FOURTH COMBINED FIVE-YEAR REVIEW REPORT FOR SAN FERNANDO VALLEY (AREA 1) SUPERFUND SITE NORTH HOLLYWOOD AND BURBANK, LOS ANGELES COUNTY, CALIFORNIA

PREPARED BY

U.S. Army Corps of Engineers

Seattle District

FOR

U.S. Environmental Protection Agency

Region 9

Approved by: MICHAEL MONTGOMERY Digitally signed by MICHAEL MONTGOMERY Date: 2023.09.28 13:58:25 -07'00' Date:

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Executive Summary

This is the fourth combined Five-Year Review of the San Fernando Valley (Area 1) Superfund Site (Site) located in North Hollywood and Burbank, Los Angeles County, California. The purpose of this Five-Year Review is to review information to determine if the remedy is and will continue to be protective of human health and the environment.

The San Fernando Valley (Area 1) Site has been divided into two groundwater operable units[1], North Hollywood and Burbank, located within its boundaries. The Five-Year Review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site at levels above those that would allow for unlimited use and unrestricted exposure.

In September 2009, EPA selected the following Second Interim Remedy for North Hollywood: construction of new extraction wells; modification/rehabilitation of several existing extraction wells; expanded treatment; chromium treatment for four of the extraction wells; 1,4-dioxane treatment for one extraction well; installation of additional monitoring wells; institutional controls; and use of the treated water in Los Angeles Department of Water and Power's water supply system.

Since the 2009 Record of Decision, EPA has modified the Second Interim Remedy three times. First, EPA amended the Second Interim Remedy in 2014 via a Record of Decision Amendment, adding reinjection of the treated water as an alternative end use. Second, in 2016, EPA finalized using a Memorandum to File that confirmed the need to add more extraction wells targeting 1,4 dioxane contamination in the western portion of the North Hollywood Third, EPA determined that containment could be improved by increasing groundwater extraction and issued an Explanation of Significant Differences in February 2018, which increased the groundwater extraction rate by adding new extraction wells and expanding the treatment system, in order to improve containment.

Honeywell International is implementing the Second Interim Remedy within the Central North Hollywood area (separate from the North Hollywood Eastern and Western areas). Lockheed Martin is implementing the Second Interim Remedy within the Eastern North Hollywood area. The Second Interim Remedy in the Western North Hollywood area is being addressed by CalMat[2]. The remedy is being constructed in phases. The first phase, which includes both extraction and treatment of groundwater, began operating in 2023. Construction of the remaining phases is ongoing in both for the Central and Eastern North Hollywood areas, with full operation expected within the next five years.

EPA selected a remedy for Burbank in a June 1989 Interim Record of Decision that included: extraction of contaminated groundwater, treatment by stripping, and reuse of the water by the City of Burbank for drinking water. Subsequently, EPA signed two Explanations of Significant Differences in November 1990 and February 1997. The 1990 Explanation of Significant Differences included the

[1] During cleanup, a site can be divided into distinct areas depending on the complexity of the problems associated with the site. These areas, called operable units, may address geographic areas of a site, specific site problems, or areas where a specific action is required.
[2] CalMat Co., doing business as Vulcan Materials Company, Western Division.

addition of blending of the extracted and treated groundwater with a water supply lower in nitrate, reinjection of excess water, and a clarification that the interim remedy could be designed, constructed, and operated in phases. In the second Explanation of Significant Differences, EPA eliminated the reinjection requirement and suspended the minimum extraction rate requirement when nitrate levels in the extracted groundwater exceed 50 milligrams per liter as nitrate. The City of Burbank committed to accept an annual average of 9,000 gallons per minute from interim remedy facilities.

Lockheed Martin is responsible for coordinating with the City of Burbank to implement the Interim Remedy for Burbank.

The exposure assumptions for ingestion of groundwater remain valid. While no numeric cleanup values were selected at the time of remedy for Burbank any water treated by either system is delivered to the drinking water supply for each remedy the groundwater treatment systems must meet up-to-date drinking water standards. Therefore, any changes in toxicity data and cleanup standards, would not impact protectiveness of the remedy. No other new information has come to light that calls into question the protectiveness of the remedy.

The remedy at North Hollywood is protective of human health and the environment. The remedy's institutional controls, which include governmental controls that prohibit the public from extracting groundwater from the San Fernando Valley Basin and prohibit service of drinking water without a permit from California's Division of Drinking Water, ensuring that the public is not exposed to untreated drinking water. The Second Interim Remedy for North Hollywood is being constructed in phases. Phase 1 is complete and started operation in May 2023. Although data regarding the first phase of implementation is not yet available, five of the eight extraction wells are now operational and improving containment of the plume. EPA anticipates the remaining remedy phases will be completed, and operation will begin in the next five years.

The remedy at Burbank is protective of human health and the environment. The treatment system effluent contaminant concentrations are less than their regulatory cleanup goals, the remedy is limiting contaminant migration, and there are governmental controls in place that prevent exposure to untreated groundwater.

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List of Acronyms and Abbreviations

EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
Site	San Fernando Valley Area 1 Superfund Site
Tetra Tech	Contractor for Lockheed Martin for Burbank
µg/L	micrograms per liter
PCE	Tetrachloroethylene
TCE	Trichloroethylene
Wood/WSP	Wood Environmental and Infrastructure Solutions, Inc/WSP USA Environmental and Infrastructure Solutions, Inc, Contractor for Honeywell International for North Hollywood
USACE	United States Army Corps of Engineers

1. Introduction

The purpose of a Five-Year Review is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act Section 121, 40 Code of Federal Regulation Section 300.430(f)(4)(ii) of the National Contingency Plan and EPA policy.

This is the fourth combined Five-Year Review for the San Fernando Valley (Area 1) Superfund Site (Site)[3]. The triggering action for this statutory review is the signature date of the previous Five-Year Review, September 21, 2018. The Five-Year Review has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

The Site consists of two operable units, North Hollywood and Burbank, which both have comingled contaminant groundwater plumes that will be addressed in this Five-Year Review.

The San Fernando Valley (Area 1) Superfund Site Five-Year Review was led by Bianca Handley and Larry Sievers, EPA Region 9 Remedial Project Managers. Participants included Cynthia Wetmore, and Cynthia Ruelas, EPA Region 9 Superfund Five-Year Review Coordinators, and from the U.S. Army Corps of Engineers (USACE): Jeff Weiss, Hydrogeologist; Jennifer Phillippe, Physical Scientist; and Jeffrey Luong, Environmental Engineer. The review began on October 28, 2022.

[3] EPA prepared three North Hollywood Five-Year Review reports (1993, 1998, 2003) and one Burbank Five-Year Review report (2004) before combining these operable units into one combined report beginning in 2008.

Table 1. Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: San Fernando Valley (Area 1) Superfund Site		
EPA ID: CAD980894893		
Region: 9	**State:** CA	**City/County:** North Hollywood/Burbank/Los Angeles County
SITE STATUS		
National Priorities List Status: Final		
Multiple Operable Units? Yes	**Has the site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal Project Manager): Bianca Handley and Larry Sievers		
Author affiliation: EPA Region IX		
Review period: 10/28/2022 - 8/31/2023		
Date of site inspection: 2/14/2023		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/21/2018		
Due date *(five years after triggering action date)*: 9/21/2023		

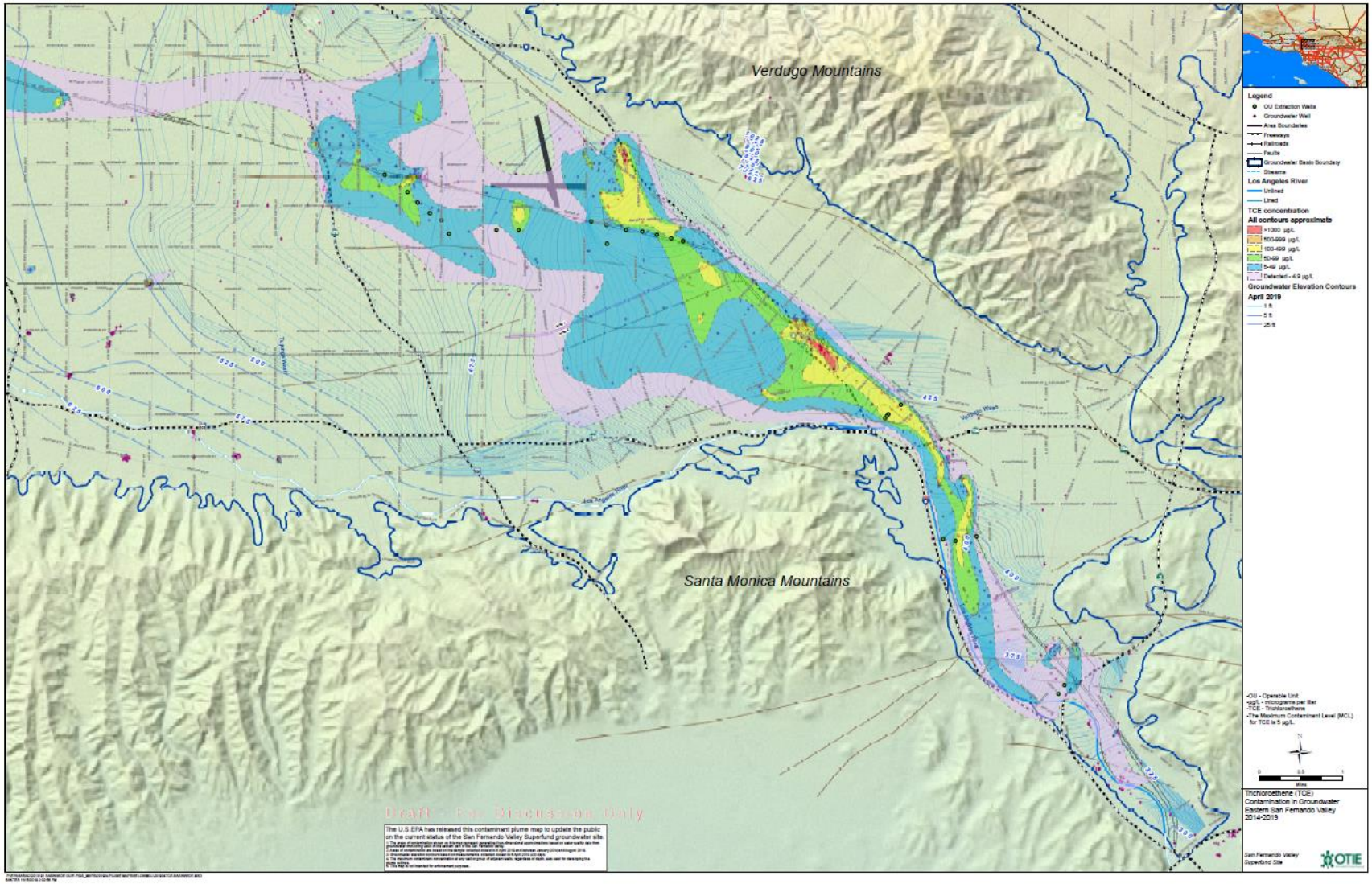
1.1. Background

The San Fernando Valley Area 1 Superfund Site consists primarily of a large groundwater contaminant plume from multiple sources in the San Fernando Valley (Figure 1). Site contaminant sources include, but are not limited to, the former Bendix Aviation and Allied Signal-Aerospace Company facilities in North Hollywood (successor cooperation is now Honeywell International), the former Lockheed Martin Corporation facilities near the Burbank Airport, the former Hewitt Pit Landfill, and many other known sources throughout Area 1. Trichloroethene and tetrachloroethene were widely used in the San Fernando Valley starting in the 1940s for dry cleaning and for degreasing machinery. Disposal was not well-regulated at that time, and releases from a large number of facilities throughout the eastern San Fernando Valley Area 1 have resulted in the large plume of volatile organic compounds-contaminated groundwater that starts in the San Fernando Valley Area 1 Site, extends southeast, down-gradient, through the San Fernando Valley Area 2 Site and through the San Fernando Valley Area 4 Site (Figure 2).

1.2. Physical Characteristics

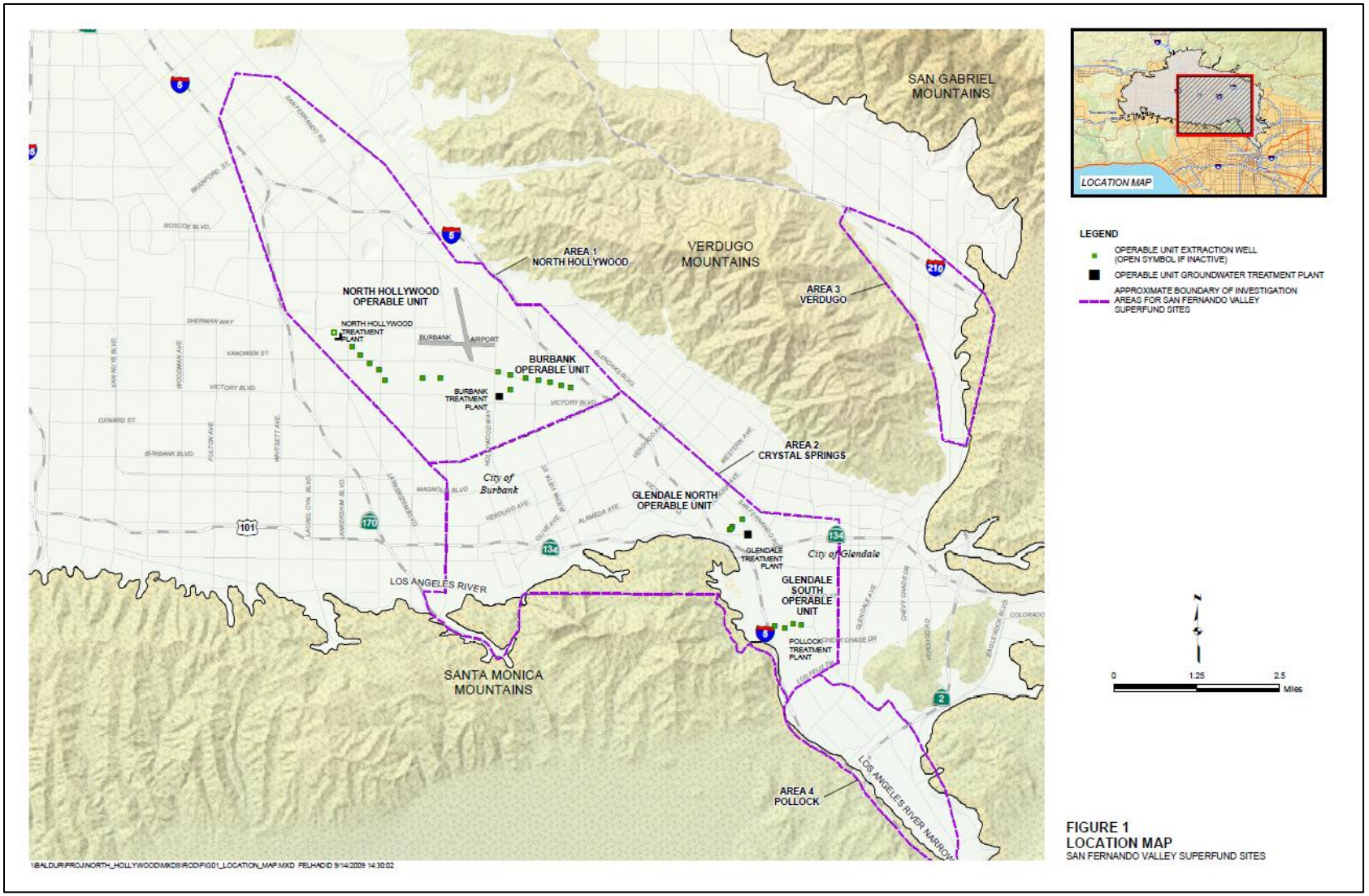
The Site is an area of comingled contaminated groundwater that encompasses approximately 13 square miles beneath the cities of North Hollywood and Burbank in the eastern San Fernando Valley, within the Upper Los Angeles River Area. The Site is in a populated urban area and does not affect any environmentally sensitive areas.

The San Fernando Valley Basin is a 122,800-acre basin in the south-central portion of the Transverse Ranges. It represents the largest basin within the Upper Los Angeles River Area. The San Fernando Valley is bordered on the northeast by the San Gabriel Mountains with the Verdugo Mountains to the southeast, on the north and northwest by the Santa Susana Mountains, on the west by the Simi Hills, and on the south by the Santa Monica Mountains.



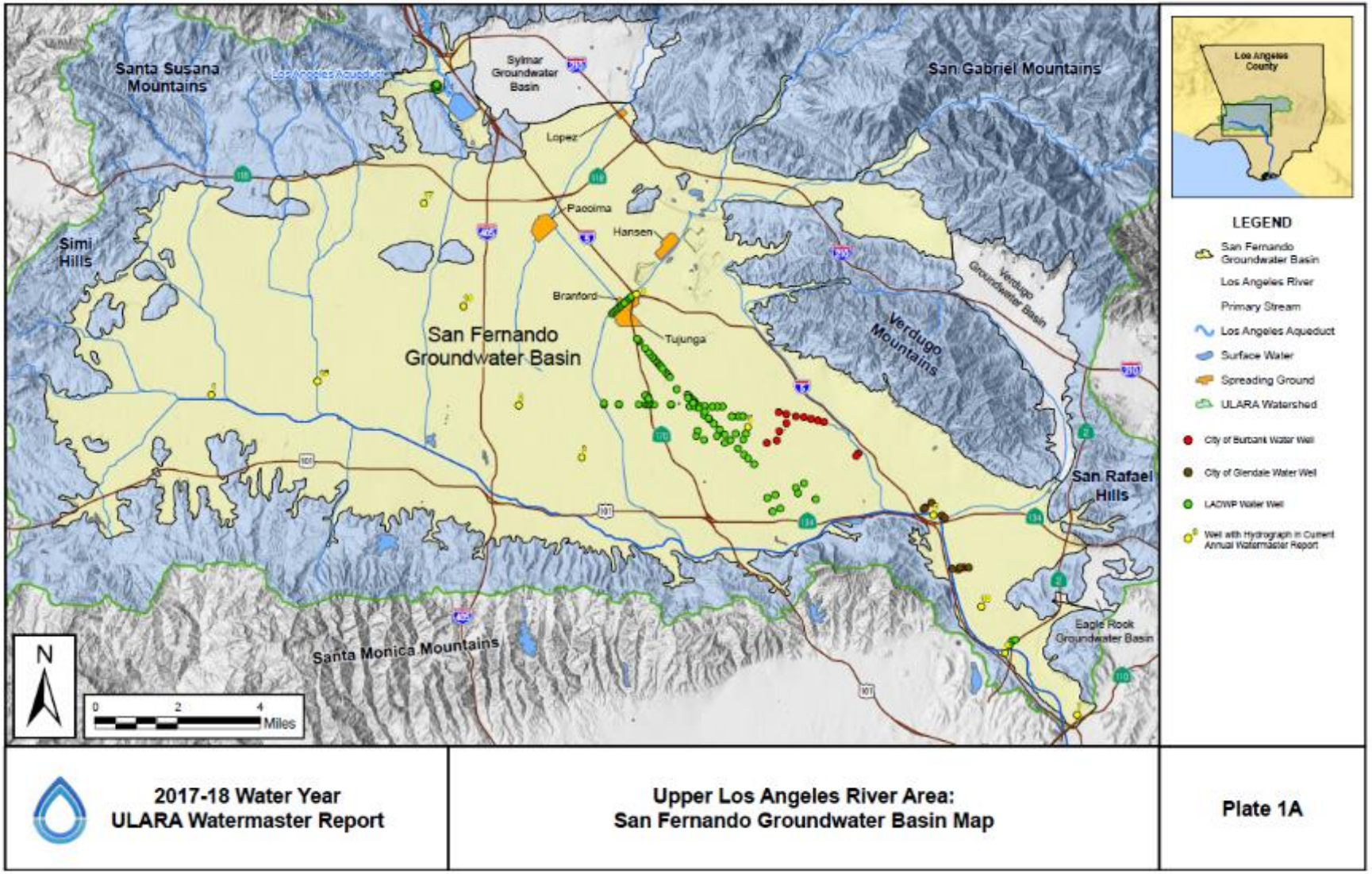
Source: OTIE Plume Map for EPA

Figure 1. Plume location based on 2019 data for the San Fernando Valley Superfund Sites



Source: 2009 Record of Decision, North Hollywood Operable Unit

Figure 2. San Fernando Valley Superfund Site Investigation Areas with location of North Hollywood and Burbank Operable Units



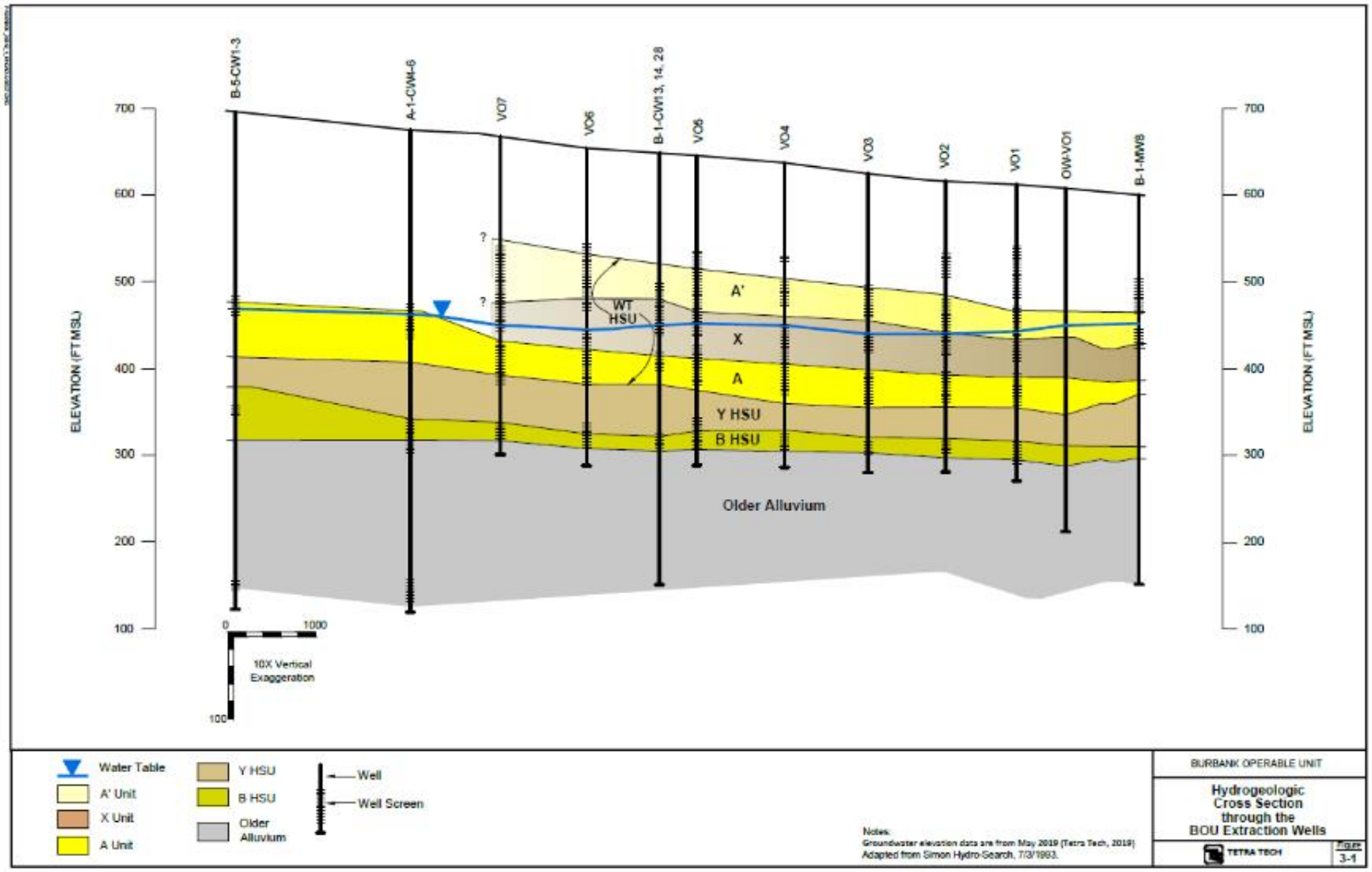
Source: 2017-18 Annual Watermaster Report, (ULARA 2019)

Figure 3. San Fernando Groundwater Basin, Part of the Upper Los Angeles River Adjudicated Area

1.3. Hydrology

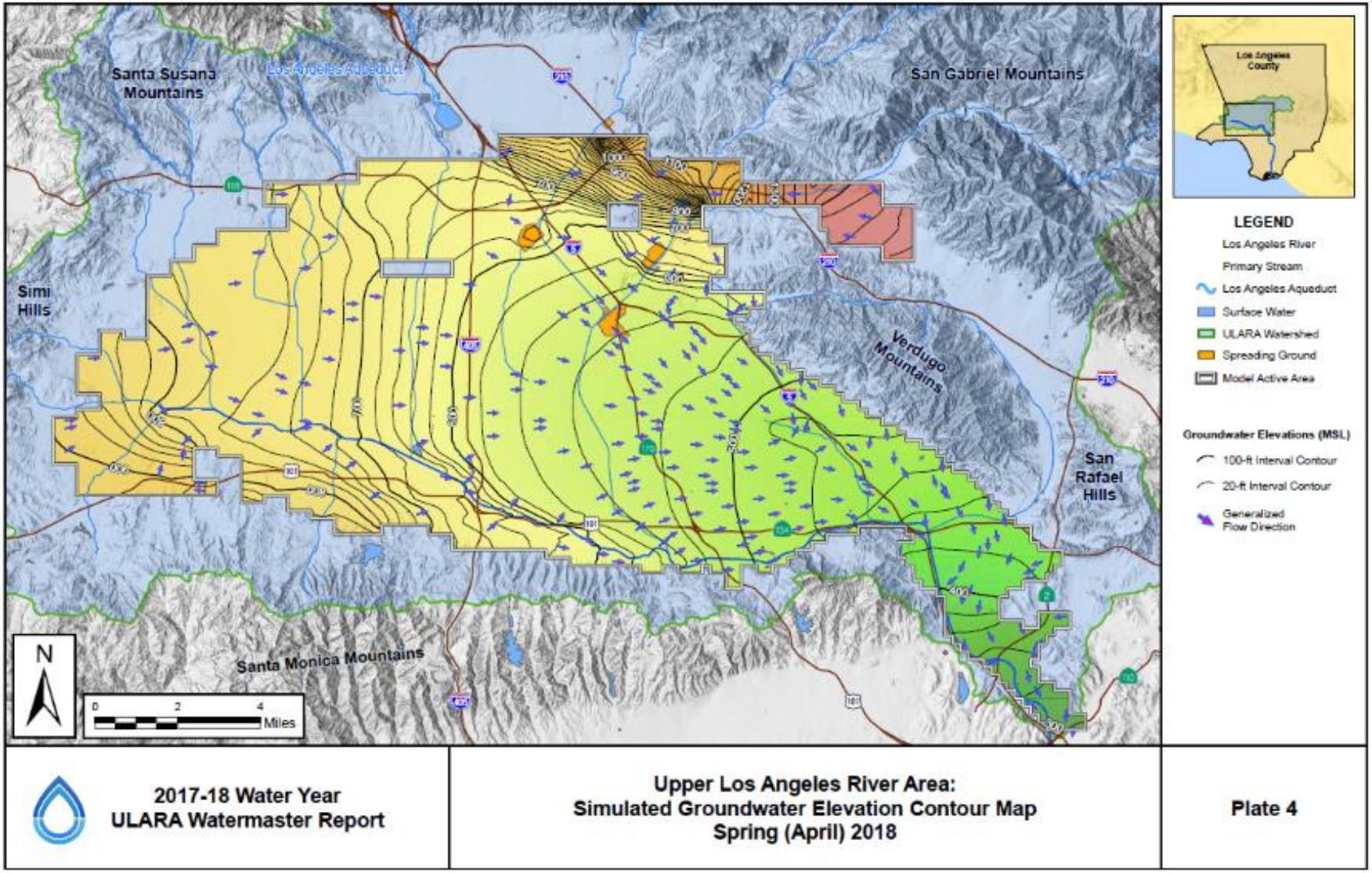
Groundwater in the San Fernando Valley is present in unconsolidated sediments shed from the surrounding mountains. The primary contaminated units at the Site are the A Zone, (also known as the Water Table Zone (WT-HSU) and the B Zone (Figure 4). The A-Zone is an unconfined aquifer within the coarse-grained sands and gravels present up to 350 feet below ground surface and overlies a leaky confining layer consisting of interbedded sands, silts, and clays. Beneath the confining layer is the B-Zone, which consists of coarse-grained sands and gravels from about 350 to 425 feet below ground surface. The depth to groundwater ranges from approximately 120 to 425 feet below ground surface.

Natural horizontal hydraulic gradients in the eastern San Fernando Valley generally run south and east, toward the Los Angeles River Narrows (Figure 5). However, extraction wells in North Hollywood and Burbank affect the gradient and can draw the flow of groundwater toward the extraction wells (Figure 6). Local water-spreading projects also have an impact on the gradient and aquifer recharge.



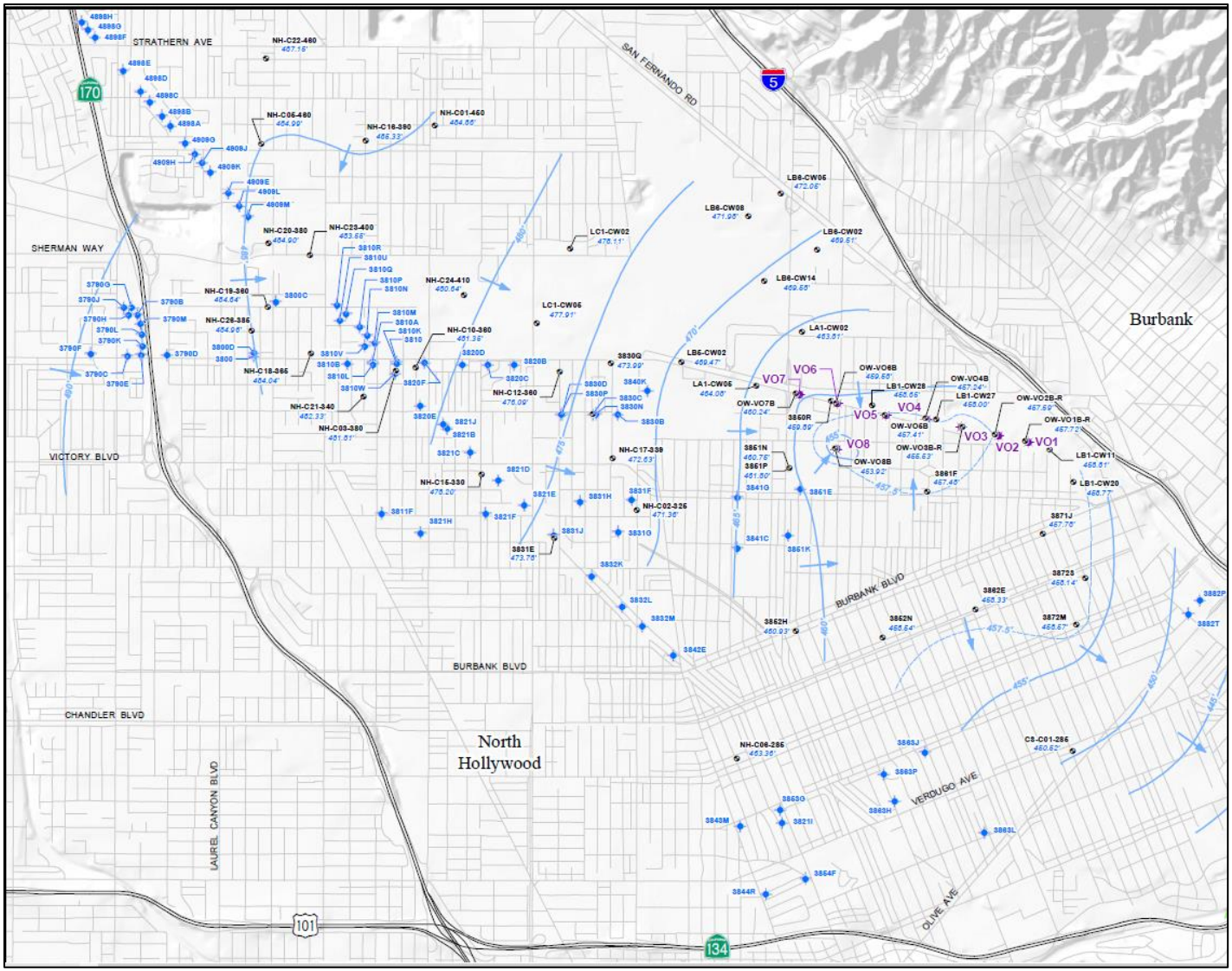
Source: Focused Feasibility Study, Burbank Operable Unit, Burbank, California (Tetra Tech, 2021)

Figure 4. Generalized Hydrogeologic Cross Section for San Fernando Valley Superfund Site



Source: 2017-18 Annual Watermaster Report, (ULARA 2019)

Figure 5. Generalized Groundwater Flow within the San Fernando Valley



Source: Focused Feasibility Study, Burbank Operable Unit, Burbank, California (Tetra Tech, 2021)

Figure 6. Site Well Fields and Monitoring Wells Near Well Fields with Groundwater Gradient

2. Remedial Actions Summary

2.1. Basis for Taking Action

The basis for taking action at this Site was the risk to human health associated with exposure to groundwater containing trichloroethene, tetrachloroethene, 1,4-dioxane, and chromium (both total and hexavalent). The primary risk to human health at the Site is ingestion of drinking water. The groundwater within the San Fernando Valley Basin provides drinking water to the Los Angeles, Burbank, and Glendale communities.

2.2. Remedy Selection

2.2.1. North Hollywood

In September 1987, EPA signed the first interim Record of Decision for North Hollywood, selecting an interim remedy to address volatile organic compound-contaminated groundwater in the North Hollywood area. The first Interim Action Record of Decision selected groundwater extraction and, treatment of volatile organic compounds by aeration combined with vapor phase carbon adsorption prior to discharge to the atmosphere.

In September 2009, EPA signed a second Interim Record of Decision for North Hollywood, selecting a remedy that utilized existing infrastructure to achieve improved performance and containment through rehabilitation and expansion of the previously installed extraction well network , and expanding the treatment system to include wellhead treatment, as necessary, accommodate higher flows, and treat additional compounds including volatile organic compounds, chromium, and 1,4-dioxane, with the intended end-use of this extracted water being drinking water.

EPA also identified the governmental controls to prevent exposure to contaminated groundwater. The primary governmental control is the 1979 Final Judgment in the Superior Court of California created the entity known as “Watermaster” with full authority to administer the adjudication of water rights. Under the judgment, only the cities of Los Angeles, Burbank, and Glendale are permitted to extract groundwater from the Basin. These drinking water regulatory controls and the Watermaster’s authority to regulate and allocate water resources ensure centralized control over area groundwater and its use as a drinking water source.

However, certain groundwater pumping scenarios acceptable to the Watermaster could interfere with the effectiveness of the Second Interim Remedy. In order to address this issue, EPA selected an institutional control in the form of a groundwater management plan to ensure the nearby pumping of water supply production wellfields does not negatively impact the North Hollywood remedy wells performance.

The remedial action objectives selected in the 2009 Interim Record of Decision are:

- Prevent exposure to contaminated groundwater above acceptable risk levels.
- Contain areas of groundwater with contaminant concentrations that exceed the drinking water standards and notification levels to the maximum extent practicable.
- Prevent further degradation of water quality at the Rinaldi-Toluca and North Hollywood West production wells fields by preventing the migration toward these well fields of the more highly contaminated areas of the volatile organic compound plume located to the east/southeast.
- Achieve improved hydraulic containment to inhibit horizontal and vertical contaminant migration in groundwater from the more highly contaminated areas and depths of the aquifer to the less contaminated areas and depths of the aquifer, including the southeast portion of North Hollywood in the vicinity of the Erwin and Whitnall production well fields.
- Remove contaminant mass from the aquifer.

In January 2014, EPA issued a Record of Decision Amendment allowing an alternative end-use if necessary; re-injection of treated water into the aquifer.

In June 2016, EPA determined that additional extraction wells should be included in the scope of the remedy in order to ensure the protection of the North Hollywood West production wellfield from 1,4-dioxane contamination, and issued a Memorandum to File which clarified that these wells were part of the required remedy.

In February 2018, EPA issued an Explanation of Significant Differences which expanded the amount of water to be extracted by the remedy. After reviewing additional groundwater data collected since 2009, EPA determined that increased groundwater extraction in North Hollywood could achieve greater containment. Requirements in the Explanation of Significant Differences include addition of new extraction wells, diversion of wells in the North Hollywood Eastern Plume Area to Burbank for treatment[4] and expansion of the North Hollywood treatment plant to accommodate the additional flow created by the new wells.

The 2009 Interim Record of Decision, as modified by the 2018 Explanation of Significant Differences, selected performance standards for treatment of the extracted groundwater, in addition to any other permit drinking water requirements. If an offsite drinking water requirement changes, the treatment system must meet whichever standard - the performance standard or the offsite requirement - is lower. With the

[4] Per the 2009 Explanation of Significant Differences, water extracted the Eastern North Hollywood Wells will be diverted to the treatment plant for the Burbank. Lockheed will evaluate the impacts of managing the Eastern North Hollywood well field as part of the Burbank treatment system in its upcoming Focused Feasibility Study. Following completion of the Focused Feasibility Study, EPA expects to issue a second interim record of decision for the Burbank. And the Burbank remedy will be updated to include this additional groundwater stream, via a Memorandum to File.

exception of hexavalent chromium, the performance standards based on maximum contaminant levels and notification levels, promulgated by EPA and the State of California. There is no state or federal maximum contaminant level or notification level for hexavalent chromium; therefore, EPA selected the Los Angeles Department of Water and Power's voluntary cleanup level as the performance standard for hexavalent chromium.

Table 2. Performance Standards for in Extracted and Treated Groundwater in North Hollywood

Chemical	Performance Standard (µg/L)	Basis for Performance Standard [a]
Trichloroethene (TCE)	5	Federal Drinking Water Standard
Tetrachloroethylene (PCE)	5	Federal Drinking Water Standard
1,1-Dichloroethane	5	Federal Drinking Water Standard
1,2-Dichloroethane	0.5	Federal Drinking Water Standard
1,1-Dichloroethene	6	Federal Drinking Water Standard
cis-1,2-Dichloroethen	6	Federal Drinking Water Standard
1,1,2-Trichloroethane	5	Federal Drinking Water Standard
Carbon tetrachloride	0.5	Federal Drinking Water Standard
Methylene Chloride	5	Federal Drinking Water Standard
Total Chromium	50	State Drinking Water Standard
Hexavalent Chromium	5[d]	See footnote "d"
Perchlorate	6	State Drinking Water Standard
1,2,3-Trichloropropane	0.005	California Department of Public Health notification level
1,4-dioxane	1	California Department of Public Health notification level
N-Nitrosodimethylamine	0.01	California Department of Public Health notification level

Notes:

[a] The California Department of Public Health permitting process may require lower concentrations in the treated effluent.

[b] Federal and State Drinking Water Standards specific to hexavalent chromium have not been established; therefore, the State Drinking Water Standard for total chromium currently is applied to hexavalent chromium.

[c] A Public Health Goal for hexavalent chromium is currently under development by the California Office of Environmental Health Hazard Assessment. Following development of a Public Health Goal, a State Drinking Water Standard specific to hexavalent chromium may be established.

[d] Based on discussions with Los Angeles Department of Water and Power, it is EPA's understanding that Los Angeles Department of Water and Power will continue to use a voluntary cleanup level of 5 µg/L for hexavalent chromium for water it will accept for use in its water supply system. Consequently, under the drinking water end use option, chromium treatment at North Hollywood will be needed so that Los Angeles Department of Water and Power's voluntary cleanup level of 5 µg/L can be met.

2.2.2. Burbank

In June 1989, EPA issued the Interim Record of Decision for Burbank. EPA selected an interim remedy to address the volatile organic compound-contaminated groundwater plume in the Burbank area. The two remedial action objectives for the remedy are:

- To partially control the movement and spread of groundwater contaminants in the Burbank area, while contributing to aquifer restoration in the San Fernando Valley Basin Area 1 Superfund Site.

- To address the public health threat posed by contamination of the City of Burbank's public water supply wells by providing residents in the area with a water supply that meets state and federal drinking water standards.

The selected remedy includes extraction wells to pump groundwater to the treatment plant for volatile organic compound removal by air stripping followed by a liquid phase granular activated carbon polishing step. The treated water is delivered to the City of Burbank for municipal supply. The air generated by air stripping is treated using granular activated carbon to remove contamination prior to discharge to the atmosphere. The selected remedy identified the governmental requirement that treated water distributed as drinking water is required to meet all Safe Drinking Water Act standards, as an institutional control.

In November 1990, EPA signed an Explanation of Significant Differences which determined that, based on high nitrate levels in the groundwater, additional measures were required to meet the drinking water standards for nitrate in the extracted and treated groundwater. EPA required blending of the extracted and treated groundwater with additional water from a water supply lower in nitrate, such that water served to the public would achieve the drinking water standards. The blending process resulted in a larger quantity of water being produced and raised the possibility that the City of Burbank would not have the demand, i.e., enough customers, to use all of the water produced. In the Explanation of Significant Differences, EPA required reinjection of excess treated water into the aquifer.

In February 1997, EPA signed a second Explanation of Significant Differences which allowed for a lower extraction rate than was selected in the 1989 Record of Decision. EPA determined that, based on additional study of the local groundwater system, an extraction rate of 9,000 gallons per minute resulted in substantially the same level of groundwater containment as an extraction rate of 12,000 gallons per minute (the rate called for in the 1989 Record of Decision). Because the City of Burbank had the capacity to accept the revised amount of extracted and treated water, 9,000 gallons per minute, EPA also eliminated the requirement for reinjection. EPA suspended the 9,000 gallons per minute extraction rate requirement during times when nitrate levels in the extracted groundwater exceed 50 milligrams per liter. In these cases, the quantity of water required to be used in the blending process in order for the effluent to meet federal drinking water standards for nitrate could make extraction at 9,000 gallons per minute infeasible for the City of Burbank to accept.

2.3. Remedy Implementation

2.3.1. North Hollywood

2.3.1.1 First Interim Remedy (1987 Interim Record of Decision)

Construction of the First Interim Remedy for North Hollywood was completed in March 1989 and the remedy operated from December 1989 until November 2017, when it was shut down with EPA approval due to declining water levels and maintenance issues.

The First Interim Remedy consisted of eight groundwater extraction wells (NHE-1 through NHE-8), one air stripping tower to remove volatile organic compounds from the extracted groundwater, two vapor phase granular activated carbon adsorbers to remove volatile organic compounds from the air stream, and ancillary equipment. Each extraction well is approximately 300 feet deep (screened in North Hollywood A Zone) and had an approximate capacity of 300 gallons per minute. Extraction well NHE-1 was never operated because of insufficient groundwater availability.

Extracted groundwater was fed through a 48-foot-tall, packed air stripper (packing height of 22 feet) with a capacity of 2,000 gallons per minute. After disinfection, treated groundwater was discharged into a Los Angeles Department of Water and Power blending facility where it was combined with water from other sources before entering the Los Angeles Department of Water and Power municipal supply system. The First Interim Remedy remains shut down while the Second Interim Remedy is being designed and built.

2.3.1.2 Second Interim Remedy (2009 Interim Record of Decision, modified by the 2018 Explanation of Significant Differences)

Honeywell International is currently designing and implementing the addition of new extraction wells in the central plume area and the expansion of the North Hollywood treatment plant while Lockheed Martin is designing and constructing additional extraction wells and implementing the diversion of groundwater extracted from wells in the North Hollywood eastern plume area that will deliver extracted water to the Burbank treatment system (see Section 2.4.2.1). Separately, CalMat is working on a design for additional extraction wells in the North Hollywood western plume area, as required by the Record of Decision.

Honeywell has been implementing the remedy in the central plume area using a phased approach. Honeywell entered into an agreement with Los Angeles Department of Water and Power to operate the Second Interim Remedy once it is constructed and permitted. Honeywell retained contractors, Wood Environmental and Infrastructure Solutions, Inc/WSP USA Environmental and Infrastructure Solutions, Inc (Wood/WSP) and Carollo Engineers, Inc, to assist with the implementation of the Second Interim Remedy. The phases and their completion status are summarized below:

- Phase 1A: Wood/WSP installed replacement extraction wells NHE-3R, NHE-4R, and NHE-5R, which replaced existing extraction wells NHE-3, NHE-4, and NHE-5 in 2018. EPA provided completion approval for Phase 1A in 2019.

- Phase 1B: Wood/WSP initiated installation of the Second Interim Remedy groundwater treatment system[5] and associated commissioning water conveyance to the storm drain in 2020. Construction was completed in early 2023. Wood/WSP constructed the Phase 1B treatment system and initiated start-up and shakedown activities in May 2023 to evaluate system performance.

- Phase 2A: Wood began installation of additional extraction wells (CCC-1, CCC-2, CCC-3) in 2019 and completed fieldwork in early 2020. EPA approved the well installations in mid-2020.

- Phase 2B: Carollo began construction of the of upgraded conveyance lines for influent from the Phase 2A extraction wells in February 2023 after EPA design approval in January 2023. Construction is anticipated to be completed in early 2024.

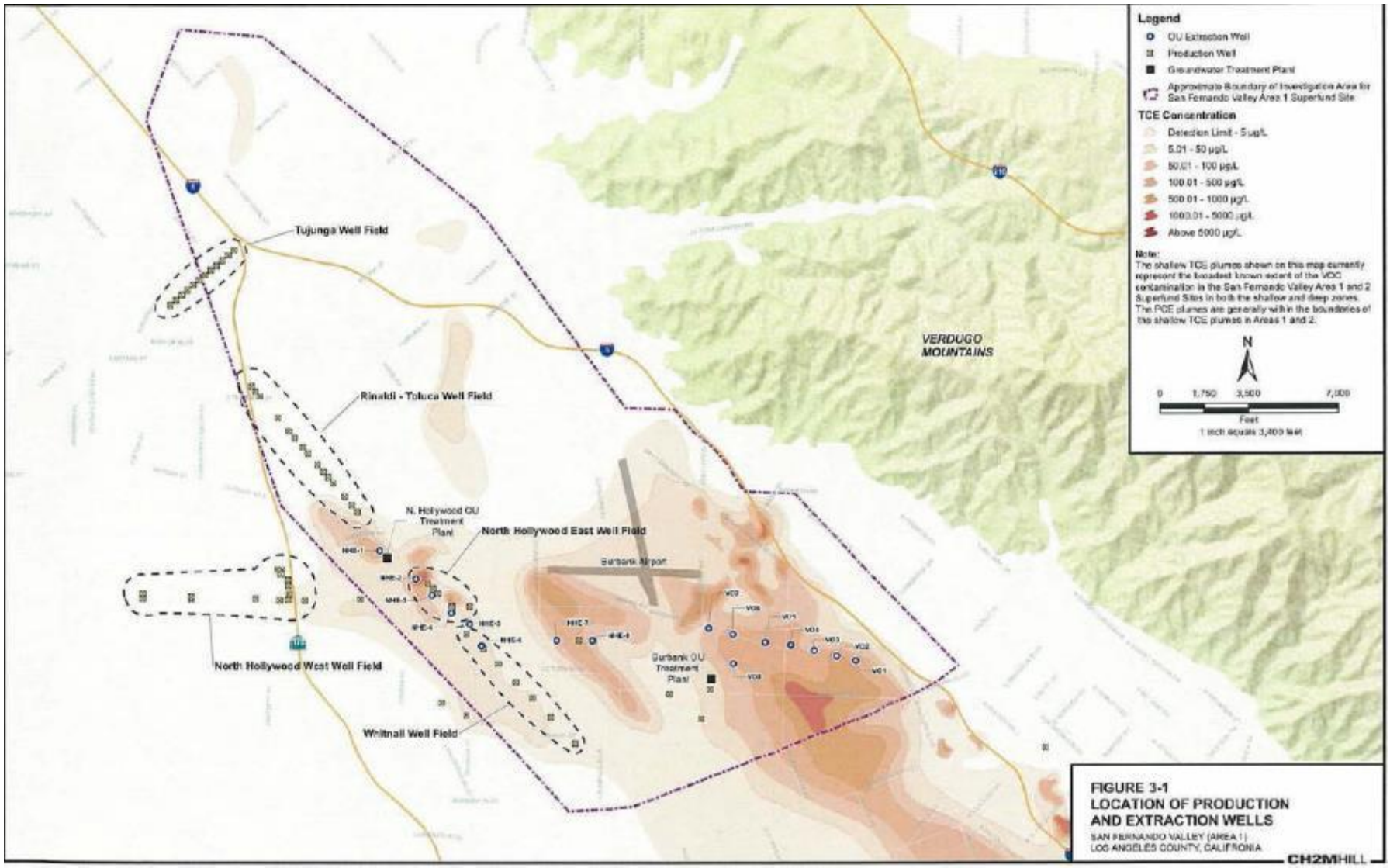
- Phase 3 – Wood/WSP submitted the 60% design for the Second Interim Remedy groundwater treatment plant in 2022. The Second Interim Remedy groundwater treatment system, like the Phase 1B treatment system will be located on Los Angeles Department of Water and Power-owned property referred to as Lankershim Yard. This treatment system is planned to be operated by Los Angeles Department of Water and Power pursuant to the agreement between Honeywell and the Los Angeles Department of Water and Power.

2.3.2. Burbank

The extraction and treatment system for Burbank was completed in two phases. Construction of Phase I of the Burbank extraction and treatment system occurred from 1993 to 1994, which included the installation of seven extraction wells (VO-1 through VO-7) capable of producing a combined flow of 6,000 gallons per minute. Operation began in 1996. In Phase II, a new well was added to allow an increase in the groundwater extraction rate from 6,000 gallons per minute to 9,000 gallons per minute. The City's municipal supply well W-10 (also known as WP-180) was modified and incorporated into the interim remedy as Burbank extraction well VO-8. Construction of Phase II was completed in December 1997 and operation commenced in 1998.

The treatment facility for Burbank is located southeast of Bob Hope Airport, and approximately 3.5 miles north of the Los Angeles River (Figure 7). All eight extraction wells within a half-mile of the treatment facility. A pipeline conveys the extracted groundwater to the Burbank treatment system. Treated groundwater is then conveyed to the City of Burbank's Valley Forebay for disinfection and storage, then to the blending facility. At the blending facility, the groundwater is blended with water from the Metropolitan Water District prior to distribution.

[5] First Remedy treatment system was demolished and the Second Interim Remedy, modified by the 2018 Explanation of Significant Differences, expanded system is constructed where the original treatment system was located.



Source: Focused Feasibility Study, Burbank Operable Unit, Burbank, California (Tetra Tech, 2021)

Figure 7. Location of Production and Extraction Wells and Treatment Plants

2.3.3. Institutional Controls

2.3.4. North Hollywood

The governmental control is the 1979 Final Judgment in Los Angeles v. San Fernando, (Superior Court Case No. 650079) (LA v. San Fernando). The 1979 Final Judgment in LA v. San Fernando upheld the Pueblo Right of the City of Los Angeles to all groundwater in the Upper Los Angeles River Area Basin from precipitation within the Upper Los Angeles River Area and all surface and groundwater flows from the Sylmar and Verdugo Basins. 14 Cal. 3d 199 (1975). LA v. San Fernando also established the water rights of the cities of Los Angeles, Glendale, and Burbank to all water imported from outside the San Fernando Valley Basin and either spread or delivered within the San Fernando Valley Basin. With the exception of a few legacy entities including a few cemeteries and a hotel, only the Cities that are party to the Judgment have the authority to extract groundwater from the San Fernando Valley Basin.

The Final Judgment created the entity known as "Watermaster" with full authority to administer the adjudication, under the auspices of the Superior Court Each of these municipalities administers a public water system, which is regulated by the California State Water Resources Control Board, Division of Drinking Water.

Additional governmental controls on the use of groundwater as drinking water include EPA and State of California-promulgated drinking water standards and California State Action Levels that require drinking water standards to be met before delivery of the treated water to the potable water supply.

2.3.5. Burbank

The Burbank remedy identified as the institutional control, the governmental control, of drinking water permit requirements from the state drinking water authority. The use of groundwater as drinking water includes EPA and State of California-promulgated drinking water standards and California State Action Levels that require drinking water standards to be met before delivery of the treated water to the potable water supply.

2.4. Operation and Maintenance

2.4.1. North Hollywood

Limited operations and maintenance activities were conducted during the review period because the treatment system for the first interim remedy was shut down in 2017 so that to design and construct the Second Interim Remedy treatment system could be designed and constructed. However, operation of a portion of the Second Interim Remedy treatment plant, Phase 1, began in May 2023, and initial activities to ensure that treatment plan can perform as designed are ongoing.

2.4.2. Burbank

The City of Burbank conducts operations and maintenance activities for the Burbank groundwater treatment plant. Operations and maintenance are conducted in accordance with the Operations and

Maintenance Plan and are monitored to evaluate if the treatment plant is operating within permit conditions. Monitoring is conducted in accordance with the Groundwater Monitoring Sampling and Analysis Plan, which includes as attachments, a Field Sampling Plan and updated Quality Assurance Project Plan. Tetra Tech, consultant for Lockheed Martin, revised the Sampling and Analysis Plan for Burbank in 2019 and prepared an addendum in 2022 to replace total chromium analysis with dissolved chromium.

Tetra Tech conducts the larger groundwater monitoring program intended to evaluate the near-field and far-field effects of the Burbank extraction well field. Tetra Tech conducted an evaluation in 2019 to set criteria for replacing dry wells resulting from dropping basin water levels within the Burbank groundwater monitoring program. Because basin water levels are transient, key monitoring wells are not considered for replacement unless they have been dry for at least two years in a row, and conditions do not suggest that groundwater elevations should be recovering. Damaged monitoring wells are also be considered for replacement.

2.4.2.1 Significant Operations and Maintenance Activities

The following non-routine operations and maintenance tasks, primarily associated with the groundwater monitoring and replacement program were noted during the review period:

- Tetra Tech abandoned monitoring well A-1-CW07, because it was damaged and could not be rehabilitated, and replaced it with a similarly constructed replacement well, identified as A-1-CW07R in 2018.

- In 2018, Tetra Tech rehabilitated observation wells OW-VO4A/B, OW-VO5A/B, and destroyed and replaced OW-VO7A/B.

- As part of the former Lockheed Martin Plant B-6 property redevelopment, Tetra Tech destroyed nine groundwater monitoring wells (B-6-CW04, B-6-CW05, B-6-CW06, B-6-CW07, B-6-CW08, B-6-CW09, MW-01, MW-02, and MW-03) in 2020 and replaced four key wells (identified as MW-03R, B-6-CW05R, B-6-CW-08R and B-6-CW09R) in 2020 and 2021.

- Tetra Tech installed monitoring well C-1-CW06-R in 2022 to replace monitoring C-1-CW06, which has been identified as a key well in the North Hollywood Eastern Plume Area. Because of the declining water levels within the San Fernando Valley, C-1-CW06 has not consistently had a sufficient water column to allow for sampling; and the recent groundwater model update forecasts a continued decline in the groundwater elevation. The original well was not abandoned since it is not consistently dry.

- Well B-5-CW03R is scheduled to be replaced in the third quarter of 2023.

3. Progress Since the Last Five-Year Review

3.1. Previous Five-Year Review Protectiveness Statement and Issues

The protectiveness statement from the Third Five-Year Review for the San Fernando Valley Area 1 Superfund Site stated the following:

The remedy at the North Hollywood Operable Unit is currently protective of human health and the environment because there is no exposure to untreated groundwater. The public is not exposed to untreated groundwater because the Second Interim Remedy is not currently extracting groundwater and governmental controls restrict and require treatment of other extraction of the groundwater. The remedy for North Hollywood has recently been modified to increase pumping rates and add new wells. Once these improvements have been implemented, EPA expects that all Remedial Action Objectives will be achieved.

The remedy at the Burbank Operable Unit is currently protective of human health and the environment. The treatment system effluent contaminant concentrations are less than their regulatory cleanup goals and there are governmental controls in place that prevent exposure to untreated groundwater.

The Third Five-Year Review did not include any issues or recommendations.

3.2. Work Completed at the Site During this Five-Year Review Period

3.2.1. North Hollywood

The majority of the work completed in North Hollywood during the review period was associated with implementing the Second Interim Remedy (Section 2.3.1.2). Other work completed during the review period during included groundwater monitoring, which will be evaluated in Data Review (Section 4.2).

3.2.2. Burbank

3.2.2.1 Focused Feasibility Study

Tetra Tech, consultant for Lockheed Martin, prepared a Focused Feasibility Study in 2021 to support the selection of a Second Interim Remedy for Burbank, that included incorporation of the North Hollywood Eastern Plume Area. The focused feasibility study goals were to: identify, collect, and evaluate updated Burbank site data; evaluate the effectiveness of the existing Burbank interim remedy in achieving the remedial action objectives set forth in the 1989 Burbank Record of Decision; and evaluate containment and treatment options to improve remedy performance.

Tetra Tech recommended the following alternative from the feasibility study to enhance hydraulic containment within Burbank and the North Hollywood Eastern Plume Areas:

- Install three new extraction wells in the North Hollywood Eastern Plume Area along with a new pipeline to connect the wells to the influent of the existing Burbank water treatment plant. Each

well will be pumped at 600 gallons per minute, for a total of 1,800 gallons per minute of groundwater.

- Increase the existing Burbank well extraction rates so that the total influent matches the required 9,000 gallons per minute.

- Install an ultraviolet/advanced oxidation process system to treat 1,4-dioxane in the influent to below its California drinking water notification level and permit discharge criteria.

- Discontinue use of the current air stripping towers for volatile organic compounds since the ultraviolet/advanced oxidation process system will treat volatile organic compounds alongside the existing granular activated carbon vessels.

- Install one additional liquid-phase granular activated carbon vessel to accommodate the higher flowrate.

- Install a permanent piping intertie between the City of Burbank distribution system and the Los Angeles Department of Water and Power system that will allow distribution of treated water to Los Angeles Department of Water and Power beyond what the City of Burbank can accept.

3.2.2.2 Vapor Intrusion

Lockheed Martin completed a vapor intrusion desktop study focused on tetrachloroethene and trichloroethene in 2019 as part of updating the conceptual site model in the focused feasibility study. The objectives of the desktop study were to:

- Gather and evaluate available data within Burbank to develop generalized and localized vapor intrusion conceptual site models; and

- Identify whether there are priority areas within Burbank that may warrant further evaluation based on the potential for vapor intrusion impacts due to migration of volatile organic compounds from the regional groundwater plume.

The Desktop Study concluded that no further assessment of the vapor intrusion pathway was warranted, because locations with high vapor intrusion potential were not identified within the study area. However, during subsequent discussions between Lockheed Martin and EPA, a mutually agreeable scope for a field investigation at eight locations (Table 3) was reached to confirm the results of the desktop study to verify that no vapor intrusion associated with the deeper groundwater plume is occurring. EPA accepted the Desktop Study in August 2021 and Lockheed Martin submitted a Revised Vapor Intrusion Field Verification Sampling and Analysis Work Plan in September 2022. EPA expects the sampling to be completed by end of 2023.

Table 3. Well Locations Selected for Vapor Intrusion Field Verification Investigation.

Well Locations Selected for Field Investigation

Well Name	Land Use Category	2016 through 2019 Study Period			Prioritization Category (2016-2019)	1993 through 1996 Study Period			Prioritization Category (1993-1996)
		Depth to Groundwater (ft btoc)	PCE Concentration (µg/L)	TCE Concentration (µg/L)		Depth to Groundwater (ft btoc)	PCE Concentration (µg/L)	TCE Concentration (µg/L)	
3830S	Residential	229.13	5.30	160	3	208.01	180	49	3
3850N	Commercial/Industrial	197.12	53.4	39.8	5	155	540	1100	3
3850X	Residential	173.23	99	72	4	100	800	550	3
3851M	Commercial/Industrial	185.21	5.51	24	5	155.82	1800	4000	3
3860K	Commercial/Industrial	204.45	3220	444	3	170.82	1300	360	3
3861D	Residential	157.67	24	160	3	120.64	3000	3400	3
3872Q	Residential	114.7	216	73	3	89.4	1300	1100	3
3871G*	Residential	No data, well dry, (DTW at 3871H ~ 139 ft btoc in 2018)				99.95	1800	1500	3

* Shallow well at 3871 well cluster. Location added at the request of EPA

3.2.2.3 Groundwater Model Update

In 2019, Tetra Tech completed a calibration update for the San Fernando Valley historical groundwater flow model, which includes North Hollywood, Burbank, and San Fernando Valley Area 2 and surrounding areas. CH2M Hill created the initial groundwater flow model of the San Fernando Valley in 1994 for EPA to analyze alternatives for the existing and planned remedial measures. Ongoing data collection and improvements in hydrogeologic interpretation in the San Fernando Valley have led to numerous revisions to the flow model.

The 2019 flow model update included the following modifications and additions:

- Revised the model boundary at the base of the Verdugo Mountains to better reflect the model representation of the mountain front.
- Added and implemented the effects of the Verdugo Fault on groundwater flow into the model.
- Updated the historical calibration period from water year 2015 through water year 2017.
- Refined the model calibration by verifying the calibration against the large-scale aquifer test conducted in 2010 at the Burbank extraction well system, using drawdowns measured during the test as calibration targets.

3.2.2.4 High Speed Rail Project

The California High-Speed Rail Authority hired a contractor, Jacobs, to prepare a memo detailing the overlap between the Site remediation infrastructure and the planned California High Speed Rail Project from Burbank to Los Angeles. Project design overlies parts of the Burbank remedy creating a need for the High-Speed Rail Authority to replace some remedy infrastructure that would be impacted by their project including: 1) conveyance piping and ancillary infrastructure (primarily the sampling cabinets) associated with extraction wells V01 to V04; 2) a portion of conveyance system piping which crosses Buena Vista

St. and is situated between extraction wells V04 and V05; 3) portions of conveyance system piping and the valve vault within Vanowen St.. and between extraction wells V05 and V07; and 4) extraction wells V05 and V06, with the remaining extraction wells (V01 to V04, V07) and all associated observation wells being protected in place. Construction of the High-Speed Rail Project isn't expected within the next five-year review period.

4. Five-Year Review Process

4.1. Community Notification, Involvement, and Site Interviews

An announcement regarding the Five-Year Review was made at the November 2022 and the March 2023 quarterly stakeholder meeting for anyone wishing to provide comments or be interviewed. No comments or response were received from the announcement.

A separate public notice was made available by a newspaper posting in *the Los Angeles Daily News* on March 20, 2023, stating that there was a Five-Year Review and inviting the public to submit any comments to the EPA. No public comments were received. The results of the review and the report will be made available at the Site information repository located at 75 Hawthorne Street, Room 3110, San Francisco, California 94105.

4.1.1. Site Interviews

During the Five-Year Review process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The EPA solicited written responses to questions from the City of Glendale. The City of Glendale impression is that the project is well-run and the communication with EPA and other agencies is frequent. The City of Glendale noted that the Plant Manager is also proactive in performing preventive maintenance which helps minimize unexpected project interruptions. The Glendale Respondents Group has been very supportive of the operations.

4.2. Data Review

4.2.1. North Hollywood

The North Hollywood treatment plant has been shut down since 2017. While the presence of governmental controls (e.g., the Site is located within an adjudicated basin) ensures that the first objective has been met despite the fact that the groundwater extraction and treatment has not operated during the review period, the final remedial objective of contaminant mass removal from the aquifer has not been achieved during the review period since no groundwater has been extracted or treated in North Hollywood. The remaining three remedial objectives primarily relate to protecting nearby water supply fields from degradation and/or contaminant migration and are further evaluated in Section 4.2.1.1.

Because portions of the Second Interim Remedy extraction and treatment system only recently began operating, there is no data available at this time to evaluate the extent of containment that the initial phase

of operations is achieving. It is anticipated that hydraulic containment and mass removal will be improved once the North Hollywood Second Interim Remedy construction is fully completed and fully operational.

4.2.1.1 North Hollywood Contaminant Migration and Well Field Evaluation

This section includes detailed discussions for each of the five well fields identified in the remedial action objectives and additional details regarding contaminant migration and changes in hydraulic containment since the First Interim Remedy's extraction and treatment system was shut down in 2017. To evaluate if the objective of protecting nearby drinking water wells and inhibiting contaminant migration were met during the review period, Mann-Kendall trend analyses were completed for monitoring wells near and water supply wells at the following production well fields: North Hollywood, North Hollywood East, Rinaldi-Toluca, Whitnall and Erwin (Figures 7 and 8). The wells selected for analysis were wells with more than three detections of tetrachloroethene, trichloroethene, and/or hexavalent chromium during the previous five years (Appendix C). Based on these conditions, evaluations were completed on 26 wells for TCE, 12 wells for PCE, and 18 wells for hexavalent chromium. These evaluations included both drinking water wells (which are generally deeper), remediation wells (which are generally in the areas of higher concentrations of contamination) and monitoring wells (which are generally shallower).

Table 4. Summary of Mann-Kendall Trend Analysis in North Hollywood

Mann Kendall Trend: Contaminant of Concern:	**No Trend** (% of wells analyzed)	**Decreasing/ Probably Decreasing** (% of wells analyzed)	**Stable** (% of wells analyzed)	**Increasing/ Probably Increasing** (% of wells analyzed)
TCE	9 (35%)	8 (30%)	2 (8%)	7 (27%)
PCE	4 (33%)	3 (25%)	1 (9%)	4 (33%)
Hexavalent Chromium	3 (16.5%)	3 (16.5%)	6 (33%)	6 (33%)

Based on this table, there is no dominant trend among a majority of wells. Variability in this type of analysis is common and it is important to compare well characteristics such as depth and location to understand how these trends correlate. Therefore, this analysis is further broken down by drinking water well field (location) below.

Rinaldi-Toluca Well Field

At the Rinaldi-Toluca well field, contamination is relatively stable with no indications of increasing contamination at the well field (Table 5). Only two of the eight drinking water wells had an increasing trichloroethene trend and none of them had increasing trends for hexavalent chromium or tetrachloroethene (Figures 8 through 11). One of the four monitoring wells had increasing trichloroethene trends. Three of the nine nearby monitoring wells had increasing hexavalent chromium; however, none of the drinking water wells had increasing hexavalent chromium. This difference may be due to the long-screen intervals in and the high-flow pumping of drinking water wells.

Table 5. Summary of Mann-Kendall Trend Analysis in Rinaldi-Toluca Well Field

Well	TCE	Hexavalent Chromium	PCE
Drinking Water Wells			
RT-1	Stable	Stable	
RT-10	Increasing		
RT-11	Stable		
RT-13	Decreasing		
RT-14	Probably Decreasing		
RT-15	No Trend		
RT-2	Increasing	Stable	
RT-3	No Trend		
Monitoring Wells			
RT-MW-01-Z1	Decreasing		
RT-MW-04-Z1	Decreasing		
RT-MW-04-Z3	No Trend		
RT-MW-06-Z1	Increasing		

North Hollywood West Well Field

The North Hollywood West well field had increasing trichloroethene trends at three wells and increasing tetrachloroethene at two wells and one with a stable tetrachloroethene trend. Only one out of the four monitoring wells had an increasing trichloroethene trend and one of the three had an increasing tetrachloroethene trend (Figures 8 through 11). Similar to the other well field, there is variability in the trends at the wells and therefore a trend can't be assigned to the well field as a whole. Because there is an increasing trend at most of the extraction wells in the North Hollywood West well field, it is likely this well field is pulling contamination in from other parts of the aquifer.

Table 6. Summary of Mann-Kendall Trend Analysis in North Hollywood Well Field

Well	TCE	Hexavalent Chromium	PCE
Drinking Water Wells			
NH-22	Increasing		
NH-23	Increasing		
NH-26	Increasing		Increasing
NH-4			Increasing
NH-7			Stable
Monitoring Wells			
NH-MW-03-Z1		Probably Increasing	
NH-MW-05-Z1		No Trend	
NH-MW-06-Z1	Probably Decreasing	Increasing	No Trend
NH-MW-06-Z2	Stable	No Trend	
NH-MW-06-Z3		Increasing	

Well	TCE	Hexavalent Chromium	PCE
NH-MW-11-Z1	Increasing	Decreasing	Probably Increasing
NH-MW-11-Z2	Decreasing	Stable	No Trend
NH-MW-11-Z3		Stable	

Second Interim Remedy Extraction Well Field

The North Hollywood Second Interim Remedy extraction well field had five wells with enough data to complete Mann-Kendall and one well had increasing tetrachloroethene trends, two had increasing hexavalent chromium and no wells had increasing trichloroethene trends (Figures 8 through 11). Three of the four nearby monitoring wells had increasing trends. Contamination at the Second Interim Remedy extraction well field has not significantly increased in the past five years but is showing increasing trends in certain areas.

Table 7. Summary of Mann-Kendall Trend Analysis in Second Interim Remedy Well Field

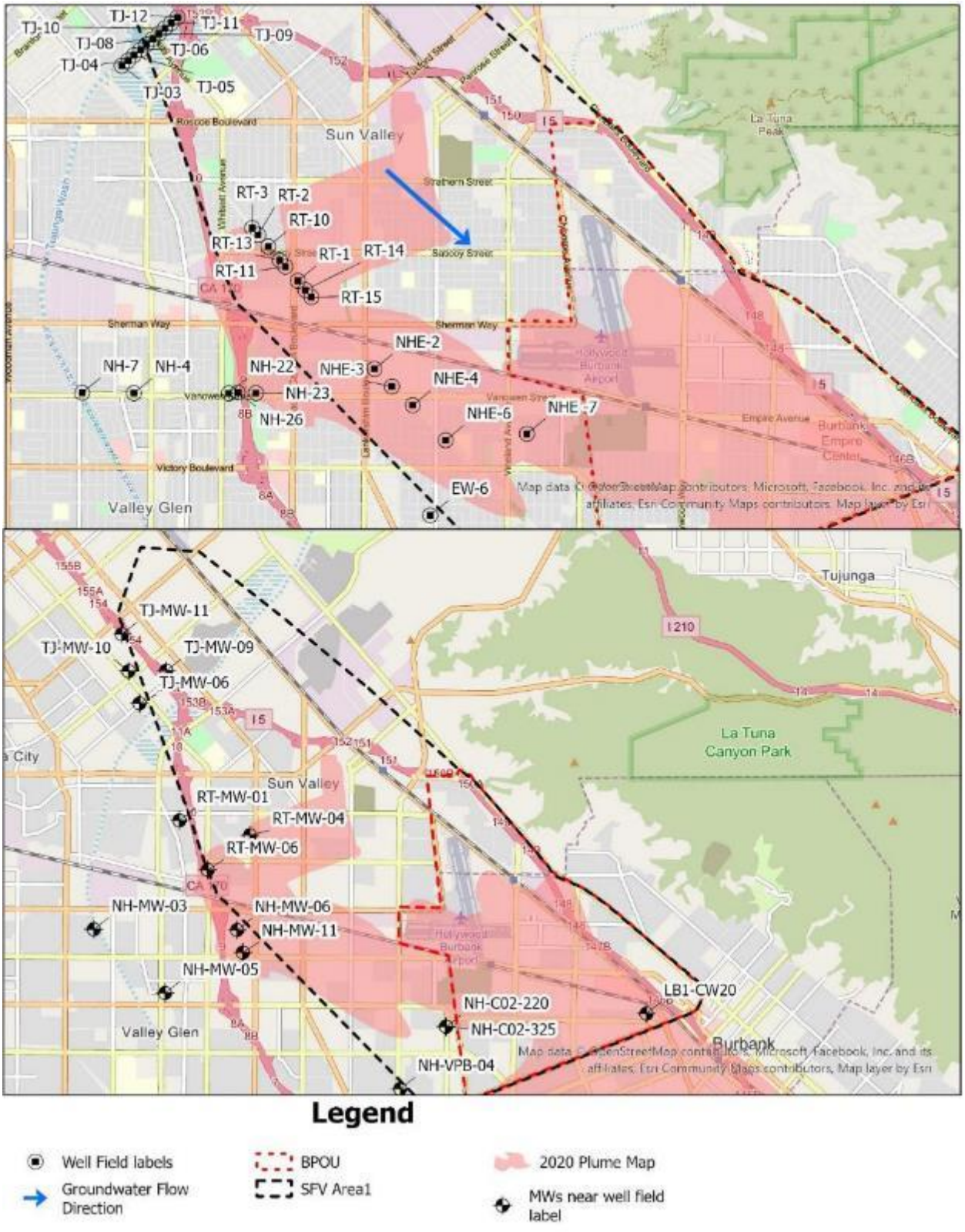
Well	TCE	Hexavalent Chromium	PCE
Drinking Water Wells			
NHE -7	Decreasing	Decreasing	Decreasing
NHE-2	Decreasing	Decreasing	Decreasing
NHE-3	No Trend	No Trend	Increasing
NHE-4	No Trend	Probably Increasing	No Trend
NHE-6	No Trend	Increasing	Probably Decreasing
Monitoring Wells			
NH-MW-03-Z1		Probably Increasing	
NH-MW-05-Z1		No Trend	
NH-MW-06-Z1	Probably Decreasing	Increasing	No Trend
NH-MW-06-Z2	Stable	No Trend	
NH-MW-06-Z3		Increasing	
NH-MW-11-Z1	Increasing	Decreasing	Probably Increasing
NH-MW-11-Z2	Decreasing	Stable	No Trend
NH-MW-11-Z3		Stable	

Erwin Well Field

The Erwin well field is currently not within the contaminant plume based on the most recent 2022 groundwater reports for both North Hollywood and Burbank. This was also found to be the case in the previous Five-Year Review. The closest area of contaminated groundwater is to the northeast, south of the Burbank airport at Clybourn Ave, Victory Blvd and Vineland Ave, seen in monitoring wells NH-C17-255, NH-C12-280 and 3831Q.

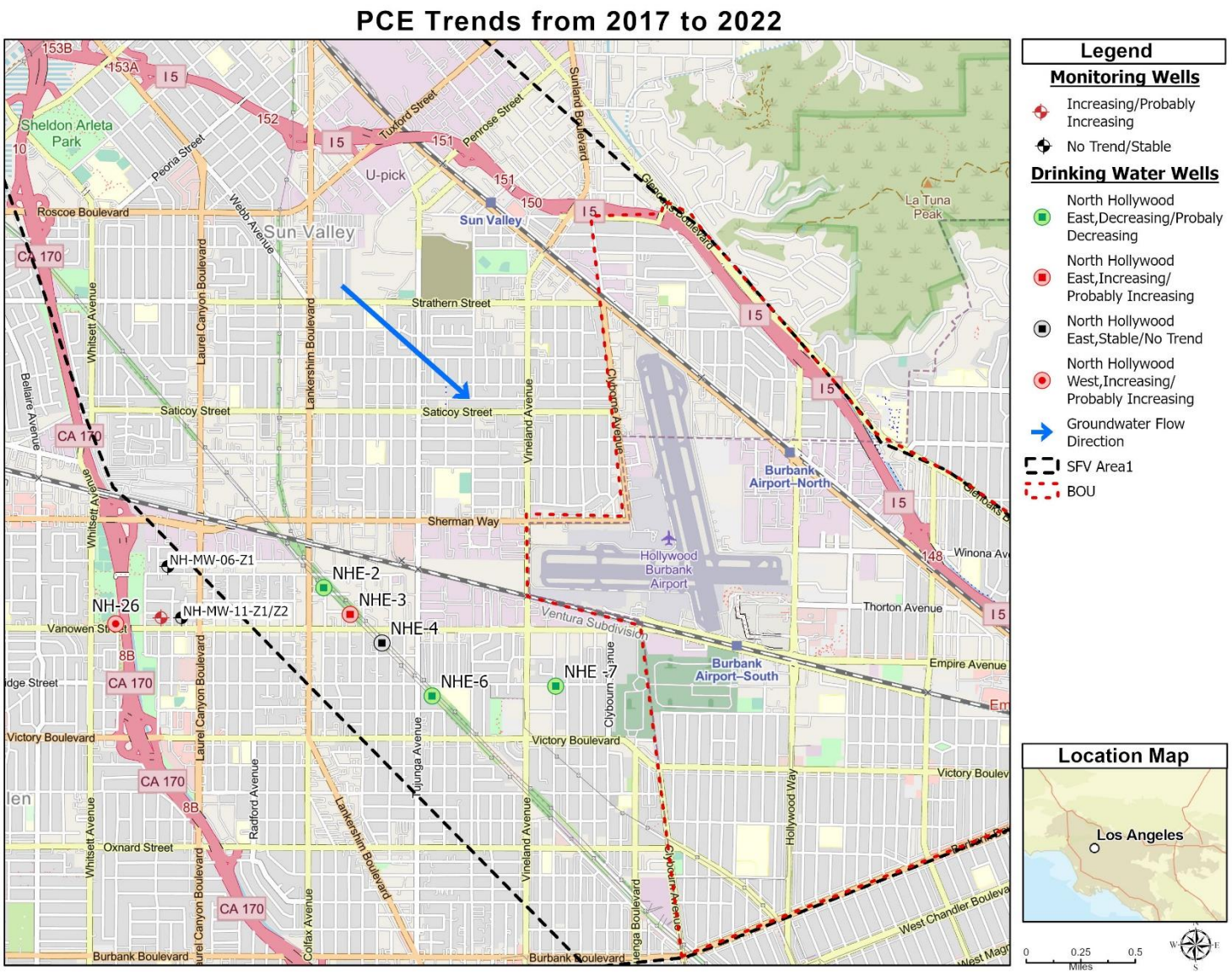
Table 8. Summary of Mann-Kendall Trend Analysis in Erwin Well Field

Well	TCE	Hexavalent Chromium	PCE
Drinking Water Wells			
EW-6	No Trend		
Monitoring Wells			
NH-C02-220	No Trend	Stable	
NH-C02-325	No Trend	Stable	
NH-VPB-04		No Trend	



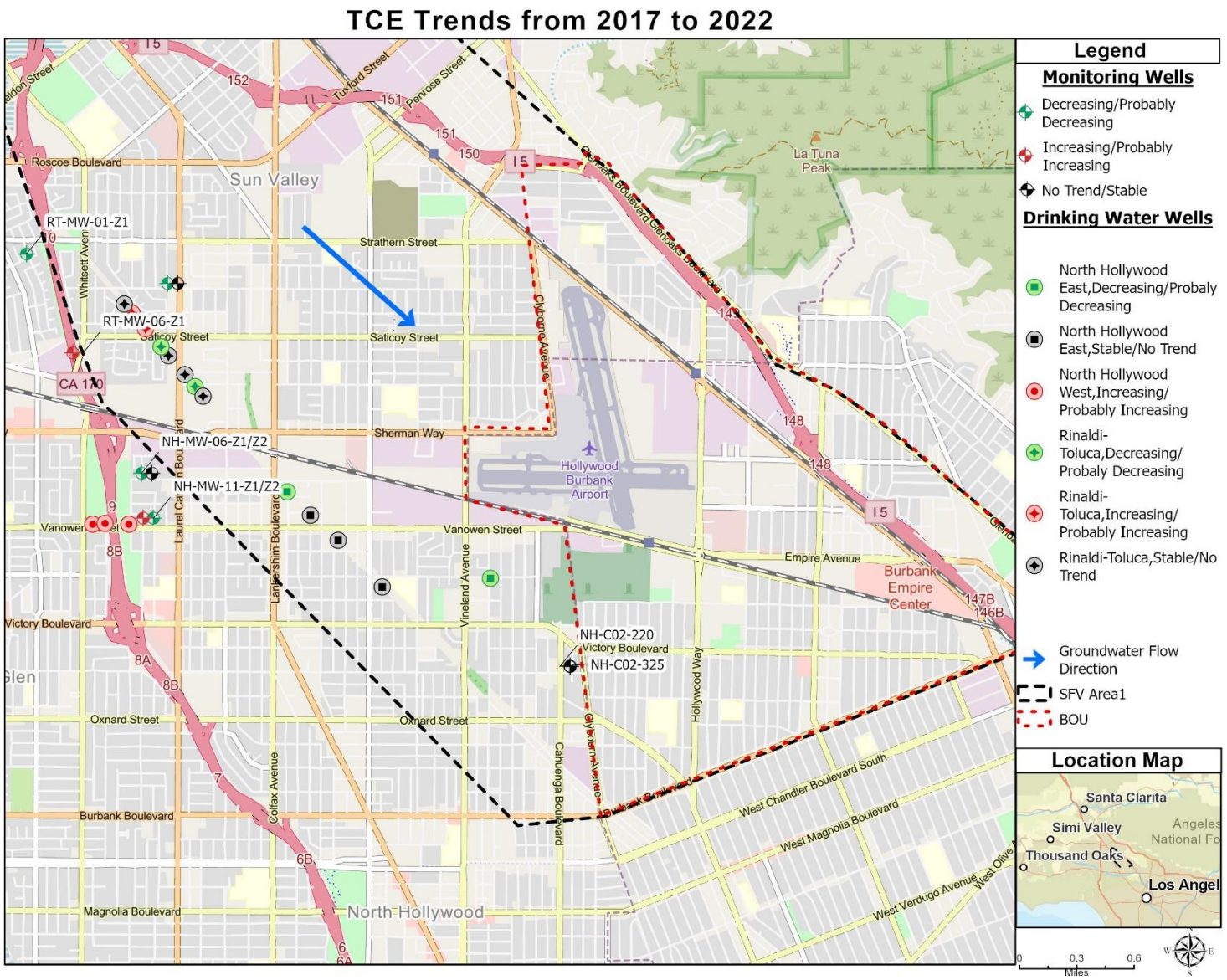
Source: USACE

Figure 8. Well Fields (upper) and Monitoring Wells (lower) Near Well Fields



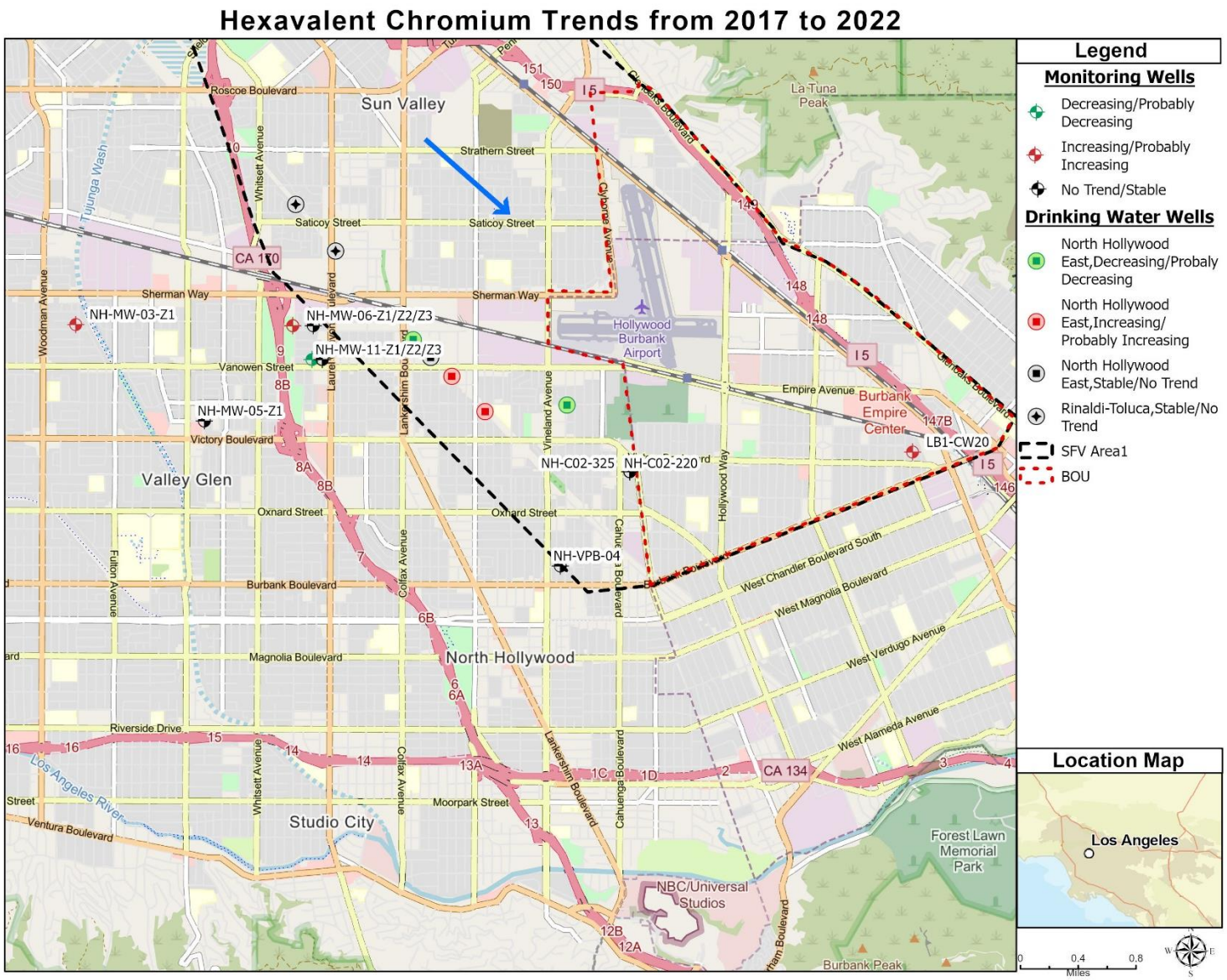
Source: USACE

Figure 9. Trichloroethene Trends at Well Fields



Source: USACE

Figure 10. Tetrachloroethene Trends at Well Fields



Source: USACE

Figure 11. Hexavalent Chromium Trends at Well Fields

4.2.2. Burbank

The Burbank interim remedy's remedial action objectives are to partially control the movement and spread of groundwater contaminants in the Burbank area, while contributing to aquifer restoration in the San Fernando Valley Basin Area 1 Superfund Site and to address the public health threat posed by contamination of the City of Burbank's public water supply wells by providing residents in the area with a water supply that meets state and federal drinking water standards.

The existing governmental controls of the California Department of Drinking Water permits requirement for distribution of the treated groundwater (effluent) from the Burbank treatment plant to meet state and federal drinking water standards remains in place. The other remedial action objectives, including of contribution to aquifer restoration and partially control of the movement and spread of groundwater contaminants were met during the review period by operation of the interim remedy's groundwater extraction wells and treatment system, as discussed in the following sections.

4.2.2.1 Burbank Contaminant Removal

One of the remedial action objectives for Burbank is to contribute to aquifer restoration. Multiple lines of evidence are needed to evaluate aquifer restoration, including mass removal, trend analysis, and current concentrations in the wells. For that reason, contaminant mass removal calculations were conducted for the Burbank remedy to demonstrate how much mass has been removed from the aquifer towards restoration (Figure 12). The Burbank treatment plant continued to maintain high averages for both pounds of volatile organic compounds removed and gallons of groundwater treated during the review period.

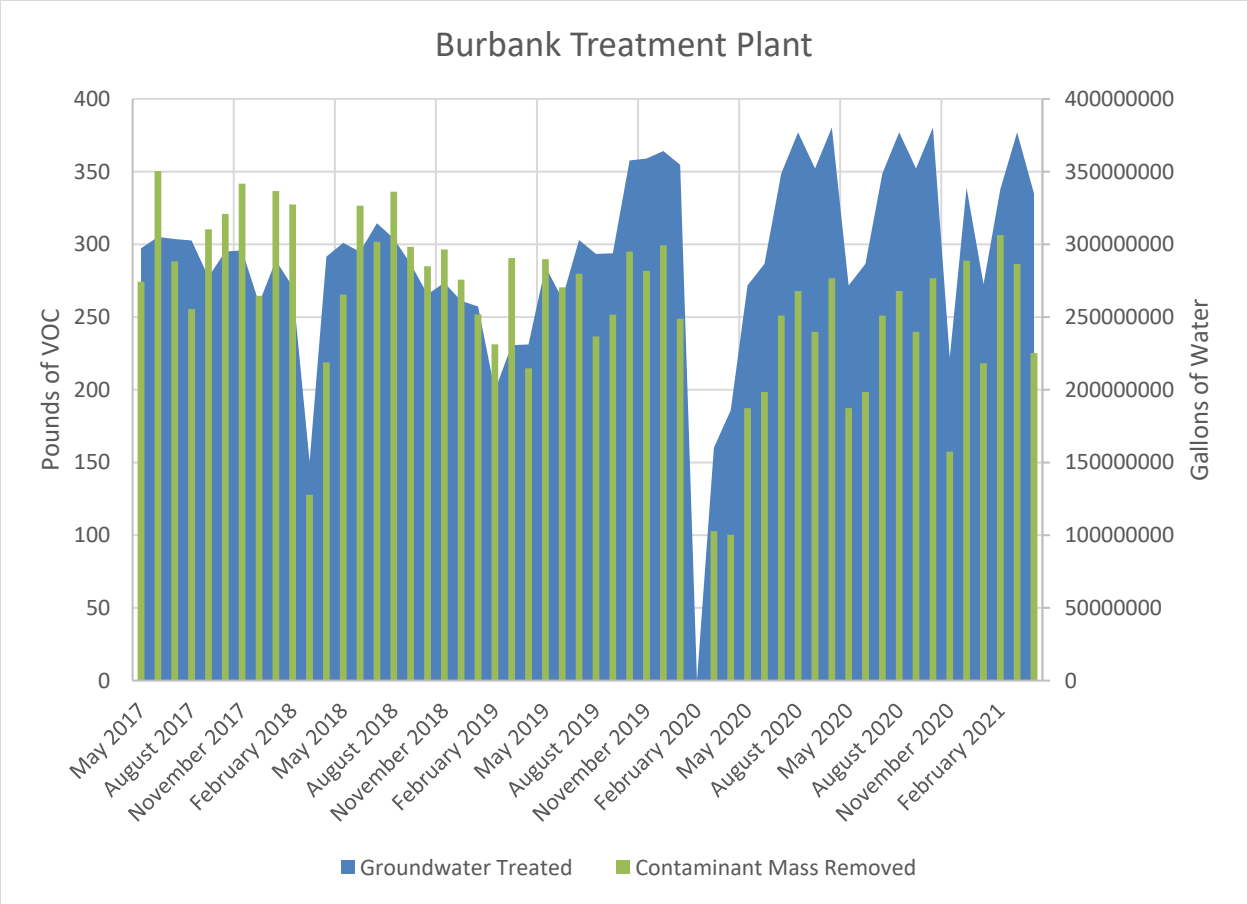


Figure 12. Burbank Mass Removed and Water Treated

4.2.2.2 Burbank Hydraulic Containment of Contaminated Groundwater

The second portion of the first remedial action objective for the Burbank's interim remedy's success in is to partially controlling the movement and spread of groundwater contaminants, Thus, hydraulic containment was evaluated by looking at multiple lines of evidence including contaminant trends at downgradient wells, contaminant detections in previously uncontaminated wells, and the groundwater gradient near extraction wells. The groundwater direction is to the southwest and the Burbank extraction wells are near the southwest edge of the Site. The extraction wells have been pumped, on average, at 78 percent of the design rates. A groundwater model completed in 2015 for Burbank (Tetra Tech 2015) demonstrated that pumping at 78% of the design extraction rates was expected to provide hydraulic containment. The groundwater gradient from the past five years was compared to groundwater gradients when the model demonstrated containment and no significant changes were observed, indicating that the plume is still generally being contained. The water levels at adjacent wells screened in the shallow and deep aquifer were reviewed and an upward gradient has remained at most of the wells which prevents contamination from migrating vertically. Contaminant concentrations at wells near the downgradient edge of North Hollywood and Burbank, NH-VPB-04, NH-C02-220, NH-C02-325 and LB1-CW20 (Figure 11) were mostly below detection levels or wells like NH-C02-220 had stable trichloroethene concentrations from 2018 to 2022. This stability on the downgradient edge of the plume provides evidence that contamination is not migrating.

Analysis was conducted on one monitoring well associated with the Burbank well field. This well, LB1-CW20 was demonstrated to have an increasing trend in chromium indicating there may be a degradation of groundwater quality at this well (Figures 8 and 11). Over the past five year, the concentration at this well has increased from 6.4 µg/L, in April 2018, to 8.1 µg/L, in April 2023 . This well is part of the monitoring program for the operable unit and will continue to be monitored moving forward to continue to evaluate this trend.

Table 9. Summary of Mann-Kendall Trend Analysis in Burbank Well Field

Well	TCE	Hexavalent Chromium	PCE
Monitoring Well			
LB1-CW20		Increasing	No Trend

4.2.3. Climate Change

The 2019 Government Accounting Office Report notes that the Site falls within the highest flood hazard category (1% or higher annual chance of flooding) as a result of climate change. California's Fourth Climate Change Assessment identified 72 atmospheric rivers (regions of high-water vapor transport from the tropics to the Pacific Coast of the U.S. that can produce intense precipitation) that made landfall were along the coast of southern California, between 1979 and 2013. While this averages out to approximately 2-3 events each year, significant variability exists from year to year. This extreme variation between heavy precipitation events and droughts is expected to increase with climate change.

California's Fourth Climate Change Assessment notes that while the overall average precipitation is not forecasted to change dramatically, extreme variations are expected on a yearly basis. This is expected to lead to more extreme droughts with more in the already drought- prone south coast of California. The potential increase in frequency and intensity of droughts due to climate change will likely lead to increased groundwater usage in the Los Angeles area. As a result of this increased usage, water levels may continue to drop, which would make it difficult to maintain hinder meeting the target pumping rates established in the remedy and accelerate the need to replace monitoring wells with additional, deeper wells in Burbank. While the 2019 Upper Los Angeles Area Basin Watermaster Report notes that the increase in infiltration and recharge projects may positively impacted groundwater elevations in some areas of the San Fernando Valley Basin, most of the projects are several years from completion.

4.3. Site Inspection

The inspection of the Site was conducted on February 14, 2023. In attendance were Bianca Handley and Larry Sievers, EPA; Jeffrey Luong, USACE; Jeffery Hu, Los Angeles Waterboard Region 4; Vahe Dabbaghian, Los Angeles Department of Water and Power; Richard Salazar, Kevin Mitchell, and Jose Baraza, Terranear PMC; Javier Martinez and Richard Wilson, Burbank Water and Power; and Natalie Young, WSP. The purpose of the inspection was to assess the condition of the remedy and verify that the remedy is operating as intended.

While the North Hollywood treatment plant is not operating, the construction site was inspected, and no safety or maintenance concerns noted. The construction project was noted to be making good progress toward completion.

The Burbank treatment plant and extraction wells were visited, and no concerns noted regarding maintenance, operations, or safety. Recent improvements noted during the inspection included seismic upgrades for selected equipment.

5. Technical Assessment

5.1. Question A: Is the remedy functioning as intended by the decision documents?

The North Hollywood Second Interim Remedy is under construction and the Phase 1B Treatment Plant began testing the operating of recently installed equipment in May 2023. While the remedy is not yet fully operational, the institutional controls selected in the Second Interim Remedy, including existing governmental controls (i.e., the San Fernando Valley Basin Watermaster who administers the adjudicated basin and maintains legal authority over groundwater), prevent public exposure to contaminated groundwater. EPA anticipates the Second Interim Remedy construction will be completed, and operation will begin in the next five years.

The Burbank interim remedy is generally functioning as intended and meeting its remedial objectives by contributing to aquifer restoration in the San Fernando Valley through contaminant mass removal, partially controlling the movement and spread of groundwater contaminants through extraction of contaminated groundwater, and providing residents in the Burbank area with a water supply that meets state and federal drinking water standards.

5.2. Question B: Are the exposure assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of Remedy Selection Still Valid?

The remedial action objectives remain valid for both North Hollywood and Burbank. While North Hollywood is not currently meeting its remedial action objective of mass removal, due to ongoing construction of the Second Interim Remedy, all of the remedial action objectives are expected to be met once the Second Interim Remedy begins operation. Burbank is achieving its remedial action objectives.

While North Hollywood is not currently processing water, drinking water is required to current state and federal drinking water standards at the time of distribution to the public according to the California Department of Drinking Water permits associated Second Interim Remedy under construction. Similarly, water distributed from the Burbank treatment plant must meet current state and federal drinking water standards at the time of discharge. Therefore, any changes in toxicity data and cleanup standards, would not impact the protectiveness of either remedy.

The exposure assumptions for both North Hollywood and Burbank remain valid. Vapor intrusion was not considered when the remedies were selected and Lockheed Martin's Desktop Study in 2019 for Burbank concluded that no further assessment of the vapor intrusion pathway was warranted, because locations with high vapor intrusion potential were not identified. Additional sampling to confirm these conclusions is expected by the end of 2023.

5.3. *Question C: Has Any Other Information Come to Light That Could Call Into Question the Protectiveness of the Remedy?*

No new information has come to light that calls into question the protectiveness of the remedy.

6. Issues/Recommendations

There were no issues and recommendations identified in this Five-Year Review.

6.1. *Other Findings*

In addition, the following are recommendations that promote climate change resiliency but do not affect current and/or future protectiveness and were identified during the Five-Year Review:

- The California High Speed Rail Project has significant overlap with the extraction wells and conveyance lines for the Burbank interim remedy and may require significant coordination to prevent damage to existing remedial infrastructure.

- Assess methods for reducing climate change vulnerability to increasingly frequent droughts and dropping water levels in monitoring wells.

7. Protectiveness Statement

Table 10. Protectiveness Statement

Protectiveness Statement(s)	
Operable Unit: North Hollywood	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy at North Hollywood is protective of human health and the environment. The remedy's institutional controls, which include governmental controls that prohibit the public from extracting groundwater from the San Fernando Valley Basin and prohibit service of drinking water without a permit from California's Division of Drinking Water, ensuring that the public is not exposed to untreated drinking water. The Second Interim Remedy for North Hollywood is being constructed in phases. Phase 1 is complete and started operation in May 2023. Although data regarding the first phase of implementation is not yet available, five of the eight extraction wells are now operational and improving containment of the plume. EPA anticipates the remaining remedy phases will be completed, and operation will begin in the next five years.	

Protectiveness Statement(s)	
Operable Unit: Burbank	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy at Burbank is protective of human health and the environment. The treatment system effluent contaminant concentrations are less than their regulatory cleanup goals, the remedy is controlling contaminant migration, and there are governmental controls in place that prevent exposure to untreated groundwater.	

8. Next Review

The next Five-Year Review report for the San Fernando Valley Area 1 Superfund Site is required five years from the completion date of this review.

Appendix A: List of Documents Reviewed

Carollo Engineers, Inc. 2022. Prefinal (90%) Design, North Hollywood Operable Unit, Second Interim Remedy, Phase 2B Conveyance, North Hollywood, California. March 2022.

EPA. 2018. Five-Year Review Report for San Fernando Valley (Area 1) Superfund Site. Los Angeles County, California. September 2018.

Jacobs. 2021. Status of California High Speed Rail Design Amidst San Fernando Valley Superfund Sites Area 1 and 2 Memo. August 2021.

Government Accounting Office. 2019. Interactive Map: https://www.gao.gov/multimedia/GAO-20-73/interactive/. Accessed June 20, 2023.

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Appendix B: Site Chronology

Event	Date
California Department of Public Health detected TCE, PCE, and other volatile organic compounds in a large number of production wells.	1980
The San Fernando (SFV) Area 1 Superfund Site was placed on the National Priorities List.	July 1986
An interim Record of Decision (ROD) for North Hollywood Operable Unit was signed.	September 1987
Construction of the North Hollywood Operable Unit facility was completed.	March 1989
An interim ROD for BOU was signed.	June 1989
North Hollywood Operable Unit treatment systems operations began.	December 1989
An Explanation of Significant Differences (ESD) for BOU was signed.	November 1990
The RI for all SFV Superfund Sites (including Area 1) was completed.	December 1992
The first North Hollywood Operable Unit five-year review was completed.	July 1993
The Phase I BOU treatment plant was constructed.	Summer 1993 – Spring 1994
The Final Remedial Design Report for BOU was approved by EPA.	November 1993
The BOU Phase I remedy was determined operational.	January 1996
A second ESD for BOU was signed.	February 1997
The Phase II BOU treatment plant was constructed.	October 1997 – December 1997
The second North Hollywood Operable Unit FYR was completed.	July 1998
The BOU Second Phase of Operation was initiated (9,000 gpm).	December 1998
The Los Angeles Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order to Honeywell International Inc. (in the North Hollywood Operable Unit) for chromium"	February 2003
The third North Hollywood Operable Unit FYR was completed.	September 2003
The first BOU FYR was completed.	September 2004
EPA completed the North Hollywood Operable Unit Chromium Evaluation.	January 2006
A performance attainment study of the BOU groundwater extraction wells, delivery systems, and control processes was conducted.	May 2006
Well NHE-2 was shut down due to high chromium concentrations.	February 2007
EPA completed a draft Focused Feasibility Study at North Hollywood Operable Unit.	February 2008
The first sitewide SFV Area 1 FYR was completed, representing the fourth North Hollywood Operable Unit FYR and the second BOU FYR.	September 2008
EPA finalized the North Hollywood Operable Unit FFS for Second Interim Remedy.	July 2009
The second interim ROD for North Hollywood Operable Unit was signed.	September 2009
EPA concluded a successful operational capacity test to demonstrate that 9,000 gpm of groundwater could be extracted and processed	August 2010
An Administrative Settlement Agreement and Order on Consent for Remedial Design was executed among EPA, Honeywell, and Lockheed Martin.	February 2011
The second sitewide SFV Area 1 FYR was completed, representing the fifth North Hollywood Operable Unit FYR and the third BOU FYR.	09/30/2013
North Hollywood Record of Decision Amendment	01/10/2014
North Hollywood Record of Decision Memo to File	2016
North Hollywood Explanation of Significant Differences	02/27/2018
The third sitewide SFV Area 1 FYR was completed, representing the sixth North Hollywood Operable Unit FYR and the fourth BOU FYR.	09/21/2018
Burbank Final Vapor Intrusion Desktop Study	05/05/2021
Burbank Focused Feasibility Study	12/22/2021
North Hollywood Phase 1B construction complete for Second Interim Remedy	Early 2023

Appendix C: Data Review

USACE performed Mann-Kendall groundwater concentration trend analysis on wells that resulted in sufficient detections of contaminants of concern for the five-year review period and the long-term trends. Mann-Kendall trend evaluations are presented in figures C-1 through C-37.

Degradation of groundwater quality at the well fields was evaluated utilizing groundwater concentration trends of tetrachloroethene, trichloroethene and hexavalent chromium at the water supply wells and nearby monitoring wells. Mann- Kendall analyses were completed for monitoring wells near the well field and extraction wells with more than three detections during the previous five years. Data from 19 drinking water wells and 16 monitoring wells were used for the Mann-Kendall analysis.

The groundwater plume trends vary based on contaminant and operable unit. Some of the increasing trends within the plume are increasing due to the shutdown of the North Hollywood treatment system. This shutdown has allowed for mid-plume monitoring wells and mid-plume drinking water wells to increase in concentration of contaminants. Typically, drinking water well groups are increasing in the northwestern most wells and decreasing in contaminants in the southern and eastern most well, effectively acting like treatment extraction wells for the OU.

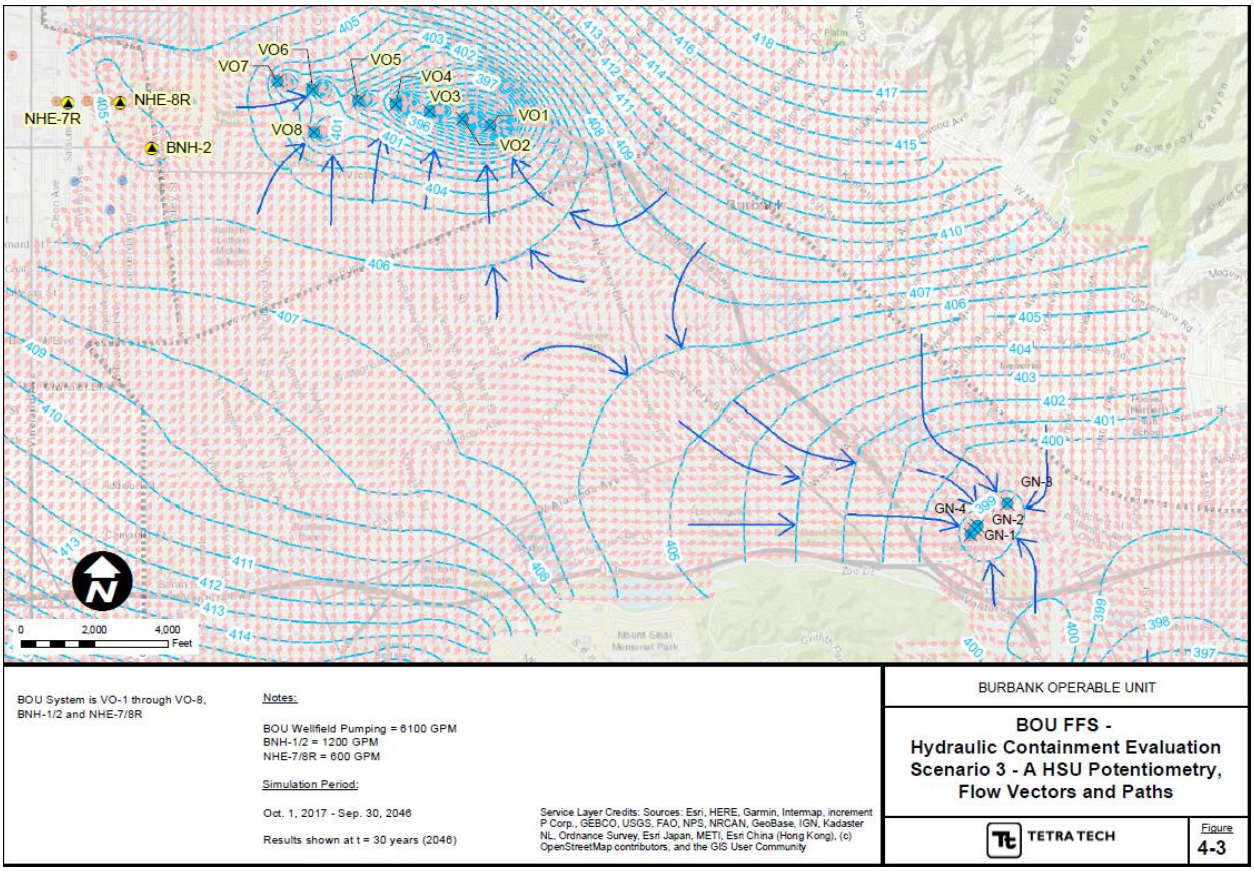
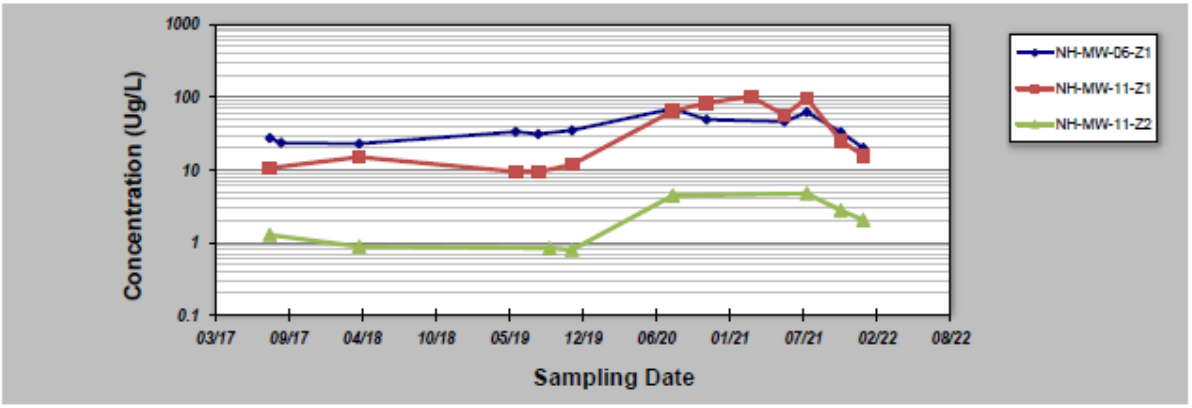


Figure C- 1 Focus Feasibility Study modeled Groundwater Gradients As Per The Conceptual Site Model Tetra Tech 2021

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: PCE
Concentration Units: Ug/L

Sampling Point ID:	NH-MW-06-Z1	NH-MW-11-Z1	NH-MW-11-Z2				
Sampling Event	Sampling Date	PCE CONCENTRATION (Ug/L)						
1	Aug-17	27.4	10.6	1.27				
2	Sep-17	23.5						
3	Apr-18	22.9	15	0.879				
4	Jun-19	33.4	9.43					
5	Aug-19	31.1	9.33					
6	Sep-19			0.835				
7	Nov-19	35	11.8	0.791				
8	Aug-20	69.7	64.6	4.43				
9	Nov-20	49.2	83.6					
10	Mar-21		102					
11	Jun-21	46	56.7					
12	Aug-21	62.3	96.7	4.72				
13	Nov-21	33	25.1	2.77				
14	Jan-22	20	15.8	2.04				
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.42	0.88	0.73				
Mann-Kendall Statistic (S):		16	24	6				
Confidence Factor:		84.5%	94.2%	72.6%				
Concentration Trend:		No Trend	Prob. Increasing	No Trend				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing: < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

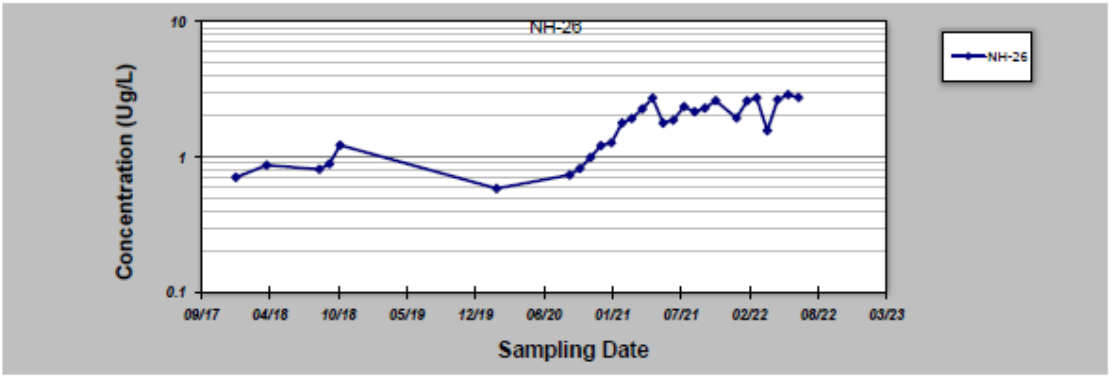
Figure C- 2 Tetrachloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: PCE
Concentration Units: Ug/L

Sampling Point ID: NH-26

Sampling Event	Sampling Date	PCE CONCENTRATION (Ug/L)
1	Jan-18	0.705
2	Apr-18	0.869
3	Sep-18	0.808
4	Oct-18	0.887
5	Nov-18	1.22
6	Feb-20	0.584
7	Sep-20	0.735
8	Oct-20	0.82
9	Nov-20	0.968
10	Dec-20	1.21
11	Jan-21	1.27
12	Feb-21	1.78
13	Mar-21	1.92
14	Apr-21	2.26
15	May-21	2.72
16	Jun-21	1.78
17	Jul-21	1.87
18	1-Aug-21	2.35
19	1-Sep-21	2.15
20	1-Oct-21	2.29
21	1-Nov-21	2.6
22	1-Jan-22	1.94
23	1-Feb-22	2.59
24	1-Mar-22	2.73
25	1-Apr-22	1.56
26	1-May-22	2.65
27	1-Jun-22	2.88
28	1-Jul-22	2.75
29		
30		
Coefficient of Variation:		0.44
Mann-Kendall Statistic (S):		273
Confidence Factor:		>99.9%
Concentration Trend:		Increasing



Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

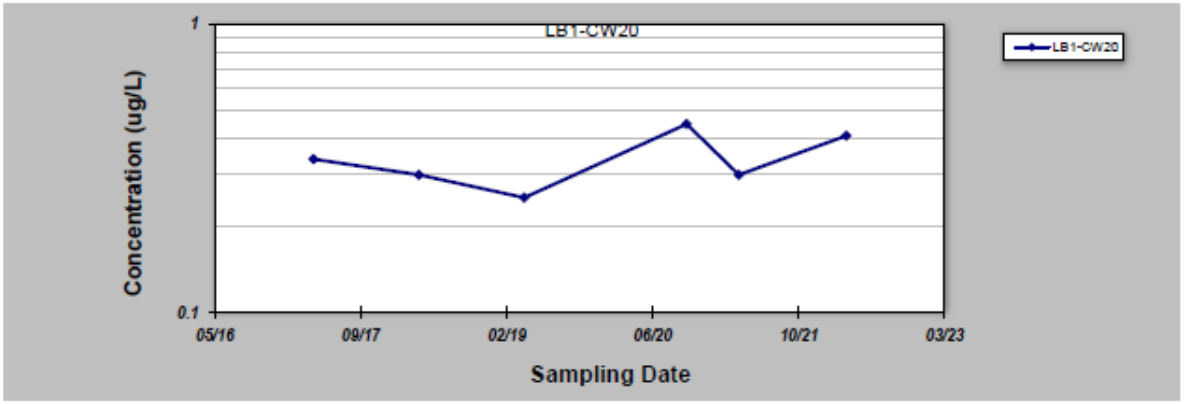
Figure C- 3 Tetrachloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	PCE
Conducted By:	Jeffrey Weiss	Concentration Units:	ug/L

Sampling Point ID: LB1-CW20

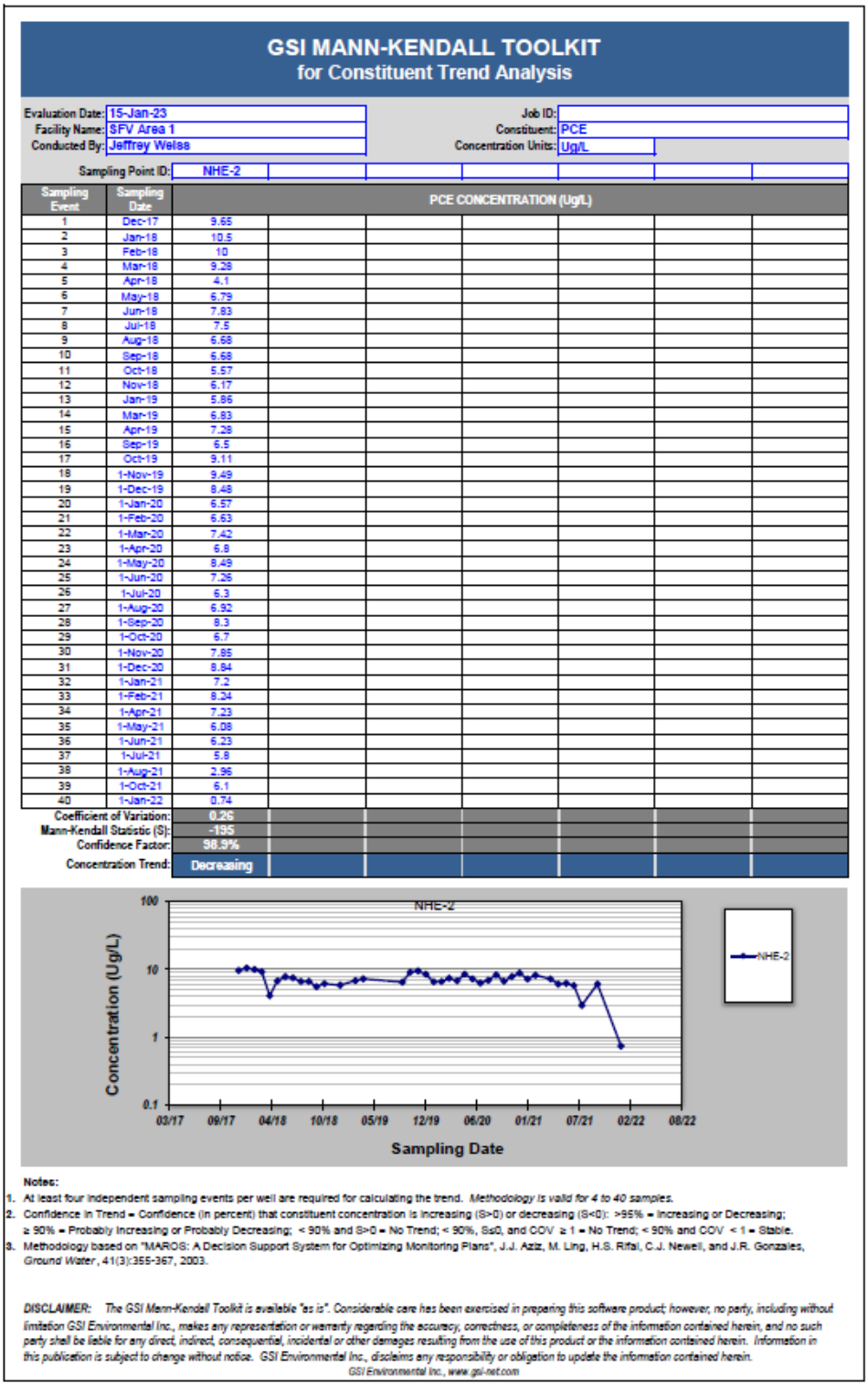
Sampling Event	Sampling Date	PCE CONCENTRATION (ug/L)
1	Apr-17	0.34
2	Apr-18	0.3
3	Apr-19	0.25
4	Oct-20	0.45
5	Apr-21	0.3
6	Apr-22	0.41
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.22
Mann-Kendall Statistic (S):		2
Confidence Factor:		57.0%
Concentration Trend:		No Trend



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 4 Tetrachloroethene concentration trend plot between 2017 and 2022.



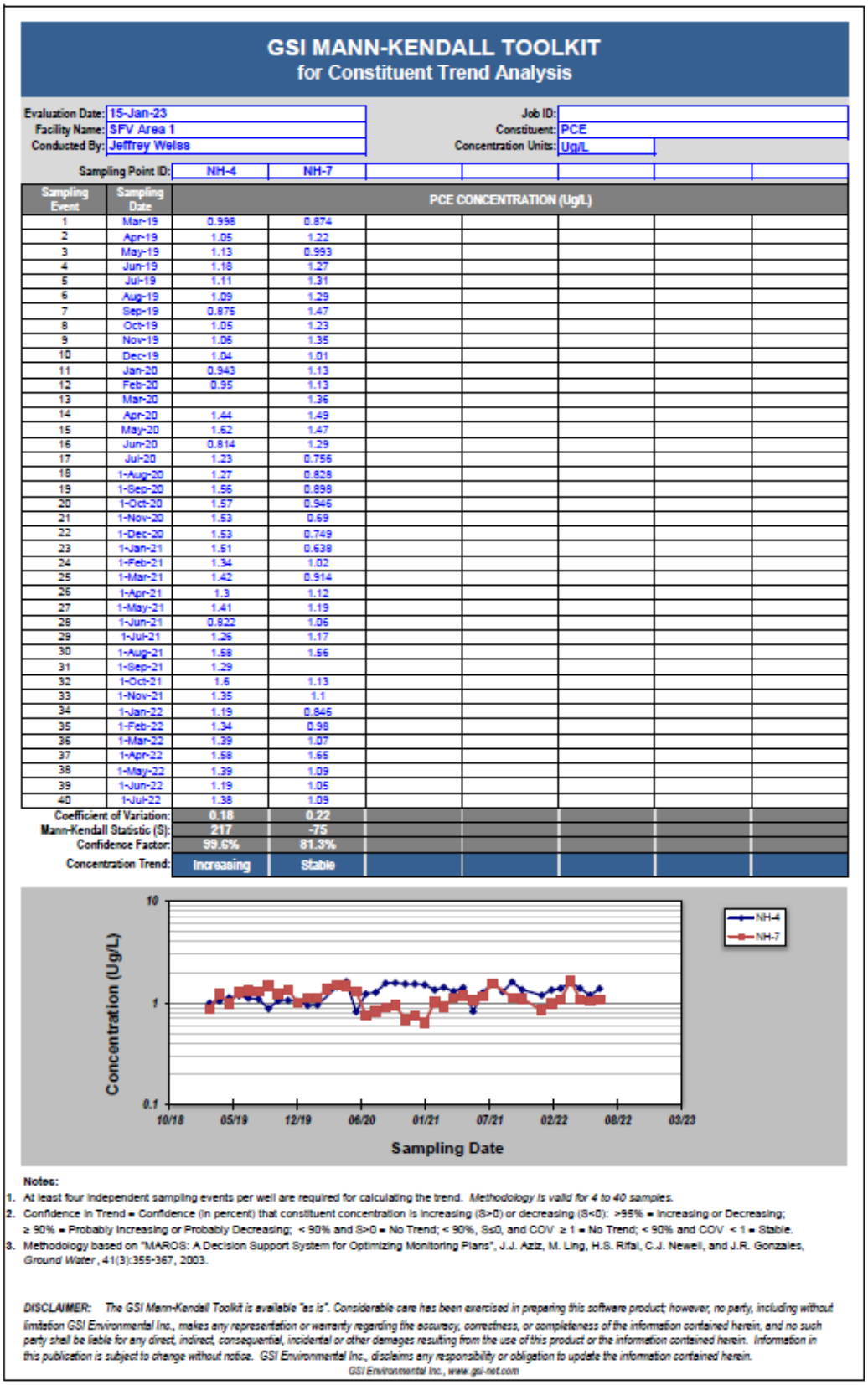
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: PCE
Concentration Units: Ug/L
Sampling Point ID: NHE-2

Sampling Event	Sampling Date	PCE CONCENTRATION (Ug/L)
1	Dec-17	9.65
2	Jan-18	10.5
3	Feb-18	10
4	Mar-18	9.28
5	Apr-18	4.1
6	May-18	6.79
7	Jun-18	7.83
8	Jul-18	7.5
9	Aug-18	6.68
10	Sep-18	6.68
11	Oct-18	5.57
12	Nov-18	6.17
13	Jan-19	5.86
14	Mar-19	6.83
15	Apr-19	7.28
16	Sep-19	6.5
17	Oct-19	9.11
18	1-Nov-19	9.49
19	1-Dec-19	8.48
20	1-Jan-20	6.57
21	1-Feb-20	6.63
22	1-Mar-20	7.42
23	1-Apr-20	6.8
24	1-May-20	8.49
25	1-Jun-20	7.26
26	1-Jul-20	6.3
27	1-Aug-20	6.92
28	1-Sep-20	8.3
29	1-Oct-20	6.7
30	1-Nov-20	7.85
31	1-Dec-20	8.84
32	1-Jan-21	7.2
33	1-Feb-21	8.34
34	1-Apr-21	7.23
35	1-May-21	6.08
36	1-Jun-21	6.23
37	1-Jul-21	5.8
38	1-Aug-21	2.96
39	1-Oct-21	6.1
40	1-Jan-22	0.74
Coefficient of Variation:		0.26
Mann-Kendall Statistic (S):		-195
Confidence Factor:		98.9%
Concentration Trend:		Decreasing

Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 5 Tetrachloroethene concentration trend plot between 2017 and 2022.



GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: PCE
Concentration Units: Ug/L

Sampling Point ID:	NH-4	NH-7					
Sampling Event	Sampling Date	PCE CONCENTRATION (Ug/L)					
1	Mar-19	0.998	0.874				
2	Apr-19	1.05	1.22				
3	May-19	1.13	0.993				
4	Jun-19	1.18	1.27				
5	Jul-19	1.11	1.31				
6	Aug-19	1.09	1.29				
7	Sep-19	0.875	1.47				
8	Oct-19	1.05	1.23				
9	Nov-19	1.06	1.35				
10	Dec-19	1.04	1.01				
11	Jan-20	0.943	1.13				
12	Feb-20	0.95	1.13				
13	Mar-20		1.36				
14	Apr-20	1.44	1.49				
15	May-20	1.62	1.47				
16	Jun-20	0.814	1.29				
17	Jul-20	1.23	0.756				
18	1-Aug-20	1.27	0.828				
19	1-Sep-20	1.56	0.898				
20	1-Oct-20	1.57	0.946				
21	1-Nov-20	1.53	0.69				
22	1-Dec-20	1.53	0.749				
23	1-Jan-21	1.51	0.638				
24	1-Feb-21	1.34	1.02				
25	1-Mar-21	1.42	0.914				
26	1-Apr-21	1.3	1.12				
27	1-May-21	1.41	1.19				
28	1-Jun-21	0.822	1.06				
29	1-Jul-21	1.26	1.17				
30	1-Aug-21	1.58	1.56				
31	1-Sep-21	1.29					
32	1-Oct-21	1.6	1.13				
33	1-Nov-21	1.35	1.1				
34	1-Jan-22	1.19	0.846				
35	1-Feb-22	1.34	0.98				
36	1-Mar-22	1.39	1.07				
37	1-Apr-22	1.58	1.65				
38	1-May-22	1.39	1.09				
39	1-Jun-22	1.19	1.05				
40	1-Jul-22	1.38	1.09				
Coefficient of Variation:		0.18	0.22				
Mann-Kendall Statistic (S):		217	-75				
Confidence Factor:		99.6%	81.3%				
Concentration Trend:		Increasing	Stable				

Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, Ss0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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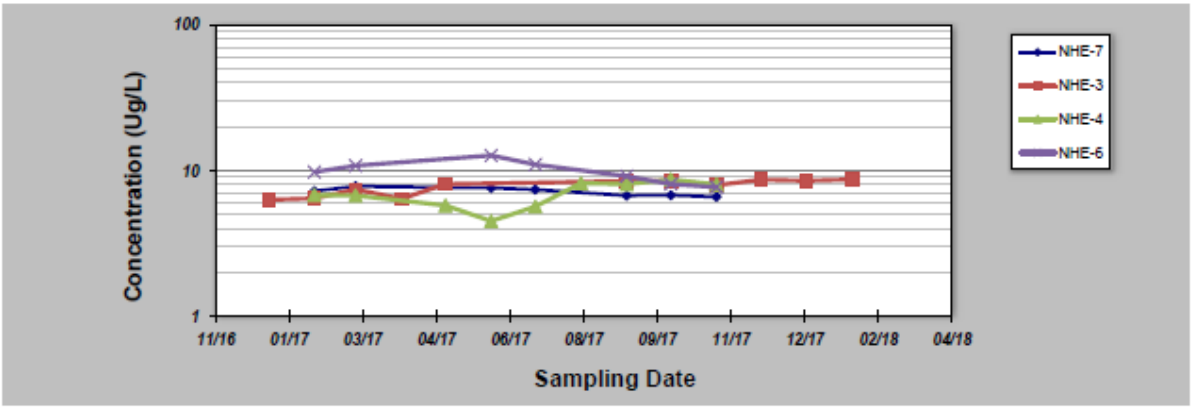
GSI Environmental Inc., www.gsi-net.com

Figure C- 6 Tetrachloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	PCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

Sampling Point ID:	NHE-7	NHE-3	NHE-4	NHE-6			
Sampling Event	Sampling Date	PCE CONCENTRATION (Ug/L)						
1	Jan-17		6.3					
2	Feb-17	7.22	6.44	6.78	9.78			
3	Mar-17	7.8	7.43	6.74	10.8			
4	Apr-17		6.4					
5	May-17		8.06	5.76				
6	Jun-17	7.6		4.5	12.7			
7	Jul-17	7.4		5.66	11			
8	Aug-17			8.19				
9	Sep-17	6.74	8.46	8.06	9.15			
10	Oct-17	6.77	8.53	8.68	8.07			
11	Nov-17	6.6	7.93	8.02	7.69			
12	Dec-17		8.66					
13	Jan-18		8.52					
14	Feb-18		8.69					
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.07	0.12	0.20	0.18			
Mann-Kendall Statistic (S):		-13	41	10	-11			
Confidence Factor:		96.5%	100.0%	82.1%	93.2%			
Concentration Trend:		Decreasing	Increasing	No Trend	Prob. Decreasing			



Notes:

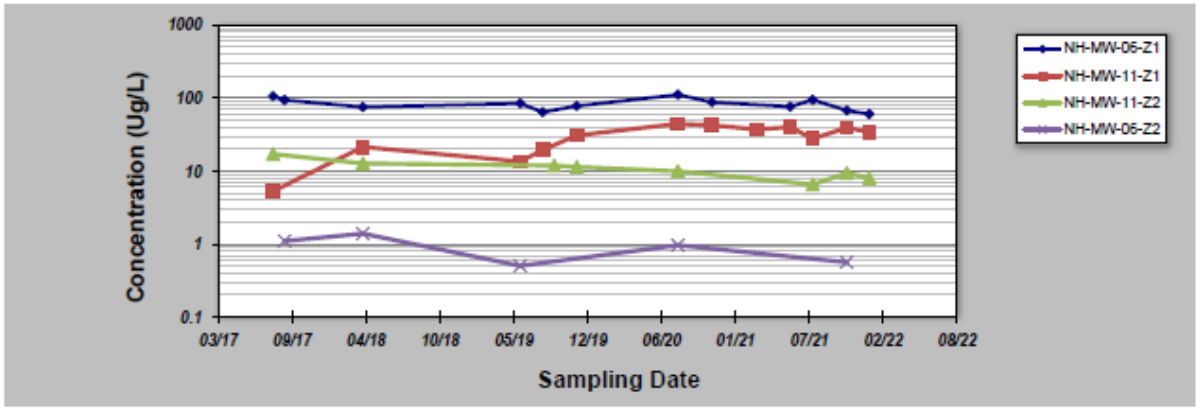
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 7 Tetrachloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L

Sampling Point ID:	NH-MW-06-Z1	NH-MW-11-Z1	NH-MW-11-Z2	NH-MW-06-Z2			
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)						
1	Aug-17	106	5.3	17.1				
2	Sep-17	93.9			1.1			
3	Apr-18	75.2	21.4	12.7	1.39			
4	Jun-19	84.3	13.5		0.502			
5	Aug-19	64	19.5					
6	Sep-19			11.9				
7	Nov-19	77.8	30.8	11.4				
8	Aug-20	111	44.4	9.93	0.964			
9	Nov-20	87.7	42.4					
10	Mar-21		37.2					
11	Jun-21	76.3	39.9					
12	Aug-21	94.4	27.8	6.54				
13	Nov-21	67.6	39.1	9.39	0.564			
14	Jan-22	60.3	34.3	8				
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.19	0.42	0.30	0.41			
Mann-Kendall Statistic (S):		-20	26	-24	-4			
Confidence Factor:		90.2%	95.7%	99.9%	75.8%			
Concentration Trend:		Prob. Decreasing	Increasing	Decreasing	Stable			



Notes:

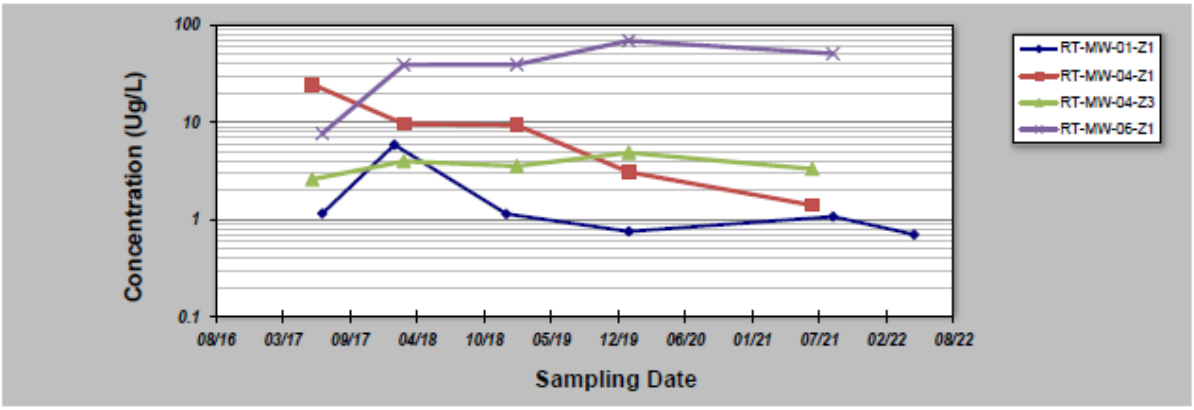
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 8 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

Sampling Point ID:	RT-MW-01-Z1	RT-MW-04-Z1	RT-MW-04-Z3	RT-MW-06-Z1			
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)						
1	Jun-17		24.5	2.59				
2	Jul-17	1.15			7.65			
3	Feb-18	5.86						
4	Mar-18		9.6	3.96	38.9			
5	Jan-19	1.14						
6	Feb-19		9.32	3.54	39.2			
7	Jan-20	0.752	3.07	4.85	68.8			
8	Jul-21		1.4	3.31				
9	Sep-21	1.07			50.7			
10	May-22	0.7						
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.13	0.95	0.23	0.54			
Mann-Kendall Statistic (S):		-11	-10	2	8			
Confidence Factor:		97.2%	99.2%	59.2%	95.8%			
Concentration Trend:		Decreasing	Decreasing	No Trend	Increasing			



Notes:

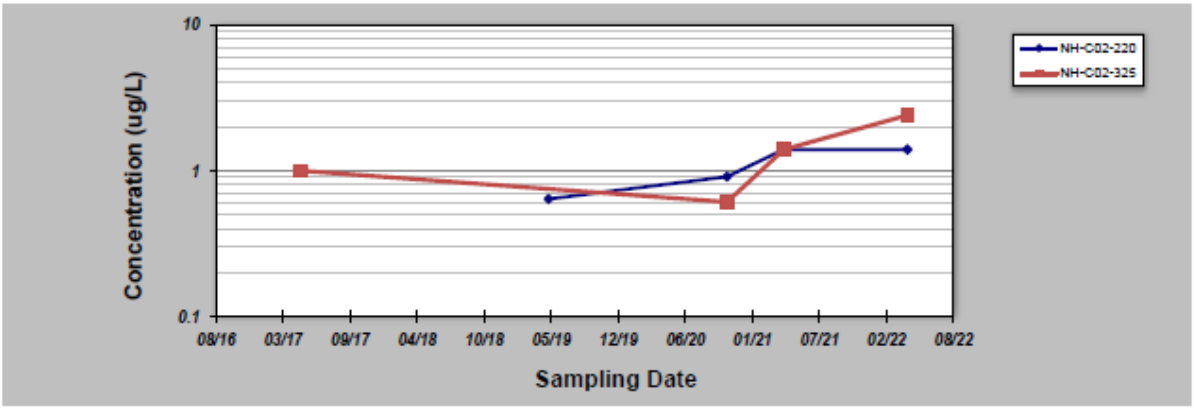
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 9 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	ug/L

Sampling Point ID:	NH-C02-220	NH-C02-325					
Sampling Event	Sampling Date	TCE CONCENTRATION (ug/L)					
1	Apr-17		1				
2	May-19	0.64					
3	Oct-20	0.91	0.61				
4	Apr-21	1.4	1.4				
5	Apr-22	1.4	2.4				
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.35	0.57				
Mann-Kendall Statistic (S):		5	4				
Confidence Factor:		89.6%	83.3%				
Concentration Trend:		No Trend	No Trend				



Notes:

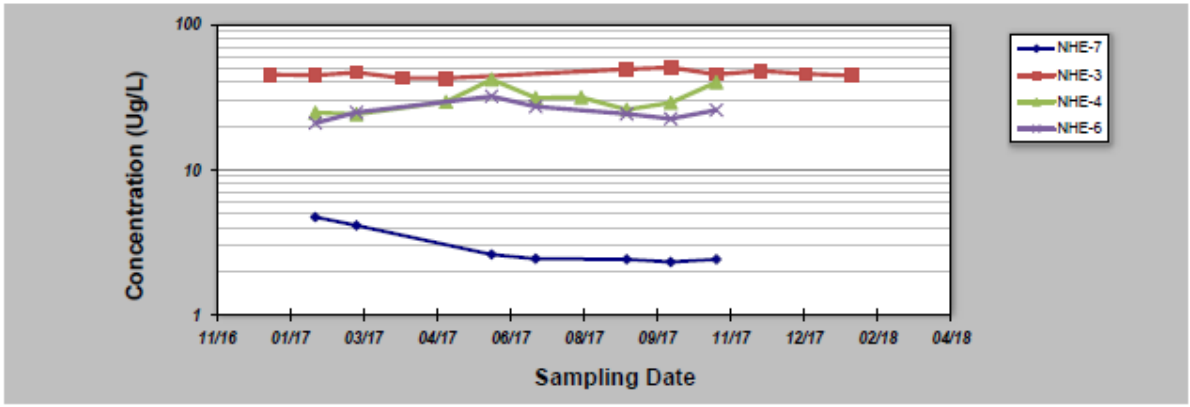
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 10 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

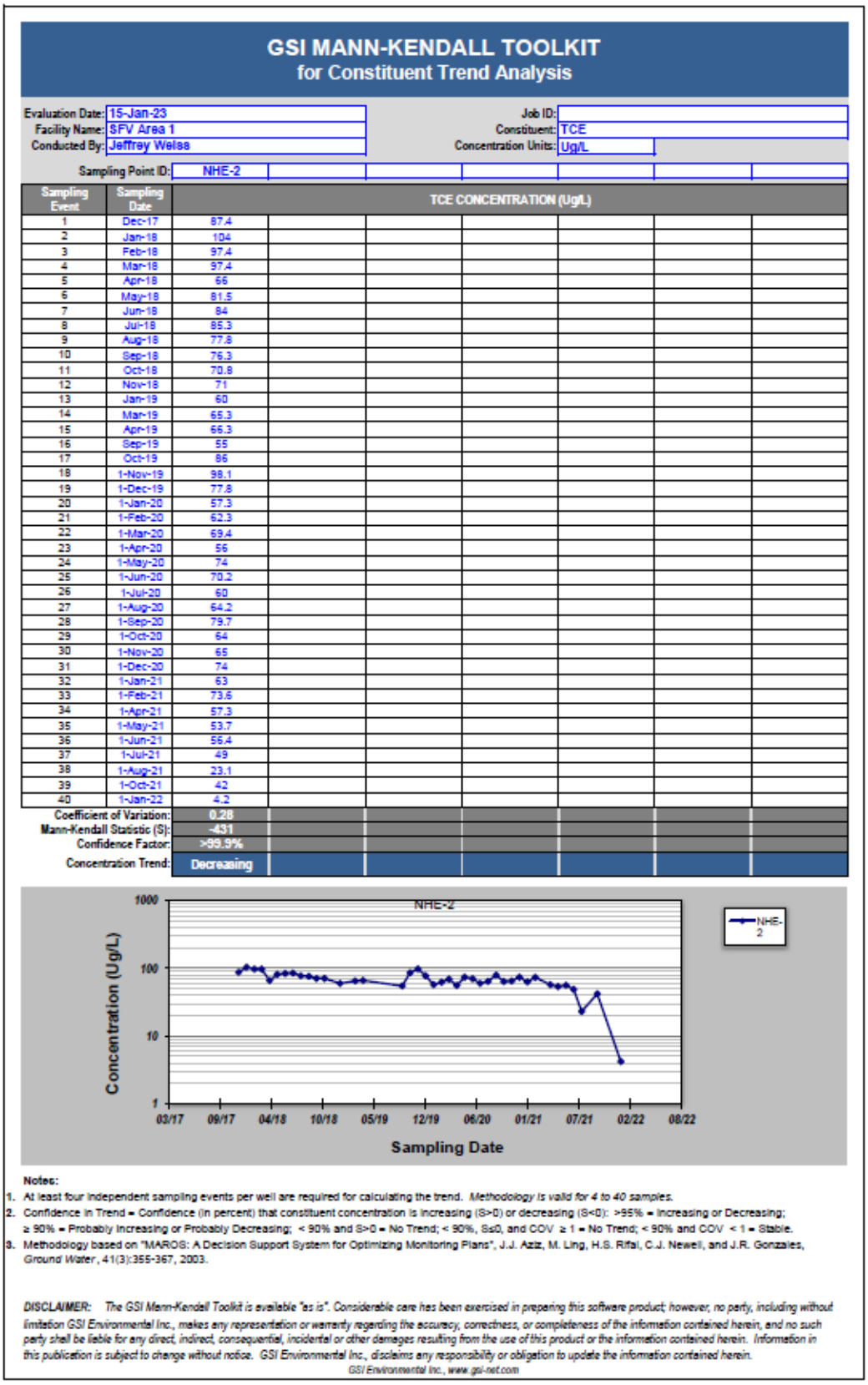
Sampling Point ID:	NHE-7	NHE-3	NHE-4	NHE-6			
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)						
1	Jan-17		45.4					
2	Feb-17	4.73	44.9	24.8	21			
3	Mar-17	4.14	46.9	24.2	24.9			
4	Apr-17		43					
5	May-17		42.8	29.4				
6	Jun-17	2.61		42	32.1			
7	Jul-17	2.44		31.3	27.3			
8	Aug-17			31.6				
9	Sep-17	2.42	49.4	26	24.3			
10	Oct-17	2.32	50.7	29	22.5			
11	Nov-17	2.42	45.5	40.1	25.8			
12	Dec-17		48.1					
13	Jan-18		45.9					
14	Feb-18		44.6					
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.33	0.05	0.20	0.14			
Mann-Kendall Statistic (S):		-18	5	12	1			
Confidence Factor:		99.7%	61.9%	87.0%	50.0%			
Concentration Trend:		Decreasing	No Trend	No Trend	No Trend			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 11 Trichloroethene concentration trend plot between 2017 and 2022.



GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L
Sampling Point ID: NHE-2

Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Dec-17	87.4
2	Jan-18	104
3	Feb-18	97.4
4	Mar-18	97.4
5	Apr-18	66
6	May-18	81.5
7	Jun-18	84
8	Jul-18	85.3
9	Aug-18	77.8
10	Sep-18	76.3
11	Oct-18	70.8
12	Nov-18	71
13	Jan-19	60
14	Mar-19	65.3
15	Apr-19	66.3
16	Sep-19	55
17	Oct-19	86
18	1-Nov-19	98.1
19	1-Dec-19	77.8
20	1-Jan-20	57.3
21	1-Feb-20	62.3
22	1-Mar-20	69.4
23	1-Apr-20	56
24	1-May-20	74
25	1-Jun-20	70.2
26	1-Jul-20	60
27	1-Aug-20	64.2
28	1-Sep-20	79.7
29	1-Oct-20	64
30	1-Nov-20	65
31	1-Dec-20	74
32	1-Jan-21	63
33	1-Feb-21	73.6
34	1-Apr-21	57.3
35	1-May-21	53.7
36	1-Jun-21	56.4
37	1-Jul-21	49
38	1-Aug-21	23.1
39	1-Oct-21	42
40	1-Jan-22	4.2
Coefficient of Variation:		0.28
Mann-Kendall Statistic (S):		-431
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing

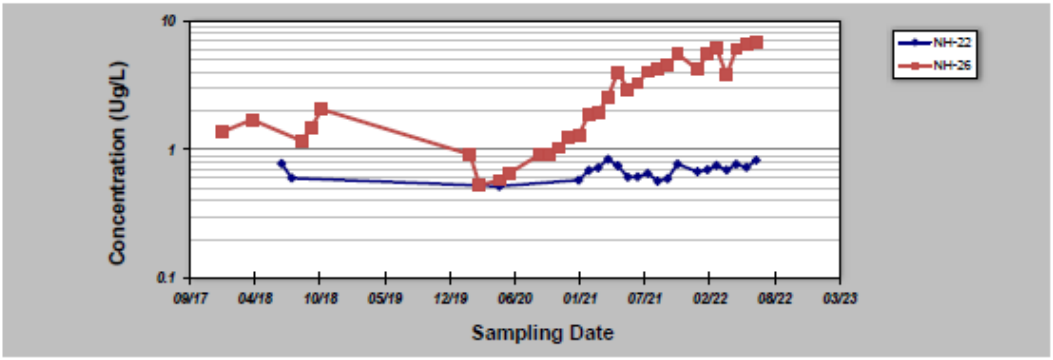
Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 12 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

Sampling Point ID:	NH-22	NH-26
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Jan-18	1.38
2	Apr-18	1.71
3	Jul-18	0.78
4	Aug-18	0.601
5	Sep-18	1.17
6	Oct-18	1.49
7	Nov-18	2.06
8	Feb-20	0.918
9	Mar-20	0.532
10	May-20	0.519	0.577
11	Jun-20	0.655
12	Sep-20	0.912
13	Oct-20	0.928
14	Nov-20	1.03
15	Dec-20	1.26
16	Jan-21	0.579	1.3
17	Feb-21	0.589	1.89
18	1-Mar-21	0.723	1.95
19	1-Apr-21	0.842	2.56
20	1-May-21	0.749	4.02
21	1-Jun-21	0.61	2.93
22	1-Jul-21	0.613	3.29
23	1-Aug-21	0.654	4.04
24	1-Sep-21	0.569	4.31
25	1-Oct-21	0.595	4.53
26	1-Nov-21	0.771	5.55
27	1-Jan-22	0.674	4.23
28	1-Feb-22	0.697	5.55
29	1-Mar-22	0.752	6.15
30	1-Apr-22	0.693	3.8
31	1-May-22	0.77	6.09
32	1-Jun-22	0.727	6.68
33	1-Jul-22	0.826	6.8
34			
35			
Coefficient of Variation:	0.13	0.69
Mann-Kendall Statistic (S):	58	332
Confidence Factor:	95.7%	>99.9%
Concentration Trend:	Increasing	Increasing



Notes:

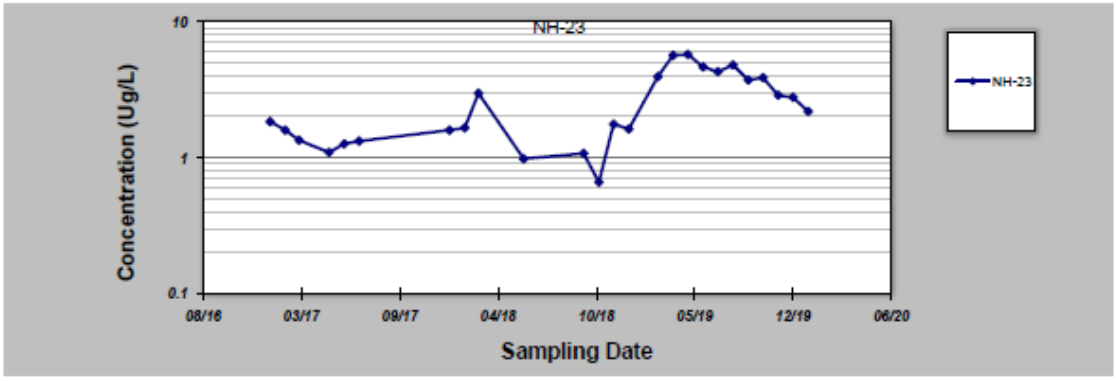
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 13 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L
Sampling Point ID:	NH-23		

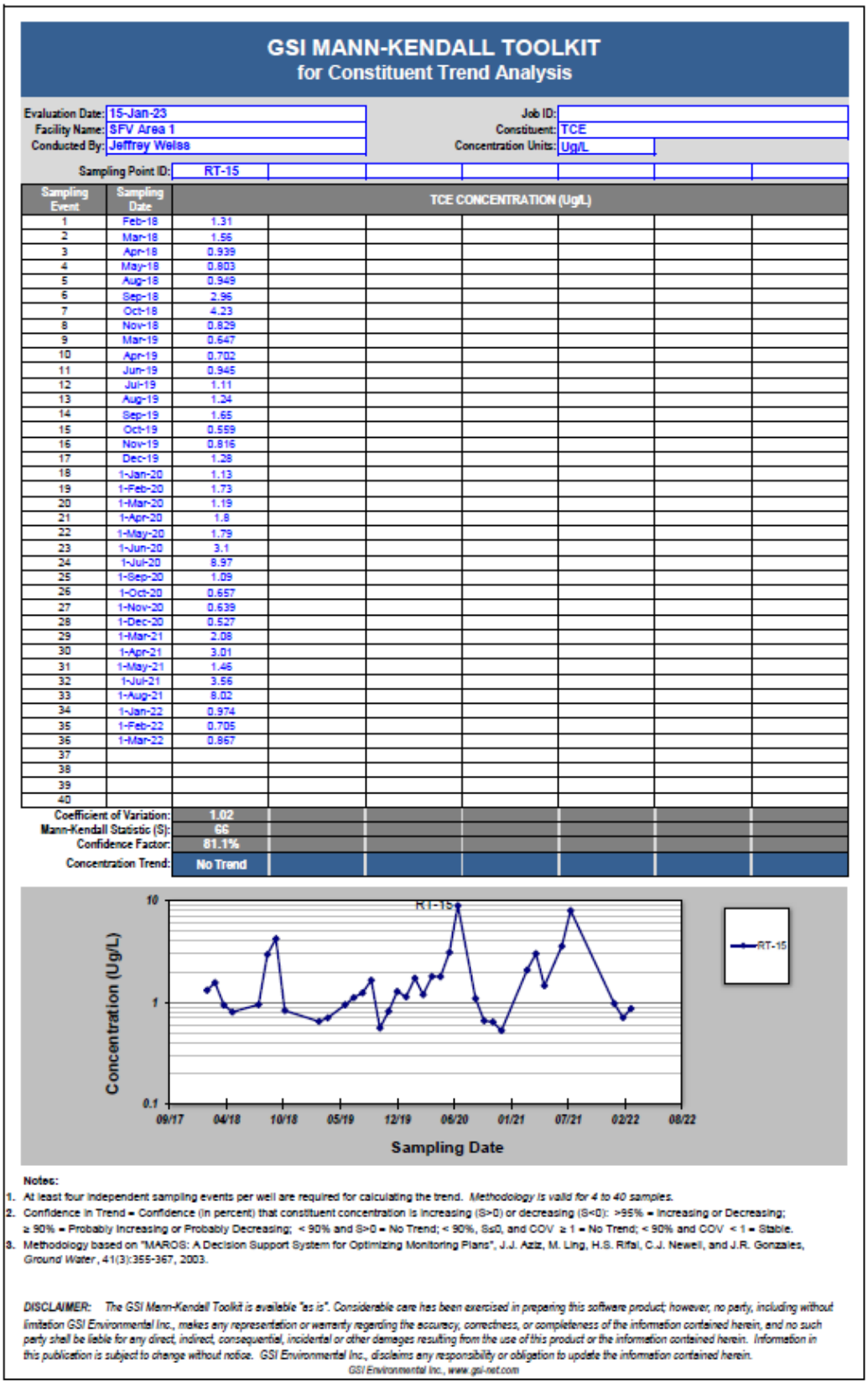
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Jan-17	1.84
2	Feb-17	1.59
3	Mar-17	1.34
4	May-17	1.09
5	Jun-17	1.26
6	Jul-17	1.32
7	Jan-18	1.59
8	Feb-18	1.65
9	Mar-18	2.97
10	Jun-18	0.979
11	Oct-18	1.07
12	Nov-18	0.658
13	Dec-18	1.76
14	Jan-19	1.62
15	Mar-19	3.94
16	Apr-19	5.65
17	May-19	5.74
18	1-Jun-19	4.64
19	1-Jul-19	4.28
20	1-Aug-19	4.79
21	1-Sep-19	3.72
22	1-Oct-19	3.86
23	1-Nov-19	2.87
24	1-Dec-19	2.77
25	1-Jan-20	2.18
26		
27		
28		
29		
30		
Coefficient of Variation:		0.59
Mann-Kendall Statistic (S):		103
Confidence Factor:		99.2%
Concentration Trend:		Increasing



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 14 Trichloroethene concentration trend plot between 2017 and 2022.



GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L
Sampling Point ID: RT-15

Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Feb-18	1.31
2	Mar-18	1.56
3	Apr-18	0.939
4	May-18	0.803
5	Aug-18	0.949
6	Sep-18	2.96
7	Oct-18	4.23
8	Nov-18	0.829
9	Mar-19	0.647
10	Apr-19	0.702
11	Jun-19	0.945
12	Jul-19	1.11
13	Aug-19	1.24
14	Sep-19	1.65
15	Oct-19	0.559
16	Nov-19	0.816
17	Dec-19	1.28
18	1-Jan-20	1.13
19	1-Feb-20	1.73
20	1-Mar-20	1.19
21	1-Apr-20	1.8
22	1-May-20	1.79
23	1-Jun-20	3.1
24	1-Jul-20	8.97
25	1-Sep-20	1.09
26	1-Oct-20	0.657
27	1-Nov-20	0.639
28	1-Dec-20	0.527
29	1-Mar-21	2.08
30	1-Apr-21	3.01
31	1-May-21	1.46
32	1-Jul-21	3.56
33	1-Aug-21	8.02
34	1-Jan-22	0.974
35	1-Feb-22	0.705
36	1-Mar-22	0.867
37		
38		
39		
40		
Coefficient of Variation:		1.02
Mann-Kendall Statistic (S):		66
Confidence Factor:		81.1%
Concentration Trend:		No Trend

Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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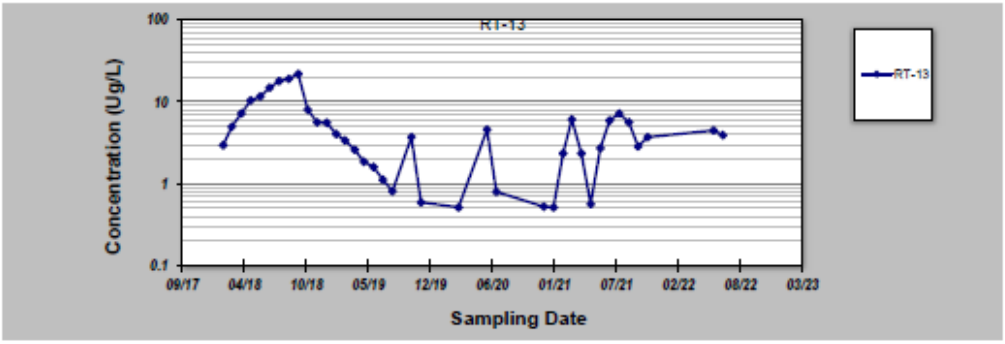
Figure C- 15 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L

Sampling Point ID: RT-13

Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Feb-18	2.95
2	Mar-18	4.97
3	Apr-18	7.22
4	May-18	10.4
5	Jun-18	11.6
6	Jul-18	14.9
7	Aug-18	17.9
8	Sep-18	19.1
9	Oct-18	21.9
10	Nov-18	8
11	Dec-18	5.61
12	Jan-19	5.55
13	Feb-19	4.04
14	Mar-19	3.38
15	Apr-19	2.6
16	May-19	1.86
17	Jun-19	1.6
18	1-Jul-19	1.12
19	1-Aug-19	0.809
20	1-Oct-19	3.71
21	1-Nov-19	0.593
22	1-Mar-20	0.514
23	1-Jun-20	4.58
24	1-Jul-20	0.797
25	1-Dec-20	0.524
26	1-Jan-21	0.513
27	1-Feb-21	2.34
28	1-Mar-21	6.11
29	1-Apr-21	2.35
30	1-May-21	0.563
31	1-Jun-21	2.71
32	1-Jul-21	5.93
33	1-Aug-21	7.2
34	1-Sep-21	5.63
35	1-Oct-21	2.85
36	1-Nov-21	3.7
37	1-Jun-22	4.48
38	1-Jul-22	3.92
39		
40		
Coefficient of Variation:		0.99
Mann-Kendall Statistic (S):		-187
Confidence Factor:		99.1%
Concentration Trend:		Decreasing



Notes:

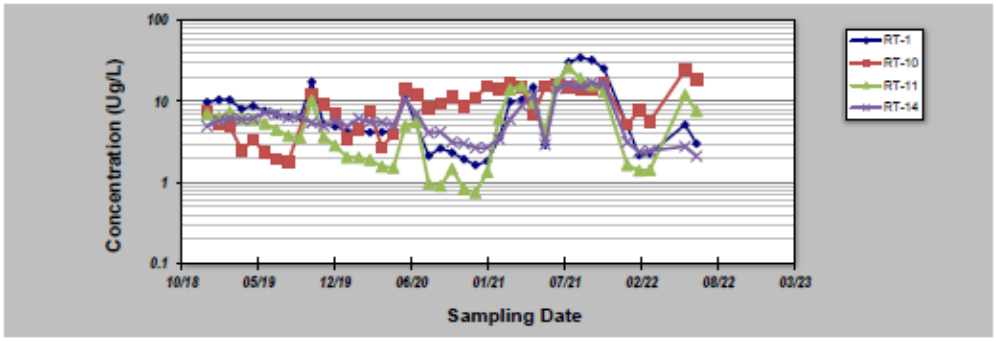
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 16 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L

Sampling Point ID:	RT-1	RT-10	RT-11	RT-14			
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)						
1	Jan-19	9.76	7.6	7.02	4.97			
2	Feb-19	10.5	5.34	6.35	5.81			
3	Mar-19	10.5	5	7.39	6.22			
4	Apr-19	8.1	2.5	6.17	5.99			
5	May-19	8.82	3.34	6	6.17			
6	Jun-19	7.64	2.36	5.32	7.25			
7	Jul-19	6.95	1.96	4.49	7.03			
8	Aug-19	6.43	1.81	3.76	6.3			
9	Sep-19	6.3		3.57	6.45			
10	Oct-19	17.5	12.4	10.4	5.45			
11	Nov-19	5.19	9.13	3.64	4.98			
12	Dec-19	4.96	7.03	2.86	5.66			
13	Jan-20	4.3	3.43	2.04	4.96			
14	Feb-20	4.44	4.52	2.03	6.13			
15	Mar-20	4.15	7.57	1.9	5.58			
16	Apr-20	4.2	2.74	1.57	5.52			
17	May-20	4.27	3.94	1.52	5.11			
18	1-Jun-20	11.4	14.2	5.02	10.4			
19	1-Jul-20		12.2	5.55	7.01			
20	1-Aug-20	2.14	8.29	0.966	4.1			
21	1-Sep-20	2.64	9.39	0.903	4.21			
22	1-Oct-20	2.34	11.4	1.47	3.15			
23	1-Nov-20	1.94	8.78	0.83	3.02			
24	1-Dec-20	1.64	11.2	0.747	2.67			
25	1-Jan-21	1.83	15.5	1.35	2.7			
26	1-Feb-21	3.57	14.2	6.24	3.45			
27	1-Mar-21	9.95	17.1	14.1	5.98			
28	1-Apr-21	10.5	15.2	15.5	8.86			
29	1-May-21	15.1	6.82	9.65	12			
30	1-Jun-21	2.92	15.4	4.41	2.94			
31	1-Jul-21	15.5	16.1	17	14.4			
32	1-Aug-21	30.6	15.2	26.2	16.5			
33	1-Sep-21	35	14.3	19.3	15.3			
34	1-Oct-21	32.5	14.4	16.2	17			
35	1-Nov-21	25.6	16.6	13.1	16.7			
36	1-Jan-22		5.13	1.64	3.15			
37	1-Feb-22	2.18	7.8	1.4	2.39			
38	1-Mar-22	2.27	5.67	1.42	2.46			
39	1-Jun-22	5.17	24.4	12.1	2.79			
40	1-Jul-22	3.01	18.5	7.58	2.11			
Coefficient of Variation:		0.57	0.58	0.93	0.64			
Mann-Kendall Statistic (S):		-100	353	-14	-121			
Confidence Factor:		89.3%	>99.9%	56.0%	91.9%			
Concentration Trend:		Stable	Increasing	Stable	Prob. Decreasing			



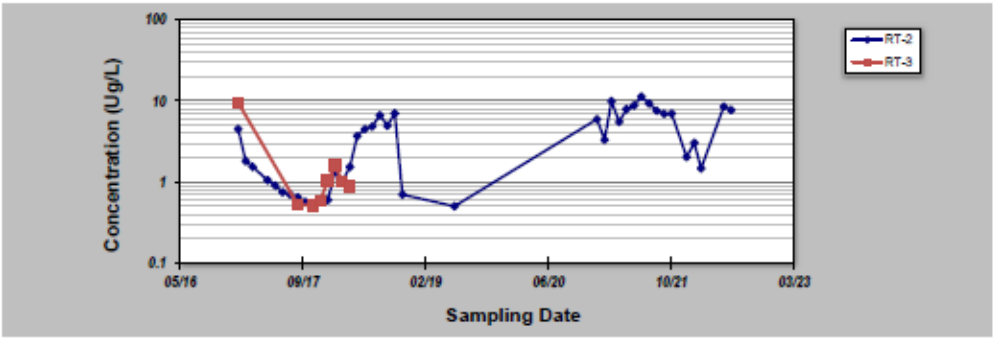
Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 17 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: TCE
Concentration Units: Ug/L

Sampling Point ID:	RT-2	RT-3					
Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)					
1	Jan-17	4.52	9.55				
2	Feb-17	1.81					
3	Mar-17	1.54					
4	May-17	1.05					
5	Jun-17	0.903					
6	Jul-17	0.747					
7	Aug-17	0.699					
8	Sep-17	0.644	0.522				
9	Oct-17	0.569					
10	Nov-17		0.514				
11	Dec-17		0.588				
12	Jan-18	0.6	1.03				
13	Feb-18	1.36	1.61				
14	Mar-18	1.01	1.01				
15	Apr-18	1.54	0.873				
16	May-18	3.68					
17	Jun-18	4.49					
18	1-Jul-18	4.83					
19	1-Aug-18	6.67					
20	1-Sep-18	4.95					
21	1-Oct-18	7.04					
22	1-Nov-18	0.699					
23	1-Jun-19	0.502					
24	1-Jan-21	5.96					
25	1-Feb-21	3.31					
26	1-Mar-21	9.95					
27	1-Apr-21	5.5					
28	1-May-21	7.91					
29	1-Jun-21	8.79					
30	1-Jul-21	11.3					
31	1-Aug-21	9.29					
32	1-Sep-21	7.57					
33	1-Oct-21	6.95					
34	1-Nov-21	6.99					
35	1-Jan-22	2.03					
36	1-Feb-22	3.04					
37	1-Mar-22	1.47					
38	1-Jun-22	8.51					
39	1-Jul-22	7.75					
40							
Coefficient of Variation:		0.77	1.57				
Mann-Kendall Statistic (S):		268	2				
Confidence Factor:		>99.9%	54.8%				
Concentration Trend:		Increasing	No Trend				



Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

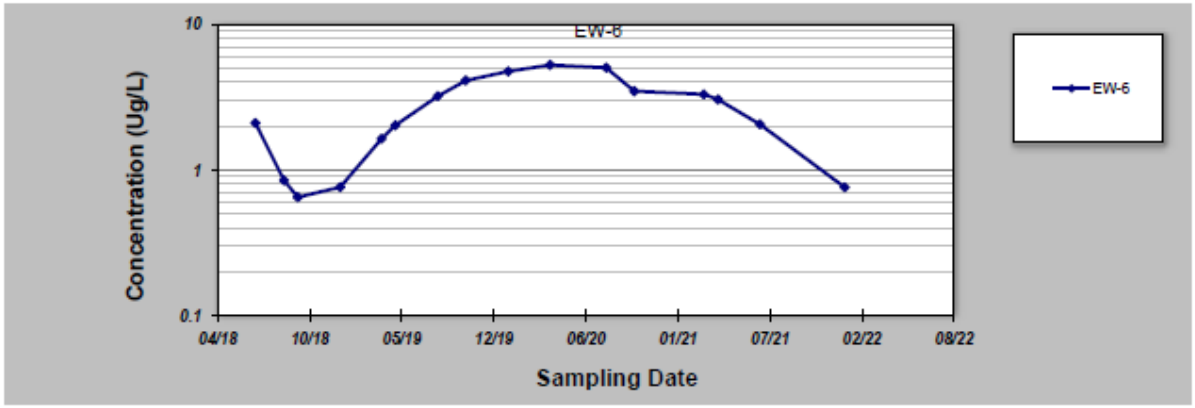
Figure C- 18 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	TCE
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

Sampling Point ID: EW-6

Sampling Event	Sampling Date	TCE CONCENTRATION (Ug/L)
1	Jul-18	2.1
2	Sep-18	0.85
3	Oct-18	0.65
4	Jan-19	0.763
5	Apr-19	1.64
6	May-19	2.03
7	Aug-19	3.21
8	Oct-19	4.12
9	Jan-20	4.76
10	Apr-20	5.27
11	Aug-20	5.04
12	Oct-20	3.48
13	Mar-21	3.31
14	Apr-21	3.05
15	Jul-21	2.06
16	Jan-22	0.761
17		
18		
19		
20		
Coefficient of Variation:		0.58
Mann-Kendall Statistic (S):		26
Confidence Factor:		86.7%
Concentration Trend:		No Trend



Notes:

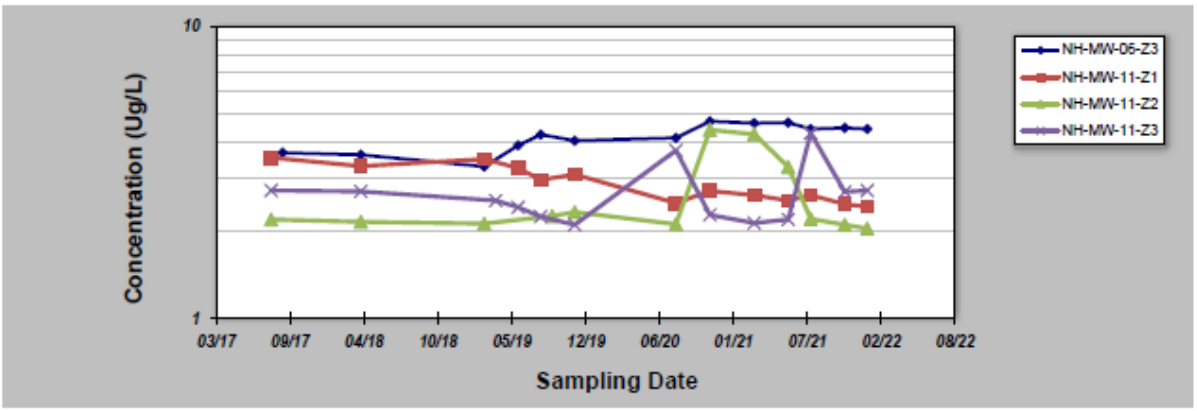
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 19 Trichloroethene concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: Hex Chromium
Concentration Units: Ug/L

Sampling Point ID:	NH-MW-06-Z3	NH-MW-11-Z1	NH-MW-11-Z2	NH-MW-11-Z3			
Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (Ug/L)						
1	Aug-17		3.55	2.18	2.74			
2	Sep-17	3.69						
3	Apr-18	3.63	3.32	2.14	2.72			
4	Mar-19	3.31	3.51	2.11				
5	Apr-19				2.53			
6	Jun-19	3.91	3.27		2.4			
7	Jul-19							
8	Aug-19	4.26	2.98		2.23			
9	Sep-19			2.24				
10	Nov-19	4.06	3.11	2.31	2.09			
11	Aug-20	4.15	2.48	2.1	3.76			
12	Nov-20	4.73	2.73	4.42	2.26			
13	Mar-21	4.66	2.64	4.27	2.12			
14	Jun-21	4.68	2.53	3.3	2.18			
15	Aug-21	4.45	2.64	2.19	4.31			
16	Nov-21	4.49	2.46	2.09	2.71			
17	Jan-22	4.45	2.41	2.03	2.74			
18								
19								
20								
Coefficient of Variation:		0.11	0.14	0.33	0.25			
Mann-Kendall Statistic (S):		43	-63	-8	-3			
Confidence Factor:		99.6%	>99.9%	68.1%	54.8%			
Concentration Trend:		Increasing	Decreasing	Stable	Stable			



Notes:

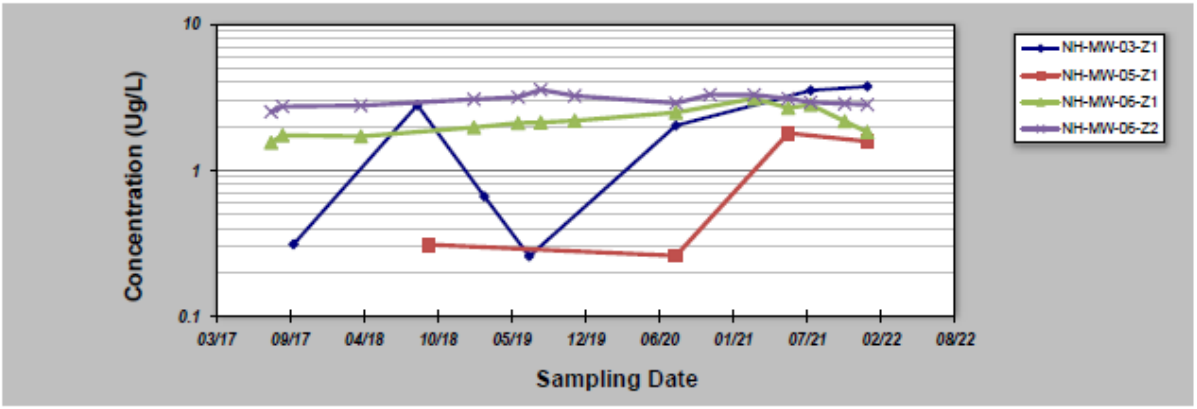
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 20 Hexavalent chromium concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: Hex Chromium
Concentration Units: Ug/L

Sampling Point ID:	NH-MW-03-Z1	NH-MW-05-Z1	NH-MW-06-Z1	NH-MW-06-Z2			
Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (Ug/L)						
1	Aug-17			1.55	2.52			
2	Sep-17			1.74	2.74			
3	Oct-17	0.312						
4	Apr-18			1.71	2.78			
5	Sep-18	2.8						
6	Oct-18		0.31					
7	Feb-19			1.97	3.07			
8	Mar-19	0.664						
9	Jun-19			2.11	3.17			
10	Jul-19	0.258						
11	Aug-19			2.13	3.57			
12	Nov-19			2.19	3.24			
13	Aug-20	2.03	0.26	2.49	2.89			
14	Nov-20				3.3			
15	Mar-21			3.11	3.29			
16	Jun-21		1.8	2.68	3.1			
17	Aug-21	3.53		2.81	2.93			
18	1-Nov-21			2.17	2.86			
19	1-Jan-22	3.76	1.58	1.83	2.82			
20								
Coefficient of Variation:		0.79	0.83	0.21	0.09			
Mann-Kendall Statistic (S):		11	2	44	13			
Confidence Factor:		93.2%	62.5%	99.7%	74.1%			
Concentration Trend:		Prob. Increasing	No Trend	Increasing	No Trend			



Notes:

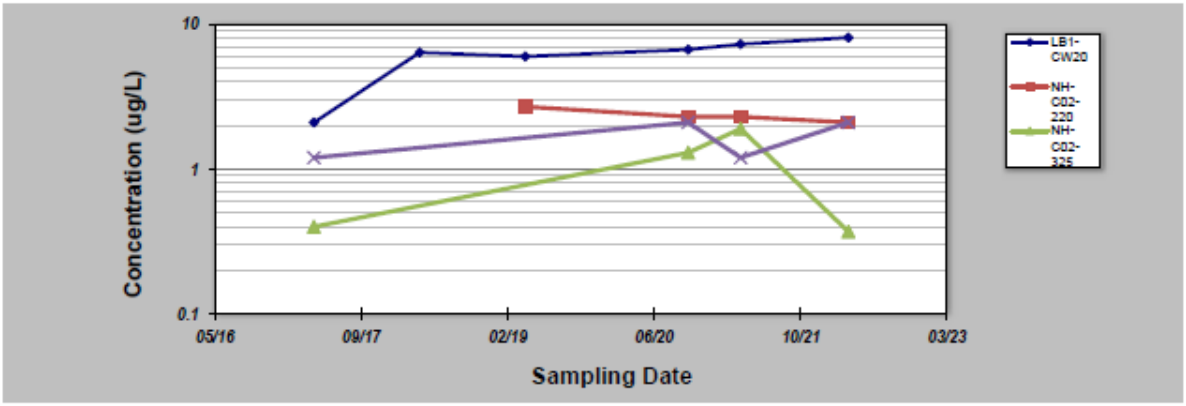
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 21 Hexavalent chromium concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	Hex Chromium
Conducted By:	Jeffrey Weiss	Concentration Units:	ug/L

Sampling Point ID:	LB1-CW20	NH-C02-220	NH-C02-325	NH-VPB-04			
Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (ug/L)						
1	Apr-17	2.1		0.4	1.2			
2	Apr-18	6.4						
3	Apr-19	6	2.7					
4	Oct-20	6.7	2.3	1.3	2.1			
5	Apr-21	7.3	2.3	1.9	1.2			
6	Apr-22	8.1	2.1	0.37	2.1			
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.34	0.11	0.75	0.31			
Mann-Kendall Statistic (S):		13	-5	0	2			
Confidence Factor:		99.2%	89.6%	37.5%	62.5%			
Concentration Trend:		Increasing	Stable	Stable	No Trend			



Notes:

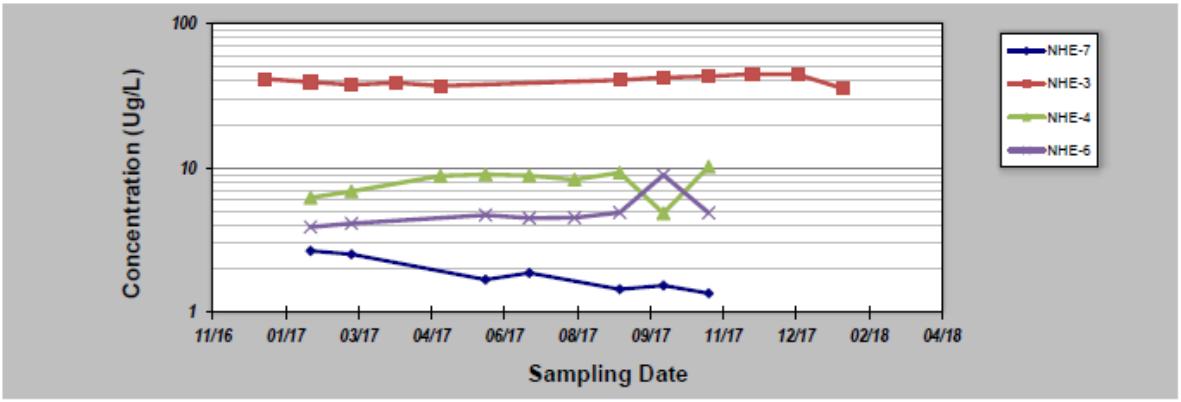
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 22 Hexavalent chromium concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	Hex Chromium
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

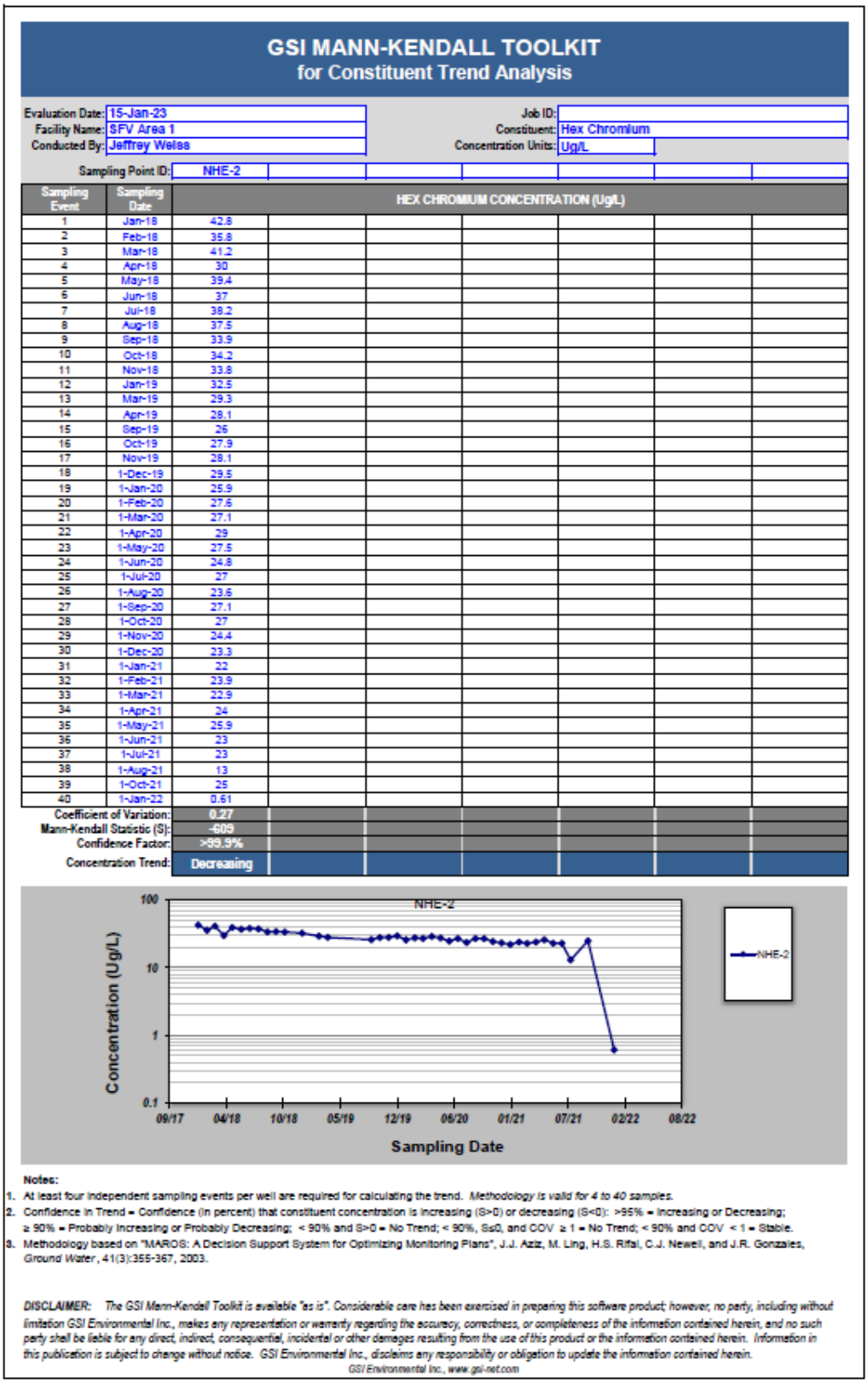
Sampling Point ID:	NHE-7	NHE-3	NHE-4	NHE-6			
Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (Ug/L)						
1	Jan-17		41.4					
2	Feb-17	2.66	39.4	6.22	3.89			
3	Mar-17	2.52	37.8	6.88	4.12			
4	Apr-17		39					
5	May-17		37.1	8.81				
6	Jun-17	1.68		9	4.71			
7	Jul-17	1.87		8.84	4.49			
8	Aug-17			8.29	4.52			
9	Sep-17	1.44	40.7	9.27	4.9			
10	Oct-17	1.53	42.4	4.85	8.93			
11	Nov-17	1.35	43.2	10.2	4.88			
12	Dec-17		44.8					
13	Jan-18		44.5					
14	Feb-18		35.6					
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.28	0.08	0.21	0.32			
Mann-Kendall Statistic (S):		-17	13	14	20			
Confidence Factor:		99.5%	82.1%	91.0%	99.3%			
Concentration Trend:		Decreasing	No Trend	Prob. Increasing	Increasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 23 Hexavalent chromium concentration trend plot between 2017 and 2022.



GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Jan-23
Facility Name: SFV Area 1
Conducted By: Jeffrey Weiss
Job ID:
Constituent: Hex Chromium
Concentration Units: Ug/L
Sampling Point ID: NHE-2

Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (Ug/L)
1	Jan-18	42.8
2	Feb-18	35.8
3	Mar-18	41.2
4	Apr-18	30
5	May-18	39.4
6	Jun-18	37
7	Jul-18	38.2
8	Aug-18	37.5
9	Sep-18	33.9
10	Oct-18	34.2
11	Nov-18	33.8
12	Jan-19	32.5
13	Mar-19	29.3
14	Apr-19	28.1
15	Sep-19	26
16	Oct-19	27.9
17	Nov-19	28.1
18	1-Dec-19	29.5
19	1-Jan-20	25.9
20	1-Feb-20	27.6
21	1-Mar-20	27.1
22	1-Apr-20	29
23	1-May-20	27.5
24	1-Jun-20	24.8
25	1-Jul-20	27
26	1-Aug-20	23.6
27	1-Sep-20	27.1
28	1-Oct-20	27
29	1-Nov-20	24.4
30	1-Dec-20	23.3
31	1-Jan-21	22
32	1-Feb-21	23.9
33	1-Mar-21	22.9
34	1-Apr-21	24
35	1-May-21	25.9
36	1-Jun-21	23
37	1-Jul-21	23
38	1-Aug-21	13
39	1-Oct-21	25
40	1-Jan-22	0.61
Coefficient of Variation:		0.27
Mann-Kendall Statistic (S):		-609
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing

Notes:
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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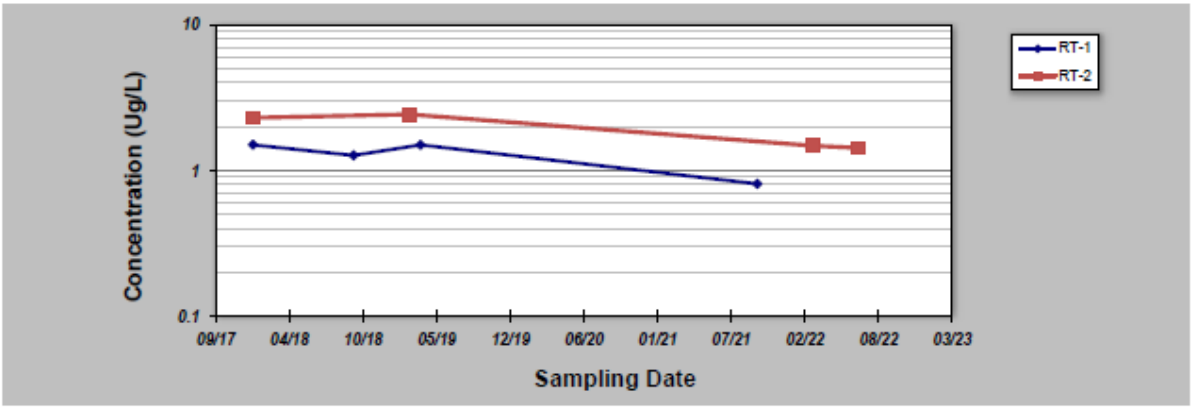
Figure C- 24 Hexavalent chromium concentration trend plot between 2017 and 2022.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Jan-23	Job ID:	
Facility Name:	SFV Area 1	Constituent:	Hex Chromium
Conducted By:	Jeffrey Weiss	Concentration Units:	Ug/L

Sampling Point ID:	RT-1	RT-2					
Sampling Event	Sampling Date	HEX CHROMIUM CONCENTRATION (Ug/L)					
1	Jan-18	1.5	2.3				
2	Oct-18	1.27					
3	Mar-19		2.43				
4	Apr-19	1.5					
5	Oct-21	0.81					
6	Mar-22		1.48				
7	Jul-22		1.43				
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.26	0.28				
Mann-Kendall Statistic (S):		-3	-4				
Confidence Factor:		72.9%	83.3%				
Concentration Trend:		Stable	Stable				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

Figure C- 25 Hexavalent chromium concentration trend plot between 2017 and 2022.

Appendix D: Applicable or Relevant and Appropriate Requirements Assessment

Section 121 (d)(2)(A) of Comprehensive Environmental Response, Compensation, and Liability Act specifies that Superfund remedial actions must meet any Federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate requirements (ARARs). ARARs are those standards, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a Comprehensive Environmental Response, Compensation, and Liability Act site.

Changes (if any) in ARARs are evaluated to determine if the changes affect the protectiveness of the remedy. Each ARAR and any change to the applicable standard or criterion are discussed below.

Chemical-specific ARARs identified in the 2009 Interim Record of Decision for North Hollywood for groundwater were evaluated (Table D-1). While the North Hollywood treatment system is not currently operating; when it is operating with a drinking water end use, the treated water must meet California's existing drinking water standards even when they are lower than the selected ARARs at the time of delivery. The chemical-specific ARARs in the 2009 Interim Record of Decision were evaluated against promulgated standards current regulations in effect at the time, except for hexavalent chromium, which was based on a voluntary cleanup level at the time of remedy selection used by the Los Angeles Department of Water and Power. and there have been no new State or Federal standards for hexavalent chromium enacted during the review period and the Los Angeles Department of Water and Power is no longer requiring that treated water meet voluntary cleanup levels.

The California Department of Public Health Notification Level for 1,4-dioxane has lowered from 3 micrograms per liter to 1 microgram per liter since EPA signed the 2009 Interim Record of Decision, but no other ARARS have become more stringent. The protectiveness of the remedy is not impacted by this change since the remedy has a drinking water end use that requires all North Hollywood effluent to is used as drinking water and must meet all current drinking water standards and notification levels as part of its California Department of Drinking Water permit.

Table D-1. Summary of Groundwater Chemical-Specific ARAR Changes

Chemical	Performance Standards (µg/L)	Basis for Performance Standard	Current Regulations (µg/L)		ARARs More or Less Stringent than Cleanup Levels?
			State California	Federal	
TCE	5	Federal Drinking Water Standard	5	5	No changes
PCE	5	Federal Drinking Water Standard	5	5	No changes
1,1-DCA	5	Federal Drinking Water Standard	5	5	No changes
1,2-DCA	0.5	Federal Drinking Water Standard	0.5	5	No changes
1,1-DCE	6	Federal Drinking Water Standard	6	7	No changes
cis-1,2-DCE	6	Federal Drinking Water Standard	6	70	No changes
1,1,2-TCA	5	Federal Drinking Water Standard	5	5	No changes
Carbon tetrachloride	0.5	Federal Drinking Water Standard	0.5	5	No changes
Methylene Chloride	5	Federal Drinking Water Standard	5	5	No changes
Total Chromium	50	State Drinking Water Standard	50	100	No changes
Hexavalent Chromium	5	Los Angeles Department of Power and Water Voluntary Cleanup Value	NA	NA	NA
Perchlorate	6	State Drinking Water Standard	6	NA	No changes
TCP	0.005	California Department of Public Health notification level	0.005*	NA	No changes
1,4-dioxane	3	California Department of Public Health notification level	1	NA	More stringent
NDMA	0.01	California Department of Public Health notification level	0.01	NA	No changes

*California now has a State Drinking Water Standard that is equal to the previous notification level

EPA did not select numeric chemical-specific ARARs in any of the decision documents for Burbank. Instead, EPA determined that the Federal maximum contaminant levels (MCLs) or any more stringent State of California MCLs are relevant and appropriate and must be attained regardless of the end use or discharge method for the treated water. Therefore, treated, blended water must meet all applicable requirements for drinking water in existence at the time that the water is served, prior to distribution through the public drinking water supply system. While some of the State of California MCLs have changed during the Five-Year Review period, the California Department of Drinking Water permits for Burbank have also been updated and so no impact to protectiveness of the remedy has occurred.

Federal and State laws and regulations other than the chemical-specific ARARs that have been promulgated or changed over the past five years are described in D-1. There have been no revisions to laws or regulations that affect the protectiveness of the remedy. The following action- or location-specific ARARs have not changed in the past five years, and therefore do not affect protectiveness:

- Clean Air Act SCAQMD, Rule 1401
- California Water Code and State Water Resources Control Board Model Well Standards Ordinance (1989), Division 7, CH 10, Section 13700 et seq.
- California Hazardous Wates Regulations, Generator Requirements, 22 CCR 66262.10, 22 CCR 66262.11, 22 CCR 66262.34(a)(1)(A), 22 CCR 66265.170 et. Seq (Article 9), 22 CCR 66265.190 et seq. (Article 10)
- California Land Disposal Restrictions, Requirements for Generators, 22 CCR 66268.3, 22 CCR 66268.7, 22 CCR 66268.9, 22 CCR 66268.50
- California Land Disposal Restrictions, Requirements for Generators, 22 CCR 66268.1 (Article 1)
- Spent Carbon Disposal, 40 CFR 268.40
- Groundwater Reinjection, State Water Resources Control Board Resolution 68-16 **No Changes**
- Groundwater Reinjection, RCRA Section 3020
- Clean Air Act SCAQMD, Regulation XIII: Rules 1309

Table D-1. Summary of ARAR Changes for Site in the Past Five Years

Requirement and Citation	Document	Description	Effect on Protectiveness	Comments	Recent Amendment Date
Clean Air Act SCAQMD, Regulation XIII: Rule 1325	1993 ROD	Air emissions associated with air stripper operation	Changes do not affect protectiveness.	Federal PM 2.5 New Source Review Program is exempt from the requirements of CEQA	January 4, 2019

Appendix E: Public Notice

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MONDAY, MARCH 20, 2023

START YOUR DAY HERE

Good Morning

Cool fact: The average human produces 25,000 quarts of saliva in a lifetime, enough to fill two swimming pools.

BOX OFFICE

'Shazam!' falls short of expectations

By Lindsey Bahr
The Associated Press

"Shazam! Fury of the Gods" felt the fury of the marketplace in its theatrical debut this weekend. The New Line Cinema and Warner Bros. superhero movie opened to a disappointing $30.5 million from 4,071 theaters, according to studio estimates Sunday.

The "Shazam!" sequel fell short of its modest expectations ($35 million) as well as the first film in the series ($53.5 million in April 2019), and earned a place on the very low end of modern DC century movie launches, between "Birds of Prey" ($55 million in February 2020) and "The Suicide Squad" ($26.2 million in August 2021), both of which were R-rated.

Directed by David F. Sandberg, "Shazam! Fury of the Gods" brought back Zachary Levi, Asher Angel, Jack Dylan Grazer, Adam Brody and Djimon Hounsou, and added Helen Mirren, Rachel Zegler and Lucy Liu. Critics, many of whom found the first film charming, were largely underwhelmed by this outing. It currently holds a 53% Rotten Tomatoes critic score.

Audiences were more positive about the sequel, giving it a B+ CinemaScore overall. Younger crowds were even more favorable.

"Shazam: Fury of the Gods" cost a reported $125 million to produce, not factoring in marketing and promotion costs. Internationally, it grossed $35 million from 77 overseas markets including China, bringing its total earnings to $65.5 million.

The DC slog at Warner Bros. has been going through a major recalibration for the past several months, with new bosses in James Gunn and Peter Safran forging a path ahead for the DC Universe that will officially kick off with a new "Superman" in 2025. "Shazam! 2" was one of several holdovers of the old regime, which includes "The Flash" coming in June and a new "Aquaman" in December.

Second place went to "Sesame I'N" in its second weekend in theaters. The horror pic, distributed by Paramount, fell 61% from its debut and added $12.6 million, bringing its domestic total to $76 million.

In its third weekend, "Creed III" grossed an additional $10.6 million to land in the No. 3 spot. The film, directed by and starring Michael B. Jordan has now earned $137.7 million in North America. "65" and "Ant-Man and the Wasp: Quantumania" rounded out the top five with $5.8 million and $4.1 million, respectively.

Following its Oscar sweep last Sunday, A24's added over 1,000 screens for an encore "Everything Everywhere All At Once" run, where it earned an additional $1.3 million.

"The Whale," for which Brendan Fraser won best actor, played on 800 screens and made $946,230.

"What audiences are enjoying right now is a diversity of content," said Paul Dergarabedian, the senior media analyst for Comscore. "Overall, it's shaping up to be a strong month."

Hot shot

BRIAN HORIUCHI — STAFF PHOTOGRAPHER

In full bloom: A bicyclist rides along a path following a day of rain at Rancho Tapo Community Park and Veterans Plaza in Simi Valley last week. Rainy weather will continue through midweek.

Birthdays

Actor Neil Linden is 92.
Former Canadian prime minister Brian Mulroney is 84.
Basketball Hall of Fame coach Pat Riley is 78.
Hockey Hall of Famer Bobby Orr is 75.
Rock musician Jimmie Vaughan is 70.
Movie director Spike Lee is 65.
Actor Holly Hunter is 65.
Glen Jim Phantom (The Stray Cats) is 62.
Actor-model-designer Kathy Ireland is 60.
Actor David Thewlis is 60.
Actor Jessica Lundy is 57.
Actor Blanca Lawson is 44.
Comedian-actor Mikey Day is 43.
Actor Nick Blood (TV: "Marvel's Agents of S.H.I.E.L.D.") is 41.
Rock Wheeler (The All-American Rejects) is 41.
Actor-singer Christy Carlson Romano is 32.

TODAY IN HISTORY

1854

The Republican Party of the United States was founded by slavery opponents at a schoolhouse in Ripon, Wisconsin.

1969

John Lennon married Yoko Ono in Gibraltar.

1976

Kidnapped newspaper heiress Patricia Hearst was convicted of armed robbery for her part in a San Francisco bank holdup carried out by the Symbionese Liberation Army.

1996

A jury in Los Angeles convicted Erik and Lyle Menendez of first-degree murder in the shotgun slayings of their wealthy parents. (They were sentenced to life in prison without the possibility of parole.)

LOTTERY

WEEKEND NUMBERS
Daily 3 Afternoon: 5, 1, 1
Daily 3 Evening: 4, 3, 8
Daily 4: 1, 8, 2, 0
Fantasy 5: 15, 26, 34, 37, 38

DAILY DERBY
1st: 8, Gorgeous George
2nd: 6, Wild Win
3rd: 9, Winning Spirit
Race time: 1:49.51

SUPER LOTTO PLUS
Saturday's drawing: 8, 10, 16, 19, 36
Mega Number: 12
Wednesday's estimated jackpot: $43 million

MEGA MILLIONS
Friday's drawing: 26, 28, 29, 39, 49
Mega Number: 25
Tuesday's estimated jackpot: $272 million

POWERBALL
Saturday's drawing: 14, 20, 30, 54, 69
Powerball: 11
Today's estimated jackpot: $65 million

Appendix F: Site Inspection Report and Photos

1. INTRODUCTION

a. Date of Visit: 14 February 2023

b. Location: Burbank, CA

c. Purpose: A site visit was conducted to visually inspect and document the conditions of the remedy, the site, and the surrounding area for inclusion into the Five-Year Review Report.

d. Participants:

NAME	ORGANIZATION SITE
Jeffrey Luong	USACE-SPL, Project Engineer
Larry Sievers	EPA, RPM
Bianca Handley	EPA, RPM
Richard Salazar	Terranear PMC (TPMC), Plant Manager
Javier Martinez	Burbank Water and Power (BWP), Manager Water Production and Operations
Richard Wilson	BWP, Assistant General ManagerBOU
Kevin Mitchell	TPMC, Consultant
Jose Barraza	TPMC, Operations Supervisor
Natalie Young	WSP, Site Engineer
Vahe Dabbaghian	LADWP, PM
Jeffrey Hu	Los Angeles Waterboard Region 4

Site visits were completed at the Burbank Treatment Plant (BTP – Burbank Operable Unit [BOU]) and North Hollywood Treatment Plant (North Hollywood Treatment Plant – North Hollywood Operable Unit [NHOU]) on February 14, 2023, as part of the San Fernando Valley Area 1 Superfund Site (Site) Five-Year Review. The participants listed attended the Site listed next to their name. EPA and USACE personnel attended both site visits. The weather was partly cloudy and in the 60s. The site visit at BTP lasted from approximately 8:15 to 11:30 a.m. followed by a visit to four extraction well locations from 11:40 a.m. to 12:40 p.m. EPA and USACE visited the North Hollywood Treatment Plant from approximately 1:50 to 3:00 p.m., and a final visit to one extraction well at 3:10 p.m.

Burbank Treatment Plant (BTP)/Burbank Operable Unit (BOU)

The inspection at BTP began in the main office building with a discussion on site security. There are two entrances to the plant itself from the east and west gate. The plant contained a secured fence along the perimeter and security cameras were observed facing each entrance. Mr. Salazar noted that there have not been any security concerns within the past five years and someone is on-site 24 hours, 7 days a week. Mr. Luong then asked the BTP representatives a number of general questions relating to the potential challenges, locations of emergency/safety plans, and the overall resiliency relating to plant operations. Mr. Salazar responded that the biggest challenge encountered within the past five years was when the

transformer blew in the beginning of 2020 causing electrical damage throughout the plant and wellfield, but the plant was able to re-establish flow within a week, minimizing operation downtime. Some other challenges noted were the retainment of experienced, certified personnel, and the rising costs of equipment, parts, and chemicals. Mr. Salazar noted that all necessary documents including the safety plans, O&M manuals, and integrated contingency plan was kept on-site to address any concerns any emergencies such as a hazardous waste spill, fire, or natural disaster. Mr. Luong confirmed the locations of the documents in the main office and the control room. In light of COVID-19, the remaining challenges were the supply chain issues and rising costs of materials. The plant continued operations and followed all health guidelines regarding COVID-19, with some short staffing issues at times.

The group then toured the treatment plant beginning from the influent piping. At the time of the inspection, the plant was running at approximately 4,300 gallons per minute from three wells (V-04, V-05, and V-06) due to ongoing inspections and instrument calibrations. Within the past five years, a seismic evaluation was conducted in 2019 which resulted in a design completed in 2021 and construction of improvements completed in 2022. Seismic improvements included banding for pipe racks, roof to wall connections/brackets in the boiler room, and brackets on the foot of the air stripper towers. There were no signs of damage or issues with the treatment plant and the BTP is operating as intended by the current remedy.

Extraction Wells – BTP/BOU

At approximately 11:40 a.m., the group drove to visit the various extraction wells starting with V-08, the only aboveground wellhead for the BOU, located in the Burbank Fire Training Center. At the time of the inspection, this well was not in operation as Mr. Salazar noted they were in the process of replacing a check valve. The group then drove to V-03, passing by V-05, V-06, and V-07 on Vanowen St. Mr. Salazar and Mr. Barraza opened the underground vault to observe V-03. Although not in operation at the time of the inspection, the wellhead and sampling cabinet all appeared in good condition and securely locked. Mr. Salazar noted that all wells are visited daily and are inspected on an alternate monthly basis. The group drove by V-02 and V-01 located at the back of the Burbank Empire Center plaza and concluded the BTP visit.

North Hollywood Treatment Plant (NHTP)/North Hollywood Operable Unit (NHOU)

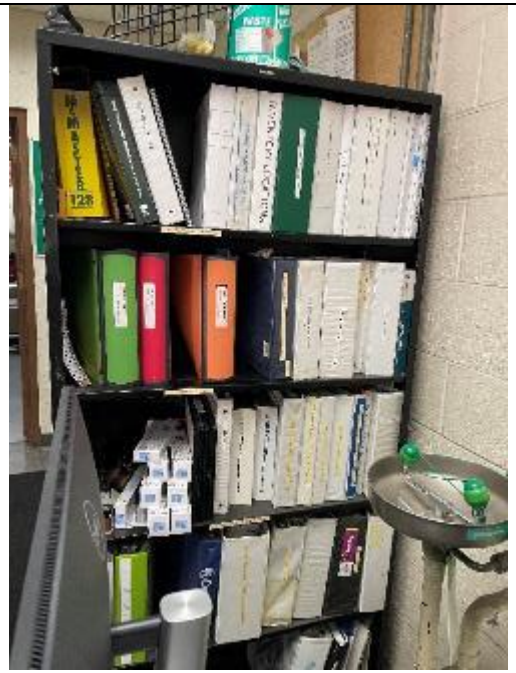
Mr. Luong, Mr. Hu, Ms. Handley met with Ms. Young and Mr. Dabbaghian at the NHTP at approximately 1:30 p.m. The activities at the treatment plant appears to be progressing along and construction of the new extraction and treatment system is near complete.

Extraction Well – NHTP/NHOU

At approximately 3:10 p.m., the group visited North Hollywood Extraction Well 3R (NHE-3R), which was located right off the corner of Vanowen St. and Beck Ave. The aboveground well unit was securely fenced and contained a Variable Frequency Drive (VFD). There were no signs of vandalism or damage and appeared to be in good condition.

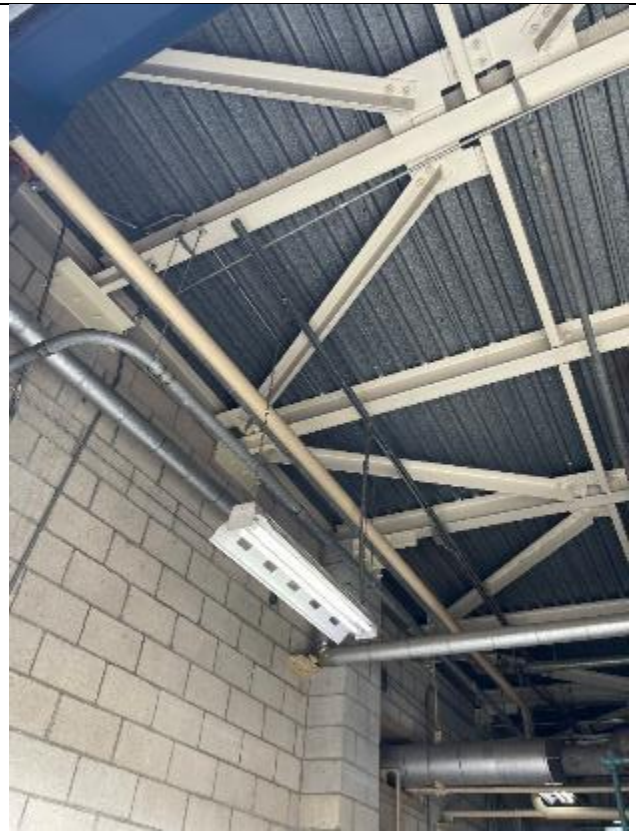
- Jeffrey Luong

No.	Photo	Caption
1		East entrance to the Burbank Treatment Plant.

2		O&M Manual, safety logs, equipment manuals located in the control room.

3		Facing northwest, influent piping to the two air stripper towers.
4		Facing north, vapor phase vessels

5		Sampling ports for the liquid phase GAC vessels.

6		Newly installed roof to wall connections for seismic improvements in the boiler room.

7		Facing north, LPGAC vessels in the background.

8		Six 120,000 gallon holding tanks for backwash.

9		SCADA system used to operate the treatment plant located in the control room.

10		Aboveground Well V-08 located in the Burbank Fire Training Center.

11		V-03 wellhead in underground vault

No.	Photo	Caption
12		Influent line to NHTP/NHOU.
13		Newly installed IX exchange vessels.

14		Facing east, newly installed GAC vessels.
15		Facing north, North Hollywood Extraction Well – 3R with a VFD and secured fence in the background.

Appendix G: Interview Form

Five-Year Review Interview Record (2019-2023)				
Site:	San Fernando Valley Areas 2 (GOU)			
Interview Questionnaire Date: June 7, 2023				
(Fill in the components below, one line per person if multiple persons are providing responses)				
Name	**Organization**	**Title**	**Telephone**	**Email**
Richard Ruyle	City of Glendale	Water Services Administrator	(818) 548-3982	rruyle@glendaleca.gov
Leo Chan	City of Glendale	Senior Civil Engineer	(818) 548-3905	lchan@glendaleca.gov

(Record responses to the questions below)

1) Historically, what has been your organization's role in the project? The City of Glendale (City) has been responsible for the day-to-day operations of the GOU treatment facility via its contractor, CDM, Smith and in meeting the project objectives as identified in the consent decree. The City also plays the role as a water purveyor in making sure the treated water from the Glendale Water Treatment Plant meets all drinking water standards and requirements prior to serving the Glendale residents. What is your organization's current and expected future role? The City is expecting to continue carrying out the same responsibility in the future regarding the project.

2) Do you feel that there is adequate communication between the water purveyors, EPA, and other agencies managing or coordinating cleanup efforts at the site? Yes. The City (as the water purveyor) communicates with EPA and other agencies (e.g. Division of Drinking Water) on a weekly basis and holds monthly and quarterly meetings with the regulatory agencies and project stakeholders to discuss the operation and issues related to the GOU.

3) Do you feel that adequate efforts are made to inform the community and stakeholders about the project's activities and progress? Do you have any comments or suggestions on EPA's efforts? Yes. CDM Smith, City's contractor for GOU facilities operation and maintenance, provides daily project status to all stakeholders via email. CDM also updates the stakeholders via email whenever there is a change in operation or project activity during the day.

4) Are you aware of any complaints, violations, or community concerns about the project in the last few years? None

5) What is your overall impression of the project? Do you have any comments, suggestions, or recommendations? My overall impression of the project is that it is a well-run project. The City of Glendale's contracted CDM Smith to operate the GOU facilities. The plant manager and the operators are very responsible and competent in operating the operable unit. The Plant Manager is also proactive in performing preventive maintenance which helps minimize unexpected project interruptions. The Glendale Respondents Group (GRG) has been very supportive of the operations. There have been no budget issues. The City also works very well with the State Water Board - Division of Drinking Water.