and the porosity is assumed to be 0.25, the average seepage velocity of groundwater is 1.875 feet per day or 684 feet per year. Wells USFW443104 and USFW501102 are 16,720 and 18,780 feet from FTA-1, with an average of 17,750 feet. At 684 feet per year, it would take 26 years for groundwater to move from FTA-1 to wells USFW443104 and USFW501102. If the peak of contamination arrived at these wells in 2002 to 2007, the contamination would have left FTA-1 in 1976 to 1981. Fire training exercises were conducted at FTA-1 from 1958 to 1985. Therefore, a seepage velocity of 684 feet per year is a plausible value to calibrate Tool 5.





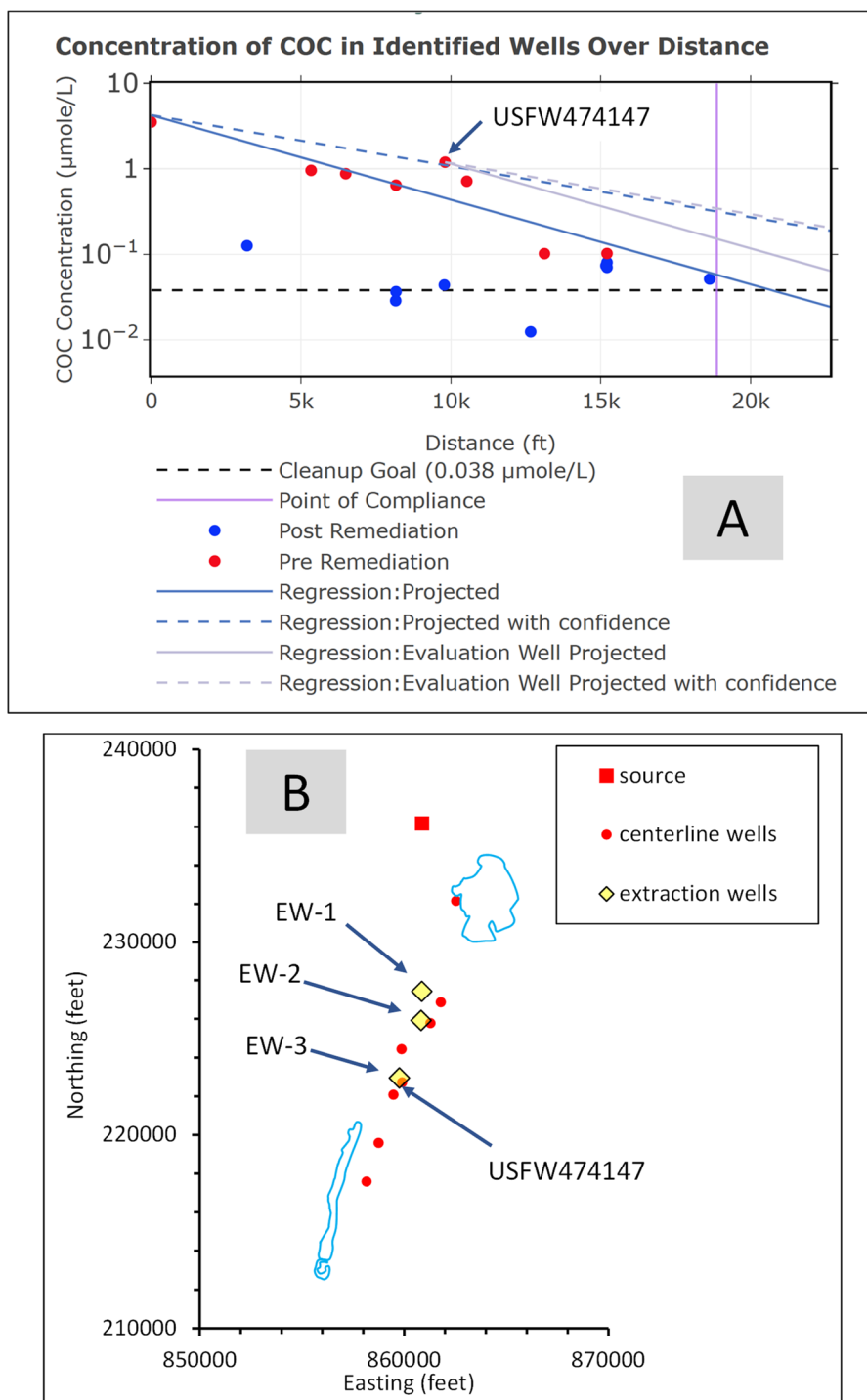
**Figure 1-36. Time of breakthrough of PCE and TCE in monitoring wells USFW443140 and USFW501102.**

#### 5.4.6 Risk at Point of Compliance before Active Remedy

Panel A of **Figure 5-37** is the application of Tool 5 of the TA<sup>2</sup> Tool to evaluate the risk at the point of compliance when the baseline data were collected in 1998 and 1999. Panel A of **Figure 5-37** was created from a cropped screen shot of output of **Results 2 Well to be Evaluated Projected** from **Tool 5 Plume Projections** of the TA<sup>2</sup> Tool. The monitoring well that imposes the greatest risk is not necessarily the well with the highest concentration, it is the well with the highest concentration above the fitted line describing attenuation along the eight centerline wells. In this case, that well is USFW474147. The solid line extending from well USFW474147 extrapolates the rate of attenuation from well USFW474147 in 1999. If the chlorinated alkenes attenuate in the same manner that they attenuated in the past along the centerline flow path, the concentration would be above the MCL for PCE and TCE when the groundwater reached the point of compliance. The dashed blue line extending from well USFW474147 extrapolates the slower one-tailed 95% confidence interval on natural attenuation. Both predictions intersect the point of compliance at concentrations above the MCL for PCE or TCE.

There is a 5% chance that there will be less attenuation than is predicted by the dashed blue line extending from well USFW474147. There is roughly a 5% chance that the concentration will be more than an order of magnitude greater than the MCL for PCE or TCE when the water reaches the point of compliance. In retrospect, a treatment system was necessary to meet the goal to prevent the spread of the plume past the point of compliance.





**Figure 5-37. Projected concentrations at the point of compliance based on concentrations in well USFW474147 at the time of baseline sampling (1999).**

#### 5.4.7 Risk at Point of Compliance at the Time of Transition of EW-1 and EW-2 (2007)

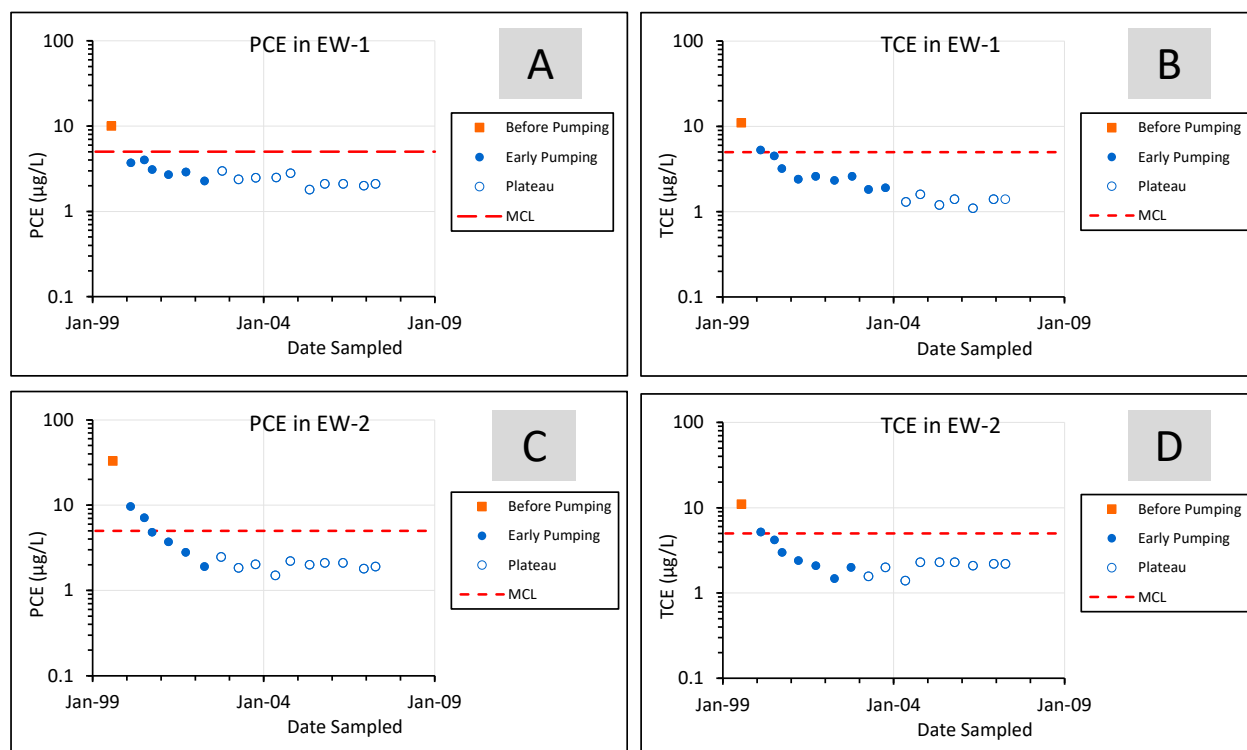
As discussed previously, in 2007 extraction wells EW-1 and EW-2 were shut down. Extraction well EW-3 continued to pump. **Figure 5-38** provides data on concentrations of PCE and TCE in the extraction wells over time (Extracted from Figure 5 of AFCEC (2015a)).

When the extraction wells were sampled before pumping, the concentrations of PCE and TCE in EW-1 and EW-2 were above the MCLs. The concentrations in the wells after pumping were lower than before pumping, probably due to dilution of the core of the plume with cleaner water that was captured by pumping. In a short time, the concentrations of PCE and TCE were below their MCLs, and after about four or five years, the concentration reached a plateau without significant further reductions. The benefit of pumping was modest. In Panels A, B and D the plateau was approximately ten-fold lower than the concentration before pumping. In Panel C the plateau was twenty-fold lower than the concentration before pumping. In all cases, the reduction in concentrations during pumping was less than ten-fold.

The distinction between periods of Early Pumping and Plateau in **Figure 5-38** was based on professional judgement. However, Tool 1 of the TA<sup>2</sup> Tool provides an objective evaluation of the distinction. In **Figure 5-39**, Tool 1 was applied to the data in Panel A of **Figure 5-38**. The figure is created from a cropped screen shot of output of the **Results** from **Tool 1 Asymptote** of the TA<sup>2</sup> Tool.

The last date in the Early Pumping sequence was selected as the breakpoint for the end of Period 1. At 95% confidence, the upper confidence interval in the rate constant in Period 2, which is equivalent to the Plateau in **Figure 5-39**, is increasing over time, indicating that the rate constant for attenuation in Period 2 is not different from zero at 95% confidence. When Tool 1 was applied to data in the other three panels of **Figure 5-38**, the result was the same. At 95% confidence, there was no evidence that the rate constant for attenuation in the Plateau was different from zero.

Data on concentrations in monitoring wells in 2006 are provided in **Table 5-12** of AFCEC (2007). Previous monitoring showed concentrations of *c*DCE, *t*DCE, 1,2-DCE and Vinyl Chloride below their respective MCLs, and AFCEC (2007) did not report concentrations for these analytes. Table 2 provides the concentrations of PCE and TCE in nine monitoring wells that were sampled in 2006 prior to the shutdown of extraction wells EW-1 and EW-2. In 2006, the concentrations of PCE and TCE were roughly equivalent.

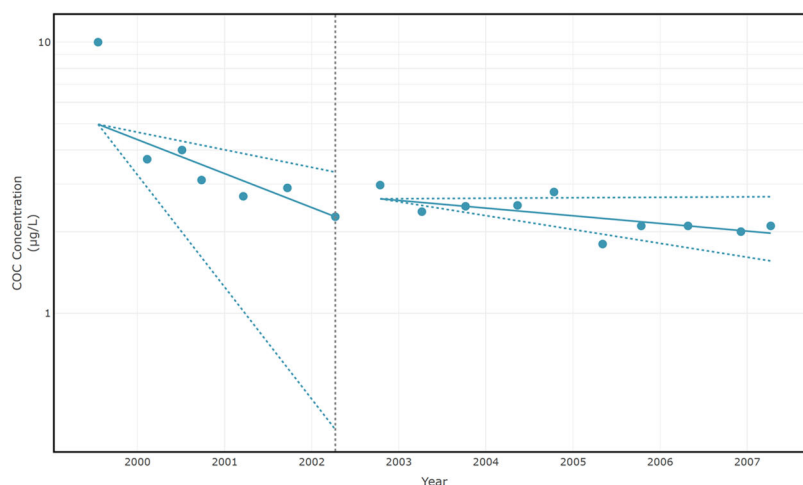


**Figure 5-38. Performance of Extraction Wells EW-1 and EW-2.**

**Table 5-12. Concentrations of PCE and TCE in monitoring wells in the Ashumet Valley plume in 2006.**

Well	Distance from 94MW0582C (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)
30MW0585A	3198	10/13/2006	<0.5	8.9
95MW0212A	5337	10/18/2006	2.9	2.7
95MW1172A	6511	10/13/2006	11.5	2.4
USFW357139	8158	11/5/2006	28.1	13.0
USFW430075	12077	11/5/2006	20.0	9.3
USFW443140	13124	10/18/2006	45.0	13.7
USFW501102	15208	10/18/2006	10.2	9.8
95MW0103	15722	10/26/2006	14.4	3.3
95MW0104	17849	4/28/2006	10.1	1.9

Geomean Concentration of COC in Selected Wells Over Time



**Step 6.** Select date range for data.

1999-07-20 to 2007-04-10

**Step 7.** Select Confidence Interval (max 0.99).

0.95

**Step 8.** Select breakpoint between two different time periods.

Breakpoint is indicated on plot with a dotted line. To manually select a breakpoint click data point on plot. To deselect double click the figure where no data point.

## Overall Results

	First Order Source Attenuation Rates (per year)	Estimated Time-to-Clean			Pearson's Correlation Coefficient (r)	p-value	Correlation Strength
		Lower Bound Year	Year	Upper Bound Year			
Entire Record	0.0360	2009	2015	2023	0.747	0.000564	High Correlation, Statistically Significant
Period 1	0.125	2001	2005	2010	0.847	0.016100	Very High Correlation, Statistically Significant
Period 2	0.0283	2011	2017	Increasing	0.718	0.019400	High Correlation, Statistically Significant

Lower and upper bound years based on 95% confidence interval.  
Cells says increasing is where it had a positive first order attenuation rate.

## Asymptote Analysis

Why the interest in Asymptotes? From the National Research Council, 2013:

"Specifically, if data indicate that contaminant concentrations are approaching an **asymptote**, resulting in exponential increases in the unit cost of the remedy, then there is limited benefit in its continued operation."

"If **asymptotic conditions** have occurred, a transition assessment is performed."

Possible Asymptotic Conditions	Is the Condition Met?
1. Are the two rates of attenuation for the two periods significantly different?	YES
2. Is attenuation rate in period 2 significantly close to 0?	NO
3. Is the attenuation rate of the first period more than two times the second rate?	YES
4. Is the the absolute difference between the last points on each regression line less than 10?	YES
5. Is the period 2 attenuation rate less than 0.0693 per year (10 year half-life)?	YES

4 of the 5 possible asymptotic conditions are present.

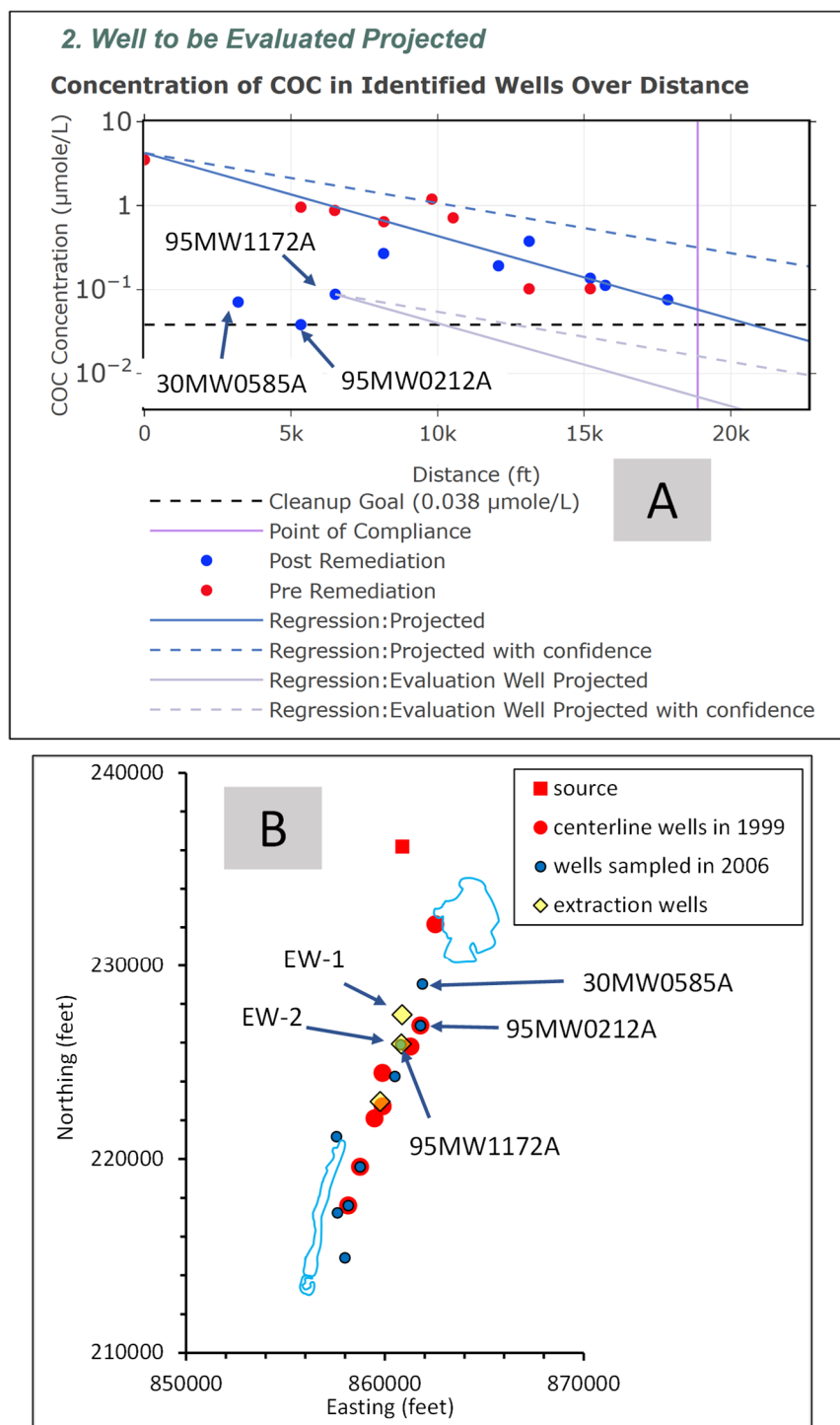
**Figure 5-39. Breakpoint and Asymptote Analysis of data from Panel A of Figure 5-38 using Tool 1.**

Panel A of **Figure 5-40** is the application of Tool 5 to evaluate the risk at the point of compliance of contamination remaining in the plume in 2006 in the portion of the flow path extending up to extraction well EW-2. The 2006 data are the blue circles in Panel A of **Figure 5-40** and the 1998/1998 baseline data are the red circles. Comparing the 2006 concentrations to the baseline concentrations in 1998/1999, there was a substantial reduction in concentrations in the flow path in the first 7,000 feet, corresponding to the location of EW-2. In wells more than 7,000 feet along the flow path, there was minimal reduction, if any, in concentrations compared to the trendline for the baseline data.

Of the three monitoring wells that were sampled in 2006 that were in the capture zone of extraction wells EW-1 and EW-2, the highest concentrations were in well 95MW1172A. This well is close to extraction well EW-2 (Panel B of **Figure 5-40**). The concentration of total alkenes was above the MCLs for TCE or PCE. The solid faint blue line in Panel A of **Figure 5-40** that extends from well 95MW1172A extrapolates the rate of natural attenuation (based on the baseline pre-remediation data (i.e., the red dots)) from the concentration in well 95MW1172A in 2006. If the chlorinated alkenes attenuate in the same manner that they attenuated in the past along the centerline flow path, the concentration would be below the MCL for PCE and TCE when the groundwater reached the point of compliance. The dashed faint blue line extending from well 94MW1172A extrapolates the slower one-tailed 95% confidence interval on attenuation. At 95% confidence, the concentration would be below the MCL for PCE and TCE when the groundwater reached the point of compliance.

Based on the evaluation provided by Tool 5, there is no evidence that the concentrations remaining in the wells in the capture zone of EW-1 or EW-2 in 2006 posed a risk that contamination would reach the point of compliance at concentrations above the MCL. The evaluation provided by Tool 5 is consistent with the decision made by the U.S. Air Force and its contractors to shut down extraction wells EW-1 and EW-2 and transition that portion of the aquifer to MNA.

Note that the evaluation using Tool 5 considers the possibility of transformation of PCE to TCE as groundwater moves along the flow path; Tool 5 adds the concentrations of PCE and TCE together, but it compares the sum to the MCL for TCE alone. At this point in the evolution of the plume in the Ashumet Valley, the groundwater was aerobic and there was little prospect for biological reductive dechlorination of PCE to TCE.



**Figure 5-40. Projected concentrations at the point of compliance based on concentrations in well 95MW1172A at the time (2006) when extraction wells EW-1 and EW-2 were shut down.**

#### 5.4.8 Risk at Point of Compliance at the Time of Transition of EW-4 (2014)

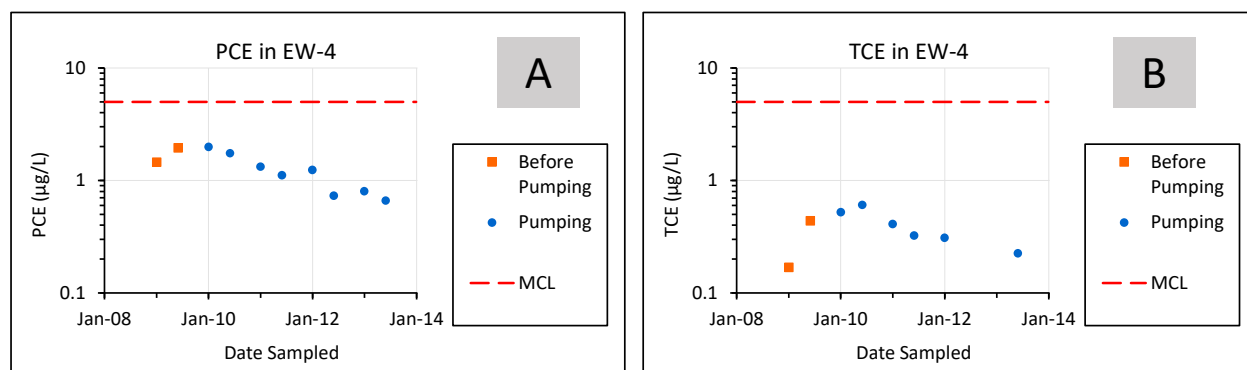
As discussed previously, extraction well EW-4 was installed at the distal portion of the plume in 2009 and shut down in 2014. **Figure 5-41** presents the concentrations of PCE and TCE in water from EW-4 (Extracted from Figure 5 of AFCEC (2015a)). The concentrations were below the MCLs before pumping began. The maximum concentrations were attained shortly after pumping began, and steadily declined over the following three or four years. Pumping was shut down in EW-4 in February 2014. The concentrations of PCE and TCE were always below the MCLs.

Data on concentrations of PCE and TCE in the Ashumet Valley plume in 2014, shortly after Extraction well EW-4 was shut down, are available in Table 2 of AFCEC (2015b). **Table 5-13** provides the concentrations of PCE and TCE in wells where PCE or TCE were detected.

**Table 5-13. Concentrations of PCE and TCE in monitoring wells and direct push samples in the Ashumet Valley in 2014.**

Well	Distance from 94MW0582C (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)
95MW1172A	6511	7/14/2014	1.70	0.20
USFW356134	8169	7/15/2014	27.00	5.00
95DP0236	8222	1/13/2014	31.00	8.10
USFW357139	8158	7/15/2014	26.00	4.60
95MW1232A	9781	7/14/2014	9.20	1.00
USFW375081	12661	7/14/2014	17.00	7.20
USFW443140	13124	7/15/2014	7.40	1.30
USFW436076	13870	7/24/2014	3.40	4.90
95MW1234C	13880	7/14/2014	21.00	6.30
USFW501102	15208	7/15/2014	17.00	7.60
USFW655075	15721	7/16/2014	3.10	1.50
USFW657078	15850	7/16/2014	3.40	1.10
95MW0104	17849	7/24/2014	3.10	2.40
USFW484023	18631	7/15/2014	3.80	1.20
EW-4	18871	6/1/2013	0.66	0.23
95MW0106	18855	7/24/2014	4.10	2.50
95PZ0003A	19318	7/16/2014	1.70	0.20
USFW497108	20520	7/24/2014	3.40	1.00





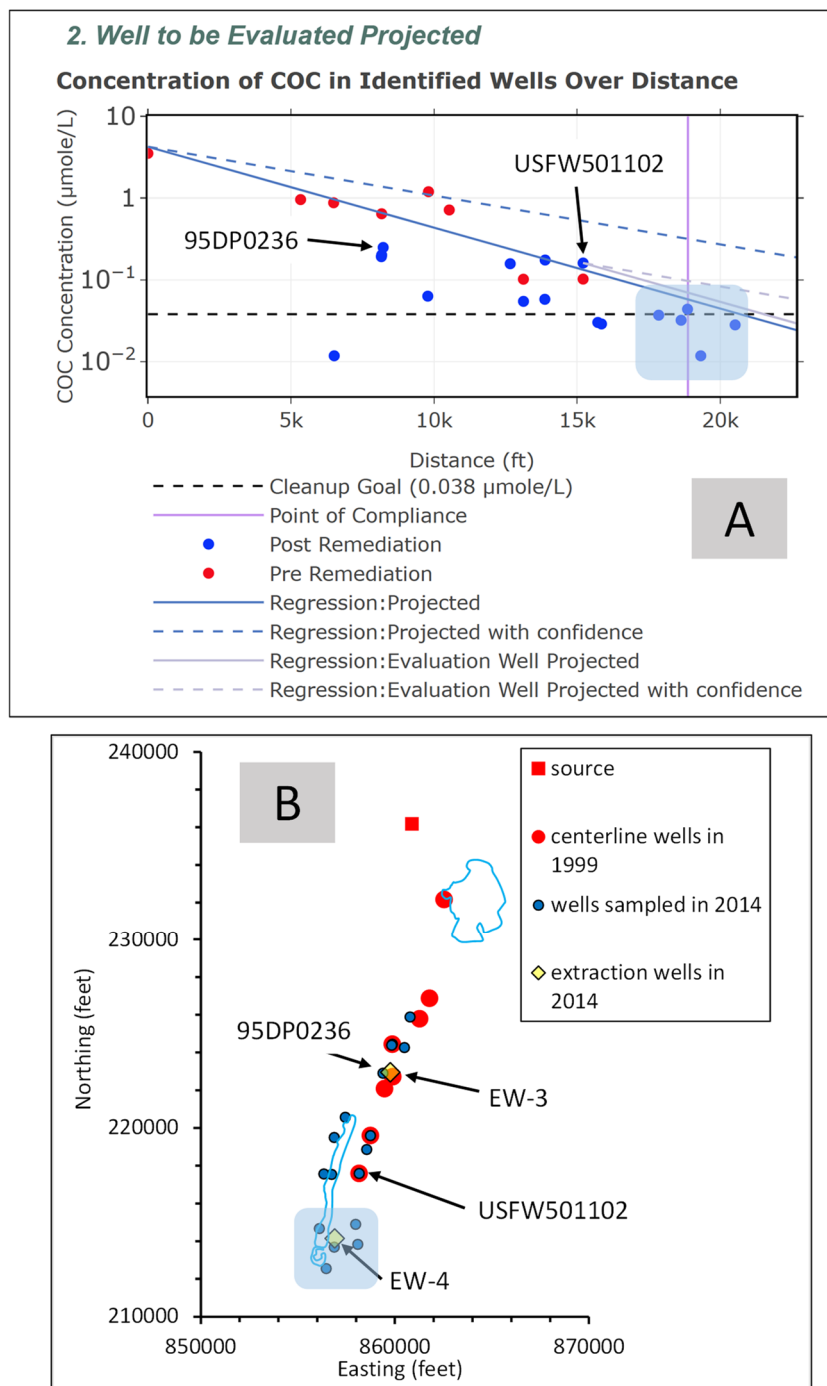
**Figure 2. Performance of Extraction Well EW-4.**

Panel A of **Figure 5-42** is the application of Tool 5 to evaluate the risk at the point of compliance of contamination remaining in the plume in 2014. The highest concentration of PCE or TCE was in direct push sample 95PD0236 upgradient of extraction well EW-3 (Panel B of **Figure 5-42**). However, the combined concentrations in well USFW501102 stood the highest compared to the solid blue trendline through the 1996/199 centerline wells and provided the greatest risk to the point of compliance. The solid faint blue line extending from USFW501102 extrapolates the rate of attenuation from the concentration in well USFW501102 in 2014. If the chlorinated alkenes attenuate in the same manner that they attenuated in the past along the centerline flow path, the concentration would be above the MCL for PCE and TCE when the groundwater reached the point of compliance. The dashed line extrapolates the slower one-tailed 95% confidence interval. There is roughly a 5% chance that the concentration could be more than three-fold higher than the MCL for TCE when the groundwater reached the point of compliance.

The blue patch in Panel A and Panel B of **Figure 5-42** identifies the wells surrounding extraction well EW-4, which for the purpose of this case study was taken to be the point of compliance. The concentrations in all five wells were below the MCL for PCE or TCE (blue shaded rows in **Table 5-12**) and the concentration of PCE and TCE in pumped water from extraction well EW-4 was below the MCLs (**Figure 5-41**). There was no benefit to water quality in the Ashmet Valley plume to continue to pump extraction well EW-4. However, the U.S. Air Force and the regulators acknowledged the possibility of unacceptable migration of contamination in the plume. An interim shut down agreement between the U.S. Air Force and the regulators set trigger criteria on concentrations of PCE and TCE in selected monitoring wells around EW-4. If the concentrations exceeded the trigger, they would assess resuming pumping at extraction well EW-4 (page 13 of AFCEC (2015a)).

If the only goal was to prevent migration of PCE and TCE past the point of compliance, it may have made sense to shut down extraction well EW-3. However, one of the goals for the site was to restore the groundwater quality in the entire plume. Well EW-3 was located just downgradient of direct push sample 95DP0236 (Panel B of **Figure 5-42**), which had the highest concentration of

PCE and TCE in the Ashumet Valley plume in 2014. It made sense to continue pumping extraction well EW-3.

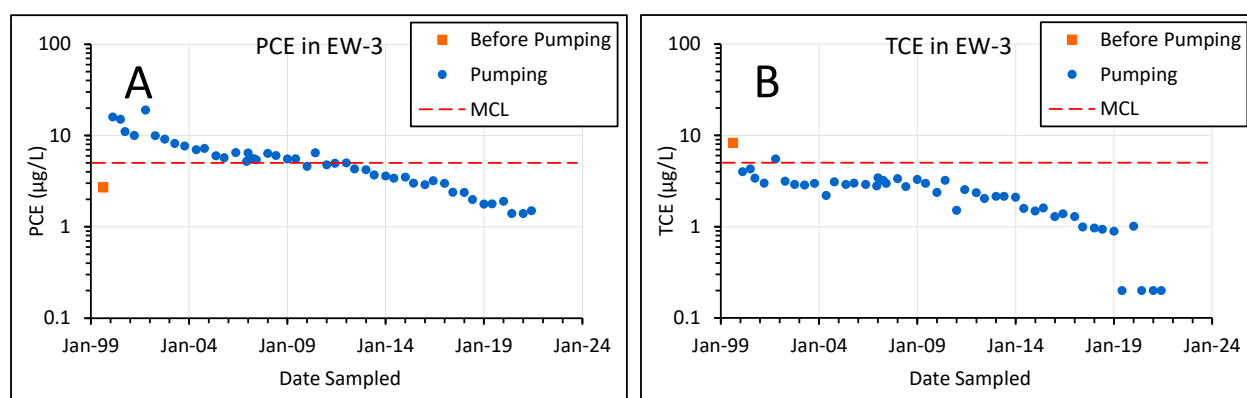


**Figure 5-42. Projected concentrations at the point of compliance based on concentrations in well USFW501102 at the time (2014) when extraction well EW-4 was shut down.**

#### 5.4.9 Risk at Point of Compliance at the Time of Transition of EW-3 (2021-2022)

Based on concentrations of PCE and TCE in monitoring wells when sampled in July 2021, the U.S. Air Force and its contractors recommended that extraction well EW-3 be shut down because the concentrations of PCE and TCE in monitoring wells in the capture zone of the extraction well were below the MCLs (AFCEC, 2022). The well was shut down on January 12, 2022.

From 2014 to 2022, extraction well EW-3 was the only extraction well operating to treat PCE and TCE in the Ashumet Valley plume. **Figure 5-43** provides data on concentrations of PCE and TCE in extraction well EW-3 over time (Extracted from Figure 5 of AFCEC (2015a)) and Figure 3 of Attachment A of AFCEC (2022). The concentrations of PCE and TCE showed slow but steady declines over time. There was no evidence of a plateau in concentrations. Concentrations of PCE were at or below the MCL by 2011 (Panel A of **Figure 5-43**), and concentrations of TCE were at or below the MCL by 2002 (Panel B).



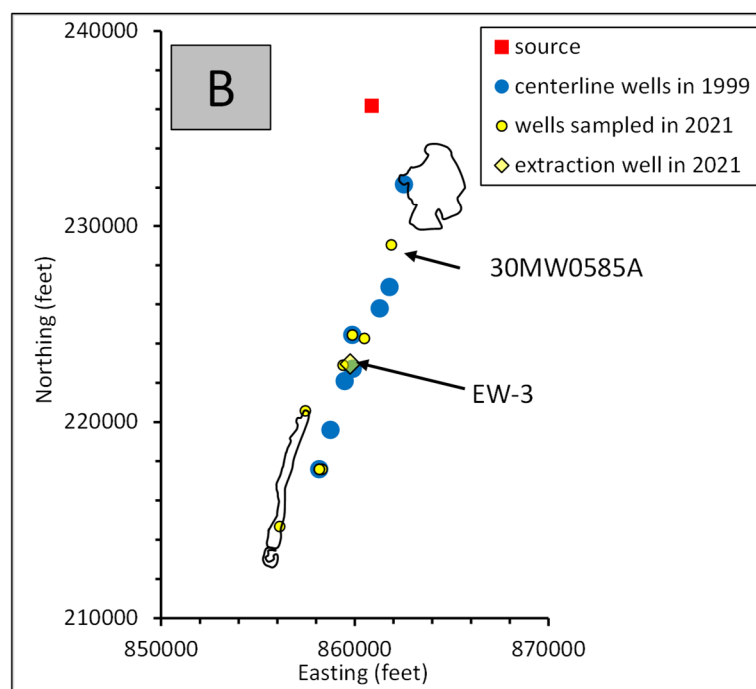
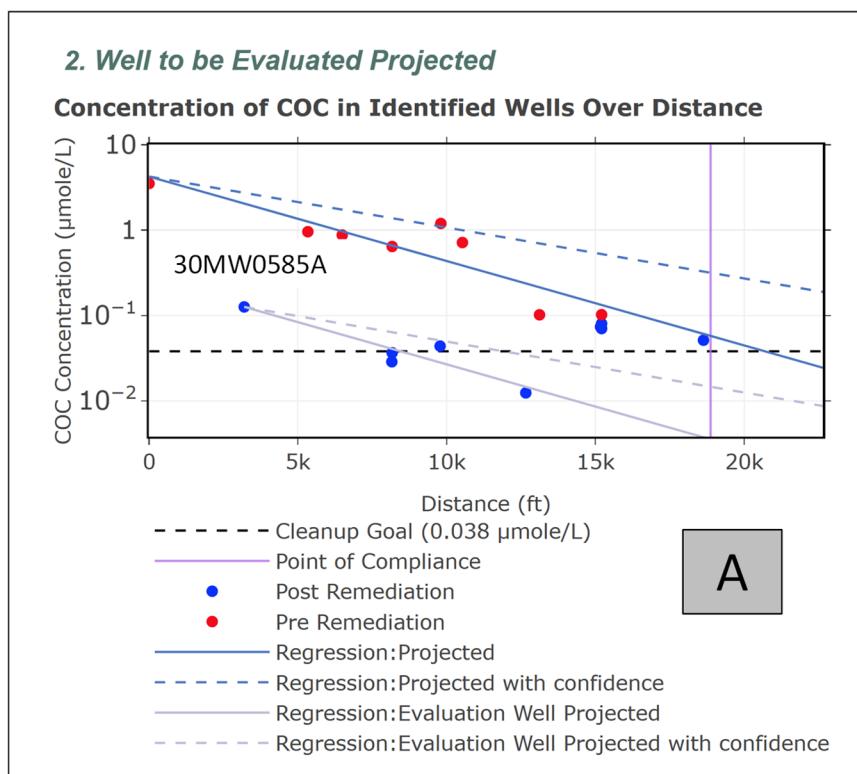
**Figure 5-43. Performance of Extraction Well EW-3.**

Data on concentrations of PCE and TCE in the Ashumet Valley plume in 2021, shortly after Extraction well EW-4 was shut down, are available in Table 2 of AFCEC (2022). **Table 5-13** provides the concentrations of PCE and TCE in the monitoring wells.

**Table 5-13. Concentrations of PCE and TCE in monitoring wells in the Ashumet Valley plume in 2021.**

Well	Distance from FTA-1 (feet)	Date Sampled	PCE (µg/L)	TCE (µg/L)
30MW0585A	7221	7/15/2021	3.20	14.00
USFW356134	11784	7/15/2021	4.80	1.00
USFW357139	11923	7/15/2021	4.50	<0.20
95MW1232A	13362	7/15/2021	7.00	<0.20
EW-3	13268			
USFW357081	15983	7/15/2021	1.80	<0.20
95PZ0002A	18765	7/15/2021	7.90	3.40
USFW501102	18780	7/15/2021	5.70	4.70
USFW501117	18780	7/15/2021	7.50	4.60
USFW484023	22029	7/15/2021	5.60	2.30

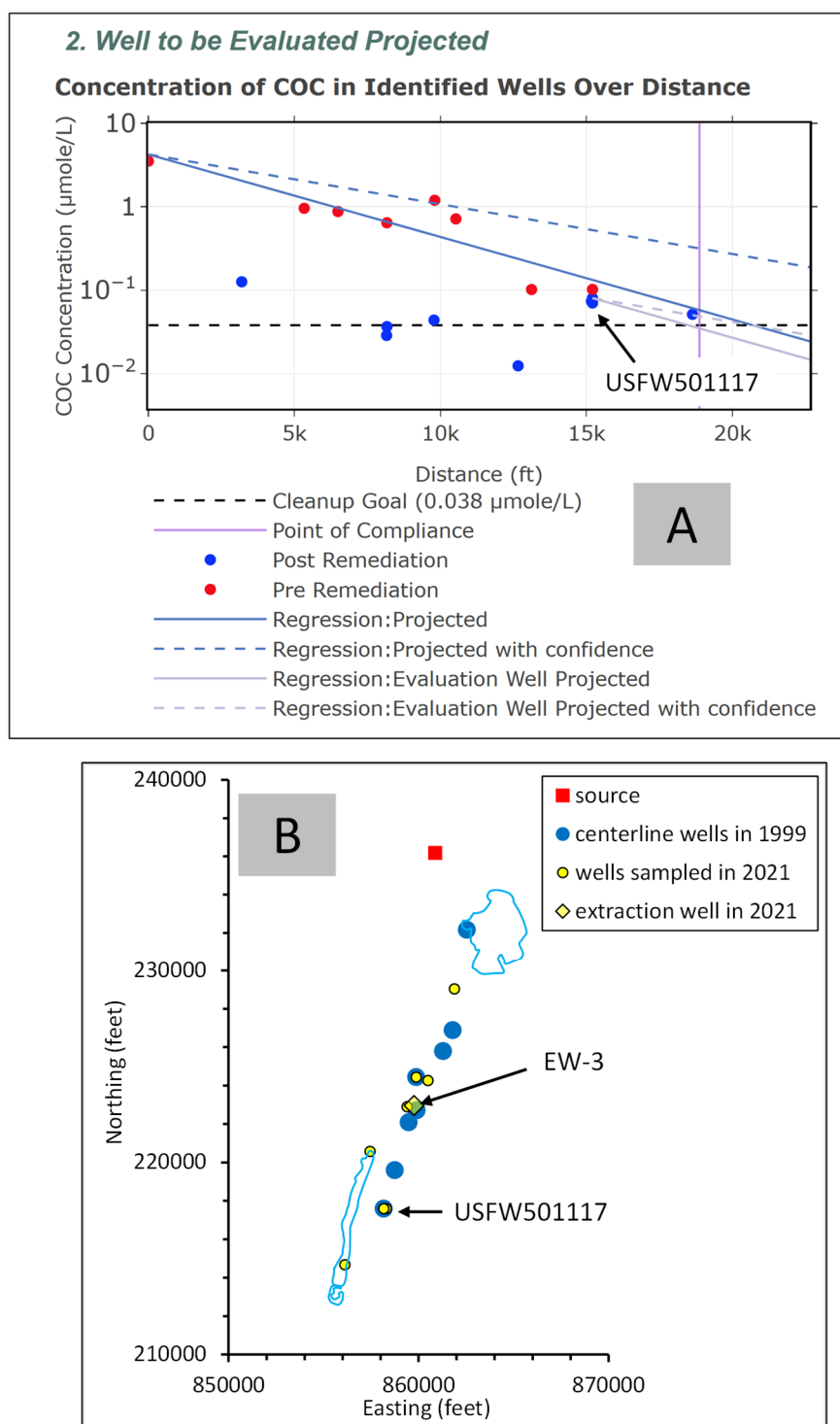
Panel A of **Figure 5-44** is the application of Tool 5 to evaluate the risk at the point of compliance of contamination remaining in the plume in 2021. The highest concentration of PCE and TCE upgradient of extraction well EW-3 was in well 30MW0585A (Panel A and Panel B of **Figure 5-44**). The solid blue line extending from well 30MW0585A extrapolates a rate of attenuation of 0.000241 per foot to the concentration in well 30MW0585A in 2021. If the chlorinated alkenes attenuate in the same manner that they attenuated in the past along the centerline flow path, the concentration would be well below the MCL for PCE and TCE when the groundwater reached the point of compliance. The dashed blue line extending from wells 30MW0585A extrapolates the slower one-tailed 95% confidence interval on natural attenuation. At 95% confidence, the concentration would still be well below the MCL for PCE and TCE when the groundwater reached the point of compliance.



**Figure 5-44. Projected concentrations at the point of compliance based on concentrations in well 30MW0585A at the time (2021) when extraction well EW-3 was shut down.**

Based on the evaluation provided by Tool 5, there is no evidence that the concentrations remaining in monitoring wells upgradient of extraction well EW-3 in 2021 posed a risk that contamination would reach the point of compliance at concentrations above the MCL.

Panel A of **Figure 5-45** continues the application of Tool 5 to evaluate the risk at the point of compliance of contamination remaining in the plume in 2021. The highest concentration of PCE and TCE downgradient of extraction well EW-3 was in well USFW50117 (Panel A and Panel B of **Figure 5-45**). The solid blue line extending from well USFW50117 extrapolating the rate of attenuation was barely below the MCL for PCE and TCE at the point of compliance. The dashed blue line extrapolating the slower one-tailed 95% confidence line for attenuation was slightly above the MCL at the point of compliance. Tool 5 provided no evidence that concentrations of TCE or PCE in groundwater downgradient of extraction well EW-3 should reach the point of compliance at concentrations above the MCLs. However, the evaluation indicates that there is a reasonable possibility that the assessment is not correct (because the predicted concentration at the 95% confidence level exceeds the MCL). This evaluation suggests that continued monitoring and evaluation is appropriate, and this approach has been taken at the site to our knowledge.



**Figure 3. Projected concentrations at the point of compliance based on concentrations in well USFW501117 at the time (2021) when extraction well EW-3 was shut down.**



#### 5.4.12 Summary Assessment and RTAI

The Ashumet Valley plume at JBCC has already undergone a transition to MNA that included shutting down portions of a groundwater extraction, treatment, and reinjection system that had long been used to manage the plume. This was based largely on monitoring data that showed that concentrations of the constituents of concern (chlorinated alkenes) were below cleanup goals and continuing to decline in many extraction wells. For the purposes of this case study, the following describes how the site could be evaluated using the stepwise process in the Summary Assessment (Tool 10) of the TA<sup>2</sup> Tool.

***Step 1 – Determine if the site meets the primary bright-line criteria:*** Site A met the applicable bright-line criterion for this site, which is that MNA could achieve the concentration goals by the time groundwater reached the downgradient point of compliance. Tool 5 provided a convenient means to evaluate the risk provided from contamination remaining in monitoring wells at the time that selected extraction wells were transitioned to MNA. The field-calibrated natural attenuation rate and plume projections in Tool 5 allow a simple evaluation of the risk that is not possible from a simple examination of concentration data in a table. These projections showed that the expected natural attenuation activity justified the decision to shut off two of the extraction wells nearer the source (EW-1 and EW-2) at the time. Furthermore, this same type of assessment showed that shutting off extraction wells that are located farther downgradient (EW-3 and EW-4) would be unlikely to result in concentrations above the cleanup goal at the point of compliance (although not at the 95% confidence level). The site is continuing to use portions of the extraction system to manage the plume, with a goal of reducing concentrations across the site below the cleanup levels. As such, the other bright-line criterion (remediation timeframe estimate) is also applicable for this site. In this case, this criterion is also met because MNA is actively contributing to concentration reductions and results in a remediation timeframe that is similar to the active remedy.

It is also worth noting that the bright-line criterion associated with meeting the cleanup goal at the point of compliance would not have been met prior to installing the active remedy. However, natural attenuation in the intervening years reduced source and plume concentrations to levels that suggested that groundwater extraction in portions of the plume was no longer needed, which justified the later transition to MNA.

***Step 2 – Establish the Remediation Transition Assessment Index for the site:*** The RTAI is based primarily on an evaluation of how site conditions and concentration trends would influence the expected performance of an active source remedy relative to more passive approaches like MNA. The Ashumet Valley plume was being actively managed using a groundwater pump-and-treat system, and no alternative remedial technology (besides MNA) was being considered (to our knowledge) at the time of transition.

An example of possible RTAI values generated by Tool 10 in the TA<sup>2</sup> Tool for this site are shown below in **Figure 5-46**. The results of Tool 1 yield an RTAI of 4 because multiple lines of evidence for asymptotic behavior could be established using data from the extraction wells. The plume

stability analysis in Tool 2 yielded an RTAI of 5 based on a confirmed decreasing concentration vs. time trends in relevant wells. The first RTAI value from Tool 4 (“Expected performance”) is a 1 because only a small concentration reduction is needed ( $<0.5$  order of magnitude) in order to achieve the cleanup goal across the site. Note that the RTAI in this tool is based on whether implementing an additional in situ remedy would be expected to achieve the concentration goal, which appears to be feasible. While this results in a low RTAI from this Tool 4 assessment, it does not imply that MNA would be unsuccessful in achieving the cleanup goal. The second RTAI value from Tool 4 (“Remedial Potential”) is a 3 based on an assumption that the site constraints to implementing common alternative remedial technologies are generally modest. The results of Tool 3 yield an RTAI of 1 because complete source removal would be predicted to result in a short remediation timeframe ( $<5$  years) for site-wide compliance with the cleanup goal. Finally, Tool 7 yields an RTAI of 2 because the scale of the site (including the depth of contaminated groundwater) would result in relatively high allocation of costs and resources to implement typical enhanced attenuation options.

For site managers, the RTAI values can be averaged to get a balanced impression of whether the site is ready to transition. In this case, the average value of 2.7 suggests that this site is a “fair candidate” or “typical candidate” for transitioning. This suggests that while additional in situ source remedies might be successful, a transition to MNA could also be warranted if there are specific factors (with higher RTAIs) that are weighted as more important than others. At this site, the plume stability and low concentrations suggested that additional source remediation was unnecessary (even if it was likely to be successful in reducing concentrations) and that MNA should be an efficient option moving forward. It is also important to note that the Tool 5 plume projections—which are part of the bright-line criterion in Step 1 and not part of the RTAI estimates—are the key driver at this site.

Tool	RTAI					Rationale
	Poor Candidate RTAI = 1	Fair Candidate RTAI = 2	Typical Candidate RTAI = 3	Good Candidate RTAI = 4	Strong Candidate RTAI = 5	
1. Asymptote (Tool 1)	1	2	3	4	5	The RTAI is higher if there are more Lines of Evidence that concentrations at the site are asymptotic.
2. Is my Plume expanding? (Tool 2)	I	PI	ST	PD	D	The RTAI is higher if key downgradient/sentinal well(s) exhibit stable or declining concentration trends.
3. Expected performance (Tool 4)	<0.5	0.5 to <0.75	0.75 to <1.25	1.25 to <2	≥2	The RTAI is higher for sites where a higher concentration is needed and may not be achievable based on the expected level of performance of remediation technologies.
4. Remedial Potential (Tool 4)	High	High-Mod	Moderate	Mod-Low	Low	The RTAI is higher for sites with challenging cleanup goals and difficult conditions. It is based on a similar methodology developed by ITRC for evaluating remediation potential.
5. How long? (Tool 3)	<5	5 to <10	10 to <25	25 to <50	≥50	The RTAI is higher for sites where additional source remediation does not result in short remediation timeframes. It is based on the estimated number of years to reach the cleanup goal after source remediation.
6. Enhanced Attenuation (Tool 7)	-	✓	-	-	-	The RTAI is higher for sites where EA technologies or approaches can be easily implemented. It is based on the depth and width of the area being targeted, which are used as proxies for cost and ease of installation.
Metric	2	1	1	1	1	

**Figure 5-46. Remediation Transition Assessment Index (RTAI) Results for the Ashumet Valley Plume.** Results were obtained using Tool 10 of the TA<sup>2</sup> Tool. Higher RTAI values support transitioning from active remedies to more passive remedies.

**Step 3 – Checklists:** As described above, the primary goal at this site was to transition away from an extensive groundwater extraction system and manage portions (or all) of the plume using MNA. To our knowledge, no other technologies were being considered besides MNA, so the RTAI values that are associated with implementing in situ alternatives are less important. The conclusion that concentrations would be expected to meet goals at downgradient receptors (using the concentration data that were available at the time of transitioning) was the most important consideration. Going step-by-step through these checklists is an optional task when using Tool 10 within the TA<sup>2</sup> Tool, but it is helpful in ensuring that all critical information is collected in support of identifying site-specific drivers for the TA. Like the other case studies presented in this report, the checklists would have supported the site’s decision to shut off extraction wells and transition to MNA.

## 6. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Transitioning to more passive, cost-effective remedial approaches like MNA may be feasible at many sites where active treatment technologies are in place or additional remediation is being considered. There is increasing evidence that these active technologies may not be able to achieve the desired concentration reductions and/or greatly shorten the remediation timeframe due to matrix diffusion and other issues related to site complexity. Several key conclusions from this research support this observation:

First, analysis of the California GeoTracker database revealed that pump-and-treat systems are being shut off at a majority of sites (77% of petroleum sites and 59% of chlorinated solvent sites), indicating transitions to passive management are feasible and occurring regularly. However, the average operating period before shutdown was 9.1 years, suggesting opportunities may exist to accelerate these transitions through more quantitative assessments.

Second, the research showed that historical concentration trends alone may be insufficient for predicting future performance, as demonstrated by the weak correlation between early and late-period attenuation rates. This highlights the importance of incorporating multiple lines of evidence, including plume stability analysis and natural attenuation capacity estimates, when evaluating transition potential.

Third, the case study applications demonstrated that matrix diffusion and other site complexities can limit the effectiveness of continued active treatment, while natural attenuation processes may achieve cleanup goals over similar timeframes. While there is no one-size-fits-all method for establishing whether it is appropriate to transition a site, the TA<sup>2</sup> Tool provided a quantitative framework for documenting these effects through multiple assessment modules.

While many RPMs and their consultants may already perform some elements of transition assessment at their sites, the TA<sup>2</sup> Tool provides several distinct advantages for the environmental remediation community:

1. The Tool serves as a comprehensive "one-stop shop" that presents the full spectrum of calculations, data analysis, statistics, modeling approaches, and key reference information in an intuitive interface. This allows RPMs and their teams to better understand the range of possible evaluation methods upfront when designing site-specific transition assessments.
2. The Tool's integrated data management system allows users to upload site monitoring data once and apply it across multiple analysis modules, reducing the initial barrier to conducting comprehensive transition assessments.
3. The Remediation Transition Assessment Index (RTAI) automatically synthesizes results from different analyses into a single metric, providing a systematic way to evaluate the relative strength of evidence supporting transition decisions.

4. The standardized framework promotes consistent terminology, data analysis, and modeling approaches across local, state, and federal regulatory stakeholders who have equal access to the Tool. This common technical language facilitates more productive discussions between regulated and regulatory communities regarding transition decisions.

These features transform what has historically been an inconsistent, site-by-site approach into a more streamlined, standardized process benefiting all stakeholders while complementing existing resources for site assessment. The streamlined approach will likely significantly reduce the time and cost for RPMs and their consultants to develop Remediation Transition Assessments. Overall the TA<sup>2</sup> Tool was developed to show how to gather quantitative and qualitative information that is relevant for a site-specific Transition Assessment. This tool compliments existing resources for site assessment, and it provides a technically sound framework to guide site management decisions.

During the development of this first-generation tool, several key areas were identified that may warrant additional research/development for future versions of the TA<sup>2</sup> Tool and Remediation Transition Assessment Process:

1. Development of improved statistical methods for analyzing concentration rebounds after transitioning from active remediation, particularly for sites with matrix diffusion effects;
2. Collection and analysis of additional case studies demonstrating successful transitions to passive management, especially for more complex sites with multiple contaminants or hydrogeologic conditions;
3. Integration of advanced diagnostic tools for natural attenuation processes into transition assessment frameworks, particularly for emerging contaminants;
4. Evaluation and demonstration of the successful implementation of enhanced attenuation approaches that could serve as "bridge" technologies between active treatment and MNA.

The TA<sup>2</sup> Tool represents an important step toward standardizing transition assessments, but continued refinement of these frameworks will be valuable as more sites consider moving from active to passive management strategies. Future work should focus on expanding the available case studies and technical resources to support data-driven transition decisions while maintaining protectiveness of human health and the environment.

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## APPENDICES

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## **APPENDIX A. SUPPORTING DATA**



SUID	COUNTY	BUSINESS NAME	CITY	LATITUDE	LONGITUDE	CASE TYPE	CaseOpenDate	STATUS	IssueType	STATUS DATE	PT	Site	SVL	Site	PTStartDate	PTEndDate	PTOpenDate	PTClosures	SVESStartDate	SVESEndDate	SVESPeriodYr	SVESRecur	EarliestOccurDate	PrimaryCOC
DO01000200	Yuba	Beale Air Force Base - Beale Air Force Base - Site 31 (SD-31)	Beale AFB	39.164584	-121.430075	Military Cleanup Site	10/15/2006	Completed - Case Closed	Closed	10/14/2014		x												
DO01000210	Yuba	Beale Air Force Base - Beale Air Force Base - Site 32 (SD-32)	Beale AFB	39.1477978	-121.4332473	Military Cleanup Site	10/15/2006	Open - Remediation	Open	11/7/2018		x												
DO01000270	Yuba	Beale Air Force Base - Beale Air Force Base - Site 33 (SD-33)	Beale AFB	39.1568370	-121.4341593	Military Cleanup Site	10/15/2006	Completed - Case Closed	Closed	6/6/2017		x												
DO01000300	Yuba	Beale Air Force Base - Beale Air Force Base - Site 18 (SD-18)	Beale AFB	39.1447723	-121.437723	Military Cleanup Site	10/15/2006	Open - Long Term Monitoring	Open	5/27/2019		x												
DO01000340	Yuba	Beale Air Force Base - Beale Air Force Base - SITE 10 (SD-10)	Beale AFB	39.1437743	-121.420414	Military UST Site	10/15/2006	Completed - Case Closed	Closed	10/14/2014		x												
DO01000360	Yuba	Beale Air Force Base - Beale Air Force Base - SITE 13 (SF-13)	Beale AFB	39.0886319	-121.423508	Military Cleanup Site	11/1/1989	Open - Remediation	Open	5/29/2008		x												
DO01000600	Yolo	Davis Tract/ Miller (McClure) - GROUNDWATER	Davis	38.6917539	-121.5817375	Military UST Site	11/1/1982	Closed - Case Closed	Closed	4/24/2015		x												
DO01002400	Monterey	Fort Ord - Fort Ord - Sites 12 and 12W	Monterey	36.8627995	-121.8150759	Military Cleanup Site	2/17/2009	Open - Remediation	Open	2/18/2010		x												
DO01002500	Monterey	Fort Ord - Fort Ord - Fitzsimms Army Airfield Fire Drill Area, On-Site 1E	Marina	36.80067239	-121.7882123	Military Cleanup Site	5/17/2009	Completed - Case Closed	Closed	5/14/2021		x												
DO01002190	Monterey	Fort Ord - OJLT - Fort Ord - OJLT	Monterey	36.86201824	-121.7783274	Military Cleanup Site	10/15/2006	Open - Remediation	Open	6/18/2020		x												
DO01003260	San Barbara	Vandenberg Space Force Base (formerly VAFB) - WFO13 Primary (formerly S Vandenberg AFB)	San Barbara	34.777958	-120.0480702	Military Cleanup Site	11/1/1978	Open - Remediation	Open	14/2018		x												
L1001295070	San Diego	POWAY LANDFILL	POWAY	32.9651089	-117.0184804	Land Disposal Site	11/1/1984	Open - Verification Monitoring	Open	4/30/2010		x												
L1000157696	San Diego	STORY ROAD LANDFILL	SAN JOSE	37.33262104	-121.8640373	Land Disposal Site	11/1/1982	Open - Verification Monitoring	Open	5/27/2019		x												
L1000177361	Solano	AQUA CLEAR FARMS FACILITY	RO YSTA	38.21030791	-121.8092538	Land Disposal Site	11/1/1998	Open - Remediation	Open	11/1/1998		x												
L1000819832	Monterey	CORT ORO	CORT ORO	37.1778863	-121.778863	Military Cleanup Site	11/1/1989	Open - Remediation	Open	11/1/1989		x												
L1000664190	San Diego	OCEANSIDE STREET LANDFILL	OCEANSIDE	33.19852172	-117.3665357	Land Disposal Site	11/1/1989	Open - ClosedWith Monitoring	Open	10/30/2014		x												
L1000736237	Sacramento	KEEFER ROAD - CLASS II SWDS	SLUGHHOUSE	38.520081	-121.201987	Land Disposal Site	4/1/1985	Open - Operating	Open	4/1/2020		x												
L1000801447	Sacramento	ELK GROVE CLASS II LANDFILL	ELK GROVE	38.41884833	-121.554429	Land Disposal Site	11/1/1982	Open - ClosedWith Monitoring	Open	11/1/1982		x												
L1000999999	Yolo	TEST LANDFILL PROJECT	DAVIS	37.33389337	-122.031234	Land Disposal Site	11/1/1989	Completed - Case Closed	Closed	14/2014		x												
SL000220074	San Jose	KINDER MORGAN (ISPP) SAN JOSE TERMINAL	SAN JOSE	37.352008	-121.912439	Cleanup Program Site	9/11/1986	Open - Verification Monitoring	Open	6/19/2019		x												
SL000020078	San Jose	TESORO GOLDEN EAGLE REFINERY	SAN JOSE	37.027338	-122.068877	Cleanup Program Site	15/01/2010	Open - Remediation	Open	15/01/2010		x												
SL000204100	Los Angeles	FORMER ALCOHOL COMPOSITE STRUCTURES	MONROVIA	34.14403208	-117.987851	Cleanup Program Site	1/17/1984	Open - Assessment & Interim Remedial Action	Open	1/30/1984		x												
SL000110043	Alameda	CHEVRON SUNKIL PIPELINE	SUNCL	37.5502129	-121.8599183	Cleanup Program Site	8/14/2005	Completed - Case Closed	Closed	12/15/2015		x												
SL000115951	Alameda	HOPWY CLEANERS	FREMONT	37.6756481	-121.863349	Cleanup Program Site	11/20/2011	Completed - Case Closed	Closed	6/16/2015		x												
SL000138427	Alameda	CENTER SUNKIL CLEANERS	FREMONT	37.560714	-122.010152	Cleanup Program Site	8/6/2003	Open - Verification Monitoring	Open	12/25/2015		x												
SL000157734	Alameda	DOLLAR CLEANERS	FREMONT	37.5437399	-121.9880736	Cleanup Program Site	2/23/2006	Open - Remediation	Open	4/10/2018		x												
SL000171788	Alameda	DOLLAR CLEANERS	OKLAND	37.835507	-122.263649	Cleanup Program Site	11/20/2005	Completed - Case Closed	Closed	9/14/2016		x												
SL000172282	Alameda	Flint Ink Corporation	Berkeley	37.87663082	-122.302816	Cleanup Program Site	11/1/2004	Open - Eligible for Closure	Open	10/22/2021		x												
SL000178130	Alameda	BIRTH BY SPORT OF OKLAND	FREMONT	37.835507	-122.302816	Cleanup Program Site	11/1/1991	Open - Remediation	Open	11/2/2016		x												
SL000179475	Alameda	DUMBAROT QUARRY - ASPHALT PLANT	FREMONT	37.539051	-122.077957	Cleanup Program Site	8/6/2003	Completed - Case Closed	Closed	11/23/2020		x												
SL000191553	Alameda	VALLEY CLEANERS (FORMER) at SYCAMORE SQUARE	DANVILLE	37.82695783	-121.943089	Cleanup Program Site	11/1/1981	Completed - Case Closed	Closed	3/10/2012		x												
SL000131338	Alameda	ARCADIA PARK	ARCADIA	37.7424138	-121.789207	Cleanup Program Site	11/1/1982	Completed - Case Closed	Closed	2/4/2008		x												
SL0001346154	Alameda	PG&E OKLAHOMA ROAD METERING STATION	ANTIOCH	37.907686	-121.795978	Cleanup Program Site	9/11/1986	Open - Remediation	Open	11/20/2013		x												
SL0001392884	Alameda	PVE STAR CLEANERS	SAN PABLO	37.937338	-122.358085	Cleanup Program Site	11/1/1989	Open - Remediation	Open	11/30/2011		x												
SL000247192	Alameda	KINDER MORGAN (FORMER SANTA FE PACIFIC PIPELINE PARTNERS)	REDWOOD CITY	37.825825	-115.569037	Cleanup Program Site	11/1/1986	Open - Remediation	Open	11/1/2005		x												
SL000334886	Lake	REDWOOD OIL COMPANY Clearlake Bulk Plant (Former)	CLEARLAKE	39.43715	-121.631351	Cleanup Program Site	2/6/2004	Open - Remediation	Open	2/23/2012		x												
SL000335089	Lassen	STABLE ENERGY BULK PLANT	SUNAVILLE	40.000303	-120.61983	Cleanup Program Site	11/1/2000	Completed - Case Closed	Closed	9/28/2015		x												
SL000341073	Lassen	ALLEG PETROLEUM BULK FACILITY	SUNAVILLE	40.3844984	-120.191715	Cleanup Program Site	9/14/2003	Open - Eligible for Closure	Open	9/24/2018		x												
SL0003701032	Los Angeles	CORBIN VALLEY CLEANERS	WOODLAND HILLS	34.172362	-118.564878	Cleanup Program Site	12/23/2005	Open - Verification Monitoring	Open	9/20/2018		x												
SL0003701026	Los Angeles	CITY OF INDUSTRY	INDUSTRY	33.17730258	-118.202549	Cleanup Program Site	11/1/1981	Open - Assessment & Interim Remedial Action	Open	11/1/1981		x												
SL0003705527	Los Angeles	Hudson Element LA	LOS ANGELES	34.0329558	-118.455777	Cleanup Program Site	3/30/1999	Open - Site Assessment	Open	12/20/2015		x												
SL0003709744	Los Angeles	FOUR SEASONS DRY CLEANERS & LAUNDRY	WEST HOLLYWOOD	34.0906703	-118.367715	Cleanup Program Site	2/20/2002	Open - Assessment & Interim Remedial Action	Open	3/18/2019		x												
SL0003723138	Los Angeles	COMPTON	COMPTON	34.0877138	-118.285849	Cleanup Program Site	11/1/1982	Open - Assessment & Interim Remedial Action	Open	31/2003		x												
SL0003726716	Los Angeles	DOC MILGROMS CLEANING CLINIC (FORMER)	NORTHRIDGE	34.234966	-118.5588312	Cleanup Program Site	6/27/2005	Open - Verification Monitoring	Open	11/2/2012		x												
SL0003746736	Los Angeles	CARSON-NORMANIDE PLAZA, LLC	TORRANCE	33.832414	-118.29643	Cleanup Program Site	3/20/2005	Open - Remediation	Open	10/3/2010		x												
SL0003746183	Los Angeles	LAIGLE RICKS SHOPPING CENTER	TORRANCE	33.830243	-118.216813	Cleanup Program Site	3/20/2005	Completed - Case Closed	Closed	9/28/2017		x												
SL0003752949	Los Angeles	HISCO PARKING LOT AREA	HAWTHORNE	33.8178313	-118.315562	Cleanup Program Site	5/30/2003	Open - Assessment & Interim Remedial Action	Open	3/8/2015		x												
SL0003760774	Los Angeles	FORMER UNITCO COMPANY (CNTAS)	LONG BEACH	33.78392	-118.150745	Cleanup Program Site	12/20/2006	Open - Remediation	Open	9/12/2013		x												
SL0003769591	Los Angeles	BEACON CO KOL'S	LONG BEACH	33.831167	-118.163691	Cleanup Program Site	4/5/2007	Open - Assessment & Interim Remedial Action	Open	2/18/2017		x												
SL0003778828	Los Angeles	ANDROPE PARTS COMPANY	LONG BEACH	33.800226	-118.154132	Cleanup Program Site	4/18/2003	Open - Remediation	Open	8/22/2011		x												
SL0003784576	Los Angeles	BEACON CO FACILITY	LONG BEACH	33.8054704	-118.152062	Cleanup Program Site	11/1/1998	Open - Remediation	Open	3/8/2011		x												
SL0003784173	Los Angeles	THE AEROSPACE CORP	LONG BEACH	33.815866	-118.341206	Cleanup Program Site	12/4/2008	Open - Site Assessment	Open	12/22/2009		x												
SL0003783535	Los Angeles	HOLLYWOOD PARK RACETRACK	INGLEWOOD	33.8055127	-118.381176	Cleanup Program Site	7/25/2006	Open - Assessment & Interim Remedial Action	Open	3/26/2010		x												
SL0003791177	Los Angeles	TELEVISIONS EAST PACIFIC	CHADRON	34.0358218	-121.833719	Cleanup Program Site	11/1/1989	Open - Remediation	Open	11/1/2005		x												
SL0003921176	Madera	MADRAM CLEANERS AND LAUNDRY	CHADRON	36.961349	-120.55533	Cleanup Program Site	10/21/2005	Open - Remediation	Open	21/2021		x												
SL0003936685	Madera	ULTRAMAR FORMER BEACON BULK PLANT NO. 13646	CHOWCHILLA	37.12224583	-120.257209	Cleanup Program Site	31/1994	Open - Remediation	Open	32/12/2018		x												
SL0004153816	Sanoma	PETALUMA AUTO CENTER UNIT NO. 3501	PETALUMA	38.5514041	-122.633569	Cleanup Program Site	11/3/2007	Completed - Case Closed	Closed	11/3/2007		x												
SL0004164109	Marin	JOHN CLEANERS	MILL VALLEY	37.905415	-122.5471249	Cleanup Program Site	5/4/2007	Open - Verification Monitoring	Open	6/8/2016		x												
SL0004556221	Mendocino	REINHART OIL INC. GASOLINE SPILL	UKIAH	39.173489	-123.209033	Cleanup Program Site	8/25/2004	Completed - Case Closed	Closed	9/19/2007		x												
SL000515536	Napa	Napa Garden Apartment	NAPA	38.293447	-122.340383	Cleanup Program Site	3/13/2000	Open - Site Assessment	Open	12/4/2020		x												
SL000546450	Orange	IDEAL UNIFORM RENTAL SERVICE	GARDEN GROVE	33.764245	-117.925738	Cleanup Program Site	7/10/2006	Open - Site Assessment	Open	7/10/2015		x												
SL0005595921	Orange	Orange County North Basin - HOWMET GLOBAL FASTENING SYSTEMS INC FULLERTON	FULLERTON	33.8947432	-117.8791772	Cleanup Program Site	2/6/1998	Open - Remediation	Open	12/9/2007		x												
SL0005597607	Orange	Orange County South Basin - CIRCUT CITY INDUSTRIES	SANTA ANA	33.78174009	-117.8501192	Cleanup Program Site	11/1/1982	Open - Remediation	Open	7/12/2013		x												
SL0005598255	Orange	RICON ELECTRONICS	IRVINE	33.698132	-117.8586	Cleanup Program Site	9/1/2001	Open - Remediation	Open	9/1/2001		x												
SL0005598178	Orange	REIN PROPERTIES CORPORATION	SANTA ANA	33.708275	-																			

SL1821126	Alameda	CERRO METAL PRODUCTS FACILITY (FORMER)	NEWARK	37 516887	-122 010353	Cleanup Program Site	1/1/1986	Open - Verification Monitoring	Open	5/12/019	x	12/11/93	6/21/2001	9	2		5/7/2012	TCE
SL1821127	Alameda	GEORGE PACIFIC - FORMER PETEERIL MOTOR CO	NEWARK	37 518839	-122 010352	Cleanup Program Site	1/1/1986	Completed - Case Closed	Closed	5/12/019	x	12/11/93	6/1/1986	8	2		5/25/2005	BZ
SL1820456	San Clara	FMC 328 West Bksway Road	SANTA CLARA	37 3448684	-121 854178	Cleanup Program Site	11/21/1991	Open - Remediation	Open	8/10/2020	x	11/12/2013	2/27/2015	23	1		6/14/2025	TCOA11
SL1820585	San Clara	BOURNS	SANTA CLARA	37 373778	-121 855113	Cleanup Program Site	7/1/1983	Open - Remediation	Open	10/22/2021	x	7/1/1985	3/30/2006	22	1		2/17/2005	TCE
SL1820588	San Clara	HEWLETT PACKARD	MOUNTAIN VIEW	37 3941151	-122 035225	Cleanup Program Site	1/1/1983	Completed - Case Closed	Closed	8/15/2020	x	1/1/1985	10/23/2001	3	1		4/15/2005	PCE
SL1821050	San Clara	LYNCH CIRCUITS	SUNNYVALE	37 3848319	-122 050124	Cleanup Program Site	6/21/1989	Open - Remediation	Open	12/22/2020	x	10/19/194	1/1/2001	8	1		5/9/2005	TCE
SL1821252	San Clara	UNION BANK	MOUNTAIN VIEW	37 36791838	-122 076002	Cleanup Program Site	5/17/1989	Completed - Case Closed	Closed	4/23/2013	x	10/31/1983	12/28/2000	8	1		4/6/2005	TCE
SL1821551	San Clara	MILITAS	NEWARK	37 41384798	-121 886284	Cleanup Program Site	1/1/1983	Open - Site Assessment	Open	8/12/018	x	1/1/1985	1/1/2004	20	1		10/24/2004	PCE
SL1821568	San Clara	BRANDENBURG-BUTTERS	SAN JOSE	37 339457	-121 866624	Cleanup Program Site	4/1/1963	Completed - Case Closed	Closed	6/30/2003	x	1/1/1995	1/1/1996	2	1		3/14/2005	ND
SL1821605	San Clara	LOCKHEED SUNNYVALE - LOCKHEED SUNNYVALE - PLANT ONE FACIL	SUNNYVALE	37 415935	-122 035328	Cleanup Program Site	8/1/1969	Open - Remediation	Open	3/12/2009	x	2/1/1992	2/1/1992	1	1		4/19/2005	TCE
SL1822018	San Clara	PARCHIL SEMICONDUCTOR SITE	PALO ALTO	37 40152203	-122 336645	Cleanup Program Site	8/1/1983	Open - Remediation	Open	8/15/2020	x	8/27/1986	6/1/2002	19	1		8/22/2005	TCOA11
SL1822362	San Clara	BENJAMIN ARDUE CO	SANTA CLARA	37 369553	-121 957932	Cleanup Program Site	1/1/1983	Open - Remediation	Open	5/12/2009	x	1/1/1987	6/1/1998	12	1		9/26/2005	BZ
SL1822624	San Clara	APPLIED MATERIALS ANDROS CAMPUS	SUNNYVALE	37 380703	-122 05521	Cleanup Program Site	7/2/1986	Open - Remediation	Open	7/2/1986	x	1/1/1995	9/30/2009	23	1		10/9/2007	TCE
SL1822762	Alameda	Livermore Acrylic Shopping Center/Milpitas Outlet Shopping Center	Livermore	37 48031953	-121 778987	Cleanup Program Site	8/5/2020	Open - Remediation	Open	8/5/2020	x	12/1/1988	2/1/1996	4	3		10/1/1995	PCE
SL1822820	San Clara	INTERIS (GE) Sunnyvale	SUNNYVALE	37 40965875	-121 964438	Cleanup Program Site	1/1/1981	Open - Remediation	Open	7/15/2021	x	1/1/1987	2/31/1995	9	1		5/24/2005	TCE
SL1822921	Alameda	HEXON 3071	SUNNYVALE	37 51251271	-121 968508	Cleanup Program Site	1/1/1983	Open - Remediation	Open	4/3/2009	x	1/1/1988	1/1/2004	7	1		6/8/2008	TCOA11
SL1823351	Alameda	H. B. FULLER CO.	NEWARK	37 524858	-122 029685	Cleanup Program Site	12/1962	Open - Verification Monitoring	Open	8/12/019	x	1/1/1996	1/1/1997	2	1		4/12/2006	TCE
SL1823654	Contra Costa	CHEVRON RICHMOND REFINERY	RICHMOND	37 63781773	-122 360959	Cleanup Program Site	7/1/1963	Open - Remediation	Open	31/2008	x	1/1/2000	1/1/2000	1	1		8/5/2008	BZ
SL1823655	Solano	Valero Benicia Refinery (Formerly Exxon)	BENICIA	38 96702403	-122 135738	Cleanup Program Site	7/1/1963	Open - Verification Monitoring	Open	6/19/2019	x	3/17/1994	6/1/2002	9	5		7/10/2005	MTBE
SL1823659	San Clara	844 East Charleston Road	PALO ALTO	37 42170503	-122 103308	Cleanup Program Site	1/17/1990	Open - Remediation	Open	1/1/2002	x	1/1/1999	1/1/2002	4	1		1/14/2010	TCE
SL18238113	Alameda	KIMS CLASSIC CLEANERS (FORMER)	NEWARK	37 548824	-122 050784	Cleanup Program Site	10/20/1995	Completed - Case Closed	Closed	58/2015	x	8/15/1992	12/30/2000	9	1		4/1/2007	4
SL1824135	San Clara	GE San Jose facility (former 175 Currier)	SANTA CLARA	37 37315847	-121 951914	Cleanup Program Site	1/1/1990	Open - Verification Monitoring	Open	5/22/2008	x	7/1/1988	6/30/1995	7	1		7/19/2005	TCE
SL1824150	San Clara	TEUTX PROPERTIES	SAN JOSE	37 3038889	-121 866231	Cleanup Program Site	8/1/2000	Open - Remediation	Open	8/9/2008	x	1/1/1984	1/1/1984	1	1		5/19/2009	TCE
SL1825071	San Mateo	MOUNTAIN VIEW	BRISBANE	37 7045003	-122 404075	Cleanup Program Site	8/1/1963	Completed - Case Closed	Closed	6/17/2022	x	1/1/1994	8/1/2007	14	1		1/11/2004	TCE
SL1825083	San Clara	SEMENS MICROELECTRONICS INC	SUNNYVALE	37 4159888	-122 084150	Cleanup Program Site	1/1/1987	Open - Remediation	Open	7/1/2002	x	1/1/2000	1/1/2000	1	1		5/22/2005	PCE
SL1825964	San Clara	999 AUSA CORPORATION	SUNNYVALE	37 38174565	-121 953058	Cleanup Program Site	1/1/1983	Open - Remediation	Open	6/1/2002	x	3/20/1996	12/4/2015	26	1		4/25/2014	ND
SL1827485	San Clara	CAE USA, Inc.	SUNNYVALE	37 3820568	-122 010511	Cleanup Program Site	12/1/1993	Open - Remediation	Open	6/13/2018	x	10/1/1990	3/1/2006	17	1		1/11/2004	TCE
SL1827598	San Clara	ONE AUSA CORPORATION - BOWERS AVE	SUNNYVALE	37 37974598	-121 910745	Cleanup Program Site	1/1/1986	Completed - Case Closed	Closed	6/28/2021	x	7/1/1988	6/28/2013	18	1		10/20/2006	TCE
SL1828706	San Clara	LOCKHEED	SUNNYVALE	37 40718732	-121 9891405	Cleanup Program Site	1/1/1962	Completed - Case Closed	Closed	2/14/2017	x	10/1/1984	1/1/1994	1	1		9/9/2005	TCE
SL1828707	San Clara	EXAR	SANTA CLARA	37 3786277	-121 988674	Cleanup Program Site	6/2/1982	Completed - Case Closed	Closed	10/7/2014	x	10/19/1988	4/26/2006	19	1		4/26/2006	TCE
SL1828711	Alameda	KACKESSION CHEMICAL FACILITY	SUNNYVALE	37 5686600	-122 014038	Cleanup Program Site	1/1/1983	Open - Remediation	Open	11/10/2018	x	1/1/1993	6/1/2001	1	1		6/1/2003	PCE
SL1829718	San Clara	HEWLETT - PACKARD Company	PALO ALTO	37 3942834	-122 1504164	Cleanup Program Site	12/1/1980	Open - Remediation	Open	5/19/2009	x	1/1/1990	12/1/1998	9	1		3/15/2005	TCE
SL1830720	San Clara	ELIANT & SIKNETICS	SUNNYVALE	37 378658	-122 02971	Cleanup Program Site	1/1/1995	Open - Remediation	Open	5/12/2022	x	1/1/1989	1/1/1999	1	1		5/17/2005	TCE
SL1831070	San Clara	TECHNIVAR/LALIGA	SANTA CLARA	37 41892566	-122 0881438	Cleanup Program Site	1/1/1974	Open - Remediation	Open	7/2/2008	x	3/1/1995	11/30/1997	3	1		2/27/2008	PCE
SL18314734	San Clara	KING'S COURT SHOPPING CENTER	LOS GATOS	37 3544822	-121 962472	Cleanup Program Site	1/1/1963	Open - Verification Monitoring	Open	11/22/2002	x	11/25/1995	11/21/2002	8	1		4/22/2010	PCE
SL18321741	San Clara	HEWLETT PACKARD COMPANY	PALO ALTO	37 424267	-122 139009	Cleanup Program Site	1/1/1983	Open - Long Term Management	Open	7/15/2021	x	1/1/1986	6/14/2003	8	1		6/27/2006	PCE
SL1832745	Alameda	RF Industries, Inc.	NEWARK	37 7385484	-122 191721	Cleanup Program Site	5/25/1984	Open - Eligible for Closure	Open	7/15/2021	x	1/1/1989	6/30/1995	7	1		8/1/2005	TCOA11
SL1832752	Alameda	Mil Temp (former) Facility	Oakland	37 811904	-122 151211	Cleanup Program Site	1/1/1980	Open - Verification Monitoring	Open	7/22/2021	x	6/1/2003	6/1/2003	1	1		3/21/2005	BZ
SL1833759	Alameda	WILSON ROAD - ROUNDHOUSE	OAKLAND	37 9757094	-122 262349	Cleanup Program Site	1/1/1963	Completed - Case Closed	Closed	8/2/2008	x	5/29/2009	5/29/2009	1	1		6/8/2008	PCE
SL18344764	Alameda	YOUNG'S CLEANERS	OAKLAND	37 7425983	-122 150327	Cleanup Program Site	3/9/1963	Open - Assessment & Interim Remedial Action	Open	11/10/2014	x	11/30/2014	11/23/2015	2	1		5/22/2007	PCE
SL1834766	San Clara	PHILIPS SEMICONDUCTORS - KIFER	SUNNYVALE	37 37534223	-122 0162106	Cleanup Program Site	7/2/1988	Completed - Case Closed	Closed	11/8/2017	x	12/1/1983	4/1/2009	27	1		10/6/2005	TCE
SL1834767	San Clara	PHILIPS SEMICONDUCTORS - ELIANT	SUNNYVALE	37 37051520	-122 0168152	Cleanup Program Site	7/2/1988	Completed - Case Closed	Closed	3/30/2020	x	1/1/1988	3/30/2020	1	1		3/30/2020	TCE
SL1835773	San Francisco	Kaiser Permanente SF Med Ctr - Offrnat Site	San Francisco	37 7628021	-122 4397138	Cleanup Program Site	10/31/1991	Open - Remediation	Open	10/31/1991	x	10/1/1991	3/30/2013	23	2		3/8/2006	PCE
SL1836785	San Mateo	FEDERAL MOGUL SITE (FORMER)	REDWOOD CITY	37 48831162	-122 215307	Cleanup Program Site	1/1/1994	Open - Assessment & Interim Remedial Action	Open	9/23/2015	x	1/1/1986	6/1/2000	15	1		12/4/2013	TCE
SL1836786	Alameda	Redwood City	Redwood City	37 48831162	-122 215307	Cleanup Program Site	1/1/1994	Open - Long Term Management	Open	9/23/2015	x	1/1/1986	6/1/2000	15	1		12/4/2013	TCE
SL1838505	San Mateo	former BARON-BLAKELEE (Purue)	BELMONT	37 52025538	-118 375193	Cleanup Program Site	3/20/1994	Open - Remediation	Open	6/14/2004	x	8/1/2006	5/7/2007	2	1		3/27/2008	TCOA11
SL18411303	Los Angeles	ALCO SIGNAL (PARK ONE) - L.A.	LOS ANGELES	33 94897349	-118 379416	Cleanup Program Site	3/1/1994	Open - Remediation	Open	10/30/2014	x	8/1/1990	10/30/2013	24	1		8/5/2005	TCOA11
SL18411384	Los Angeles	TRW SPACE & DEFENSE - HAWTHORNE	HAWTHORNE	33 90083146	-118 379416	Cleanup Program Site	8/1/1994	Open - Remediation	Open	8/12/2013	x	8/12/2013	8/12/2013	1	1		8/5/2005	TCE
SL18421315	Los Angeles	ALCOA COMPOSITES, INC.	LOS ANGELES	33 91050762	-118 273019	Cleanup Program Site	6/19/1996	Open - Remediation	Open	10/1/1999	x	10/1/1999	10/14/2014	16	2		4/12/2005	PCE
SL18431416	Los Angeles	HAWTHORNE	LOS ANGELES	33 91050762	-118 273019	Cleanup Program Site	6/19/1996	Open - Assessment & Interim Remedial Action	Open	5/18/2020	x	7/1/1993	8/1/2002	1	1		8/24/2012	PCE
SL18431420	Los Angeles	WRIGHT TERMINAL	LOS ANGELES	33 91286737	-118 391593	Cleanup Program Site	7/1/1996	Open - Remediation	Open	3/30/2000	x	3/13/1998	3/1/1999	3	1		10/31/2007	MTBE
SL184401423	Los Angeles	COMB INSPECTION, INC. (FORMER)	LOS ANGELES	33 99950379	-118 131154	Cleanup Program Site	8/1/1996	Completed - Case Closed	Closed	3/12/2018	x	10/1/1998	7/1/2002	5	1		3/11/2005	PCE
SL184601433	Los Angeles	CHOC BEACH	LOS ANGELES	33 99950379	-118 131154	Cleanup Program Site	8/1/1996	Completed - Case Closed	Closed	3/30/2014	x	10/1/1998	7/1/2002	5	1		3/11/2005	PCE
SL184601448	Los Angeles	LEACH CORPORATION FACILITY	LOS ANGELES	33 9870814	-118 265842	Cleanup Program Site	1/1/1967	Open - Assessment & Interim Remedial Action	Open	3/26/2010	x	11/1/1996	2/1/1999	4	1		10/3/2006	TCE
SL18471456	Los Angeles	LEGGETT & PLATT FACILITY	WHITTIER	33 73564177	-118 474894	Cleanup Program Site	6/24/1996	Open - Assessment & Interim Remedial Action	Open	5/1/1997	x	6/15/2009	10/20/2013	5	1		3/8/2005	TCE
SL18471458	Los Angeles	FORMER PRESCO SITE	WHITTIER	33 8834333	-118 464487	Cleanup Program Site	1/1/20/1991	Open - Site Assessment	Open	11/26/2011	x	8/1/1996	10/1/2000	1	1		8/1/1997	PCE
SL184801469	Los Angeles	FAZO CLEANERS	WOODLAND HILLS	34 15949129	-118 634398	Cleanup Program Site	4/1/1967	Open - Remediation	Open	6/30/2002	x	8/27/1997	5/8/1998	2	1		3/22/2010	PCE
SL185072803	Placer	FINE PARTICLES TECHNOLOGY CORP	AUBURN	38 56131598	-121 078951	Cleanup Program Site	1/1/1969	Open - inactive	Open	12/6/2017	x	2/25/1997	2/25/1997	1	1		6/23/2005	PCE
SL18509284	Merced	GENERAL ELECTRIC CO - KENDALL SITE	MERCED	38 262214	-120 4157078	Cleanup Program Site	1/1/1983	Open - Remediation	Open	7/8/2018	x	8/27/1986	1/1/1986	1	1		8/2/2005	TCE
SL18510285	San Joaquin	UNION PACIFIC RAILROAD - TRACY YARD	TRACY	37 3710616	-121 4156179	Cleanup Program Site	3/4/1987	Open - Remediation	Open	2/12/2013	x	1/1/1992	11/2/2007	16	1		12/1/2000	12/1/2000
SL18516248	Tulare	COOPER POWER SYSTEMS FACILITY (Imr McGraw-Edison)	VEALUA	36 2411706	-121 4521764	Cleanup Program Site	1/1/1986	Open - Remediation	Open	7/8/2018	x	1/1/1993	1/1/1993	1	1		10/18/2011	TCE
SL18516260	Merced	COOPER POWER SYSTEMS FACILITY (Imr McGraw-Edison)	MERCED	37 3325294	-120 528754	Cleanup Program Site	1/1/1986	Open - Remediation	Open	2/5/2009	x	4/28/2008	4/28/2008	1	1		4/28/2008	TCE
SL185402912	Sacramento	SOUTHGATE NRG POWER CLEANERS	SACRAMENTO	38 49683717	-121 449591	Cleanup Program Site	12/1/1989	Open - Remediation	Open	6/17/2								

SL04051612	Los Angeles	CAMEO CLEANERS	LANO ANGELS	34.02082187	-11.334185	Cleanup Program Site	1/18/1996	Open - Remediation	Open	3/1/2010	x	3/1/2010	2/20/2011	2	1	3/8/2016	TCE	
SL04051613	Los Angeles	GATX - GX 145 PIPELINE	RANCHO DOMINGUEZ	33.86037344	-11.2161338	Cleanup Program Site	3/9/2007	Open - Remediation	Open	3/9/2007	x	1/13/1999	2/1/2006	8	1	9/15/2005	BZ	
SL04051614	Los Angeles	LA 18000 PLATING	LA 18000 PLATING	33.18891222	-11.6891222	Cleanup Program Site	6/17/2003	Open - Inactive	Open	6/17/2003	x	7/1/2005	3/2/2010	1	1	3/2/2010	PCE	
SL04051615	Los Angeles	GATX - GX 190 PIPELINE RELEASE AREA	Carson	33.81406408	-11.2572812	Cleanup Program Site	5/15/2000	Open - Remediation	Open	11/8/2015	x	6/1/2002	5/1/2008	7	1	3/6/2006	MTBE	
SL04061647	Los Angeles	BONNIE'S COURTESY CLEANERS	CARSON	33.8340436	-11.277562	Cleanup Program Site	5/5/1999	Open - Site Assessment	Open	4/20/2020	x	8/28/2002	7/21/2004	3	1	9/4/2020	MTBE	
SL04061648	Los Angeles	38.980000 PLATING (FORMER)	LA 18000 PLATING	33.18891222	-11.6891222	Cleanup Program Site	6/17/2003	Open - Remediation	Open	6/17/2003	x	7/1/2005	3/2/2010	1	1	3/2/2010	BZ	
SL04071653	Ventura	GILSON STATION TRANSDUCER (FORMER)	OXNARD	34.17758336	-11.164543	Cleanup Program Site	1/11/1995	Open - Remediation	Open	6/30/2002	x	1/1/1998	11/2/2002	5	2	12/27/2011	TCE	
SL04071669	Los Angeles	BP CHEMICALS (HTCO)	GARDENA	33.9085787	-11.3043498	Cleanup Program Site	1/1/1996	Open - Remediation	Open	12/7/2017	x	6/1/2004	12/3/2009	6	3	12/24/2005	TCE	
SL04171660	Los Angeles	UNION PACIFIC RAILROAD - CORNFELD VAD	LOS ANGELES	34.06211919	-120.329323	Cleanup Program Site	3/1/1999	Open - Verification Monitoring	Open	10/21/2012	x	6/1/2004	12/3/2009	6	3	12/24/2005	TCE	
SL04081661	Los Angeles	CLOPAY CORP.	RANCHO DOMINGUEZ	33.85737302	-11.2897578	Cleanup Program Site	1/1/1996	Open - Assessment & Interim Remedial Action	Open	7/12/2010	x	1/12/1999	4/15/2000	2	1	3/30/2006	PCE	
SL04081665	Los Angeles	CERRO METAL PRODUCTS CO.	PARAMOUNT	33.8965046	-11.1665689	Cleanup Program Site	3/1/1996	Open - Assessment & Interim Remedial Action	Open	6/1/2006	x	3/24/2010	3/24/2010	1	1	12/1/2005	TCE	
SL04092231	Los Angeles	Novetta Industrial Park	Novetta Industrial Park	33.889445	-11.046919	Cleanup Program Site	3/1/1996	Open - Remediation	Open	5/2/2011	x	3/1/2003	12/3/2010	8	1	3/2/2006	PCE	
SL04081725	Los Angeles	AVIATION INGLEWOOD (FORMERLY BODYCOTE HUNDLERTER)	INGLEWOOD	33.9534371	-11.3747461	Cleanup Program Site	1/18/1999	Open - Assessment & Interim Remedial Action	Open	6/30/2000	x	3/23/2010	3/24/2010	1	2	2/6/2008	PCE	
SL04081750	Los Angeles	BRONX INDUSTRIAL PROPERTY	CARSON	33.84442028	-11.2554562	Cleanup Program Site	3/7/2000	Open - Remediation	Open	10/31/2013	x	12/1/2001	12/1/2001	1	1	6/25/2015	PCE	
SL04081751	Los Angeles	BELLFLOW FLOWERS	INGLEWOOD	33.88475200	-11.1255665	Cleanup Program Site	3/1/1996	Open - Verification Monitoring	Open	6/1/2006	x	8/14/2004	8/14/2004	1	1	6/25/2015	PCE	
SL04081752	Los Angeles	THE DORADO CLEANER	LONG BEACH	33.8187205	-11.0695007	Cleanup Program Site	10/22/1998	Open - Verification Monitoring	Open	2/24/2002	x	7/20/2002	3/20/2004	3	1	6/30/2008	TCE	
SL04081753	Los Angeles	FORMER ATLAS (FORMER ROTOFLOW)	GARDENA	34.90196119	-11.2651798	Cleanup Program Site	1/1/1996	Open - Remediation	Open	12/1/2012	x	6/1/2004	12/3/2009	6	3	12/24/2005	TCE	
SL04081754	Los Angeles	ALL-TEX KNOX CORPORATION	LA MIRADA	33.877602	-11.0195005	Cleanup Program Site	1/18/1973	Open - Assessment & Interim Remedial Action	Open	2/1/2017	x	2/1/2011	3/31/2015	11	1	12/12/2005	TCE	
SL04081755	Los Angeles	MOBI, MA PIPELINE	LOS ANGELES	33.9452163	-11.2322199	Cleanup Program Site	5/8/2000	Open - Assessment & Interim Remedial Action	Open	3/26/2010	x	1/11/2008	1/11/2008	1	1	3/14/2005	BZ	
SL04082290	Los Angeles	CONDO APARTMENTS	LOS ANGELES	33.9175204	-11.2380123	Cleanup Program Site	1/1/1996	Open - Remediation	Open	1/1/2000	x	1/2/2001	4/1/2000	1	1	3/2/2006	BZ	
SL04082291	Los Angeles	UNIONGALP TANK FARM SITE (former)	NORWALK	33.9074607	-11.087664	Cleanup Program Site	2/1/2000	Open - Assessment & Interim Remedial Action	Open	10/28/2009	x	5/22/2000	7/1/2002	3	1	3/14/2005	BZ	
SL05012989	San Joaquin	NESTLE USA - BEVERAGE DIVISION, INC FACILITY	RIPON	37.73805503	-121.124781	Cleanup Program Site	1/1/1998	Open - Remediation	Open	7/24/2017	x	6/1/1986	8/19/86	1	1	10/27/2005	TCE	
SL05012990	San Joaquin	WAMAR (WAMAR SERVICES) FORMER ATLAS	HANFORD	36.76386909	-11.6652626	Cleanup Program Site	1/1/1998	Open - Remediation	Open	7/24/2017	x	12/11/96	12/11/96	1	1	12/1/2005	PCE	
SL05052426	Kern	ULTRAMAR, FORMER BEACON OIL	HANFORD	36.73207777	-11.6259232	Cleanup Program Site	12/15/1987	Open - Remediation	Open	2/21/2013	x	12/14/2001	1/23/2010	10	4	12/27/2005	BZ	
SL05062467	Kern	CHEVRON USA AKKA CHEVRON REFINERY & WAIT TANK TRAC	BAKERSFIELD	35.4238	-113.0087	Cleanup Program Site	5/1/1995	Open - Remediation	Open	7/12/2013	x	1/1/1996	1/1/1996	1	2	4/26/2005	BZ	
SL05013297	San Joaquin	TRACY, SACRAMENTO (FORMERLY) FARM	TRACY	36.572195	-121.510594	Cleanup Program Site	1/1/1996	Open - Remediation	Open	1/1/2011	x	1/1/2000	1/1/2000	1	1	3/29/2005	PCE	
SL05013298	San Joaquin	UNION VILLAGE SHOPPING CENTER	STOCKTON	36.91156684	-121.320602	Cleanup Program Site	9/1/1993	Open - Remediation	Open	10/8/2019	x	1/1/2001	1/1/2001	1	1	6/7/2005	PCE	
SL05013299	San Joaquin	CHEVRON PIPELINE CO - CORRAL COLUMBIA ROAD	TRACY	37.751291	-121.452018	Cleanup Program Site	1/1/1996	Completed - Case Closed	Open	9/21/2007	x	6/1/1997	11/1/1997	1	1	11/1/1997	MTBE	
SL05019470	Tulare	SPRAGUE ELECTRIC CO. (FORMER)	VISALIA	36.2678	-118.3159	Cleanup Program Site	10/1/1993	Open - Verification Monitoring	Open	4/18/2016	x	6/1/2009	9/15/2015	1	1	5/23/2005	TCE	
SL05024272	Kern	SUNLAND REFINING CORPORATION	BAKERSFIELD	35.3755916	-119.091102	Cleanup Program Site	3/23/1990	Open - Remediation	Open	5/28/2009	x	3/22/1996	12/3/2013	18	2	3/21/2006	BZ	
SL05014212	San Joaquin	Bakersfield Refinery	Bakersfield	36.3803382	-119.071202	Cleanup Program Site	1/1/1996	Open - Remediation	Open	3/22/2010	x	1/1/1996	1/23/2011	16	4	3/21/2006	MTBE	
SL05036307	San Joaquin	DEUEL OILQUANDY INSTITUTION - Fire Pit	TRACY	37.74901715	-121.327453	Cleanup Program Site	1/12/1993	Open - Remediation	Open	1/1/2018	x	5/15/2002	5/15/02	1	1	3/16/2005	BZ	
SL05037308	San Joaquin	KEMP H&H Petroleum Pipeline Release	HOLT	37.0230059	-121.45309	Cleanup Program Site	2/1/1986	Open - Verification Monitoring	Open	9/7/2009	x	8/28/1988	8/28/1988	1	1	3/16/2005	PCE	
SL05037309	San Joaquin	CONTRA COSTA	BREYER BLVD	37.929184	-121.7231125	Cleanup Program Site	1/1/1996	Completed - Case Closed	Open	8/10/2011	x	12/1/1996	12/1/1996	1	1	3/2/2006	BZ	
SL05041312	Yolo	KEMP FOX Road Petroleum Pipeline Release	WISCONSIN	38.3768804	-121.804547	Cleanup Program Site	1/1/1993	Open - Remediation	Open	4/27/2001	x	1/1/2000	1/1/2000	3	2	1/15/2005	MTBE	
SL05042031	Yolo	Union USA Inc. (Formerly VAN WATERS & ROGERS INC)	WEST SACRAMENTO	38.3963804	-121.513454	Cleanup Program Site	1/1/1996	Open - Verification Monitoring	Open	6/1/2000	x	2/1/1995	2/1/1995	5	1	9/1/2007	PCE	
SL05042032	Yolo	JR. SMIT, WYNTON FACILITY	WINTON	37.3778667	-120.814649	Cleanup Program Site	1/1/1996	Open - Remediation	Open	6/1/2000	x	1/1/2000	1/1/2000	1	1	9/1/2007	PCE	
SL05074285	San Joaquin	LEVINSON PROPERTY (ROCKWELL FERTILIZER CORP)	PORTERVILLE	36.0930568	-119.037308	Cleanup Program Site	1/13/1987	Completed - Case Closed	Open	11/22/2019	x	5/1/1995	5/1/1995	1	1	5/1/2005	PCE	
SL05074286	San Joaquin	SACRAMENTO WAREHOUSE	SACRAMENTO	38.454258	-121.47845	Cleanup Program Site	1/1/1996	Completed - Case Closed	Open	7/28/2019	x	3/5/2002	3/14/2004	8	2	8/20/2005	MTBE	
SL05091426	Kern	CHEVRON USA BULK FUEL PLANT (FORMER)	TEHACHAPI	35.13279	-118.441196	Cleanup Program Site	1/1/1992	Completed - Case Closed	Open	10/4/2018	x	10/6/2002	9/15/2004	1	1	3/22/2005	BZ	
SL05094267	Kern	MOBI, BULK PLANT (FORMER)	HANFORD	36.3528	-119.6369	Cleanup Program Site	3/28/1995	Completed - Case Closed	Open	9/20/2018	x	2/1/2000	2/1/2000	1	1	9/23/2002	MTBE	
SL05094268	San Bernardino	VALLEY RAILWAY - FORMER BARSTOW DIESEL SHOPS	BARSTOW	34.0689091	-117.9196	Cleanup Program Site	1/1/1996	Open - Assessment & Interim Remedial Action	Open	8/22/2005	x	4/8/2010	4/8/2010	1	1	3/29/2005	BZ	
SL05065823	San Bernardino	CALNEV BARSTOW TERMINAL	DAGGETT	34.876081	-116.885665	Cleanup Program Site	9/1/1992	Completed - Case Closed	Open	2/15/2015	x	12/1/2007	12/1/2007	1	1	6/12/2005	MTBE	
SL05062387	San Bernardino	WELDON CHEMICAL	RALTO	34.0594	-117.36226	Cleanup Program Site	12/1/1987	Open - Remediation	Open	3/1/2002	x	1/1/1983	1/1/1993	1	1	12/4/2005	MTBE	
SL05062388	San Bernardino	WELDON CHEMICAL	WELDON LOCK	33.73891758	-118.0330502	Cleanup Program Site	1/1/1996	Open - Remediation	Open	6/1/2000	x	3/1/1996	3/1/1996	1	1	5/31/2005	PCE	
SL05062389	San Bernardino	GALLADE CHEMICAL INC.	SANTA ANA	33.7188923	-117.8547513	Cleanup Program Site	10/3/1990	Open - Remediation	Open	4/21/2006	x	5/10/2002	6/30/02	23	6	11/20/2005	3/7/2005	TCE
SL05064396	San Bernardino	ALGER MANUFACTURING COMPANY	ONTARIO	34.0559386	-117.599328	Cleanup Program Site	5/1/1992	Open - Assessment & Interim Remedial Action	Open	5/22/2017	x	10/23/2000	10/23/2000	1	1	3/29/2013	PCE	
SL05064397	San Bernardino	CONCRETE PUMP STATION - SANTA FE PACIFIC RAILROAD PIPELINE	CAMP PIERCE	37.353528	-118.0195	Cleanup Program Site	5/1/1996	Completed - Case Closed	Open	1/1/2018	x	1/1/1996	1/1/1996	1	1	1/1/2005	MTBE	
SL05091430	San Diego	Marine Holdings Inc. (Former SIGMET ARMORLINE, INC.)	SAN MARCOS	34.1412716	-117.158874	Cleanup Program Site	8/2/1992	Completed - Case Closed	Open	13/1/2014	x	7/1/1995	3/1/1997	3	1	4/7/2005	BZ	
SL05091431	San Diego	Palmar Plant	Escondido	33.1527373	-117.088534	Cleanup Program Site	3/8/1996	Open - Inactive	Open	11/6/2012	x	10/31/2002	9/26/2004	3	1	8/13/2012	TCE	
SL05091432	San Diego	TECH AIR Aerospace & ELECTRONICS FACILITY	EL CAJON	32.814488	-116.951463	Cleanup Program Site	1/1/1996	Open - Remediation	Open	1/1/2018	x	10/31/2012	11/12/2003	2	1	10/31/2005	MTBE	
SL05091433	San Diego	HERBON ELECTRONICS SITE (FORMER)	ESCONDIDO	33.1297310	-117.126515	Cleanup Program Site	12/1/1994	Open - Site Assessment	Open	11/26/2021	x	2/1/2004	10/26/2005	2	2	8/1/2005	8/1/2005	TCE
SL05091434	San Diego	TECH AIR Aerospace & ELECTRONICS FACILITY	TEMALECA	32.814488	-116.951463	Cleanup Program Site	1/1/1996	Completed - Case Closed	Open	1/1/2018	x	10/31/2012	11/12/2003	2	1	10/31/2005	MTBE	
SL05091435	San Diego	REDWOOD OIL-ROCK (FORMER)	ROCKLIN	36.7971342	-121.230956	Cleanup Program Site	3/1/2000	Open - Verification Monitoring	Open	2/1/2015	x	4/1/2006	3/21/2006	1	2	2/28/2005	MTBE	
SL05112378	Placer	BUTLEY BULK Fuel Plant (former)	Modelo	37.64445	-121.008709	Cleanup Program Site	5/18/1998	Completed - Case Closed	Open	4/3/2013	x	4/1/2009	3/24/2011	3	1	10/31/2002	MTBE	
SL05112379	Placer	Richmond Petroleum Terminal (formerly Pacific Atlantic, formerly Shon	Richmond	37.91992	-121.008709	Cleanup Program Site	1/1/1996	Open - Verification Monitoring	Open	1/1/2018	x	10/1/1995	11/20/07	13	2	1/1/2005	MTBE	
SL05124033	Los Angeles	UNION - TOSCO LOS ANGELES REFINERY, CARSON	CARSON	33.8044996	-118.247725	Cleanup Program Site	4/15/2019	Open - Assessment & Interim Remedial Action	Open	6/22/2020	x	2/14/2003	2/14/2003	1	1	4/19/2005	BZ	
SL05124034	Los Angeles	FORMER MOBI TORRANCE REFINERY	TORRANCE	33.856209	-118.39893	Cleanup Program Site	3/28/1988	Open - Remediation	Open	3/28/1988	x	6/1/1988	6/1/1988	1	1	4/7/2005	BZ	
SL05124035	Los Angeles	TOSCO REFINING CO. 66 Broadway (FORMER)	SACRAMENTO	38.454258	-119.037308	Cleanup Program Site	1/1/1996	Completed - Case Closed	Open	11/6/2017	x	1/1/1996	1/1/1996	1	1	4/7/2005	MTBE	
SL05124036	Kern	Kern Oil & Refining	BAKERSFIELD	35.2564	-119.6189	Cleanup Program Site	1/1/1987	Open - Remediation	Open	6/29/2012	x	7/18/1996	6/30/2008	13	2	3/6/2006	BZ	
SL05124037	San Joaquin	TEP PETERS TRUCKING MANTECA FACILITY	MANTECA	37.7953358	-121.249692	Cleanup Program Site	9/25/2001	Completed - Case Closed	Open	6/29/2012	x	8/1/2009	5/1/2011	3	1	3/6/2006	BZ	
SL05124038	San Joaquin	San Joaquin (former Coast Oil)	San Joaquin	37.35716516	-121.848018	Cleanup Program Site	7/1/1996	Open - Verification Monitoring	Open	5/27/1993	x	9/15/2003	9/15/2003	11	1	9/1/2005	MTBE	
SL05124039	Los Angeles	PARAMOUNT	PARAMOUNT	33.900004	-118.155005	Cleanup Program Site	6/30/2002	Open - Assessment & Interim Remedial Action	Open	12/1/2009	x	1/1/2000	6/1/2012	12	1	4/19/2005	BZ	
SL05124040	Los Angeles	FORMER OIL FIELD (FORMERLY) FARM	STOCKTON	36.91156684	-121.320602	Cleanup Program Site	9/1/1993	Open - Remediation	Open	6/30/2002	x	1/1/2000	6/5/2014	2	1	4/19/20		

SLTRFO104303	Fresno	Ennes/Former Dry Cleaner Site	REEDLEY	36.5942	-119.4487	Cleanup Program Site	9/11/1987	Completed - Case Closed	Closed	6/27/2018	x	x	1/1/1994	1/1/1994	1	1	24/2/01	PCE
SLTRFO14039	Fresno	Kings River Community College (AKA Reddy C.C.)	REEDLEY	36.6155	-119.4577	Cleanup Program Site	9/23/1987	Completed - Case Closed	Closed	10/20/2011	x	x	8/1/2008	10/1/2008	1	1	8/24/2018	TCE
SLTRFO123507	Sacramento	ARCO #25507 (WET FILL/FILL FILL)	MACRO	38.53601444	-121.4886433	Cleanup Program Site	8/12/2002	Open - Remediation	Open	3/26/2003	x	x	3/26/2003	3/26/2003	1	1	1/15/2006	PCE
SLTSS1883227	Stevensburg	McHenry Village	Modelo	37.668834	-120.939561	Cleanup Program Site	2/1/2002	Open - Verification Monitoring	Open	1/1/2016	x	x	2/1/2002	2/1/2002	1	1	3/23/2005	PCE
SLTR1024036	San Bernardino	ARCO TANKS/48M	Bloomington	34.556924	-117.3598187	Cleanup Program Site	4/1/2000	Open - Remediation	Open	1/2/2019	x	x	8/1/1992	8/2/1992	1	1	2/25/2019	MTBE
SLTR1104008	Orange	Orange County South Basin - BELL INDUSTRIES	SANTA ANA	33.7226004	-117.84904	Cleanup Program Site	1/1/1992	Open - Remediation	Open	2/17/2010	x	x	10/12/2005	10/12/2005	1	1	3/7/2005	TCM11
T00010011	Alameda	A & C ENTERPRISES	NEWARK	37.530324	-122.03823	LUST Cleanup Site	6/4/1984	Open - Eligible for Closure	Open	6/28/2021	x	x	1/12/1999	2/21/1999	1	1	8/22/2002	BZ
T000100081	Alameda	ARCO #03055	Albany	37.8951407	-122.373863	LUST Cleanup Site	8/1/1989	Completed - Case Closed	Closed	5/20/2014	x	x	28/1/95	88/1/95	2	1	3/3/2001	BZ
T000100085	Alameda	ARCO #00608	San Lorenzo	37.6783881	-122.125373	LUST Cleanup Site	11/12/1985	Completed - Case Closed	Closed	2/1/2013	x	x	10/25/1991		1	1	9/26/2002	MTBE
T000100096	Alameda	DESERT PETROLEUM #796	Oakland	37.8155429	-122.197887	LUST Cleanup Site	7/7/1989	Open - Eligible for Closure	Open	7/1/2021	x	x	6/1/1992	2/2/1992	2	1	2/8/2012	MTBE
T000100098	Alameda	ARCO #02158	Fremont	37.566537	-122.027788	LUST Cleanup Site	8/12/1986	Completed - Case Closed	Closed	12/20/2013	x	x	10/1/1992	10/1/1992	1	1	12/27/2001	MTBE
T000100098	Alameda	ARCO #05369	Fremont	37.561249	-122.017135	LUST Cleanup Site	3/21/1985	Completed - Case Closed	Closed	8/7/2014	x	x	11/10/1994	10/6/1995	2	1	7/23/2002	MTBE
T000100099	Alameda	ARCO #02147	Fremont	37.527531	-121.962816	LUST Cleanup Site	3/28/1988	Open - Verification Monitoring	Open	8/23/2021	x	x	6/15/1995	3/6/1995	4	1	9/22/2001	MTBE
T000100100	Alameda	ARCO #06021	Fremont	37.5363769	-121.920983	LUST Cleanup Site	7/22/1988	Completed - Case Closed	Closed	7/22/2021	x	x	8/24/1992	2/24/1994	3	1	1/22/2001	MTBE
T000100101	Alameda	UNOCAL #7376	Pleasanton	37.6530983	-121.869814	LUST Cleanup Site	1/18/1982	Completed - Case Closed	Closed	7/14/2016	x	x	11/20/2011	11/20/2011	1	1	9/17/2001	MTBE
T000100102	Alameda	UNOCAL #7376	Pleasanton	37.5102746	-121.902913	LUST Cleanup Site	1/18/1982	Completed - Case Closed	Closed	12/23/2021	x	x	8/25/1992	6/3/2008	17	2	1/22/2001	MTBE
T000100113	Alameda	ARCO #00771	Livermore	37.6881426	-121.7835765	LUST Cleanup Site	8/24/1987	Completed - Case Closed	Closed	10/16/2014	x	x	12/20/1994	1/17/1995	2	1	1/21/2002	BZ
T000100114	Alameda	ARCO #02189	Oakland	37.74410779	-122.1698248	LUST Cleanup Site	8/8/1991	Completed - Case Closed	Closed	7/30/2010	x	x	11/16/1991	2/5/1992	2	1	6/4/2008	MTBE
T000100116	Alameda	ARROW RENTALS	Livermore	37.88316031	-121.725859	LUST Cleanup Site	12/31/1984	Completed - Case Closed	Closed	12/16/2021	x	x	11/15/2011	5/12/2017	7	1	1/13/2001	BZ
T000100140	Alameda	DOUGLAS PARKING CO	Oakland	37.8006696	-122.267339	LUST Cleanup Site	7/1/1993	Completed - Case Closed	Closed	5/10/2018	x	x	10/29/2007	10/29/2007	1	1	1/4/2002	BZ
T000100158	Alameda	DESERT PETROLEUM / JAM SERVICE STATION #7	Oakland	37.8042513	-122.2251206	LUST Cleanup Site	11/11/1989	Completed - Case Closed	Closed	12/22/2015	x	x	10/7/1999	8/9/2002	4	2	12/18/2001	BZ
T000100186	Alameda	CITY BLUE PRINT	Oakland	37.8075139	-122.2733098	LUST Cleanup Site	4/8/1987	Open - Site Assessment	Open	7/12/2013	x	x	6/1/1992	7/1/1998	8	1	6/23/2005	BZ
T000100201	Alameda	BP #11117	Oakland	37.7863089	-122.1770379	LUST Cleanup Site	1/5/1992	Open - Remediation	Open	3/26/2012	x	x	3/16/2000	4/28/2000	1	1	9/20/2001	BZ
T000100210	Alameda	BP #11133	Oakland	37.7482622	-122.161435	LUST Cleanup Site	6/15/1987	Completed - Case Closed	Closed	8/11/2014	x	x	10/1/1994	10/1/1998	5	1	1/18/2002	MTBE
T000100211	Alameda	BP #11133	Oakland	37.588142	-122.0681727	LUST Cleanup Site	5/31/1985	Completed - Case Closed	Closed	1/20/2018	x	x	3/24/1998	3/28/1998	1	1	1/8/2002	MTBE
T000100213	Alameda	BP #11132	Oakland	37.7916707	-122.204896	LUST Cleanup Site	5/10/1990	Open - Site Assessment	Open	2/3/2016	x	x	1/22/1993	12/31/1995	3	1	8/31/2001	BZ
T000100215	Alameda	MOBL 10-HASBP 11289	FREMONT	37.5443489	-122.1310777	LUST Cleanup Site	6/1/1987	Completed - Case Closed	Closed	5/22/2013	x	x	4/4/1996	1/14/1996	1	1	9/6/2002	MTBE
T000100227	Alameda	BROADWAY VOLKSWAGEN	Oakland	37.816191	-122.303401	LUST Cleanup Site	8/15/1989	Completed - Case Closed	Closed	5/5/2015	x	x	4/16/1996	3/1/1998	3	1	6/19/2013	BZ
T000100233	Alameda	ARROWHEAD ALLIANCE	HAYWARD	37.6659452	-122.1178114	LUST Cleanup Site	12/21/1991	Completed - Case Closed	Closed	8/4/2016	x	x	11/1/1997	1/1/1998	2	1	9/13/2001	MTBE
T000100236	Alameda	ARCO TANKS/48M	Bloomington	34.556924	-121.918198	Cleanup Program Site	5/1/1987	Completed - Case Closed	Closed	1/14/2013	x	x	2/1/1992	2/1/1998	2	1	9/17/2001	TCE
T000100289	Alameda	CHEVRON	BERKELEY	37.869259	-122.200804	LUST Cleanup Site	11/30/1981	Completed - Case Closed	Closed	3/8/2005	x	x	4/5/2000	3/1/1998	1	1	10/15/2001	BZ
T000100302	Alameda	CHEVRON #9-0504	San Lorenzo	37.8811721	-122.127358	LUST Cleanup Site	12/31/1983	Completed - Case Closed	Closed	6/22/2018	x	x	8/19/1992	7/19/1994	3	1	9/4/2001	MTBE
T000100341	Alameda	CHEVRON #9-1501	San Lorenzo	37.7033179	-121.7430451	LUST Cleanup Site	8/1/1984	Completed - Case Closed	Closed	12/21/2007	x	x	3/24/1990	1/28/1990	1	1	6/26/2001	MTBE
T000100346	Alameda	CHEVRON #9-4230	FREMONT	37.5326365	-122.005543	LUST Cleanup Site	10/31/1984	Completed - Case Closed	Closed	6/11/2015	x	x	6/8/1990	12/31/1991	2	1	10/22/2001	MTBE
T000100355	Alameda	CHEVRON #9-2582	Dublin	37.5581746	-122.837322	LUST Cleanup Site	2/17/1989	Completed - Case Closed	Closed	6/13/2020	x	x	3/1/1992	4/1/1996	5	1	11/27/2001	MTBE
T000100371	Alameda	FREMONT FIRE STATION NO.1	FREMONT	37.5448414	-121.8686788	LUST Cleanup Site	8/15/1987	Completed - Case Closed	Closed	8/15/2017	x	x	9/2/1990	9/2/1990	1	1	1/26/2005	BZ
T000100375	Alameda	CITY OF OAKLAND MUNICIPAL SERVICE CENTER	Oakland	37.7488438	-122.209287	LUST Cleanup Site	6/4/1984	Open - Eligible for Closure	Open	6/23/2022	x	x	5/22/2006	5/13/2017	12	1	9/1/2005	BZ
T000100421	Alameda	CRESCENT TRUCK LINES	HAYWARD	37.67507	-122.06422	LUST Cleanup Site	10/27/1987	Open - Eligible for Closure	Open	12/23/2020	x	x	6/1/1994	6/1/1994	1	1	10/18/2004	PCE
T000100535	Alameda	JAM PROPERTY GAS STATION	Oakland	37.7850545	-122.269043	LUST Cleanup Site	8/1/1982	Open - Eligible for Closure	Open	8/1/2022	x	x	2/1/2011	4/30/2015	5	1	6/26/2003	BZ
T000100537	Alameda	VALERO #323	Pleasanton	37.6700899	-121.865712	LUST Cleanup Site	3/31/1988	Completed - Case Closed	Closed	9/23/2016	x	x	3/12/2001	9/1/1993	5	2	12/17/2001	MTBE
T000100543	Alameda	FREMONT	FREMONT	37.5137059	-122.0134153	LUST Cleanup Site	8/3/2019	Completed - Case Closed	Closed	6/3/2019	x	x	3/1/1988	1/12/2000	1	1	1/26/2001	BZ
T000100543	Alameda	FALCON EXXON RAS #7-3800	HAYWARD	37.64841302	-122.091071	LUST Cleanup Site	8/9/1990	Completed - Case Closed	Closed	11/15/2010	x	x	6/30/2005	2/21/2006	2	1	9/27/2001	MTBE
T000100545	Alameda	EXXON NO. 7-3599 (FREMONT BLVD)	FREMONT	37.5414372	-121.9733607	LUST Cleanup Site	6/25/1985	Completed - Case Closed	Closed	12/19/2019	x	x	6/18/1994	3/1/1997	4	1	10/18/2001	BZ
T000100546	Alameda	EXXON NO. 7-1716 (THORNTON AVE)	FREMONT	37.5137059	-121.863371	LUST Cleanup Site	8/1/1987	Completed - Case Closed	Closed	8/19/2018	x	x	6/1/1992	6/1/1992	1	1	10/16/2001	MTBE
T000100547	Alameda	EXXON NO. 7-3985 (MISSION BLVD)	FREMONT	37.4922058	-121.9259427	LUST Cleanup Site	8/31/1988	Completed - Case Closed	Closed	10/8/2013	x	x	2/27/1997	7/20/2004	8	1	10/16/2001	MTBE
T000100548	Alameda	Valero #13767	FREMONT	37.537166	-121.885381	LUST Cleanup Site	12/1/1987	Completed - Case Closed	Closed	10/7/2013	x	x	8/1/1994	8/1/1994	1	1	10/11/2001	MTBE
T000100548	Alameda	Valero #13767	NEWARK	37.53801963	-122.029282	LUST Cleanup Site	8/1/1987	Completed - Case Closed	Closed	8/13/2017	x	x	9/13/1997	9/13/1997	1	1	10/18/2001	MTBE
T000100552	Alameda	EXXON #7-3006	Oakland	37.78642489	-122.1156959	LUST Cleanup Site	5/1/1987	Completed - Case Closed	Closed	10/7/2016	x	x	1/1/1995	12/1/1998	4	1	3/11/2002	BZ
T000100555	Alameda	EXXON #7-0104	Alameda	37.7888286	-122.2359584	LUST Cleanup Site	7/25/1991	Completed - Case Closed	Closed	10/25/2012	x	x	10/10/1994	10/10/1994	1	1	24/2/02	MTBE
T000100615	Alameda	FREMONT LUMBER COMPANY	FREMONT	37.5317	-121.954138	LUST Cleanup Site	8/1/1986	Open - Site Assessment	Open	12/22/2020	x	x	5/24/2007	6/5/2007	1	1	3/20/2014	BZ
T000100650	Alameda	NEW UNION MOTOR MANUF. INC. (NUMMI)	FREMONT	37.4508767	-121.9440099	Cleanup Program Site	1/28/1985	Open - Site Assessment	Open	8/1/1985	x	x	36/90	36/90	1	1	3/20/2012	BZ
T000100685	Alameda	HERITAGE LUMBER	FREMONT	37.545424	-121.999699	LUST Cleanup Site	3/17/1986	Completed - Case Closed	Closed	12/1/2008	x	x	6/1/1993	6/1/1993	1	1	8/24/2002	TCM11
T000100714	Alameda	KOOFHS AUTO SERVICE	FREMONT	37.800734	-122.22532	LUST Cleanup Site	5/8/1990	Completed - Case Closed	Closed	11/1/2011	x	x	6/15/1993	8/23/1994	1	1	1/19/2002	BZ
T000100870	Alameda	PRIVATE RESIDENCE	UNION CITY	37.588339	-122.059823	LUST Cleanup Site	10/31/1984	Completed - Case Closed	Closed	8/16/2012	x	x	11/20/2003	12/22/2011	2	1	10/1/2008	BZ
T000100882	Alameda	37.5561081 PROPERTY	UNION CITY	37.5561081	-122.151433	LUST Cleanup Site	12/23/2013	Completed - Case Closed	Closed	12/23/2013	x	x	12/8/2010	12/22/2011	2	1	10/1/2008	BZ
T000100894	Alameda	MIKE ROBERTS COAL PRODUCTION	Emeryville	37.8442426	-122.295379	Cleanup Program Site	6/5/1989	Open - Verification Monitoring	Open	3/20/2021	x	x	10/1/1990	3/21/1991	2	1	2/10/2016	PCE
T000100905	Alameda	NIKE UNIFORM & LINEN SERVICE	UNION CITY	37.620435	-122.02396	Cleanup Program Site	8/1/1988	Open - Remediation	Open	1/2/2015	x	x	6/1/1992	6/1/1992	1	1	3/2/2005	BZ
T000100909	Alameda	ARCO #03451	LEANSANTON	37.6960343	-121.8734033	LUST Cleanup Site	7/1/1987	Completed - Case Closed	Closed	7/1/2015	x	x	1/1/1995	5/25/2000	6	1	10/15/2001	MTBE
T000100939	Alameda	UNITED PARCEL SERVICE	Oakland	37.73251582	-122.215527	LUST Cleanup Site	2/21/1980	Open - Assessment & Interim Remedial Action	Open	4/20/2009	x	x	4/12/2010	4/14/2010	1	1	9/30/2002	BZ
T000100977	Alameda	ALAMEDA GATEWAY LTD	Alameda	37.7893141	-122.2607138	LUST Cleanup Site	4/1/1990	Completed - Case Closed	Open	7/30/2019	x	x	12/19/2016	13/2017	2	1	10/12/2015	BZ
T000100985	Alameda	OAKLAND AUTO PARTS	Oakland	37.781781	-122.073081	LUST Cleanup Site	8/1/1987	Open - Remediation	Open	1/14/2014	x	x	4/1/1994	2/15/2001	8	1	2/10/2002	MTBE
T000101019	Alameda	PABCO GYPSUM	NEWARK	37.527618	-122.023653	LUST Cleanup Site	6/15/1992	Completed - Case Closed	Closed	9/11/2013	x	x	3/17/1997	3/18/1997	1	1	10/11/2001	MTBE
T000101033																		

T060050001	Amador	BEACON #3674 (FORMER)	JACKSON	38.35648545	-120.7818088	LUST Cleanup Site	2/28/1985	Completed - Case Closed	Closed	10/10/2009	x	x	2/1/1989	3/1/2004	16	1	4/18/1986	11/1/2004	9	2	11/20/2001	BZ	
T060050001	Amador	WATER STREET ANTIQUES	JACKSON	38.348681	-120.772967	LUST Cleanup Site	4/29/1991	Completed - Case Closed	Closed	6/17/2017	x	x	6/17/2017	6/17/2017	3	1	6/28/2010	6/28/2010	3	2	6/28/2010	MTBE	
T060050004	Amador	JON'S PIT STOP (FORMERLY)	SUTTER CREEK	38.36557575	-120.852594	LUST Cleanup Site	10/10/2018	x	x	9/9/2005	x	x	6/12/2012	6/12/2012	8	1	10/20/2009	10/20/2009	3	1	6/12/2002	MTBE	
T060050052	Amador	SERRA TRADING POST #2	IONE	38.34453384	-120.955842	LUST Cleanup Site	12/22/1990	Open - Site Assessment	Open	3/28/2017	x	x	12/12/2011	12/12/2011	12	5	10/19/2004	10/27/2010	7	1	9/20/2001	MTBE	
T060050057	Amador	HC TRUCKS HAWAII	VOLCANO	38.1678241989	-120.6126594	LUST Cleanup Site	9/19/1989	Completed - Case Closed	Closed	6/23/2018	x	x	11/21/2012	11/21/2012	1	1	4/22/2002	4/22/2002	1	1	4/22/2002	BZ	
T060050419	Amador	SERRA TRADING POST-BUCHHORN STATION	PIONEER	38.444234	-120.532743	LUST Cleanup Site	12/3/2003	Open - Verification Monitoring	Open	2/26/2016	x	x			1	1	10/19/2004	10/27/2010	7	1	9/20/2001	MTBE	
T060070015	Butte	SHELL SS GRIDLEY	GRIDLEY	39.36570752	-121.6877853	LUST Cleanup Site	3/9/1988	Completed - Case Closed	Closed	3/30/2004	x	x	2/1/1983	2/27/1987	5	1	12/10/2012	9/17/2013	2	1	12/5/2008	MTBE	
T060070036	Butte	GRIDLEY PIT STOP	GRIDLEY	39.33361196	-121.6877753	LUST Cleanup Site	7/21/1988	Completed - Case Closed	Closed	6/15/2017	x	x	8/13/2003	3/26/2009	7	1	10/19/2004	10/19/2009	1	1	2/28/2002	BZ	
T0600700119	Butte	SOUTHLAND 7-11 STORE #22468	GRIDLEY	39.36335838	-121.687753	LUST Cleanup Site	1/16/1994	Completed - Case Closed	Closed	10/26/2012	x	x			1	1	9/5/2002	5/26/2003	2	2	9/25/2001	MTBE	
T060070142	Butte	FROST CO SH-CHICO CASE #2	CHICO	39.32135659	-121.6283553	LUST Cleanup Site	9/16/1995	Completed - Case Closed	Closed	9/11/2012	x	x			1	1	8/8/2007	9/8/2007	1	1	3/8/2002	MTBE	
T060070163	Butte	BANGOR GROCERY	GRIDLEY	39.33883368	-121.6481699	LUST Cleanup Site	7/20/1987	Completed - Case Closed	Closed	9/20/2010	x	x			1	1	12/20/2005	12/20/2005	1	1	6/12/2002	MTBE	
T060070169	Butte	BIGGS AUTO INC	BIGGS	39.41220585	-121.7121861	LUST Cleanup Site	3/31/1997	Completed - Case Closed	Closed	9/15/2009	x	x			1	1	12/29/2008	12/29/2008	1	1	4/23/2002	MTBE	
T060070181	Butte	LEDGORD BEACON	CHICO	39.37125328	-121.8358379	LUST Cleanup Site	10/27/1997	Completed - Case Closed	Closed	8/7/2012	x	x			1	1	8/28/2008	8/28/2008	1	1	3/29/2002	MTBE	
T060070192	Butte	LAKE CLUB THE	PROVALLIE	39.504718019	-121.4382094	LUST Cleanup Site	10/15/1997	Completed - Case Closed	Closed	9/30/2008	x	x			1	1	1/16/2004	1/16/2004	1	1	4/23/2002	BZ	
T060070183	Butte	TOMS SIERRA SUPERSTOP #17	GRIDLEY	39.3477013	-121.683144	LUST Cleanup Site	9/10/1997	Completed - Case Closed	Closed	6/29/2011	x	x			1	1	3/15/2007	3/15/2007	1	1	9/4/2002	MTBE	
T060070192	Butte	CHICO 74073686 CAR WASH	CHICO	39.4423281	-121.6423281	LUST Cleanup Site	9/14/2008	Completed - Case Closed	Closed	9/14/2008	x	x			1	1	3/22/2010	3/22/2010	1	1	3/16/2002	MTBE	
T060070205	Butte	VANILLA OIL COMPANY	CHICO	39.74066121	-121.8381596	LUST Cleanup Site	12/5/1998	Completed - Case Closed	Closed	10/14/2010	x	x			1	1	6/10/2005	6/10/2005	1	1	6/11/2002	BZ	
T060070208	Butte	GOLD NUGGET OIL COMPANY STN #2	PARADISE	39.7774769	-121.6086255	LUST Cleanup Site	12/15/1998	Completed - Case Closed	Closed	7/12/2010	x	x	12/14/1998	12/14/1998	1	1	12/27/2006	12/27/2006	1	1	7/13/2004	BZ	
T060070212	Butte	GOLD NUGGET OIL COMPANY STN #1	OROVILLE	39.4842007	-121.5251163	LUST Cleanup Site	1/13/1999	Completed - Case Closed	Closed	7/17/2012	x	x			1	1	10/19/2009	10/19/2009	1	1	2/28/2002	MTBE	
T060070214	Butte	SOUTH SIDE MINI MART	OROVILLE	39.50007614	-121.5488024	LUST Cleanup Site	3/30/1999	Completed - Case Closed	Closed	3/15/2010	x	x			1	1	11/10/2008	11/10/2008	1	1	5/30/2002	MTBE	
T060070222	Butte	WRIGHTS CHEVRON CASE #2	OROVILLE	39.5105991	-121.541845	LUST Cleanup Site	7/22/1999	Completed - Case Closed	Closed	8/15/2010	x	x			1	1	2/6/2006	2/6/2006	1	1	5/20/2002	BZ	
T060070223	Butte	SOUTHLAND 7-11 STORE #14083	OROVILLE	39.51766937	-121.5348902	LUST Cleanup Site	8/29/1997	Completed - Case Closed	Closed	9/20/2010	x	x	12/7/2004	12/7/2004	1	1	10/17/2007	10/17/2007	1	1	4/16/2002	BZ	
T060070226	Butte	PERRY'S TANK	DURHAM	39.44618277	-121.8004409	LUST Cleanup Site	2/8/1999	Completed - Case Closed	Closed	1/29/2015	x	x			1	1	10/17/2007	10/17/2007	1	1	4/16/2002	BZ	
T060070228	Butte	HONDUIT STORE	OROVILLE	39.528806	-121.5332676	LUST Cleanup Site	9/14/1999	Completed - Case Closed	Closed	3/6/2008	x	x			1	1	8/22/2005	8/22/2005	1	1	4/4/2002	MTBE	
T060070231	Butte	PRIVATE RESIDENCE	DURHAM	39.54671783	-121.7745016	LUST Cleanup Site	12/17/1999	Completed - Case Closed	Closed	9/12/2010	x	x			1	1	9/21/2008	9/21/2008	1	1	2/15/2002	MTBE	
T060070235	Butte	ROBERTSON'S MARKET	OROVILLE	39.4815558	-121.5303352	LUST Cleanup Site	11/5/1998	Open - Eligible for Closure	Open	6/14/2021	x	x	5/15/2006	5/15/2006	1	1	5/5/2010	3/18/2016	7	1	7/22/2004	BZ	
T060070426	Butte	CALIFORNIA RANCH PROPERTY	GRIDLEY	39.308572	-121.6622847	LUST Cleanup Site	8/20/2003	Completed - Case Closed	Closed	11/3/2017	x	x			1	1	1/6/2007	1/6/2007	1	1	1/25/2002	MTBE	
T060072216	Butte	DAWSON OIL COMPANY	OROVILLE	39.45594791	-121.5651038	LUST Cleanup Site	8/29/1997	Completed - Case Closed	Closed	12/21/2009	x	x	5/8/2006	5/8/2006	1	1	1/6/2007	1/6/2007	1	1	1/6/2007	ND	
T060090026	Calaveras	RAILROAD FLAT	RAILROAD FLAT	38.33807271	-120.516222	LUST Cleanup Site	4/5/1991	Completed - Case Closed	Closed	1/25/2010	x	x	7/1/2003	7/30/2007	5	1	12/1/2006	4/26/2008	3	1	9/19/2001	BZ	
T060090035	Calaveras	SAN ANDREAS	SAN ANDREAS	38.19236718	-120.8233596	LUST Cleanup Site	8/29/1997	Completed - Case Closed	Closed	9/23/2009	x	x			1	1	12/1/2006	4/26/2008	3	1	9/19/2001	BZ	
T060090073	Calaveras	WILSEYVILLE FOOD & GAS	WILSEYVILLE	38.37850884	-120.5159574	LUST Cleanup Site	5/22/1998	Completed - Case Closed	Closed	11/17/2009	x	x			1	1	11/1/2004	12/31/2010	5	1	6/26/2002	BZ	
T060090074	Calaveras	COPPER COLON / COPPER HOTEL	COPPERPOLIS	38.92707987	-121.8634118	LUST Cleanup Site	4/14/1998	Completed - Case Closed	Closed	8/16/2013	x	x	5/26/2006	12/27/2007	2	1	8/12/2012	12/31/2013	2	2	12/17/2001	BZ	
T060090089	Calaveras	JOE'S SIERRA SUPER STOP #2	VALLEY SPRINGS	38.10286193	-120.827185	LUST Cleanup Site	4/3/2001	Completed - Case Closed	Closed	4/3/2001	x	x			1	1	12/31/2002	12/31/2002	2	2	6/11/2003	BZ	
T060090094	Calaveras	GLENCO STOREONE STOP STATION	GLENCO	39.4040027	-120.5695828	LUST Cleanup Site	9/16/1999	Completed - Case Closed	Closed	17/01/15	x	x			1	1	11/18/2011	9/5/2012	2	2	8/10/2011	ND	
T060090184	Calaveras	TOM'S SIERRA BULK PLANT # 2	SAN ANDREAS	38.19930484	-120.830649	LUST Cleanup Site	4/16/2002	Completed - Case Closed	Closed	3/20/2020	x	x			1	1	4/22/2008	1/14/2013	6	2	12/11/2003	MTBE	
T060100010	Colusa	WILLIAMS SHELL	WILLIAMS	39.15552914	-122.478639	LUST Cleanup Site	11/5/2013	x	x	6/22/2009	6/22/2009	1	1			1	1	11/5/2013	11/5/2013	1	1	12/1/2001	MTBE
T060130002	Contra Costa	7-ELEVEN STORE #22930	RICHMOND	37.933041	-122.345257	LUST Cleanup Site	6/6/1989	Completed - Case Closed	Closed	3/26/2016	x	x	1/1/1990	10/30/1991	2	1	11/1/2002	4/12/2012	11	2	2/1/2002	MTBE	
T060130018	Contra Costa	ARCO #428	RICHMOND	37.84703589	-122.302986	LUST Cleanup Site	8/21/1989	Open - Site Assessment	Open	8/30/2017	x	x	10/1/1991	10/1/1991	1	1	11/1/1994	10/1/2004	11	1	10/4/2001	BZ	
T060130019	Contra Costa	ARCO #215128	RICHMOND	37.93811298	-122.3478678	LUST Cleanup Site	8/21/1989	Completed - Case Closed	Closed	6/17/2022	x	x	5/17/1992	12/30/1992	2	1	5/17/1992	12/30/1992	2	1	6/11/2002	MTBE	
T060130033	Contra Costa	BETTERMADE FOODS COMPANY	RICHMOND	37.9286881	-122.347078	LUST Cleanup Site	8/9/1990	Completed - Case Closed	Closed	3/29/2018	x	x	12/16/2005	12/16/2005	1	1	7/18/2001	7/18/2001	1	1	11/5/2002	BZ	
T060130034	Contra Costa	ARCO #1141	RICHMOND	37.9286881	-122.347078	LUST Cleanup Site	8/9/1990	Completed - Case Closed	Closed	3/29/2018	x	x	12/16/2005	12/16/2005	1	1	7/18/2001	7/18/2001	1	1	11/5/2002	BZ	
T060130037	Contra Costa	TOSCO - FACILITY #1142	DANVILLE	37.83237119	-121.9992308	LUST Cleanup Site	6/20/1988	Completed - Case Closed	Closed	9/19/2011	x	x	4/1/1995	8/20/1998	4	1	4/4/1998	8/20/1998	16	2	11/20/2001	BZ	
T0601300121	Contra Costa	FORMER EXCON 7-2002	WALNUT CREEK	37.80652305	-122.0161346	LUST Cleanup Site	7/28/1998	Completed - Case Closed	Closed	12/23/2016	x	x			1	1	4/5/2000	4/5/2000	1	1	11/19/2001	MTBE	
T0601300147	Contra Costa	MARTINEZ C	MARTINEZ	38.00861798	-122.0999918	LUST Cleanup Site	11/23/2013	x	x	5/1/2002	5/1/2002	1	1			1	1	11/23/2013	11/23/2013	1	1	7/24/2002	MTBE
T0601300152	Contra Costa	SUPERIOR CAR WASH	PITTSBURG	38.00715997	-121.8632726	LUST Cleanup Site	2/31/1988	Open - Site Assessment	Open	9/8/2017	x	x			1	1	12/22/2007	12/22/2007	1	1	11/14/2001	BZ	
T060130029	Contra Costa	FORMER SHELL SERVICE STATION	RICHMOND	37.84438312	-122.3476715	LUST Cleanup Site	4/4/1989	Completed - Case Closed	Closed	6/25/2019	x	x			1	1	8/25/2005	6/20/2008	4	1	10/29/2001	MTBE	
T060130030	Contra Costa	FORMER EXCON 7-2006	RICHMOND	38.0075737	-122.302986	LUST Cleanup Site	8/13/1988	Completed - Case Closed	Closed	3/30/1987	x	x			1	1	10/13/2008	10/13/2008	1	1	11/15/2001	MTBE	
T060130035	Contra Costa	FORMER EXCON 7-0272	SAN PABLO	38.000283	-122.321417	LUST Cleanup Site	3/24/1988	Completed - Case Closed	Closed	3/26/2003	x	x			1	1	7/10/2000	7/10/2000	1	1	10/9/2001	MTBE	
T060130034	Contra Costa	ULTRAMAR BEACON #5713 (FORMER)	MARTINEZ	38.012635	-122.171071	LUST Cleanup Site	8/19/1988	Completed - Case Closed	Closed	10/22/2015	x	x			1	1	9/24/2006	12/18/2006	1	1	12/12/2001	MTBE	
T0601300375	Contra Costa	VALNUT CREEK	VALNUT CREEK	37.9286881	-122.347078	LUST Cleanup Site	8/9/1990	Completed - Case Closed	Closed	12/23/2016	x	x			1	1	4/23/2001	4/23/2001	1	1	11/15/2001	MTBE	
T0601300378	Contra Costa	TESORO Petroleum Company	CONCORD	37.96460934	-121.9912847	LUST Cleanup Site	8/26/1988	Completed - Case Closed	Closed	7/19/2013	x	x			1	1	4/30/2007	4/30/2009	3	1	3/20/2002	MTBE	
T060130043	Contra Costa	76 Station #713	CONCORD	37.91115985	-122.1184943	LUST Cleanup Site	6/25/1993	Completed - Case Closed	Closed	7/23/2014	x	x			1	1	4/23/2001	4/23/2001	3	1	5/16/2006	MTBE	
T0601300541	Contra Costa	SHELL GAS AND DIESEL	PITTSBURG	38.0025404	-121.862757	LUST Cleanup Site	8/28/1988	Completed - Case Closed	Closed	4/17/2018	x	x	8/12/2008	9/6/2008	1	1	9/20/2008	9/20/2008	1	1	5/16/2006	MTBE	
T060130037	Contra Costa	WORLD OIL #26	CONCORD	37.9581	-122.0356	LUST Cleanup Site	11/18/1995	Completed - Case Closed	Closed	10/28/2012	x	x											

T0601900322	Fireno	STREET HOME VIDEO	SANGER	36.746843	-119.565052	LUST Cleanup Site	7/19/1991	Completed - Case Closed	Closed				2/13/2003	2/13/2003	1		9/4/2001	BZ	
T0601900337	Fireno	GROSSMAN'S TEXACO	FRESNO	36.858620	-119.652320	LUST Cleanup Site	12/22/1991	Completed - Case Closed	Closed				10/1/2008	10/1/2008	3		3/25/2008	BZ	
T0601900513	Fireno	DAVES EXXON	FRESNO	36.757382	-118.816335	LUST Cleanup Site	10/24/1994	Completed - Case Closed	Closed				5/11/2006	5/11/2006	1		2/10/2003	BZ	
T0601900517	Fireno	SUPER EXXON	CLOVIS	36.826309	-119.749177	LUST Cleanup Site	10/27/1994	Completed - Case Closed	Closed				5/20/2004	5/20/2004	2	2	2/10/2005	ND	
T0601900525	Fireno	FIFTH HAVEN TRUCKSTOP	MALACA	36.184967	-119.737897	LUST Cleanup Site	7/9/1993	Completed - Case Closed	Closed				1/30/2003	1/30/2003	1		2/19/2002	MTBE	
T0601900555	Fireno	KWIK KORNER	REDELEY	36.598726	-119.457249	LUST Cleanup Site	10/3/1995	Completed - Case Closed	Closed				10/1/2004	10/1/2004	1		12/11/2001	BZ	
T0601900577	Fireno	EXXON BULK PLANT #221	FRESNO	36.74418822	-119.852438	LUST Cleanup Site	12/15/1995	Completed - Case Closed	Closed				11/13/2004	9/15/2012	3		7/27/2005	MTBE	
T0601900584	Fireno	CONALES AUTO SERVICE	FRANCE COVE	36.524876	-119.189425	LUST Cleanup Site	5/24/1996	Open - Remediation	Open				1/20/2019	1/20/2019	1		7/18/2018	MTBE	
T0601900611	Fireno	FORMER EXXON 7-1155	FRESNO	36.80879088	-119.781812	LUST Cleanup Site	10/17/1996	Completed - Case Closed	Closed				4/30/2009	3/15/2005	4		3/15/2002	MTBE	
T0601900614	Fireno	ET TRIP	FRESNO	36.83159225	-119.91878	LUST Cleanup Site	11/12/1999	Completed - Case Closed	Closed				8/13/2014	14/4/2005	2	2	11/11/2005	MTBE	
T0601900628	Fireno	CARNEY OL MINI MART #2	FRESNO	36.74291754	-118.123894	LUST Cleanup Site	8/9/1997	Completed - Case Closed	Closed				3/19/2017	9/18/2004	1		6/2/2004	MTBE	
T0601900631	Fireno	M & S TEXACO AKA FLEETCARD FUELS # 1992	FRESNO	36.76568616	-119.754518	LUST Cleanup Site	10/17/1997	Completed - Case Closed	Closed				3/20/2012	2/25/2002	1		4/10/2006	MTBE	
T0601900636	Fireno	R. V. JENSEN INC	FRESNO	36.677549	-119.74591	LUST Cleanup Site	11/28/1997	Completed - Case Closed	Closed				5/18/2011	1/3/2006	1		5/13/2006	MTBE	
T0601900647	Fireno	KLINGBILG GAS	FRESNO	36.16847268	-119.5494708	LUST Cleanup Site	6/21/1998	Completed - Case Closed	Closed				2/18/2007	2/14/2007	1		3/21/2003	MTBE	
T0601900651	Fireno	RATCLIFFE GAS	FRESNO	36.77033152	-119.7006491	LUST Cleanup Site	7/11/1998	Completed - Case Closed	Closed				2/16/2012	4/24/2008	6/30/2010	3	4	1/23/2006	BZ
T0601900658	Fireno	LAKEVIEW ENTERPRISES	LAKEVIEW	36.15597596	-119.1659756	LUST Cleanup Site	9/18/1998	Completed - Case Closed	Closed				6/5/2002	1/29/2003	1		6/17/2007	BZ	
T0601900658	Fireno	KLING'S TRUCK STOP	FRESNO	36.83175272	-119.9135318	LUST Cleanup Site	5/15/1998	Completed - Case Closed	Closed				7/5/2006	6/2/2010	5	3	8/27/2002	BZ	
T0601900659	Fireno	CLINGMAN'S JUNCTION GROCERY	SQUAW VALLEY	36.75452074	-119.171941	LUST Cleanup Site	9/11/1998	Completed - Case Closed	Closed				7/22/2016	5/1/2012	1		10/30/2013	BZ	
T0601900667	Fireno	EXXON SERVICE STATION	FRESNO	36.74265598	-119.7457395	LUST Cleanup Site	1/28/1999	Completed - Case Closed	Closed				9/27/2008	9/27/2008	1		1/22/2006	MTBE	
T0601900689	Fireno	ORANGE COVE LIQUOR	ORANGE COVE	36.6246356	-119.3097002	LUST Cleanup Site	1/29/1998	Completed - Case Closed	Closed				5/29/2013	5/15/2006	1		10/14/2001	MTBE	
T0601900692	Fireno	FOWLDER EXXON MINI MART	FOWLDER	36.6273052	-119.883158	LUST Cleanup Site	7/12/1999	Completed - Case Closed	Closed				2/17/2009	10/31/2007	5		6/5/2007	MTBE	
T0601900711	Fireno	VAN NISS AUTO REPAIR	FRESNO	36.77661132	-119.803509	LUST Cleanup Site	8/23/1999	Completed - Case Closed	Closed				9/15/2008	9/15/2008	1		9/24/2005	TCE	
T0601905275	Fireno	SHELL	PNEADLE	36.8913289	-119.760043	LUST Cleanup Site	11/19/2001	Completed - Case Closed	Closed				1/23/2010	3/10/2010	2	3	6/4/2003	MTBE	
T0601916096	Fireno	7-ELEVEN #13916	FRESNO	36.7626576	-119.888223	LUST Cleanup Site	5/5/2004	Completed - Case Closed	Closed				8/22/2013	9/26/2010	2	5	5/22/2006	MTBE	
T0601935591	Fireno	OL Hammer Field	FRESNO	36.7716	-115.7032	Cleanup Program Site	2/11/1988	Open - Remediation	Open				5/28/2009	12/7/2005	1		2/15/2018	TCE	
T0601945800	Fireno	ONE STOP	REDELEY	36.604177	-119.438229	LUST Cleanup Site	8/6/2003	Completed - Case Closed	Closed				1/25/2011	6/17/2009	6/17/2009	1		9/5/2007	MTBE
T0601959841	Fireno	RIDER TRUCK RENTAL	FRESNO	36.76996884	-119.776301	LUST Cleanup Site	7/10/2002	Completed - Case Closed	Closed				4/8/2015	11/5/2008	1		10/20/2007	MTBE	
T06019710220	Alameda	Q1 SALVO TRUCKING	SAN LORENZO	37.67004602	-122.532071	LUST Cleanup Site	6/20/2003	Completed - Case Closed	Closed				6/10/2014	1/6/2008	1	2	1/17/2006	MTBE	
T06019716197	Alameda	SPRINGTOWN GAS	LIVERMORE	37.705217	-121.759819	LUST Cleanup Site	6/29/2005	Completed - Case Closed	Closed				7/18/2012	6/16/2008	1	1	2/20/2007	MTBE	
T0601974784	San Diego	STEELE AUTOHAUS	EL CAJON	32.78740398	-116.8152117	LUST Cleanup Site	6/19/2005	Completed - Case Closed	Closed				8/1/2008	11/8/2014	1	1	9/13/2007	BZ	
T06019757161	Alameda	VALERO #3632	OAKLAND	37.792748	-122.201903	LUST Cleanup Site	6/11/2002	Completed - Case Closed	Closed				6/11/2018	7/10/13	1		11/12/2007	MTBE	
T0601991433	Fireno	CHEVRON (JR JENSEN INC)	ALBERRY	37.07581682	-119.4853342	LUST Cleanup Site	1/26/2001	Completed - Case Closed	Closed				5/24/2011	1/15/2008	12/8/2010	3	2	4/3/2006	MTBE
T0601991950	Fireno	FLEET CARD FUELS	FRESNO	36.79104304	-115.70005	LUST Cleanup Site	6/1/1999	Completed - Case Closed	Closed				12/1/2013	10/28/2001	1		11/16/2005	BZ	
T0601991957	Fireno	7-ELEVEN STORE #23948	SANGER	36.708065	-119.564484	LUST Cleanup Site	8/8/2001	Completed - Case Closed	Closed				10/18/2012	6/20/2006	1		3/25/2003	BZ	
T0601991960	Fireno	WILLOW MARKET	FRESNO	36.707452	-119.727068	LUST Cleanup Site	1/19/1989	Completed - Case Closed	Closed				4/4/2005	7/20/2007	12/15/2008	2	3	6/26/2007	MTBE
T0601992008	Fireno	PETCS VALLEY TRADING CENTER	SQUAW VALLEY	36.758373	-119.284781	LUST Cleanup Site	6/18/1999	Completed - Case Closed	Closed				1/13/2013	10/15/2008	1		1/23/2007	MTBE	
T0601993689	Fireno	SELMA 76	SELMA	36.562576	-119.628528	LUST Cleanup Site	9/28/1998	Completed - Case Closed	Closed				4/29/2010	4/1/2008	1		1/23/2007	ND	
T0601993691	Fireno	U-SAVE MART #0	FRESNO	36.73369393	-119.833378	LUST Cleanup Site	3/9/2000	Completed - Case Closed	Closed				1/25/2012	10/7/2009	6/26/2010	2	3	10/6/2005	MTBE
T0601993702	Fireno	BO GOIL & BROS. MAIL 101 BP	FRESNO	36.72071446	-119.778474	LUST Cleanup Site	1/11/1995	Completed - Case Closed	Closed				12/13/2012	2/8/2009	3/18/2005	1		1/3/2003	BZ
T0601993707	Orange	MOBIL #16-J7X	ORANGE	33.78751304	-117.826843	LUST Cleanup Site	10/30/2000	Completed - Case Closed	Closed				10/9/2015	7/20/2004	1/12/2009	6		10/11/2001	MTBE
T0602100003	Glenn	WILLOW CANYON OIL CO. INC.	WILLOWS	39.5284811	-122.548203	LUST Cleanup Site	6/1/1999	Completed - Case Closed	Closed				8/1/2005	6/1/2007	1		9/4/2002	BZ	
T0602100010	Glenn	ARCO #2194	WILLOWS	39.5244229	-122.2116024	LUST Cleanup Site	8/21/1988	Open - Verification Monitoring	Open				7/15/2019	5/10/1993	5/31/1997	5	1	10/17/2001	BZ
T0602100502	Glenn	KELLSHER FACILITY (FORMER)	WILLOWS	39.5126282	-122.193653	LUST Cleanup Site	5/15/2003	Completed - Case Closed	Closed				4/27/2016	11/5/2010	11/5/2010	1		7/14/2004	BZ
T0602200002	Humboldt	PORTLANDS POINT STATE PARK	FRINDAD	42.13711931	-124.151178	LUST Cleanup Site	6/1/1999	Open - Eligible for Closure	Open				10/4/2011	11/8/2014	4	2	10/20/2007	MTBE	
T0602200028	Humboldt	TOTEM POLE MARKET (FORMER)	FORTUNA	40.89700312	-124.1470531	LUST Cleanup Site	1/28/1988	Completed - Case Closed	Closed				12/16/2014	9/1/2007	11/7/2011	5	3	2/25/2003	BZ
T0602200046	Humboldt	TRIPLE TOMBERS, JACK	FERNDALE	40.57714817	-124.282781	LUST Cleanup Site	8/11/1988	Completed - Case Closed	Closed				9/27/2011	1/7/2008	1/7/2008	1		1/15/2002	BZ
T0602200056	Humboldt	REDWOOD MOTORS, INC.	EUREKA	40.78020304	-124.138305	LUST Cleanup Site	6/17/1990	Completed - Case Closed	Closed				5/30/2014	5/1/2006	5/1/2006	7		3/7/2007	MTBE
T0602200060	Humboldt	HUMBOLDT FIRE DISTRICT HEADQUARTERS	EUREKA	40.8006976	-124.1678316	LUST Cleanup Site	10/27/1988	Completed - Case Closed	Closed				1/14/2018	5/1/2006	5/1/2012	7	2	1/25/2002	BZ
T0602200065	Humboldt	HUMBOLDT FIRE DISTRICT HEADQUARTERS	EUREKA	40.78075073	-124.12845	LUST Cleanup Site	11/3/1988	Completed - Case Closed	Closed				11/1/2010	2/1/2001	3/8/2009	9	3	5/6/2003	BZ
T0602200067	Humboldt	HUMELSON FREIGHT YARD (FORMER)	FORTUNA	40.79128109	-124.1839101	LUST Cleanup Site	11/14/1988	Completed - Case Closed	Closed				4/1/2018	7/15/2008	11/20/2008	1		9/2/2005	MTBE
T0602200085	Humboldt	HUMBOLDT PETROLEUM	FORTUNA	40.58883598	-124.1472496	LUST Cleanup Site	3/21/1989	Completed - Case Closed	Closed				5/30/18	3/26/2001	11/20/2011	3		9/6/2001	BZ
T0602200095	Humboldt	HUMELSON PL WYCOO MILL (Former)	EUREKA	40.79180304	-124.1472496	LUST Cleanup Site	3/21/1989	Completed - Case Closed	Closed				4/1/2018	7/15/2008	11/20/2008	1		9/2/2005	MTBE
T0602200135	Humboldt	BIG OIL & TIRE - CLENDALE BP	ARCATA	40.89665173	-124.1016907	LUST Cleanup Site	10/18/1988	Completed - Case Closed	Closed				10/10/2017	7/29/2003	9/15/2003	1		3/3/2002	MTBE
T0602200155	Humboldt	ELLIOTT'S SERVICE STATION	LOLETA	40.6281294	-124.2200964	LUST Cleanup Site	12/18/1989	Completed - Case Closed	Closed				9/5/2014	10/23/2006	11/10/2011	6	3	11/2/2001	MTBE
T0602200156	Humboldt	SHELL BAKERSFIELD	ARCATA	40.7282084	-124.084396	LUST Cleanup Site	12/23/1988	Open - Site Assessment	Open				12/23/2018	6/25/2009	10/24/2008	1		2/17/2007	MTBE
T0602200188	Humboldt	HARPER JEEP-EAGLE	EUREKA	40.8044809	-124.170699	LUST Cleanup Site	4/25/1990	Completed - Case Closed	Closed				6/14/2017	10/6/2008	10/10/2008	1		11/13/2001	BZ
T0602200194	Humboldt	HUMBOLDT PETROLEUM - former Rio Dell Shell	RO DELL	40.46826055	-124.148826	LUST Cleanup Site	5/21/1990	Completed - Case Closed	Closed				3/27/2013	12/1/2002	9/15/2003	2	1	1/21/2002	MTBE
T0602200198	Humboldt	NORTHWOOD CHEVROLET	EUREKA	40.78073580	-124.1677684	LUST Cleanup Site	6/17/1990	Completed - Case Closed	Closed				4/3/20	9/2/2010	3/7/2014	5	1	10/17/2005	BZ
T0602200201	Humboldt	HUMBOLDT PETROLEUM	EUREKA	40.79734527	-124.142773	LUST Cleanup Site	6/28/1990	Open - Verification Monitoring	Open				6/25/2019	10/11/2011	10/3/2011	1		7/10/2002	MTBE
T0602200242	Humboldt	FLYING J SERVICE STATION	EUREKA	40.7751961	-124.189902	LUST Cleanup Site	1/24/1990	Completed - Case Closed	Closed				8/4/2018	6/1/2001	12/1/2003	3	2	2/14/2002	MTBE
T0602200248	Humboldt	PRIVATE RESIDENCE	BRANDAN	40.23443651	-123.845781	LUST Cleanup Site	6/18/1991	Completed - Case Closed	Closed				12/12/2014	6/30/2011	5/1/2013	1		9/1/2001	BZ
T0602200257	Humboldt	HUMBOLDT PETROLEUM	EUREKA	40.80301563	-124.1571543	LUST Cleanup Site	12/14/1990	Completed - Case Closed	Closed				6/5/2014	11/8/2011	11/8/2011	1		2/8/2002	MTBE
T0602200262	Humboldt	FERNDALE MOTOR	FERNDALE	40.57689419	-124.2515167	LUST Cleanup Site	3/15/1991	Completed - Case Closed	Closed				6/30/214	5/8/2012	5/10/2012	1		1/14/2002	BZ
T0602200268	Humboldt	CHEVRON CARBONVILLE	ARCATA	40.59847788	-123.765321	LUST Cleanup Site	6/9/1992	Completed - Case Closed	Closed				6/28/2012	10/31/2001	10/31/2001	1		2/27/2001	BZ
T0602200332	Humboldt	SHELL CASHILL	ARCATA	40.															

T0603300489	Lake	LOWER LAKE UNION	38.19032	-122.609258	LUST Cleanup Site	12/8/1993	Completed - Case Closed	Closed	2/22/2012	x					12/15/2007	12/31/2010	4	1	3/25/2003	MTBE	
T0603300549	Lake	KELSEYVILLE FIRE DEPT	38.87693868	-122.817185	LUST Cleanup Site	3/31/1995	Completed - Case Closed	Closed	7/22/2010	x					11/15/2004	7/22/2013	5	1	2/26/2002	BZ	
T060330071	Lake	NOTTS LIQUORS #213	38.8499686	-122.655715	LUST Cleanup Site	1/28/1997	Completed - Case Closed	Closed	8/14/2006	x					8/14/2006	7/30/2011	6	2	10/27/2005	MTBE	
T0603300110	Lassen	BEACON GAS STATION #890	40.413205	-120.936835	LUST Cleanup Site	5/25/1988	Completed - Case Closed	Closed	10/16/2006	x					11/11/1997	11/11/1998	2	1	5/31/2002	MTBE	
T0603300113	Lassen	JANESVILLE PAYLESS GAS	40.28629294	-120.825493	LUST Cleanup Site	3/20/1989	Open - Verification Monitoring	Open	5/25/2002	x					5/25/2002	1/1	1	9/6/2001	MTBE		
T0603300116	Lassen	OLD ARCO STATION	40.41545818	-120.6478161	LUST Cleanup Site	6/24/1992	Completed - Case Closed	Closed	12/12/2013	x		12/9/1995	4/13/2004	10	1			9/11/2002	BZ		
T060330021	Lassen	SEVEN ACRES MOBILE HOME PARK	40.27883323	-120.382609	LUST Cleanup Site	12/21/1995	Completed - Case Closed	Closed	84/2016	x		8/15/2003	8/13/2004	1	1			9/7/2001	BZ		
T0603300229	Lake	CLAY STREET PROPERTIES	34.8686095	-118.1661344	LUST Cleanup Site	3/12/1987	Completed - Case Closed	Closed	11/30/2015	x					1/11/1994	12/31/2011	18	3	4/25/2001	MTBE	
T060330031	Lake	LANCASTER	34.86679637	-118.1476164	LUST Cleanup Site	11/28/1990	Completed - Case Closed	Closed	7/10/2014	x					8/29/2002	10/20/2011	10	2	10/10/2001	BZ	
T0603300352	Lake	SHELL STATION	34.70359901	-118.1476367	LUST Cleanup Site	12/21/1988	Completed - Case Closed	Closed	12/30/2013	x					11/17/2004	6/30/2005	2	1	3/18/2002	MTBE	
T0603300375	Lake	GENCO STORE #21 FORMER	34.67517494	-118.1536712	LUST Cleanup Site	3/11/1987	Completed - Case Closed	Closed	11/10/2004	x					3/11/1987	8/1/2006	1	2	9/13/2001	MTBE	
T0603300381	Lake	FORMER EVEREST ENERGY GAS	34.7037067	-118.1406821	LUST Cleanup Site	12/12/1997	Completed - Case Closed	Closed	12/22/2015	x					5/8/2003	4/24/2014	12	3	12/4/2001	MTBE	
T060330041	San Bernardino	WRIGHTWOOD MINI MART	34.3897426	-117.8098415	LUST Cleanup Site	10/15/1997	Completed - Case Closed	Closed	3/10/2008	x					8/10/2003	12/30/2004	2	1	2/22/2005	MTBE	
T0603300419	Lake	WATTS	33.9597497	-118.274999	LUST Cleanup Site	3/20/1984	Open - Remediation	Open	7/31/2006	x					11/16/2014	11/16/2002	1	1	11/16/2002	BZ	
T0603300407	Lake	SMITH SERVICE STATION (FORMER)	33.9531392	-118.2562074	LUST Cleanup Site	11/11/94	Completed - Case Closed	Closed	11/27/2013	x					9/20/2007	2/24/2012	6	1	7/25/2002	BZ	
T0603300410	Lake	LOS ANGELES	33.28629294	-118.279254	LUST Cleanup Site	11/13/1993	Open - Eligible for Closure	Open	10/9/1997	x					11/16/2002	11/16/2002	1	1	11/16/2002	BZ	
T0603300411	Lake	MOBL #18-EL4 (FORMER #11-EL4)	33.945614	-118.2740057	LUST Cleanup Site	7/20/1987	Completed - Case Closed	Closed	12/30/2019	x					3/17/2004	3/1/2010	8	1	10/12/2001	MTBE	
T0603300415	Lake	ARCO #0069 (FORMER)	33.9402039	-118.264499	LUST Cleanup Site	3/30/1990	Completed - Case Closed	Closed	8/22/2008	x					1/19/2002	3/31/2006	5	1	10/22/2001	MTBE	
T0603300433	Lake	CIRCLE #221108 FORMER MOBL #18-GX111-GX8)	34.083226	-118.2520872	LUST Cleanup Site	4/15/1991	Open - Remediation	Open	1/20/2004	x		8/1/2001	7/14/2022	22	1	12/13/2010	9/17/2010	10	2	1/6/2002	MTBE
T0603300435	Lake	SHELL BRANDED SERVICE STATION	34.0695575	-118.3098812	LUST Cleanup Site	4/11/1989	Completed - Case Closed	Closed	9/26/2013	x					3/24/2004	6/25/2008	5	1	7/20/2001	MTBE	
T0603300445	Lake	UNOCAL #0457	34.069327	-118.306052	LUST Cleanup Site	11/19/1992	Open - Remediation	Open	6/16/2016	x		10/10/2010	12/31/2014	5	1	1/11/1996	8/31/1997	2	1	1/6/2002	BZ
T0603300448	Lake	BEVERLY CATALINA CAR WASH	34.0761144	-118.2655329	LUST Cleanup Site	1/26/1990	Completed - Case Closed	Closed	7/15/2016	x					11/14/2007	4/9/2009	3	1	6/9/2004	MTBE	
T0603300458	Lake	FORMER MOBL #18-LFR	34.08323016	-118.3055363	LUST Cleanup Site	6/4/1986	Completed - Case Closed	Closed	2/23/2010	x		11/14/2007	4/9/2009	3	1	9/12/2007	5/8/2009	3	1	6/9/2004	MTBE
T0603300465	Lake	75 STATION #214	34.0745836	-118.2644676	LUST Cleanup Site	4/18/1990	Open - Remediation	Open	10/28/2010	x					2/9/2004	8/1/2013	10	1	11/14/2001	MTBE	
T0603300467	Lake	TOSCO - 75 STATION #205958	34.057344	-118.301392	LUST Cleanup Site	11/11/1991	Completed - Case Closed	Closed	7/17/2011	x					5/1/2000	25/2016	17	3	12/4/2001	BZ	
T0603300469	Lake	ALRIGHT PARKING LOT (CHEVRON HERITAGE #21-1315)	34.081518	-118.1186914	LUST Cleanup Site	10/25/1982	Completed - Case Closed	Closed	7/15/2013	x					8/13/2002	54/2008	5	1	10/28/2001	BZ	
T0603300475	Lake	UNITED OIL #65	34.0478197	-118.2517034	LUST Cleanup Site	1/3/1990	Completed - Case Closed	Closed	11/18/2009	x					8/21/1996	6/17/2008	13	1	3/11/2002	BZ	
T0603300477	Lake	WORLD OIL #22 (FORMER)	34.0436201	-118.2517204	LUST Cleanup Site	1/16/1997	Completed - Case Closed	Closed	11/12/2009	x					11/21/1997	7/26/2003	7	1	10/17/2001	BZ	
T0603300482	Lake	THRIFTY #242	34.0083897	-118.3349761	LUST Cleanup Site	6/21/1995	Completed - Case Closed	Closed	6/15/2008	x					3/3/2004	10/25/2005	2	2	6/21/2002	MTBE	
T0603300485	Lake	THRIFTY #242	34.0167919	-118.355626	LUST Cleanup Site	6/16/1987	Completed - Case Closed	Closed	8/29/2008	x					6/13/2003	12/29/2003	1	1	6/25/2001	MTBE	
T0603300530	Lake	JIMMIE JOES TEXACO	34.0643534	-118.238579	LUST Cleanup Site	7/11/1994	Open - Eligible for Closure	Open	11/22/2021	x					2/27/2008	16/2014	7	1	6/26/2008	MTBE	
T0603300532	Lake	FIRE STATION #3	34.0583237	-118.2528884	LUST Cleanup Site	6/13/1988	Open - Remediation	Open	7/26/2011	x		7/30/2009	5/28/2010	2	1	9/8/2014	9/8/2014	8/31/2007	MTBE		
T0603300535	Lake	PAULS DISTRIBUTION HEADQUARTER	34.03703703	-118.369614	LUST Cleanup Site	11/1/1991	Open - Remediation	Open	11/15/2014	x					7/15/2005	11/15/2014	10	1	11/15/2004	MTBE	
T0603300564	Lake	ARCO #5180	34.0128126	-118.3740143	LUST Cleanup Site	11/15/1991	Completed - Case Closed	Closed	5/16/2013	x					2/8/2002	11/30/2007	6	2	10/31/2001	MTBE	
T0603300570	Lake	SUN SERVICE AUTO REPAIR	34.0323304	-118.3597901	LUST Cleanup Site	1/4/1989	Completed - Case Closed	Closed	12/20/2005	x					2/26/2003	6/2/2004	2	1	4/12/2002	BZ	
T0603300571	Lake	WORLD OIL #27	34.0323304	-118.3596882	LUST Cleanup Site	5/14/1994	Open - Verification Monitoring	Open	11/15/2016	x		10/18/1999	11/5/2004	6	1	10/18/1999	11/5/2004	6	1	8/26/2001	MTBE
T0603300572	Lake	DANNYS MOBL SERVICE STATION	34.0352914	-118.3498369	LUST Cleanup Site	4/18/1991	Completed - Case Closed	Closed	9/7/2010	x					4/1/2008	6/15/2010	3	1	12/18/2001	MTBE	
T0603300575	Lake	KENNY'S AUTO SERVICE (FORMER)	34.0262928	-118.369785	LUST Cleanup Site	1/9/1996	Open - Remediation	Open	5/23/207	x					8/17/2003	8/3/2006	4	1	11/26/2001	MTBE	
T0603300591	Lake	SHELL CHESS OIL	34.0342927	-118.2701559	LUST Cleanup Site	1/15/1989	Completed - Case Closed	Closed	7/17/2018	x					11/20/2004	9/3/2014	1	1	9/3/2001	MTBE	
T0603300608	Lake	MOBL 18-LEG	34.037433	-118.3180365	LUST Cleanup Site	7/31/1987	Completed - Case Closed	Closed	10/25/2018	x					8/7/2001	4/11/2017	17	3	11/26/2001	MTBE	
T0603300612	Lake	LOS ANGELES	34.0549191	-118.3023203	LUST Cleanup Site	12/12/1991	Completed - Case Closed	Closed	11/18/2007	x		10/1/1991	9/11/1997	7	2	2/19/2001	2/19/2001	2	1	11/26/2001	MTBE
T0603300615	Lake	SHN BROTHERS AUTOBODY & PAINT	34.05412	-118.3222426	LUST Cleanup Site	8/50/1991	Completed - Case Closed	Closed	12/9/2020	x		2/16/2015	3/1/2017	3	1	11/1/2014	11/1/2018	5	1	3/28/2003	BZ
T0603300617	Lake	LA DPW WESTERN DISTRICT-H.Q.	34.03844361	-118.3683301	LUST Cleanup Site	8/11/1987	Open - Remediation	Open	10/9/1997	x		7/15/2005	11/5/2014	10	1	10/9/1997	4/15/2004	8	1	2/11/2002	BZ
T0603300618	Lake	MD CITY	34.0443374	-118.3279492	LUST Cleanup Site	8/11/1987	Completed - Case Closed	Closed	5/1/2013	x					11/23/2003	10/9/2012	10	1	9/19/2001	BZ	
T0603300620	Lake	MOBL #18-LR	34.0526387	-118.3052862	LUST Cleanup Site	8/24/1989	Open - Remediation	Open	7/28/2004	x					10/9/2002	10/9/2012	10	1	9/19/2001	BZ	
T0603300622	Lake	CHEVRON #9-1210	34.05447	-118.3231974	LUST Cleanup Site	4/5/1991	Completed - Case Closed	Closed	6/12/2008	x					11/11/1995	2/27/1996	2	1	10/11/2001	BZ	
T0603300628	Lake	75 STATION #2041	34.0426298	-118.3482169	LUST Cleanup Site	8/20/1988	Completed - Case Closed	Closed	8/20/2016	x					8/20/2016	8/20/2016	1	1	9/5/2004	MTBE	
T0603300629	Lake	CHEVRON #9-5204 FORMER	34.06375672	-118.3055291	LUST Cleanup Site	1/11/1983	Completed - Case Closed	Closed	12/20/2017	x					7/11/1991	9/30/2004	14	2	10/6/2001	BZ	
T0603300630	Lake	FORMER ARCO #1860	34.0691804	-118.2587213	LUST Cleanup Site	2/25/1988	Open - Remediation	Open	4/27/2012	x		9/5/2002	17/2005	4	1	9/29/2002	4/24/2017	18	2	11/20/2001	MTBE
T0603300636	Lake	TOSCO - 75 STATION #3472	34.06927304	-118.2919467	LUST Cleanup Site	10/22/1992	Completed - Case Closed	Closed	13/10/2018	x					8/1/2008	8/1/2008	1	1	9/20/2001	MTBE	
T0603300639	Lake	MOBL #11-EKT	34.0134108	-118.219584	LUST Cleanup Site	6/4/1986	Completed - Case Closed	Closed	10/21/2009	x					5/24/2006	10/24/2008	3	1	9/23/2002	BZ	
T0603300640	Lake	TOSCO - 75 STATION #1055 (FORMER)	34.0591073	-118.445822	LUST Cleanup Site	5/19/1991	Completed - Case Closed	Closed	9/15/2009	x					6/30/2003	5/22/2007	3	1	11/1/2001	MTBE	
T0603300661	Lake	CHEVRON #9-3100	34.0641191	-118.4483301	LUST Cleanup Site	12/12/1991	Completed - Case Closed	Closed	7/1/2014	x					11/11/1996	11/11/1996	1	1	11/1/2001	MTBE	
T0603300681	Lake	75 STATION #201715	34.05787271	-118.424018	LUST Cleanup Site	10/11/1987	Completed - Case Closed	Closed	11/30/2017	x		5/11/1990	10/6/2014	25	3	4/10/1998	9/13/2004	7	1	8/27/2002	BZ
T0603300682	Lake	MOBL #18-OLM (FORMER)	34.0444665	-118.465713	LUST Cleanup Site	11/3/1988	Completed - Case Closed	Closed	5/1/2013	x		10/1/1997	6/1/2006	10	1	11/17/2001	11/17/2001	1	1	11/17/2001	MTBE
T0603300697	Lake	T & T SERVICE	34.0448157	-118.4469817	LUST Cleanup Site	6/4/1996	Completed - Case Closed	Closed	9/30/2005	x					12/1/2004	3/31/2004	1	1	12/6/2001	BZ	
T0603300713	Lake	ARCO #9-8422	34.0700493	-118.267957	LUST Cleanup Site	18/1062	Completed - Case Closed	Closed	11/20/2014	x					10/3/2006	34/2011	4	1	10/26/2001	MTBE	
T0603300727	Lake	Circle K #221128 (Former MoBl #11-LMR)	34.0726113	-118.2753302	LUST Cleanup Site	1/14/1987	Open - Remediation	Open	11/9/2005	x		11/9/2005	11/2/2006	2	1	10/9/2005	11/2/2006	1	1	9/20/2001	MTBE
T0603300737	Lake	THRIFTY #183	34.0862094	-118.2686842	LUST Cleanup Site	7/8/1991	Completed - Case Closed	Closed	17/03/13	x					4/9/2002	4/10/2002	1	1	10/8/2		



T0603701203	Los Angeles	SHRE STATE	LOS ANGELES	34.010568	-118.4387188	LUST Cleanup Site	5/12/1989	Completed - Case Closed	Closed	12/27/2011	x				11/1/2005	3/1/2011	7	1	10/23/2001	MTBE					
T0603701204	Los Angeles	LOS ANGELES GAS (FORMER)	LOS ANGELES	34.033796	-118.433796	LUST Cleanup Site	6/19/1997	Completed - Case Closed	Closed	3/10/2010					10/25/2010		6	1	8/6/2001	BZ					
T0603701215	Los Angeles	HELL BRANDED SERVICE STATION (FORMER)	LOS ANGELES	34.127447	-118.3467199	LUST Cleanup Site	6/17/1992	Completed - Case Closed	Closed	10/10/2012	x		9/11/1998	2/1/2000	3	1	6/1/2001	6/1/2001	1	8/9/2001	MTBE				
T0603701216	Los Angeles	CIRCLE K STORE #2211225 (FORMER MOBIL 18-FE)	HOLLYWOOD	34.129347	-118.3483162	LUST Cleanup Site	7/2/1992	Completed - Case Closed	Closed	11/9/2016							1	1	8/21/2006	11/30/2012	7	1	3/25/2002	MTBE	
T0603701222	Los Angeles	SOUTHERN CAR TRD	WEST HOLLYWOOD	34.2632199	-118.41448	LUST Cleanup Site	Open	Remediation	Open	9/19/2021										9/19/2021				9/19/2021	MTBE
T0603701226	Los Angeles	ARCO #5122	LOS ANGELES	34.092949	-118.3958328	LUST Cleanup Site	4/15/1985	Completed - Case Closed	Closed	7/7/2015			5/4/1992	3/17/2004	13	1			12/29/2007	8/30/2009	3	1	2/27/2002	MTBE	
T0603701248	Los Angeles	SOUTHERN CA EDISON CO	COMPTON	33.90091555	-118.202627	LUST Cleanup Site	29/1/1988	Open - Eligible for Closure	Open	4/7/2021									5/1/1997	10/25/1999	3	1	11/8/2001	BZ	
T0603701257	Los Angeles	POWER RESIDENT	LOS ANGELES	33.94544	-118.417812	LUST Cleanup Site	13/1/1988	Completed - Case Closed	Closed	8/7/2018									9/1/2007	6/13/2011	5	1	10/5/2002	MTBE	
T0603701260	Los Angeles	WINALL #18	LOS ANGELES	34.018546	-118.406475	LUST Cleanup Site	4/1/1994	Completed - Case Closed	Closed	4/17/2008									5/1/2000	7/1/2007	8	1	10/23/2001	MTBE	
T0603701274	Los Angeles	VRCO MANUFACTURING CORP INC	GARDENA	33.894326	-118.2913665	LUST Cleanup Site	7/25/1992	Completed - Case Closed	Closed	12/31/2012									12/1/2007	6/30/2008	2	1	1/7/2002	BZ	
T0603701287	Los Angeles	LA AND M SERVICE STATION	LOS ANGELES	33.882415	-118.287201	LUST Cleanup Site	6/9/1/987	Completed - Case Closed	Closed	11/8/2021									1/13/2001	11/8/2021	2	1	10/23/2001	MTBE	
T0603701301	Los Angeles	CALTRANS - WITCO CHEMICAL CO. (FORMER)	LYNNWOOD	33.930231	-118.224656	Cleanup Program Site	10/25/1989	Open - Assessment & Interim Remedial Action	Open	10/27/2015									2/1/1996	12/1/2004	9	2	12/4/2007	TCE	
T0603701337	Los Angeles	PIONEER FRENCH BAKERY	VENICE	33.986308	-118.4736575	LUST Cleanup Site	5/1/1987	Completed - Case Closed	Closed	3/11/2013	x		9/1/2001	9/30/2001	1	1	10/1/2003	12/1/2005	3	2	8/6/2001	MTBE			
T0603701339	Los Angeles	ARCO (FORMER)	VENICE	33.989372	-118.461308	LUST Cleanup Site	8/23/1989	Completed - Case Closed	Closed	8/23/1989									8/23/1989				8/23/1989	BZ	
T0603701342	Los Angeles	MOBL #204-H10-0307	VENICE	33.9932762	-118.4537199	LUST Cleanup Site	8/21/1989	Completed - Case Closed	Closed	8/27/2004	x		10/16/2001	8/7/2003	3	1	4/15/2002	8/7/2003	2	1	10/25/2001	MTBE			
T0603701354	Los Angeles	PLAYA DEL REY #11-GN8	PLAYA DEL REY	33.9569104	-118.4434299	LUST Cleanup Site	10/7/1995	Completed - Case Closed	Closed	5/1/1993									5/1/1993				11/8/2001	MTBE	
T0603701360	Los Angeles	SHELL #204-4530-0060	LOS ANGELES	33.960043	-118.3036047	LUST Cleanup Site	7/8/1986	Open - Eligible for Closure	Open	5/16/2022									1/10/2016	7/16/2020	5	1	7/5/2001	BZ	
T0603701362	Los Angeles	WORLD OIL #16	SANTA MONICA	34.0138413	-118.4843168	LUST Cleanup Site	6/24/1987	Completed - Case Closed	Closed	32/22/2012	x		4/1/1998	10/1/1998	1	1	4/1/1994	7/1/1998	5	1	11/10/2001	MTBE			
T0603701420	Los Angeles	COLIN CAR WASH	SANTA MONICA	34.0162751	-118.4873342	LUST Cleanup Site	3/17/1994	Completed - Case Closed	Closed	9/28/2012	x		5/1/2004	5/24/2004	5	1	5/1/2004		9/5/2002				9/29/2001	MTBE	
T0603701458	Los Angeles	ALLAN'S ARCO MINI MARKET	LOS ANGELES	33.83178	-118.306714	LUST Cleanup Site	63/1/1994	Completed - Case Closed	Closed	22/1/2007									9/29/2003	3/1/2005	3	1	9/27/2002	MTBE	
T0603701468	Los Angeles	MADRONA CAR WASH	TORRANCE	33.82519109	-118.3436341	LUST Cleanup Site	4/18/1992	Completed - Case Closed	Closed	7/17/2018									4/7/2011	8/29/2012	2	1	7/22/2002	MTBE	
T0603701469	Los Angeles	MOBL 18-L1	TORRANCE	33.8483843	-118.3922103	LUST Cleanup Site	3/20/1988	Completed - Case Closed	Closed	9/17/2008									5/16/2007				11/16/2001	BZ	
T0603701479	Los Angeles	TEXACO #128(NACTIVE)	TORRANCE	33.8726292	-118.3430373	LUST Cleanup Site	10/20/1988	Completed - Case Closed	Closed	7/21/2020									2/1/1993	6/30/1995	3	1	11/8/2001	BZ	
T0603701480	Los Angeles	ARCO #0210	TORRANCE	33.877261	-118.3437983	LUST Cleanup Site	3/14/1989	Completed - Case Closed	Closed	12/20/2015	x								8/1/1994	2/11/2009	16	1	10/17/2001	MTBE	
T0603701488	Los Angeles	YNUJEAZ FAMILY TRUST	TORRANCE	33.865369	-118.3288788	LUST Cleanup Site	3/14/1989	Completed - Case Closed	Closed	84/2/16	x		3/25/2002	12/26/2002	1	1	8/1/1992	9/25/2007	2	1	9/25/2007	MTBE			
T0603701484	Los Angeles	EXXON #7-5712	TORRANCE	33.8654438	-118.3265458	LUST Cleanup Site	4/7/17/92	Completed - Case Closed	Closed	39/2/10									9/1/1999	8/31/2009	11	2	10/9/2001	BZ	
T0603701490	Los Angeles	YUSUEZ FAMILY TRUST	TORRANCE	33.8654438	-118.3265458	LUST Cleanup Site	12/30/1993	Completed - Case Closed	Closed	10/25/2010	x		1/1/2000	12/31/2001	2	1	1/1/2000	12/31/2010	15	1	10/9/2001	BZ			
T0603701498	Los Angeles	YUSUEZ FAMILY TRUST	TORRANCE	33.872732	-118.3432783	LUST Cleanup Site	8/25/1992	Completed - Case Closed	Closed	12/30/2015									1/1/2002	11/9/2013	12	2	9/10/2001	MTBE	
T0603701499	Los Angeles	MOBL #18-EC (FORMER #11-ECPI)	TORRANCE	33.8580642	-118.3287252	LUST Cleanup Site	4/8/1987	Open - Remediation	Open	12/9/2010									8/1/2009	9/30/2018	10	1	11/16/2001	BZ	
T0603701493	Los Angeles	MOBL #18-DE	TORRANCE	33.879032	-118.3248742	LUST Cleanup Site	10/25/2003	Completed - Case Closed	Closed	10/25/2003									10/25/2003	10/25/2003	1	1	9/29/2001	MTBE	
T0603701494	Los Angeles	MOBL 18-DE	TORRANCE	33.8654438	-118.3282818	LUST Cleanup Site	9/14/1990	Completed - Case Closed	Closed	98/2/14	x		1/1/2000	10/30/2003	4	1	10/29/2003	5/31/2012	10	1	10/9/2001	BZ			
T0603701495	Los Angeles	TEXACO	TORRANCE	33.8586263	-118.3271325	LUST Cleanup Site	5/1/1990	Completed - Case Closed	Closed	6/1/2021	x		8/1/2000	3/1/2008	7	1	9/20/1996	2/1/2016	21	1	10/9/2001	MTBE			
T0603701496	Los Angeles	MOBL #18-EDP (FORMER #11-EDP)	TORRANCE	33.865369	-118.3282818	LUST Cleanup Site	12/31/11	Completed - Case Closed	Closed	12/31/11									11/11/2008	10/30/2010	11	1	9/25/2001	MTBE	
T0603701503	Los Angeles	ARCO #0171	TORRANCE	33.8125485	-118.32789	LUST Cleanup Site	6/17/1986	Completed - Case Closed	Closed	19/13/2013	x		10/1/1990	5/30/1991	2	1	10/1/1990	1/10/12	23	1	12/27/2001	BZ			
T0603701530	Los Angeles	VICTORIA MEYER TRUST PROPERTY	SANTA FE SPRINGS	33.526237	-118.0465899	LUST Cleanup Site	10/1/1987	Completed - Case Closed	Closed	3/30/212									3/17/2003	3/30/2007	1	1	2/20/2002	MTBE	
T0603701535	Los Angeles	LA MIRADA	LA MIRADA	33.833302	-118.0269594	LUST Cleanup Site	3/1/1990	Completed - Case Closed	Closed	12/22/2015	x		4/1/2006	6/30/2006	1	1	4/1/2006	6/30/2006	1	1	4/1/2006	MTBE			
T0603701540	Los Angeles	G I TRUCKING CO.	LA MIRADA	33.888101	-118.012181	LUST Cleanup Site	11/11/1988	Open - Remediation	Open	4/23/2008									2/20/2007	4/25/2007	1	1	12/7/2001	BZ	
T0603701545	Los Angeles	POWER RATED FRANCHISO TRUST	NORWALK	33.9189122	-118.0826	LUST Cleanup Site	34/1/1988	Completed - Case Closed	Closed	3/7/2008									2/1/1993	11/10/1996	4	1	9/12/2001	BZ	
T0603701573	Los Angeles	SENNIS PROPERTY DEVELOPMENT	SANTA FE SPRINGS	33.9203509	-118.072349	LUST Cleanup Site	6/28/1988	Completed - Case Closed	Closed	10/31/2014									12/22/2007	9/25/2009	2	1	9/25/2002	MTBE	
T0603701576	Los Angeles	AMERICAN SITE BEARS	SANTA FE SPRINGS	33.969481	-118.0600582	LUST Cleanup Site	12/12/1990	Completed - Case Closed	Closed	32/1/2011									3/14/2005	12/8/2008	4	1	9/24/2001	BZ	
T0603701589	Los Angeles	HARBOR CITY	HARBOR CITY	33.810031	-118.2504913	LUST Cleanup Site	8/1/2008	Completed - Case Closed	Closed	12/8/2008									12/8/2008				10/10/2001	MTBE	
T0603701591	Los Angeles	RAPID GAS #51	HARBOR CITY	33.7910944	-118.291354	LUST Cleanup Site	11/29/1993	Completed - Case Closed	Closed	7/7/2016									9/1/2007	9/30/2014	8	1	11/27/2001	BZ	
T0603701604	Los Angeles	MATTHEWS SERVICE STATION	HAWAIIAN GARDENS	33.8312607	-118.0167523	LUST Cleanup Site	5/26/1983	Open - Eligible for Closure	Open	6/22/2020	x		3/19/2011	4/15/2014	4	1	6/13/2011	2/25/2014	1	1	6/22/2004	MTBE			
T0603701612	Los Angeles	MOBL #18-EC (FORMER #11-ECPI)	SAN PEDRO	33.7823158	-118.2805294	LUST Cleanup Site	10/1/1987	Completed - Case Closed	Closed	7/13/2011									4/1/2006	9/30/2006	1	1	9/31/2001	MTBE	
T0603701615	Los Angeles	HARBOR AUTO BODY	SAN PEDRO	33.73431541	-118.2813513	LUST Cleanup Site	10/15/1992	Completed - Case Closed	Closed	12/10/2010									7/8/2001	12/17/2008	8	1	12/17/2001	BZ	
T0603701629	Los Angeles	ARCO #3069	TERMINAL ISLAND	33.7538351	-118.2922965	LUST Cleanup Site	9/15/1987	Completed - Case Closed	Closed	6/30/2008									12/23/2003	3/31/2006	4	1	9/29/2001	MTBE	
T0603701653	Los Angeles	UNIONAL #5221	WILMINGTON	33.7920318	-118.2807188	LUST Cleanup Site	7/20/1995	Open - Site Assessment	Open	1/18/2008			213/1996	215/2007	12	1	1/18/2008		2/4/1993				9/29/2001	MTBE	
T0603701659	Los Angeles	ROCKET #5	WILMINGTON	33.7718439	-118.2784906	LUST Cleanup Site	7/20/1995	Open - Site Assessment	Open	7/31/2008									58/2007	11/9/2007	1	1	3/21/2002	BZ	
T0603701663	Los Angeles	TEXACO	WILMINGTON	33.7812191	-118.2420418	LUST Cleanup Site	8/10/1992	Open - Remediation	Open	25/2/04									3/1/2003	12/1/2003	1	1	9/26/2001	BZ	
T0603701664	Los Angeles	WILMINGTON GAS #6	WILMINGTON	33.7787359	-118.2635028	LUST Cleanup Site	10/26/2008	Completed - Case Closed	Closed	10/26/2008									12/1/2008	10/26/2008	1	1	9/25/2001	MTBE	
T0603701667	Los Angeles	UNITED RENTAL	LONG BEACH	33.788397	-118.291914	LUST Cleanup Site	6/27/1986	Open - Remediation	Open	5/15/2015									6/1/2001	2/13/2003	3	1	2/28/2002	MTBE	
T0603701673	Los Angeles	TOSCO - 76 STATION #3568	LONG BEACH	33.780017	-118.291914	LUST Cleanup Site	5/19/1997	Completed - Case Closed	Closed	7/3/2015			3/1/2000	3/2/2000	1	1	11/1/2000	11/1/2008	1	1	9/25/2001	BZ			
T0603701672	Los Angeles	FORMER TEXACO	WILMINGTON	33.780017	-118.247238	LUST Cleanup Site	12/1/1990	Open - Remediation	Open	8/7/2010			2/22/2011	12/6/2015	5	1	7/20/2011	11/20/17	7	1	4/23/2002	MTBE			
T0603701678	Los Angeles	RAPID GAS #7	WILMINGTON	33.7800697	-118.2751247	LUST Cleanup Site	5/25/1997	Completed - Case Closed	Closed	86/2/12									9/10/2006	11/20/11	6	1	9/19/2001	MTBE	
T0603701700	Los Angeles	CHICO BE CORPORATION PROPERTY	LONG BEACH	33.7891202	-118.1818252	LUST Cleanup Site	12/22/2008	Completed - Case Closed	Closed	7/10															

T0603702121	Los Angeles	PHIL'S CAR & TRUCK RENTAL	WINNETKA	34.2008725	-118.5712625	LUST Cleanup Site	10/27/1998	Completed - Case Closed	Closed	7/23/2019	x		2/1/2010	12/1/2013	4	1	3/1/2008	MTBE
T0603702124	Los Angeles	ACCA'S AUTOMOTIVE CENTER #1308	CANOGA PARK	34.1972006	-118.6235651	LUST Cleanup Site	3/24/1998	Completed - Case Closed	Closed	3/31/1998	x		3/1/2000	3/1/2003	8	1	4/1/2000	MTBE
T0603702132	Los Angeles	MOBL #18-90	CHATS WORTH	34.257438	-118.5786889	LUST Cleanup Site	12/30/1993	Completed - Case Closed	Closed	1/19/2005	x		3/1/2008	3/1/2013	5	1	3/1/2008	MTBE
T0603702146	Los Angeles	TOSCO - 76 STATION #5200	CHATS WORTH	34.2489734	-118.6052895	LUST Cleanup Site	1/18/1998	Completed - Case Closed	Closed	3/1/2005	x		3/1/2008	3/1/2008	1	1	12/24/2003	MTBE
T0603702168	Los Angeles	GENI FUEL	NORTHridge	34.2282304	-118.6133899	LUST Cleanup Site	1/18/1998	Completed - Case Closed	Closed	8/13/2000	x		3/1/2008	3/1/2008	5	1	11/1/2002	MTBE
T0603702173	Los Angeles	FORMER SERVICE STATION	NORTHridge	34.2206389	-118.5185626	LUST Cleanup Site	9/27/1995	Completed - Case Closed	Closed	7/27/1995	x		12/24/2003	9/1/2007	5	1	9/6/2001	BZ
T0603702176	Los Angeles	GAS SIS	NORTHridge	34.2272139	-118.5349106	LUST Cleanup Site	5/20/1991	Completed - Case Closed	Closed	4/24/2018	x		7/6/1999	6/15/2011	13	1	12/27/2011	MTBE
T0603702212	Los Angeles	SHELL #204-4420-0201	RESEDA	34.2013125	-118.5534581	LUST Cleanup Site	10/25/1987	Completed - Case Closed	Closed	7/12/2014	x		11/1/1998	11/20/2011	8	1	9/17/2001	BZ
T0603702223	Los Angeles	SHELL	RESEDA	34.1931467	-118.5362044	LUST Cleanup Site	11/19/1985	Completed - Case Closed	Closed	7/27/2015	x		2/4/2004	11/14/2006	3	1	3/22/2002	MTBE
T0603702225	Los Angeles	UNITED OIL #22	RESEDA	34.2261506	-118.5357873	LUST Cleanup Site	6/21/1993	Open - Remediation	Open	3/17/2014	x		6/9/2002	2/27/2013	12	1	11/5/2001	MTBE
T0603702228	Los Angeles	TOSCO - 76 STATION #3692	RESEDA	34.2021155	-118.5238922	LUST Cleanup Site	6/9/1989	Completed - Case Closed	Closed	7/23/2013	x		11/2/2003	11/5/2008	2	1	9/1/2001	MTBE
T0603702229	Los Angeles	DEALS ON WHEELS	RESEDA	34.2008455	-118.5427928	LUST Cleanup Site	11/11/1990	Completed - Case Closed	Closed	9/21/2012	x		10/1/2010	10/1/2011	2	1	6/12/2002	BZ
T0603702245	Los Angeles	THRIFTY #133VARCO #9584	NORTHridge	34.2267249	-118.5359268	LUST Cleanup Site	12/1/1998	Completed - Case Closed	Closed	9/30/2011	x		11/28/2007	7/31/2011	5	1	12/22/2002	MTBE
T0603702250	Los Angeles	GENI FUEL	SAN FERNANDO	34.2802334	-118.4472096	LUST Cleanup Site	10/15/1987	Open - Assessment & Interim Remedial Action	Open	4/23/2014	x		1/23/1998	8/26/2002	5	1	12/18/2001	MTBE
T0603702251	Los Angeles	ARCO #1804	SAN FERNANDO	34.2907844	-118.4484687	LUST Cleanup Site	9/27/1988	Completed - Case Closed	Closed	12/8/2013	x		12/12/2003	3/1/2011	9	1	10/15/2001	BZ
T0603702254	Los Angeles	SAN ANGELES PROPERTY	SAN FERNANDO	34.1854922	-118.4592229	LUST Cleanup Site	11/11/1988	Completed - Case Closed	Closed	11/11/1988	x		12/6/2004	11/20/2011	2	1	12/1/2001	BZ
T0603702267	Los Angeles	THE REEVES TRUST	SYLMAR	34.273268	-118.3942606	LUST Cleanup Site	7/11/1990	Completed - Case Closed	Closed	3/1/1999	x		12/31/2000		2	1	12/5/2001	BZ
T0603702272	Los Angeles	MOBL #11-JV9	SYLMAR	34.30382628	-118.4762577	LUST Cleanup Site	27/1993	Completed - Case Closed	Closed	3/16/2010	x		6/1/2008	5/1/2009	2	1	5/19/2005	MTBE
T0603702288	Los Angeles	SHELL (FORMER LEO'S)	GRANADA HILLS	34.207043	-118.571864	LUST Cleanup Site	10/22/1995	Completed - Case Closed	Closed	10/19/2003	x		10/19/2003	10/19/2003	1	1	6/22/2002	MTBE
T0603702307	Los Angeles	CIRCLE K SS (FORMER MOBL #18-LMQ)	SANTA CLARITA	34.4244895	-118.4229961	LUST Cleanup Site	2/10/1988	Completed - Case Closed	Closed	8/12/2015	x	3/1/1995	5/26/2011	17	2	11/14/2001	BZ	
T0603702310	Los Angeles	THRIFTY #132	TARZANA	34.1860134	-118.5296857	LUST Cleanup Site	12/29/1988	Completed - Case Closed	Closed	28/2012	x	12/1/1991	6/3/1993	3	1	12/20/2001	BZ	
T0603702313	Los Angeles	MOBL #18-F01	TARZANA	34.1721533	-118.5355009	LUST Cleanup Site	6/9/1987	Completed - Case Closed	Closed	9/3/2010	x		9/25/2005	11/5/2008	2	1	9/1/2001	MTBE
T0603702318	Los Angeles	NIX AUTO SERVICES	WOODLAND HILLS	34.1714722	-118.5692228	LUST Cleanup Site	7/27/1995	Completed - Case Closed	Closed	10/13/2009	x		5/21/2002	9/19/2005	4	2	10/18/2001	MTBE
T0603702396	Los Angeles	ARCO #6622 FORMER THRIFTY #220	WOODLAND HILLS	34.1847379	-118.6211743	LUST Cleanup Site	11/8/1990	Completed - Case Closed	Closed	7/20/2012	x		11/1/2006	12/1/2006	1	1	11/1/2001	MTBE
T0603702399	Los Angeles	76 PRODUCTS STATION #662	WOODLAND HILLS	34.1865818	-118.6426893	LUST Cleanup Site	2/7/1995	Completed - Case Closed	Closed	11/10/2012	x		11/2/2007	11/2/2007	1	1	9/21/2001	MTBE
T0603704046	Los Angeles	L.T. SAWYER INC	VAN NUYS	34.1804393	-118.455082	LUST Cleanup Site	3/8/1994	Open - Verification Monitoring	Open	7/20/2012	x		10/25/2006	4/15/2012	7	1	10/4/2005	MTBE
T0603704048	Los Angeles	ARCO #6084	VAN NUYS	34.1869731	-118.4574818	LUST Cleanup Site	7/14/1992	Completed - Case Closed	Closed	7/18/2012	x		2/1/1995	4/2/2002	8	1	3/5/2006	BZ
T0603704242	Los Angeles	WYNAL STATION #17	SHERMAN OAKS	34.1251312	-118.4483989	LUST Cleanup Site	6/15/1986	Open - Remediation	Open	5/9/2003	x	11/29/2011	12/20/2011	1	1	9/21/2001	MTBE	
T0603704244	Los Angeles	MOBL #11-FV (FORMER)	SHERMAN OAKS	34.1521791	-118.4654405	LUST Cleanup Site	7/11/1985	Completed - Case Closed	Open	3/12/2013	x	5/23/2005	8/30/2011	7	1	10/11/2001	MTBE	
T0603704245	Los Angeles	UNITED OIL #9	VAN NUYS	34.1672255	-118.4602758	LUST Cleanup Site	2/15/1991	Completed - Case Closed	Closed	12/22/2016	x		11/15/2005	10/28/2010	6	1	12/31/2001	MTBE
T0603704249	Los Angeles	THRIFTY #90	LOS ANGELES	34.2012925	-118.5005007	LUST Cleanup Site	5/21/1994	Completed - Case Closed	Closed	8/29/2016	x	4/12/2011	11/15/2015	5	2	10/30/2003	MTBE	
T0603704270	Los Angeles	MOBL #18-F0C	VAN NUYS	34.1864284	-118.4660411	LUST Cleanup Site	6/25/1988	Completed - Case Closed	Closed	8/29/2013	x		11/1/2006	8/26/2011	6	1	8/14/2008	MTBE
T0603704275	Los Angeles	MOBL #18-F09	SHERMAN OAKS	34.1502074	-118.4220609	LUST Cleanup Site	3/3/1986	Completed - Case Closed	Closed	2/1/1985	x		7/1/1992	2/1/1993	2	1	10/23/2001	BZ
T0603704276	Los Angeles	TEXACO	SHERMAN OAKS	34.1502087	-118.4368129	LUST Cleanup Site	5/4/1987	Open - Eligible for Closure	Open	8/19/2022	x		11/1/1996	2/1/2006	11	1	12/13/2001	BZ
T0603704280	Los Angeles	FASHION SQUARE CAR WASH	SHERMAN OAKS	34.1502089	-118.4368129	LUST Cleanup Site	1/7/1991	Open - Remediation	Open	1/27/2018	x		4/12/1991	4/12/2001	8	1	11/13/2001	MTBE
T0603704285	Los Angeles	VENTURA CAR WASH	SHERMAN OAKS	34.1465586	-118.4231639	LUST Cleanup Site	7/11/1987	Open - Eligible for Closure	Open	8/4/2021	x		4/1/2015	5/1/2015	1	1	6/11/2003	MTBE
T0603704289	Los Angeles	MOBL #18-FIN (FORMER 11-FPN)	LOS ANGELES	34.175558	-118.4149484	LUST Cleanup Site	10/23/1985	Completed - Case Closed	Closed	3/18/2013	x	6/1/1991	5/31/2005	15	1	5/1/1990	PCE	
T0603704290	Los Angeles	BURBANK #18-443	BURBANK	34.1621388	-118.3424363	LUST Cleanup Site	1/15/2008	Completed - Case Closed	Closed	2/4/2013	x		2/4/2013	2/4/2013	7	1	10/1/2001	MTBE
T0603705202	Los Angeles	UNITED OIL #10	BURBANK	34.1670704	-118.3073713	LUST Cleanup Site	3/6/1998	Completed - Case Closed	Closed	10/28/2010	x		7/22/2008	4/2/2009	2	1	10/25/2001	MTBE
T0603705214	Los Angeles	BURBANK STATION	BURBANK	34.1519453	-118.3242172	LUST Cleanup Site	8/27/2000	Completed - Case Closed	Closed	8/27/2000	x		8/27/2000	8/27/2000	2	1	1/30/2002	MTBE
T0603705215	Los Angeles	WORLD OIL #25	BURBANK	34.1962951	-118.3386787	LUST Cleanup Site	2/13/1996	Completed - Case Closed	Closed	6/26/2006	x		4/25/2001	2/20/2004	4	1	9/26/2001	PCE
T0603705228	Los Angeles	UNITED #14	BURBANK	34.1717411	-118.3347483	LUST Cleanup Site	4/15/1998	Completed - Case Closed	Closed	8/26/2015	x		7/21/2008	7/1/2013	6	1	11/18/2005	MTBE
T0603705260	Los Angeles	COLLIER #18-F0Q	STUDIO CITY	34.1262839	-118.3688969	LUST Cleanup Site	10/28/1989	Completed - Case Closed	Closed	11/1/1991	x		10/28/2009		1	1	7/6/2005	MTBE
T0603705263	Los Angeles	TOSCO - 76 STATION #1747	STUDIO CITY	34.1456917	-118.4131015	LUST Cleanup Site	5/31/1993	Completed - Case Closed	Closed	10/22/2009	x	10/6/2001	2/23/2009	9	1	9/26/2001	MTBE	
T0603705268	Los Angeles	TOSCO - 76 STATION #1736	NORTH HOLLYWOOD	34.1401415	-118.3700009	LUST Cleanup Site	9/29/1989	Completed - Case Closed	Closed	8/22/2021	x		4/1/2014	8/19/2016	3	1	9/27/2001	MTBE
T0603705269	Los Angeles	FAST FUEL CITY (FORMER)	INDUSTRY	34.1857300	-118.3171717	LUST Cleanup Site	10/1/1988	Completed - Case Closed	Closed	10/1/2003	x		8/1/2000	8/1/2000	5	1	8/1/2000	BZ
T06037052632	Los Angeles	LA CO SHEFF STATION	INDUSTRY	34.0248362	-117.9594876	LUST Cleanup Site	5/31/1988	Completed - Case Closed	Closed	10/15/2007	x		7/3/2005	9/25/2006	2	1	9/3/2004	BZ
T0603705280	Los Angeles	MOBL #18-LPN (FORMER #11-LPN)	LOS ANGELES	34.0956511	-118.1727058	LUST Cleanup Site	3/25/1991	Completed - Case Closed	Closed	4/20/2018	x		6/4/2008	12/15/2008	1	1	11/5/2001	MTBE
T06037052712	Los Angeles	ARCO #6129	CARSON	33.8351835	-118.2632453	LUST Cleanup Site	6/21/1988	Completed - Case Closed	Closed	7/3/2015	x		12/21/2006	4/26/2019	2	1	10/1/2001	MTBE
T06037052713	Los Angeles	MOBL #18-LPN (FORMER #11-LPN)	CUDAHY	33.9700099	-118.1977745	LUST Cleanup Site	4/26/1991	Open - Remediation	Open	8/20/2018	x		10/2/1998	4/30/2019	22	1	11/19/2001	MTBE
T06037052727	Los Angeles	LOS ANGELES STATION	CUDAHY	34.0185436	-118.1700185	LUST Cleanup Site	1/19/1990	Completed - Case Closed	Closed	4/19/2011	x		5/21/2002	2/1/2011	1	1	4/9/2002	BZ
T06037052737	Los Angeles	CIRCLE K #2211248 (FORMER MOBL #18-KB7)	CHOCOMA HILLS	34.1465605	-118.1870192	LUST Cleanup Site	2/1/1989	Completed - Case Closed	Closed	8/6/2014	x	5/7/2001	12/23/2002	2	1	8/31/2002	BZ	
T06037052743	Los Angeles	CHEVRON STATION #9-1796	HAWTHORNE	33.9135551	-118.3618163	LUST Cleanup Site	1/28/1999	Completed - Case Closed	Closed	45/2013	x		11/11/2005	12/27/2005	1	1	10/31/2001	MTBE
T06037052761	Los Angeles	SANTA CLARITA	SANTA CLARITA	34.4213412	-118.3633393	LUST Cleanup Site	1/16/2011	Completed - Case Closed	Closed	1/16/2011	x		6/1/1996	11/2/2000	6	1	5/29/2001	MTBE
T06037052777	Los Angeles	MALIBU CANYON SHELL (FORMER ARCO)	CALABASAS	34.1451014	-118.6883303	LUST Cleanup Site	11/1/1991	Completed - Case Closed	Closed	7/25/2022	x		3/12/2019	10/2/2020	2	1	11/12/2001	MTBE
T0603705279	Los Angeles	ARCO #8189	SANTA FE SPRINGS	33.8026373	-118.4484941	LUST Cleanup Site	12/1/1987	Completed - Case Closed	Closed	8/9/2011	x		6/21/1998	2/2/2010	13	1	10/30/2001	BZ
T06037052815	Los Angeles	ARCO #1285	COSEMEAD	34.0523126	-118.0921171	LUST Cleanup Site	1/16/1991	Completed - Case Closed	Closed	5/16/2001	x		5/16/2001	8/9/2007	7	1	9/1/2001	MTBE
T06037052821	Los Angeles	EXXON #7-2303	LOS ANGELES	34.0582631	-118.1724468	LUST Cleanup Site	8/21/1990	Completed - Case Closed	Closed	9/11/2017	x		4/1/1998	7/6/2003	3	1	10/26/2001	MTBE
T06037052835	Los Angeles	MOBL #18-MCE	CARSON	33.8471247	-118.2343843	LUST Cleanup Site	4/21/1990	Completed - Case Closed	Closed	7/18/2012	x		11/8/2004	11/1/2008	5	1	11/20/2001	MTBE
T06037052838	Los Angeles	CHEVRON #61-4568	CORNWALL	33.8078194	-118.1012871	LUST Cleanup Site	12/10/1986	Completed - Case Closed	Closed	11/1/2021	x	12/12/2002	12/14/2002	1	1	9/12/2001	MTBE	
T06037052850	Los Angeles	UNITED OIL #44/PAPIO GAS #44	GARDENA	33.8602248	-118.3309994	LUST Cleanup Site	5/26/1988	Open - Remediation	Open	5/3/2007	x		10/19/2006	3/1/2013	8	1	10/30/2001	MTBE
T06037052851	Los Angeles	COMMERCIE PETROPIUM, LLC	COMMERCIE	33.6227396	-118.3697862	LUST Cleanup Site	4/2											

T0603703412	Los Angeles	MOBL #16-LEN	INGLEWOOD	33.96308975	-118.3707869	LUST Cleanup Site	5/21/90	Open - Eligible for Closure	Open	6/19/2008	6/30/2021	2	1	11/20/2001	BZ							
T0603703416	Los Angeles	MOBL #16-DVXV FORMER #11-GW400	BEVERLY HILLS	33.8778801	-118.3778801	LUST Cleanup Site	2/22/1999	Completed - Case Closed	Closed	7/1/2006	7/1/2006	1	1	11/1/2006	BZ							
T0603703426	Los Angeles	SHELL #204-4606-0408	LYNNWOOD	33.920512	-118.217297	LUST Cleanup Site	8/30/06	Completed - Case Closed	Closed	12/27/2000		7	1	11/13/2001	BZ							
T0603703434	Los Angeles	SHELL #204-6676-0503 (FORMER)	BELL	33.97045942	-118.1882206	LUST Cleanup Site	12/6/1983	Completed - Case Closed	Closed	11/16/2002	3/1/2005	4	1	11/2/2001	MTBE							
T0603703435	Los Angeles	WORLD OIL #62	BELLFLOWER	33.87251208	-118.168935	LUST Cleanup Site	2/21/1999	Completed - Case Closed	Closed	6/1/2008	3/1/2011	1	1	12/6/2001	MTBE							
T0603703439	Los Angeles	SHELL #204-4539-304	LOS ANGELES	33.916274	-118.2827486	LUST Cleanup Site	3/21/1990	Completed - Case Closed	Closed	3/30/2009	4/1/2009	1	1	6/22/2006	BZ							
T0603703468	Los Angeles	EXXONMOBL #16-ETV	EAST LOS ANGELES	34.0874236	-118.1347687	LUST Cleanup Site	6/17/1985	Completed - Case Closed	Closed	8/13/2004	8/1/2005	2	1	56/2004	NZ							
T0603703504	Los Angeles	TOSCO - 76 STATION #2365	INGLEWOOD	33.969291	-118.3770584	LUST Cleanup Site	1/12/1980	Completed - Case Closed	Closed	6/25/1994	4/15/1996	1	1	6/22/2001	MTBE							
T0603703509	Los Angeles	UNOCAL #5685	HAWTHORNE	33.93067008	-118.3531305	LUST Cleanup Site	2/16/1993	Completed - Case Closed	Closed	12/11/1999	6/30/2002	1	1	3/13/2008	MTBE							
T0603703514	Los Angeles	CHEVRON #9-5868	LA MIRADA	33.830393	-118.022164	LUST Cleanup Site	12/7/1986	Completed - Case Closed	Closed	8/20/2014	x	x	4/1/2006	6/30/2006	1	1	4/10/2001	BZ				
T0603703519	Los Angeles	CHEVRON #9-2436 (FORMER)	COWNEY	33.8477166	-118.116697	LUST Cleanup Site	1/30/1984	Completed - Case Closed	Closed	8/28/2003	8/1/2009	2	1	4/16/2002	MTBE							
T0603703563	Los Angeles	TOSCO - 76 STATION #4817	REDONDO BEACH	33.8872146	-118.3612079	LUST Cleanup Site	4/1/1987	Completed - Case Closed	Closed	8/17/2012	x	x	4/17/2003	3/7/2011	9	1	10/18/2001	MTBE				
T0603703585	Los Angeles	ARCO #5933	CARSON	33.828303	-118.240694	LUST Cleanup Site	4/24/1995	Open - Remediation	Open	5/4/2012			3/1/1996	11/24/2004	9	3	3/7/2002	MTBE				
T0603703597	Los Angeles	WORLD OIL #42	BEVERLY HILLS	34.0599763	-118.383719	LUST Cleanup Site	7/28/1995	Completed - Case Closed	Closed	6/24/2011	x	x	1/1/2005	10/1/2008	4	1	3/1/2001	MTBE				
T0603703598	Los Angeles	WORLD OIL #61 (FORMER)	CERRITOS	33.85804085	-118.0999572	LUST Cleanup Site	4/16/1986	Completed - Case Closed	Closed	12/12/2002	x	x	12/20/2016	12/20/2016	1	1	4/27/2008	7/1/2013	6	1	11/2/2001	MTBE
T0603703616	Los Angeles	SHELL #204-4598-1507	CARSON	33.8318116	-118.2743853	LUST Cleanup Site	7/21/1992	Completed - Case Closed	Closed	6/1/2008	9/1/2009	1	1	6/1/2008	9/1/2009	1	1	6/29/2002	BZ			
T0603703632	Los Angeles	SHELL #204-1740-0205	COMPTON	33.8595102	-118.253016	LUST Cleanup Site	8/31/1987	Completed - Case Closed	Closed	12/22/2006	11/30/2012	x	x	3/2/2002		1	3/7/2002	BZ				
T0603703633	Los Angeles	SHELL #204-2928-0504	GARDENA	33.90146514	-118.3008828	LUST Cleanup Site	7/28/1989	Completed - Case Closed	Closed	7/23/2019	9/30/2010	8	2	8/1/2003	9/30/2010	8	2	7/30/2001	BZ			
T0603703636	Los Angeles	ARCO #5208	PARAMOUNT	33.8966947	-118.1517382	LUST Cleanup Site	4/13/1987	Completed - Case Closed	Closed	8/25/2014	11/1/2000	65/2012	13	3	10/29/2001	MTBE						
T0603703643	Los Angeles	CHEVRON #9-3874 (FORMER)	CARSON	33.8660154	-118.247891	LUST Cleanup Site	4/18/1989	Open - Remediation	Open	10/25/2021	3/1/1993	123/1194	2	1	10/11/2001	BZ						
T0603703657	Los Angeles	SHELL #204-3221-0109	HAWAIIAN GARDENS	33.83171465	-118.0717768	LUST Cleanup Site	4/16/1986	Completed - Case Closed	Closed	2/10/2013	8/6/2003	8/13/2004	2	2	11/21/2001	MTBE						
T0603703665	Los Angeles	THE VILLAGE AT CENTURY (FORMER HOLLY PARK CAR WASH)	INGLEWOOD	33.9435051	-118.2050791	LUST Cleanup Site	10/23/1991	Completed - Case Closed	Closed	11/1/2010	6/1/2008	8/1/2009	2	1	2/14/2007	PCE						
T0603703677	Los Angeles	THRIFTY #1 (FORMER)	MAYWOOD	33.9888131	-118.2007931	LUST Cleanup Site	9/12/1990	Completed - Case Closed	Closed	2/19/2008	x	x	6/28/2003	6/13/2006	4	1	11/20/2001	BZ				
T0603703679	Los Angeles	THRIFTY SERVICE STATION #4024	ARTESIA	33.8943331	-118.0722175	LUST Cleanup Site	5/21/1986	Completed - Case Closed	Closed	12/20/2012	x	x	1/1/1989	6/30/1994	6	1	10/18/2001	MTBE				
T0603703680	Los Angeles	THRIFTY #2	BELL	33.9710344	-118.1985458	LUST Cleanup Site	10/6/1987	Completed - Case Closed	Closed	7/18/2014	x	x	9/5/2000	4/20/2013	14	2	12/13/2001	MTBE				
T0603703686	Los Angeles	THRIFTY #073	CARSON	33.8022285	-118.2634878	LUST Cleanup Site	12/1/1998	Open - Remediation	Open	8/6/2010	x	x	7/27/2007		7	1	10/22/2001	MTBE				
T0603703690	Los Angeles	ARCO #8646FORMER THRIFTY#255	REDONDO BEACH	33.8946235	-118.3551181	LUST Cleanup Site	10/20/1980	Completed - Case Closed	Closed	7/29/2014	x	x	11/1/2009	4/15/2013	5	1	1/1/2001	MTBE				
T0603703700	Los Angeles	TOSCO - 76 STATION #0271	LYNNWOOD	34.0715314	-118.0404189	LUST Cleanup Site	4/1/1981	Completed - Case Closed	Closed	7/17/2013	x	x	6/1/1995	10/31/1996	2	1	9/19/2001	MTBE				
T0603703702	Los Angeles	WHITTIER	BELL	33.9693822	-118.1785621	LUST Cleanup Site	1/17/1988	Completed - Case Closed	Closed	7/30/2015	x	x	9/1/2008	9/1/2013	6	1	11/13/2001	MTBE				
T0603703712	Los Angeles	TOSCO - 76 STATION #4046	HAWTHORNE	33.9162884	-118.3436829	LUST Cleanup Site	11/27/1990	Open - Verification Monitoring	Open	6/23/2010			3/18/2010	9/30/2019	10	2	10/25/2001	MTBE				
T0603703713	Los Angeles	INDUSTRIAL PRODUCTS STATION #4302	WHITTIER	33.9604375	-118.237932	LUST Cleanup Site	8/11/1992	Completed - Case Closed	Closed	11/15/2013	x	x	8/11/1992	11/23/2016	8	1	11/7/2001	MTBE				
T0603703714	Los Angeles	TOSCO - 76 STATION #4448	LYNNWOOD	33.9299193	-118.2115737	LUST Cleanup Site	10/7/1987	Completed - Case Closed	Closed	8/30/2016	x	x	8/1/2001	12/31/2004	4	1	11/13/2001	BZ				
T0603703730	Los Angeles	FORMER #76 #1907#THRIFTY #86	HAWTHORNE	33.916077	-118.326236	LUST Cleanup Site	6/15/1992	Completed - Case Closed	Closed	8/29/2012	x	x	9/18/2005	9/18/2011	7	1	11/18/2001	MTBE				
T0603703732	Los Angeles	MOTOR OIL STORES	BEVERLY HILLS	34.06501654	-118.383719	LUST Cleanup Site	8/22/2004	Completed - Case Closed	Closed	12/22/2014	x	x	12/1/2009	9/1/2010	3	1	1/30/2002	BZ				
T0603703739	Los Angeles	TOSCO - 76 STATION #521	INDUSTRY	34.004363	-117.8099475	LUST Cleanup Site	5/21/1988	Completed - Case Closed	Closed	10/13/2014	x	x	7/1/2000	6/30/2012	13	2	10/18/2001	MTBE				
T0603703740	Los Angeles	TOSCO - 76 STATION #8264	POMONA	34.034213	-117.780726	LUST Cleanup Site	8/31/1991	Completed - Case Closed	Closed	10/7/2011	x	x	6/10/1988	9/6/2000	3	2	10/1/2001	MTBE				
T0603703744	Los Angeles	SUNBELT SERVICE STATION #51	LA MONTE	34.0748136	-118.024039	LUST Cleanup Site	7/24/2000	Completed - Case Closed	Closed	2/24/2010	x	x	8/11/1994	9/30/2006	13	1	1/16/2002	BZ				
T0603703751	Los Angeles	ALAMEDA MANUFACT #544	BELLFLOWER	33.8748445	-118.1403383	LUST Cleanup Site	6/11/1987	Completed - Case Closed	Closed	8/15/2007	x	x	3/17/2004	3/9/2005	2	1	9/26/2001	MTBE				
T0603703752	Los Angeles	SOUTH GATE	LA MONTE	34.0457	-118.216622	LUST Cleanup Site	1/1/2000	Completed - Case Closed	Closed	7/23/2011	x	x	1/1/2000	1/1/2000	1	1	1/26/2001	MTBE				
T0603703754	Los Angeles	MOBL #16-MF6 FORMER/ CIRCLE K STORE #2211186	DOWNEY	33.916819	-118.1374009	LUST Cleanup Site	12/11/1989	Completed - Case Closed	Closed	11/12/2013	x	x	10/10/2008	5/20/2010	3	1	2/14/2005	MTBE				
T0603703756	Los Angeles	MOBL 16-ER	WHITTIER	33.93160474	-117.9934712	LUST Cleanup Site	5/26/1986	Completed - Case Closed	Closed	7/24/2006	x	x	2/1/1996	3/1/2005	8	1	10/3/2001	MTBE				
T0603703761	Los Angeles	ALHAMBRA	ALHAMBRA	34.0783553	-118.1604705	LUST Cleanup Site	8/2/1989	Completed - Case Closed	Closed	8/12/2013	x	x	10/1/2000	3/5/2008	9	1	9/6/2001	MTBE				
T0603703768	Los Angeles	CITY OF COMPTON FIRE STATION 1	COMPTON	33.8847402	-118.227025	LUST Cleanup Site	11/1/1991	Open - Assessment & Interim Remedial Action	Open	8/29/2019	x	x	5/17/2004	5/24/2004	1	1	9/30/2002	MTBE				
T0603703801	Los Angeles	MCMHARTER TEXACO S.S. (FORMER)	EL MONTE	34.0626221	-118.040012	LUST Cleanup Site	12/4/1991	Open - Remediation	Open	4/17/2008	x	x	10/10/2008	10/2/2008	1	1	8/1/2005	9/30/2008	4	1	9/25/2001	BZ
T0603703804	Los Angeles	LA MIRADA STEEL CO.	LA MIRADA	33.881521	-118.028018	LUST Cleanup Site	9/21/1987	Completed - Case Closed	Closed	12/24/2013	x	x	10/24/2003	10/24/2003	1	1	9/24/2001	MTBE				
T0603703809	Los Angeles	H W GREENFIELD AND SONS INC	COMPTON	33.9200235	-118.2204768	LUST Cleanup Site	9/15/1987	Completed - Case Closed	Closed	11/12/2007	x	x	3/4/2003	3/6/2008	4	1	11/25/2002	BZ				
T0603703854	Los Angeles	CRESCENTA VALLEY TOW	LA CRESCENTA	34.22709	-118.2462917	LUST Cleanup Site	2/9/1994	Completed - Case Closed	Closed	11/15/2014	x	x	3/4/2011	8/4/2013	3	1	3/23/2007	MTBE				
T0603703880	Los Angeles	THRIFTY #715 (FORMER)	REDONDO BEACH	33.87627	-118.362047	LUST Cleanup Site	8/20/1990	Completed - Case Closed	Closed	8/1/2010	x	x	8/1/2010	11/23/2010	8	1	10/15/2001	MTBE				
T0603703886	Los Angeles	ARCO #0087	HAWTHORNE	33.9306899	-118.3522143	LUST Cleanup Site	1/20/1998	Completed - Case Closed	Closed	11/15/2014	x	x	3/1/1998	11/19/2005	8	1	11/29/2001	MTBE				
T0603703881	Los Angeles	CULVER CITY #0114	CULVER CITY	33.035422	-118.373795	LUST Cleanup Site	5/18/1992	Open - Remediation	Open	5/22/2008	x	x	4/22/2003	9/30/2008	6	1	11/29/2001	MTBE				
T0603703905	Los Angeles	ARCO #0128	SOUTH GATE	33.9520346	-118.130761	LUST Cleanup Site	5/18/1992	Completed - Case Closed	Closed	7/1/2002	x	x	7/1/2002	11/9/2009	8	1	10/29/2001	BZ				
T0603703913	Los Angeles	ARCO #3041	LAKEWOOD	33.8471643	-118.1746088	LUST Cleanup Site	10/27/1989	Completed - Case Closed	Closed	4/30/2010	x	x	6/12/1996	10/2/2007	12	1	10/17/2001	BZ				
T0603703917	Los Angeles	WEST COAST CHEVRONA	LAKEWOOD	34.002216	-118.381342	LUST Cleanup Site	12/1/1989	Completed - Case Closed	Closed	12/1/2008	x	x	12/1/2008	9/1/2007	3	1	10/28/2001	BZ				
T0603703915	Los Angeles	ARCO #5110	SOUTH GATE	33.9404899	-118.1655581	LUST Cleanup Site	9/20/1989	Open - Eligible for Closure	Open	6/26/2018	x	x	5/1/2004	5/17/2017	14	1	9/14/2001	BZ				
T0603703918	Los Angeles	ARCO #5182	CERRITOS	33.8602813	-118.0950032	LUST Cleanup Site	3/11/1961	Completed - Case Closed	Closed	4/23/2010	x	x	12/27/2000	2/5/2001	2	1	10/1/2001	MTBE				
T0603703922	Los Angeles	LA MONT	LA MONT	34.0718035	-118.0484269	LUST Cleanup Site	9/21/1987	Completed - Case Closed	Closed	4/22/2013	x	x	6/15/2001	5/23/2002	2	1	9/30/2001	BZ				
T0603703924	Los Angeles	ARCO #6176	WEST COVINA	34.030638	-117.925904	LUST Cleanup Site	8/7/1991	Completed - Case Closed	Closed	5/9/2006	x	x	5/8/1997	5/25/2004	8	1	11/14/2001	BZ				
T0603703926	Los Angeles	UNITED OIL #02	CERRITOS	33.901832	-118.302559	LUST Cleanup Site	1/19/1986	Completed - Case Closed	Closed	11/12/2017	x	x	2/10/15	9/1/2015	1	1	11/6/2001	MTBE				
T0603703931	Los Angeles	EXXON #7-3657 (FORMER)	CERRITOS	33.858187	-118.099174	LUST Cleanup Site	8/27/1989	Open - Remediation	Open	10/16/2010	x	x	10/16/2010	10/5/2010	1	1	10/16/2001	MTBE				
T0603704001	Los Angeles	CHADRON PLANT	HAWTHORNE	33.9014049	-118.369174	LUST Cleanup Site	6/10/1990	Open - Remediation	Open	4/26/2012	x	x	9/1/2009	6/10/2016	8	1	11/14/2001	MTBE				
T0603704034	Los Angeles	SIMONS MIN MARKET	INGLEWOOD	33.9316469	-118.348363	LUST Cleanup Site	7/21/1994	Completed - Case Closed	Closed	11/1/2006	x	x	2/23/2000	6/27/2006	7	1	11/2/2005	MTBE				
T0603704059	Los Angeles	SHELL #204-738-134 (FORMER)	SOUTH GATE	33.945679	-118.180714	LUST Cleanup Site	8/13/1987	Completed - Case Closed	Closed	9/18/2013	x	x	10/1/2000									

T0603705091	Los Angeles	ARCO #1002	33.8862583	-118.2491254	LUST Cleanup Site	6/27/2000	Completed - Case Closed	Closed	12/28/2020	x	x	99/2010	6/1/2017	8	1	9/9/2010	6/1/2017	8	1	11/21/2001	BZ
T0603705094	Los Angeles	LARRY COHEN M/F FORMER	34.4562014	-118.4330748	LUST Cleanup Site	12/2/2000	Completed - Case Closed	Closed	6/8/2018	x	x	1/2/2003	10/1/2003	1	1	1/2/2003	10/1/2003	1	1	11/21/2001	MTBE
T0603705104	Los Angeles	A & M SERVICE #665 (FORMER) PRESTONE TIRE SERVICE CENTER	33.8606963	-117.8452001	LUST Cleanup Site	3/2/1993	Completed - Case Closed	Closed	17/7/2010	x	x	5/1/2003	10/26/2003	1	1	5/1/2003	10/26/2003	1	1	12/11/2001	MTBE
T0603705130	Los Angeles	RANCHO DOMINGUEZ	33.8597429	-118.2166028	LUST Cleanup Site	7/25/1996	Open - Eligible for Closure	Open	11/8/2021	x	x	11/8/2021	12/31/2013	1	1	11/8/2021	12/31/2013	1	1	9/5/2002	MTBE
T0603705147	Los Angeles	LA COSTA DRIVE #111	34.0424681	-118.3193262	LUST Cleanup Site	12/14/1999	Completed - Case Closed	Closed	6/28/2003	x	x	5/1/2010	3/31/2011	2	1	6/8/2013	12/18/2016	1	1	12/18/2016	BZ
T0603705186	Los Angeles	TRUCK ENTERPRISES	33.917452	-118.09876	LUST Cleanup Site	94/1198	Completed - Case Closed	Closed	6/16/2008	x	x	4/16/2006	4/21/2006	1	1	4/16/2006	4/21/2006	1	1	12/7/2004	MTBE
T0603705202	Los Angeles	CENTURY MOBI	33.9457371	-118.3610781	LUST Cleanup Site	7/30/1998	Open - Remediation	Open	12/26/2018	x	x	8/22/2017	8/12/2020	4	2	5/4/2016	8/12/2020	5	2	9/17/2015	BZ
T0603705206	Los Angeles	UNITED OIL #57	33.9452047	-118.3535787	LUST Cleanup Site	4/25/1996	Completed - Case Closed	Closed	6/22/2012	x	x	5	5	1	1	5/1/2008	10/1/2010	1	1	11/21/2001	MTBE
T0603705206	Los Angeles	EXCON STATION	34.0927258	-118.0353403	LUST Cleanup Site	7/28/1997	Completed - Case Closed	Closed	6/19/2014	x	x	3/27/2006	9/28/2010	5	1	3/27/2006	9/28/2010	5	1	11/25/2002	MTBE
T0603705284	Los Angeles	RAPID GAS STATION #35 (FORMER RAPID GAS)	33.9386059	-118.3568463	LUST Cleanup Site	20/1/1998	Open - Remediation	Open	5/15/2012	x	x	6/3/2008	12/31/2017	10	1	5/30/2007	3/30/2012	6	1	6/3/2002	MTBE
T0603705286	Los Angeles	SOUTH CHITTER SCHOOL DISTRICT	33.9447356	-118.016835	LUST Cleanup Site	10/20/1996	Completed - Case Closed	Closed	6/10/2006	x	x	24/2/2003	12/22/2003	1	1	1/2/2003	12/22/2003	1	1	9/5/2001	MTBE
T0603705302	Los Angeles	RAPID GAS #19	33.8960125	-118.1169588	LUST Cleanup Site	6/16/1997	Completed - Case Closed	Closed	78/2016	x	x	25/2/2007	9/28/2007	1	1	38/2004	11/8/2007	4	1	12/20/2001	MTBE
T0603705304	Los Angeles	BILL SOUTH TRAXCO FORMER	33.7434602	-118.2986878	LUST Cleanup Site	11/5/1998	Completed - Case Closed	Closed	3/7/2012	x	x	2/27/2005	11/26/2007	4	1	2/27/2005	11/26/2007	4	1	12/4/2001	BZ
T0603705309	Los Angeles	LUCKIES TRANSPORTATION FACILITY	34.0283578	-117.8507317	LUST Cleanup Site	12/14/1999	Completed - Case Closed	Closed	6/28/2003	x	x	5/1/2010	3/31/2011	2	1	6/8/2013	12/18/2016	1	1	12/18/2016	BZ
T0603705321	Los Angeles	FRIENDLY VALLEY AUTO CENTER	34.399636	-118.4737502	LUST Cleanup Site	6/31/1986	Completed - Case Closed	Closed	11/8/2011	x	x	11/8/2006	12/15/2010	1	1	11/8/2006	12/15/2010	1	1	6/13/2003	BZ
T0603705347	Los Angeles	ARCO #1613	33.8313301	-118.2630111	LUST Cleanup Site	8/1/2004	Open - Remediation	Open	6/1/2004	x	x	6/1/2004	11/2/2004	1	1	6/1/2004	11/2/2004	1	1	10/13/2004	MTBE
T0603705363	Los Angeles	EXCON #7-2893	34.1531215	-118.6502205	LUST Cleanup Site	4/26/1988	Completed - Case Closed	Closed	12/30/2009	x	x	104/2005	1/23/2007	3	1	11/7/1995	12/22/2001	7	1	11/8/2001	MTBE
T0603705377	Los Angeles	GARFIELD EXPRESS	33.9226306	-118.20398	LUST Cleanup Site	11/20/1995	Open - Assessment & Interim Remedial Action	Open	89/2010	x	x	65/2003	3/31/2015	13	1	65/2003	3/31/2015	13	1	9/1/2005	MTBE
T0603705386	Los Angeles	PAST GAS #8018/TARGET T-290	33.8860554	-118.3141888	LUST Cleanup Site	10/11/1991	Completed - Case Closed	Closed	9/25/2013	x	x	10/15/2001	11/2/2012	1	1	10/15/2001	11/2/2012	1	1	10/23/2001	BZ
T0603705400	Los Angeles	SANTA CLARITA MOBI	34.3675403	-118.5052584	LUST Cleanup Site	26/1/1998	Completed - Case Closed	Closed	12/29/2014	x	x	6/16/2011	7/31/2013	1	1	6/16/2011	7/31/2013	1	1	12/25/2002	MTBE
T0603705403	Los Angeles	UNITED OIL #1	33.877284	-118.3521625	LUST Cleanup Site	11/16/1995	Completed - Case Closed	Closed	6/18/2015	x	x	78/2006	4/30/2013	8	1	78/2006	4/30/2013	8	1	1/21/2001	BZ
T0603705408	Los Angeles	CHILLER LUMBER	33.8593872	-118.038911	LUST Cleanup Site	5/24/1996	Completed - Case Closed	Closed	8/12/2005	x	x	4/13/2004	9/27/2004	1	1	4/13/2004	9/27/2004	1	1	1/5/2002	BZ
T0603705415	Los Angeles	A & S FUEL STOP	33.89081058	-118.3269123	LUST Cleanup Site	3/28/1997	Completed - Case Closed	Closed	83/2002/1	x	x	31/2017	3/31/2018	2	1	7/13/2015	3/1/2018	4	1	5/21/2007	MTBE
T0603705416	Los Angeles	CITY OF SOUTH GATE-TARGETLAZAR	33.943152	-118.274807	LUST Cleanup Site	10/23/1998	Open - Remediation	Open	9/24/2020	x	x	5/28/1999	12/21/1999	1	1	5/28/1999	12/21/1999	1	1	3/7/2017	BZ
T0603705420	Los Angeles	TRITTY OIL CO. #286	33.8078465	-118.2705378	LUST Cleanup Site	6/17/1996	Open - Remediation	Open	10/25/2013	x	x	12/12/2006	19/2/2016	11	1	12/12/2006	19/2/2016	11	1	8/26/2001	BZ
T0603705422	Los Angeles	EDCO STATION INC	34.0167888	-118.1671952	LUST Cleanup Site	2/31/1997	Completed - Case Closed	Closed	2/10/2010	x	x	2/10/2002	12/31/2009	8	1	2/10/2002	12/31/2009	8	1	10/14/2001	MTBE
T0603705426	Los Angeles	TH & M OIL STATION #69	34.0181306	-118.470187	LUST Cleanup Site	11/1/1991	Completed - Case Closed	Closed	3/12/2012	x	x	1/24/2008	12/21/2011	3	1	1/24/2008	12/21/2011	3	1	10/4/2001	MTBE
T0603705463	Los Angeles	BELLFLOWER	33.8841102	-118.1336703	LUST Cleanup Site	6/19/2007	Open - Remediation	Open	4/19/2021	x	x	39/2011	6/10/2011	1	1	39/2011	6/10/2011	1	1	6/20/2002	MTBE
T0603705482	Los Angeles	TOSCO - 76 STATION #5378	33.8111605	-118.2641868	LUST Cleanup Site	9/29/1997	Completed - Case Closed	Closed	11/24/2009	x	x	3/12/2008	3/7/2009	2	1	3/12/2008	3/7/2009	2	1	11/14/2001	MTBE
T0603705484	Los Angeles	LANEWOOD	33.8465719	-118.1248012	LUST Cleanup Site	10/20/1996	Completed - Case Closed	Closed	12/1/2009	x	x	12/1/2009	2/22/2010	1	1	12/1/2009	2/22/2010	1	1	10/4/2001	MTBE
T0603705487	Los Angeles	AL SAUL OIL #13	34.0912652	-118.0690802	LUST Cleanup Site	10/22/1996	Completed - Case Closed	Closed	28/2/2010	x	x	9/14/2007	28/6/2009	3	1	9/14/2007	28/6/2009	3	1	7/30/2001	MTBE
T0603705478	Los Angeles	76 STATION #5836	34.0247678	-118.1422869	LUST Cleanup Site	10/24/1994	Open - Remediation	Open	21/4/2008	x	x	9/14/2006	10/1/2011	6	1	9/14/2006	10/1/2011	6	1	9/22/2001	MTBE
T0603705480	Los Angeles	C & M OIL STATION #407	33.9302148	-118.1844408	LUST Cleanup Site	10/24/1994	Completed - Case Closed	Closed	10/24/2018	x	x	10/28/2002	12/31/2006	5	1	10/28/2002	12/31/2006	5	1	10/24/2001	MTBE
T0603705483	Los Angeles	THRIFTY SERVICE STATION #289 (FORMER)	33.902532	-118.089997	LUST Cleanup Site	12/26/1997	Completed - Case Closed	Closed	10/28/2004	x	x	33/2003	4/12/2004	2	1	33/2003	4/12/2004	2	1	11/21/2001	MTBE
T0603705485	Los Angeles	THRIFTY #245 (FORMER)	33.9232318	-118.117084	LUST Cleanup Site	12/26/1997	Completed - Case Closed	Closed	10/25/2011	x	x	3/22/2004	10/6/2004	1	1	3/22/2004	10/6/2004	1	1	21/3/2002	BZ
T0603705487	Los Angeles	WESTERN AUTO SALES (FORMER ARCO)	33.974466	-118.1180207	LUST Cleanup Site	4/15/1990	Completed - Case Closed	Closed	11/28/2003	x	x	11/28/2003	11/28/2003	1	1	11/28/2003	11/28/2003	1	1	10/24/2001	MTBE
T0603705491	Los Angeles	COMET GAS STATION	33.8317249	-118.2781443	LUST Cleanup Site	98/1998	Completed - Case Closed	Closed	2/27/2011	x	x	4/1/2002	10/1/2008	7	1	4/1/2002	10/1/2008	7	1	10/29/2001	BZ
T0603705505	Los Angeles	UNITED EL SEGUNDO STATION #54	34.0441778	-118.1737797	LUST Cleanup Site	11/14/1996	Completed - Case Closed	Closed	5/16/2022	x	x	11/5/2010	12/4/2012	3	1	9/10/2010	8/8/2011	2	1	3/26/2005	MTBE
T0603705528	Los Angeles	HYNOC	33.9447356	-118.2266628	LUST Cleanup Site	10/20/1996	Open - Site Assessment	Open	12/30/2020	x	x	11/20/2012	2/12/2014	3	1	11/20/2012	2/12/2014	3	1	9/25/2005	MTBE
T0603705530	Los Angeles	UNITED STATION #39	33.8889543	-118.206797	LUST Cleanup Site	6/28/1998	Open - Remediation	Open	3/12/2013	x	x	6/13/2008	11/6/2017	13	3	36/2007	11/6/2017	11	1	11/11/2001	MTBE
T0603705540	Los Angeles	UNITED STATION #105	33.8313529	-118.2818394	LUST Cleanup Site	12/28/1998	Completed - Case Closed	Closed	5/7/2012	x	x	5/7/2012	12/27/2010	13	3	5/7/2012	12/27/2010	13	3	10/20/2001	MTBE
T0603705541	Los Angeles	C & C AUTO MOTIVE	33.996	-118.1974781	LUST Cleanup Site	2/16/1999	Completed - Case Closed	Closed	10/31/2007	x	x	85/2003	6/20/2007	5	1	85/2003	6/20/2007	5	1	5/22/2002	TCE
T0603705552	Los Angeles	ANGEL'S GAS & MART	33.8484843	-118.2689498	LUST Cleanup Site	12/9/1999	Completed - Case Closed	Closed	37/2012	x	x	12/6/2011	12/13/2011	1	1	12/6/2011	12/13/2011	1	1	5/14/2007	MTBE
T0603705632	Los Angeles	EXCONMOBI #18-LN (FORMER)	34.421058	-118.423158	LUST Cleanup Site	10/30/2007	Completed - Case Closed	Closed	6/1/1992	x	x	1/1/1992	10/1/1992	1	1	6/1/1992	10/1/1992	1	1	8/6/2003	MTBE
T0603705729	Los Angeles	MOBI #18-ED5	33.891576	-118.300673	LUST Cleanup Site	10/30/2007	Completed - Case Closed	Closed	10/21/2013	x	x	4/11/2011	10/22/2011	1	2	4/11/2011	10/22/2011	1	2	12/4/2007	MTBE
T0603707309	Los Angeles	ARCO #1802	33.84888	-118.125096	LUST Cleanup Site	21/2/2005	Completed - Case Closed	Closed	4/12/2010	x	x	21/2/2005	4/18/1996	2	1	21/2/2005	4/18/1996	2	1	11/8/2001	BZ
T0603708516	Los Angeles	FEES SERVICE - CLOSED	33.7457046	-118.292628	LUST Cleanup Site	4/1/2004	Completed - Case Closed	Closed	11/29/2006	x	x	4/1/2004	11/29/2006	1	1	4/1/2004	11/29/2006	1	1	1/13/2004	MTBE
T0603708629	Los Angeles	EXCONMOBI #18-LN	34.257033	-118.522947	LUST Cleanup Site	10/31/2001	Completed - Case Closed	Closed	10/31/2014	x	x	4/12/2007	12/1/2010	4	1	4/12/2007	12/1/2010	4	1	5/13/2003	MTBE
T0603708673	Los Angeles	SHELL SERVICE STATION	34.0123404	-118.463364	LUST Cleanup Site	39/2004	Open - Verification Monitoring	Open	7/12/2013	x	x	12/21/2009	2/26/2013	5	2	12/21/2009	2/26/2013	5	2	21/2/2007	BZ
T0603709218	Los Angeles	MOBI #18-ER (FORMER)	34.0447114	-118.300208	LUST Cleanup Site	4/1/2004	Completed - Case Closed	Closed	11/20/2014	x	x	11/8/2000	11/8/2014	1	1	11/8/2000	11/8/2014	1	1	9/25/2005	MTBE
T0603709734	Los Angeles	ARCO #1054	33.790392	-118.274769	LUST Cleanup Site	10/5/1995	Completed - Case Closed	Closed	5/1/2005	x	x	10/1/2002	10/31/2002	1	1	10/1/2002	10/31/2002	1	1	12/14/2001	MTBE
T0603709847	Los Angeles	SHELL SERVICE STATION	34.033284	-118.305489	LUST Cleanup Site	6/1/1998	Completed - Case Closed	Closed	6/1/1998	x	x	11/7/2001	11/7/2001	1	1	11/7/2001	11/7/2001	1	1	11/6/2007	MTBE
T0603710155	Los Angeles	SHELL	33.743056	-118.296572	LUST Cleanup Site	11/20/2003	Completed - Case Closed	Closed	6/26/2013	x	x	6/24/2010	8/25/2010	1	1	6/24/2010	8/25/				

T0603756938	Los Angeles	BUY RITE GASOLINE	LOS ANGELES	33.96302	-118.277312	LUST Cleanup Site	12/29/1998	Open - Remediation	Open	10/22/2007	x					11/22/2016	3/28/2017	2	1			3/19/2007	BZ		
T0603757485	Los Angeles	MIRAMAR PROPERTY	LOS ANGELES	34.031017	-118.374774	LUST Cleanup Site	12/29/2007	Completed - Case Closed	Closed	10/14/2007	x					11/16/2007	10/12/2008	1	1			2/28/2007	BZ		
T0603757623	Los Angeles	LEEMERT AUTO SERVICE	LOS ANGELES	34.04447576	-118.300357	LUST Cleanup Site	8/21/1991	Completed - Case Closed	Closed	7/25/2017	x			7/5/2012	8/15/2014	3	1					11/14/2005	MTBE		
T0603758862	Los Angeles	PRIVATE RESIDENCE	PARAMOUNT	33.89807	-118.163658	LUST Cleanup Site	8/14/1958	Open - Remediation	Open	24/2/2016	x					9/23/2016	12/27/2018	3	1			3/4/2009	BZ		
T0603759192	Los Angeles	MOBI HOME DEPOT	LOS ANGELES	33.78631720	-118.124808	LUST Cleanup Site	8/16/2001	Open - Remediation	Open	11/28/2018	x			3/1/2009	12/1/2016	8	1					11/4/2011	MTBE		
T0603761486	Los Angeles	JAYCO ENTERPRISES	LONG BEACH	33.85609	-118.139983	LUST Cleanup Site	10/29/2001	Completed - Case Closed	Closed	12/6/2012	x					11/30/2008	11/21/2010	3	1			10/29/2001	BZ		
T0603761730	Los Angeles	EXPERT CAR WASH	LOS ANGELES	34.058468	-118.345105	LUST Cleanup Site	7/6/2003	Completed - Case Closed	Closed	11/10/2012	x					10/18/2006	2/18/2009	4	2			4/11/2005	MTBE		
T0603762118	Los Angeles	FORMER MOBIL #18-B34	LOS ANGELES	34.0457038	-118.49326	LUST Cleanup Site	9/27/2000	Completed - Case Closed	Closed	7/22/2013	x			9/30/2005	6/13/2012	8	1					6/10/2002	MTBE		
T0603762297	Los Angeles	GILBERT REESE TRUST	LONG BEACH	33.74997	-118.122895	LUST Cleanup Site	12/3/2004	Open - Eligible for Closure	Open	6/1/2022						1/25/2007	1/26/2007	1	1			3/5/2007	MTBE		
T0603763357	Los Angeles	76 STATION #821	SAWTELLE	34.041347	-118.461491	LUST Cleanup Site	5/22/2002	Completed - Case Closed	Closed	11/30/2010	x					12/17/2006	6/1/2009	4	1			6/19/2002	BZ		
T0603763325	Los Angeles	EXXONMOBIL OIL #18-B34	INDUSTRY	34.018765	-117.658885	LUST Cleanup Site	11/22/2013	Completed - Case Closed	Closed	11/22/2013	x					8/17/2008	4/22/2012	4	1			9/5/2004	BZ		
T0603764517	Los Angeles	BILL'S AUTO REPAIR (FORMER)	PARAMOUNT	33.907065	-118.159801	LUST Cleanup Site	12/12/2002	Completed - Case Closed	Closed	2/28/2022						7/26/2019	12/30/2019	1	1			9/12/2014	BZ		
T0603764877	Los Angeles	MOBIL #18-BFW	HUNTINGTON PARK	33.971931	-118.203982	LUST Cleanup Site	4/19/2002	Completed - Case Closed	Closed	4/20/2016	x			2/18/2006	9/19/2006	1	1					4/6/2007	MTBE		
T0603764918	Los Angeles	CIRCLE K #221135/MOBIL #18-LOG	LOS ANGELES	34.078292	-118.305845	LUST Cleanup Site	8/16/2001	Open - Remediation	Open	9/8/2019	x					8/1/2019	7/13/2019	5	1			12/2/2003	MTBE		
T0603765533	Los Angeles	RASHID SHELL	LOS ANGELES	33.94514	-118.317377	LUST Cleanup Site	7/8/2002	Completed - Case Closed	Closed	11/20/2013	x					7/13/2010	12/15/2012	3	3			2/20/2007	PCE		
T0603770234	Los Angeles	LUIS GARCIA GAS MART	LA CRESCENTA DOWNS	34.221125	-118.237225	LUST Cleanup Site	8/16/2001	Completed - Case Closed	Closed	6/1/2013	x					8/1/2014	3/1/2016	4	1			8/23/2006	MTBE		
T0603770616	Los Angeles	EXXONMOBIL #18-F20	NORWALK	33.916808	-118.063482	LUST Cleanup Site	2/19/2004	Open - Eligible for Closure	Open	3/14/2019	x					12/4/2009	8/4/2016	8	1			6/21/2005	BZ		
T0603771771	Los Angeles	SHELL SERVICE STATION (FORMER)	SANTA CLARITA	34.415042	-118.462159	LUST Cleanup Site	11/16/1999	Completed - Case Closed	Closed	4/5/2010	x					1/5/2009	1/15/2009	1	1			12/21/2004	MTBE		
T0603774352	Los Angeles	ALAMO CAR WASH	WALNUT	34.02485	-117.894057	LUST Cleanup Site	9/27/2000	Completed - Case Closed	Closed	9/3/2021	x					6/18/2007	9/12/2011	5	2			6/17/2005	MTBE		
T0603774661	Los Angeles	TMB OIL	WILLOWBROOK	33.92921834	-118.259256	LUST Cleanup Site	6/7/1999	Completed - Case Closed	Closed	9/20/2018	x			5/29/2014	4/1/2015	2	1			10/31/2011	4/1/2015	5	1	9/11/2003	MTBE
T0603774928	Los Angeles	MOBIL #18-LSE (FORMER)	GLENDALE	34.171085	-118.260248	LUST Cleanup Site	4/15/2003	Completed - Case Closed	Closed	73/10/2012	x					8/23/2005	10/26/2011	7	2			8/9/2004	MTBE		
T0603776248	Los Angeles	WOODLAND HILLS LA VERNE	WOODLAND HILLS LA VERNE	34.1812723	-118.6229487	LUST Cleanup Site	4/23/2001	Open - Eligible for Closure	Open	3/26/2021	x					6/1/2016	9/1/2019	4	1			8/15/2002	MTBE		
T0603776524	Los Angeles	SHELL OIL GAS STATION	LA VERNE	34.097639	-117.771655	LUST Cleanup Site	3/5/1203	Completed - Case Closed	Open	8/1/2022	x					2/2/2012	2/10/2012	1	1			10/2/2007	MTBE		
T0603776732	Los Angeles	MOBIL #18-PFC FORMER/CIRCLE STORE #2211204	WEST HOLLYWOOD	34.08806	-118.361041	LUST Cleanup Site	8/30/2001	Completed - Case Closed	Open	22/4/2015	x					6/22/2008	12/22/2011	4	1			5/12/2004	MTBE		
T0603777035	Los Angeles	MINYALE	MINYALE	33.880384	-118.320241	LUST Cleanup Site	4/16/2003	Open - Remediation	Open	10/27/2014	x					1/1/1986	3/1/1987	4	1			3/5/2004	BZ		
T0603777067	Los Angeles	AMIN'S OIL (FORMER SHELL STATION)	LOS ANGELES	34.032378	-118.300862	LUST Cleanup Site	18/2/2002	Completed - Case Closed	Closed	12/21/2017	x			6/17/2003	9/6/2013	11	4			6/17/2003	9/6/2013	11	5	8/27/2003	MTBE
T0603777229	Los Angeles	SHELL SERVICE STATION (FORMER)	COMPTON	33.90258	-118.288461	LUST Cleanup Site	10/1/2002	Completed - Case Closed	Closed	7/18/2012	x					6/22/2008	12/22/2011	4	1			7/2/2002	MTBE		
T0603777351	Los Angeles	PIZZA HUT SITE #11-1488	LOS ANGELES	33.86941	-118.310341	LUST Cleanup Site	11/7/2002	Open - Remediation	Open	16/2/2011	x			12/24/2015	13/12/2017	3	1			6/1/2003	2/1/2004	7	1	8/7/2007	BZ
T0603778251	Los Angeles	SERVICE STATION	VENICE	34.00133607	-118.468444	LUST Cleanup Site	7/1/2002	Completed - Case Closed	Closed	7/1/2015	x			9/11/2001	9/30/2001	1	1			7/8/2012	4/30/14	3	1	7/8/2009	BZ
T0603778589	Los Angeles	ALPINE VALLEY FARM	TORRANCE	33.842435	-118.28712	LUST Cleanup Site	9/12/1997	Completed - Case Closed	Closed	6/20/2018	x					6/23/2016	6/2/2016	1	1			6/2/2016	MTBE		
T0603778779	Los Angeles	SHELL STATION (FORMER)	LOS ANGELES	34.024218	-118.173738	LUST Cleanup Site	21/2/2001	Completed - Case Closed	Closed	72/8/2011	x					10/6/2009	3/27/2011	3	1			3/28/2008	ND		
T0603778729	Los Angeles	CIRCLE K STORE #2211339 FORMER MOBIL 18-LD4	LOS ANGELES	34.087323	-118.338956	LUST Cleanup Site	8/1/2002	Open - Remediation	Open	4/1/2009	x			11/10/2005	6/2/2021	17	1					7/29/2003	BZ		
T0603778910	Los Angeles	PLAGE FUEL STOP	LOS ANGELES	34.48322468	-118.6031468	LUST Cleanup Site	9/12/1997	Completed - Case Closed	Closed	11/2/2017	x					2/22/2016	2/27/2016	1	1			11/2/2017	MTBE		
T0603780442	Los Angeles	PICCASSO AUTO BODY	LOS ANGELES	34.027884	-118.371891	LUST Cleanup Site	7/23/1998	Open - Eligible for Closure	Open	5/9/2022						66/8/2008	7/12/2013	6	1			4/3/2006	BZ		
T0603780747	Los Angeles	CONCOPHILLIPS CO #253733	MONTEBELLO	33.907918	-118.126069	LUST Cleanup Site	7/18/2005	Completed - Case Closed	Closed	4/30/2019	x			2/1/2017	2/16/2021	1	1					10/6/2006	MTBE		
T0603782401	Los Angeles	LONG BEACH TRANSIT	LONG BEACH	33.7831662	-118.1881728	LUST Cleanup Site	6/1/2003	Completed - Case Closed	Open	1/13/2018	x			2/1/2017	6/1/2021	5	1					6/1/2016	BZ		
T0603783309	Los Angeles	CHEVRON STATION	NORWALK	33.925897	-118.105348	LUST Cleanup Site	2/17/1999	Completed - Case Closed	Closed	12/30/2014	x					6/17/2008	9/18/2008	1	1			2/1/2006	MTBE		
T0603784133	Los Angeles	JOE'S CAR WASH	LOS ANGELES	34.042012	-118.248467	LUST Cleanup Site	12/8/1999	Completed - Case Closed	Closed	21/5/2008	x					4/12/2001	3/3/2002	2	1			6/7/2005	MTBE		
T0603784213	Los Angeles	HUNTINGTON PARK (FORMER)	HUNTINGTON PARK	34.973075	-118.377329	LUST Cleanup Site	11/4/2002	Completed - Case Closed	Closed	9/30/2020	x					9/27/2019	3/26/2020	9	1			6/19/2003	BZ		
T0603784346	Los Angeles	WINALL OIL COMPANY #3	LOS ANGELES	34.073509	-118.20749	LUST Cleanup Site	9/19/1997	Completed - Case Closed	Closed	13/10/2022						4/10/2019	11/1/2020	2	1			7/8/2008	MTBE		
T0603785644	Los Angeles	EXXONMOBIL #18-KEP	LOS ANGELES	34.074545	-118.287225	LUST Cleanup Site	8/16/2001	Completed - Case Closed	Closed	6/6/2011	x					8/4/2016	8/4/2016	3	1			12/27/2004	BZ		
T0603785662	Los Angeles	MOBIL #18-LF	RESEDA	34.186273	-118.553206	LUST Cleanup Site	7/10/2001	Completed - Case Closed	Closed	8/29/2011	x					5/2/2007	12/10/2008	2	1			5/20/2004	MTBE		
T0603786022	Los Angeles	WORLD OIL MARKETING CO. #2	LOS ANGELES	33.9375	-118.256	LUST Cleanup Site	21/2/2008	Completed - Case Closed	Closed	8/19/2013	x					12/8/2008	5/13/2013	6	1			9/19/2008	BZ		
T0603786681	Los Angeles	CINC BEACH	CINC BEACH	33.948393	-118.193861	LUST Cleanup Site	8/16/2001	Completed - Case Closed	Closed	7/28/2003	x					1/20/2011	8/2/2011	3	1			8/28/2003	MTBE		
T0603787037	Los Angeles	SHELL SERVICES STATION (FORMER)	HARBOR CITY	33.789846	-118.307158	LUST Cleanup Site	6/20/2001	Completed - Case Closed	Closed	5/30/2008	x					4/28/2004	5/1/2013	6	1			3/4/2003	MTBE		
T0603788228	Los Angeles	CIRCLE K STORE #2211317 (Former MOBIL #18-MVM)	SAN PEDRO	33.722933	-118.312171	LUST Cleanup Site	26/2/2001	Open - Eligible for Closure	Open	84/2/2022						9/5/2007	9/12/2007	1	1			11/24/2004	BZ		
T0603788529	Los Angeles	EXXONMOBIL OIL #18-B34	LOS ANGELES	33.075823	-118.361865	LUST Cleanup Site	6/2/2003	Completed - Case Closed	Open	14/2/2013	x			2/24/2011	3/22/2011	1	1					9/1/2007	MTBE		
T0603789106	Los Angeles	FORMER MOBIL STATION #18-GT9	SAN PABLO	33.971413	-118.39537	LUST Cleanup Site	6/12/2001	Open - Remediation	Open	59/2/2011	x					11/11/2008	3/12/2021	14	2			4/15/2005	MTBE		
T0603789306	Los Angeles	MOBIL #18-F48	HUNTINGTON PARK	33.975369	-118.260464	LUST Cleanup Site	11/7/2002	Completed - Case Closed	Closed	11/18/2010	x					12/1/2005	4/1/2009	5	1			11/13/2003	MTBE		
T0603789550	Los Angeles	SAVETHORNE	SAVETHORNE	33.927492	-118.333062	LUST Cleanup Site	11/2/2000	Completed - Case Closed	Closed	4/28/2020	x					4/28/2020	4/28/2020	3	1			2/4/2003	BZ		
T0603789591	Los Angeles	DR. PICKETTS PROPERTY	LOS ANGELES	33.988415	-118.311146	LUST Cleanup Site	9/22/2001	Completed - Case Closed	Closed	3/29/2011	x					3/1/2003	3/31/2003	1	1			5/21/2003	BZ		
T0603790574	Los Angeles	TEA'S CUP	LOS ANGELES	33.7552696	-118.159168	LUST Cleanup Site	9/16/2001	Completed - Case Closed	Closed	7/17/2018	x					10/17/2008	12/13/2008	3	1			10/17/2008	BZ		
T0603790603	Los Angeles	ARCO #1063 (TESORO 97610-1063)	LONG BEACH	33.760709	-118.148154	LUST Cleanup Site	11/6/2000	Open - Remediation	Open	6/29/2015	x			10/9/2015	4/15/2019	5	1			11/27/2006	12/13/2008	12/13/2008	MTBE		
T0603790605	Los Angeles	CALFED BANK	LONG BEACH	33.79737	-118.189134	LUST Cleanup Site	12/16/1998	Open - Remediation	Open	10/17/2007	x					6/20/2010	9/18/2012	3	1			6/29/2002	BZ		
T0603790619	Los Angeles	RESEDA	RESEDA	34.18929	-118.536265	LUST Cleanup Site	4/1/2001	Completed - Case Closed	Closed	11/9/2011	x					11/9/2011	4/1/2011	2	1			11/9/2002	BZ		
T0603790662	Los Angeles	MOBIL 18-FD10	LOS ANGELES	34.049879	-118.43603	LUST Cleanup Site	15/1/2																		

T0604100125	Marin	SHELL	37 87081903	-122.5206762	UJST Cleanup Site	9/11/1989	Open - Verification Monitoring	Open	5/16/2015	x	11/2/1998	11/1/2005	8	1		11/1/2001	MTBE						
T0604101040	Marin	NOVATO GAS STATION	37 88747317	-122.588326	UJST Cleanup Site	2/23/1989	Completed - Case Closed	Closed	2/19/2012	x	12/18/2001	3/4/2004	4		3/4/2004	8/18/2009	1	2/19/2002	MTBE				
T0604103030	Marin	MARIN COUNTY CMC CENTER	37 88747317	-122.5292301	UJST Cleanup Site	2/23/1989	Completed - Case Closed	Closed	4/1/2008	x	10/26/1999	11/1/1999	1				1	10/21/2008	MTBE				
T0604111928	Marin	CORTE MODERA INVESTMENTS	37 924327	-122.515578	UJST Cleanup Site	3/26/2003	Completed - Case Closed	Closed	9/9/2013	x	3/26/2003	4/15/2003	1				1	1/9/2008	MTBE				
T0604115071	Marin	CORTE MODERA INVESTMENTS	37 924327	-122.515578	UJST Cleanup Site	3/26/2003	Completed - Case Closed	Closed	9/9/2013	x	3/26/2003	4/15/2003	1				1	1/9/2008	MTBE				
T0604130707	Marin	CORTE MODERA INVESTMENTS	37 924327	-122.515578	UJST Cleanup Site	3/26/2003	Completed - Case Closed	Closed	9/9/2013	x	3/26/2003	4/15/2003	1				1	1/9/2008	MTBE				
T060417917	Marin	SHILL STATION	36 086668	-122.538874	UJST Cleanup Site	11/4/2003	Completed - Case Closed	Closed	9/12/2010	x	x	2/10/2005	2/28/2005	1		9/1/2003	3/30/2004	2	1	6/27/2003	MTBE		
T0604183233	Marin	FAIRFAX GAS	37 88738387	-122.580063	UJST Cleanup Site	12/28/1989	Completed - Case Closed	Closed	10/9/2015	x	10/29/2007	10/29/2007	1		1	10/22/2009	10/22/2009		1	11/25/2002	MTBE		
T0604300033	Mariposa	780 DE LONG AVENUE PROPERTY	38 105225	-122.665624	UJST Cleanup Site	9/11/2003	Completed - Case Closed	Closed	11/16/2003	x	10/9/2007	10/16/2007	1				1	3/3/2007	BZ				
T0604300074	Mariposa	YOSEMITE STATION(CHINAPIEN)	37 8475203	-119.7203507	UJST Cleanup Site	12/21/1991	Completed - Case Closed	Closed	3/15/2005	x	x	11/15/1996	11/1/1996	5	1	9/1/1994	11/1/1999	6	1	6/11/2002	BZ		
T0604300074	Mariposa	STAGE STOP	37 48837383	-119.669362	UJST Cleanup Site	8/27/1994	Completed - Case Closed	Closed	4/3/2008	x	x					5/10/2005	10/12/2005	1		4/19/2002	MTBE		
T0604300075	Mariposa	COULTEVILLE GENERAL STORE	37 10170165	-120.195659	UJST Cleanup Site	5/21/1995	Completed - Case Closed	Closed	9/30/2005	x	x	12/15/2006	12/15/2006	2		5/10/2005	9/30/2006	1		4/19/2002	MTBE		
T0604300078	Mariposa	MOUNTAIN VIEW GROCERY	37 55119522	-119.823625	UJST Cleanup Site	3/23/1999	Completed - Case Closed	Closed	7/20/2009	x	x	6/10/2005	8/9/2005	1		6/10/2005	8/9/2005	1		1/15/2002	MTBE		
T0604300180	Mariposa	CHASE'S FOOTHILL PETROLEUM	37 48262157	-119.849327	UJST Cleanup Site	10/22/2004	Open - Eligible for Closure	Open	9/4/2022	x	x	10/1/2007	10/1/2007	1		11/7/2013	11/1/2013	1		3/23/2008	MTBE		
T0604301642	Mariposa	BARTLETT PETROLEUM	37 48262157	-119.849327	UJST Cleanup Site	7/15/2007	Open - Remediation	Open	9/11/2020	x	x	7/17/2002	7/17/2002	6	1	7/17/2002	8/14/2007	1		7/23/2010	MTBE		
T0604500007	Mendocino	CHEVRON #9 1240 ERNIES	39 13807813	-123.205904	UJST Cleanup Site	2/9/1987	Completed - Case Closed	Closed	4/19/2021	x	x	1/11/1989	1/11/1989	8	1	1/11/1989	1/11/1989	8	1	11/15/2001	MTBE		
T0604500008	Mendocino	COYOTE CANYON	39 13807813	-123.205904	UJST Cleanup Site	2/9/1987	Completed - Case Closed	Closed	4/19/2021	x	x	1/11/1989	1/11/1989	8	1	1/11/1989	1/11/1989	8	1	11/15/2001	MTBE		
T0604500010	Mendocino	CDP LAYTONVILLE FIRE STATION	39 7016233	-123.488349	UJST Cleanup Site	8/24/1987	Open - Assessment & Interim Remedial Action	Open	6/22/2017	x	x					11/1/1995	11/30/1995	1		5/21/2002	BZ		
T0604500033	Mendocino	COG LEGGETT VALLEY FIRE STATION	39 87612637	-123.721828	UJST Cleanup Site	8/19/1988	Completed - Case Closed	Closed	9/15/2010	x	x	8/17/1986	12/23/1996	1		8/17/1986	12/23/1996	1		12/22/2009	ND		
T0604500046	Mendocino	FOOD & LUXURY #186	39 4110328	-123.5547452	UJST Cleanup Site	12/9/1999	Completed - Case Closed	Closed	12/23/2013	x	x	4/11/1989	5/29/1989	1		4/11/1989	5/29/1989	1		5/29/2002	MTBE		
T0604500060	Mendocino	ULTRAMAR #1-621	39 41194328	-123.8081127	UJST Cleanup Site	1/11/1988	Completed - Case Closed	Closed	12/15/2015	x	x	8/28/2012	9/18/2012	1		5/10/2004	12/18/2012	1		9/25/2001	BZ		
T0604500086	Mendocino	CHEVRON #9 2662	39 7913184	-123.248542	UJST Cleanup Site	12/7/1989	Completed - Case Closed	Closed	3/11/2021	x	x	5/1/2006	13/1/2008	4	3	8/1/2005	11/30/2008	4	3	10/29/2001	MTBE		
T0604500115	Mendocino	TESORO #87119	38 59801519	-123.3488453	UJST Cleanup Site	8/6/1980	Completed - Case Closed	Closed	10/5/2015	x	x	3/1/1984	3/1/1984	1		3/1/1984	3/1/1984	1		9/25/2001	MTBE		
T0604500174	Mendocino	UKIAH CITY CORPORATION YARD	39 1317451	-123.205933	UJST Cleanup Site	2/6/1992	Open - Eligible for Closure	Open	2/5/2016	x	x	12/9/2011	9/30/2012	2		3/1/2012	9/30/2012	2		10/30/2001	MTBE		
T0604500216	Mendocino	COG LEGGETT	39 86624848	-123.712657	UJST Cleanup Site	6/14/1993	Completed - Case Closed	Closed	21/1/2022	x	x	6/1/1999	10/1/2001	3		6/1/1999	10/1/2001	3		12/13/2001	BZ		
T0604500249	Mendocino	HOPPERS CORNER STORE	39 3215421	-123.089555	UJST Cleanup Site	1/22/1994	Completed - Case Closed	Closed	9/24/2018	x	x					5/8/2011	5/8/2011	1		9/19/2001	MTBE		
T0604500283	Mendocino	PIFF PETROLEUM	39 28624444	-123.201483	UJST Cleanup Site	10/11/1995	Completed - Case Closed	Closed	12/13/2019	x	x	7/11/2008	10/16/2008	1		7/11/2008	10/16/2008	1		2/19/2002	MTBE		
T0604500324	Mendocino	ANCHOR BAY STATION	38 80317607	-123.258375	UJST Cleanup Site	8/13/1997	Completed - Case Closed	Closed	10/13/2015	x	x	5/10/2007	3/24/2009	3		5/10/2007	3/24/2009	3		11/30/2001	MTBE		
T0604500305	Mendocino	HOPLAND ELEMENTARY SCHOOL	38 8665915	-123.118091	UJST Cleanup Site	12/16/1987	Completed - Case Closed	Closed	8/20/2014	x	x	2/1/2012	8/14/2013	2	3	2/1/2012	8/14/2013	2	3	12/22/2009	MTBE		
T0604500338	Mendocino	UNION 76/TOSCO #211	39 44372511	-123.805211	UJST Cleanup Site	1/12/1999	Completed - Case Closed	Closed	3/15/2021	x	x					2/5/2008	2/5/2008	1		11/28/2001	MTBE		
T0604500338	Mendocino	UNION 76/TOSCO #211	39 44372511	-123.805211	UJST Cleanup Site	1/12/1999	Completed - Case Closed	Closed	3/15/2021	x	x					2/5/2008	2/5/2008	1		11/28/2001	MTBE		
T0604500786	Mendocino	ARACONS MUFFLER SHOP	39 6882418	-123.482448	UJST Cleanup Site	10/22/2002	Completed - Case Closed	Closed	4/15/2016	x	x					8/14/2012	9/14/2012	1		6/26/2004	BZ		
T060457228	Mendocino	SEB TO 848	39 161	-123.2129	UJST Cleanup Site	11/20/2003	Completed - Case Closed	Closed	4/9/2008	x	x	11/25/2003	11/25/2003	1		1		1		6/22/2008	ND		
T0604591170	Mendocino	AGC 1202	39 43240338	-123.3037134	Cleanup Program Site	11/20/2003	Completed - Case Closed	Closed	4/22/2012	x	x	8/9/2006	4/22/2012	7	2	1/8/2010	1/8/2010	1		TC4-11	11/11/2002	MTBE	
T0604593173	Mendocino	ADZ, INC.	39 148485	-123.2020361	Cleanup Program Site	9/9/1988	Completed - Case Closed	Closed	6/14/2022	x	x	9/13/2002	9/13/2002	1		9/13/2002	9/13/2002	1		4/1/2006	BZ		
T0604593324	Mendocino	ARMEX CORPORATION - REMCO HYDRAULICS	38 422006	-123.351196	Cleanup Program Site	11/1/1981	Open - Remediation	Open	3/27/2015	x	x	12/1/1999	12/1/1999	1		1/23/2009	12/29/2009	1		1/10/2008	TC4-11		
T0604700001	Mered	BEACON #401	37 29481705	-120.458568	UJST Cleanup Site	7/14/1989	Completed - Case Closed	Closed	1/24/2021	x	x	4/21/1989	7/21/1989	1		4/21/1989	7/21/1989	1		8/2		4/19/2002	BZ
T0604700012	Mered	CHEVRON #9-0789	39 148485	-123.2020361	Cleanup Program Site	7/8/1988	Completed - Case Closed	Closed	1/25/2011	x	x	3/1/1992	12/15/1992	1		4/28/2003	1/12/2010	1		9/4/2001	BZ		
T0604700015	Mered	GREEN'S EXON SERVICE	38 985041	-120.62893	UJST Cleanup Site	5/9/1985	Completed - Case Closed	Closed	6/17/2009	x	x	8/1/2000	6/1/2002	3		8/1/2000	6/1/2002	3		11/22/2001	MTBE		
T0604700019	Mered	MERCED COUNTY PUBLIC WORKS YARD	37 28073313	-120.4871571	UJST Cleanup Site	1/20/1988	Completed - Case Closed	Closed	6/27/2012	x	x	11/19/2008	7/20/2010	1		11/19/2008	7/20/2010	1		4/19/2002	BZ		
T0604700044	Mered	GAS N GO	37 3024811	-120.473249	UJST Cleanup Site	3/28/1988	Open - Site Assessment	Open	11/2/2012	x	x	3/10/2011	3/10/2011	1		6/1/2006	6/1/2006	1		6/29/2008	BZ		
T0604700074	Mered	CAN LUX RESERVOR BUICK (FORMER)	36 984675	-120.62893	UJST Cleanup Site	12/20/1985	Completed - Case Closed	Closed	11/1/1988	x	x	12/20/1985	12/20/1985	3		12/20/1985	12/20/1985	3		12/20/2002	BZ		
T0604700079	Mered	NICOLETTI OIL INC.	36 985555	-120.63944	Cleanup Program Site	6/30/1988	Open - Remediation	Open	10/13/2005	x	x	12/22/2005	9/30/2008	4		12/22/2005	9/30/2008	4		11/21/2003	MTBE		
T0604700084	Mered	OUR LADY OF MERCY CATHOLIC CHU	37 305049	-120.4800072	UJST Cleanup Site	7/12/1988	Completed - Case Closed	Closed	3/3/2010	x	x	6/27/2007	9/14/2009	3		6/27/2007	9/14/2009	3		5/8/2003	BZ		
T0604700087	Mered	2887 NISSAN	-120.4773399	UJST Cleanup Site	4/26/2003	Completed - Case Closed	Closed	9/13/2020	x	x	4/26/2003	9/13/2020	3		4/26/2003	9/13/2020	3		12/23/2009	MTBE			
T0604700110	Mered	PRIVATE RESIDENCE	37 29213267	-120.4604073	UJST Cleanup Site	3/15/1989	Completed - Case Closed	Closed	6/29/2020	x	x	5/15/2011	3/31/2012	2		5/15/2011	3/31/2012	2		10/23/2001	BZ		
T0604700126	Mered	ARC0 #2027	37 30296471	-120.5024761	UJST Cleanup Site	8/18/1988	Completed - Case Closed	Closed	9/29/2011	x	x					11/6/1995	6/10/2010	16	2	9/18/2001	BZ		
T0604700127	Mered	SHELL STATION	37 29718243	-120.462404	UJST Cleanup Site	7/14/1989	Completed - Case Closed	Closed	3/16/2010	x	x	5/24/2002	6/30/2003	2		5/24/2002	6/30/2003	2		9/27/2001	MTBE		
T0604700146	Mered	RON SMITH BUICK/OLIVE	37 3067341	-120.456956	UJST Cleanup Site	5/4/1990	Completed - Case Closed	Closed	3/16/2010	x	x					9/22/2005	12/14/2008	4		10/2/2002	MTBE		
T0604700156	Mered	DUTRA'S EXON	37 35734312	-120.849584	UJST Cleanup Site	2/5/1987	Completed - Case Closed	Closed	8/6/2011	x	x	11/18/2008	12/3/2009	2		11/18/2008	12/3/2009	2		6/27/2002	MTBE		
T0604700163	Mered	SHANNONS	37 28333333	-120.487888	UJST Cleanup Site	12/21/1989	Open - Verification Monitoring	Open	7/11/2016	x	x	5/7/2009	5/7/2009	1		7/11/2016	5/7/2009	1		15/1/1988	MTBE		
T0604700176	Mered	GAS N SAVE	37 3032101	-120.491238	UJST Cleanup Site	12/18/1990	Completed - Case Closed	Closed	6/22/2010	x	x	5/1/2003	9/25/2007	5		5/1/2003	9/25/2007	5		12/5/2000	MTBE		
T0604700183	Mered	M & A MARKET	37 3315433	-120.527855	UJST Cleanup Site	4/19/1991	Completed - Case Closed	Closed	9/1/2006	x	x	6/10/2006	5/9/2008	1		6/10/2006	5/9/2008	1		5/9/2008	BZ		
T0604700190	Mered	MANGI & SONS PACKING CO.	37 3185247	-120.5050135	UJST Cleanup Site	11/28/2011	Completed - Case Closed	Closed	11/28/2011	x	x	6/10/2006	6/30/2011	6	2	6/10/2006	6/30/2011	6	2	12/26/2003	BZ		
T0604700191	Mered	JAN'S MARKET	37 2981404	-120.373988	UJST Cleanup Site	8/21/1991	Completed - Case Closed	Closed	8/13/2010	x	x	10/5/1995	6/1/2009	15		10/5/1995	6/1/2009	15		12/10/2005	MTBE		
T0604700198	Mered	ST 1013020 (AKA R ST EX																					

T060500253	Napa	BIRLEFFI MOTORS INC	CALISTOGA	38.584795	-122.576335	LUST Cleanup Site	9/25/1997	Completed - Case Closed	Closed	12/30/2011	x	x	8/15/2003	7/3/2006	4	1	4/5/2000	4/6/2000	1	1	10/17/2001	MTBE		
T060500254	Napa	PERALDO CHEVROLET	NAPA	38.32072282	-122.27875	LUST Cleanup Site	3/21/1994	Completed - Case Closed	Closed	10/27/2003							1/27/1994	3/2/1994	1	1	2/17/2002	MTBE		
T060500256	Napa	MAIN STREET TRK	NAPA					Completed - Case Closed	Closed		x	x	6/6/2004	6/1/2009	6	2	8/8/2005	6/17/2008	4	2	11/23/2002	MTBE		
T060500259	Napa	CALISTOGA CITY PUB WKS DEPT	CALISTOGA	38.57705	-122.57639	LUST Cleanup Site	1/4/1999	Completed - Case Closed	Closed	7/29/2014			6/1/2001	6/1/2001	1				1		2/28/2002	BZ		
T060500279	Napa	WATER SERVICE STATION	NAPA	38.44720967	-122.198887	LUST Cleanup Site	10/18/1997	Completed - Case Closed	Closed	11/19/2002			x	2/10/1995	3/17/1995	1	1	1/16/2006	11/28/2012	7	5	1/23/2002	MTBE	
T060500297	Napa	UNOCAL	NAPA	38.312425	-122.30737	LUST Cleanup Site	12/29/1996	Completed - Case Closed	Closed	11/24/2009							2/23/1999		1	1	5/22/2002	MTBE		
T060500304	Napa	PUTAH CREEK PARK	NAPA	38.622319	-122.289306	LUST Cleanup Site	9/4/1990	Open - Site Assessment	Open	10/13/2011			3/15/2004	3/31/2009	6	1	8/20/2002	8/20/2002	1		12/19/2001	BZ		
T060500312	Napa	STEELER PARK MARINA	NAPA	38.526638	-122.201702	LUST Cleanup Site	4/10/1996	Completed - Case Closed	Closed	12/8/2011			1/21/1996	12/16/1995	1	1	6/8/2008	6/8/2008	1		12/20/2002	MTBE		
T060500320	Napa	PRIVATE RESIDENCE	NAPA	38.3364051	-122.255292	LUST Cleanup Site	5/22/2006	Open - Remediation	Open	8/23/2016			x	8/21/2016	10/24/2018	3	1	8/21/2016		3	1	12/28/2006	BZ	
T060501859	Napa	NUSSO TRANSPORTATION CENTER	NAPA	38.1424319	-122.24443	LUST Cleanup Site	7/6/1999	Completed - Case Closed	Closed	4/13/2009			x	5/22/2002	5/22/2002	1	1			1		6/29/2003	MTBE	
T060501908	Napa	SPANISH FLAT YARD	TRUCKEE	38.5357146	-122.24443	LUST Cleanup Site	1/24/2002	Completed - Case Closed	Closed	11/4/2012			x	11/19/2011	11/20/2011	1	1			1		7/17/2003	MTBE	
T060502002	Nevada	KINGVALE MAINTENANCE STATION (CALTRANS)	KINGVALE	39.31702646	-120.437255	LUST Cleanup Site	12/10/1996	Completed - Case Closed	Closed	12/30/2019			1/11/1988	1/1/2004	17	1			11/22/2010		1		2/20/2002	MTBE
T060502005	Nevada	GOLD FLAT SERVICE CENTER (FORMER)	NEVADA CITY	39.25226938	-121.020381	LUST Cleanup Site	4/19/1993	Open - Remediation	Open	11/4/2010			x			1	11/22/2010	11/22/2010	1	1	9/23/2002	BZ		
T060502107	Nevada	SERRA ENERGY - SERRA SUPER STOP #3	NORTH SAN JUAN	39.3702951	-121.1033456	LUST Cleanup Site	1/13/1997	Completed - Case Closed	Closed	6/26/2014			x	11/4/2005	11/4/2005	1	1	11/4/2005	11/4/2005	1	1	11/4/2002	MTBE	
T060502114	Nevada	SERRA SUPER STOP #1	GRASS VALLEY	39.219741	-121.059426	LUST Cleanup Site	4/11/1998	Completed - Case Closed	Closed	12/24/2009				5/1/2005	9/1/2007	3	1	5/1/2005	9/1/2007	3	1	8/15/2002	MTBE	
T060502115	Nevada	GRASS VALLEY #7	GRASS VALLEY	39.219156	-121.051056	LUST Cleanup Site	10/19/1993	Completed - Case Closed	Closed	3/31/2002				11/19/2008		1		11/19/2008		1		11/23/2002	MTBE	
T060502164	Nevada	FORMER TAYLORS TRILES	TRUCKEE	39.3261013	-120.2113217	LUST Cleanup Site	10/9/1987	Completed - Case Closed	Closed	5/21/2015				6/26/2009	4/29/2011	3	2	6/26/2009	4/29/2011	3	2	9/18/2002	BZ	
T060502164	Nevada	MCNAMUS PROPERTY	TRUCKEE	39.3274164	-120.187942	LUST Cleanup Site	9/16/1992	Completed - Case Closed	Closed	12/4/2012			x	1/13/2000	12/14/2000	1	1	6/1/2001	6/1/2001	1		10/29/2001	BZ	
T060502167	Nevada	TOSCO #10071 #8091	TRUCKEE	39.33305857	-120.227876	LUST Cleanup Site	7/28/1993	Completed - Case Closed	Closed	12/30/2005			x	6/24/2001	12/12/2002	2	2	6/24/2001	12/12/2002	2	2	10/18/2001	MTBE	
T060502177	Nevada	PAT & OLLIES SUPERSTOP (FORMER)	TRUCKEE	39.32587411	-120.2023709	LUST Cleanup Site	3/22/2001	Completed - Case Closed	Closed	2/20/2019			x	12/24/2001	11/12/2002	2	4	7/1/2004	4/30/2005	2	1	9/11/2003	MTBE	
T060502187	Nevada	Western Energetics Cardrock Facility (FORMER BERRY-HINKLEY INDUS.	C TRUCKEE	39.3293265	-120.181131	LUST Cleanup Site	4/15/1998	Completed - Case Closed	Closed	18/20/16				3/8/1999	3/31/2003	5	1	3/8/1999	3/31/2003	5	1	10/4/2001	MTBE	
T060502188	Nevada	NATO AND OLLIES TOO	TRUCKEE	39.32738437	-120.1862203	LUST Cleanup Site	2/17/1987	Completed - Case Closed	Closed	10/16/2010			x	12/21/2005	9/13/2007	3	1	12/21/2005	9/13/2007	3	1	10/15/2001	MTBE	
T060502198	Nevada	Tom's Sierra Superstop	TRUCKEE	39.32637286	-120.2142251	LUST Cleanup Site	7/13/2000	Completed - Case Closed	Closed	3/24/2009				2/17/2005	2/17/2005	1	1			1		8/4/2002	MTBE	
T060503016	Orange	ADEPT MFG	COSTA MESA	33.678904	-117.302496	LUST Cleanup Site	11/21/1987	Completed - Case Closed	Closed	8/24/2005			x	8/18/1987	8/22/2000	14	1	12/4/1987	5/25/2000	14	1	12/5/2001	BZ	
T060503032	Orange	ARCO #1912	FOUNTAIN VALLEY	33.684349	-117.633843	LUST Cleanup Site	9/19/1985	Open - Remediation	Open	4/5/2002			x	8/5/2005	3/29/2007	17	1	3/17/2001	11/20/2012	12	1	9/18/2001	MTBE	
T060503033	Orange	ARCO #1905	FOUNTAIN VALLEY	33.7007882	-117.5718075	LUST Cleanup Site	12/11/1985	Open - Eligible for Closure	Open	6/15/2021			x	12/5/2000	12/31/2019	20	1	5/11/1992	10/16/2000	9	1	9/17/2001	MTBE	
T060503035	Orange	ARCO #1977	SANTA ANA	33.707619	-117.618895	LUST Cleanup Site	15/1/1987	Completed - Case Closed	Closed	11/18/2014			x	11/1/1985	2/25/2012	48	2	11/1/1985	2/25/2012	48	2	9/13/2001	ND	
T060503037	Orange	ARCO #1023	FULLERTON	33.86645625	-117.84228	LUST Cleanup Site	12/23/1985	Completed - Case Closed	Closed	10/25/2017			x	17/2002	3/31/2005	4	1			1		12/20/2002	BZ	
T060503038	Orange	ARCO #1055	GARDEN GROVE	33.7741121	-117.9759811	LUST Cleanup Site	5/22/1989	Completed - Case Closed	Closed	2/22/2016			x	10/9/1991	21/3/2004	14	1	10/9/1991	21/3/2004	14	1	11/16/2001	BZ	
T060503038	Orange	CYPRESS	GARDEN GROVE	33.8167446	-118.0457316	LUST Cleanup Site	12/23/1985	Completed - Case Closed	Closed	4/10/2004				11/1/1985		1		11/1/1985		1		11/16/2001	BZ	
T060503040	Orange	MOBL #18-JAY	COSTA MESA	33.696557	-117.5074017	LUST Cleanup Site	4/21/1993	Completed - Case Closed	Closed	4/16/2021				3/7/2000	8/12/2014	15	1			1		11/7/2001	MTBE	
T060503041	Orange	ARCO #8071	SANTA ANA	33.7035543	-117.6865316	LUST Cleanup Site	6/20/1985	Open - Remediation	Open	4/1/2009			x	7/13/1999	12/21/2007	9	1	7/13/1999	12/21/2007	9	1	9/13/2001	MTBE	
T060503046	Orange	ARCO #1004	SANTA ANA	33.71813007	-117.6881195	LUST Cleanup Site	6/19/2014	Completed - Case Closed	Closed	11/18/2014			x	7/28/1992	7/28/1992	1	1	7/28/1992	7/28/1992	1	1	8/23/2005	MTBE	
T060503068	Orange	CHEVRON #9-2330	BUENA PARK	33.8465299	-118.028306	LUST Cleanup Site	11/16/1984	Completed - Case Closed	Closed	4/10/2015				6/1/1994	7/30/1996	3	1	6/1/1994	7/30/1996	3	1	9/11/2001	MTBE	
T060503073	Orange	CHEVRON #9-1657	SEAL BEACH	33.739384	-118.078548	LUST Cleanup Site	4/9/1986	Completed - Case Closed	Closed	4/19/2012			x	12/2/2006		1		12/2/2006		1		9/7/2002	MTBE	
T060503074	Orange	CHEVRON #9-3442	NEWPORT BEACH	33.6246781	-117.876351	LUST Cleanup Site	12/1/1986	Completed - Case Closed	Closed	4/5/2011			x	7/1/1988	4/1/1991	4	1	7/1/1988	4/1/1991	4	1	8/7/2002	BZ	
T060503077	Orange	CHEVRON #9-5492	WESTMINSTER	33.7371305	-117.8898296	LUST Cleanup Site	1/19/1988	Completed - Case Closed	Closed	8/19/2001			x	4/1/1991	12/31/1995	5	1	4/1/1991	12/31/1995	5	1	11/16/2001	BZ	
T060503080	Orange	CHEVRON #9-4287	GARDEN GROVE	33.788687	-118.028896	LUST Cleanup Site	7/8/1986	Completed - Case Closed	Closed	4/24/2023				10/29/1995		2	1			1		9/11/2001	MTBE	
T060503085	Orange	CHEVRON #16-3510	SEAL BEACH	33.7442164	-118.022653	LUST Cleanup Site	12/28/1988	Open - Remediation	Open	2/16/2021			x	1/19/1996	11/26/1997	2	1	1/19/1996	11/26/1997	2	1	11/23/2002	BZ	
T060503087	Orange	CHEVRON	LAGUNA HILLS	33.812696	-117.172006	LUST Cleanup Site	11/15/1985	Completed - Case Closed	Closed	6/6/2005			x	5/22/2001	5/22/2001	1	1	5/22/2001	5/22/2001	1	1	12/5/2001	BZ	
T060503091	Orange	WORLD #2314	BUENA PARK	33.8679193	-117.8679399	LUST Cleanup Site	12/19/2004	Completed - Case Closed	Closed	2/16/2014			x	10/23/2009	11/13/2009	1	1	10/23/2009	11/13/2009	1	1	11/6/2001	BZ	
T060503091	Orange	HARBOR FARM EXXON	COSTA MESA	33.663296	-117.919136	LUST Cleanup Site	12/17/1991	Completed - Case Closed	Closed	6/25/2014			x	5/25/2004	9/12/2006	3	1	5/25/2004	9/12/2006	3	1	9/27/2002	MTBE	
T060503091	Orange	EXXON #7-3515	IRVINE	33.89369036	-117.853383	LUST Cleanup Site	9/5/1985	Open - Verification Monitoring	Open	22/2/2002				3/20/1990	5/1/2010	21	2			1		10/25/2001	BZ	
T060503091	Orange	EXXON #16 STORE	BUENA PARK	33.8591876	-118.027942	LUST Cleanup Site	4/9/2004	Completed - Case Closed	Closed	10/27/2014			x	12/1/1990	12/20/1995	6	1	12/1/1990	12/20/1995	6	1	9/27/2001	BZ	
T060503091	Orange	FIVE POINT U SERVICE	BUENA PARK	33.8587117	-118.0285228	LUST Cleanup Site	10/19/87	Completed - Case Closed	Closed	10/7/2013			x	7/1/1993	12/1/2003	11	1	6/1/1993	12/1/2003	11	1	9/26/2001	MTBE	
T060503043	Orange	HUGHES AIRCRAFT COMPANY - GSG	FULLERTON	33.87724518	-117.864399	Cleanup Program Site	11/11/1998	Open - Remediation	Open	21/5/2008				10/11/1992	12/31/2011	20	2	10/8/1991	21/6/1998	1	1	9/26/2005	TCE	
T060503056	Orange	HAYO OIL COMPANY	IRVINE	33.831018	-117.820818	LUST Cleanup Site	4/20/1986	Completed - Case Closed	Closed	18/2/2003				4/1/1986	12/14/1991	1	1	4/1/1986	12/14/1991	1	1	11/27/2006	BZ	
T060503063	Orange	KAISER OILREPRODUCTION	IRVINE	33.6996332	-117.846713	LUST Cleanup Site	4/21/1986	Completed - Case Closed	Closed	3/29/2008			x	12/14/1991	12/31/2001	1	1	10/5/1991	10/15/1991	1	1	8/21/2003	TCE	
T060503079	Orange	FULLERTON SCHOOL DISTRICT (HHS)	FULLERTON	33.86791678	-117.853337	LUST Cleanup Site	11/10/1998	Completed - Case Closed	Closed	21/23/19				11/22/2010	11/22/2010	1	1			1		11/17/2006	BZ	
T060503084	Orange	BOEING FORMER McDONNELL Douglas AERONAUTICS	HUNTINGTON BEACH	33.74589164	-118.043433	Cleanup Program Site	12/28/1986	Open - Remediation	Open	2/30/2009			x	11/1/1990	10/31/2011	22	7	11/22/2010	11/22/2010	1	1	11/27/2006	TC111	
T060503090	Orange	MOBL #18-HCK	NEWPORT BEACH	33.616405	-117.9014487	LUST Cleanup Site	7/22/1986	Completed - Case Closed	Closed	7/28/2005			x	8/31/1989	5/1/2002	14	2	8/31/1989	5/1/1994	6	1	10/22/2001	BZ	
T060503091	Orange	MOBL #18-HA (FORMER)	COSTA MESA	33.6306746	-117.912029	LUST Cleanup Site	21/1/1995	Completed - Case Closed	Closed	11/11/2006			x	11/1/1996		1		11/1/1996		1		10/22/2001	BZ	
T060503093	Orange	MOBL #18-B24	IRVINE	33.686749	-117.80203	LUST Cleanup Site	5/11/2006	Open - Verification Monitoring	Open	11/16/2021			x	11/26/2001	5/1/2021	31	3	11/26/200						



0000050553	Orange	CIRCLE SEAL CONTROLS	ANAHAIM	33.8473729	-117.595372	Cleanup Program Site	10/17/987	Open - Verification Monitoring	Open	8/12/2008	x	x	6/11/1999	6/26/2006	6	1	6/11/1999	6/26/2006	8	1	2/14/2005	TCE
0000050554	Orange	TS AFRC LOS Alamitos - JOINT FORCES TRAINING BASE, LOS ALAMITOS	LOS ALAMITOS	33.7948176	-117.784176	Military LUST Site	2/11/1887	Completed - Case Closed	Closed	12/10/211	x	x	11/11/1995	12/31/2010	16	4	1/15/1998	3/5/2007	14	3	4/4/2006	BZ
0000050555	Orange	TS AFRC LOS Alamitos - JOINT FORCES TRAINING BASE, LOS ALAMITOS	LOS ALAMITOS	33.7948176	-117.784176	Military LUST Site	2/11/1887	Completed - Case Closed	Closed	6/1/2010	x	x	3/31/2008	6/1/2010	6	1	3/31/2008	6/1/2010	4	3	3/1/2002	MTBE
0000050557	Orange	MOBL #18-008	ANAHAIM	33.7594485	-117.595302	LUST Cleanup Site	10/1/1987	Completed - Case Closed	Closed	4/19/2012	x	x	7/17/1991	11/20/2012	12	1	6/1/1991	4/8/1997	7	1	1/18/2010	MTBE
0000050558	Orange	MOBL #18-009	HUNTINGTON BEACH	33.7300058	-117.952216	LUST Cleanup Site	9/29/1987	Open - Verification Monitoring	Open	11/20/2011	x	x	5/11/1992	8/1/2004	13	1	3/7/2012	3/9/2012	1	1	9/17/2010	BZ
0000050559	Orange	MOBL #18-010	WESTMINSTER	33.7450187	-117.574455	LUST Cleanup Site	10/1/1987	Completed - Case Closed	Closed	6/15/2010	x	x	5/1/1992	6/15/2010	10	1	5/1/1992	6/15/2010	1	1	10/26/2010	MTBE
0000050571	Orange	UNOCAL #5678 (aka TOSCO - 78)	TUSTIN	33.732523	-117.816432	LUST Cleanup Site	10/1/1987	Completed - Case Closed	Closed	10/22/2011	x	x	5/13/2005	5/24/2013	9	1	5/13/2005	5/24/2013	8	1	10/26/2010	MTBE
0000050572	Orange	TS AFRC LOS Alamitos - JOINT FORCES TRAINING BASE, LOS ALAMITOS	LOS ALAMITOS	33.79422	-117.584222	Military LUST Site	4/17/1993	Completed - Case Closed	Closed	10/22/2011	x	x	11/11/1995	8/24/2003	8	1	8/19/2005	6/20/2009	1	1	5/10/2006	BZ
0000050580	Orange	CITY OF BUENA PARK	BUENA PARK	33.8591437	-117.584038	LUST Cleanup Site	1/1/1987	Completed - Case Closed	Closed	10/22/2011	x	x	11/11/1995	8/24/2003	8	1	8/19/2005	6/20/2009	1	1	5/10/2006	BZ
0000050582	Orange	TEXACO	LOS ALAMITOS	33.7993242	-118.071693	LUST Cleanup Site	9/17/1998	Completed - Case Closed	Closed	7/14/2014	x	x	8/11/1992	7/11/1994	3	1	4/26/1995	4/26/1995	1	1	12/26/2011	MTBE
0000050591	Orange	BISBEE'S MARINE FUELS	NEWPORT BEACH	33.6902379	-118.024793	LUST Cleanup Site	12/18/1987	Completed - Case Closed	Closed	3/23/2012	x	x	8/18/2005	3/7/2009	5	1	8/18/2005	3/7/2009	5	1	9/23/2003	MTBE
0000050592	Orange	MOBL #18-011	HUNTINGTON BEACH	33.7157307	-118.024793	LUST Cleanup Site	1/1/1987	Completed - Case Closed	Closed	7/14/2014	x	x	7/30/1992	11/20/2005	14	1	4/17/2011	4/21/2011	1	1	11/26/2011	MTBE
0000050625	Orange	MOBL #18-006	ANAHAIM	33.8287054	-117.814272	LUST Cleanup Site	2/22/1988	Completed - Case Closed	Closed	2/26/2010	x	x	7/11/1991	5/31/1994	4	2	6/22/2002	5/31/1994	4	2	12/5/2003	MTBE
0000050632	Orange	CHEVRON #5 & 6515	GARDEN GROVE	33.781781	-118.025692	LUST Cleanup Site	5/9/1987	Completed - Case Closed	Closed	6/22/2010	x	x	1/23/1987	1/23/1987	11	1	1/23/1987	1/23/1987	1	1	6/22/2010	MTBE
0000050633	Orange	MOBL #18-010	FOUNTAIN VALLEY	33.7056731	-117.554463	LUST Cleanup Site	3/31/1988	Completed - Case Closed	Closed	6/22/2010	x	x	5/8/2001	4/19/2011	11	1	4/24/1994	5/20/2005	12	3	11/27/2011	MTBE
0000050634	Orange	MOBL #18-010	YORBA LINDA	33.8894454	-117.139807	LUST Cleanup Site	7/17/1987	Completed - Case Closed	Closed	4/10/2012	x	x	3/1/1992	5/31/2000	9	1	3/1/1992	5/31/2000	9	1	10/17/2011	BZ
0000050641	Orange	ARCOC #6159	ANAHAIM	33.8324511	-117.877702	LUST Cleanup Site	2/6/1985	Completed - Case Closed	Closed	6/15/2010	x	x	11/19/2003	6/15/2010	13	1	11/19/2003	6/15/2010	13	1	9/12/2011	MTBE
0000050642	Orange	MOBL #18-009	HUNTINGTON BEACH	33.7300058	-117.959634	LUST Cleanup Site	7/25/1985	Completed - Case Closed	Closed	6/10/2012	x	x	3/1/1994	1/31/1995	2	1	3/1/1994	1/31/1995	2	1	7/2/2002	BZ
0000050643	Orange	MOBL #18-008	HUNTINGTON BEACH	33.7296459	-118.023878	LUST Cleanup Site	4/15/1985	Completed - Case Closed	Closed	6/22/2010	x	x	12/26/2011	9/15/2011	11	1	3/22/2011	9/15/2011	11	1	10/17/2011	MTBE
0000050644	Orange	NEWPORT BEACH	WESTMINSTER	33.6268478	-117.583535	LUST Cleanup Site	1/21/1988	Open - Remediation	Open	11/18/2011	x	x	11/18/2011	6/20/2011	1	1	11/18/2011	6/20/2011	1	1	11/26/2011	MTBE
0000050645	Orange	MOBL #18-014	IRVINE	33.7581847	-117.955216	LUST Cleanup Site	1/21/1988	Open - Remediation	Open	21/3/2004	x	x	11/11/1988	3/26/2020	1	1	12/8/2000	3/26/2020	8000	4	12/5/2011	BZ
0000050655	Orange	TRANSIT MIX CONCRETE CO	IRVINE	33.695322	-117.727968	LUST Cleanup Site	9/31/1982	Completed - Case Closed	Closed	26/2/2004	x	x	3/1/1989	6/12/1996	6	1	2/25/1994	5/12/1999	1	1	11/21/2011	MTBE
0000050656	Orange	MOBL #18-FW	HUNTINGTON BEACH	33.8463569	-118.021159	LUST Cleanup Site	3/24/1988	Completed - Case Closed	Closed	6/22/2010	x	x	11/11/1995	6/22/2010	14	2	11/11/1995	6/22/2010	7	1	11/26/2011	MTBE
0000050669	Orange	HUNTINGTON CENTER CAR WASH	HUNTINGTON BEACH	33.7001292	-117.969856	LUST Cleanup Site	3/24/1988	Completed - Case Closed	Closed	6/26/2018	x	x	3/24/2005	12/18/2006	2	1	6/1/1993	6/1/1995	3	1	9/12/2011	MTBE
0000050671	Orange	QUALITY GAS #552	HUNTINGTON BEACH	33.7250575	-118.030335	LUST Cleanup Site	7/23/1987	Completed - Case Closed	Closed	12/27/2012	x	x	3/27/1998	123/20/08	9	1	3/27/1998	123/20/08	9	1	9/23/2011	BZ
0000050672	Orange	CAMPBELL	HUNTINGTON BEACH	33.6487138	-117.935648	LUST Cleanup Site	1/2/1987	Completed - Case Closed	Closed	6/22/2010	x	x	1/2/1987	1/20/1991	11	1	1/2/1987	1/20/1991	11	1	12/10/2011	BZ
0000050680	Orange	TEXACO	HUNTINGTON BEACH	33.7328091	-118.0170256	LUST Cleanup Site	3/22/1988	Completed - Case Closed	Closed	6/29/2012	x	x	4/29/1991	5/2/2001	1	1	4/29/1991	5/2/2001	1	1	9/23/2011	BZ
0000050681	Orange	LA HABRA	HUNTINGTON BEACH	33.6248176	-117.968112	LUST Cleanup Site	1/21/1988	Completed - Case Closed	Closed	6/29/2012	x	x	4/11/1997	4/13/1988	1	1	12/27/1993	1/19/1986	4	1	3/17/2004	BZ
0000050708	Orange	UNOCAL #5225	BREA	33.1965630	-117.8996272	LUST Cleanup Site	5/23/1988	Completed - Case Closed	Closed	84/2004	x	x	8/19/1998	8/19/1998	2	1	8/19/1998	8/19/1998	2	1	8/1/2002	BZ
0000050737	Orange	TEXACO #5225	WESTMINSTER	33.7592873	-117.8971338	LUST Cleanup Site	12/21/1987	Completed - Case Closed	Closed	3/21/2006	x	x	11/11/1991	10/30/2001	11	2	8/1/2000	8/12/2002	3	1	11/8/2011	BZ
0000050741	Orange	CHEVRON #418	IRVINE	33.6761498	-117.869335	LUST Cleanup Site	3/26/1988	Completed - Case Closed	Closed	6/22/2010	x	x	11/18/1994	6/24/1995	1	1	11/18/1994	6/24/1995	1	1	6/22/2010	BZ
0000050766	Orange	TEXACO SERVICE STATION	ANAHAIM	33.6594768	-117.790779	LUST Cleanup Site	8/10/1990	Completed - Case Closed	Closed	12/8/2005	x	x	5/23/2001	5/23/2001	1	1	5/23/2001	5/23/2001	1	1	12/9/2002	MTBE
0000050772	Orange	MOBL #18-CBT	GARDEN GROVE	33.737287	-117.8745011	LUST Cleanup Site	4/11/1988	Completed - Case Closed	Closed	74/2014	x	x	4/3/1992	3/9/1993	2	1	4/3/1992	3/9/1993	2	1	12/17/2011	MTBE
0000050773	Orange	WESTMINSTER MAINTENANCE YARD	GARDEN GROVE	33.7330211	-118.0207194	LUST Cleanup Site	1/23/1988	Open - Verification Monitoring	Open	11/20/2011	x	x	11/20/2011	11/20/2011	16	2	11/20/2011	11/20/2011	16	2	11/20/2011	MTBE
0000050775	Orange	ARCOC #6159	GARDEN GROVE	33.781911	-118.0202172	LUST Cleanup Site	7/20/1988	Open - Remediation	Open	10/7/2010	x	x	4/11/2002	11/20/23	1	1	8/25/1991	4/10/2003	5	1	11/15/2011	BZ
0000050776	Orange	MOBL #18-014	TUSTIN	33.7349565	-117.8142041	LUST Cleanup Site	6/1/1988	Completed - Case Closed	Closed	15/8/2020	x	x	4/11/1988	7/10/2010	23	3	7/10/2018	7/10/2010	1	1	11/26/2011	MTBE
0000050780	Orange	GARDEN GROVE	GARDEN GROVE	33.7592184	-117.9380039	LUST Cleanup Site	7/2/1988	Completed - Case Closed	Closed	6/22/2010	x	x	4/29/1991	5/2/2001	11	1	4/29/1991	5/2/2001	11	1	9/23/2011	BZ
0000050790	Orange	ARCOC #1187	HUNTINGTON BEACH	33.7192574	-117.9889139	LUST Cleanup Site	6/23/1988	Open - Site Assessment	Open	6/30/2019	x	x	3/19/1987	6/6/2011	5	2	3/19/1987	6/6/2011	5	2	9/5/2011	BZ
0000050794	Orange	LA HABRA	FULLERTON	33.8947618	-117.903937	LUST Cleanup Site	1/2/1988	Completed - Case Closed	Closed	6/22/2010	x	x	11/19/2003	6/22/2010	13	1	11/19/2003	6/22/2010	13	1	9/12/2011	BZ
0000050794	Orange	JET GAS STATION	GARDEN GROVE	33.7710063	-117.5548864	LUST Cleanup Site	7/5/1988	Completed - Case Closed	Closed	4/18/2014	x	x	1/26/2004	1/26/2004	1	1	1/26/2004	1/26/2004	7996	1	8/21/2002	BZ
0000050807	Orange	Orange County South Beam - BFM Energy PRODUCTS CORP.	SANTA ANA	33.7055961	-117.8448039	Cleanup Program Site	4/15/1998	Open - Remediation	Open	11/8/2021	x	x	7/15/1999	12/31/1996	14	2	7/15/1999	11/5/1998	1	1	12/13/2006	PCE
0000050814	Orange	Orange MESA - US MARINE CORPS CASI LUST	IRVINE	33.6768148	-117.7338848	Cleanup Program Site	3/1/1987	Completed - Case Closed	Closed	6/22/2010	x	x	11/11/1995	6/22/2010	1	1	11/11/1995	6/22/2010	1	1	9/23/2011	BZ
0000050822	Orange	CONEXANT SYSTEMS, INC. (FORMER ROCKWELL INT. SEMI-CONDUCT	NEWPORT BEACH	33.6622804	-117.8555994	Cleanup Program Site	3/16/1987	Open - Remediation	Open	11/11/2011	x	x	7/11/1991	6/1/2004	7	1	10/10/1984	6/30/2013	30	4	12/8/2005	TCE
0000050832	Orange	THRIFTY OIL #368	WESTMINSTER	33.7592409	-118.0197396	LUST Cleanup Site	9/27/1988	Completed - Case Closed	Closed	74/2014	x	x	7/11/1995	11/20/2013	11	2	6/23/1999	2/23/2011	1	1	5/23/2002	BZ
0000050834	Orange	GARDEN GROVE	GARDEN GROVE	33.7882106	-118.0201106	LUST Cleanup Site	1/2/1988	Completed - Case Closed	Closed	6/22/2010	x	x	7/10/1992	8/1/1996	1	1	7/10/1992	8/1/1996	1	1	12/2/2002	MTBE
0000050847	Orange	THRIFTY OIL #376	SANTA ANA	33.7581847	-117.8846114	LUST Cleanup Site	11/14/1988	Completed - Case Closed	Closed	5/2/2002	x	x	10/29/2007	10/29/2007	1	1	5/2/2002	10/29/2007	1	1	12/10/2011	MTBE
0000050852	Orange	UNOCAL #5422	SANTA ANA	33.7264793	-117.850296	LUST Cleanup Site	10/24/1988	Open - Remediation	Open	4/22/2016	x	x	7/31/2008	12/30/2013	5	1	7/31/2008	12/30/2013	5	1	9/25/2011	MTBE
0000050859	Orange	GARDEN GROVE	GARDEN GROVE	33.7701727	-117.945407	LUST Cleanup Site	1/23/1988	Completed - Case Closed	Closed	6/22/2010	x	x	1/2/1988	3/24/1998	1	1	1/2/1988	3/24/1998	7996	1	9/12/2002	BZ
0000050861	Orange	ARCOC #1188	HUNTINGTON BEACH	33.7282719	-118.0075755	LUST Cleanup Site	11/23/1988	Open - Remediation	Open	7/2/2011	x	x	6/17/2003	2/27/2019	17	2	6/8/1995	6/13/2003	9	2	9/10/2011	MTBE
0000050862	Orange	LA HABRA	HUNTINGTON BEACH	33.7162414	-117.9341242	LUST Cleanup Site	1/30/1988	Open - Site Assessment	Open	10/30/2019	x	x	11/10/1985	2/28/2011	19	8	11/10/1985	3/9/2001	1	1	9/12/2002	MTBE
0000050876	Orange	THRIFTY OIL #070	GARDEN GROVE	33.7695013	-117.9726479	LUST Cleanup Site	6/24/1992	Completed - Case Closed	Closed	5/2/2002	x	x	11/26/2011	11/26/2011	1	1	11/26/2011	11/26/2011	7999	1	11/15/2011	MTBE
0000050886	Orange	CHEVRON #9038	BREA	33.9138699	-117.8789265	LUST Cleanup Site	10/26/1990	Completed - Case Closed	Closed	4/20/2022	x	x	2/1/2004	2/1/								

MOB0591602	Orange	MOBL #18-793	FULLERTON	33.910623	-117.880753	LUST Cleanup Site	8/20/1992	Completed - Case Closed	Closed	6/50/2013	x	x	9/27/2001	9/27/2001	1	1	9/1/1997	9/1/1997	1	1	12/4/2001	MTBE
MOB0591622	Orange	CHEVRON #69-549	TUSTIN	33.748728	-117.121257	LUST Cleanup Site	11/23/1992	Open - Verification Monitoring	Open	10/26/2014	x	x	8/1/2002	8/1/2002	1	1	9/26/2006	9/26/2006	1	1	9/26/2006	MTBE
MOB0591634	Orange	UNICAL #6404	IRVINE	33.666546	-117.826746	LUST Cleanup Site	2/4/1993	Completed - Case Closed	Closed	4/22/2014	x	x	8/1/2002	8/1/2002	6	1	1/31/1997	1/31/1997	11	1	1/31/1997	MTBE
MOB0591646	Orange	THRIFTY OIL #3771 ORCAL #7741	SANTA ANA	33.743010	-117.850849	LUST Cleanup Site	2/17/1993	Completed - Case Closed	Closed	10/27/2005	x	x	38/2007	2/26/2016	1	1	11/8/2001	11/8/2001	1	1	12/26/2001	MTBE
MOB0591649	Orange	GARDEN GROVE	IRVINE	33.781534	-117.914584	LUST Cleanup Site	3/25/1993	Open - Remediation	Open	11/14/2013	x	x	1/1/2001	1/1/2001	3	1	12/23/2000	12/23/2000	8000	3	12/23/2000	MTBE
MOB0591651	Orange	UNICAL COP #5915	FOUNTAIN VALLEY	33.730228	-117.971875	LUST Cleanup Site	4/28/1993	Open - Remediation	Open	11/5/2021	x	x	9/1/1998	5/30/2002	5	2	10/1/2000	10/1/2000	5	2	10/5/2001	MTBE
MOB0591659	Orange	ARCO #6191	HUNTINGTON BEACH	33.708340	-118.003919	LUST Cleanup Site	12/16/1992	Completed - Case Closed	Closed	10/18/2017	x	x	6/1/2004	5/30/2002	14	2	2/10/1984	2/1/1984	1	1	12/5/2001	MTBE
MOB0591654	Orange	MOBL #6110	PLACENTIA	33.954423	-117.842076	LUST Cleanup Site	11/25/1992	Completed - Case Closed	Closed	6/28/2019	x	x	11/18/1983	5/1/2006	14	2	9/27/2001	9/27/2001	1	1	9/27/2001	MTBE
MOB0591711	Orange	CITY OF SEAL BEACH PUBLIC WORKS	SEAL BEACH	33.752572	-118.087483	LUST Cleanup Site	1/17/1989	Completed - Case Closed	Closed	6/30/2014	x	x	11/15/2001	11/15/2001	7	1	7/999	7/999	1	1	10/3/2001	BZ
MOB0591714	Orange	AEROMIL ENGINEERING CO., INC.	SANTA ANA	33.737957	-117.845159	LUST Cleanup Site	12/10/1987	Completed - Case Closed	Closed	6/4/2021	x	x	11/4/2003	7/21/2003	1	1	4/12/2006	4/12/2006	1	1	4/12/2006	BZ
MOB0591736	Orange	PACIFIC CAR WASH	STANTON	33.787874	-117.852759	LUST Cleanup Site	7/24/1993	Completed - Case Closed	Closed	4/9/2012	x	x	11/11/2001	4/1/2004	7	1	4/1/2004	4/1/2004	7	1	4/1/2004	MTBE
MOB0591742	Orange	THRIFTY OIL #182	BUENA PARK	33.8590489	-118.023352	LUST Cleanup Site	11/11/1994	Completed - Case Closed	Closed	11/14/2011	x	x	11/20/2001	5/30/2003	3	1	10/9/2001	10/9/2001	1	1	10/9/2001	MTBE
MOB0591785	Orange	ARCO / FAST FUEL SS #88 aka CLARK, Ralph	ANAHEIM	33.840788	-117.932778	LUST Cleanup Site	3/18/1994	Completed - Case Closed	Closed	6/11/2014	x	x	11/11/1999	7/30/2001	3	1	11/14/2001	11/14/2001	1	1	11/14/2001	MTBE
MOB0591781	Orange	THRIFTY OIL #508	IRVINE	33.788134	-117.811847	LUST Cleanup Site	3/25/1993	Completed - Case Closed	Closed	10/20/2004	x	x	4/1/2001	3/1/2002	2	1	6/1/2001	6/1/2001	1	1	6/1/2001	BZ
MOB0591784	Orange	TOSCO - 76 #5483	PLACENTIA	33.864781	-117.862585	LUST Cleanup Site	9/12/1994	Completed - Case Closed	Closed	9/23/2015	x	x	5/1/2002	5/2/2002	1	1	7/6/2012	7/6/2012	1	1	7/6/2012	PCE
MOB0591786	Orange	MOBL #6110	HUNTINGTON BEACH	33.708340	-118.003919	LUST Cleanup Site	11/25/1992	Site Assessment	Open	2/20/1999	x	x	11/15/2001	11/15/2001	3	1	10/23/2001	10/23/2001	3	1	10/23/2001	BZ
MOB0591783	Orange	CHEVRON #21-1314 / AMERICAN SAVINGS BANK	COSTA MESA	33.8566147	-117.918773	LUST Cleanup Site	5/9/1994	Completed - Case Closed	Closed	5/23/2017	x	x	8/1/2008	10/31/2008	1	1	12/1/2000	4/24/2002	3	1	3/14/2002	BZ
MOB0591787	Orange	WINALL STATION #19	HUNTINGTON BEACH	33.679707	-117.988409	LUST Cleanup Site	10/24/1994	Completed - Case Closed	Closed	7/31/2013	x	x	8/18/2000	8/19/2000	1	1	8/13/2006	6/30/2011	6	1	4/19/2002	PCE
MOB0591800	Orange	GARDEN GROVE	IRVINE	33.765169	-117.838832	LUST Cleanup Site	9/29/1994	Completed - Case Closed	Closed	9/18/2016	x	x	8/16/2000	9/16/2000	1	1	8/24/2000	7/23/2002	3	1	9/20/2001	MTBE
MOB0591801	Orange	G & M OIL #01	SEAL BEACH	33.742495	-118.099234	LUST Cleanup Site	5/23/1994	Open - Remediation	Open	10/10/2005	x	x	5/8/2014	6/2/2007	7	1	7/10/2001	10/10/2005	1	1	10/31/2001	BZ
MOB0591804	Orange	GENERAL AVIATION COMPANY	FULLERTON	33.8701624	-117.978483	LUST Cleanup Site	4/28/1994	Completed - Case Closed	Closed	9/15/2009	x	x	2/11/1995	11/2/2009	15	2	5/1/2000	9/30/2000	1	1	11/6/2001	BZ
MOB0591827	Orange	HUNTINGTON BEACH ARCO	HUNTINGTON BEACH	33.7443138	-118.054123	LUST Cleanup Site	11/13/1994	Completed - Case Closed	Closed	9/13/2015	x	x	11/13/2015	11/13/2015	7	1	11/13/2015	11/13/2015	7	1	11/13/2015	MTBE
MOB0591845	Orange	G & M OIL #30	SANTA ANA	33.7453668	-117.929157	LUST Cleanup Site	4/14/1995	Completed - Case Closed	Closed	12/8/2014	x	x	12/1/2004	12/1/2004	1	1	11/2001	12/1/2004	1	1	9/5/2000	MTBE
MOB0591847	Orange	ARCO #6228	PLACENTIA	33.867626	-117.867373	LUST Cleanup Site	9/14/1994	Completed - Case Closed	Closed	22/22/2016	x	x	11/1/2004	11/30/2015	2	2	3/11/2002	3/11/2002	2	2	3/11/2002	BZ
MOB0591848	Orange	WINALL STATION #11	COSTA MESA	33.843463	-117.918514	LUST Cleanup Site	10/20/1994	Completed - Case Closed	Closed	3/13/2015	x	x	8/14/2006	6/27/2010	1	1	3/20/2001	8/1/2010	11	2	9/17/2001	MTBE
MOB0591877	Orange	TEXACO	HUNTINGTON BEACH	33.693192	-117.958920	LUST Cleanup Site	7/25/1995	Open - Remediation	Open	1/30/2022	x	x	21/8/2008	9/16/2009	2	1	3/4/2008	10/27/2010	3	1	12/27/2001	MTBE
MOB0591891	Orange	U-C-I FLEET SERVICE	IRVINE	33.694453	-117.855514	LUST Cleanup Site	8/25/1995	Completed - Case Closed	Closed	5/8/2012	x	x	11/1/2004	11/30/2015	2	2	11/1/2004	11/30/2015	2	2	11/1/2004	BZ
MOB0591899	Orange	UNICAL #5077	SANTA ANA	33.7455298	-117.9377195	LUST Cleanup Site	8/26/1995	Completed - Case Closed	Closed	3/13/2015	x	x	10/18/2000	8/31/2010	11	2	9/1/2001	8/31/2010	11	2	9/1/2001	MTBE
MOB0591918	Orange	G & M OIL #21	COSTA MESA	33.679738	-117.8858121	LUST Cleanup Site	10/25/1995	Open - Verification Monitoring	Open	11/30/2021	x	x	10/15/2002	2/28/2013	12	1	10/7/2002	11/29/2012	11	1	10/5/2001	BZ
MOB0591927	Orange	WESTMINSTER	IRVINE	33.762862	-117.889843	LUST Cleanup Site	1/30/1996	Completed - Case Closed	Closed	6/28/2019	x	x	8/14/2006	6/27/2010	8	1	3/20/2001	11/27/2007	1	1	11/27/2007	MTBE
MOB0591932	Orange	SHELL #2960	FULLERTON	33.8895237	-117.874749	LUST Cleanup Site	2/17/1996	Open - Eligible for Closure	Open	7/20/2022	x	x	11/20/2001	6/12/2008	13	2	2/20/1996	6/12/2008	13	2	12/27/2001	MTBE
MOB0591935	Orange	G & M OIL STATION #31	ANAHEIM	33.82692	-117.959942	LUST Cleanup Site	5/7/1996	Completed - Case Closed	Closed	10/22/2003	x	x	11/1/1998	11/1/2000	3	1	11/1/1998	11/1/2000	3	1	11/1/1998	BZ
MOB0591939	Orange	WEBER FAMILY TRUST	COSTA MESA	33.634678	-117.854842	LUST Cleanup Site	6/5/1996	Completed - Case Closed	Closed	10/22/2008	x	x	3/8/2001	3/8/2001	1	1	3/8/2001	3/8/2001	1	1	3/8/2001	MTBE
MOB0591943	Orange	WORLD OIL #38	ANAHEIM	33.850638	-117.953432	LUST Cleanup Site	3/31/1996	Completed - Case Closed	Closed	8/23/2007	x	x	3/31/1998	4/23/2001	4	1	3/31/1998	4/23/2001	4	1	10/10/2001	MTBE
MOB0591947	Orange	TEXACO	GARDEN GROVE	33.768033	-117.972509	LUST Cleanup Site	6/5/1996	Completed - Case Closed	Closed	4/8/2013	x	x	1/1/2001	1/1/2001	2	1	11/29/2001	11/29/2001	2	1	11/29/2001	BZ
MOB0591960	Orange	UNICAL COP #7462	STANTON	33.802874	-117.884421	LUST Cleanup Site	7/31/1996	Completed - Case Closed	Closed	1/5/2013	x	x	4/23/2003	10/18/2004	2	1	4/23/2003	10/18/2004	2	1	4/23/2003	MTBE
MOB0591967	Orange	ALRON OIL	BREA	33.9233111	-117.8996771	LUST Cleanup Site	6/25/1996	Completed - Case Closed	Closed	8/26/2014	x	x	7/21/2005	12/28/2011	7	1	7/21/2005	12/28/2011	7	1	10/31/2001	BZ
MOB0591970	Orange	MOBL #18-F-10	LA PALMA	33.858867	-118.074344	LUST Cleanup Site	7/8/1996	Completed - Case Closed	Closed	3/3/2015	x	x	5/10/2005	1/3/2011	7	1	8/1/1999	1/3/2011	7	1	10/8/2001	MTBE
MOB0591971	Orange	CHEVRON #5-7414	CORRALINDA	33.891187	-117.817293	LUST Cleanup Site	4/14/1997	Open - Eligible for Closure	Open	5/9/2022	x	x	5/9/2022	5/9/2022	5	1	5/9/2022	5/9/2022	5	1	5/9/2022	MTBE
MOB0591982	Orange	MOBL #18-GVW	GARDEN GROVE	33.7885184	-117.958552	LUST Cleanup Site	8/26/1996	Completed - Case Closed	Closed	8/25/2015	x	x	9/19/2001	9/19/2001	7	1	9/19/2001	9/19/2001	7	1	10/29/2001	MTBE
MOB0591988	Orange	ULLUSTION MAINTENANCE YARD	FULLERTON	33.895387	-117.949179	LUST Cleanup Site	3/28/2000	Completed - Case Closed	Closed	3/28/2000	x	x	21/2/2009	21/2/2009	7	1	21/2/2009	21/2/2009	7	1	11/27/2001	BZ
MOB0591988	Orange	POWER CHEVROLET OF IRVINE	IRVINE	33.631022	-117.715997	LUST Cleanup Site	4/7/1995	Completed - Case Closed	Closed	5/11/2005	x	x	7/12/2005	7/13/2005	1	1	7/12/2005	7/13/2005	1	1	7/20/2006	BZ
MOB0592022	Orange	SUPER STOP DAIRY MART	GARDEN GROVE	33.7452811	-117.945937	LUST Cleanup Site	8/31/1996	Completed - Case Closed	Closed	10/20/2021	x	x	4/8/1998	4/8/1998	1	1	8/26/1998	4/8/1998	1	1	3/3/2003	MTBE
MOB0592024	Orange	COSTA MESA	SANTA ANA	33.6573208	-117.833984	LUST Cleanup Site	9/10/1996	Completed - Case Closed	Closed	9/2/2014	x	x	8/30/1998	10/30/2000	3	1	8/30/1998	10/30/2000	3	1	11/27/2001	MTBE
MOB0592028	Orange	UNICAL #4991	SANTA ANA	33.7459719	-117.846352	LUST Cleanup Site	2/4/1997	Completed - Case Closed	Closed	8/10/2021	x	x	8/26/1998	11/30/2006	4	1	8/26/1998	11/30/2006	4	1	9/14/2001	MTBE
MOB0592029	Orange	Tustin MCAS - US Marine Corps Air Station Tustin UST 222	TUSTIN	33.7155583	-117.827865	Military LUST Site	11/26/1998	Completed - Case Closed	Closed	12/25/2012	x	x	5/15/1998	1/31/2011	14	11	3/21/2008	8/28/2008	1	1	4/30/2008	MTBE
MOB0592030	Orange	UNICAL COP #5898	WESTMINSTER	33.737063	-118.003531	LUST Cleanup Site	1/19/1999	Open - Eligible for Closure	Open	12/30/2021	x	x	11/1/2001	11/1/2001	1	1	11/1/2001	11/1/2001	1	1	11/1/2001	MTBE
MOB0592035	Orange	SHELL OIL	ORANGE	33.8887148	-117.818842	LUST Cleanup Site	12/18/1995	Completed - Case Closed	Closed	8/12/2015	x	x	12/21/1995	1/7/2009	15	2	12/21/1995	1/7/2009	15	2	12/21/1995	MTBE
MOB0592040	Orange	METRO CAR WASH	ORANGE	33.7628751	-117.852517	LUST Cleanup Site	2/12/1997	Completed - Case Closed	Closed	3/10/2013	x	x	7/12/2000	11/6/2011	12	1	7/12/2000	11/6/2011	12	1	8/31/2004	ND
MOB0592046	Orange	MOBL #18-C17	ANAHEIM	33.834181	-117.841813	LUST Cleanup Site	3/14/1997	Completed - Case Closed	Closed	10/18/2002	x	x	11/15/2001	7/31/2002	1	1	11/15/2001	7/31/2002	1	1	11/15/2001	MTBE
MOB0592051	Orange	SHELL OIL	GARDEN GROVE	33.774495	-117.920075	LUST Cleanup Site	4/30/1996	Completed - Case Closed	Closed	10/18/2019	x	x	8/11/2000	6/24/2008	7	1	8/11/2000	6/24/2008	7	1	12/28/2001	MTBE
MOB0592052	Orange	SANTA ANA FORMER	SANTA ANA	33.785472	-117.854274	LUST Cleanup Site	6/1/1995	Open - Site Assessment	Open	10/27/2004	x	x	5/21/2011	12/5/2012	12	1	5/21/2011					

TO005911931	Orange	SHARPA ADMIRALTY	HUNTINGTON BEACH	33.687067	-117.988341	LUST Cleanup Site	2/5/2003	Completed - Case Closed	Closed	10/8/2016	x	4/17/1997	6/8/2007	11	1	2/24/2011	3/4/2011	1	1	12/18/2006	MTBE		
TO005912596	Orange	TS 4500	LOS ALAMITOS	33.78421	-118.057134	Military UST Site	9/1/1997	Open - Site Assessment	Open	7/1/2021	x					8/1/2006	6/9/2006	1		6/9/2006	BZ		
TO005919782	Orange	OCTO YARD	LOS ALAMITOS	33.67837884	-117.751593	LUST Cleanup Site	7/28/2006	Completed - Case Closed	Closed	7/28/2006	x	x				9/3/1993	5/29/1998	6	1	9/30/2002	BZ		
TO005923476	Orange	COLLEGE PARK MOBIL	SEAL BEACH	33.776315	-118.062918	LUST Cleanup Site	11/15/2000	Completed - Case Closed	Closed	10/25/2021	x	x	5/11/2015	7/11/2016	2	2	10/26/2015	3/21/2016	2	1	4/11/2006	MTBE	
TO005926041	Orange	PLACENTIA	PLACENTIA	33.98890884	-117.8144584	LUST Cleanup Site	6/22/2004	Completed - Case Closed	Closed	6/22/2004	x					8/27/2007	4/26/2008	2	1	8/28/2007	MTBE		
TO005927641	Orange	HOME OIL COMPANY	ANAHEIM	33.82873707	-117.9315	LUST Cleanup Site	9/18/1998	Completed - Case Closed	Closed	3/19/2018	x					4/12/2010	9/23/2013	4	5	9/22/10	PCE		
TO00592778	Orange	MOBIL #16-HNR	COSTA MESA	33.680473	-117.919314	LUST Cleanup Site	8/14/2000	Completed - Case Closed	Closed	2/19/2015	x					8/28/2007	5/19/2011	5	1	2/23/2003	BZ		
TO005929011	Orange	STANTON	STANTON	33.8097292	-118.02228	LUST Cleanup Site	9/31/99	Completed - Case Closed	Closed	118.02228	x	2/1/2011	2/7/2012	2	1	120/2008	4/24/2012	5	2	3/31/2002	MTBE		
TO005930426	Orange	SHELL OIL	BUENA PARK	33.84626	-118.02683	LUST Cleanup Site	3/23/1999	Completed - Case Closed	Closed	10/8/2013	x	x	2/28/2001	8/29/2005	5	1	3/22/2001	10/8/2004	1	1	12/8/2001	BZ	
TO005934181	Orange	CHEVRON #9-937	LA HABRA	33.932231	-117.86823	LUST Cleanup Site	3/20/2002	Completed - Case Closed	Closed	22/21/2004	x					6/1/2004	9/1/2004	1	1	6/4/2003	BZ		
TO005934887	Orange	TE CO	ANAHEIM	33.86499	-117.81234	LUST Cleanup Site	3/19/2000	Completed - Case Closed	Closed	2/24/2014	x	x	12/13/2007	6/13/2008	2	2	2/1/2008	1/2/2008	1	1	3/23/2003	MTBE	
TO005934888	Orange	SHELL OIL	TUSTIN	33.73461832	-117.814737	LUST Cleanup Site	10/1/2001	Completed - Case Closed	Closed	11/12/2015	x		12/22/2011	1031/2013	3	1	6/11/2004	5/11/2004	1	1	6/12/2002	MTBE	
TO005936376	Orange	COSTA MESA FIRE STATION #1	COSTA MESA	33.67395	-117.82248	LUST Cleanup Site	10/16/2002	Completed - Case Closed	Closed	6/28/2011	x					11/9/2006	12/31/2008	3	1	2/6/2005	MTBE		
TO005938718	Orange	CHEV AUTO SHOP	COUNTY VALLEY	33.6937884	-117.842524	LUST Cleanup Site	6/4/2002	Open - Eligible for Closure	Closed	1/15/2012	x	x	5/24/2007	4/27/2019	13	1					8/28/2003	MTBE	
TO005940167	Orange	CHEVRON #9-568	SEAL BEACH	33.7801389	-118.027049	LUST Cleanup Site	7/20/1994	Completed - Case Closed	Closed	9/26/2014	x					4/4/1995	5/8/1997	3	1	10/5/2001	BZ		
TO005940476	Orange	STANTON	STANTON	33.803117	-117.9841	LUST Cleanup Site	2/14/1998	Completed - Case Closed	Closed	9/29/2014	x					7/27/2004	8/24/2011	1	1	10/19/2001	MTBE		
TO005942769	Orange	MOBIL #16-PLR	NEWPORT BEACH	33.6115849	-117.8640373	LUST Cleanup Site	2/10/2005	Open - Verification Monitoring	Open	2/28/2021	x	x	2/11/2010	6/26/2014	5	1	12/17/2009	9/12/2011	3	1	12/19/2005	MTBE	
TO005943447	Orange	MOBIL #9-WMC	WESTMINSTER	33.758848	-118.02421	LUST Cleanup Site	11/3/2003	Completed - Case Closed	Closed	6/29/2012	x					5/1/2007	30/4/2010	3	3	12/23/2003	BZ		
TO005943783	Orange	FULLERTON TOWN CENTER	FULLERTON	33.859474	-117.823313	LUST Cleanup Site	9/10/2003	Completed - Case Closed	Closed	6/25/2013	x					10/29/2003	10/29/2003	1	1	11/12/2008	PCE		
TO005948047	Orange	G & M OIL #61	STANTON	33.8092559	-117.9752884	LUST Cleanup Site	1/15/1992	Open - Remediation	Open	3/24/2008	x		7/11/2010	8/27/2019	10	2					4/15/2002	MTBE	
TO005957667	Orange	MOBIL #16-K85	HUNTINGTON BEACH	33.6845269	-117.9536102	LUST Cleanup Site	7/10/2003	Completed - Case Closed	Closed	4/7/2015	x		7/18/2011	9/15/2011	1	1	12/7/2006	12/7/2006	1		6/30/2003	MTBE	
TO005970478	Orange	COSTA MESA	COSTA MESA	33.674098	-117.889592	LUST Cleanup Site	3/10/2003	Completed - Case Closed	Closed	6/4/2010	x					10/24/2005	10/24/2005	1	1	3/31/2005	MTBE		
TO005971075	Orange	MOBIL #16-B36	MISSION VIEJO	33.622356	-117.885122	LUST Cleanup Site	3/25/2003	Completed - Case Closed	Closed	4/27/2016	x	x	7/22/2009	6/13/2012	4	1	7/8/2009	11/11/2011	3	1	8/28/2003	MTBE	
TO005972592	Orange	SHELL OIL STATION	SANTA ANA	33.727204	-117.864327	LUST Cleanup Site	5/15/1998	Completed - Case Closed	Closed	9/30/2009	x					12/11/2006	9/5/2008	3	1	10/30/2003	MTBE		
TO005985148	Orange	ARCO #1782	HUNTINGTON BEACH	33.744115	-118.037381	LUST Cleanup Site	10/24/2000	Completed - Case Closed	Closed	5/5/2015	x					6/13/2003	2/26/2013	11	2	11/20/2001	MTBE		
TO005979500	Orange	CHEVRON #9-0884	LAKE FOREST	33.628758	-117.704037	LUST Cleanup Site	10/22/2002	Completed - Case Closed	Closed	11/5/2015	x					8/4/2005	3/41/2006	2	1	6/30/2003	MTBE		
TO005988138	Orange	ARCO #1782	SANTA ANA	33.75581412	-117.850538	LUST Cleanup Site	5/17/2004	Completed - Case Closed	Closed	9/3/2014	x					8/30/2006	6/30/2006	1	1	5/25/2005	BZ		
TO005989813	Orange	RANDY'S AUTOMOTIVE PROPERTY	COSTA MESA	33.65	-117.919101	Cleanup Program Site	2/22/2000	Open - Verification Monitoring	Open	7/12/2019	x	x	11/6/2007	2/12/2019	13	3	11/6/2007	7/16/2018	12	3	3/26/2007	BZ	
TO005990228	Orange	El Toro MCAS - U S MARINE CORPS AR STATION EL TORO, PCA Tank	IRVINE	33.815151	-117.7415	Military UST Site	4/21/1992	Completed - Case Closed	Closed	11/8/2007	x					10/1/1998	11/30/1997	2	1	12/18/2006	BZ		
TO005990228	Orange	El Toro MCAS - U S MARINE CORPS AR STATION EL TORO, PCA Tank	IRVINE	33.815151	-117.7415	Military UST Site	4/21/1992	Completed - Case Closed	Closed	11/8/2007	x					11/30/2007	1/21/2007	2	1	12/18/2006	BZ		
TO005990919	Orange	MOBIL #16-FHW	TUSTIN	33.74920784	-117.810452	LUST Cleanup Site	4/4/1995	Open - Assessment & Interim Remedial Action	Open	2/10/17	x					1/5/2005	12/27/2006	1	1	6/23/2003	MTBE		
TO005990905	Orange	El Toro MCAS - U S MARINE CORPS AR STATION EL TORO, PCA UST	SANTA ANA	33.68010297	-117.7398133	Military UST Site	1/20/1994	Completed - Case Closed	Closed	9/8/2009	x					4/21/1998	9/3/2004	7	2	12/19/2006	ND		
TO005990909	Orange	QUADAJANA TREES	SANTA ANA	33.76104184	-117.8331884	LUST Cleanup Site	1/9/2000	Open - Verification Monitoring	Open	1/9/2000	x	x	8/17/2018	9/18/2018	1	1					3/4/2013	MTBE	
TO005991012	Orange	KIMS AUTO	GARDEN GROVE	33.788637	-117.875996	LUST Cleanup Site	3/1/2000	Completed - Case Closed	Closed	6/30/13	x					4/22/2005				3/21/2002	MTBE		
TO005991100	Orange	TOSCO - 76 #4914	BUENA PARK	33.8844745	-117.965088	LUST Cleanup Site	7/20/1998	Completed - Case Closed	Closed	5/8/2015	x					7/17/2003	18/20/13	11	1	21/1/2003	MTBE		
TO005991118	Orange	SHELL OIL	GARDEN GROVE	33.7887189	-118.011591	LUST Cleanup Site	8/9/1997	Completed - Case Closed	Closed	11/20/2011	x		1/24/2001			1/26/2001	2/26/2001	4	1	7/26/2001	MTBE		
TO00599123	Orange	ANAHIM CAR WASH (FORMER)	ANAHEIM	33.832829	-117.92471	LUST Cleanup Site	2/29/2000	Completed - Case Closed	Closed	5/25/2018	x					4/19/2007	8/24/2016	10	3	12/9/2003	BZ		
TO005991449	Orange	CHEVRON #21-247	WESTMINSTER	33.739537	-117.861495	LUST Cleanup Site	6/21/2000	Completed - Case Closed	Closed	8/22/2017	x					6/12/2006	6/1/2009	4	1	6/29/2002	BZ		
TO005991617	Orange	DANZ AUTO REPAIR	SANTA ANA	33.742577	-117.896163	LUST Cleanup Site	8/15/2003	Completed - Case Closed	Closed	12/27/2012	x					9/8/2004	12/4/2007	11	3	10/23/2001	MTBE		
TO005992687	Orange	ARCO #6132	ANAHEIM	33.81870155	-117.881019	LUST Cleanup Site	10/23/2000	Completed - Case Closed	Closed	6/24/2014	x					11/1/2004	12/17/2004	1	1	9/10/2001	MTBE		
TO005993026	Orange	GARDEN GROVE	GARDEN GROVE	33.761992	-117.820854	LUST Cleanup Site	9/13/1999	Completed - Case Closed	Closed	6/24/2014	x		2/14/2002	10/1/2015	14	1	1/21/2002				12/26/2001	MTBE	
TO005995955	Orange	LOS ANGELES TIMES-SOUTH TANKS	COSTA MESA	33.692277	-117.916434	LUST Cleanup Site	9/26/1990	Completed - Case Closed	Closed	21/11/2013	x					4/5/2006	4/5/2006	12	4	11/7/2001	BZ		
TO005996602	Orange	CHEVRON STATION #8194	GARDEN GROVE	33.774777	-117.905955	LUST Cleanup Site	34/2005	Completed - Case Closed	Closed	11/9/2022	x		x	7/27/2010	1/25/2018	9	2	8/15/2008	12/12/2017	10	1	11/1/2007	MTBE
TO006010002	Placer	INCOLN LUST ORCO # 1330	INCOLN	38.9398241	-121.265238	LUST Cleanup Site	8/21/2017	Completed - Case Closed	Closed	8/21/2017	x					2/1/1994		8	2	8/21/2001	MTBE		
TO006010010	Placer	NELLA OIL #5	AUBURN	38.92648503	-121.0570509	LUST Cleanup Site	1/27/1987	Completed - Case Closed	Closed	4/15/2013	x		7/24/2003	6/26/2007	5	1	9/8/2011	9/8/2011	1	1	9/18/2001	MTBE	
TO006010016	Placer	Rockin Mini Mart	ROCKLIN	38.7952044	-121.267344	LUST Cleanup Site	8/29/1987	Completed - Case Closed	Closed	8/29/2017	x					8/15/2012	8/15/2012	1	1	3/12/2003	BZ		
TO006010032	Placer	ALACONING, MCKEAN & CO	ALACONING	38.829219	-121.281032	LUST Cleanup Site	8/27/1987	Completed - Case Closed	Closed	8/18/2002	x					8/1/1982	7/26/2004	1	1	12/13/2001	BZ		
TO006010033	Placer	GOLD RUN 76	GOLD RUN	39.17431979	-120.857248	LUST Cleanup Site	12/4/1987	Completed - Case Closed	Closed	8/5/2019	x	x	10/4/2004	9/15/2012	9	1	11/1/2004	9/15/2012	8	2	1/15/2002	BZ	
TO006010035	Placer	PERFORM EXXON 7-0124	ROSEVILLE	38.7430265	-121.276942	LUST Cleanup Site	6/16/1998	Completed - Case Closed	Closed	7/1/2009	x		x	5/22/2002	5/26/2005	4	1	1/5/1994	3/18/2005	12	2	11/15/2001	MTBE
TO006010041	Placer	ARCO FACILITY 4-2119	AUBURN	38.82371624	-121.058320	LUST Cleanup Site	8/19/1990	Completed - Case Closed	Closed	8/19/2012	x					12/1/2005	2/29/1998	2	1	1/8/2001	MTBE		
TO006010045	Placer	TOM'S SIERRA COMPANY INC	AUBURN	38.90112877	-121.068788	LUST Cleanup Site	10/28/1988	Completed - Case Closed	Closed	9/16/2013	x	x	8/2/2000	9/2/2010	1	1	11/20/06	9/2/2010	1	1	12/21/2001	MTBE	
TO006010052	Placer	ARCO MAINTENANCE STATION (CALTRANS)	AUBURN	38.9208569	-121.063230	LUST Cleanup Site	12/1/1991	Completed - Case Closed	Closed	6/22/2013	x					7/1/1997	2/23/2010	14	2	2/12/2010	MTBE		
TO006010062	Placer	TOM'S SIERRA #24 & J-HALL	AUBURN	38.91742244	-121.062015	LUST Cleanup Site	8/24/2005	Completed - Case Closed	Closed	9/14/2018	x		5/1/1993	12/12/2001	11	1	5/1/1993	12/12/2001	5	2	9/10/2001	MTBE	
TO006010085	Placer	EXXON #F-0250	ROSEVILLE	38.7220277	-121.200528	LUST Cleanup Site	35/1990	Completed - Case Closed	Closed	7/26/2013	x		4/1/1994	5/28/2002	9	1	2/21/1994	6/1/2001	8	1	11/13/2001	MTBE	
TO006010070	Placer	EXXON #24#8B (FORMER)	COAKES	38.9734921	-121.150176	LUST Cleanup Site	11/19/92	Completed - Case Closed	Closed	8/8/2013	x					11/19/92	8/7/2005	1	1	8/7/2005	MTBE		
TO006010076	Placer	B & M Mkt Mart	ROSEVILLE	38.9423715	-121.097724	LUST Cleanup Site	6/27/1990	Completed - Case Closed	Closed	5/20/2014	x					2/22/1996	11/6/2009	14	2	1/30/2002	MTBE		
TO006010085																							

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T06070037	Sacramento	LAWRENCE MAYFLOWER MOVING & ST	SACRAMENTO	38 5776363	-121.479649	UST Cleanup Site	7/29/1998	Completed - Case Closed	Closed	5/20/2011	x					1/8/1998	10/20/2000	3	1	10/26/2001	BZ		
T06070038	Sacramento	SACRAMENTO CONSOLIDATED FREIGHTWAYS Facility	SACRAMENTO	38 65315470	-121.481301	UST Cleanup Site	9/19/1998	Completed - Case Closed	Closed	6/25/2013	x					5/4/2007	6/10/2009	3	2		MTBE		
T06070040	Sacramento	FORMER UNOCAL #624	SACRAMENTO	38 6635386	-121.259262	UST Cleanup Site	7/17/1998	Completed - Case Closed	Closed	6/25/2013	x					5/20/1991	6/11/1993	3		3/12/1996	2	11/20/2001	MTBE
T06070048	Sacramento	WARE HOUSE	SACRAMENTO	38 607366	-121.445521	UST Cleanup Site	6/19/1998	Completed - Case Closed	Closed	10/10/2008	x					1/11/2002	3/23/2004	2	1	10/29/2001	BZ		
T06070088	Sacramento	UNOCAL #20708	SACRAMENTO	38 6176037	-121.362510	UST Cleanup Site	12/22/1998	Completed - Case Closed	Closed	6/12/2011	x					1/12/1999	12/31/2010	3	1	12/31/2010	BZ		
T06070077	Sacramento	TEXACO-CHEVRON SS (VACANT LOT)	SACRAMENTO	38 45964825	-121.441262	UST Cleanup Site	2/21/1987	Completed - Case Closed	Closed	26/7/2012	x					4/11/1994	6/30/1999	6	1	10/3/2001	MTBE		
T06070085	Sacramento	CHEVRON #9-1743	SACRAMENTO	38 57452312	-121.383434	UST Cleanup Site	7/21/1998	Completed - Case Closed	Closed	8/6/2015	x					5/21/2005	2/8/2007	3	1	6/11/2003	MTBE		
T06070088	Sacramento	SHELL #24-1024-0201	FOLSOM	38 57411293	-121.589026	UST Cleanup Site	7/19/1987	Completed - Case Closed	Closed	11/4/2020	x					1/14/2009		3	1	10/23/2001	MTBE		
T06070091	Sacramento	CHEVRON #9-1601 (FORMER)	SACRAMENTO	38 50077808	-121.431408	UST Cleanup Site	2/5/1987	Completed - Case Closed	Closed	9/26/2011	x					5/1/1990	8/1/1996	7	1	7/31/2002	BZ		
T06070094	Sacramento	UNOCAL #4565	CARMICHAEL	38 68102505	-121.327208	UST Cleanup Site	6/19/1987	Completed - Case Closed	Closed	12/3/2019	x					5/1/1989	9/1/1989	1	1	9/25/2001	MTBE		
T06070095	Sacramento	UNOCAL #1-430	SACRAMENTO	38 6221453	-121.475459	UST Cleanup Site	6/19/1987	Completed - Case Closed	Closed	9/27/2013	x					3/1/2009	3/1/2009	1	1	9/1/2009	BZ		
T06070100	Sacramento	BP #1176 (FORMER)	SACRAMENTO	38 5730137	-121.383487	UST Cleanup Site	10/22/1987	Completed - Case Closed	Closed	10/11/2011	x					4/1/2004	6/1/2010	7	2	7/10/2003	MTBE		
T06070102	Sacramento	SHELL #204-678-1307 (FORMER)	SACRAMENTO	38 6145559	-121.475705	UST Cleanup Site	2/10/1987	Completed - Case Closed	Closed	21/4/2014	x					4/11/1989	3/30/1992	4	1	10/3/2002	BZ		
T06070105	Sacramento	CHEVRON #9-4244	FAIR OAKS	38 6038007	-121.226207	UST Cleanup Site	6/19/1988	Completed - Case Closed	Closed	6/12/2014	x					9/1/2007	9/31/2007	1	1	10/30/2001	BZ		
T06070107	Sacramento	SHELL #204-678-9102	SACRAMENTO	38 50968782	-121.542613	UST Cleanup Site	12/30/1998	Completed - Case Closed	Closed	5/16/2011	x					12/1/2005	12/1/2005	1	1	4/2/2002	MTBE		
T06070112	Sacramento	SHELL #204-678-9102	SACRAMENTO	38 5733183	-121.488042	UST Cleanup Site	6/19/1988	Completed - Case Closed	Closed	6/19/2014	x					4/18/2000	7/26/2005	6	1	10/10/2001	MTBE		
T06070119	Sacramento	FORMER EXXON 7-0119	SACRAMENTO	38 618311	-121.401835	UST Cleanup Site	3/17/1987	Completed - Case Closed	Closed	6/16/2005	x					5/2/1995	7/1/2000	6	1	11/12/2001	PCE		
T06070122	Sacramento	ARCO #3058	CARMICHAEL	38 660253	-121.327001	UST Cleanup Site	10/9/1987	Completed - Case Closed	Closed	6/1/2007	x					11/21/1994	4/30/1996	3	1	10/31/2001	MTBE		
T06070129	Sacramento	CHEVRON #9-1703	CITRUS HEIGHTS	38 67064823	-121.387796	UST Cleanup Site	7/23/1987	Completed - Case Closed	Closed	12/31/2017	x					10/1/1990	12/31/1993	4	1	9/14/2001	BZ		
T06070142	Sacramento	FORMER EXXON 7-2002	CARMICHAEL	38 648774	-121.327283	UST Cleanup Site	7/6/1987	Completed - Case Closed	Closed	5/2/2007	x					7/1/1990	3/1/1996	7	1	10/31/2001	ND		
T06070163	Sacramento	OROWEAT INC	SACRAMENTO	38 6112621	-121.438366	UST Cleanup Site	2/19/1988	Completed - Case Closed	Closed	5/26/2010	x					6/28/1993	12/20/1995	3	1	6/10/2009	ND		
T06070184	Sacramento	UNOCAL RC STOCKING STATION	SACRAMENTO	38 5931983	-121.478789	UST Cleanup Site	1/15/1988	Completed - Case Closed	Closed	2/19/2016	x					4/12/2004	1/25/2006	3	1	11/8/2001	BZ		
T06070200	Sacramento	ARCO #6025	SACRAMENTO	38 5640548	-121.4810831	UST Cleanup Site	2/26/1988	Completed - Case Closed	Closed	9/5/2014	x					6/1/1993	6/30/1993	1	1	9/17/2001	MTBE		
T06070202	Sacramento	CIRCLE-K #953 (FORMER)	SACRAMENTO	38 4715737	-121.427462	UST Cleanup Site	3/19/1987	Completed - Case Closed	Closed	6/17/2015	x					9/25/2006	5/31/2011	6	4	9/25/2001	BZ		
T06070207	Sacramento	UNOCAL #7-0128	CARMICHAEL	38 6135429	-121.358511	UST Cleanup Site	8/12/1988	Completed - Case Closed	Closed	3/10/2016	x					6/1/1989	5/30/2005	16	1	12/20/03	MTBE		
T06070208	Sacramento	EXXON #7-0128	SACRAMENTO	38 5247558	-121.4774216	UST Cleanup Site	6/16/1988	Completed - Case Closed	Closed	21/2/2010	x					8/10/1991	8/10/1991	1	1	12/6/2001	MTBE		
T06070210	Sacramento	ARCO #6019	SACRAMENTO	38 5475850	-121.4277015	UST Cleanup Site	6/17/1988	Completed - Case Closed	Closed	6/30/2015	x					9/20/2016	11/30/2012	7	1	9/7/2001	MTBE		
T06070218	Sacramento	AUTOMATIC MERCHANDISING CO	SACRAMENTO	38 6066530	-121.445321	UST Cleanup Site	7/26/1988	Completed - Case Closed	Closed	4/24/2015	x					4/1/2002	4/1/2002	1	1	3/5/2001	BZ		
T06070223	Sacramento	ARCO #4868	SACRAMENTO	38 57417089	-121.382861	UST Cleanup Site	8/16/1988	Completed - Case Closed	Closed	11/24/2015	x					2/5/2009	2/5/2009	1	1	11/21/2001	BZ		
T06070225	Sacramento	ARCO #6025	SACRAMENTO	38 57417089	-121.382861	UST Cleanup Site	8/16/1988	Completed - Case Closed	Closed	12/7/2012	x					6/18/2004	12/31/2007	4	3	3/4/2002	MTBE		
T06070230	Sacramento	MONTGOMERY WARD	SACRAMENTO	38 49642951	-121.441287	UST Cleanup Site	7/21/1988	Completed - Case Closed	Closed	9/20/2021	x					10/29/2006	8/17/2012	7	2		BZ		
T06070240	Sacramento	SHELL #204-1586-0800	CITRUS HEIGHTS	38 6872383	-121.272084	UST Cleanup Site	1/30/1989	Completed - Case Closed	Closed	6/9/2015	x					10/1/1995	10/31/1995	1	1	10/4/2001	MTBE		
T06070245	Sacramento	UNOCAL #6302	SACRAMENTO	38 5801343	-121.484329	UST Cleanup Site	6/19/1988	Completed - Case Closed	Closed	9/12/2014	x					11/1/1998	10/1/1998	1	1	9/21/2001	BZ		
T06070249	Sacramento	POWELL MATERIALS	SACRAMENTO	38 565559	-121.476009	UST Cleanup Site	9/28/1988	Completed - Case Closed	Closed	4/11/2013	x					8/13/2006	12/31/2006	3	2	11/27/2002	BZ		
T06070258	Sacramento	ARCO #8337	ORANGEVALE	38 6252385	-121.202197	UST Cleanup Site	4/13/2001	Completed - Case Closed	Closed	9/29/2014	x					11/2/2010	7/30/2013	4	1	8/11/2009	ND		
T06070259	Sacramento	ARCO #8169	CITRUS HEIGHTS	38 6791851	-121.313179	UST Cleanup Site	8/11/1988	Completed - Case Closed	Closed	6/15/2013	x					8/1/1987	8/1/1987	1	1	10/16/2001	PCE		
T06070261	Sacramento	BEACON #865	ORANGEVALE	38 6783314	-121.206761	UST Cleanup Site	1/31/1989	Completed - Case Closed	Closed	6/12/2006	x					2/21/1989	2/21/1989	1	1	10/15/2001	MTBE		
T06070265	Sacramento	B & B AUTOMOTIVE	FAIR OAKS	38 644945	-121.261708	UST Cleanup Site	1/17/1989	Open - Verification Monitoring	Open	2/22/2009	x					11/20/2003	10/20/2003	1	1	13/10/2002	BZ		
T06070268	Sacramento	1000 DEL PASO BOULEVARD	SACRAMENTO	38 620318	-121.465624	UST Cleanup Site	6/23/1989	Completed - Case Closed	Closed	6/9/2013	x					9/8/2009	4/30/2013	1	1	8/25/2006	BZ		
T06070273	Sacramento	ARCO #8062	SACRAMENTO	38 59674742	-121.4033376	UST Cleanup Site	3/30/1989	Completed - Case Closed	Closed	9/11/2015	x					11/1/1991	12/31/2012	22	1	10/8/2001	MTBE		
T06070279	Sacramento	ORANGEVALE (FORMER)	SACRAMENTO	38 6781478	-121.211382	UST Cleanup Site	8/19/1987	Completed - Case Closed	Closed	8/19/1987	x					11/1/1987	12/1/2004	1	1	11/1/2004	BZ		
T06070280	Sacramento	FAVERO PROPERTY	SACRAMENTO	38 5627207	-121.470837	UST Cleanup Site	6/23/1988	Completed - Case Closed	Closed	4/25/2013	x					4/11/1998	12/31/2007	9	1	11/11/2001	BZ		
T06070282	Sacramento	ARCO #8078	SACRAMENTO	38 6607936	-121.345869	UST Cleanup Site	7/7/1989	Completed - Case Closed	Closed	2/28/2014	x					11/1/2009	12/31/2009	1	1	9/25/2003	ND		
T06070291	Sacramento	ARCO #8169	SACRAMENTO	38 6952898	-121.454345	UST Cleanup Site	11/29/2004	Completed - Case Closed	Closed	11/29/2004	x					11/1/2004	12/31/2004	1	1	5/27/2002	MTBE		
T06070311	Sacramento	SHELL (FORMER)	SACRAMENTO	38 5633536	-121.495614	UST Cleanup Site	8/22/1988	Completed - Case Closed	Closed	3/23/2007	x					5/1/1993	8/1/1995	3	1	12/3/2001	MTBE		
T06070323	Sacramento	ARCO #8051	SACRAMENTO	38 4956632	-121.5041763	UST Cleanup Site	1/12/1989	Completed - Case Closed	Closed	12/3/2012	x					10/1/1996	6/1/1998	3	2	10/16/2001	BZ		
T06070338	Sacramento	LUE DIAMOND GROWERS	SACRAMENTO	38 5840188	-121.478331	UST Cleanup Site	5/28/1988	Completed - Case Closed	Closed	5/28/2004	x					5/20/1993	5/21/1993	1	1	8/22/2003	BZ		
T06070370	Sacramento	LUMBERJACK	SACRAMENTO	38 6062167	-121.4455211	UST Cleanup Site	5/23/1989	Completed - Case Closed	Closed	11/23/2007	x					12/1/1995	3/31/1996	2	1	8/27/2003	BZ		
T06070387	Sacramento	PARKS ENTERPRISES	CITRUS HEIGHTS	38 68968147	-121.309573	UST Cleanup Site	1/30/1990	Completed - Case Closed	Closed	6/9/2015	x					1/8/2002	12/1/2002	1	1	3/13/2002	MTBE		
T06070388	Sacramento	BEACON #12-449	SACRAMENTO	38 5967148	-121.4647104	UST Cleanup Site	6/14/1988	Completed - Case Closed	Closed	12/15/2018	x					4/8/1993	12/15/2018	1	1	8/15/2002	BZ		
T06070389	Sacramento	SEMCO'S GAS & LIQUOR	SACRAMENTO	38 6094979	-121.3559198	UST Cleanup Site	2/26/1990	Completed - Case Closed	Closed	19/2/2020	x					8/1/2002	9/1/2002	1	1	12/27/2001	MTBE		
T06070407	Sacramento	EXXON #7-0128	SACRAMENTO	38 5599187	-121.4103121	UST Cleanup Site	7/27/1990	Completed - Case Closed	Closed	5/5/2011	x					34/2004	34/2004	1	1	12/6/2001	MTBE		
T06070417	Sacramento	38 5571701	SACRAMENTO	38 5571701	-121.4256405	UST Cleanup Site	10/22/1994	Completed - Case Closed	Closed	10/22/1994	x					10/22/1994	9/30/2004	9	1	4/14/2001	BZ		
T06070427	Sacramento	UNOCAL (FORMER)	SACRAMENTO	38 5590059	-121.487826	UST Cleanup Site	10/3/1990	Completed - Case Closed	Closed	19/2/2004	x					10/2/1992	12/11/1993	2	1	3/29/2002	ND		
T06070434	Sacramento	UNOCAL GREEN (FORMER SITE)	SACRAMENTO	38 5218037	-121.395702	UST Cleanup Program	8/19/1988	Open - Remediation	Open	1/1/1991	x					8/1/1991	8/1/1991	1	1	10/18/2001	MTBE		
T06070452	Sacramento	EXECUTIVE AIRPORT	SACRAMENTO	38 5130279	-121.4996648	UST Cleanup Site	3/20/1988	Completed - Case Closed	Closed	5/16/2014	x					4/16/2003	4/16/2003	1	1	1/6/2005	MTBE		
T06070460	Sacramento	UNOCAL #3725	SACRAMENTO	38 59584823	-121.3621657	UST Cleanup Site	4/18/1991	Completed - Case Closed	Closed	4/25/2008	x					12/22/2005	12/22/2005	1	1	5/25/2004	MTBE		
T06070461	Sacramento	ARCO #15748	CITRUS HEIGHTS	38 7022118	-121.2922701	UST Cleanup Site	8/11/1988	Completed - Case Closed	Closed	9/8/1998	x					9/8/1998	11/5/2000	3	1	8/23/1998	MTBE		
T06070468	Sacramento	ARCO #2096	SACRAMENTO	38 49547473	-121.4801785	UST Cleanup Site	4/7/1991	Completed - Case Closed	Closed	3/28/2014	x					2							

760700109	Sacramento	ANDREWS 24-HOUR TOWING	SACRAMENTO	38.51429893	-121.4779424	LUST Cleanup Site	2/26/1999	Completed - Case Closed	Closed	11/17/2019						6/29/2012	4/20/2015	4	1	2/26/2003	BZ	
760700110	Sacramento	FERG'S MARKET	SACRAMENTO	38.510483	-121.4647434	LUST Cleanup Site	8/5/1999	Completed - Case Closed	Closed	10/22/2013	x	x	5/26/2006	8/1/2009	4	2	12/31/2003	9/1/2007	5	1	2/14/2003	MTBE
7607001092	Sacramento	GALT GAS & FUEL	GALT	38.268083	-121.3041305	LUST Cleanup Site	8/13/1999	Completed - Case Closed	Closed	12/25/2006						2/1/2005	12/28/2005	1		9/1/2001	ND	
7607001096	Sacramento	GALT CITY OF CORP YARD	GALT	38.26147781	-121.3037395	LUST Cleanup Site	1/1/1999	Completed - Case Closed	Closed	12/25/2006			8/25/2001			8/24/2001	8/24/2001	1		10/15/2002	ND	
7607001101	Sacramento	JAYS AUTO REPAIR	GALT	38.26242871	-121.2979031	LUST Cleanup Site	6/17/1999	Completed - Case Closed	Closed	2/4/2011			6/29/2004	20/3/2009	6		6/29/2004	20/3/2009	6		1/17/2002	MTBE
760700110	Sacramento	DUGLAS & SONS	NORTH HIGHLANDS	38.50149968	-121.3233261	LUST Cleanup Site	6/11/1999	Completed - Case Closed	Closed	6/29/2006			6/29/2006			4/18/2004	4/18/2004	1		3/28/2003	ND	
7607001116	Sacramento	PARKIN GAS	SACRAMENTO	38.5471264	-121.3369077	LUST Cleanup Site	2/10/1999	Completed - Case Closed	Closed	6/23/2014			6/23/2014	5/27/2004			6/23/2014	5/27/2004			12/22/2002	MTBE
7607001119	Sacramento	EXXON #7-021	SACRAMENTO	38.6296921	-121.475468	LUST Cleanup Site	5/29/1998	Completed - Case Closed	Closed	6/15/2002	x		6/28/2004	4/27/2009	6						10/30/2001	MTBE
7607001120	Sacramento	INNOVEX PROPERTY	SACRAMENTO	38.56268138	-121.4617014	LUST Cleanup Site	1/1/1999	Completed - Case Closed	Closed	6/15/2002	x					7/31/2002	3/31/2012	11		2/27/2003	BZ	
7607001129	Sacramento	ARCO #625 (CASE #2)	NORTH HIGHLANDS	38.6515257	-121.3833899	LUST Cleanup Site	11/30/1999	Completed - Case Closed	Closed	3/16/2012						9/1/2003	11/30/2004	1		10/21/2001	BZ	
7607001131	Sacramento	FULL STOP MINIMART	RD LINDA	38.62533605	-121.4458676	LUST Cleanup Site	12/16/1999	Completed - Case Closed	Closed	3/5/2019			4/28/2009	9/30/2015	7	2					2/30/2003	BZ
7607001309	Sacramento	QUICK STOP MARKET (FORMER ASSOCIATED GAS STA.)	SACRAMENTO	38.52472186	-121.4619693	LUST Cleanup Site	8/30/2002	Completed - Case Closed	Closed	3/16/2012						8/27/2003	10/20/11	2		1/10/2011	BZ	
7607001369	Sacramento	QATESBENNING TRUST PROPERTY	SACRAMENTO	38.569418	-121.494701	LUST Cleanup Site	8/26/2004	Completed - Case Closed	Closed	11/25/2008	x		21/1008	21/1008	1		9/1/2010	8/31/2013	4		10/8/2007	ND
7607001369	Sacramento	NOBLO AUTO SALES SITE (FORMER)	SACRAMENTO	38.604182	-121.45578	LUST Cleanup Site	7/11/2007	Completed - Case Closed	Closed	3/8/2021						9/1/2010	8/31/2013	4		10/8/2007	ND	
7607001409	Sacramento	CALTRANS EQUIPMENT SHOP	SACRAMENTO	38.5618773	-121.4651728	LUST Cleanup Site	11/01/1999	Completed - Case Closed	Closed	6/30/2002						9/1/2010	8/31/2013	4		10/8/2007	ND	
7607001554	Sacramento	BOSTON MARKET RESTAURANT	SACRAMENTO	38.6607789	-121.3554563	LUST Cleanup Site	2/12/1996	Open - Eligible for Closure	Open	5/27/2022						9/13/2012	10/7/2017	6		5/30/2007	BZ	
7607001629	Sacramento	KWIK SERV	SACRAMENTO	38.524477	-121.487728	LUST Cleanup Site	12/19/2002	Completed - Case Closed	Closed	7/24/2006						4/8/2006	4/8/2006	1		9/16/2004	MTBE	
7607001738	Sacramento	YELLEN KILGORE	SACRAMENTO	38.650489	-121.356743	LUST Cleanup Site	4/9/1998	Completed - Case Closed	Closed	8/21/2006						2/23/2002	4/23/2002	1		9/1/2002	BZ	
76070019425	Sacramento	7-ELEVEN #2015	NORTH HIGHLANDS	38.6904416	-121.3827435	LUST Cleanup Site	7/8/2003	Completed - Case Closed	Closed	3/14/2008						12/17/2006	12/22/2006			2/17/2006	ND	
76070019434	Sacramento	76 STATION #79 (CASE #3)	SACRAMENTO	38.6112027	-121.42867	LUST Cleanup Site	1/1/1999	Completed - Case Closed	Closed	1/23/2014	x		12/15/2010	12/13/2010	1						1/24/2009	MTBE
76070019435	Sacramento	7-ELEVEN #2015 (CASE #3)	SACRAMENTO	38.61296981	-121.4678787	LUST Cleanup Site	8/11/2002	Completed - Case Closed	Closed	4/12/2011	x		11/15/2005	2/23/2006	2	1					9/24/2003	MTBE
76070019434	Sacramento	ARCO #624	SACRAMENTO	38.510363	-121.410031	LUST Cleanup Site	11/20/2000	Completed - Case Closed	Closed	11/30/2014						11/18/2012	12/31/2012	1		10/22/2002	BZ	
76070019434	Sacramento	ARCO #625 (CASE #2)	SACRAMENTO	38.58807037	-121.4153627	LUST Cleanup Site	5/22/2000	Completed - Case Closed	Closed	3/16/2012						4/10/2012	3/30/2014	1		7/31/2002	MTBE	
7607001919	Sacramento	ARCO #1218 (CASE #2)	FAIR OAKS	38.64503363	-121.2715848	LUST Cleanup Site	11/14/2000	Open - Eligible for Closure	Open	3/7/2022						8/1/2016	8/30/2017	2	1	4/4/2002	MTBE	
7607001952	Sacramento	BELL GAS	SACRAMENTO	38.67454499	-121.4298423	LUST Cleanup Site	3/8/1999	Completed - Case Closed	Closed	2/28/2014						4/1/2010	7/30/2010	1		1/4/2002	BZ	
7607001954	Sacramento	SHELL STATION	SACRAMENTO	38.46537407	-121.4552564	LUST Cleanup Site	11/4/2001	Completed - Case Closed	Closed	1/16/2015			12/20/07	12/20/07	1	1	10/24/2008	3/22/2012	5	1	5/1/2003	MTBE
7607002015	Sacramento	ULTRAMAR # 3683	SACRAMENTO	38.549262	-121.3425458	LUST Cleanup Site	10/21/2000	Completed - Case Closed	Closed	10/25/2013	x					1/28/2003	11/31/2008			9/1/2001	ND	
7607001926	Sacramento	GERBERA POOLS, INC.	SACRAMENTO	38.555012	-121.427398	LUST Cleanup Site	3/30/1999	Completed - Case Closed	Closed	3/17/2011						1/31/2009	3/30/2011			4/25/2005	ND	
7607001926	Sacramento	CROWN FAMILY TRUST	SACRAMENTO	38.53506895	-121.4744683	LUST Cleanup Site	9/13/2001	Completed - Case Closed	Closed	8/10/2018						1/31/2009	3/30/2011			4/25/2005	ND	
7607001945	Sacramento	15TH & L INVESTORS	SACRAMENTO	38.761767	-121.487288	LUST Cleanup Site	29/2005	Completed - Case Closed	Closed	2/27/2006			4/10/2005	4/30/2005	1		9/1/2004	9/1/2004	1		9/20/2003	MTBE
7607001945	Sacramento	POLE SACRAMENTO SERVICE CENTER	SACRAMENTO	38.52854661	-121.3871719	LUST Cleanup Site	9/20/2007	Completed - Case Closed	Closed	12/20/2017						3/1/2008	3/1/2008			9/20/2003	MTBE	
7607001916	Sacramento	SACRAMENTO FAMILY FUN CENTER	SACRAMENTO	38.65847499	-121.3641329	LUST Cleanup Site	11/19/2004	Completed - Case Closed	Closed	5/12/2014	x					3/1/2008	3/30/2008	1		11/18/2006	ND	
7607001905	San Benito	E'S RANCH MILL XS	HOLLISTER	38.65894923	-121.4015302	LUST Cleanup Site	3/11/1999	Completed - Case Closed	Closed	9/10/2013			11/17/2008	330/2003	8		11/17/2008	330/2003	8		7/25/2002	BZ
7607001905	San Benito	MEL'S CHEVRO	HOLLISTER	38.8531515	-121.4033028	LUST Cleanup Site	2/9/1995	Completed - Case Closed	Closed	5/1/2013						3/1/2008	3/30/2008	1		11/18/2006	ND	
7607001905	San Benito	TORO PETROLEUM CO.	HOLLISTER	38.841151	-121.392115	LUST Cleanup Site	10/27/2000	Completed - Case Closed	Closed	10/13/2011						2/1/2007	12/20/2009	3		9/30/2003	MTBE	
7607001908	San Benito	MOBIL #2417	LOMA LINDA	38.0420355	-121.761195	LUST Cleanup Site	7/29/1997	Completed - Case Closed	Closed	11/30/2011			10/28/1999	5/31/2005	11		2/21/2009	2/21/2009			9/21/2001	MTBE
7607001908	San Benito	MOBIL #18-FW	LOMA LINDA	38.1380136	-121.2551963	LUST Cleanup Site	7/29/1997	Completed - Case Closed	Closed	11/30/2011			10/28/1999	5/31/2005	11		2/21/2009	2/21/2009			9/21/2001	MTBE
7607001907	San Benito	CROWN CARGO INTERNATIONAL	CHINO	34.00170044	-117.6927117	LUST Cleanup Site	5/11/1987	Completed - Case Closed	Closed	10/17/2019	x		6/20/1990	10/31/1997	8	1	6/20/1990	10/31/1997	7	1	7/15/2003	PCE
7607001907	San Benito	MORTON INTERNATIONAL	COLTON	34.0503131	-117.378912	LUST Cleanup Site	9/11/1982	Completed - Case Closed	Closed	2/24/2009						12/7/2004	10/7/2014			9/16/2005	ND	
7607001907	San Benito	ARCO #102034	COLTON	34.05102034	-117.3200388	LUST Cleanup Site	2/29/1988	Completed - Case Closed	Closed	12/23/2015						9/1/2002	9/1/2002			12/20/05	MTBE	
7607001910	San Benito	ARCO #6181	SAN BERNARDINO	34.09050511	-117.3141871	LUST Cleanup Site	9/18/1989	Completed - Case Closed	Closed	3/26/2010			21/1000	11/1/2000	1		9/1/1995	7/1/2004	10	1	9/29/2001	MTBE
7607001910	San Benito	ARCO #6181	SAN BERNARDINO	34.09159189	-117.3101125	LUST Cleanup Site	9/18/1989	Completed - Case Closed	Closed	3/26/2010						9/1/1995	7/1/2004	10	1	9/29/2001	MTBE	
7607001916	San Benito	THRIFTY OIL #345	SAN BERNARDINO	34.06604089	-117.2601016	LUST Cleanup Site	12/20/1989	Completed - Case Closed	Closed	6/18/2012	x		31/2/2007	31/2/2007	1		3/12/2007	31/2/2007	1		10/18/2001	BZ
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2007	11	1	11/13/2001	BZ	
7607001910	San Benito	ARCO #6214	SAN BERNARDINO	34.06285905	-117.278495	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	11/30/2014						6/1/1997	16/2					

T067030317	San Diego	JULIAN CHEVRON	JULIAN	33 0785051	-116.024196	LUST Cleanup Site	6/19/1989	Open - Remediation	Open	4/22/1991	x				1/13/1994	12/31/2000	7	3	5/20/2002	MTBE
T067030324	San Diego	ACTEC	NATIONAL CITY	32 8055116	-117.060735	LUST Cleanup Site	7/19/1998	Completed - Case Closed	Closed	9/13/2004	x				9/6/2008	11/23/2008	9	1	9/12/2001	MTBE
T067030405	San Diego	INCOAL SERV SYS #6953-31282	ESCONDIDO	33 1270338	-117.054000	LUST Cleanup Site	1/18/1989	Completed - Case Closed	Closed	11/21/2007	x				8/1/2006	6/1/2006	1	1	11/20/2001	BZ
T067030510	San Diego	ARCO 5409 PWS6217	CHULA VISTA	32 6241083	-117.073481	LUST Cleanup Site	5/18/1990	Completed - Case Closed	Closed	2/6/2018	x				2/15/2000	2/15/2000	1	1	11/20/2001	BZ
T067030537	San Diego	SAN MARCOS	SAN MARCOS	33 1872121919	-117.072359	LUST Cleanup Site	8/1/1988	Completed - Case Closed	Closed	2/21/2013	x			5/1/1998	5/1/1998	1	1	10/20/2001	BZ	
T067030542	San Diego	TOWNE CENTER SERVICE	SANTEE	32 83837291	-116.955411	LUST Cleanup Site	3/20/1985	Completed - Case Closed	Closed	4/13/2016	x			6/1/1995	12/1/1996	2	1	9/27/2002	MTBE	
T067030594	San Diego	HILLCREST SMOG & REPAIR	SAN DIEGO	32 7477495	-117.164049	LUST Cleanup Site	8/6/1990	Completed - Case Closed	Closed	12/25/2011	x			8/7/1995	3/7/2000	6	3	6/26/2002	BZ	
T067030670	San Diego	USPS EL CAJON STATION	EL CAJON	32 7925219	-116.866143	LUST Cleanup Site	11/20/1991	Completed - Case Closed	Closed	5/5/2015	x			10/29/1997	10/29/1998	2	1	12/28/2010	BZ	
T067030683	San Diego	Camp Pendleton Marine Corps Base (MCB) - 22 AREA - BLDG 2214 (MCX)	CAMP PENDLETON	33 2969149	-117.352086	Military UST Site	11/23/1989	Completed - Case Closed	Closed	9/13/2016	x			3/1/1997	6/26/2004	8	1	11/20/2001	MTBE	
T067030695	San Diego	VISTA MINI MARKET #153	CHULA VISTA	32 641468	-117.037038	LUST Cleanup Site	12/29/1991	Completed - Case Closed	Closed	7/22/2015	x			5/7/2002	3/8/2012	11	1	11/26/2001	BZ	
T067030726	San Diego	ARCO PETROLEUM PROCD CO	LEMON GROVE	32 7420174	-117.028094	LUST Cleanup Site	11/12/1991	Completed - Case Closed	Closed	11/10/2013	x			6/27/2003	11/22/2011	9	1	11/23/2001	MTBE	
T067030738	San Diego	PACIFIC BEACH CAR WASH/SHELL	SAN DIEGO	32 80013103	-117.231915	LUST Cleanup Site	4/10/1991	Completed - Case Closed	Closed	1/30/2013	x			5/1/1993	4/1/1999	7	1	2/25/2002	MTBE	
T067030739	San Diego	BUL-RITE #207	NATIONAL CITY	32 65819569	-117.006937	LUST Cleanup Site	9/11/1989	Completed - Case Closed	Closed	1/30/2013	x			6/1/2009	5/31/2011	3	1	9/13/2001	MTBE	
T067030768	San Diego	Mobil 18-FTM	CHULA VISTA	32 62024215	-117.071819	LUST Cleanup Site	5/1/1991	Completed - Case Closed	Closed	2/27/2018	x			5/1/2004	2/1/2012	1	1	10/15/2001	BZ	
T067030848	San Diego	ARCO #5410 PWS6128	CHULA VISTA	32 59452964	-117.074201	LUST Cleanup Site	12/30/1990	Open - Remediation	Open	6/1/1992	x			11/1/1995	3/17/2012	18	2	10/4/2001	BZ	
T067030849	San Diego	ESCONDIDO CARWASH	ESCONDIDO	33 12570176	-117.088217	LUST Cleanup Site	5/1/1989	Completed - Case Closed	Closed	1/11/1998	x			5/1/1995	5/1/2001	1	1	11/20/2001	BZ	
T067030973	San Diego	THE GAS STOP INC	LEMON GROVE	32 7430951	-117.025653	LUST Cleanup Site	8/21/1991	Completed - Case Closed	Closed	11/1/2017	x			10/10/2006	2/27/2012	7	1	10/2/2002	MTBE	
T067030984	San Diego	RENT-X	POWAY	32 5956097	-117.047408	LUST Cleanup Site	11/21/1991	Completed - Case Closed	Closed	11/21/2017	x			9/11/2008	9/1/2008	1	1	9/18/2001	BZ	
T067030990	San Diego	CHULA VISTA	CHULA VISTA	32 83071935	-117.075287	LUST Cleanup Site	12/29/1991	Completed - Case Closed	Closed	9/28/2012	x			5/1/2008	7/15/2008	1	1	11/4/2002	MTBE	
T067030923	San Diego	ARCO FACILITY #9755	IMPERIAL BEACH	32 58347838	-117.108437	LUST Cleanup Site	11/3/1992	Completed - Case Closed	Closed	8/7/2014	x			5/1/1989	4/30/2012	24	2	11/15/2001	BZ	
T067030924	San Diego	BODY BEAUTIFUL CAR WASH INC	EL CAJON	32 7882484	-116.914769	LUST Cleanup Site	12/20/1991	Completed - Case Closed	Closed	4/5/2013	x			2/15/2003	3/15/2006	4	1	11/8/2001	MTBE	
T067030930	San Diego	LAKELAND AUTO	LA MESA	32 7852582	-117.021553	LUST Cleanup Site	12/14/1991	Completed - Case Closed	Closed	10/27/2016	x			5/1/2008	7/15/2008	1	1	11/4/2002	MTBE	
T067030933	San Diego	TREES 4 LESS	CHULA VISTA	32 64557237	-117.046876	LUST Cleanup Site	12/17/1991	Open - Site Assessment	Open	12/10/2017	x			4/5/2008	2/26/2009	2	4	6/20/2007	BZ	
T067031011	San Diego	North Naval Air Station (NAS) - UST BLDG 955	SAN DIEGO	32 7080222	-117.216743	Military UST Site	4/27/1992	Open - Eligible for Closure	Open	6/6/2020	x							5/15/2002	BZ	
T067031067	San Diego	PSI #820ARCO #1862	OCEANSIDE	33 15648024	-117.353738	LUST Cleanup Site	11/13/1987	Completed - Case Closed	Closed	3/14/2017	x			7/1/1987	7/1/1987	1	1	10/3/2001	MTBE	
T067031108	San Diego	BUL-RITE GAS STATION #208	SAN DIEGO	32 82145405	-117.157328	LUST Cleanup Site	10/13/1992	Completed - Case Closed	Closed	12/24/2009	x			11/1/2003	4/5/2005	3	1	5/13/2003	BZ	
T067031019	San Diego	BRADLEY GAS STATION OFFICE DEPT	OCEANSIDE	33 2022451	-117.387795	LUST Cleanup Site	10/13/1992	Completed - Case Closed	Closed	4/28/2013	x			12/1/2000	6/30/2003	4	1	9/20/2006	BZ	
T067031230	San Diego	TST	SAN DIEGO	32 7735692	-117.174759	LUST Cleanup Site	8/29/1982	Completed - Case Closed	Closed	9/27/2013	x			7/1/1989	4/30/2006	8	1	11/13/2001	BZ	
T067031242	San Diego	CIRCLE #4777	FALLBROOK	33 38694794	-117.2404718	LUST Cleanup Site	3/9/1993	Completed - Case Closed	Closed	12/22/2017	x			3/18/1997	3/19/1997	1	1	9/1/2001	MTBE	
T067031253	San Diego	ALPHATECH #5652	EL CAJON	32 8011982	-116.880099	LUST Cleanup Site	10/30/1987	Completed - Case Closed	Closed	4/25/2016	x			11/11/2008	6/19/2013	6	1	11/11/2001	MTBE	
T067031267	San Diego	ALPHM MINI MARKET #591	SAN DIEGO	32 8015936	-117.0400707	LUST Cleanup Site	7/20/1993	Completed - Case Closed	Closed	4/1/2020	x			11/6/2003	3/28/2006	4	1	11/5/2001	BZ	
T067031273	San Diego	GREEN YOUNG ARCO #520	SAN MARCOS	33 15063037	-117.977579	LUST Cleanup Site	6/21/1993	Completed - Case Closed	Closed	5/16/2008	x			11/1/2004	10/1/2006	3	1	10/10/2001	MTBE	
T067031275	San Diego	Mobil 18-FTM	OCEANSIDE	33 2007287	-117.388252	LUST Cleanup Site	9/24/1994	Completed - Case Closed	Closed	1/27/2018	x			11/4/1991	11/20/1994	1	1	11/6/2002	BZ	
T067031300	San Diego	ARCO #5132 PWS6609	SAN DIEGO	32 7529841	-117.064886	LUST Cleanup Site	11/18/1986	Completed - Case Closed	Closed	6/26/2017	x			4/5/2002	3/26/2013	12	1	9/10/2001	BZ	
T067031325	San Diego	7-ELEVEN FOOD STORE #23892	IMPERIAL BEACH	32 57625103	-117.105471	LUST Cleanup Site	8/7/1993	Completed - Case Closed	Closed	12/4/2017	x			9/10/212	6/30/2013	1	1	10/22/2001	MTBE	
T067031375	San Diego	SPRING VALLEY	SPRING VALLEY	33 59777007	-117.184649	LUST Cleanup Site	1/30/1993	Completed - Case Closed	Closed	8/7/2017	x			8/7/2007	12/21/2008	8	1	11/27/2001	MTBE	
T067031390	San Diego	7-ELEVEN FOOD STORE #22894	ESCONDIDO	33 1342386	-117.066873	LUST Cleanup Site	12/10/1993	Completed - Case Closed	Closed	11/20/2016	x			9/7/2000	5/21/2004	5	1	10/3/2001	MTBE	
T067031462	San Diego	Mobil 18-EIT	POWAY	32 58671484	-117.070362	LUST Cleanup Site	3/7/1984	Completed - Case Closed	Closed	8/7/2019	x			12/1/1990	6/1/1993	4	1	10/8/2001	MTBE	
T067031464	San Diego	ESCONDIDO	Mobil 18-EIT	33 13505891	-117.085716	LUST Cleanup Site	7/3/2014	Completed - Case Closed	Closed	7/3/2014	x			7/8/1999	7/8/1999	10	1	9/8/2001	MTBE	
T067031494	San Diego	MADISON EXPRESS GAS	SAN DIEGO	32 8033877	-117.007793	LUST Cleanup Site	2/22/1994	Completed - Case Closed	Closed	4/9/2010	x			4/1/2001	12/15/2007	7	1	11/6/2001	BZ	
T067031523	San Diego	EL CAJON	EL CAJON	32 5191254	-116.9620193	LUST Cleanup Site	11/1/1989	Completed - Case Closed	Closed	11/2/2020	x			3/23/2004	9/30/2018	15	1	11/14/2001	MTBE	
T067031656	San Diego	ARCO 9590	SAN DIEGO	32 70664691	-117.1397698	LUST Cleanup Site	7/15/1994	Completed - Case Closed	Closed	7/24/2014	x			12/1/2005	2/28/2013	9	2	11/14/2001	BZ	
T067031663	San Diego	Mobil 18-FW	SAN DIEGO	32 85418373	-117.2049165	LUST Cleanup Site	18/1987	Completed - Case Closed	Closed	18/2016	x			10/1/1989	11/1/1996	8	1	10/9/2001	BZ	
T067031712	San Diego	SPRING VALLEY #5659	EL CAJON	32 52174153	-116.934817	LUST Cleanup Site	4/11/1993	Completed - Case Closed	Closed	4/11/2015	x			6/21/2002	3/23/2005	4	1	11/6/2001	MTBE	
T067031719	San Diego	7-ELEVEN FOOD STORE #15944	SPRING VALLEY	32 7078979	-116.988194	LUST Cleanup Site	11/20/1994	Completed - Case Closed	Closed	8/23/2016	x			6/1/2000	2/28/2004	5	1	10/25/2001	BZ	
T067031762	San Diego	G & M OIL STATION #83	SAN DIEGO	32 8038138	-117.046987	LUST Cleanup Site	5/11/1998	Completed - Case Closed	Closed	8/27/2015	x			11/1/2007	9/25/2008	2	1	7/22/2003	MTBE	
T067031771	San Diego	Camp Pendleton Marine Corps Base (MCB) - 13 Area Gas Station - BLDG 101	ES CAMP PENDLETON	33 30291193	-117.3128192	LUST Cleanup Site	11/23/1984	Open - Remediation	Open	3/20/2018	x			9/1/2010	2/28/2012	3	3	11/20/2001	MTBE	
T067031789	San Diego	SAN DIEGO TERMINAL	SAN DIEGO	32 69399919	-117.143888	LUST Cleanup Site	11/22/1994	Completed - Case Closed	Closed	5/6/2020	x			5/1/1998	2/17/2006	9	1	12/27/2001	MTBE	
T067031816	San Diego	CIRCLE K STORE #7553	SPRING VALLEY	32 7058148	-117.1014152	LUST Cleanup Site	2/20/1995	Completed - Case Closed	Closed	4/20/2017	x			6/29/2014	2/9/2016	3	1	9/11/2001	MTBE	
T067031828	San Diego	AMPMWATER #1598	SAN DIEGO	32 82067494	-117.1757016	LUST Cleanup Site	11/21/1994	Completed - Case Closed	Closed	11/16/2010	x			3/6/2001	7/8/2018	18	2	11/1/2001	BZ	
T067031899	San Diego	ARCO AMPM MINI MARKET #914	CHULA VISTA	32 62944988	-117.0542432	LUST Cleanup Site	7/25/1995	Completed - Case Closed	Closed	7/2/2021	x			6/24/2002	10/30/2007	6	1	9/19/2001	MTBE	
T067031963	San Diego	STELLA MARCOS CORP	SAN DIEGO	32 78915702	-117.171958	LUST Cleanup Site	10/10/1996	Completed - Case Closed	Closed	4/2/2018	x			5/10/2001	5/10/2001	5	1	10/30/2001	BZ	
T067031907	San Diego	PRESTIGE STATION #711	CAMP CITY	32 874493	-117.097563	LUST Cleanup Site	11/14/1996	Completed - Case Closed	Closed	8/24/2017	x			5/4/2004	3/26/2006	3	1	10/30/2001	MTBE	
T0670320210	San Diego	Camp Pendleton Marine Corps Base (MCB) - 62 AREA - BLDG 62007	CAMP PENDLETON	33 4280271	-117.588146	Military UST Site	4/28/1997	Completed - Case Closed	Closed	9/29/2013	x			12/1/2001	5/13/2010	10	1	10/30/2002	MTBE	
T067032027	San Diego	7-ELEVEN FOOD STORE #27771	SAN DIEGO	32 56420307	-117.078149	LUST Cleanup Site	6/30/2009	Completed - Case Closed	Closed	11/23/2017	x			6/30/2009	12/31/2009	8	1	11/27/2001	MTBE	
T067032036	San Diego	SANTA YSABEL FORMER CHEVRON	SANTA YSABEL	33 10409177	-116.873761	LUST Cleanup Site	6/12/1997	Completed - Case Closed	Closed	4/22/2019	x			2/1/2003	12/10/2007	5	2	2/22/2002	MTBE	
T067032035	San Diego	ARCO FAC #5657 P51	SANTEE	32 68287974	-116.9833419	LUST Cleanup Site	10/9/1997	Completed - Case Closed	Closed	10/9/2014	x			10/1/1997	4/30/2012	16	3	11/5/2001	MTBE	
T067032044	San Diego	7-ELEVEN PETROLEUM	ESCONDIDO	33 11607165	-117.087146	Cleanup Program Site	11/13/1987	Completed - Case Closed	Closed	11/16/2012	x			6/1/2000	3/1/2002	3	1	9/20/2003	MTBE	
T067032040	San Diego	7-ELEVEN FOOD STORE #15070	SPRING VALLEY	32 72954486	-116.981397	LUST Cleanup Site	2/23/1998	Completed - Case Closed	Closed	11/10/2014	x			4/9/2002	10/4/2006	5	1	11/14/2001	MTBE	
T067032042	San Diego	PACIFIC EXECUTIVE AVIATION INC	RAMONA	33 040321	-116.901031	LUST Cleanup Site	4/20/1998	Completed - Case Closed	Closed	11/17/2014	x			12/21/2009	8/23/2012	4	1	9/6/2001	BZ	
T067032444	San Diego	ARCO FACILITY #5532	ARCO FACILITY	32 68203263	-117.073819															



T060770048	San Joaquin	OCAMPO PROPERTY	STOCKTON	37 544747006	-121 2956083	LUST Cleanup Site	12/20/1985	Completed - Case Closed	Closed	18/20/2010	x		8/5/2010	6/24/2015	6	2	10/17/2002	BZ	
T060770049	San Joaquin	ROCK CONSTRUCTION	STOCKTON	37 554871000	-121 2709698	LUST Cleanup Site	7/16/1997	Open - Site Assessment	Open	8/13/2018			1/14/1997	6/17/2002	1	1	6/17/2002	MTBE	
T060770076	San Joaquin	SHIP OPIUS - Stockton Terminal	STOCKTON	37 951299	-121 345156	Cleanup Program Site	2/18/2000	Open - Verification Monitoring	x	2/18/2008	x		1/12/1995	5/23/2001	7	2	2/17/2005	MTBE	
T060770083	San Joaquin	MOORE PETROLEUM	BANTA	37 7528556	-121 3738981	LUST Cleanup Site	8/16/1988	Completed - Case Closed	Closed	9/26/2013	x			4/28/1987	3	3	13/1/2002	MTBE	
T060770085	San Joaquin	ST LAURENCE #254542	STOCKTON	37 54501417	-121 254542	LUST Cleanup Site	8/1/1989	Completed - Case Closed	Closed	4/29/2008	x			5/5/1995	4/28/1987	3	3	2/19/2002	BZ
T060770087	San Joaquin	LOCAL FOOD STORE	STOCKTON	37 5564598	-121 3328723	LUST Cleanup Site	8/18/1988	Completed - Case Closed	Closed	11/19/2009	x		7/23/2004	5/12/2006	3	1	8/25/1999	MTBE	
T060770092	San Joaquin	FORMER ARCO #610	TRACY	37 7126206	-121 5363852	LUST Cleanup Site	4/7/1987	Completed - Case Closed	Closed	6/17/2002	x			1/11/2004	8/31/2010	7	1	12/23/2002	BZ
T060770095	San Joaquin	FORMER TACO STORE	STOCKTON	37 5374146	-121 2035104	LUST Cleanup Site	10/27/1988	Open - Remediation	Open	8/37/2013	x			1/30/1988	3/30/1988	3	1	2/6/2001	BZ
T060770096	San Joaquin	STOCKTON WAREHOUSING & INDUSTRIAL CENTER, LLC	STOCKTON	37 8953532	-121 242754	LUST Cleanup Site	4/5/1988	Completed - Case Closed	Closed	10/24/2011	x			3/19/1999	12/41/1999	1	1	9/27/2004	ND
T060770204	San Joaquin	DOLLY MADISON/LANDENDORF	STOCKTON	37 53643001	-121 2352253	LUST Cleanup Site	7/27/1988	Completed - Case Closed	Closed	5/4/2011	x			5/15/2009	12/20/2010	2	1	2/14/2002	BZ
T060770231	San Joaquin	NATIONAL FRIEGHT	STOCKTON	37 83041137	-121 2732337	LUST Cleanup Site	7/26/1988	Completed - Case Closed	Closed	6/30/2012	x		10/30/2006	1/10/2006	1	1	9/13/2001	BZ	
T060770242	San Joaquin	DIESEL PERFORMANCE INC	STOCKTON	37 9664627	-121 2535048	LUST Cleanup Site	2/20/1987	Completed - Case Closed	Closed	11/17/2011	x			10/25/2004	8/4/2006	3	2	10/25/2002	BZ
T060770244	San Joaquin	APACHE PLASTICS	STOCKTON	37 8621466	-121 254974	LUST Cleanup Site	8/9/1988	Open - Remediation	Open	9/18/2015	x			7/30/1994	12/30/1996	3	1	2/14/2002	BZ
T060770249	San Joaquin	LAUREL STORE #7050	STOCKTON	37 88324117	-121 2719713	LUST Cleanup Site	1/19/1989	Completed - Case Closed	Closed	11/10/2011	x			1/17/2008	3/11/2011	4	1	8/19/2002	BZ
T060770253	San Joaquin	TOP FILLING STATION	STOCKTON	37 95456449	-121 2714949	LUST Cleanup Site	2/31/1989	Open - Verification Monitoring	Open	5/27/2002	x		x	11/17/2004	11/28/2016	13	1	8/31/2004	8/26/2013
T060770257	San Joaquin	STOCKTON CITY #1	STOCKTON	38 05667476	-121 3491975	LUST Cleanup Site	1/6/1987	Completed - Case Closed	Closed	12/27/2014	x			8/10/1997	12/30/1997	1	1	3/11/2002	MTBE
T060770260	San Joaquin	MICHELLOTTIS AUTO REPAIR	STOCKTON	37 9673505	-121 3231351	LUST Cleanup Site	2/6/1989	Completed - Case Closed	Closed	9/10/2013	x		2/1/2007	2/1/2007	1	1	11/5/2002	MTBE	
T060770305	San Joaquin	SHELL #204-7254-4305	STOCKTON	37 9371063	-121 2953881	LUST Cleanup Site	7/24/1989	Completed - Case Closed	Closed	9/25/2014	x			8/1/1992	11/1/1996	5	1	2/11/2003	BZ
T060770314	San Joaquin	HARRIS AUTO MART	STOCKTON	37 8628941	-121 27141079	LUST Cleanup Site	6/12/1989	Completed - Case Closed	Closed	2/25/2015	x			6/28/2010	10/12/2012	3	2	9/24/2001	BZ
T060770319	San Joaquin	ARCO #5956	STOCKTON	38 0210382	-121 2562597	LUST Cleanup Site	6/5/1989	Open - Site Assessment	Open	9/1/1999	x		4/8/2002	10/1/2004	3	1	3/11/2013	3/12/2013	
T060770320	San Joaquin	FORMER DONNA GARDNER PROPERTY	THORNTON	38 2241412	-121 4218811	LUST Cleanup Site	9/5/1989	Completed - Case Closed	Closed	5/26/2010	x			8/30/2008	8/30/2008	1	1	3/19/2004	BZ
T060770347	San Joaquin	CASCO	STOCKTON	37 54071421	-121 2771538	LUST Cleanup Site	11/14/1989	Open - Verification Monitoring	Open	7/30/2003	x			7/14/1997	7/10/2003	7	1	10/25/2001	BZ
T060770348	San Joaquin	SAN JOAQUIN CATHOLIC CEMETERY	STOCKTON	37 87224863	-121 2558819	LUST Cleanup Site	11/17/1989	Completed - Case Closed	Closed	12/10/2007	x			5/9/1996	5/9/1996	1	1	6/20/2003	MTBE
T060770370	San Joaquin	SHELL #204-7525-0104	LODI	38 1374626	-121 2536351	LUST Cleanup Site	12/28/1989	Completed - Case Closed	Closed	11/5/2012	x		2/1/2005	9/1/2009	5	2	11/8/2001	MTBE	
T060770380	San Joaquin	7-11 STORE #1734	STOCKTON	38 0265297	-121 3184565	LUST Cleanup Site	3/8/1990	Completed - Case Closed	Closed	10/12/2017	x			7/26/2006	11/2/2006	1	1	12/10/2001	PCE
T060770407	San Joaquin	7-11 STORE #1734	STOCKTON	37 9869741	-121 3210516	LUST Cleanup Site	5/22/1990	Completed - Case Closed	Closed	8/5/2014	x			5/16/2002	5/16/2002	1	1	1/9/2002	MTBE
T060770430	San Joaquin	VALLEY MOTORS	STOCKTON	37 9067608	-121 2708981	LUST Cleanup Site	6/9/1990	Completed - Case Closed	Closed	6/24/2012	x			5/22/2000	5/22/2000	1	1	9/16/2001	BZ
T060770435	San Joaquin	CHAPIN BROTHERS INC	STOCKTON	37 5541965	-121 2656241	LUST Cleanup Site	10/22/1990	Completed - Case Closed	Closed	12/3/2014	x		1/10/2010	1/10/2010	1	1	8/13/2007	8/13/2007	
T060770445	San Joaquin	CHAPIN BROTHERS INC	STOCKTON	37 5590708	-121 218257	LUST Cleanup Site	12/11/1990	Completed - Case Closed	Closed	11/4/2011	x		x	3/1/2002	2/12/2010	9	1	4/1/1997	12/31/1999
T060770447	San Joaquin	RANCH MARKET (FORMER)	RIVERBANK	37 74446451	-120 5099392	LUST Cleanup Site	5/20/1991	Completed - Case Closed	Closed	2/14/2022	x			10/22/2000	6/15/2007	8	2	1/3/2002	BZ
T060770481	San Joaquin	BEACON #419	STOCKTON	37 9507054	-120 2434321	LUST Cleanup Site	4/29/1991	Completed - Case Closed	Closed	8/20/2014	x			8/22/2005	8/22/2005	1	1	5/16/2002	BZ
T060770482	San Joaquin	BEACON #414	STOCKTON	37 86404144	-121 2412802	LUST Cleanup Site	4/28/1991	Completed - Case Closed	Closed	7/1/2012	x			11/10/2000	6/1/2002	1	1	10/20/2002	BZ
T060770492	San Joaquin	BEACON #641	STOCKTON	38 02053756	-121 2872944	LUST Cleanup Site	7/16/1991	Completed - Case Closed	Closed	3/20/2013	x			3/1/2005	3/1/2005	1	1	6/19/2002	MTBE
T060770498	San Joaquin	WESTERN LIFT CASE 1	STOCKTON	37 9086527	-121 2751579	LUST Cleanup Site	6/6/1991	Completed - Case Closed	Closed	5/5/2014	x			11/15/2004	11/15/2004	1	1	9/18/2001	MTBE
T060770499	San Joaquin	DEL MONTE DISC	STOCKTON	37 85336501	-121 25336501	LUST Cleanup Site	10/13/1989	Completed - Case Closed	Closed	8/1/2003	x			6/1/2003	6/1/2003	1	1	8/20/2002	MTBE
T060770508	San Joaquin	ARCO #166 (FORMER)	STOCKTON	37 93769371	-121 2936061	LUST Cleanup Site	8/24/1991	Open - Remediation	Open	2/26/2013	x			8/30/1997	4/30/1998	2	2	12/6/2001	MTBE
T060770523	San Joaquin	STALLWORTH AUTO DETAIL	STOCKTON	37 8691144	-121 289214	LUST Cleanup Site	6/15/1991	Open - Remediation	Open	9/15/2010	x			7/17/2007	8/22/2011	5	2	3/27/2003	BZ
T060770532	San Joaquin	E & M MARINA	STOCKTON	38 0004396	-121 468862	Cleanup Program Site	10/19/1991	Completed - Case Closed	Closed	8/1/2018	x		6/5/2005	6/5/2005	1	1	7/17/2007	8/27/2002	
T060770537	San Joaquin	JACKPOT FOOD MART	LOCKEPORT	38 16553229	-121 1481955	LUST Cleanup Site	2/5/1992	Completed - Case Closed	Closed	10/30/2006	x			8/8/1998	11/19/2004	7	1	34/2002	BZ
T060770549	San Joaquin	THREE B'S TRUCK WASH	STOCKTON	37 8271765	-121 2638756	LUST Cleanup Site	1/1/1992	Completed - Case Closed	Closed	5/1/2001	x			8/12/2005	8/12/2005	1	1	5/11/2002	BZ
T060770549	San Joaquin	7-ELEVEN STORE #21756	MANTECA	37 7972768	-120 251555	LUST Cleanup Site	1/29/1998	Completed - Case Closed	Closed	10/13/2008	x			4/1/2002	4/1/2002	1	1	1/7/2002	MTBE
T060770554	San Joaquin	CHEVRON #9 1452	RPN	37 7395384	-121 1159803	LUST Cleanup Site	4/29/1992	Completed - Case Closed	Closed	7/13/2008	x		8/12/2004	8/12/2005	2	1	11/29/2001	MTBE	
T060770558	San Joaquin	PAULSON'S STORE STOP	MANTECA	37 78702581	-121 3515289	LUST Cleanup Site	1/1/1992	Open - Verification Monitoring	Open	3/27/2012	x		x	12/20/2001	12/31/2003	3	1	1/15/2003	MTBE
T060770559	San Joaquin	PACIFIC CAR WASH	STOCKTON	37 9879141	-121 3418634	LUST Cleanup Site	11/22/1991	Open - Remediation	Open	1/1/2009	x			1/24/2006	10/7/2006	1	2	8/25/2003	BZ
T060770568	San Joaquin	CANTEEN CORPORATION	STOCKTON	37 87830099	-121 2481703	LUST Cleanup Site	6/17/1992	Completed - Case Closed	Closed	18/2013	x			6/1/2004	6/1/2004	1	1	11/8/2001	BZ
T060770568	San Joaquin	STERANS CASCO (FORMER)	STOCKTON	37 54207952	-121 2684402	LUST Cleanup Site	1/24/1992	Completed - Case Closed	Closed	12/19/2012	x			6/13/2004	6/13/2004	2	1	5/13/2004	BZ
T060770605	San Joaquin	Former Ships Service Station (aka Olvera's Property)	STOCKTON	37 95051754	-121 2634919	LUST Cleanup Site	2/12/1993	Open - Site Assessment	Open	1/24/2018	x		6/25/2004	6/25/2004	1	1	11/20/2004	8/19/2001	
T060770615	San Joaquin	FLAG CITY CHEVRON #9-0302	LODI	38 1135896	-121 39415	LUST Cleanup Site	6/1/1990	Completed - Case Closed	Closed	32/7/2012	x		1/1/2001	8/15/2004	4	1	9/6/2001	MTBE	
T060770628	San Joaquin	GENIES RESTAURANT	STOCKTON	37 8875768	-121 2480245	Cleanup Program Site	1/22/2001	Completed - Case Closed	Closed	12/20/2011	x			12/26/2006	12/27/2006	1	1	9/18/2004	MTBE
T060770632	San Joaquin	CENTER ST PARTS	STOCKTON	37 8348028	-121 2854136	LUST Cleanup Site	1/26/1990	Completed - Case Closed	Closed	12/9/2013	x			11/1/2003	12/13/2005	3	1	6/27/2002	BZ
T060770635	San Joaquin	ARCO #166	STOCKTON	37 8800183	-121 2632889	LUST Cleanup Site	5/5/1992	Completed - Case Closed	Closed	9/4/2018	x			8/30/2004	8/30/2004	1	1	12/11/2001	MTBE
T060770643	San Joaquin	PACIFIC FARMS INC.	STOCKTON	37 820302	-121 4493001	Cleanup Program Site	7/1/1991	Completed - Case Closed	Closed	6/9/2011	x		8/24/2009	9/23/2009	1	1	4/15/2004	MTBE	
T060770650	San Joaquin	RPMN BRAND SERVICE	RPN	37 7502545	-121 1381796	LUST Cleanup Site	6/15/1987	Completed - Case Closed	Closed	7/30/2009	x			12/10/2000	1/1/2004	5	1	10/21/2004	MTBE
T060770663	San Joaquin	MANITEX CARPORT #12548	MANTECA	37 7819786	-121 3121901	LUST Cleanup Site	9/1/1993	Open - Site Assessment	Open	1/18/2013	x			1/21/2002	6/1/2010	9	1	2/18/2004	MTBE
T060770665	San Joaquin	FORMER MOBIL STATION 99C4S	STOCKTON	37 88041141	-121 299669	LUST Cleanup Site	10/10/1994	Completed - Case Closed	Closed	10/25/2016	x		1/21/2002	6/1/2010	1	1	3/27/2012	3/11/2014	
T060770692	San Joaquin	BERNARDOS PLACE	STOCKTON	37 80434296	-121 2882135	LUST Cleanup Site	11/18/1994	Open - Remediation	Open	1/1/2010	x			11/10/2009	11/10/2009	1	1	12/26/2000	BZ
T060770697	San Joaquin	SHELL #204-7254-3055	STOCKTON	37 86505001	-121 3346647	LUST Cleanup Site	7/19/1994	Open - Verification Monitoring	Open	6/14/2002	x		3/1/1999	3/28/2008	10	1	12/13/1994	12/13/1994	
T060770702	San Joaquin	CHEVRON #9-2033	STOCKTON	37 83721019	-121 2840141	LUST Cleanup Site	12/28/1994	Open - Remediation	Open	8/4/2013	x			3/14/2013	3/25/2014	2	6	12/6/2001	MTBE
T060770708	San Joaquin	T & T TRUCKING	LODI	38 06884204	-121 2591124	LUST Cleanup Site	3/31/1995	Completed - Case Closed	Closed	3/28/2020	x			11/1/2009	1/1/2009	1	1	10/31/2001	MTBE
T060770717	San Joaquin	THE TRANSMISSION STORE	MANTECA	37 83747201	-121 2941716	LUST Cleanup Site	1/13/1993	Open - Remediation	Open	8/22/2017	x			1/13/1993	1/13/1993	1	1	2/20/2001	BZ
T060770719																			

T008010037	San Mateo	TEXACO #725	SAN MATEO	37 57012699	-122.335301	LUST Cleanup Site	2/4/1988	Completed - Case Closed	Closed	5/13/2002	x	6/8/1992	9/3/2003	12	2		6/27/2002	BZ
T008010038	San Mateo	ARCO #4485	SAN MATEO	37 57014585	-122.355542	LUST Cleanup Site	10/27/2002	Completed - Case Closed	Closed	10/27/2002	x	4/1/2000	12/1/2000	1	1	12/1/2000	12/1/2000	MTBE
T008010039	San Mateo	ARCO #433	PACIFICA	37 56485870	-122.412581	LUST Cleanup Site	4/23/2002	Completed - Case Closed	Closed	8/25/03	x	6/19/1997	6/14/2000	4	1	10/25/2003	BZ	
T008010040	San Mateo	ARCO #842	REDWOOD CITY	37 48462215	-122.248748	LUST Cleanup Site	3/31/1987	Completed - Case Closed	Closed	2/6/2010	x	7/12/1993	7/16/1993	1	3	9/17/2002	BZ	
T008010042	San Mateo	FOSTER CITY #19	FOSTER CITY	37 57027398	-122.277299	LUST Cleanup Site	2/1/1988	Completed - Case Closed	Closed	5/1/2018	x	5/1/1992	6/30/1992	1	1	6/27/2002	MTBE	
T008010055	San Mateo	L C SMITH TRUST	SAN MATEO	37 56226135	-122.338988	LUST Cleanup Site	1/30/1985	Completed - Case Closed	Closed	3/22/2015	x	5/6/1986	5/6/1986	1	2	12/5/2001	BZ	
T008010059	San Mateo	BELMONT CAR WASH	BELMONT	37 52018092	-122.275404	LUST Cleanup Site	11/16/1984	Completed - Case Closed	Closed	8/20/211	x	2/1/1995	4/30/1995	1	1	10/6/2010	MTBE	
T008010077	San Mateo	MOBL 10-KST / BP #11202	DAILY CITY	37 5882511	-122.47342	LUST Cleanup Site	4/20/1988	Open - Eligible for Closure	Open	5/25/2002	x	9/14/1993	8/18/2015	23	8	6/11/2003	MTBE	
T008010079	San Mateo	MOBL 10-KK / BP#11203	PACIFICA	37 6597678	-122.477578	LUST Cleanup Site	11/3/1988	Completed - Case Closed	Closed	1/30/2019	x	12/7/1999	12/7/1999	1	2	11/27/2001	MTBE	
T008010080	San Mateo	MOBL / BP #11200	SAN BRUNO	37 63104554	-122.408508	LUST Cleanup Site	12/21/1990	Completed - Case Closed	Closed	7/14/2022	x	18/2001	21/2001	1	1	12/20/2001	BZ	
T008010085	San Mateo	BRANDON PLANT PRODUCE & FLOWERS, FORMER	REDWOOD CITY	37 48882674	-122.225105	LUST Cleanup Site	11/8/2008	Completed - Case Closed	Closed	17/22/2012	x	12/27/1993	2/25/1994	2	1	12/2/2006	MTBE	
T008010102	San Mateo	CANADA COLLEGE	REDWOOD CITY	37 48001247	-122.265123	LUST Cleanup Site	4/24/1991	Completed - Case Closed	Closed	3/11/2014	x	5/1/1991	5/1/1991	1	4	4/24/2011	ND	
T008010123	San Mateo	CHEVRON 9-0312	SAN MATEO	37 56206798	-122.325324	LUST Cleanup Site	5/13/1984	Completed - Case Closed	Closed	12/4/2005	x	12/31/1990	4/1/1997	8	1	2/19/2002	BZ	
T008010129	San Mateo	CHEVRON 9-0428	DAILY CITY	37 70567024	-122.408271	LUST Cleanup Site	6/28/1984	Completed - Case Closed	Closed	1/18/2006	x	1/18/2006	5/1/1993	2	1	1/11/2002	BZ	
T008010130	San Mateo	CHEVRON 9-0271	WOODSIDE	37 42936928	-122.250514	LUST Cleanup Site	4/01/1987	Completed - Case Closed	Closed	11/19/2010	x	10/10/1990	4/9/1996	7	1	9/14/2001	MTBE	
T008010147	San Mateo	SAN BRUNO #275 ECR SB COMINGLED	SAN BRUNO	37 42170943	-122.417094	LUST Cleanup Site	10/23/2004	Completed - Case Closed	Closed	3/5/2019	x	3/5/1991	4/4/1997	17	2	10/16/2003	BZ	
T008010151	San Mateo	CTGO (SOUTHLAND)	DAILY CITY	37 70504704	-122.407209	LUST Cleanup Site	8/19/1991	Completed - Case Closed	Closed	12/28/2016	x	5/31/1994	1/1/1995	8	1	11/7/2013	BZ	
T008010168	San Mateo	DAILY CITY TEXACO	DAILY CITY	37 70751185	-122.467105	LUST Cleanup Site	8/7/1989	Completed - Case Closed	Closed	9/10/211	x	12/1/2008	12/30/2008	1	1	12/21/2001	BZ	
T008010171	San Mateo	COYNE CYLINDER CO	SOUTH SAN FRANCISCO	37 5468599	-122.418214	LUST Cleanup Site	9/26/1989	Completed - Case Closed	Closed	7/20/2011	x	1/31/1990	1/11/1995	2	1	6/13/2003	BZ	
T008010203	San Mateo	EXXON 7-3910	MENLO PARK	37 4477496	-122.174066	LUST Cleanup Site	10/12/1988	Completed - Case Closed	Closed	11/7/2003	x	2/1/2008	2/7/2001	6	1	10/25/2001	BZ	
T008010204	San Mateo	EXXON 7-0207 FORMER	DAILY CITY	37 8892582	-122.474719	LUST Cleanup Site	8/9/1991	Completed - Case Closed	Closed	6/25/2013	x	9/31/1992	3/18/1998	7	3	9/12/2001	MTBE	
T008010205	San Mateo	EXXON 7-4135 (FORMER)	SAN MATEO	37 5542743	-122.353777	LUST Cleanup Site	7/10/1988	Completed - Case Closed	Closed	4/22/2013	x	3/5/1996	3/5/1996	1	2	1/8/2002	MTBE	
T008010207	San Mateo	EXXON 7-0107 (Former)	SAN BRUNO	37 63075148	-122.410215	LUST Cleanup Site	8/8/1988	Completed - Case Closed	Closed	6/26/2015	x	11/30/1993	12/27/2012	4	11	3/12/2002	MTBE	
T008010209	San Mateo	EXXON 7-0225	MENLO PARK	37 44845072	-122.176079	LUST Cleanup Site	7/15/1992	Completed - Case Closed	Closed	5/12/2008	x	6/18/1996	27/2001	6	1	9/10/2001	BZ	
T008010211	San Mateo	BENICUITY FORMER TEXACO	REDWOOD CITY	37 46930731	-122.245592	LUST Cleanup Site	5/25/1988	Completed - Case Closed	Closed	2/26/2018	x	5/1/2000	5/1/2000	1	1	12/7/1998	BZ	
T008010216	San Mateo	A-1 GAS 5TH AVE SERVICE	REDWOOD CITY	37 47591879	-122.1999139	LUST Cleanup Site	11/21/1984	Completed - Case Closed	Closed	4/30/2019	x	5/22/2001	6/15/2001	1	1	8/22/2002	MTBE	
T008010219	San Mateo	FIRE STATION #84	DAILY CITY	37 56313075	-122.469854	LUST Cleanup Site	9/11/1998	Completed - Case Closed	Closed	1/30/2014	x	5/1/1988	5/1/1988	2	1	12/16/2001	MTBE	
T008010237	San Mateo	GOLDEN GATE FLOWER GROWERS	SAN MATEO	37 55931062	-122.300027	LUST Cleanup Site	6/21/1992	Open - Assessment & Interim Remedial Action	Open	12/12/2016	x	8/10/1995	8/10/1995	1	1	7/1/2002	BZ	
T008010253	San Mateo	HARRIS PROPERTY	BURLINGAME	37 5778971	-122.345453	LUST Cleanup Site	8/11/1989	Open - Eligible for Closure	Open	6/6/2022	x	10/1/1996	10/1/1996	1	1	11/16/2001	BZ	
T008010257	San Mateo	TEXACO 211284, FORMER	BURLINGAME	37 4622584	-122.343381	LUST Cleanup Site	11/17/1991	Completed - Case Closed	Closed	16/2/2012	x	12/27/1999	7/12/2001	3	1	7/1/2002	BZ	
T008010301	San Mateo	PACIFICA SCHOOL DISTRICT	PACIFICA	37 61433385	-122.4852128	LUST Cleanup Site	7/5/1985	Completed - Case Closed	Closed	6/20/2012	x	4/7/1994	8/29/1995	2	2	12/3/2004	BZ	
T008010311	San Mateo	LGFS PROPERTIES	REDWOOD CITY	37 48032998	-122.239525	LUST Cleanup Site	7/22/1987	Completed - Case Closed	Closed	6/9/2011	x	10/18/1990	5/31/1993	4	4	11/3/2003	BZ	
T008010317	San Mateo	MALIBU CASTLE	REDWOOD CITY	37 48221218	-122.311817	LUST Cleanup Site	8/20/1987	Completed - Case Closed	Closed	10/2/2017	x	8/18/2017	9/20/2017	1	1	8/9/2013	BZ	
T008010338	San Mateo	MOBL 10-FTX / BP #11917	SAN MATEO	37 56206458	-122.326289	LUST Cleanup Site	1/7/1991	Completed - Case Closed	Closed	24/2020	x	3/29/2011	12/31/2011	1	2	11/13/2001	BZ	
T008010346	San Mateo	MOBL 10-KST / BP #11201	SAN CARLOS	37 51160304	-122.258165	LUST Cleanup Site	3/31/1986	Completed - Case Closed	Closed	5/10/2021	x	5/22/1990	6/7/2002	13	4	9/10/2001	MTBE	
T008010350	San Mateo	BP #11201	BURLINGAME	37 59146529	-122.363689	LUST Cleanup Site	8/21/1988	Completed - Case Closed	Closed	1/21/2018	x	11/1/1990	8/1/1990	1	2	1/16/2003	BZ	
T008010380	San Mateo	QK KNOLL STATION	REDWOOD CITY	37 47121926	-122.259944	LUST Cleanup Site	4/7/1989	Completed - Case Closed	Closed	11/27/2017	x	10/10/2002	8/10/1992	1	1	12/3/2008	MTBE	
T008010384	San Mateo	OLYMPIC OIL HMB	HALF MOON BAY	37 4880627	-122.430025	LUST Cleanup Site	7/8/1987	Completed - Case Closed	Closed	10/21/2006	x	10/20/2010	4/3/2003	4	1	11/7/2001	MTBE	
T008010388	San Mateo	OLYMPIC SHARP PARK	PACIFICA	37 53867191	-122.409492	LUST Cleanup Site	2/28/1993	Open - Eligible for Closure	Open	12/8/2020	x	12/30/2010	8/16/2018	1	1	9/21/2001	BZ	
T008010389	San Mateo	OLYMPIC AUTO SERVICE	SOUTH SAN FRANCISCO	37 6564093	-122.409567	LUST Cleanup Site	8/15/1991	Completed - Case Closed	Closed	8/4/2014	x	10/29/1993	2/23/2007	15	2	11/27/2001	BZ	
T008010376	San Mateo	SHELL BELL	SOUTH SAN FRANCISCO	37 54342941	-122.420713	LUST Cleanup Site	8/22/1988	Completed - Case Closed	Closed	4/23/1998	x	12/12/2005	12/12/2005	8	1	9/25/2005	BZ	
T008010423	San Mateo	REGAL	SAN MATEO	37 56687698	-122.318206	LUST Cleanup Site	3/19/1987	Completed - Case Closed	Closed	2/20/2018	x	6/1/2003	12/16/2004	2	1	3/10/2002	BZ	
T008010430	San Mateo	MOBL 04-FRL (RON'S B.P.)	REDWOOD CITY	37 48863983	-122.238052	LUST Cleanup Site	8/11/1991	Completed - Case Closed	Closed	7/12/2006	x	2/1/1993	2/28/1993	1	1	12/6/2001	MTBE	
T008010461	San Mateo	SHELL OIL CO	SOUTH SAN FRANCISCO	37 54338812	-122.310718	LUST Cleanup Site	8/21/2004	Completed - Case Closed	Closed	6/21/2014	x	2/6/2001	3/26/2001	1	2	12/17/2001	MTBE	
T008010470	San Mateo	SHELL	SAN MATEO	37 54838821	-122.3103404	LUST Cleanup Site	11/1/1989	Completed - Case Closed	Closed	4/23/2013	x	6/11/1999	6/1/2003	5	1	11/2/2001	MTBE	
T008010473	San Mateo	SHELL OIL CO	HALF MOON BAY	37 46776285	-122.429575	LUST Cleanup Site	3/25/1987	Completed - Case Closed	Closed	12/15/2011	x	4/15/1994	8/12/1996	3	2	10/18/2001	MTBE	
T008010483	San Mateo	SHELL ECR SB COMINGLED	SAN CARLOS	37 53821819	-122.281918	LUST Cleanup Site	1/3/2003	Completed - Case Closed	Closed	1/30/2013	x	6/7/2000	10/12/2007	8	1	11/21/2001	BZ	
T008010491	San Mateo	SHELL ECR SB COMINGLED	SAN BRUNO	37 6288108	-122.4163019	LUST Cleanup Site	4/19/1989	Completed - Case Closed	Closed	7/22/2013	x	2/25/1993	6/1/1996	4	1	10/16/2001	BZ	
T008010509	San Mateo	SOUTHERN PACIFIC	BELMONT	37 52018518	-122.275458	LUST Cleanup Site	2/28/1988	Completed - Case Closed	Closed	8/6/2011	x	2/1/1995	4/30/1995	1	1	10/6/2010	BZ	
T008010514	San Mateo	A-1 & B-BEACH	SAN MATEO	37 56331469	-122.3259187	LUST Cleanup Site	10/29/1993	Completed - Case Closed	Closed	24/2015	x	6/1/1995	12/1/1995	2	1	11/13/2001	BZ	
T008010519	San Mateo	STOP NGO	SAN CARLOS	37 5018185	-122.254268	LUST Cleanup Site	1/8/1990	Completed - Case Closed	Closed	10/18/2016	x	3/1/1990	3/2/1990	14	3	8/21/2002	BZ	
T008010520	San Mateo	DAILY CITY PROPERTY	SAN CARLOS	37 55931075	-122.464261	LUST Cleanup Site	12/1/1990	Completed - Case Closed	Closed	3/26/2020	x	6/1/2001	6/1/2001	1	1	9/26/2001	BZ	
T008010537	San Mateo	EXXON 7-0259 (FORMER) ECR SB COMINGLED	SAN BRUNO	37 62916263	-122.416477	LUST Cleanup Site	3/21/1988	Completed - Case Closed	Closed	7/22/2013	x	5/5/1991	8/1/1996	6	1	6/25/2002	MTBE	
T008010539	San Mateo	TEXACO #15 and Exxon Station #7245 (FORMER)	REDWOOD CITY	37 49343425	-122.234566	LUST Cleanup Site	2/15/1988	Completed - Case Closed	Closed	3/26/2020	x	7/18/2001	3/29/2011	11	3	3/22/2002	BZ	
T008010545	San Mateo	UNION STATION #8023	SOUTH SAN FRANCISCO	37 51821255	-122.42545	LUST Cleanup Site	8/19/2003	Open - Verification Monitoring	Open	1/18/2022	x	11/13/2006	12/1/1995	4	2	2/28/2002	MTBE	
T008010553	San Mateo	CHEVRON 9-7863	SAN MATEO	37 54822234	-122.3249187	LUST Cleanup Site	12/17/1992	Open - Verification Monitoring	Open	3/20/2014	x	7/21/1999	12/25/2005	7	2	12/5/2001	BZ	
T008010566	San Mateo	UNOCAL STATION #3885	BURLINGAME	37 58871079	-122.363017	LUST Cleanup Site	3/21/1991	Completed - Case Closed	Closed	7/27/2021	x	11/21/1994	11/23/1994	1	1	9/7/2001	MTBE	
T008010568	San Mateo	UNOCAL STATION #8023	DAILY CITY	37 69551366	-122.4683189	LUST Cleanup Site	11/28/1993	Completed - Case Closed	Closed	1/23/2013	x	7/28/1988	8/1/1988	8	1	9/25/2004	BZ	
T008010569	San Mateo	UNOCAL STATION #869	SAN MATEO	37 57343071	-122.3116004	LUST Cleanup Site	3/21/1990	Completed - Case Closed	Closed	8/24/2016	x	5/1/1990	3/30/2006	17	2	9/12/2001	BZ	
T008010570	San Mateo	UNOCAL STATION #8070	BURLINGAME	37 58454043	-122.363137	LUST Cleanup Site	5/31/1987	Open - Verification Monitoring	Open	11/1/2022	x	5/1/1998	5/31/1998	1	1	10/21/2001	BZ	
T008010575	San Mateo	UNOCAL STATION #3758	BURLINGAME	37 56885956	-122.3630736	LUST Cleanup Site	4/27/1988	Open - Remediation	Open	1/16/2016	x	3/30/2014	34/2014	1	1	1/16/2001	MTBE	
T008010579	San Mateo	UNOCAL STATION #1020	SOUTH SAN FRANCISCO	37 65542992	-122.4081659	LUST Cleanup Site	8/11/1987	Completed - Case Closed	Closed	4/16/2012	x	8/31/1987	31/6/2000	14	2	11/2/2001	MTBE	
T008010584	San Mateo	UNOCAL STATION #3076	MILLBRAE	37 58848172														

T060300090	Santa Barbara	Monterey Water District	Monterey	34.43927375	-116.6334418	LUST Cleanup Site	1/18/1989	Completed - Case Closed	Closed	10/4/2013	x	2/1/1998	6/12/2005	8	1	3/1/1992	7/1/1995	4	2	10/3/2001	BZ	
T060300094	Santa Barbara	Elmore Canal	Goleta	34.4517734	-116.186217	LUST Cleanup Site	1/18/1989	Completed - Case Closed	Closed	11/8/2001	x	x	x	x	1	3/6/1992	11/10/2004	7	1	11/2/2001	BZ	
T060300095	Santa Barbara	Lompoc Ford	Goleta	34.4146657	-120.4573796	LUST Cleanup Site	4/17/1988	Completed - Case Closed	Closed	3/27/2014	x	x	11/7/1991	x	1	11/7/1991	x	1	11/7/2003	BZ		
T060300113	Santa Barbara	Excelsi Arco	Santa Barbara	34.42481381	-119.8626304	LUST Cleanup Site	2/13/1992	Completed - Case Closed	Closed	10/24/2012	x	x	6/25/2003	3/30/2009	7	2	10/3/2007	10/31/2007	10	1	10/24/2001	MTBE
T060300114	Santa Barbara	Santa Barbara Texaco	Santa Barbara	34.4186789	-119.776881	LUST Cleanup Site	7/31/1991	Completed - Case Closed	Closed	11/9/2005	x	x	6/11/2003	77/2005	1	1	11/7/2003	x	1	11/7/2003	MTBE	
T060300115	Santa Barbara	Cito Corp	SANTA BARBARA	34.42048158	-119.6867446	LUST Cleanup Site	3/14/1990	Completed - Case Closed	Closed	7/9/2007	x	x	1/1/1996	11/26/1997	2	1	11/1996	11/26/1997	2	1	9/22/2001	BZ
T060300119	Santa Barbara	Brian's Auto Body	Goleta	34.46729922	-120.3735239	LUST Cleanup Site	9/24/1991	Open - Eligible for Closure	Open	7/5/2022	x	x	6/14/2012	6/26/2012	1	1	6/14/2012	6/26/2012	1	1	10/3/2001	BZ
T060300131	Santa Barbara	Santa Maria	Santa Maria	34.89263198	-120.4811983	LUST Cleanup Site	1/25/1989	Completed - Case Closed	Closed	12/23/2009	x	x	4/7/2001	6/30/2004	4	2	4/7/2001	6/30/2004	4	2	14/02/2002	BZ
T060300139	Santa Barbara	American Contracting Service	Santa Barbara	34.43959179	-119.7620138	LUST Cleanup Site	2/1/1991	Open - Eligible for Closure	Open	11/22/2021	x	x	11/20/203	101/2008	6	1	7/15/2003	4/21/2008	6	1	31/3/2002	BZ
T060300147	Santa Barbara	S.B. County Fire Station #13	SE COUNTY	34.33872421	-119.7759589	LUST Cleanup Site	7/11/1988	Completed - Case Closed	Closed	9/7/2011	x	x	45/2000	33/12/06	5	1	1/1/1991	11/2/2004	14	2	11/18/2001	MTBE
T060300149	Santa Barbara	S-2 Server #10100	Goleta	34.58746453	-120.5741293	LUST Cleanup Site	5/10/1992	Completed - Case Closed	Closed	9/10/2012	x	x	6/10/2002	6/1/2003	1	1	6/10/2002	6/1/2003	1	1	12/30/2003	BZ
T060300159	Santa Barbara	S.B. City Fire Station #5	Santa Barbara	34.42519972	-119.7222464	LUST Cleanup Site	2/15/1989	Completed - Case Closed	Closed	4/10/2014	x	x	5/1/1997	6/30/1998	2	1	5/1/1997	10/31/1997	1	1	11/15/2002	BZ
T060300167	Santa Barbara	Shell Fairview	Goleta	34.4414533	-119.8308241	LUST Cleanup Site	2/22/1988	Completed - Case Closed	Closed	1/8/2014	x	x	6/18/2012	6/18/2012	1	1	10/24/1994	12/15/1998	3	1	11/20/2001	MTBE
T060300168	Santa Barbara	Agri-Turf Supplies	Santa Barbara	34.4770291	-119.6832098	LUST Cleanup Site	7/31/1989	Completed - Case Closed	Closed	15/9/2015	x	x	6/18/2012	6/18/2012	1	1	6/18/2012	6/18/2012	1	1	9/21/2001	MTBE
T060300168	Santa Barbara	Mobile Oil No 11-ILC	Santa Barbara	34.42654839	-119.7194016	LUST Cleanup Site	2/31/1989	Completed - Case Closed	Closed	8/21/2013	x	x	5/1/2003	6/30/2003	1	1	1/1/1992	12/31/1995	4	1	12/5/2001	MTBE
T060300170	Santa Barbara	Goleta Corporation	Goleta	34.43902042	-119.8208307	LUST Cleanup Site	1/15/1997	Completed - Case Closed	Closed	12/20/2012	x	x	3/20/2009	3/30/2007	8	1	4/1/2002	5/31/2002	1	1	10/24/2001	MTBE
T060300181	Santa Barbara	GAVITO VILLAGE	GOLETA	34.47439908	-120.2141006	LUST Cleanup Site	6/29/1989	Completed - Case Closed	Closed	4/10/2012	x	x	4/16/1991	2/28/1993	3	1	4/16/1991	2/28/1993	3	1	13/02/2002	BZ
T060300183	Santa Barbara	Mobile Oil ss#18-18	Santa Barbara	34.45131974	-119.7611009	LUST Cleanup Site	8/25/1985	Open - Remediation	Open	10/15/2016	x	x	12/1/2003	12/26/1994	4	1	6/30/1994	12/26/1996	3	1	10/10/2001	BZ
T060300189	Santa Barbara	TOSCO - 76 ss #8081	Santa Barbara	34.44016362	-119.7295196	LUST Cleanup Site	1/25/1989	Completed - Case Closed	Closed	9/5/2013	x	x	8/1/1992	6/26/2003	12	2	8/1/1992	6/26/2003	12	2	11/26/2001	MTBE
T060300203	Santa Barbara	Chemtron ss #9-2397	Buellton	34.61127967	-120.1866652	LUST Cleanup Site	9/14/1989	Completed - Case Closed	Closed	11/5/2014	x	x	1/1/2004	7/30/2003	1	2	31/2/2002	7/30/2003	1	2	12/5/2001	MTBE
T060300225	Santa Barbara	Mackenzie Metal	Santa Barbara	34.44058843	-119.7312245	LUST Cleanup Site	12/31/1991	Completed - Case Closed	Closed	11/2/2012	x	x	6/3/2004	2/24/2006	3	1	6/1/2006	9/1/2006	3	1	22/2/2002	MTBE
T060300233	Santa Barbara	CHEVRON #9-2444	Santa Barbara	34.42910903	-119.6946504	LUST Cleanup Site	3/29/1993	Completed - Case Closed	Closed	9/5/2014	x	x	31/2000	6/30/2005	6	2	6/1/2003	10/13/2009	6	2	12/5/2001	BZ
T060300238	Santa Barbara	Andrews Automotive	Santa Barbara	34.42128048	-119.6790224	LUST Cleanup Site	11/14/1992	Completed - Case Closed	Closed	3/26/2014	x	x	9/24/2012	9/29/2012	1	1	9/24/2012	9/29/2012	1	1	12/12/2001	MTBE
T060300242	Santa Barbara	TOSCO - 76 ss#113	Caripetaria	34.40438622	-119.5269915	LUST Cleanup Site	11/10/1989	Completed - Case Closed	Closed	28/2/2013	x	x	12/2/1991	4/26/2009	19	4	4/1/2002	5/31/2002	1	1	10/30/2001	MTBE
T060300256	Santa Barbara	Kiaae Brain Automotive	Santa Barbara	34.44038323	-119.7943599	LUST Cleanup Site	12/6/1988	Completed - Case Closed	Closed	12/20/2012	x	x	3/20/2009	3/30/2007	8	1	4/1/2002	5/31/2002	1	1	9/5/2001	BZ
T060300340	Santa Barbara	Goleta Water District	Goleta	34.43685647	-119.7654503	LUST Cleanup Site	8/21/1988	Completed - Case Closed	Closed	6/30/2015	x	x	7/16/1999	4/17/2001	3	3	9/1/1999	4/17/2001	3	3	10/10/2001	BZ
T060300340	Santa Barbara	ARCO #1580	Caripetaria	34.39634206	-119.5122057	LUST Cleanup Site	7/20/1988	Completed - Case Closed	Closed	5/22/2012	x	x	12/1/2006	1/30/2009	4	1	9/1/1990	6/30/2006	17	2	12/10/2001	MTBE
T060300346	Santa Barbara	Chest Motors Inc	Santa Barbara	34.41369969	-119.6952474	LUST Cleanup Site	6/11/1988	Completed - Case Closed	Closed	4/29/2010	x	x	11/20/2012	6/12/2012	1	1	3/2/2010	8/26/2012	3	2	12/20/2001	MTBE
T060300351	Santa Barbara	Corner Store	Santa Ynez	34.61079128	-120.0820032	LUST Cleanup Site	8/6/1999	Completed - Case Closed	Closed	12/13/2012	x	x	11/20/2012	6/12/2012	1	1	3/2/2010	8/26/2012	3	2	12/20/2001	MTBE
T060300355	Santa Barbara	Mission Linn Supply	Caripetaria	34.4271775	-119.6863017	LUST Cleanup Site	9/11/1989	Completed - Case Closed	Closed	12/17/2012	x	x	11/1/2003	12/1/2011	19	2	8/1/2004	9/31/2006	3	2	12/3/2001	MTBE
T060300352	Santa Barbara	Chemtron ss#9-3005	Caripetaria	34.40490194	-119.5305094	LUST Cleanup Site	2/11/1988	Completed - Case Closed	Closed	12/9/2010	x	x	2/1/1998	5/31/1998	1	1	9/1/2004	9/31/2006	3	2	11/30/2001	MTBE
T060300360	Santa Barbara	Lompoc Unified School District	Lompoc	34.65994943	-120.44992	LUST Cleanup Site	9/11/1988	Completed - Case Closed	Closed	5/9/2012	x	x	11/2/1993	10/31/2011	19	2	6/21/2001	6/16/2005	5	3	3/22/2002	BZ
T060300365	Santa Barbara	TOSCO - 76 Station #5303	Goleta	34.42187743	-119.6401242	LUST Cleanup Site	9/11/1988	Completed - Case Closed	Closed	12/19/2012	x	x	11/2/1993	10/31/2011	19	2	6/21/2001	6/16/2005	5	3	3/22/2002	BZ
T060300366	Santa Barbara	Santa Ynez	Santa Ynez	34.42051984	-120.082199	LUST Cleanup Site	9/18/1987	Completed - Case Closed	Closed	12/9/2010	x	x	10/17/2007	10/17/2007	1	1	10/17/2007	10/17/2007	1	1	12/20/2001	BZ
T060300369	Santa Barbara	Thrifty OilCircle K	Santa Barbara	34.44012506	-119.7583021	LUST Cleanup Site	1/11/1986	Completed - Case Closed	Closed	3/26/2014	x	x	11/1/1993	3/31/2003	11	2	7/1/1998	12/31/2002	15	3	12/20/2001	BZ
T060300391	Santa Barbara	USA Petroleum ss #259 (Lompoc)	Lompoc	34.65186993	-120.4681422	LUST Cleanup Site	8/11/1988	Open - Eligible for Closure	Open	12/19/2012	x	x	4/15/2004	4/15/2014	1	1	4/15/2004	4/15/2014	1	1	2/26/2002	MTBE
T060300353	Santa Barbara	La Cumbe Mini Mart	Santa Barbara	34.46115513	-119.7519508	LUST Cleanup Site	1/12/1989	Completed - Case Closed	Closed	12/9/2016	x	x	1/1/1991	13/1/1996	6	2	5/1/1993	12/31/2010	18	2	9/11/2001	BZ
T060300355	Santa Barbara	Hamilton's Radiator	Lompoc	34.63871951	-120.4555196	LUST Cleanup Site	2/16/1988	Completed - Case Closed	Closed	5/17/2012	x	x	4/1/1994	10/1/1997	4	1	7/1/1998	8/1/1999	2	1	9/26/2001	ND
T060300359	Santa Barbara	Mission Linn Supply	Santa Barbara	34.42227493	-119.6845362	LUST Cleanup Site	9/11/1988	Completed - Case Closed	Closed	5/4/2012	x	x	4/1/1994	10/1/1997	4	1	7/1/1998	8/1/1999	2	1	9/26/2001	ND
T060300357	Santa Barbara	CHEVRON #9-4419	Goleta	34.43103786	-119.854281	LUST Cleanup Site	28/1/1991	Completed - Case Closed	Closed	11/11/2013	x	x	9/10/2008	10/20/2008	1	1	9/10/2008	10/20/2008	1	1	9/25/2001	BZ
T060300362	Santa Barbara	Thrifty Oil Circle K	Goleta	34.4343626	-119.8269932	LUST Cleanup Site	3/1/1988	Completed - Case Closed	Closed	11/11/2013	x	x	4/1/1996	11/21/2006	21	3	4/1/1996	11/21/2006	21	3	11/14/2001	BZ
T060300371	Santa Barbara	J.B. Dewar	Guadalupe	34.95560243	-120.5741632	LUST Cleanup Site	12/7/1986	Completed - Case Closed	Closed	4/19/2018	x	x	2/25/1994	3/31/1995	2	1	7/18/2001	3/31/1995	2	1	7/18/2001	BZ
T060300384	Santa Barbara	Chemtron ss #9-2805	Goleta	34.44204505	-119.8309741	LUST Cleanup Site	2/15/1998	Completed - Case Closed	Closed	7/28/2017	x	x	11/6/2002	11/6/2002	1	1	11/6/2002	11/6/2002	1	1	9/4/2001	MTBE
T060300384	Santa Barbara	Neill Oil Station #11-409A	Santa Barbara	34.42885383	-119.7404986	LUST Cleanup Site	10/12/1982	Open - Verification Monitoring	Open	10/12/2012	x	x	11/19/2001	11/19/2001	1	1	11/19/2001	11/19/2001	1	1	9/4/2001	MTBE
T060300388	Santa Barbara	ExxonMobil Oil Corp ss#18-HFK	Santa Barbara	34.43900126	-119.7559912	LUST Cleanup Site	8/30/1988	Completed - Case Closed	Closed	5/10/2015	x	x	8/1/1994	6/28/1995	2	1	7/28/1994	5/6/1997	4	1	17/02/2002	BZ
T060300393	Santa Barbara	Circle K Store #2211281 (Former ExxonMobil ss#18-AF)	Santa Barbara	34.43591929	-119.7897195	LUST Cleanup Site	5/7/1989	Completed - Case Closed	Closed	6/6/2015	x	x	5/1/1997	10/20/2008	12	3	5/1/1997	10/20/2008	12	3	31/3/2002	MTBE
T060300396	Santa Barbara	ss #18-BRC	Goleta	34.6333626	-120.4743534	LUST Cleanup Site	12/15/1988	Completed - Case Closed	Closed	4/14/2017	x	x	8/1/1993	3/30/1999	4	1	8/1/1993	3/30/1999	4	1	11/26/2001	MTBE
T060300399	Santa Barbara	TOSCO - 76 STATION #6005	Goleta	34.44423257	-119.7889748	LUST Cleanup Site	12/15/1988	Completed - Case Closed	Closed	18/2/2007	x	x	5/18/2005	5/21/2005	1	1	5/18/2005	5/21/2005	1	1	9/11/2001	BZ
T060300400	Santa Barbara	TOSCO - 76 ss #4081	Santa Barbara	34.48111026	-119.7620201	LUST Cleanup Site	3/12/1998	Completed - Case Closed	Closed	12/18/2008	x	x	12/17/2006	12/22/2006	1	1	12/17/2006	12/22/2006	1	1	11/28/2001	MTBE
T060300401	Santa Barbara	TOSCO - 76 ss#4074	Santa Barbara	34.40187951	-119.7233375	LUST Cleanup Site	8/11/1988	Completed - Case Closed	Closed	10/19/2014	x	x	11/1/1981	12/31/1995	8	1	11/1/1981	12/31/1995	8	1	11/27/2001	MTBE
T060300403	Santa Barbara	Unocal ss#4005	Santa Barbara	34.40213968	-119.7505544	LUST Cleanup Site	8/11/1988	Completed - Case Closed	Closed	12/9/2016	x	x	5/1/1990	12/31/2012	23	3	5/1/1990	12/31/2012	23	3	9/11/2001	BZ
T060300403	Santa Barbara	Unocal ss#4050	Goleta	34.44115513	-119.8303099	LUST Cleanup Site	9/11/1988	Completed - Case Closed	Closed	11/16/2004	x	x	7									

7000000042	San Jose	Clark/H	San Jose	37.363368	-121.882707	LUST Cleanup Site	6/19/1985	Completed - Case Closed	Closed	9/12/2007	x	x	5/15/1996	4/19/1998	2/10/2004	7	1	9/14/2001	BZ			
7000000043	San Clara	CO-OPT SERVICE STATION	PAOLO ALTO	37.41707256	-122.1295495	LUST Cleanup Site	6/19/1991	Completed - Case Closed	Closed	9/12/2007	x	x	5/15/1996	4/19/1998	2/10/2004	7	1	2/26/2002	BZ			
7000000044	San Jose	JOHN COLENDACH AUTOMOTIVE	San Jose	37.34374848	-121.9163986	LUST Cleanup Site	9/5/1989	Open - Eligible for Closure	Open	3/25/2018	x	x	4/13/2002	8/5/2002				3/12/2004	BZ			
7000000045	San Jose	COMBES AUTO REPAIR	PAOLO ALTO	37.41944444	-122.1337168	LUST Cleanup Site	8/31/1991	Completed - Case Closed	Closed	9/12/2007	x	x	5/15/1996	4/19/1998	2/10/2004	7	1	9/14/2001	BZ			
7000000046	San Jose	COMMERCIAL FUELING CORPORATION	San Jose	37.36026575	-121.9038677	LUST Cleanup Site	5/21/1990	Open - Eligible for Closure	Open	12/10/2020	x	x	8/17/1992	4/12/2000	9	2	8/17/1992	4/12/2000	BZ			
7000000047	San Jose	COUNTRY CLUBS	San Jose	37.42125791	-121.6262634	LUST Cleanup Site	22/1/1990	Open - Remediation	Open	7/5/2022	x	x	2/1/1990	1/1/1990	1	1	3/25/2018	1/1/1990	BZ			
7000000048	San Jose	DARIANO & SONS	San Jose	37.32288623	-121.8594488	LUST Cleanup Site	6/19/1985	Open - Verification Monitoring	Open	6/30/2016	x	x	8/17/1992	4/12/2000	9	2	8/17/1992	4/12/2000	BZ			
7000000049	San Jose	WORLD OIL #79	San Jose	37.2993695	-121.8332934	LUST Cleanup Site	21/11/1990	Completed - Case Closed	Closed	4/9/2013	x	x	9/9/2003	3/24/2009	7	1	9/30/2003	6/20/2005	BZ			
7000000050	San Jose	WORLD OIL #336	San Jose	37.2391958	-121.851026	LUST Cleanup Site	1/1/1990	Completed - Case Closed	Closed	12/15/2001	x	x	9/1/1990	6/25/2003	9	1	11/26/2001	6/25/2003	MTBE			
7000000051	San Jose	DON BOCCI MOBIL SERVICE	San Jose	37.33512	-121.906514	LUST Cleanup Site	1/9/1985	Completed - Case Closed	Closed	4/6/2009	x	x	11/1/2002				7/998	1	9/16/2004	BZ		
7000000054	San Jose	UNOCAL #5250	SANTA CLARA	37.3660033	-121.9411167	LUST Cleanup Site	1/1/1987	Completed - Case Closed	Closed	1/15/2009	x	x	3/17/2003	9/25/2004	2	1	10/27/2004	10/27/2004	BZ			
7000000055	San Jose	CHEVRON #9-4300	SANTA CLARA	37.1578471	-121.078471	LUST Cleanup Site	1/1/1987	Completed - Case Closed	Closed	1/15/2009	x	x	3/17/2003	9/25/2004	2	1	10/27/2004	10/27/2004	BZ			
7000000056	San Jose	EXXON #7-3304	SUNNYSIDE	37.3722291	-122.0485783	LUST Cleanup Site	1/15/1987	Open - Remediation	Open	3/4/2004	x	x	7/11/1993	3/24/2004	12	1	12/1/1992	5/26/2002	11	1	9/21/2001	MTBE
7000000056	San Jose	EXXON #7-3306	San Jose	37.3202257	-122.82636	LUST Cleanup Site	8/1/1987	Completed - Case Closed	Closed	7/24/2008	x	x	3/4/1993	6/12/2005	13	1	8/1/1987		9/21/2001	MTBE		
7000000056	San Jose	EXXON #7-3332	San Jose	37.229718	-121.984765	LUST Cleanup Site	1/2/1987	Completed - Case Closed	Closed	10/23/2009	x	x	8/21/1996	1/12/2002	7	1	10/23/2009		9/21/2001	MTBE		
7000000056	San Jose	EXXON #7-3964	San Jose	37.403244	-121.881286	LUST Cleanup Site	4/10/1986	Completed - Case Closed	Closed	10/28/2009	x	x	11/28/1994	4/29/2004	11	1	11/28/1994	5/1/1995	2	1	9/1/2001	MTBE
7000000057	San Jose	EXXON #7-71	Campbell	37.240781	-121.96527	LUST Cleanup Site	8/23/1986	Completed - Case Closed	Closed	12/26/2009	x	x	5/12/1989	1/28/1997	4	1	5/12/1989	1/28/1997	9	1	11/30/2001	MTBE
7000000058	San Jose	EXXON #7-0113	PAOLO ALTO	37.4196183	-122.10366	LUST Cleanup Site	12/1/1987	Completed - Case Closed	Closed	1/15/2009	x	x	11/27/2001	9/13/2001	1	1	11/27/2001		9/13/2001	MTBE		
7000000058	San Jose	REGAL #423	San Jose	37.3233988	-121.8914488	LUST Cleanup Site	5/25/1988	Open - Assessment & Interim Remedial Action	Open	11/21/2017	x	x	4/18/1991				4/18/1991		8009	1	12/25/2001	BZ
7000000058	San Jose	REGAL #424 (EXXON)	San Jose	37.363424	-121.8594488	LUST Cleanup Site	11/25/1986	Completed - Case Closed	Closed	10/23/2009	x	x	9/1/1990	6/25/2003	9	1	11/24/2001		9/13/2001	MTBE		
7000000059	San Jose	EXXON #7-0254	San Jose	37.3508078	-121.8139786	LUST Cleanup Site	1/1/1987	Open - Remediation	Open	10/28/2005	x	x	10/11/1994	6/25/2002	7	1	10/11/1994	3/21/1995	2	1	11/16/2001	BZ
7000000059	San Jose	FILLEM FATH	PAOLO ALTO	37.426952	-122.159626	LUST Cleanup Site	10/27/1986	Completed - Case Closed	Closed	9/17/2010	x	x	6/15/1995	3/5/2004	10	2	6/15/1995	12/28/2005	11	2	9/16/2001	MTBE
7000000059	San Jose	THE FLYING YARD	SUNNYSIDE	37.3714488	-122.038621	LUST Cleanup Site	11/8/1986	Completed - Case Closed	Closed	11/8/2011	x	x	6/11/1996	8/27/2003	8	1	6/11/1996	8/27/2003	8	1	2/28/2002	BZ
7000000067	San Jose	GAS AND SHOP	San Jose	37.3555739	-121.859193	LUST Cleanup Site	8/19/1986	Completed - Case Closed	Closed	8/16/2021	x	x	3/21/2004	9/30/2004	1	1	8/16/2021		9/30/2004	MTBE		
7000000067	San Jose	FIGONE GREGORY TRUST	San Jose	37.3071	-121.8838	LUST Cleanup Site	2/27/1991	Completed - Case Closed	Closed	9/18/2017	x	x	2/1/1999	8/25/2003	5	1	6/1/1996	9/1/2001	6	2	11/6/2002	BZ
7000000067	San Jose	FIGONE GREGORY TRUST (Former Teesco)	San Jose	37.3514586	-121.827758	LUST Cleanup Site	2/28/1991	Completed - Case Closed	Closed	8/30/2017	x	x	2/1/1999	8/25/2003	5	1	6/1/1996	9/1/2001	6	2	11/6/2002	BZ
7000000068	San Jose	GILMORE FLOWERS	SARATOGA	37.29040025	-122.031664	LUST Cleanup Site	10/9/1988	Completed - Case Closed	Closed	3/8/2007	x	x	12/14/1999	8/25/2004	6	1	11/14/1999	8/9/2004	1	1	12/12/2004	BZ
7000000068	San Jose	GILMORE FLOWERS	San Jose	37.3487659	-121.8594488	LUST Cleanup Site	1/15/1986	Open - Site Assessment	Open	12/31/2020	x	x	6/18/2004				6/18/2004		1	1	9/8/2005	MTBE
7000000071	San Jose	EXXON #7-0273	SANTA CLARA	37.3616751	-121.952135	LUST Cleanup Site	11/25/1986	Completed - Case Closed	Closed	8/30/21	x	x	9/8/2010	9/10/2010	1	1	4/26/2010	4/26/2010	1	1	9/21/2001	MTBE
7000000078	San Jose	SJ AIRPORT MAINTENANCE AREA	San Jose	37.3584917	-121.916565	LUST Cleanup Site	4/14/1990	Completed - Case Closed	Closed	3/21/2012	x	x	4/14/1990	9/14/2010	1	1	4/26/2010	4/26/2010	1	1	12/26/2001	MTBE
7000000078	San Jose	CP #12341	San Jose	37.393121	-121.812125	LUST Cleanup Site	2/1/1987	Completed - Case Closed	Closed	2/1/1987	x	x	7/5/1993	11/5/1996	4	1	7/5/1993	11/8/2001	19	2	10/23/2001	BZ
7000000078	San Jose	JOHNS TUNE-UP	San Jose	37.3273412	-121.911075	LUST Cleanup Site	8/12/1987	Completed - Case Closed	Closed	9/12/2016	x	x	4/15/2002				4/15/2002		7998	1	10/23/2001	BZ
7000000080	San Jose	ESTABE CARPENTER LAHMAN	SANTA CLARA	37.351823	-121.95385	LUST Cleanup Site	1/30/1985	Completed - Case Closed	Closed	4/21/2010	x	x	12/31/1996	8/31/2002	7	1	12/31/1996	8/31/2002	7	1	3/7/2002	BZ
7000000080	San Jose	BP OIL #1225	San Jose	37.3589138	-121.989138	LUST Cleanup Site	7/8/1986	Completed - Case Closed	Closed	12/20/2015	x	x	11/7/2001	1/17/2001	1	1	11/7/2001		1	1	3/5/2006	MTBE
7000000093	San Jose	MOBIL (B11227)	MILPITAS	37.4048623	-121.903251	LUST Cleanup Site	9/27/1984	Completed - Case Closed	Closed	12/30/2013	x	x	12/30/1992	3/1/1993	2	1	3/16/2011	11/8/2012	2	3	12/31/2001	BZ
7000000093	San Jose	MOBIL SERVICE STATION 64-LR (EXXONMOBIL)	SANTA CLARA	37.3252621	-122.031664	LUST Cleanup Site	12/24/1984	Completed - Case Closed	Closed	9/8/2016	x	x	12/11/1993	4/1/1996	4	1	8/5/2002		1	1	8/5/2002	BZ
7000000093	San Jose	MOBIL #11228	San Jose	37.3699383	-121.847245	LUST Cleanup Site	10/29/1986	Completed - Case Closed	Closed	10/29/2015	x	x	12/11/1993	4/1/1996	4	1	8/5/2002		1	1	8/5/2002	BZ
7000000093	San Jose	MOBIL BP #11209	San Jose	37.27622129	-121.841938	LUST Cleanup Site	12/30/1985	Completed - Case Closed	Closed	22/7/2012	x	x	8/7/2000	11/20/2009	10	1	2/12/2002	3/30/2006	5	2	2/13/2002	MTBE
7000000093	San Jose	BP OIL #1252	SUNNYSIDE	37.3714582	-122.023938	LUST Cleanup Site	11/12/1985	Completed - Case Closed	Closed	12/1/1985	x	x	11/19/91	3/1/1996	3	2	11/19/91	3/1/1996	3	2	12/20/2004	MTBE
7000000093	San Jose	BP OIL #1259	LOS GATOS	37.355619	-121.877638	LUST Cleanup Site	11/25/1986	Completed - Case Closed	Closed	22/5/2011	x	x	21/4/1992	3/30/2008	17	1	8/22/2003		1	1	12/21/2001	MTBE
7000000094	San Jose	MOBIL (B11228) (FORMER)	San Jose	37.25128731	-121.875075	LUST Cleanup Site	3/31/1988	Completed - Case Closed	Closed	5/19/2009	x	x	4/29/2003	10/20/2003	1	1	5/19/2009		1	1	11/21/2001	MTBE
7000000094	San Jose	BP #1128 (FORMER)	San Jose	37.340271	-121.832452	LUST Cleanup Site	5/16/1986	Completed - Case Closed	Closed	5/16/2012	x	x	11/12/2005	5/20/2004	5	1	5/16/2012		5/20/2004	MTBE		
7000000094	San Jose	QUALITY TUNE-UP #3	San Jose	37.3021851	-121.873784	LUST Cleanup Site	1/1/1989	Completed - Case Closed	Closed	5/16/2012	x	x	11/20/2005	10/20/2004	5	1	5/16/2012		5/20/2004	MTBE		
7000000097	San Jose	Quality Tune-Up #6	San Jose	37.3384287	-121.843157	LUST Cleanup Site	11/19/1984	Completed - Case Closed	Closed	4/21/2010	x	x	12/18/2008	12/20/2009	2	1	4/21/2010		1	1	2/4/2008	BZ
7000000104	San Jose	CHANDON AUTO SERVICE	San Jose	37.340271	-121.88858	LUST Cleanup Site	5/8/1986	Completed - Case Closed	Closed	5/8/2012	x	x	5/8/1986				5/8/2012		1	1	3/5/2006	MTBE
7000000104	San Jose	ROTTEN ROBBIE #39	SANTA CLARA	37.3384515	-121.937744	LUST Cleanup Site	2/23/1988	Completed - Case Closed	Closed	9/12/2016	x	x	7/19/1988	7/19/1988	1	1	7/19/1988	7/19/1988	1	1	4/19/2002	BZ
7000000131	San Jose	ROTTEN ROBBIE #39	Santa Clara	37.3384515	-121.937744	LUST Cleanup Site	11/20/1984	Completed - Case Closed	Closed	9/8/2002	x	x	11/11/1991	4/1/2000	11	1	11/11/1991		1	1	11/1/2002	BZ
7000000131	San Jose	ROTTEN ROBBIE #41	San Jose	37.342182	-121.832594	LUST Cleanup Site	7/21/1986	Completed - Case Closed	Closed	10/26/2017	x	x	7/21/1986				7/21/1986		1	1	11/6/2001	MTBE
7000000135	San Jose	ROTTEN ROBBIE #24	San Jose	37.3594257	-121.8227014	LUST Cleanup Site	2/23/1988	Completed - Case Closed	Closed	10/6/2021	x	x	3/17/1991	3/1/2000	10	1	2/3/1992	11/5/1993	2	1	11/30/2001	MTBE
7000000140	San Jose	ROY'S MOBIL	San Jose	37.3485672	-121.894705	LUST Cleanup Site	12/28/1990	Completed - Case Closed	Closed	4/16/2019	x	x	6/16/2014	6/16/2014	1	1	5/23/2014	5/23/2014	1	1	9/28/2005	BZ
7000000140	San Jose	SAN JOSE SPORTSCENTER	San Jose	37.35814252	-121.918274	LUST Cleanup Site	3/20/1986	Completed - Case Closed	Closed	3/20/2018	x	x	10/1/1989	8/31/1998	20	1	10/1/1989	8/31/1998	20	1	2/12/2002	BZ
7000000140	San Jose	SAN JOSE AIRPORT/TECHNOLOGY	San Jose	37.35418225	-121.909695	LUST Cleanup Site	5/19/1988	Completed - Case Closed	Closed	8/23/2011	x	x	8/4/1993	8/2/2004	3	1	8/13/1993	8/28/1993	1	1	19/2007	BZ
7000000140	San Jose	TECH-FAST EAST YARD	San Jose	37.3562329	-121.891157	LUST Cleanup Site	5/2/1986	Completed - Case Closed	Closed	5/2/1986	x	x	5/2/1986				5/2/1986		1	1	5/2/1986	BZ
7000000140	San Jose	SHELL - 1205 WINCHESTER	San Jose	37.3063653	-121.950404	LUST Cleanup Site	12/15/1993	Completed - Case Closed	Closed	12/16/2016	x	x	8/11/1991	12/15/2003	13	1	4/1/2002	10/1/2006	5	1	10/12/2001	MTBE
7000000143	San Jose	SHELL - 110 N RENGSTORFF	MOUNTAIN VIEW	37.4036069	-122.027044	LUST Cleanup Site	1/14/1983	Completed - Case Closed	Closed	4/15/2015	x	x	9/20/1991	6/28/1994	4	1	9/20/1991	6/28/1994	4			

T08050262	Santa Clara	CUPERTINO CLEAN SCENE	CUPERTINO	37 32540833	-122 026763	UST Cleanup Site	5/15/1998	Completed - Case Closed	Closed	6/15/2011	x	8/8/2003	11/30/2004	2	1	11/3/2008	4/25/2010	3	5	12/22/2003	BZ		
T08050269	Santa Clara	SAN JACOB	SAN JACOB	-121 802621	UST Cleanup Site	6/28/98	Completed - Case Closed	Closed	6/28/2001	x	x	8/23/2003	8/23/2003	1	1	8/23/2003	8/23/2003	1	1	11/15/2001	MTBE		
T08050273	Santa Clara	CHEVRON #9-4783	SAN JOSE	37 270571	-121 95955	UST Cleanup Site	2/23/1998	Completed - Case Closed	Closed	2/23/2006	x	x	2/23/2006	2/23/2006	2	1	2/23/2006	2/23/2006	2	1	11/15/2001	MTBE	
T08050284	Santa Clara	WORLD OIL #62	MORGAN HILL	37 1215652	-121 847891	UST Cleanup Site	4/7/1988	Completed - Case Closed	Closed	9/10/2015	x	x	8/23/2000	7/30/2011	5	1	9/28/2011	7/30/2011	1	1	9/28/2011	BZ	
T08050215	Santa Clara	MORGAN HILL - 17905 MONTEREY	MORGAN HILL	37 1352216	-121 858884	UST Cleanup Site	12/1/1988	Completed - Case Closed	Closed	12/22/2016	x	x	11/8/1989	3/18/2003	5	1	12/10/1989	3/18/2003	1	1	12/10/1989	MTBE	
T080502195	Santa Clara	Shell	Gilroy	37 0034637	-121 551918	UST Cleanup Site	12/9/1988	Completed - Case Closed	Closed	19/2001	x	x	12/9/1988	19/2001	16	1	15/2004	15/2004	1	1	15/2004	BZ	
T080502203	Santa Clara	CHEVRON #9-6293	GILROY	36 98443025	-121 558073	UST Cleanup Site	10/9/1984	Completed - Case Closed	Closed	10/25/2010	x	x	12/27/2002	10/28/2005	4	1	9/11/2001	8/2	1	1	9/11/2001	BZ	
T080502205	Santa Clara	SHELL FOOD MART	GILROY	37 01302363	-121 570769	UST Cleanup Site	9/1/1981	Completed - Case Closed	Closed	1/13/2001	x	x	12/14/1982	8/3/1983	2	2	12/10/05	8/3/1983	2	2	12/10/05	BZ	
T080502213	Santa Clara	GAVILAN COLLEGE	UNINCORPORATED	36 8760337	-121 570264	UST Cleanup Site	9/11/1990	Completed - Case Closed	Closed	7/5/2012	x	x	5/19/1994	10/26/2010	17	2	4/28/2008	10/25/2010	3	2	9/19/2001	BZ	
T080502233	Santa Clara	UNION #697	LOS ALTOS	37 37715417	-122 114468	UST Cleanup Site	11/11/1984	Completed - Case Closed	Closed	10/15/2014	x	x	7/17/1989	8/6/2007	9	1	7/17/2000	7/30/2011	12	2	2/9/2004	BZ	
T080502284	Santa Clara	CHEVRON #9-5215	SAN JOSE	37 37473493	-122 114462	UST Cleanup Site	12/1/1988	Completed - Case Closed	Closed	8/22/2010	x	x	1/17/1989	3/1/2006	8	1	1/17/1989	3/1/2006	1	1	10/18/2001	MTBE	
T080502370	Santa Clara	SHELL	SAN JOSE	37 314381	-121 791349	UST Cleanup Site	12/16/1998	Completed - Case Closed	Closed	8/26/2005	x	x	55/2003	11/22/2004	2	1	6/17/2003	5/27/2004	2	1	10/9/2003	MTBE	
T080502376	Santa Clara	SHELL - 3751 LAFAYETTE	SANTA CLARA	37 367651	-121 853389	UST Cleanup Site	9/3/1988	Completed - Case Closed	Closed	7/27/2017	x	x	5/1/2003	13/2005	3	1	7/27/2017	13/2005	3	1	2/15/2002	MTBE	
T080502385	Santa Clara	SHELL	SAN JOSE	37 2713641	-121 854643	UST Cleanup Site	10/28/1988	Completed - Case Closed	Closed	12/22/2016	x	x	5/1/2003	11/22/2004	2	1	8/28/2003	7/27/2004	2	1	10/9/2003	MTBE	
T080502383	Santa Clara	GEORGES FUEL	SUNNYVALE	37 38270281	-122 043383	UST Cleanup Site	4/26/1988	Completed - Case Closed	Closed	18/2013	x	x	12/1/2003	6/24/2008	4	1	12/1/2003	12/6/2004	2	1	11/9/2004	MTBE	
T080502387	Santa Clara	SAN JOSE 370217 (FORMER)	SAN JOSE	37 370217	-121 917433	UST Cleanup Site	11/19/1988	Completed - Case Closed	Closed	2/2/2012	x	x	3/30/1989	4/1/1996	3	1	3/30/1989	4/1/1996	3	1	10/3/2012	ND	
T080502402	Santa Clara	SHELL - 3639 SHEL	SAN JOSE	37 276952	-121 842738	UST Cleanup Site	7/10/1988	Completed - Case Closed	Closed	9/23/2015	x	x	43/2000	11/30/2004	5	2	11/14/2001	11/30/2004	1	1	11/14/2001	MTBE	
T080502406	Santa Clara	SHELL	SAN JOSE	37 33356942	-121 914736	UST Cleanup Site	11/5/1998	Completed - Case Closed	Closed	2/19/2013	x	x	4/16/2002	12/7/2006	5	1	6/16/2003	4/29/2004	1	1	9/20/2001	MTBE	
T080502407	Santa Clara	SHELL - 1688 TULLY	SAN JOSE	37 321914	-121 825934	UST Cleanup Site	11/19/1988	Completed - Case Closed	Closed	9/21/2016	x	x	5/23/2002	8/15/2003	2	2	11/13/2001	8/15/2003	2	2	11/13/2001	MTBE	
T080502415	Santa Clara	SHELL	SAN JOSE	37 233733	-121 831088	UST Cleanup Site	11/2/1998	Completed - Case Closed	Closed	3/10/2009	x	x	11/3/2003	2/24/2004	4	1	11/3/2003	2/24/2004	2	1	12/28/2001	MTBE	
T080502415	Santa Clara	TOSCO#76	SAN JOSE	37 26631433	-121 8314	UST Cleanup Site	2/26/1998	Completed - Case Closed	Closed	9/3/2014	x	x	4/22/2002	11/23/2004	3	1	11/5/2004	10/16/2012	3	1	10/13/2003	MTBE	
T080502428	Santa Clara	SHELL	SAN JOSE	37 373548	-121 873693	UST Cleanup Site	11/19/1988	Completed - Case Closed	Closed	8/9/2010	x	x	7/8/2002	11/23/2004	2	1	11/23/2002	11/23/2004	2	1	11/23/2002	MTBE	
T080502431	Santa Clara	SHELL	SAN JOSE	37 294046	-121 913106	UST Cleanup Site	7/6/1989	Completed - Case Closed	Closed	10/29/2010	x	x	5/8/2002	11/23/2004	1	1	11/23/2002	11/23/2004	1	1	11/23/2002	MTBE	
T080502435	Santa Clara	PRICE COSTCO	SANTA CLARA	37 35740409	-121 837543	UST Cleanup Site	11/17/1998	Completed - Case Closed	Closed	4/23/2009	x	x	7/28/2003	11/11/2006	4	1	9/14/2013	8/4/2014	2	1	12/3/2002	MTBE	
T080502448	Santa Clara	ZAMORA PROPERTY	SAN JOSE	37 34079343	-121 818103	UST Cleanup Site	4/5/1991	Completed - Case Closed	Closed	9/17/2021	x	x	10/1/2001	11/1/2001	1	1	10/1/2001	11/1/2001	1	1	12/18/2003	BZ	
T080509697	Santa Clara	CHEVRON #6-1325	SAN JOSE	37 29120012	-121 921492	UST Cleanup Site	5/22/2003	Completed - Case Closed	Closed	3/12/2018	x	x	10/16/2008	8/18/2014	7	3	10/16/2008	8/18/2014	7	3	7/31/2003	MTBE	
T080509698	Santa Clara	USA PETROLEUM #202	SAN JOSE	37 23919489	-121 743452	UST Cleanup Site	6/10/2003	Completed - Case Closed	Closed	7/14/2003	x	x	11/15/2004	6/26/2009	6	1	6/26/2009	6/26/2009	6	1	6/26/2009	MTBE	
T0805113416	Santa Clara	QUI STOP MARKET #86	SAN JOSE	37 230025	-121 869916	UST Cleanup Site	3/1/2003	Completed - Case Closed	Closed	10/26/2016	x	x	12/1/2003	11/1/2003	1	1	10/26/2016	11/1/2003	1	1	6/9/2004	MTBE	
T080512923	Santa Clara	BP FACILITY #11224	MORGAN HILL	37 142811	-121 850208	UST Cleanup Site	4/29/1987	Open - Verification Monitoring	Open	4/30/2018	x	x	103/12001	12/1/1983	1	2	11/11/1983	12/1/1983	1	1	12/10/2001	BZ	
T080512642	Santa Clara	MOUNTAIN VIEW	SAN JOSE	37 3737154	-122 387334	UST Cleanup Site	7/24/2012	Open - Eligible for Closure	Open	7/24/2012	x	x	8/13/2002	4/7/2006	5	1	8/6/2001	4/7/2006	5	1	9/2/2001	MTBE	
T080512933	Santa Clara	ARC0 #5640	SAN JOSE	37 267028	-121 831104	UST Cleanup Site	2/23/2001	Completed - Case Closed	Closed	10/30/2014	x	x	41/22004	12/28/2010	7	1	41/22004	10/26/2010	7	1	6/21/2002	MTBE	
T080513232	Santa Clara	GUNTER BROTHERS	MORGAN HILL	37 13104081	-121 854551	UST Cleanup Site	9/11/1988	Completed - Case Closed	Closed	12/15/2014	x	x	7/22/2011	12/28/2011	7	1	7/22/2011	12/28/2011	7	1	12/2/2002	BZ	
T080513501	Santa Clara	SAN JOSE JET CENTER	SAN JOSE	37 36880108	-121 833868	UST Cleanup Site	9/1/1988	Completed - Case Closed	Closed	10/26/2016	x	x	34/2005	6/22/2005	1	1	6/22/2005	6/22/2005	1	1	6/22/2005	MTBE	
T080543715	Santa Clara	ARC0 #0495	CUPERTINO	37 3141901	-122 031769	UST Cleanup Site	6/20/2002	Completed - Case Closed	Closed	7/24/2013	x	x	21/9/2007	6/3/2008	2	1	37/3007	5/4/2011	5	1	12/2004	BZ	
T080543688	Santa Clara	ALKEN PROPERTY	SAN JOSE	37 314601	-121 864804	UST Cleanup Site	7/21/1992	Completed - Case Closed	Closed	11/6/2014	x	x	11/6/2014	3/27/2008	6	1	11/6/2014	3/27/2008	6	1	12/22/2004	BZ	
T080546798	Santa Clara	CHEVRON BEACON	CUPERTINO	37 32170968	-122 068239	UST Cleanup Site	9/1/1988	Open - Eligible for Closure	Open	4/30/2018	x	x	21/12/2004	11/1/2006	3	2	11/2/2004	11/1/2006	3	2	11/2/2004	MTBE	
T080549723	Santa Clara	GILROY CANNERY	GILROY	37 011264	-121 586179	Cleanup Program Site	11/20/04	Completed - Case Closed	Closed	7/1/2005	x	x	11/1/2005	11/20/05	1	1	11/1/2005	11/20/05	1	1	11/8/2005	BZ	
T080550099	Santa Clara	SHELL - 2090 THE ALAMEDA	SAN JOSE	37 343589	-121 820915	UST Cleanup Site	8/9/2002	Completed - Case Closed	Closed	12/15/2014	x	x	7/29/2003	8/3/2005	3	1	7/29/2003	8/3/2005	3	1	6/19/2003	MTBE	
T080551115	Santa Clara	SAN JOSE	SAN JOSE	37 30327441	-121 830792	UST Cleanup Site	11/6/2013	Completed - Case Closed	Closed	11/6/2013	x	x	11/6/2013	11/6/2013	1	1	11/6/2013	11/6/2013	1	1	11/6/2013	MTBE	
T080554100	Santa Clara	ANCIEWICZ PROPERTY	SAN JOSE	37 32222718	-121 873958	UST Cleanup Site	4/12/2002	Completed - Case Closed	Closed	6/17/2013	x	x	8/10/2010	11/7/2011	2	1	3/10/2006	3/10/2006	2	1	5/6/2003	BZ	
T080550113	Santa Clara	HECKER DRIVE (FORMER)	SAN JOSE	37 35781262	-121 845115	UST Cleanup Site	6/11/2003	Completed - Case Closed	Closed	11/13/2013	x	x	12/22/2008	11/13/2008	1	1	12/22/2008	11/13/2008	1	1	11/15/2004	BZ	
T080559890	Santa Clara	US MAIN POST OFFICE	SAN JOSE	37 368888	-121 884838	UST Cleanup Site	5/20/2005	Completed - Case Closed	Closed	4/9/2009	x	x	71/2005	76/2005	76/2005	1	1	5/24/2008	76/2005	1	1	5/24/2008	ND
T080575840	Santa Clara	TOSCO #11220	CUPERTINO	37 32260333	-122 014863	UST Cleanup Site	9/11/2000	Completed - Case Closed	Closed	9/23/2014	x	x	10/26/2007	6/27/2009	3	2	6/1/2005	9/30/2008	4	1	6/30/2003	BZ	
T080577145	Santa Clara	SUNNYVALE CAR SPA	SUNNYVALE	37 3871764	-121 985735	UST Cleanup Site	11/19/1988	Completed - Case Closed	Closed	9/28/2016	x	x	10/26/2007	6/27/2009	3	2	10/30/2014	1/9/2015	2	1	11/7/2004	MTBE	
T080578662	Santa Clara	SABCO GAS STATION	MORGAN HILL	37 11654757	-121 846215	UST Cleanup Site	6/1/1987	Open - Verification Monitoring	Open	9/28/2016	x	x	10/30/2014	1/9/2015	2	1	10/30/2014	1/9/2015	2	1	3/15/2004	BZ	
T080578883	Santa Clara	Alt Closures (Former)	SAN JOSE	37 34013257	-121 881781	Cleanup Program Site	9/23/2002	Open - Remediation	Open	11/3/2020	x	x	5/10/2021	5/10/2021	1	1	5/10/2021	5/10/2021	1	1	10/20/21	PCE	
T080583435	Santa Clara	WESTGATE GAS STATION CAR WASH	SAN JOSE	37 29187107	-121 867337	UST Cleanup Site	9/23/2002	Completed - Case Closed	Closed	9/23/2002	x	x	6/16/2005	9/23/2002	1	1	6/16/2005	9/23/2002	1	1	9/23/2002	MTBE	
T080583902	Santa Clara	U.S. POSTAL SERVICE	SAN JOSE	37 29120147	-121 9116204	UST Cleanup Site	1/20/1987	Completed - Case Closed	Closed	8/2/2018	x	x	11/19/85	21/1001	22	1	9/7/2011	9/7/2011	1	1	4/22/2002	BZ	
T080585105	Santa Clara	GREAT WESTERN STIMNES WESTERN CHEM	MELPITAS	37 4214323	-121 885948	Cleanup Program Site	2/21/1983	Completed - Case Closed	Closed	12/9/2018	x	x	1/14/1981	1/14/1981	22	1	11/13/2007	1/14/1981	22	1	11/13/2007	PCE	
T080585161	Santa Clara	MCKINSTRY	SANTA CLARA	37 370351	-121 850472	Cleanup Program Site	9/1/1981	Open - Remediation	Closed	10/30/2008	x	x	1/1/2008	1/1/2008	1	1	1/1/2008	1/1/2008	1	1	8/6/2002	MTBE	
T0805851842	Santa Clara	Shell	Gilroy	37 003789	-121 551572	UST Cleanup Site	1/29/1988	Completed - Case Closed	Closed	19/2001	x	x	12/9/1988	12/9/1988	1	1	12/9/1988	12/9/1988	1	1	21/5/2002	BZ	
T080585426	Santa Clara	YELCON FILTERS	SAN JOSE	37 3771778	-121 807134	Cleanup Program Site	6/15/1988	Open - Verification Monitoring	Open	6/8/2006	x	x	12/1/1985	21/1/1985	1	1	11/1/2006	21/1/1985	1	1	11/1/2006	MTBE	
T080585655	Santa Clara	CHE																					

T0609500339	Solano	BEACON # 3682 (FORMER)	DIXON	38.45641379	-121.8226812	LUST Cleanup Site	10/8/1987	Completed - Case Closed	Closed	5/20/2011	x	12/2011	12/31/2011	1	1	12/14/1990	8/4/2009	20	4	8/19/2002	MTBE
T0609500342	Solano	UNCAL CEMETERY	DIXON	38.45641379	-121.8881206	LUST Cleanup Site	3/23/1998	Completed - Case Closed	Closed	6/30/2008	x	11/15/2005	12/17/2005	1	1	11/15/2005	12/17/2005	1	1	12/17/2005	MTBE
T0609500347	Solano	BP #11245	DIXON	38.49957071	-121.8041988	LUST Cleanup Site	4/25/2010	Completed - Case Closed	Closed	11/21/2008	x	11/21/2008	2/10/2017	18	3	11/21/2008	2/10/2017	18	3	12/11/2001	BZ
T0609500387	Solano	VACAVILLE CARDOCK	VACAVILLE	38.3534907	-121.9515358	LUST Cleanup Site	12/8/1989	Completed - Case Closed	Closed	7/10/2010	x	5/20/2006	5/20/2006	1	1	1/19/1999	12/1/1999	1	1	10/8/2001	MTBE
T0609500381	Solano	VACAVILLE STOP-MARKET SHELL	VACAVILLE	38.34012984	-121.9882215	LUST Cleanup Site	11/17/1993	Completed - Case Closed	Closed	6/27/2008	x	6/27/2008	3/30/2015	10	3	6/27/2008	3/30/2015	10	3	6/26/2001	MTBE
T0609500370	Solano	BP #11244	VACAVILLE	38.38633384	-121.9332004	LUST Cleanup Site	9/28/1989	Open - Eligible for Closure	Open	12/1/2021	x	11/11/1993	4/2/2019	27	3	12/1/2021	4/2/2019	27	3	12/12/2001	BZ
T0609500372	Solano	CHEVRON (ABANDONED SHELL)	VACAVILLE	38.370703	-121.9545348	LUST Cleanup Site	6/1/1989	Completed - Case Closed	Closed	12/27/2008	x	9/1/1990	9/1/1990	1	1	11/26/2001	9/1/1990	1	1	11/26/2001	MTBE
T0609500384	Solano	BULK PLANT	RO VISTA	38.1807284	-121.6880411	LUST Cleanup Site	7/30/1987	Completed - Case Closed	Closed	6/12/2018	x	5/19/2008	7/28/2009	2	1	5/19/2008	7/28/2009	2	1	9/19/2001	BZ
T0609500395	Solano	ARCO #2007	VACAVILLE	38.36897953	-121.9543603	LUST Cleanup Site	9/15/1990	Completed - Case Closed	Closed	10/23/2015	x	12/1/1994	12/1/1994	1	1	11/26/2001	12/1/1994	1	1	11/26/2001	BZ
T0609500399	Solano	Dumret	VACAVILLE	38.3547176	-121.900007	LUST Cleanup Site	4/31/1992	Completed - Case Closed	Closed	11/27/2013	x	7/29/2009	9/23/2009	1	1	9/11/2015	6/23/2017	3	2	10/8/2001	MTBE
T0609500404	Solano	DIXON LAUNDRY	DIXON	38.45434675	-121.8240016	LUST Cleanup Site	6/24/2002	Completed - Case Closed	Closed	6/25/2012	x	9/11/2015	6/23/2017	3	2	9/11/2015	6/23/2017	3	2	9/15/2001	BZ
T0609500409	Solano	CITY CORPORATION YARD	DIXON	38.4207301	-121.8194854	LUST Cleanup Site	9/5/1991	Completed - Case Closed	Closed	5/14/2015	x	2/27/1997	5/27/2005	9	1	7/26/2010	4/12/2011	1	1	12/19/2001	BZ
T0609500410	Solano	MOBL 99-319 (DELTA DELL), Former	RO VISTA	38.1803349	-121.891467	LUST Cleanup Site	4/21/1993	Completed - Case Closed	Closed	12/18/2018	x	10/30/2002	3/4/2015	14	3	10/30/2002	3/4/2015	14	3	11/16/2001	BZ
T0609500411	Solano	RO VISTA SHELL	RO VISTA	38.1604584	-121.6222203	LUST Cleanup Site	6/27/1993	Completed - Case Closed	Closed	6/27/2018	x	11/29/2008	3/30/2015	10	3	11/29/2008	3/30/2015	10	3	11/29/2008	BZ
T0609500415	Solano	CHEVRON 99-1608	VACAVILLE	38.3402049	-121.9739001	LUST Cleanup Site	24/1/1994	Completed - Case Closed	Closed	8/6/2007	x	3/1/1995	3/1/1995	1	1	10/22/2001	3/1/1995	1	1	10/22/2001	MTBE
T0609500432	Solano	UNCAL CEMETERY #101	VACAVILLE	38.45072164	-121.9215714	LUST Cleanup Site	9/11/1993	Completed - Case Closed	Closed	4/12/2014	x	11/16/2001	12/1/2006	12	1	11/16/2001	12/1/2006	12	1	11/16/2001	BZ
T0609500435	Solano	7-11 STORE #2387	VACAVILLE	38.35353087	-121.9526951	LUST Cleanup Site	3/4/1996	Completed - Case Closed	Closed	12/20/2011	x	5/7/2002	11/21/2002	1	1	3/1/2002	11/21/2002	1	1	3/1/2002	MTBE
T0609500443	Solano	TOWER MART STORE #18	DIXON	38.44741306	-121.8778784	LUST Cleanup Site	8/13/1997	Completed - Case Closed	Closed	9/22/2011	x	4/2/2003	12/23/2003	1	1	5/21/2002	12/23/2003	1	1	5/21/2002	MTBE
T0609500444	Solano	RO VISTA	RO VISTA	38.1608134	-121.6861982	LUST Cleanup Site	9/11/1993	Open - Remediation	Open	12/17/2008	x	4/12/2004	12/6/2006	2	1	9/12/2004	12/6/2006	2	1	9/12/2004	BZ
T0609500446	Solano	SHELL - RAMOS OIL #XION	DIXON	38.464084	-121.821501	LUST Cleanup Site	9/14/1998	Open - Remediation	Open	5/25/2005	x	5/25/2005	10/19/2008	2	1	5/24/2002	10/19/2008	2	1	5/24/2002	MTBE
T0609500451	Solano	DK Dixon	DIXON	38.41608977	-121.8935023	LUST Cleanup Site	4/21/1988	Completed - Case Closed	Closed	6/17/2019	x	6/7/2002	6/1/2002	1	1	8/19/2010	12/12/05	6	1	11/22/2001	MTBE
T06095002143	Solano	TEXAS PETROLEUM SERVICES	FARFIELD	38.240578	-122.056207	LUST Cleanup Site	6/4/2002	Completed - Case Closed	Closed	9/21/2011	x	11/10/2011	8/28/2012	2	1	12/15/2006	5/7/2007	2	1	11/22/2006	PCE
T0609535283	Solano	GENERAL MILLS, COMMERCIAL	VALLEJO	38.0803925	-122.2455239	LUST Cleanup Site	12/14/2005	Completed - Case Closed	Closed	10/17/2018	x	11/10/2011	8/28/2012	2	1	12/15/2006	5/7/2007	2	1	11/22/2006	PCE
T0609548562	Solano	BEACON NTU TREE STATION	VACAVILLE	38.3641513	-121.9073084	LUST Cleanup Site	11/1/1990	Open - Site Assessment	Open	11/18/2014	x	6/18/2004	11/7/2005	2	1	3/12/2004	11/7/2005	2	1	3/12/2004	MTBE
T0609552098	Solano	RODGERS BOTTLE	VALLEJO	38.1047478	-122.3432795	LUST Cleanup Site	5/11/2002	Completed - Case Closed	Closed	11/14/2005	x	7/7/2002	7/7/2002	1	1	1/26/2004	7/7/2002	1	1	1/26/2004	NO
T0609575881	Solano	FORMER SERVICE STATION	VALLEJO	38.1228595	-122.2626133	LUST Cleanup Site	7/21/2004	Completed - Case Closed	Closed	5/19/2009	x	6/17/2008	6/30/2009	2	1	16/2007	6/30/2009	2	1	16/2007	MTBE
T0609575889	Solano	GENERAL MILLS, Residential	VALLEJO	38.091584	-122.245151	LUST Cleanup Site	2/14/2005	Completed - Case Closed	Closed	3/22/2007	x	11/6/2006	11/6/2006	1	1	11/22/2006	11/6/2006	1	1	11/22/2006	PCE
T060959622	Solano	TOWN SQUARE, VACAVILLE	VACAVILLE	38.356933	-121.987419	LUST Cleanup Site	3/3/2005	Completed - Case Closed	Closed	6/7/2014	x	3/15/2005	3/15/2005	1	1	2/15/2008	3/15/2005	1	1	2/15/2008	NO
T0609591446	Solano	FORMER STOP N GO	FARFIELD	38.244437	-122.052574	LUST Cleanup Site	6/29/2001	Completed - Case Closed	Closed	3/29/2010	x	3/1/2005	3/1/2008	4	1	3/28/2002	3/1/2008	4	1	3/28/2002	MTBE
T0609592137	Solano	DW Men & WPDS Packaged Treatment System	FARFIELD	37.94995807	-122.4181233	Cleanup Program Site	4/1/1985	Completed - Case Closed	Closed	10/8/2015	x	10/8/2015	10/8/2015	1	1	10/3/2002	10/8/2015	1	1	10/3/2002	NO
T0609597106	Solano	BA-RO VISTA	RO VISTA	38.150708	-121.891975	LUST Cleanup Site	5/11/1997	Completed - Case Closed	Closed	12/31/2014	x	11/17/2008	12/1/1998	1	1	7/23/2003	12/1/1998	1	1	7/23/2003	BZ
T0609700005	Sonoma	Almond #4978	Coati	38.33083963	-122.7110423	LUST Cleanup Site	10/22/1995	Completed - Case Closed	Closed	12/16/2010	x	1/1/1996	2/28/2006	1	1	10/19/2001	2/28/2006	1	1	10/19/2001	MTBE
T0609700006	Sonoma	ARCO #1341	Coati	38.33181189	-122.7147748	LUST Cleanup Site	6/25/1995	Completed - Case Closed	Closed	11/10/2014	x	11/10/2014	11/10/2014	1	1	9/26/2007	4/14/2010	4	1	9/26/2007	MTBE
T0609700011	Sonoma	ALLIANCE SERVICE STATION - SEBASTOPOL	SEBASTOPOL	38.3953559	-122.801967	LUST Cleanup Site	8/24/1987	Completed - Case Closed	Closed	4/10/2015	x	14/2007	14/2007	1	1	21/2001	12/31/2013	13	2	15/2004	BZ
T0609700021	Sonoma	Exxon #9-0248 (former)	Rohnert Park	38.33581002	-122.708752	LUST Cleanup Site	6/12/1988	Completed - Case Closed	Closed	11/12/2018	x	1/11/1996	12/31/2004	9	2	9/19/2001	12/31/2004	9	2	9/19/2001	MTBE
T0609700025	Sonoma	Stone Station, Inc.	Sebastopol	38.37401384	-122.7125848	LUST Cleanup Site	8/1/1990	Completed - Case Closed	Closed	8/6/2021	x	18/19/1996	10/23/2010	1	1	18/19/1996	10/23/2010	1	1	18/19/1996	MTBE
T0609700038	Sonoma	Vacu-Dry	Sebastopol	38.42014101	-122.8496812	LUST Cleanup Site	1/16/1987	Completed - Case Closed	Closed	9/17/2007	x	4/15/1992	4/17/1992	1	1	75/2005	75/2005	1	1	11/5/2001	MTBE
T0609700043	Sonoma	Foreville Chevron	Foreville	38.47353822	-122.800105	LUST Cleanup Site	9/9/1988	Open - Verification Monitoring	Open	3/22/2021	x	7/11/1989	11/30/1992	4	1	6/30/2003	11/30/1992	4	1	6/30/2003	BZ
T0609700047	Sonoma	Sanita Road	SANTA ROSA	38.49873787	-122.7428393	LUST Cleanup Site	6/25/1988	Completed - Case Closed	Closed	7/24/2007	x	10/7/1993	12/1/1995	3	1	6/3/2013	6/6/2013	1	1	3/19/2001	MTBE
T0609700053	Sonoma	SHELL SERVICE STATION - DUTTON AVENUE	SANTA ROSA	38.43231698	-122.755561	LUST Cleanup Site	8/24/1987	Open - Verification Monitoring	Open	5/27/2015	x	12/13/2002	3/10/2003	2	1	3/21/2007	10/1/2009	1	1	11/13/2001	MTBE
T0609700067	Sonoma	ROHNERT PARKER-COMMERCIAL CORP.	ROHNERT PARK	37.95992804	-122.7088727	LUST Cleanup Site	6/11/2001	Completed - Case Closed	Closed	7/26/2004	x	8/15/2003	8/15/2003	1	1	8/15/2003	8/15/2003	1	1	8/15/2003	BZ
T0609700081	Sonoma	MOBIL Station (former)	Windor	38.52599012	-122.792634	LUST Cleanup Site	8/16/2013	Completed - Case Closed	Closed	8/16/2013	x	7/18/2003	12/18/2006	4	1	6/29/2004	10/31/2008	3	1	12/18/2001	BZ
T0609700084	Sonoma	Shell Service Station	Sebastopol	38.4032273	-122.8254004	LUST Cleanup Site	4/14/1987	Completed - Case Closed	Closed	4/22/2014	x	11/30/1994	12/5/1994	1	1	12/20/2001	12/5/1994	1	1	12/20/2001	MTBE
T0609700085	Sonoma	Windor K Store (former)	Windor	38.54072608	-122.814326	LUST Cleanup Site	4/1/1991	Open - Eligible for Closure	Open	6/1/2007	x	3/1/1997	9/1/2000	4	1	11/16/2002	9/1/2000	4	1	11/16/2002	MTBE
T0609700089	Sonoma	Pelini Chevrolet	Sebastopol	38.4200485	-122.8282306	LUST Cleanup Site	4/20/1987	Completed - Case Closed	Closed	7/9/2009	x	11/19/92	11/19/97	6	1	6/3/2003	5/20/2004	2	1	6/26/2002	BZ
T0609700092	Sonoma	Texaco/Exxon (former)	Rohnert Park	38.34789239	-122.7089891	LUST Cleanup Site	12/21/1988	Completed - Case Closed	Closed	6/13/2014	x	4/11/1996	8/9/2009	14	1	12/12/2012	12/12/2012	1	1	10/5/2001	MTBE
T0609700095	Sonoma	Rohnert Park #41	Rohnert Park	38.33581002	-122.7077278	LUST Cleanup Site	18/2/1988	Completed - Case Closed	Closed	11/27/2018	x	4/11/1996	11/7/2003	1	1	4/11/1996	11/7/2003	1	1	4/11/1996	MTBE
T0609700102	Sonoma	Shell Service Station	Windor	38.54761541	-122.8104885	LUST Cleanup Site	8/13/1987	Open - Remediation	Open	12/12/2019	x	7/9/2001	24/2004	4	1	12/15/1997	7/25/2001	5	1	11/16/2001	MTBE
T0609700103	Sonoma	SHELL	SANTA ROSA	38.41453221	-122.717848	LUST Cleanup Site	8/17/1987	Completed - Case Closed	Closed	12/13/2013	x	10/21/2005	11/31/2008	4	1	12/13/2013	11/31/2008	4	1	9/6/2001	MTBE
T0609700104	Sonoma	HEALDSBURG	SANTA ROSA	38.52568128	-122.871137	LUST Cleanup Site	11/19/88	Open - Remediation	Open	12/20/2018	x	12/20/2018	10/1/2012	6	2	12/20/2018	10/1/2012	6	2	3/21/2005	BZ
T0609700138	Sonoma	Sanita Road (Former)	Gerventille	38.7068699	-122.9049104	LUST Cleanup Site	33/11/1988	Completed - Case Closed	Closed	5/9/2013	x	12/18/2000	10/3/2007	8	1	12/18/2000	10/3/2007	8	1	21/7/2003	BZ
T0609700139	Sonoma	Sanita Road	SANTA ROSA	38.5873785	-122.741137	LUST Cleanup Site	5/11/1998	Open - Assessment & Interim Remedial Action	Open	7/11/2021	x	12/18/2000	10/3/2007	8	1	12/18/2000	10/3/2007	8	1	12/18/2000	MTBE
T0609700141	Sonoma	Former TEXACO	HEALDSBURG																		

7600700997	Sonoma	Lakeville Service Station	Petaluma	38.212232	-122.549162	LUST Cleanup Site	2/17/1994	Completed - Case Closed	Closed	2/22/2019				8/13/2012	8/13/2012	1	1					8/23/2002	BZ
7600701006	Sonoma	PRIVATE RESIDENCE	Petaluma	38.266843	-122.701469	LUST Cleanup Site	7/27/1995	Completed - Case Closed	Closed	12/22/2014	x	x	9/15/2008	6/28/2011	4	1	2/1/2000	4/30/2000	1	1	9/13/2001	MTBE	
7600701018	Sonoma	Fort Colson Service Station	Petaluma	38.217521	-122.469041	LUST Cleanup Site	Completed	10/27/2009	Closed	11/16/2007			7/24/2004	1/12/2006	1	1	5/1/2000	4/16/2000	1	1	9/1/2000	BZ	
7600745551	Sonoma	PRIVATE RESIDENCE	PETALUMA	38.277555	-122.647695	LUST Cleanup Site	12/23/2002	Completed - Case Closed	Closed	9/20/2016	x		12/27/2011	8/28/2014	1	4	2/8/2011	2/26/2011	1	1	12/21/2005	BZ	
7600743788	Sonoma	PRIVATE RESIDENCE	SONOMA	38.271033	-122.445152	LUST Cleanup Site	2/25/2002	Completed - Case Closed	Closed	3/14/2005	x		2/28/2001	2/28/2002	1	1			1	1	10/20/2003	BZ	
7600740474	Sonoma	Sonoma Del	SONOMA	38.250726	-122.457876	LUST Cleanup Site	Completed	6/15/2002	Closed	11/12/2008			6/15/2002	10/13/2008	1	1	11/23/2001				11/23/2001	MTBE	
7600700739	Sonoma	USSG TRAINING CENTER BLDG 12S, TANK F-34	TWO ROCK	38.2510384	-122.798971	Cleanup Program Site	8/1/2003	Completed - Case Closed	Closed	9/12/2014	x		5/9/2006	5/9/2006	1	1					5/1/2006	ND	
7600718620	Sonoma	PREES DEVELOPMENT COMPANY PROJECT	SEASAT/POS	38.291656	-122.821627	LUST Cleanup Site	10/1/2005	Completed - Case Closed	Closed	12/05/2010						1	1	8/16/2010	11/30/2015	6	2	8/1/2008	MTBE
7600700118	Sonoma	LESTER JACK	LESTER JACK	38.423521	-122.709947	LUST Cleanup Site	3/6/1987	Completed - Case Closed	Closed	12/12/2004			x	11/20/14	12/31/2006	3	1	12/15/2004	3/14/2005	1	1	3/23/2005	BZ
7600701123	Sonoma	PRIVATE RESIDENCE	SANTA ROSA	38.4651137	-122.752021	LUST Cleanup Site	12/21/1989	Open - Site Assessment	Open	5/20/2009			2/8/2005	3/17/2005	1	1					2/25/2004	BZ	
7600701168	Sonoma	CEMERS NURSERY (FORMER)	SANTA ROSA	38.438717	-122.799315	LUST Cleanup Site	2/1/2002	Completed - Case Closed	Closed	3/1/2002						1	1	7/30/2012	10/29/2012	1	1	5/7/2001	MTBE
7600701161	Sonoma	HEMMETT PACKARD VALLEY SITE	SANTA ROSA	38.472435	-122.734923	Cleanup Program Site	6/24/1987	Open - Assessment Program Site	Open	2/3/2009			x	5/15/1987	4/28/2006	20	2	3/28/2013	3/28/2013	1	1	3/29/2005	TCE
7600701310	Sonoma	HEWLETT PACKARD FOUNTAIN GROVE	SANTA ROSA	38.4804372	-122.708748	Cleanup Program Site	3/4/1982	Completed - Case Closed	Closed	12/27/2001			2/1/1983	3/30/1987	5	1	9/1/1987	9/1/1987			3/8/2005	TCE	
7600701026	Sonoma	VON TILLOW BURBANK CLEANERS	SANTA ROSA	38.448911	-122.696108	Cleanup Program Site	1/1/1988	Open - Assessment & Remedial Action	Open	4/12/2012			1/1/2008	1/1/2008	3	1	12/29/2007				12/29/2007	PCE	
7600703183	Sonoma	JDS/CULI (former)	SANTA ROSA	38.47148593	-122.7479159	Cleanup Program Site	1/7/1988	Open - Verification Monitoring	Open	6/13/2017			7/21/1998	7/21/1998	1	1					7/20/2005	TCE	
7600703939	Sonoma	MOB BRANES ASSEMBLY PLANT	CLOVERDALE	38.7841764	-123.012087	Cleanup Program Site	10/71/1994	Open - Remediation	Open	5/20/2009			x	9/24/2002	3/27/2009	8	2	11/4/2003	11/4/2003	1	1	3/8/2005	TCE
7600703544	Sonoma	MARLOW CENTER DRY CLEANERS	SANTA ROSA	38.421277	-122.751612	LUST Cleanup Site	9/8/1987	Completed - Case Closed	Closed	12/27/2009						1	1	8/17/2001	8/17/2001	1	1	8/17/2001	MTBE
7600703654	Sonoma	Valley Ford Service	Valley Ford	38.8136706	-122.925028	LUST Cleanup Site	8/9/1993	Completed - Case Closed	Closed	12/6/2017						1	1	10/7/2014	11/7/2014	1	1	12/1/2003	MTBE
7600700001	Stanislaus	BEACON DOWNTOWN	MOORESTOWN	37.6363145	-121.000996	LUST Cleanup Site	6/15/1995	Completed - Case Closed	Closed	10/16/2010			10/22/2001	5/22/2006	6	1	1/1/2002				1/1/2002	BZ	
7600700002	Stanislaus	MARLB'S REPAIR SHOP PROPERTY	TURLOCK	37.6528638	-122.966717	LUST Cleanup Site	9/25/1987	Completed - Case Closed	Closed	9/25/2007			10/18/2001		1	1	10/18/2001				10/18/2001	BZ	
7600700004	Stanislaus	ARCO #6181	TURLOCK	37.65835	-120.84688	LUST Cleanup Site	19/1987	Open - Remediation	Open	2/27/2018			6/21/2000	23/2009	10	2	3/21/2002				3/21/2002	MTBE	
76007000047	Stanislaus	ESTRELLAS EXON	WESTLEY	37.548369	-121.196828	LUST Cleanup Site	92/1987	Completed - Case Closed	Closed	10/22/2014			12/16/2008	6/25/2011	4	1	8/30/2006				8/30/2006	BZ	
76007000048	Stanislaus	ARCO # T AND	TURLOCK	37.645367	-120.968708	LUST Cleanup Site	7/29/1987	Completed - Case Closed	Closed	10/22/2007			6/18/2003	8/23/2003	1	1	12/1/2000				12/1/2000	BZ	
7600700005	Stanislaus	SERRA FARMS AKA TRUE VALLEY HARDWARE	EMPIRE	37.6362978	-120.931415	LUST Cleanup Site	19/14/1987	Completed - Case Closed	Closed	4/30/2009			11/2/2003	9/21/2006	4	1	6/29/2001				6/29/2001	MTBE	
76007000056	Stanislaus	TURLO 435956	MOORESTOWN	37.659522	-120.848038	LUST Cleanup Site	7/14/2007	Open - Remediation	Open	7/14/2007	x		1/17/2003	1/17/2003	1	1	12/29/2007				12/29/2007	PCE	
7600700006	Stanislaus	ARCO # 6196	MOORESTOWN	37.673717	-120.975501	LUST Cleanup Site	31/8/1986	Completed - Case Closed	Closed	9/3/2004	x		7/5/1994	12/1/1998	5	1	7/5/1994	12/1/1998	5	1	2/19/2002	MTBE	
7600700010	Stanislaus	ORVIS BROTHERS SLAUGHTERHOUSE	MOORESTOWN	37.618994	-120.996107	LUST Cleanup Site	21/5/1989	Completed - Case Closed	Closed	4/28/2008			x	10/23/2006	10/23/2006	1	1	12/10/2002	11/21/2008	7	1	6/19/2002	BZ
7600700012	Stanislaus	TOWN CENTER CASE # GOODRICH OIL CASE #1&2 O PLUS	CROWDS LANDING	37.459383	-121.844114	LUST Cleanup Site	1/3/2011	Completed - Case Closed	Closed	10/13/2011			10/23/2006		1	1	10/23/2006				10/23/2006	BZ	
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011	4	1	10/28/2003	BZ
7600700012	Stanislaus	ALTO KING MINI MART	CROWDS LANDING	37.3515226	-121.069901	LUST Cleanup Site	11/6/1988	Open - Verification Monitoring	Open	7/26/2016	x					1	1	7/1/2008	8/6/2011				



T0610700436	Tulare	QUICK STOP FOOD MARKET	WOODLAKE	36.4322824	-118.0991806	LUST Cleanup Site	11/17/1998	Completed - Case Closed	Closed	11/13/2014	x		4/17/2007	7/28/2008	2	2	14/20/05	MTBE				
T0610700438	Tulare	CUTLER FOOD MART	CUTLER	36.5217891	-118.268601	LUST Cleanup Site	11/17/1998	Completed - Case Closed	Closed	7/30/2013	x		3/1/2008	8/30/2003	3	2	2/24/2005	BZ				
T0610700443	Tulare	POPS STOP	EXETER	36.302527	-118.153378	LUST Cleanup Site	12/7/2006	Completed - Case Closed	Closed	2/17/2008	x		2/1/2003	10/1/2004	2	2	2/10/2006	ND				
T0610700444	Tulare	VALERO BROTHERS EXCON	WOODLAKE	36.418984	-118.088303	LUST Cleanup Site	2/18/1999	Open - Verification Monitoring	Open	9/11/2017	x		4/1/2003	9/30/2007	5	3	3/11/2004	MTBE				
T0610700446	Tulare	PAIGE AND THE TRUCK STOP	TULARE	36.181921	-118.327496	LUST Cleanup Site	3/13/1999	Completed - Case Closed	Closed	12/23/2013	x		12/23/2013	4/18/2011	2	2	4/10/2004	BZ				
T0610700453	Tulare	C.P. PHELPS	TULARE	36.1961273	-118.301172	LUST Cleanup Site	2/23/1999	Completed - Case Closed	Closed	2/23/2019	x		12/6/2003	4/25/2008	6	2	11/28/2001	MTBE				
T0610700460	Tulare	B/S EXHIBITS MART	LINDSAY	36.2041025	-118.0951738	LUST Cleanup Site	2/01/1999	Completed - Case Closed	Closed	2/28/2013	x		4/41/2004	5/14/2007	4	1	4/24/2003	MTBE				
T0610700462	Tulare	EL MONTE EXCON	DUNBAR	36.5452158	-118.340892	LUST Cleanup Site	6/9/1999	Completed - Case Closed	Closed	5/24/2015	x		5/4/2011	3/21/2013	2	2	4/6/2007	MTBE				
T0610700465	Tulare	E-Z MART	LINDSAY	36.21051256	-118.082759	LUST Cleanup Site	8/7/1998	Completed - Case Closed	Closed	10/21/2015	x		14/20/10	12/26/2012	3	1	4/9/2003	MTBE				
T0610715514	Tulare	CRUMMART & DELI	OROSI	36.544843	-118.266404	LUST Cleanup Site	3/7/2003	Completed - Case Closed	Closed	11/5/2018	x		6/15/2009	28/2/15	5	2	10/26/2009	MTBE				
T0610725070	Tulare	CITY OF DUNBAR	DUNBAR	36.3386138	-118.388734	LUST Cleanup Site	7/18/2003	Completed - Case Closed	Closed	8/7/2015	x		7/24/2015	7/24/2015	1	1	5/9/2008	BZ				
T061074127	Tulare	AGA GAS-H-GRUB #2	FARMERSVILLE	36.28	-119.2071	LUST Cleanup Site	7/7/2004	Completed - Case Closed	Closed	8/4/2014	x		11/13/2012	12/19/2012	1	2	7/1/2008	ND				
T061076370	Tulare	CHET ENTERPRISES	LINDSAY	36.2044645	-118.094231	LUST Cleanup Site	2/11/1999	Completed - Case Closed	Closed	5/11/2018	x		10/31/2003	102/12/009	7	2	5/31/2006	BZ				
T0610900001	Tuolumne	BEACON #1-034	SONORA	37.881938	-120.3817248	LUST Cleanup Site	8/12/1992	Completed - Case Closed	Closed	9/22/2011	x		12/1/1993	12/31/1995	6	2	2/8/2002	BZ				
T0610900007	Tuolumne	D.T'S STOP	SONORA	37.8796784	-120.3811669	LUST Cleanup Site	8/16/1998	Completed - Case Closed	Closed	12/31/2015	x		11/0/2008	8/23/2011	4	10	10/22/2001	BZ				
T0610900009	Tuolumne	CHOCOROCK	SONORA	37.204657	-120.39467	LUST Cleanup Site	8/19/1998	Completed - Case Closed	Closed	10/11/2007	x		7/1/1999	10/26/2009	10	9	9/25/2006	MTBE				
T0610900033	Tuolumne	TWAIN HART CHEVRON	TWAIN HART	38.038518	-120.229263	LUST Cleanup Site	9/9/1989	Completed - Case Closed	Closed	3/27/2014	x		7/21/2005	6/3/2002	6/3/2002	5	2	6/3/2002	BZ			
T0610900037	Tuolumne	VERNS GROVELAND CHEVRON	GROVELAND	37.8352898	-120.209458	LUST Cleanup Site	4/27/1990	Completed - Case Closed	Closed	12/29/2011	x		12/27/1998	6/22/2004	7	2	3/22/2004	MTBE				
T0610900049	Tuolumne	YOSIMITE NP	YOSIMITE NP	37.8773886	-119.3443349	LUST Cleanup Site	10/24/1991	Completed - Case Closed	Closed	12/23/2016	x		6/31/1994	108/19/94	1	1	5/19/2001	MTBE				
T0610900051	Tuolumne	Former P & D Union 76 Station	SONORA	37.87625719	-120.3793806	LUST Cleanup Site	12/5/1991	Completed - Case Closed	Closed	8/29/2017	x		7/20/23	10/3/1999	7	2	12/27/2001	BZ				
T0610900061	Tuolumne	JAMESTOWN TOWN YARD	JAMESTOWN	37.6529706	-120.154778	LUST Cleanup Site	2/22/1993	Completed - Case Closed	Closed	9/28/2020	x		11/5/1987	1/15/1987	1	1	5/30/2002	BZ				
T0610900066	Tuolumne	UNICAL #303	SONORA	37.8816553	-120.3811704	LUST Cleanup Site	5/12/1993	Completed - Case Closed	Closed	9/25/2020	x		5/13/1983	5/13/1983	1	1	10/13/2001	BZ				
T0610900067	Tuolumne	SCOTT'S CHEVRON	SONORA	37.8746523	-120.3457336	LUST Cleanup Site	5/23/1993	Completed - Case Closed	Closed	10/11/2017	x		10/12/2001	10/12/2001	1	1	12/4/2001	BZ				
T0610900072	Tuolumne	MOBIL VISTA GARAGE	SONORA	37.8673628	-120.270872	LUST Cleanup Site	8/27/1993	Open - Remediation	Open	7/15/2016	x		12/20/2005	2/26/2008	4	6	12/22/2002	BZ				
T0610900083	Tuolumne	THUILLIARD	SONORA	38.1880249	-120.045369	LUST Cleanup Site	9/7/1994	Completed - Case Closed	Closed	11/19/2014	x		10/13/2011	11/17/2011	1	1	1/31/2002	MTBE				
T0610900088	Tuolumne	R&M MINI MART #1	SONORA	38.0270411	-120.4555843	LUST Cleanup Site	4/21/1995	Completed - Case Closed	Closed	12/1/2020	x		7/7/2004	9/18/2005	2	1	6/28/2006	3/7/2012	7	3	3/7/2002	BZ
T061090101	Tuolumne	YOSIMITE NP	SONORA	37.878711	-119.358056	LUST Cleanup Site	11/24/1994	Completed - Case Closed	Closed	10/28/2016	x		7/18/2000	10/23/2009	10	9	9/25/2006	MTBE				
T061090105	Tuolumne	PACIFIC BEL FACILITY (UC-695)	SONORA	37.8783692	-120.337187	LUST Cleanup Site	6/5/1997	Completed - Case Closed	Closed	1/9/2013	x		11/14/2005	7/2/2007	3	4	10/18/2002	MTBE				
T061090110	Tuolumne	TWAIN HART SHELL	TWAIN HART	38.038391	-120.229533	LUST Cleanup Site	3/17/1998	Completed - Case Closed	Closed	10/20/2016	x		2/15/2006	6/5/2008	3	2	10/27/2003	MTBE				
T061090121	Tuolumne	DOG CAK FLAT	SONORA	38.232898	-120.275954	LUST Cleanup Site	11/24/1998	Completed - Case Closed	Closed	14/2/2018	x		2/15/2006	3/30/2012	4	10	5/9/2005	BZ				
T061090123	Tuolumne	BELENES DISTRIBUTING CO.	SONORA	37.968486	-120.321102	LUST Cleanup Site	12/16/1998	Completed - Case Closed	Closed	11/3/2005	x		19/2003	19/2003	1	1	6/30/1999	6/30/1999	1	1	12/10/2001	MTBE
T061100003	Ventura	AL SA. OL #22	NEWBURY PARK	34.1989381	-118.9115041	LUST Cleanup Site	8/27/1998	Completed - Case Closed	Closed	6/24/2014	x		2/24/1993	6/5/2007	15	2	8/16/2001	MTBE				
T061100107	Ventura	MOBL OL SS #18-HTA	NEWBURY PARK	34.1889148	-118.9408125	LUST Cleanup Site	8/14/2015	Completed - Case Closed	Closed	11/4/2015	x		11/4/2015	11/16/2005	1	1	12/7/2001	BZ				
T061100111	Ventura	THRIFTY OL #7028	SONORA	34.2195612	-119.194917	LUST Cleanup Site	7/31/1984	Completed - Case Closed	Closed	9/7/2012	x		3/24/2005	11/30/2005	1	1	11/15/2001	BZ				
T061100129	Ventura	CHEVRON #9-0118	SANTA PAULA	34.340005	-119.081866	LUST Cleanup Site	11/1/1986	Completed - Case Closed	Closed	11/25/2013	x		3/1/1987	2/8/2007	21	3	12/10/2001	MTBE				
T061100134	Ventura	SCOTS SUPPLY	SONORA	34.2033261	-118.994828	LUST Cleanup Site	4/14/1988	Completed - Case Closed	Closed	12/1/2003	x		12/1/2003	12/1/2003	1	1	12/1/2003	BZ				
T061100138	Ventura	CONCORD HOLLOWERS	ONNARD	34.1889135	-119.207744	LUST Cleanup Site	3/19/1987	Completed - Case Closed	Closed	7/15/2013	x		8/15/1994	8/15/2003	10	2	3/20/2002	BZ				
T061100143	Ventura	TEXACO SS - CENTRAL	FLMORRE	34.400621	-118.9138517	LUST Cleanup Site	8/13/1986	Completed - Case Closed	Closed	7/31/2013	x		2/25/2010	10/1/2012	3	2	10/24/2001	BZ				
T061100159	Ventura	THOUSAND OAKS	THOUSAND OAKS	34.1614541	-118.823095	LUST Cleanup Site	12/4/1986	Completed - Case Closed	Closed	10/17/2013	x		9/22/2011	9/22/2011	1	1	9/22/2011	BZ				
T061100169	Ventura	THRIFTY OL #215	SMI VALLEY	34.2714559	-118.783275	LUST Cleanup Site	11/26/1998	Completed - Case Closed	Closed	6/14/2011	x		12/20/2008	12/20/2008	1	1	11/28/2001	BZ				
T061100186	Ventura	SANTA PAULA #55 (BEACON)	SANTA PAULA	34.163628	-118.95581	LUST Cleanup Site	8/3/2008	Completed - Case Closed	Closed	8/3/2008	x		8/3/2008	8/3/2008	1	1	8/13/2001	BZ				
T061100221	Ventura	EXCON #7-0462	SMI VALLEY	34.2786521	-118.7618848	LUST Cleanup Site	8/4/1987	Open - Remediation	Open	6/22/2005	x		7/23/2001	12/1/2004	4	1	10/29/2001	BZ				
T061100230	Ventura	VCO FIRE STATION #3	THOUSAND OAKS	34.1847486	-118.851702	LUST Cleanup Site	7/19/1987	Completed - Case Closed	Closed	9/6/2011	x		8/24/2001	8/24/2001	1	1	3/21/2002	MTBE				
T061100233	Ventura	SMI VALLEY	THOUSAND OAKS	34.2171	-118.763896	LUST Cleanup Site	11/24/1998	Completed - Case Closed	Closed	13/11/2002	x		13/11/2002	12/31/1995	3	1	11/16/2001	BZ				
T061100253	Ventura	MOBL OL SS #18-KVB	CAMRILLLO	34.2115	-119.005222	LUST Cleanup Site	10/12/1987	Completed - Case Closed	Closed	4/16/2013	x		9/15/1995	5/5/2010	15	2	10/19/2001	BZ				
T061100262	Ventura	MOBL OL SS #18-KC	NEWBURY PARK	34.1821833	-118.927453	LUST Cleanup Site	8/1/1983	Completed - Case Closed	Closed	11/25/2013	x		11/21/1996	5/8/1997	2	1	11/16/2001	MTBE				
T061100282	Ventura	THOUSAND OAKS	THOUSAND OAKS	34.186818	-118.874528	LUST Cleanup Site	8/1/1988	Open - Remediation	Closed	8/14/2013	x		3/1/1997	4/6/2012	16	2	11/22/2001	BZ				
T061100288	Ventura	UNICAL #506 (FORMER TOSCO - 76 SS)	THOUSAND OAKS	34.218315	-118.866704	LUST Cleanup Site	5/21/1986	Open - Remediation	Open	7/16/2008	x		7/26/1996	9/15/2005	10	2	5/10/2002	BZ				
T061100309	Ventura	ALL AMERICAN CAR WASH	SMI VALLEY	34.1986369	-118.769379	LUST Cleanup Site	4/22/1998	Completed - Case Closed	Closed	10/13/2008	x		7/15/1999	9/15/2004	6	1	5/19/2001	MTBE				
T061100320	Ventura	ARC0 #1139	SMI VALLEY	34.27113	-118.783828	LUST Cleanup Site	14/20/11	Completed - Case Closed	Closed	14/20/11	x		2/14/2000	4/20/2004	8	2	5/10/2002	BZ				
T061100327	Ventura	ROBERT MACK PLUMBING	SMI VALLEY	34.2718439	-118.787363	LUST Cleanup Site	4/26/1998	Completed - Case Closed	Closed	4/12/2010	x		8/11/2010	3/5/2011	2	1	11/18/2001	MTBE				
T061100340	Ventura	ONNARD	ONNARD	34.1978952	-119.0218128	LUST Cleanup Site	8/23/1989	Completed - Case Closed	Closed	11/11/2013	x		5/15/2003	5/15/2003	1	1	8/29/2001	BZ				
T061100354	Ventura	OX ONNARD REPORT - HANGAR B	ONNARD	34.19815303	-119.1998148	LUST Cleanup Site	8/26/1998	Completed - Case Closed	Closed	9/9/2012	x		5/15/2003	3/20/2004	2	1	5/15/2003	BZ				
T061100380	Ventura	KWK REUSE	QUAI	34.44783028	-119.247365	LUST Cleanup Site	11/1/1988	Completed - Case Closed	Closed	9/10/2015	x		7/15/1987	9/15/2002	6	1	4/30/2002	BZ				
T061100412	Ventura	SCOTS SUPPLY	QUAI	34.4482208	-119.2170428	LUST Cleanup Site	5/7/2012	Completed - Case Closed	Closed	5/7/2012	x		3/22/2005	5/13/2009	5	1	10/11/2001	BZ				
T061100438	Ventura	CHEVRON #9-6152	THOUSAND OAKS	34.2152206	-118.8598717	LUST Cleanup Site	11/1/1989	Completed - Case Closed	Closed	11/17/2014	x		5/7/2004	8/19/2010	7	1	11/7/2001	MTBE				
T061100443	Ventura	USA PETROLEUM SS #223	ONNARD	34.1548582	-119.1774821	LUST Cleanup Site	2/01/1989	Completed - Case Closed	Closed	6/7/2011	x		6/25/1996	7/18/2001	6	2	9/11/2002	MTBE				
T061100454	Ventura	ONNARD	ONNARD	34.1528184	-119.195128	LUST Cleanup Site	8/23/2011	Completed - Case Closed	Closed	8/23/2011	x		1/7/1998	1/30/1998	1	1	11/1/2002	BZ				
T061100495	Ventura	ONNARD SELF SERVICE	ONNARD	34.1948448	-119.1771335	LUST Cleanup Site	2/01/1989	Completed - Case Closed	Closed	8/13/2010	x		4/22/1998	6/20/2006	9	1	12/20/2002	MTBE				
T061100497	Ventura	PHILLIPS INC	FLMORRE	34.3973347	-118.914643	LUST Cleanup Site	7/21/1989	Completed - Case Closed	Closed	6/11/2010	x		2/8/2001	2/27/2006	6	1	12/20/2002	BZ				
T061100498	Ventura	THOUSAND OAKS	THOUSAND OAKS	34.217751	-118.869891	LUST Cleanup Site	8/1/1989	Completed - Case Closed	Closed	8/14/1995	x		8/14/1995	8/14/1995	1	1	9/10/2001	MTBE				
T061100502	Ventura	CHEVRON #0-6598	THOUSAND OAKS	34.1862595	-118.874714	LUST Cleanup Site	7/25/1999	Completed - Case Closed	Closed	12/5/2011	x		6/15/1996	11/5/1996	1	1	11/13/2001	MTBE				

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## APPENDIX B. LIST OF PUBLICATIONS

### *Published or In Review*

- McHugh, T.E., Newell, C.J., Beckley, L.M., Adamson, D.T., DeVaul, G.E. and Lahvis, M.A., 2023. Forecasting Groundwater Remediation Timeframes: Site-Specific Temporal Monitoring Results May Not Predict Future Performance. *Groundwater Monitoring & Remediation*, 43(4), pp.92-103.
- Adamson, D.T., Hori, H., McHugh, T.E., Wilson, J., and Newell, C.J., 2025. State of the Practice Worldwide: Developing Approaches to Transition from Active Remediation to Monitored Natural Attenuation. *Groundwater Monitoring & Remediation*, DOI: 10.1111/gwmr.12702.

### *Conference and Other Presentations*

- Federal Remediation Technology Roundtable, May 2024(Adamson and Newell)
- Western Groundwater Congress, September 2023 (Adamson)
- SERDP-ESTCP Webinar Series, September 2023 (Adamson)
- SERDP-ESTCP Symposium (presentation), December 2021 (Adamson)
- Battelle Conference, May 2022 (Newell)
- SERDP-ESTCP Training Webinar, date to be determined (Adamson and Newell)
- SERDP-ESTCP Symposium (short course), anticipated December 2024 (Adamson, Newell, and Wilson)