City of Fresno

Request For Qualifications For U.S. Environmental Protection Agency Brownfields Revolving Loan Fund Supplemental Grant Consulting Services

Stantec Consulting Services Inc. July 19, 2024 Bid File #1240220

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A. Executive Summary

Stantec

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July 19, 2024

Attention:
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carbon copy to:
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City of Fresno
Planning and Development Department
2600 Fresno Street, 3rd Floor
Fresno, CA 93721

Reference: Request For Qualifications For U.S. Environmental Protection Agency Brownfields Revolving Loan Fund Supplemental Grant Consulting Services Bid File #12402200

Dear Mr. Densley and Selection Committee,

We appreciate the chance to submit our proposal to the selection committee and look forward to our continued collaboration with the City of Fresno (the City or Fresno). Stantec's values of environmental stewardship and building strong communities have led us to intentionally cultivate deep and broad capabilities to support brownfield revitalization. Our work extends beyond providing high quality environmental assessments to thoughtful community engagement, reuse planning, and helping communities connect with funding partners, developers, and other leading resources in pursuit of smart, sustainable growth and community development. As our brownfield team has grown and our skills and proficiency have deepened, we have attracted staff with exceptional environmental and planning experience, but more importantly, people with a passion for building resilient and livable communities.

Great places don't just happen - they are born of thoughtful vision and intelligent planning. Our team is excited to do just that, to continue work with the City on this exciting opportunity to broaden the reach and impact of the Fresno brownfield Revolving Loan Fund (RLF) program.

We believe we are the best team to serve your needs on this project for many reasons, most critically:

We are helping advance the City's sustainable brownfield program. Stantec and the City have been tackling brownfield challenges together since 2018. Our team, including Graeme Taylor, Project Manager and David Holmes, RLF and Brownfield Grant Specialist, have on-going experience helping to secure the EPA Brownfield Coalition Assessment Grant and the RLF Grant currently being implemented by the City. Through our experience working directly with you on brownfield challenges and strategies, we have established a clear understanding of the City's priorities and opportunities. We recognize that Fresno has immense opportunity to redevelop and revitalize their downtown core. We understand your reuse plans and goals, and we are intimately familiar with the regulatory and programmatic requirements related to effective Brownfield RLF management. With this background, Stantec is uniquely positioned and knowledgeable in strategies to support the City in continuing to build an effective long-term brownfield program.

Our team has strong technical qualifications. Our National Asset Transformation and Brownfield (NATBF) Program practice group is supported by a dedicated team of nearly 75 brownfield specialists including engineers, geologists, scientists, planners, and funding specialists who work together seamlessly to deliver results for clients and communities throughout the US. Leading this project is Graeme Taylor, an environmental scientist and project manager, with 20 years of environmental consulting experience focused on site assessment, cleanup, and redevelopment. We have also included David Holmes, who has been providing the City with ongoing assistance since 2018, as the RLF and Brownfield Grant Specialist.

Supporting Graeme and David is Neil Doran, Principal Geologist and Site Assessment Lead, Jason Stagno, Regulated Building Materials Lead, and Paul Stoppelmann, Local Contact and Cleanup Lead. To support community engagement, resource coordination, and marketing, Carrie Rackey and Khandriale Clark bring their vast experience with brownfield related communications. We are confident our team will deliver the results the City needs in the most efficient and cost-effective way.

We provide valuable skills and specialized experience. Stantec has more than 5,100 environmental services staff company-wide with experience covering more than 20 disciplines. We can pull from a large pool of specialists covering almost every discipline in science, engineering, architecture, and planning. Should the project require expertise beyond Stantec's proposed key personnel, all we need to do is pick up the phone to reach any number of in-house specialists.

Our team's RLF Implementation approach is built upon leadership and successful results. We design with community in mind. We translate market potential into achievable visions with strong community buy-in that leads to full-scale implementation. This perspective and the knowledge of our multi-disciplinary team sets us apart. In Fiscal Year 2020, we worked closely with the City to prepare the grant application to secure the first round of RLF funding from EPA, writing one of the highest scoring grant applications for that year. Brownfield redevelopment services, and your program, will benefit from our dedicated brownfield staff and diverse capabilities.

Our approach to community engagement is to put people first. Community engagement is a vital part of any brownfield program. Not only is it a requirement in the grant work plan but it is an important part of our Stantec mission to put people first. Many of the neighborhoods we are working in are very diverse in population, and it's common to find language barriers and a disconnected populous. The key to the success of any brownfield project is involving the community where the project is taking place. When a neighborhood feels a part of what is transpiring, there is a better chance they will believe in the project and stand behind it.

We have the multidisciplinary skills to consider the potential end use of brownfield sites, assisting in planning, design, and engineering for site adaptation. We also bring a range of funding services capabilities to develop and implement a leveraged funding strategy to push projects through completion.

We are a valued partner and trusted advisor to the City. Our team is passionate about helping the City continue to develop its sustainable brownfield program. Stantec has an unmatched record of success preparing successful applications for EPA Brownfields grants and helping communities use the funding to build successful brownfield redevelopment programs. We are proficient not only in securing funding but helping grantees to achieve exceptional results from their grant funded projects . We help our clients to take fullest advantage of the opportunities presented by the grants to not only advance sites through the environmental due diligence process, but also in using the grants and projects to strengthen our clients' long-term brownfields, economic development, and neighborhood revitalization programs.

We are skilled not only in securing EPA brownfield grants, but in helping clients successfully navigate a broad array of federal, state, and local funding programs that are relevant to cleanup and redevelopment of individual sites and/or in advancing revitalization of urban areas. We are unique in helping our EPA brownfield grant clients to implement an array of proven strategies for using their initial grants to successfully position priority brownfield sites and projects for other types of funding, and in using their assessment grants as a powerful tool for making these sites and projects "grant ready." We also assist clients in utilizing an array of higher end funding tools (such as natural capital assessments and insurance cost recovery) that can have an enormous financial impact on individual priority brownfield sites.

We have reviewed the Sample Agreement in the Request for Qualifications (RFQ) and agree with the terms and conditions. We look forward to partnering with the City on this transformative project. If you have any questions, please don't hesitate to contact us.

Stantec Consulting Ltd.

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B. Business Information

Firm's Point of Contact

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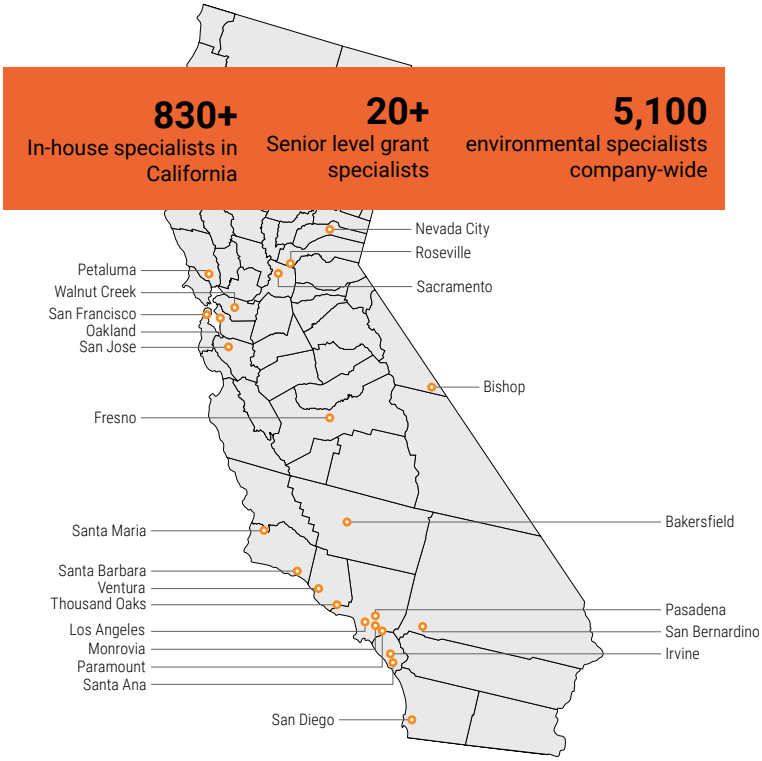
Company Background

A local firm with a strong national + global presence

At Stantec, we recognize we are better together. The Stantec community unites **more than 31,000 employees working in over 450 locations**. Established in 1954, We are a global leader in environmental consulting, engineering, and sustainable architecture. Stantec empowers clients, people, and communities to rise to the world's greatest challenges at a time when the world faces more unprecedented concerns than ever before.

With 28 offices in California including the City of Fresno, we have the depth of resources and availability to immediately support your brownfield program needs.



Why Stantec is the Best Choice

We are leaders in transforming sites into assets that revitalize communities and bring neighborhoods to life—while reducing risk and developing value.

500
Successful US EPA brownfield grants

$200M
USEPA brownfield grant funded activities

#1
Top 115 Architecture/Engineering Firms (BD&C 2023)

Our National Asset Transformation and Brownfields (NATBF) Program includes nearly 75 senior-level grant specialists who routinely work with our local technical leaders in offices throughout the country to deliver funding and implementation results to our diverse clientele. Stantec has over a decade of experience helping 100s of communities secure funding, including US Environmental Protection Agency (EPA) Brownfield Grants, and partnering with them to build effective brownfield programs.

For many brownfield sites, redevelopment will occur only if funding is provided to offset extraordinary development costs associated with environmental assessment, cleanup, demolition, and/or abatement. Therefore, the successful redevelopment of many of our client's priority brownfield sites is linked to their ability to secure funding to address these costs. We bring exceptional knowledge related to a wide array of funding programs, and how communities and our clients can increase their opportunities to secure these funding sources.

Our team is uniquely qualified to assist the City of Fresno in continuing to develop a long-term and effective brownfield program. Our goal is to help your community realize its potential through programs to manage site re-use and revitalization now, and for years to come.

C. Methodology + Project Approach

Team
We have assembled a well-rounded team to provide the City with EPA Brownfield Grant services. Key staff were chosen based on their familiarity with the EPA Brownfield Grant Program, experience working with the City of Fresno and in California's Central Valley, and with other local agencies as well as their availability to commit to your project. Efficient coordination within our proposed team is facilitated by long-standing relationships between our team members as they have worked together on a number of projects in a similar capacity. Moreover, we provide a strong leadership structure to support an efficient and cohesive project. **Key team members are listed below:**

Graeme Taylor, Project Manager
David Holmes, RLF and Brownfield Grant Specialist
Neil Doran, Principal Geologist & Site Assessment Lead
Carrie Rackey, QA/QC and Engagement Lead
Jason Stagno, Regulated Building Materials Lead
Paul Stoppelmann, Local Contact and Cleanup Lead
Khandriale Clark, Community Engagement Support

> **We have provided an organizational chart in Section D - Representative Resumes.**

Methodology + Project Approach

The Stantec team brings much more than technical knowledge in site assessment and remediation. We are creative and passionate about the communities we support. We strive to engage and connect with the community, and understand the history, needs, and cultural and natural assets of the area. This is the foundation of the Stantec team's approach. Geologists, industrial hygienists, planners, architects, engineers, community outreach specialists and facilitators: we employ technical skills as tools to be used in the service of sustainable, beneficial community solutions that are conceived and designed in close collaboration with all impacted members of the community and aligned with local needs.

Project Management
Stantec, if selected as the Qualified Environmental Professional (QEP), will perform all services offered in our proposal. We confirm that no external subconsultants are required for this project. Stantec will be the sole point of contact regarding contractual matters, including payment of any and all charges to the subcontractors resulting from the contract.

Below we outline our anticipated approach and methodology. We are flexible and collaborative in our approach and from the City's experience, you can count on the team's dedication and commitment to excellent client services.

Detailed Scope of Services and Approach

Planning, Organization, and Management
At the start of the project, Stantec will join the City in a kickoff meeting to review project goals, timelines, and roles. As we have already been working with you to implement RLF Grant funding, we anticipate this will be an efficient meeting where together we evaluate successes to date and any desired process adjustments. During the kickoff we will discuss the project schedule and milestones for evaluating progress accomplishments. We will also document the City's goals and begin to develop criteria for prioritizing projects for loans and subgrants. We suggest scheduling a standing call at least on a bi-weekly basis to keep all team members informed of progress and developments.

As noted elsewhere in this proposal, Graeme Taylor will serve as the Stantec Project Manager and primary contact with the City. As the project progresses, Graeme will call on the key team members to take on specific technical tasks as needed by the City. Graeme will keep the Stantec team on track with scope, schedule, and budget throughout the project. The section following summarizes our approach to implementing nine core tasks we anticipate in managing your Brownfield RLF program.

Task 1- Technical Review of Environmental Reports:
Stantec will review due diligence investigations and cleanup plans provided by RLF applicants for completeness and adequacy, and to evaluate whether projects meet the City's goals and criteria for RLF loans and subgrants. Our review will focus on determining the degree to which the proposed remediation plan will support the desired site reuse. Stantec will issue a memorandum summarizing our review. The memorandum will include our recommendations for any identified deficiencies requiring completion prior to the start of the project. As needed, we will coordinate with the California Department of Toxic Substances Control (DTSC) for cleanup plan reviews and approvals. Stantec has developed procedures and threshold criteria for reviewing and qualifying projects and borrowers/ subgrantees for loans and subgrants. Examples of qualifying threshold criteria for loan applicants we have used in similar EPA Brownfields RLF, Cleanup, and Assessment grant projects have included:

Task 2 - ABCA Management: Stantec will complete an Analysis of Brownfield Cleanup Alternatives (ABCA) document for each site that receives Brownfield RLF funding following EPA guidelines. The ABCA will include information about the site, contamination issues, an explanation of why environmental cleanup is required, applicable cleanup standards and regulations, alternatives considered, and a description of the selected cleanup method (including anticipated cleanup costs for the selected alternative). The ABCA will document that environmental cleanup or abatement activities are appropriate, compliant with applicable rules, will achieve the anticipated cleanup objectives, and will support the desired reuse objectives for the site.

A comparative analysis of cleanup alternatives, including a "no action" alternative, will also be part of the ABCA. The ABCA will consider effectiveness, capability for implementation, the cost of the response and the resilience of the remedial options among other considerations. The need for land use controls (LUCs) and environmental use restrictions (EURs) after the environmental cleanup will also be part of the analysis and report.

We will facilitate publishing the ABCA for public comment (which is typically 30-days). Stantec will assist the City in responding to questions and comments provided by the public. After the 30-day comment period and public meeting, Stantec will prepare a Decision Memorandum, which summarizes public comments and provides additional details on the selected remedial alternative. As appropriate, environmental cleanup technologies, including greener cleanup technologies will be included in the decision memorandum. For building material (e.g., asbestos) abatement projects, a simplified and streamlined ABCA template will be utilized as the cleanup requirements are generally very straightforward for these types of projects, with fewer alternatives to be considered.

Task 3 - Cleanup Planning Oversight: Stantec will assist the City and RLF applicants with cleanup planning activities. We will review and verify completeness and approach based on investigation reports and cleanup planning documents written and provided by contractors or others. Where appropriate Stantec will advise the City and RLF applicants on where there are deficiencies in cleanup approach and will work with project stakeholders to correct those deficiencies to help ensure projects are completed in compliance with all federal, state, and local regulations that may be applicable.

Task 4 - Regulatory Agency Enrollment: Stantec will confirm RLF applicant enrollment in relevant regulatory programs. As part of the eligibility determination process, Stantec will review relevant information and the environmental history for selected sites and will confirm that the site is enrolled in relevant regulatory programs such as DTSC's Voluntary Cleanup Program (VCP) to protect human health, cleanup the environment, and get property back to productive use. During this project review stage, Stantec will consult with EPA regarding potential applicability of the National Historic Preservation Act, and if applicable, assist Fresno in satisfying requirements of the Act and implementing regulations. In addition, during the project review phase, Stantec will assist Fresno in coordination of the project with other federal, state and local agencies, including the US Occupational Safety and Health Administration (OSHA), California OSHA, California EPA, DTSC, San Joaquin Valley Air Pollution Control District and others as warranted by the specific project Property owners and RLF Applicants will be kept updated on cleanup schedules and project progress throughout the project review phase.

If the eligibility of the loan recipient/subgrantee and/or property under EPA eligibility rules has not been previously confirmed by EPA, Stantec will prepare an eligibility determination request and submit the determination request to EPA. If the site is targeted for remediation of petroleum impacts, Stantec will prepare the eligibility determination request and submit to DTSC for review/approval prior to submitting to EPA.

EPA's site eligibility requirements are another area where Stantec's detailed knowledge of EPA program rules will be essential. On many sites, the eligibility is not a clear-cut issue, and depends on a detailed understanding of the environmental liabilities that require cleanup, how these relate to specific past property owners and land uses, and other factors. Overly lenient interpretations of eligibility could expose the City or project partners to a later determination that the site was ineligible. On the other hand, an overly restrictive interpretation of the eligibility requirements may prevent a desirable development project from having access to what could be a key source of funding for difficult to finance project components (i.e., the environmental cleanup). Knowledge regarding the eligibility rules is also important for use of funding on projects that include abatement or demolition activities. Both the St. Rest and H Street brownfield projects for which Stantec provided assistance with the initial RLF grant provide examples of this. We worked with St. Rest and EPA to secure cost eligibility for replacement of the main ceiling of the building, as well as for the costs of reinforcement of the walls of the building (that resulted from the decision to replace the roof).

Similarly, costs for the majority of demolition of the H Street building were eligible for use of RLF funding because it was successfully argued to EPA that demolition was integral to abatement, and also that demolition was necessary to safely access underlying soil for environmental testing.

Stantec team members assigned to this project have extensive knowledge and experience regarding EPA and DTSC eligibility requirements and will work with each agency to address nuanced liability and eligibility issues.

Task 5 - Cleanup Oversight: Stantec will perform site visits to oversee cleanup activities, as required, to help evaluate compliance with applicable federal and state environmental requirements. Site visits will be conducted, as necessary, to help ensure compliance with cleanup plans, EPA RLF requirements and applicable regulations that govern environmental cleanup projects in California. As needed, access agreements will be executed between the City and property owners to allow Stantec or other contractors working with RLF funding access to properties for the purpose of overseeing cleanup/ abatement projects.

Task 6 - Cleanup Report Review: Upon completion of an RLF-funded cleanup project, Stantec will review remedial reports and Regulated Building Material abatement completion reports and provide documentation that cleanup was completed in accordance with plans, laws and regulations, and grant requirements.

In March 2023, Stantec assisted the City of Fresno with close-out documentation for asbestos and mold treatment for the St Rest Food to Share project that was funded by their existing RLF grant. This involved compiling redevelopment plans, photographs, daily field reports asbestos containing material disposal documentation and other information into a report to facilitate closure with the EPA and other relevant agencies. **This document is attached in Appendix 1 of our proposal along with other examples of cleanup documents prepared by Stantec for other projects.**

Task 7 - RLF Grant Management and Compliance: Stantec assumes that the City of Fresno will prepare loan and security documents, loan agreements, reimbursement agreements, etc. Stantec can and will support the City with reviewing various loan documents to be compliant with EPA RLF requirements. To determine the viability of a project, Stantec will review project summaries, funding requests, and project financial information provided by the loan or subgrant applicant. Furthermore, Stantec has developed specific procedures and threshold criteria for reviewing and qualifying projects and borrowers/ subgrantees for loans and subgrants. Stantec will assist the City to develop qualifying threshold criteria for loan applicants that we have used on similar EPA Brownfields RLF, Cleanup, and Assessment grant projects.

We will assist the City in reporting on program income, cleanup progress, and program accomplishments by completing and submitting relevant portions of the Property Profile Form, Brownfields RLF Form, and Quarterly Reports using EPA's Assessment, Cleanup, and Redevelopment Exchange System (ACRES) database. In addition to ACRES, Stantec will support completion of other required annual reporting such as the required Disadvantaged Business Enterprise reporting and final project programmatic and administrative reporting. Stantec will follow quarterly or yearly reporting requirements based on the RLF Grant's Programmatic Terms and Conditions.

Task 8 - Cross Cutter Compliance: Stantec will advise the City of Fresno and RLF applicants to ensure compliance with all Federal cross-cutting requirements, such as requirements associated with federal funding, Davis-Bacon prevailing wage, the National Historic Preservation Act, the Endangered Species Act, and other applicable laws and regulations. We will prepare required documentation to meet compliance with these laws.

Task 9 - Community Engagement: Our team will assist the City in conducting notifications and community engagement activities that may include technical presentations, handouts, flyers, public meetings or other engagement activities. Stantec will support the City of Fresno and/or RLF awardees to respond to public comments during community engagement periods and will prepare materials in support of community engagement efforts. As requested, Stantec will assist with community engagement and marketing efforts related to the Brownfield RLF Program. Activities may include developing displays, giving presentations, meeting with potential borrowers/ subgrantees, etc. It is anticipated that much of the support needed for the Brownfield RLF Program can be integrated into outreach and marketing that will be conducted as part of the Coalition Assessment Grant.

Community involvement and outreach is imperative to the successful implementation of the EPA Brownfield RLF Grant. As part of this activity, Stantec will prepare presentations as requested to provide information about the Brownfield RLF Program on specific project progress and attend municipal, advisory committee meetings, and public meetings.

For loan/subgrant projects, site-specific Community Involvement Plans (CIPs) are required to provide the public with background and environmental information on the project as well as how the local government partners will involve the community and solicit input into the project.

Administrative Record
In addition to the tasks outlined above, Stantec will help the City establish an Administrative Record to contain the documents that form the basis for the selection of a cleanup plan. At a minimum, the cooperative agreement requires the following documents to be included in the administrative record:

- ABCA (including responses to public comments and decision memorandum)
- Site investigation reports (i.e., Phase I ESA, Phase II ESA, Site Investigation Report, Asbestos Survey Report, etc.)
- Remedial Action Plan (including cleanup standards used)
- Verification Cleanup is Complete (i.e., Closure request, DTSC closure letter, etc.)

To facilitate long-term maintenance and continuity in the project, Stantec proposes expanding the Administrative Record to include the following additional documents:

- EPA Progress Reports (Quarterly Reports, Annual Financial Reports, and MBE/WBE reports)
- Meeting notes from municipal, advisory committee, and public meetings (including fact sheets, newsletters, briefing materials)
- Formal EPA correspondence/communications
- Eligibility Determinations and Access Agreements
- Site-Specific CIP(s)
- QAPP and Health and Safety Plans (HASPs)
- Site-inspection notes

It is most appropriate to maintain the Administrative Record on the City's website.

D. Experience + Capabilities

Experience reviewing and reporting on environmental investigation, cleanup, and planning efforts

Our team has an unmatched depth of experience managing EPA Brownfield Grants. We have partnered with communities across California, Region 9, and the US. We have uniquely focused experience with California Central Valley communities including the Cities of Fresno, Bakersfield, Stockton, and Lodi, building and managing successful EPA Brownfield Grant Programs. Since 2015, we have helped 30+ EPA Region 9 communities win and/or manage EPA Brownfield RLF, Assessment, and Cleanup Grants. We've assisted 13 California communities to establish and grow their brownfield programs including the cities of Fresno, Bakersfield, Stockton, Richmond, Lodi, Vallejo, and Los Angeles.

From our years of working closely with the City to address brownfield challenges, we have a deep understanding of recent and ongoing revitalization efforts in the downtown core. We take great pride in supporting the City with downtown/Chinatown revitalization efforts. We recognize that this is a unique opportunity to reshape Downtown Fresno by leveraging the high-speed rail project and key infrastructure investments.

Using the brownfield program we have created one-of-a-kind tools including a housing and brownfield inventory, an opportunity analysis and a resource roadmap that can be utilized by various City departments and other regional stakeholders to plan and implement the ambitious approach to develop mixed-income, mixed-use housing near transit hubs, and high-quality public amenities. Great cities have great downtowns, and Stantec wants to help Fresno realize its plans for a vibrant, livable, and resilient downtown.

For Fresno's ongoing RLF program, we have assembled a team of geologists, engineers, planners, scientists, and other specialists covering the full spectrum of environmental assessment, remediation, and reuse needs. We are experienced in managing various environmental media from soil and groundwater to soil vapor, indoor air, and building materials like asbestos and lead paint on a range of brownfield sites. Our areas of technical environmental and EPA Brownfield Grant specialty and proficiency relevant to Fresno's RLF grant project include but are not limited to:

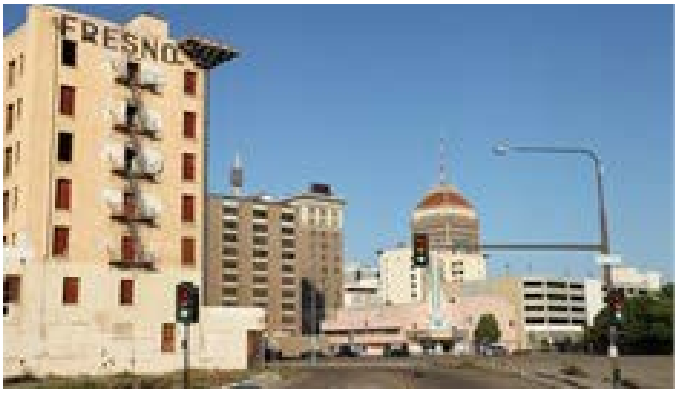
Stantec's Relevant Technical Environmental and EPA Brownfield Grant Specialty Experience	
Site eligibility under EPA Brownfield Grants	California Department of Toxic Substances Control, San Joaquin Valley Air Pollution Control District, and other agency regulations
Assessment of soil, groundwater, soil gas, indoor air, regulated building materials, and other contaminated media	Human health and ecological risk assessment
Remediation feasibility studies/ABCAs	Environmental remediation oversight
Asbestos and lead paint abatement oversight	Remediation system design, operation, and maintenance (e.g., soil vapor extraction, air sparging, active and passive venting, remedial cap design)
Human health and ecological risk assessment	Implementing institutional and environmental controls such as deed restrictions and paved caps
Analysis, evaluation, and treatment of emerging contaminants such as Per- and polyfluoroalkyl substances (PFAS	Implementing institutional and environmental controls such as deed restrictions and paved caps
Cleanup cost development and oversight	Quality Assurance/Quality Control

Our staff assigned to this project have extensive experience preparing and conducting technical reviews of the types of reports and documents that will be prepared under Fresno's ongoing RLF program, including:

- Quality Assurance Project Plans (QAPPs)
- Eligibility Determinations (EDs)
- Analysis of Brownfield Cleanup Alternatives (ABCA)
- Hazardous Building Materials Surveys
- Section 106 Studies/Reports
- CIPs
- Hazardous Building Materials Abatement Reports
- Sampling and Analysis Plans (SAPs)
- Phase I and II ESAs
- Remediation Action Plans
- Remedial Action Implementation Reports

Stantec staff assigned to this project have real world experience planning and conducting all aspects of work expected under the RLF program. We regularly prepare all the documents listed above, conduct field investigations, and manage field cleanups. Through our assessment and cleanup experience, and through implementing our own rigorous internal quality and technical review process, our staff have developed a finely tuned ability to review and add value to technical documents. The selected project descriptions below provide examples of Stantec's experience with EPA Brownfield Grant projects and environmental investigation, planning, cleanup, and redevelopment projects.

RELEVANT PROJECT EXPERIENCE



City of Fresno Brownfield Program Development and RLF Management

Stantec role:
Grant Writer, Qualified Environmental Professional

In 2018-19, Stantec helped the City of Fresno prepare a successful application for a $600,000 EPA Brownfield Coalition Assessment Grant. Stantec guided the City in developing strategies to form a coalition to pursue the funding, selecting a target area, and identifying priority brownfields sites to feature in the application. We advised focusing on a target area encompassing downtown Fresno, Chinatown, and southwest Fresno to build on momentum from the City's Transformative Climate Communities Grant supporting new affordable housing, trails, and other green infrastructure projects. Since that initial brownfield funding, Stantec assisted the City in completing additional initial steps in creating a brownfield program, including helping the City to apply for and implement the City's $800,000 EPA Brownfield RLF Grant awarded in 2020.

Using the Coalition Assessment Grant and the complementary RLF Grant, Stantec and the City have conducted environmental assessments on five properties totaling 19 parcels (so far) and cleanup activities on two properties. Deliverable completed to date have included one QAPP, five SAPs, three Phase I ESAs, four Phase II ESAs, two ABCAs, and two Section 106 studies/reports. In addition, Stantec assisted with the development of a City-wide brownfields inventory tool focused on potential housing development sites, a complimentary inventory tool that incorporated information (and georeferenced images) from eight sets of Sanborn fire insurance maps covering the City, redevelopment studies for two priority redevelopment areas, and a "resource roadmap." In addition, Stantec assisted two of the project partners (Fresno Metropolitan Ministry and Every Neighborhood Partnership) in preparing separate applications for two additional EPA grants totaling $575,000 in funding.

Prairie Hills Illinois EPA Brownfields Assessment and RLF Grant Implementation

Stantec implemented a $600,000 EPA Brownfields Assessment Grant awarded in 2018 to Prairie Hills, a regional government entity dedicated to advancing economic development and environmental restoration in a six-county area of Western Illinois. The project had a dual focus, with 50% of grant funds focused on advancing redevelopment of brownfields within target areas in the four largest cities (Canton, Galesburg, Macomb, and Monmouth), and 50% focused on projects in the 68 smaller communities that lack the administrative, financial, and technical resources and expertise to effectively spur redevelopment of brownfields on their own. Assessment or reuse planning activities were performed on 30 sites in seven cities, with reuse planning for nine additional sites.

Stantec subsequently assisted Prairie Hills in preparing successful applications for both a $500,000 EPA Community Wide Assessment Grant and a $1 million EPA Brownfields RLF Grant, both awarded in 2022. Stantec was retained as the QEP supporting implementation of both grants.

City of Atlanta EPA Brownfields RLF Grant Implementation
Stantec has assisted the City of Atlanta with building a $7.2M Brownfield RLF Program that has leveraged over $900M, created 6,400 jobs, and secured a National Phoenix Award for Brownfield Excellence. Stantec provides QEP services to the city, helping to evaluate projects, maintain compliance with grant regulations and policies, and meet EPA progress reporting requirements.

City of Dallas, Texas EPA Brownfields Coalition, Community Wide Assessment (CWA), and RLF Grant Implementation

Stantec has been working with the City of Dallas, Texas since 2020 in securing and implementing four EPA Brownfield Grants totaling $2.35 million in funding: $600,000 Coalition Assessment Grant (FY2020), $500,000 CWA Grant (FY2023), $1 million RLF Grant (FY2023), and $250,000 Supplemental RLF Grant (FY2024). As has been true for our work with the City of Fresno, Stantec has provided assistance to several of the community-based organizations that were partners on the initial coalition assessment grant, in securing their own EPA grants to further their work in disadvantaged communities in South Dallas, including a $500,000 EPA Brownfield Cleanup Grant, $800,000 EPA Brownfields Multipurpose Grant, and $500,000 EPA Environmental Justice Grant awarded to St. Philips School and Community Center in 2022-2024, and an application for a $20 million EPA Community Change Grant for St. Philips and Forest Forward that is currently under review.

City of Bakersfield, EPA Brownfields Grant Writing and Implementation Services

Stantec began working with the City of Bakersfield in 2017 to develop a robust and impactful brownfields program. Stantec prepared a successful application for a $300,000 EPA Brownfield CWA Grant awarded in 2017 and then helped the City implement a successful program by completing the following major elements: 1) a comprehensive GIS-based brownfield inventory and prioritization tool for four target areas; 2) a brownfield public outreach and education program; and 3) eight Phase I ESAs, six Phase II ESAs, two remedial action plans, and an area-wide revitalization plan. Subsequently, in 2022 Stantec assisted the City with a successful application for a $500,000 EPA Brownfield CWA Grant being used to support redevelopment of brownfields in three disadvantaged neighborhoods. The Stantec team is currently implementing this brownfield grant-funded project.

City of Lodi, EPA Brownfields Grant Writing, and Implementation Services

Stantec first assisted the City in preparing a successful application for a $400,000 EPA Brownfield CWA Grant awarded in 2016. Stantec was also retained to implement the grant funded project. The project was focused on a variety of vacant and underutilized properties in or near downtown Lodi, including two former fire stations, a former warehouse, a 66-acre industrial property, a 9-acre former rail facility, and a half-block of vacant commercial buildings. Stantec completed Phase I ESAs of 10 parcels. We prepared SAPs for hazardous building material surveys and/or soil, groundwater, and soil vapor sampling on seven brownfield sites. A detailed market study was completed on the 66-acre industrial property which is occupied by a 1.15-million-square-foot former General Mills cereal plant constructed in 1946 that closed in 2016. The market study was performed to help identify market feasible reuse options that would maintain industrial use of the parcel, which is served by rail, water, and power infrastructure. Funding is also being used to support a proposed $28 million expansion of the World of Wonders (WoW) Science Museum to occupy the block containing the vacant commercial buildings, and a 9-acre mixed-use development on another portion of the former General Mills plant.

Capabilities and experience conducting community engagement related to environmental cleanup efforts and projects

For each EPA Brownfields Grant project where the Stantec team has served as QEP, we assist communities with developing and implementing effective community engagement programs. We conduct outreach to communities about Brownfield RLF Programs, present information to municipal agencies and advisory committees, and plan and host public meetings and one-on-one communications with property owners and developers to facilitate property transaction, cleanup, and redevelopment plans. We have prepared holistic Community Involvement Plans (CIPs) for EPA Brownfield Grant projects across California and the US, as well as site-specific CIPs which are required for RLF Program loans and subgrant projects. Our site-specific CIPs provide a roadmap of actions and tools for sharing project background and environmental information with the community, and how the community capacity can be established to provide project input.

We have experience approaching brownfield-related engagement from multiple directions: 1) broad community engagement to promote awareness of the funding source and purpose and market the program to potential beneficiaries; 2) engaging with property owners, prospective purchasers, and developers to explain the program benefits and encourage participation for specific projects; and 3) explaining complex scientific information in plain language that conveys useful perspective on site redevelopment options. The project descriptions below demonstrate our experience and capabilities with community engagement.

City of Fresno Brownfield Program

Stantec has assisted the City of Fresno with engagement and outreach activities with the Brownfields Assessment Coalition (Chinatown Foundation and St Rest EDC) to broaden the reach of the brownfield program and to engage with community-based organizations and other project stakeholders. Stantec has developed tools and information that are being used by various City departments to aid in revitalization efforts across the City but focused on the downtown/Chinatown neighborhoods. In 2023 and 2024, the Stantec team championed Fresno's brownfield program and conducted successful outreach to various community-based organizations (e.g. Every Neighborhood Partnership, Fresno Metro Ministry, St Rest Economic Development Corporation, South Tower Community Land Trust), engaged with various City Departments (Public Works, Planning and Development, Capital Projects, Historic Preservation, the Mayor's office, etc) to promote the City's brownfield program.

Stantec believes that a successful brownfield program must be supported by the community and must have connectivity with other City initiatives to have long term success. Stantec has helped the City to do just that and anticipates continuing the help the city build partners that can work with the brownfield program to improve their projects.

We know the city's priorities and plans. Stantec's Historical Architecture team has been working with the City to help evaluate a historic district in Chinatown. Stantec's Community Development Team and their staff of engineers has helped develop plans for infrastructure improvements on H Street, and Stantec's planning and economic evaluation team has helped Fresno develop a Public Infrastructure Plan that establishes an approach to work with community members, leverage other funds, and allocate money from the California Governor's office to design and build new infrastructure in Downtown Fresno that will set the stage for significant redevelopment projects focused on housing and economic development. Institutional knowledge of plans and programs (infrastructure plan) to allocate $250M – helps guide RLF priorities.

Additional areas of expertise relevant to the City of Fresno's RLF Grant

We know the City's priorities and plans. Stantec's Historical Architecture team has been working with the City to help evaluate a historic district in Chinatown. Stantec's Community Development Team and their staff of engineers has helped develop plans for infrastructure improvements on H Street, and Stantec's planning and economic evaluation team has helped Fresno develop a Public Infrastructure Plan that establishes an approach to work with community members, leverage other funds, and allocate money from the California Governor's office (Go-Biz) to design and build new infrastructure in Downtown Fresno that will set the stage for significant redevelopment projects focused on housing and economic development.

E. Representative Resumes

AN EXPERIENCED AND PASSIONATE TEAM

Our team is led by **Graeme Taylor** and **David Holmes.** Together our core leadership team (Graeme and David) bring over 50 years of experience in environmental assessment and cleanup projects with a specialty in brownfield revitalization. Graeme currently serves as Project Manager for the City of Fresno's brownfield program and has managed other EPA Brownfield Grants for cities, municipalities, councils of government, tribes, and school districts in EPA Regions 9 and 10.

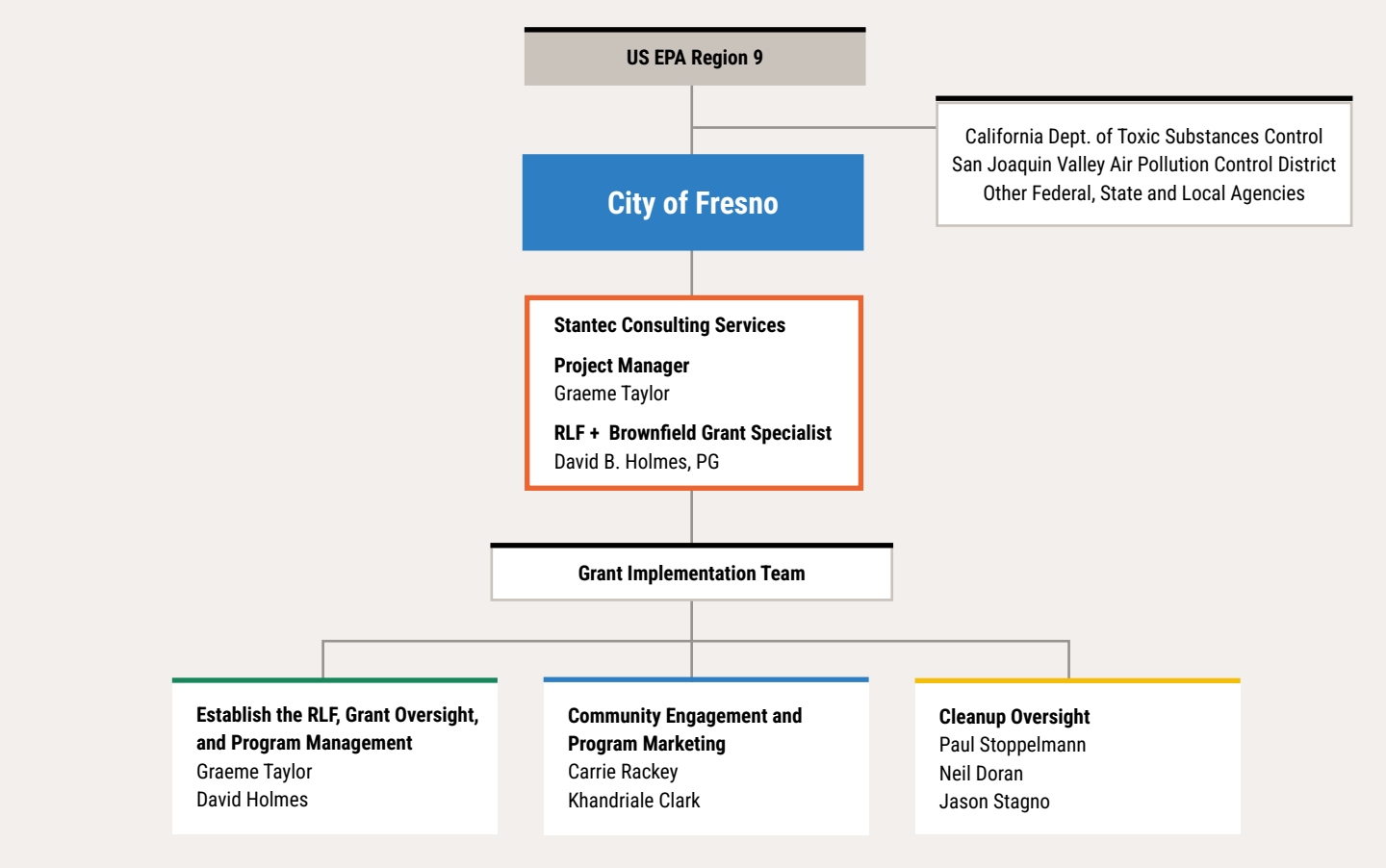
As project manager, Graeme will manage the scope, schedule, and budget and serve as the main point of contact with the City. David Holmes is Stantec's National Technical Lead for Brownfields and our team's RLF and Brownfield Grant Specialist. Together Graeme and David will manage this RLF grant implementation and work closely with the City to utilize the RLF grant in concert with other brownfield projects in Fresno as well as larger revitalization efforts across the City.

We have added additional experienced team members to assist the City. The supporting team bios can be found in other information in legal documents and bios for Graeme and David are on the following pages.

SUBCONSULTANTS

We confirm that no external subconsultants are required for this project.

ORGANIZATIONAL CHART



Graeme Taylor

Bachelor of Science, Hydrological Science

Project Manager

20 years of experience

5 years at Stantec

Project Role: Graeme will manage the project scope, schedule, and budget and will be the primary point of contact with the City of Fresno.

Benefits to the City of Fresno

- Principal environmental scientist and project manager with 20 years of relevant experience
- Technical leader in environmental site assessment and cleanup and subject matter expert in sediment assessment and cleanup projects
- Currently working with Fresno to develop a sustainable brownfield program
- Experience managing the City of Fresno's Coalition Assessment Grant and RLF grant

Select Relevant Experience

City of Fresno EPA FY Brownfields Coalition Assessment Grant and RLF Grant Implementation | Fresno, CA | Graeme is the current Project Manager for the City of Fresno's brownfield program. Graeme has deep roots in the Fresno area and is passionate about revitalization of Fresno's downtown core. He wants to support the City in their mission to continue restoring vibrancy to a once-great downtown.

City of Bakersfield EPA Brownfields Grant Management and Implementation | Bakersfield, CA | Graeme is the current Project Manager for Bakersfield's brownfield program focused on catalytic development in downtown Bakersfield associated with the planned high speed rail station.

Brownfield Grant Management and Implementation | Oregon Cascades West Council of Governments | Newport/Toledo, OR | Graeme was the Project Manager for the Yaquina Bay Brownfield Initiative program.

Riverfront Redevelopment Property | City of Troutdale | Troutdale, OR | Graeme worked with the City of Troutdale, Oregon as the Client Manager and Project Manager.

Environmental Services On-Call Contract | Prosper Portland | Portland, OR | Graeme has been working with the City of Portland Urban Renewal Agency.

Confederated Tribes of the Siletz Indians | Various Projects | Siletz and Toledo, OR Graeme has been the client and project manager for various projects and for the Tribe's economic development company.

David Holmes

PG

RLF and Brownfield Grant Specialist

38 years of experience

15 years at Stantec

Project Role: David will apply his leadership in managing complex brownfield projects and RLF Programs to the project. David will be providing high-level strategic insight and reviewing documents to advise Fresno on RLF program management.

Benefits to the City of Fresno

- Experience collaborating with Fresno since 2018
- Stantec's National Technical Lead for Brownfields
- Exceptional experience securing state and federal grants to support brownfield redevelopment
- 38 years of experience

Select Relevant Experience

USEPA Brownfields Grant Writing and Implementation, City of Fresno | City of Fresno | David was the lead writer for successful applications submitted by the City of Fresno in 2018 and 2019 for USEPA Brownfields CWA Coalition and RLF Grants totaling $1.4 million. David assisted with management of environmental, planning, and other consulting services performed by Stantec as part of implementation of both grants, which are focused on brownfields within distressed and disadvantaged neighborhoods in Southwest Fresno. To date, funding has been used to perform Phase I ESA, Phase II ESAs, and/or remedial planning activities at five sites totaling 19 parcels.

USEPA Brownfield RLF Grant Implementation | David is currently serving as the lead for QEP services being provided by Stantec for EPA Brownfield RLF Grants and/or supplemental RLF grants awarded to the City of Fresno, CA, the City of Dallas, TX, Prairie Hills Resource Conservation & Development in Illinois, and Washington County, WI.

EPA Brownfield Grant Application Assistance | Various Clients | Grant Writer | Since 2005, David has assisted clients throughout the US in preparing successful applications for more than 124 grants from the USEPA Brownfields Grant Program totaling over $52.4 million in funding. His experience through the FY2024 Grant Competition includes assisting with successful applications for 5 area-wide planning (AWP) grants, 26 cleanup grants, 88 community-wide or coalition assessment grants, and 5 revolving loan fund (RLF) or supplemental RLF grants. David was the primary or coauthor for at least 79 of these applications, and a technical reviewer or key strategy consultant for the remaining applications.

F. Cost Proposal

Stantec will work closely with Fresno to manage the RLF in an efficient and streamlined manner by appointing Graeme Taylor as the single point of contact. Because the scale and scope of projects that will be completed within the RLF Program is unknown, it is not possible to provide a detailed budget for all anticipated projects that may occur under the RLF Grant. Therefore, to develop a lump sum cost estimate to support RLF implementation, Stantec assumes the following based on the City's RFQ:

- Stantec will support up to four (4) RLF loans and two (2) subgrants to remediate up to six (6) brownfield sites at an average level of complexity.
- Stantec's average billing rate based on anticipated staff mix is $185 per hour.
- The City will manage all loan documents, Davis-Bacon wage monitoring tasks, cleanup contractor hiring and management, and other grant administrative tasks under the purview of the grantee.

Therefore, Stantec proposes to support the City with the following primary tasks over the estimated 178-week period of performance (August 1, 2024, through December 31, 2027):

Task	Estimated Hours	Average Billing Rate	Extended Cost
Grant Administration and Reporting (Tasks 1, 7,8)	178 (1 hour per week)	$185	$32,930
Cleanup Oversight (Tasks 2, 3, 4, 5,6)	300 (50 hours x 6 cleanup projects)	$185	$55,500
Community Engagement Activities (Task 9)	72 (12 hours x 6 cleanup projects)	$185	$11,100
Totals	**550 hours**	**$185**	**$101,750**

As project tasks arise, Graeme will identify the best-qualified, most cost-effective staff member(s) to conduct the work based on the services requested. He will coordinate with staff to prepare a brief written scope of work including a schedule, cost estimate, and description of deliverables. Once the task order is authorized by the City and Stantec, Graeme will confirm that staff implementing the work understand the scope, goals, budget, schedule, and deliverables, and project work will begin. If budget adjustments are needed because of changes in scope, Stantec will negotiate a change order with the City and will obtain written authorization before proceeding.

The core Stantec team's hourly staff rates are provided below although additional Stantec staff may work on the project based on services required and staff availability. Rates are subject to annual increase.

Staff Name	Role	Rate
Khandriale Clark	Administrative Support	$169
TBD	Staff Geologist/Engineer	$181
TBD	Senior Geologist/Engineer	$187
Jason Stagno	Regulated Building Materials Lead	$196
Graeme Taylor	Project Manager	$205
Carrie Rackey	Resource Coordinator & Engagement Lead	
David Holmes	RLF and Brownfield Grant Resource	
Paul Stoppelmann	Cleanup Lead	
Neil Doran	Site Assessment Lead	$231

OTHER EXPENSES / MATERIALS

Stantec's standard mark-up on expenses subconsultants and subcontractors is 10% unless prescribed differently within a task order or other contract document. Mileage will be charged at the U.S. Internal Revenue Service standard mileage rate.

G. References

1 **City of Bakersfield**
Cecelia Griego, Principal Planner, Economic and Community Development Department
Email: CGriego@bakersfieldcity.us
City of Bakersfield EPA Brownfields Grant Management and Implementation
2017-Current (two separate EPA CWA Brownfield Grants)
$700,000 (total estimated contract value)

2 **City of Fresno**
David Densley, Project Administrator, Planning and Development
Email: David.Densley@fresno.gov
Dalton Bennett, Project Administrator, Capital Projects Department
Email: Dalton.Bennett@fresno.gov
City of Fresno Brownfields Grant Management and Implementation
$650,000 (total estimated contract value across multiple projects)

3 **Prosper Portland**
Colin Polk, Environmental Coordinator
Email: PolkC@ProsperPortland.us
On-Call Environmental Services
2010-current
$1,000,000 (Contract Value from 2010 to current)

4 **City of Richmond**
Charice Duckworth, Community Development Project Manager
Email: charice_duckworth@ci.richmond.ca.us
City of Richmond Brownfields Grant Management and Implementation
2016-current
$900,000 (Contract Value from 2016 to current)

5 **City of Vallejo**
Ivette Iraheta, Economic Development Program Manager
Email: ivette.iraheta@cityofvallejo.net
City of Vallejo Brownfields Grant Management and Implementation
2020-current
$600,000

6 **City of Stockton**
Jordan Peterson, Deputy Director of Redevelopment
Email: jordan.peterson@stocktonca.gov
City of Stockton Brownfields Grant Management and Implementation
2016-current
$750,000 (Contract Value from 2016 to current)

Legal Documents + Additional Information

Documents included:

- Other Information (supporting team bios - 2 pages)
- Exhibit B - Insurance Requirements
- Exhibit C - Conflict of Interest
- Exhibit D - Statement of Acceptance of the Indemnification and Insurance Requirements
- Stantec Historical Cleanup Reports

Other Information - Additional Team Bios

Neil Doran

PG

Principal Geologist + Site Assessment Lead

27 years of experience

23 years at Stantec

Project Role: Neil will review investigation reports for projects requesting RLF assistance, evaluating data gaps, recommendations, and options for additional investigation and progression to the cleanup phase.

Benefits to the City of Fresno

- 300+ Phase 1 and Phase II ESAs performed under Neil's direct supervision
- Experience in Fresno
- Numerous brownfield grant projects in California
- Extensive site assessment, investigation, and remediation experience

Recent Relevant Experience

Sacramento Railyards Project | Sacramento, CA | Task Manager | Neil served as task manager and a key member of an interdisciplinary Stantec team supporting redevelopment of the Sacramento Railyards urban infill development project. Occupying 240 acres in the Central Business District of California's capital city, the Sacramento Railyards is considered the largest infill brownfield development in the country.

EPA Brownfield Grant Management | City of Richmond Richmond, CA | Project Manager | Neil managed implementation of a $400,000 EPA Brownfield Grant

EPA Brownfield Grant Management | City of Lodi | Lodi, CA | Project Manager | Neil manages implementation of a $400,000 EPA Brownfield Grant

EPA Brownfield Grant Management | Sonoma County Community Development Commission | Santa Rosa, CA Project Manager | Neil manages implementation of a $392,000 EPA Brownfield Grant

Regional Utility Provider Substation, California Department of Toxic Substances Control | Fresno, CA Project Manager | Neil managed the assessment and remediation at a former utility provider substation in Fresno, California.

USEPA Brownfield Grant Management | City of Bakersfield | Bakersfield, CA | Project Manager | Neil managed implementation of a $300,000 USEPA Brownfield Grant for the City of Bakersfield, California.

Jason Stagno

CAC, LRCIA

Regulated Building Materials Lead

21 years of experience

18 years at Stantec

Project Role: Jason will review regulated building material survey reports and cleanup plans, evaluating completeness and reliability of investigations and fitness of abatement recommendations.

Benefits to the City of Fresno

- California Certified Asbestos Consultant and Lead Related Construction Inspector/Assessor with more than 20 years of environmental consulting experience.

Recent Relevant Experience

Los Angeles Department of Water and Power - Site Investigation and Remediation | Los Angeles Department of Water and Power | Los Angeles, CA | Task Manager | various environmental projects, including environmental assessments.

Clearvista Energy Wind Project | Kern County, California | Project Scientist

Jason prepared a technical noise study and a noise impact section of an EIR for this project that involved proposed construction and operation of a 40-megawatt wind energy project. Jason participated in conducting a noise survey in the vicinity of a proposed wind energy site. Existing ambient noise levels were recorded near sensitive receptor locations. Data collected was used to assess potential noise impacts associated with the proposed project.

Asbestos and Lead-Based Paint Surveys | Various Locations, California, Oregon, Washington, Arizona, New Mexico | 2019 | Senior Scientist

Jason has conducted and managed multiple pre-renovation/demolition surveys for asbestos and lead-based paint in addition to quantification of universal wastes (polychlorinated biphenyls [PCBs], mercury-containing equipment, refrigerants, etc.) that would require special handling

Carrie Rackey

QA/QC and Engagement Lead

26 years of experience

9 Years at Stantec

Project Role: Carrie will act as a connector between the project team and Stantec's vast pool of technical resources to meet project needs at a high standard of quality. She will also work closely with the project team to guide community engagement and marketing efforts for the RLF Program.

Benefits to the City of Fresno

- Principal Project Manager and Regional Brownfield Resource Group Lead in Stantec's Asset Transformation and Brownfields Program, providing the City with in-depth experience and relevant capabilities.
- With a background in both writing and technical consulting, Carrie helps develop clear and useful communication materials, and build impactful engagement programs.

Recent Relevant Experience

Oregon Metro EPA Brownfield Coalition Assessment Grants | Metro | Portland Metro Area, OR | Carrie helped secure a total of $2.7M in EPA Brownfield Grant Funding for Metro since 2015, and has been providing QEP services to this regional land use planning agency for ten years.

City of Salem EPA Brownfield Assessment Grant | Salem, OR | Carrie assisted the City of Salem with a successful application securing a $500K EPA Brownfield Grant. She helped the city build a brownfield program including a site inventory, QAPP, community engagement materials and participation in community events, and environmental services from assessment to cleanup planning and leveraging additional funding. Over the life of the grant, she completed 25 ESAs, with a total of over 48 acres assessed.

City of Colorado Springs EPA Brownfield Assessment Grant Project | Colorado Springs, CO | City of Colorado and Coalition Partners | Carrie assisted the City of Colorado Springs and its Coalition partners with preparing a successful application for a $600,000 EPA Brownfield Assessment Grant awarded in 2019. Carrie worked with the communities to develop engagement programs to bring community members, nonprofits, elected officials, and service providers together to evaluate community needs and how brownfield revitalization could move project plans forward.

Paul Stoppelmann

PG, CEG

Lead Contact and Cleanup Lead

32 years of experience

4 years at Stantec

Project Role: Paul will review cleanup work plans and reports for projects requesting RLF assistance, advising on the appropriateness and effectiveness of cleanup recommendations. Paul will coordinate site visits with his staff and will support close out documentation after cleanup is completed.

Benefits to the City of Fresno

- Paul lives and works in the City of Fresno and is an experienced geologist focused on site investigation and cleanup

Recent Relevant Experience

Paul is a highly qualified geologist with over 30 years of experience in managing challenging subsurface investigations for public and private clients, and for a public works agency. He is licensed in geotechnical, hydrogeological, and environmental investigations.

Khandriale Clark

Community Engagement Support

6 years of experience

5 Years at Stantec

Project Role: Khandriale will support our team with facilitation, community outreach, and planning.

Benefits to the City of Fresno

- Khandriale is currently working with the City to implement the Coalition Assessment Grant. She also has similar experience in California to bring to the team for this project.

Recent Relevant Experience

San Joaquin River Restoration Program Landowner Coordination, San Joaquin Valley, CA | US Bureau of Reclamation | Public Affairs Specialist

GSP Communication and Engagement Support for the Kings and Kaweah Subbasins | California | Facilitator

Tracy Subbasin SGMA Public Outreach Support | San Joaquin County, CA | Associate Facilitator

Exhibit B - Insurance Requirements

ACORD

CERTIFICATE OF LIABILITY INSURANCE

5/1/2025

DATE (MM/DD/YYYY) 4/25/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
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444 W. 47th Street, Suite 900
Kansas City MO 64112-1906
(816) 960-9000
kcasu@lockton.com

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Travelers Property Casualty Company of America	25674
INSURER B : Berkshire Hathaway Specialty Insurance Company	22276
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
1415077
STANTEC CONSULTING
SERVICES INC.
410 17TH STREET
SUITE 1400
DENVER CO 80202-4427

COVERAGES CERTIFICATE NUMBER: 14193567 REVISION NUMBER: XXXXXXX

GENERIC CERTIFICATE

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
B	X COMMERCIAL GENERAL LIABILITY	N	N	47 - GLO-307584	5/1/2024	5/1/2025	EACH OCCURRENCE	$ 2,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 1,000,000
	X CONTRACTUAL/CROSS						MED EXP (Any one person)	$ 25,000
	X XCU COVERED						PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	POLICY X PRO-JECT X LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY	N	N	TC2J - CAP - 8E086819 (AOS)	5/1/2024	5/1/2025	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
A	X ANY AUTO			TJ - BAP - 8E086820	5/1/2024	5/1/2025	BODILY INJURY (Per person)	$ XXXXXXX
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$ XXXXXXX
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$ XXXXXXX
								$ XXXXXXX
B	X UMBRELLA LIAB X OCCUR	N	N	47 - UMO-307585	5/1/2024	5/1/2025	EACH OCCURRENCE	$ 5,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 5,000,000
	DED RETENTION $							$ XXXXXXX
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY		N	UB - 3P635310 (AOS)	5/1/2024	5/1/2025	X PER STATUTE / OTH-ER	
A	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N N	N / A		UB - 3P533004 (MA, WI)	5/1/2024	5/1/2025	E.L. EACH ACCIDENT	$ 1,000,000
A	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			EXCEPT FOR OH ND WA WY			E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
TO WHOM IT MAY CONCERN.

CERTIFICATE HOLDER

14193567
TO WHOM IT MAY CONCERN

CANCELLATION See Attachment

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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CERTIFICATE OF LIABILITY INSURANCE

10/1/2024

DATE (MM/DD/YYYY) 9/22/2023

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

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kcasu@lockton.com

CONTACT NAME:
PHONE (A/C, No, Ext):
FAX (A/C, No):
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Berkshire Hathaway Specialty Insurance Company	22276
INSURER B : AIG Specialty Insurance Company	26883
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
1414100
STANTEC CONSULTING SERVICES INC.
410 17TH STREET
SUITE 1400
DENVER CO 80202-4427
SCSI GENERIC - $3M

COVERAGES **CERTIFICATE NUMBER:** 14181323 **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC OTHER:			NOT APPLICABLE			EACH OCCURRENCE	$ XXXXXXX
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ XXXXXXX
							MED EXP (Any one person)	$ XXXXXXX
							PERSONAL & ADV INJURY	$ XXXXXXX
							GENERAL AGGREGATE	$ XXXXXXX
							PRODUCTS - COMP/OP AGG	$ XXXXXXX
								$
	AUTOMOBILE LIABILITY ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY			NOT APPLICABLE			COMBINED SINGLE LIMIT (Ea accident)	$ XXXXXXX
							BODILY INJURY (Per person)	$ XXXXXXX
							BODILY INJURY (Per accident)	$ XXXXXXX
							PROPERTY DAMAGE (Per accident)	$ XXXXXXX
								$ XXXXXXX
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $			NOT APPLICABLE			EACH OCCURRENCE	$ XXXXXXX
							AGGREGATE	$ XXXXXXX
								$ XXXXXXX
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		NOT APPLICABLE			PER STATUTE OTH-ER	
							E.L. EACH ACCIDENT	$ XXXXXXX
							E.L. DISEASE - EA EMPLOYEE	$ XXXXXXX
							E.L. DISEASE - POLICY LIMIT	$ XXXXXXX
A	Professional Liab	N	N	47-EPP-308810	10/1/2023	10/1/2024	$3,000,000 PER CLAIM/AGG	
A				NO RETROACTIVE DATE			INCLUSIVE OF COSTS	
B	Contractors Pollution Liab			CPO8085428	10/1/2023	10/1/2025	$3,000,000 PER LOSS/AGG	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

14181323
TO WHOM IT MAY CONCERN

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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Exhibit C - Conflict of Interest

EXHIBIT C

DISCLOSURE OF CONFLICT OF INTEREST

RFQ for US EPA Brownfields RLF Supplemental Grant

		YES*	NO
1	Are you currently in litigation with the City of Fresno or any of its agents?	☐	■
2	Do you represent any firm, organization, or person who is in litigation with the City of Fresno?	☐	■
3	Do you currently represent or perform work for any clients who do business with the City of Fresno?	■	☐
4	Are you or any of your principals, managers, or professionals, owners or investors in a business which does business with the City of Fresno, or in a business which is in litigation with the City of Fresno?	■	☐
5	Are you or any of your principals, managers, or professionals, related by blood or marriage to any City of Fresno employee who has any significant role in the subject matter of this service?	☐	■
6	Do you or any of your subcontractors have, or expect to have, any interest, direct or indirect, in any other contract in connection with this Project?	☐	■
* If the answer to any question is yes, please explain in full below.			

Explanation: Stantec is a publicly traded company on the NYSE. We offer our employees the ability to purchase shares. Also, we are currently working with the City of Fresno on several projects.

☐ Additional page(s) attached.

Signature

July 19, 2024
Date

Graeme Taylor
(Name)

Stantec Consulting Services Inc.
(Company)

601 SW 2nd Ave Suite 1400
(Address)

Portland, OR 97204
(City, State Zip)

Exhibit D - Statement of Acceptance of the Indemnification and Insurance Requirements

EXHIBIT D

STATEMENT OF ACCEPTANCE OF THE INDEMNIFICATION AND INSURANCE REQUIREMENTS

REQUEST FOR QUALIFICATIONS FOR U.S. ENVIRONMENTAL PROTECTION AGENCY BROWNFIELDS REVOLVING LOAN FUND SUPPLEMENTAL GRANT CONSULTING SERVICES

BID FILE NO. 12402200

The Proposer shall sign below that the Proposer accepts in whole the Indemnification and Insurance Requirements set forth in these Specifications. If the Proposer takes exception to some portions, those portions shall be listed here below and the Proposer shall sign that the Proposer accepts all portions of the requirements not listed.

Note: Any exceptions may render the proposal non-responsive.

[X] ACCEPT
[ ] DO NOT ACCEPT

If "DO NOT ACCEPT" is checked, please list exceptions:

Signature of Authorized Person

Graeme Taylor, Stantec Consulting Services Inc.

Type or Print Name of Authorized Person

Stantec Consulting Services Inc.
12080 Corporate Pkwy, Ste 200, Mequon, WI 53092

March 14, 2023

Mr. Dalton Bennett, Projects Administrator
City of Fresno, Planning and Development Department
2600 Fresno Street, Room 3076
Fresno, California 93721

Reference: Brownfield Revolving Loan Fund Subgrant Close-out Documentation for Asbestos Abatement and Mold Treatment – 2316 South Elm Avenue, Fresno, California

Dear Mr. Bennett,

Stantec Consulting Services, Inc. (Stantec) has prepared this letter report on behalf of the City of Fresno (City) to document remedial activities completed to support renovation and reuse of an existing building located at 2316 South Elm Avenue, Fresno, California (the "Property"). The remedial activities were funded through a Subgrant awarded by the City to Fresno Metropolitan Ministry (FMM) from a United States Environmental Protection Agency (USEPA) Brownfields Revolving Loan Fund (RLF) Grant awarded to the City in 2020. In general, remedial activities were conducted in accordance with the scope of work for the recommended remedial alternative presented an Analysis of Brownfields Cleanup Alternatives (ABCA) prepared for the building by Stantec in 2021 (Stantec, 2021). Further details pertaining to the remedial actions conducted are provided below.

Background and General Site Information

The Property is composed of a single parcel of land (Fresno County Assessor Parcel Number 478-183-07) which occupies approximately 0.46 acres in the City of Fresno as shown on **Figure 1**. The Property was initially developed with several rural residential and ancillary agricultural structures prior to 1937 and was occupied in part by an orchard/grove. The Property was redeveloped as a bakery in the early 1950s and then converted to a meat packing facility and warehouse in 1955 which operated until October 2012. Prior to the recent redevelopment, the Property contained an approximately 5,852 square foot (SF) warehouse building which included three loading docks and one loading ramp along the south side of the building. The remaining portion of the Property was paved with asphalt. Surrounding properties are mixed in use and include residential, commercial, and industrial properties. The adjoining property to the north was first developed prior to 1932 as a small automotive fueling station. This adjoining property was redeveloped in the late 1950s/early 1960s with another automotive fueling and service station, which was demolished in the 1970s. The layout of the Property prior to the recent redevelopment and the surrounding area is illustrated on **Figure 2**.

The Property was acquired by the current owner, St. Rest Baptist Church (SRBC) in 2014 for the purpose of renovation of the building and adaptive reuse of the Property as a food hub (the "St. Rest + Food to Share Hub") in partnership with FMM. The redevelopment project was supported in part through funding provided by a Transformative Climate Communities (TCC) Grant awarded to the City in 2018. The ABCA was funded through a USEPA Brownfield Coalition Assessment Grant awarded to City in 2019. The Property was identified as a catalyst site in the City's application for a USEPA Brownfields RLF Grant awarded in 2020, and remedial activities were in fact funded through this grant.

Previous Site Investigations

Various Phase I and II Environmental Site Assessments (ESAs) were completed at the Property between 2013 and 2021. Phase I ESAs conducted for the Property identified several recognized environmental conditions (RECs) associated with the past uses of the Property as an orchard, a bakery, and a meat processing company, as well as concerns associated with neighboring properties (several of which were used as gas stations or auto repair facilities). Phase II ESA activities were conducted at the Property to evaluate the impact of the identified RECs. The results of the Phase II ESAs indicated that the presence of

asbestos containing materials (ACMs) within the former warehouse building was the primary environmental concern. The most significant ACM requiring abatement within the building was skim-coat over foam insulation containing 1.2% chrysotile. The skim-coat over foam insulation was estimated to cover approximately 5,720 square feet of surface area located on the upper walls and ceiling of the two storage rooms. The presence of mold was documented on the ceiling areas as well which was identified as the secondary environmental concern.

A Supplemental Phase II ESA was completed by Stantec (2021a, 2021b) to further assess select constituents detected in soil and/or soil vapor, but the study concluded that remedial measures were not required to address the concentrations of these constituents present in soil or soil vapor. Lead based paint (LBP) as well as some hazardous materials within the building (i.e., refrigerants, compressed gas cylinders, and several drums containing petroleum products) were documented as part of previous assessment activities but were either removed prior to redevelopment or determined to have negligible impact on the planned future redevelopment.

Redevelopment and Remedial Action Planning

The Property was planned to be redeveloped as the "St. Rest + Food to Share Hub" for adaptive reuse as a food hub. Stantec prepared the ABCA in 2021 to evaluate remedial alternatives to address the presence of ACMs and mold in conjunction with the planned redevelopment. A total of three remedial alternatives (Alternative 1 – no action, Alternative 2 – encasement/enclosure of select hazardous building materials, and Alternative 3 – full removal of hazardous materials) were evaluated based on their effectiveness, implementability, and cost. Consideration was also given to climate change impacts, equity and environmental justice concerns, and green and sustainable remediation guidance. Alternative 3 was ultimately selected as the recommended remedial alternative following the evaluation because it was the most effective and practically implementable alternative. The scope associated with Alternative 3 included the following activities:

1. Inspecting and repairing the roof;
2. Establishing appropriate containment, barrier, and air-filtration systems as necessary for workers in appropriate protective clothing to work in areas subject to mold and ACM;
3. Removing the ceiling and disposing of it appropriately as a regulated ACM;
4. Repairing or rerouting any plumbing or water lines located in areas above the ceiling;
5. Treating all exposed framing and studs with evidence of mold with a microbial cleaning agent;
6. Constructing a new ceiling together with required structural reinforcements; and
7. Abating limited ACM in other areas of the building as needed.

Several factors favored selection of Alternative 3 including:

- It provided for the permanent removal of asbestos and eliminated on-going future notification, inspection, and monitoring requirements.
- It enhanced the ability to fully and reliably address mold and the underlying causes.
- The USEPA Project Officer confirmed that costs for structural reinforcement of the building's walls would be a grant eligible activity given that this was a building code requirement mandated by the roof replacement.

Redevelopment and Remedial Action Documentation

The overall redevelopment of the Property as the "St. Rest + Food to Share Hub" includes the following elements:

1. Repair and renovation of the pre-existing 5,852 square foot (SF) former Farmer John Meat Company warehouse to serve as a food recovery, storage, and distribution center;
2. Construction of a new 3,800-SF two-story building that includes office space, a meeting room, and a certified commercial kitchen; and
3. Implementation of "urban heat island" mitigation measures in the form of landscape improvements in outdoor areas.

A copy of the proposed redevelopment plans which also depict the current Property layout are provided in **Appendix A**. Mark Wilson Construction, Inc. (MWC), the general contractor, was the construction manager for the redevelopment and documented overall construction and abatement activities. Stantec personnel were not present to monitor the abatement or general construction activities and relied on information provided by MWC and FMM to prepare this report. In general, remedial actions completed as part of the redevelopment were conducted in accordance with the scope proposed in Alternative 3 as part of the 2021 ABCA. Construction and remedial activities were initiated in March 2022 and substantially completed by the end of June 2022. Photographs documenting the redevelopment and remedial action progress are included in **Appendix B**. Contractor and sub-contractor daily field logs documenting the redevelopment and remedial action progress are included in **Appendix C.**

Asbestos Abatement and Mold Treatment

MWC contracted Cencal Services, Inc. (Cencal), a California licensed asbestos abatement contractor, to remove the ACM from the warehouse as proposed in the ABCA. Cencal began abatement activities on March 1, 2022 and substantially completed them by March 7, 2022. Appropriate containment, barrier, and air-filtration systems were established as necessary for workers in areas subject to mold and ACM. MWC reported that no ACM encountered in the warehouse was left in place for encapsulation and all of the ACM encountered was removed and transported for offsite disposal. A total of 9.78 tons, approximately 160 cubic yards, of friable ACM was removed from the warehouse building. Between March 7 and 9, 2022, Cencal personnel loaded the ACM onto trucks and transported it offsite to the Forward Landfill in Manteca, California for landfill disposal. Disposal documentation for the ACM is presented in **Appendix D**. Following ACM abatement, a microbial cleaning agent was used to treat all exposed framing and studs with evidence of mold.

Former Warehouse Renovation

Following the asbestos abatement, MWC continued to renovate the warehouse building by conducting rough carpentry activities between March 14 and April 8, 2022. Rough carpentry activities included the layout, installation, and/or management of structural reinforcements including but not limiting to cable bracing, anchor bolts, joists, blocking, and grout spacing. MWC contracted Tarlton and Son Inc. (Tarlton) to install the new ceiling following the ACM abatement, mold treatment, and structural reinforcement construction. Tarlton installed the framing and drywall for the new ceiling between June 16 and June 29, 2022. Infinity Power Source (IPS) was contracted to install/swap the electrical panel and associated wiring in the building between June 24 and 30, 2022.

Summary and Conclusions

Remedial activities at the Site were initiated during March 2022 and substantially completed by the end of June 2022. Redevelopment of the Site completed to date includes the repair and renovation of the pre-existing warehouse building. Other redevelopment components, including construction of a new two-story office/commercial kitchen building, and implementation of “urban heat island” mitigation measures in the form of landscape improvements in outdoor areas, will be completed by the end of 2023. Remedial actions associated with the redevelopment included the abatement of ACM and treatment of mold within the former warehouse building. A total of 9.78 tons, approximately 160 cubic yards, of friable ACM was transported offsite for landfill disposal. The work was performed in accordance with the ABCA for the Site. All of the ACM encountered was reported to be completely removed from the Property and therefore no ongoing inspection or maintenance activities of ACM are needed at the Property.

On behalf of the City of Fresno, Stantec is requesting written USEPA approval that remediation for the Property is considered complete with no continuing obligations and can be closed-out from the Brownfield grant. Stantec recommends a copy of this letter be submitted to the California EPA for documentation purposes.

Reference: Brownfield Grant Close-out Documentation of Asbestos Abatement and Mold Treatment – 2316 South Elm Avenue, Fresno, California

Limitations

This letter was prepared in accordance with generally accepted practices for the environmental consulting profession, undertaking similar studies at the same time and in the same geographical area as the work conducted by Stantec. Stantec observed the degree of care and skill that are generally exercised by the profession under similar circumstances and conditions. No other warranty is expressed or implied.

Stantec's observations, findings, and opinions should not be considered as scientific certainties, but only as opinion based upon our professional judgment concerning the significance of the data gathered during the investigation. Specifically, Stantec cannot represent that the Site does not contain any hazardous or toxic materials or other latent conditions beyond that observed by Stantec during this work. Additionally, due to limitations of the investigation process and the necessary use of data furnished by others, Stantec and its subcontractors cannot assume liability if actual conditions differ from the information presented in this report.

We trust this information meets your needs. Please do not hesitate to contact us with any questions or comments.

Regards,

Rex A. Key, EIT
Geological Engineer In Training
Phone: (262) 665-4043
Email: Rex.Key@Stantec.com

David B. Holmes
Principal
Phone: (262) 643-9177
Email: David.Holmes@Stantec.com

c. Mr. Keith Bergthold, Executive Director, Fresno Metro Ministry

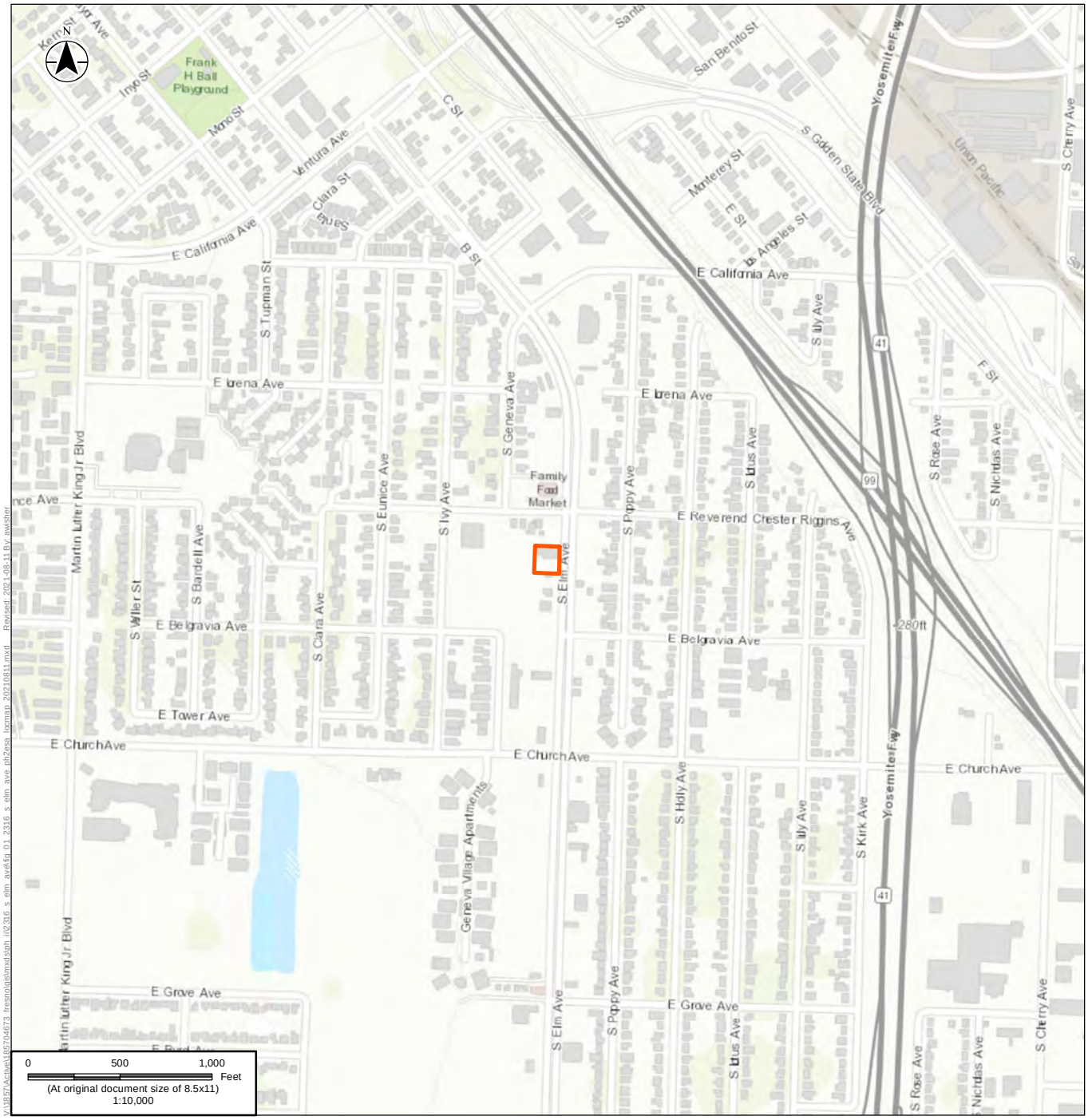
Attachments: Figure 1 – Site Location Map
Figure 2 – Site Plan and Surrounding Properties
Figure 3 – Site Plan and Sampling Locations

Attachment A – Site Redevelopment Plans
Attachment B – Remedial Action Photograph Log
Attachment C – General Contractor Daily Reports
Attachment D – ACM Disposal Documentation

References:

Stantec, 2021. 2316 South Elm Avenue, Fresno, California, Analysis of Brownfield Cleanup Alternatives. December 21, 2021.

FIGURES



Approximate Property Location

Stantec

Project Location
2316 South Elm Avenue
Fresno, California 93706
APN 478-18-307

Client/Project 185704673
City of Fresno California
EPA Brownfield Coalition Assessment Grant
Analysis of Brownfield Cleanup Alternatives

Title
Site Location Map

Figure No.
1

Notes
1. Coordinate System: NAD 1983 UTM Zone 11N
2. Data Sources: City of Fresno, CA
3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

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Approximate Property Location

Stantec

Project Location
2316 South Elm Avenue
Fresno, California 93706
APN 478-18-307

Client/Project 185704673
City of Fresno California
EPA Brownfield Coalition Assessment Grant
Analysis of Brownfield Cleanup Alternatives

Notes
1. Coordinate System: NAD 1983 UTM Zone 11N
2. Data Sources: City of Fresno, CA
3. Background: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors
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Title
Site Plan and Surrounding Properties

Figure No.
2

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Phase 1 Remedial Action Closure Report

Vehicle Maintenance Facility and Former Manufactured Gas Plant Cleanup

Former USPS Processing & Distribution Center Property

715 NW Hoyt Street, Portland, Oregon 97209

DEQ ECSI #2183

January 18, 2022

Prepared for:

Prosper Portland
Contact: Colin Polk
222 NW 5th Avenue
Portland, Oregon 97209

Prepared by:

Stantec Consulting Services Inc.
601 SW 2nd Avenue Suite 1400
Portland, Oregon 97204

Stantec Project Number: 185750980

Sign-off Sheet

This document entitled *Phase 1 Remedial Action Closure Report* was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Prosper Portland (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by _____
(signature)

Joseph Hammer, PMP
Senior Associate

Reviewed by _____
(signature)

Leonard Farr Jr., RG, LG
Principal Geologist

Approved by _____
(signature)

Graeme Taylor
Project Manager

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Acronyms and Abbreviations

µg/L	microgram per liter
ATCS	Abandoned Tanner Creek Sewer
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
City	City of Portland
CMMP	contaminated media management plan
COC	contaminant of concern
DEQ	Oregon Department of Environmental Quality
DRO	diesel range organics
ECSI	Environmental Cleanup Site Information
EES	easement and equitable servitude
EPA	United States Environmental Protection Agency
EUV	electric utility vault
FFS	focused feasibility study
GRO	gasoline range organics
K&S	K&S Environmental, Inc.
McDE	McDonald Excavating
mg/kg	milligram per kilogram
mg/L	milligrams per liter
MGP	Former Pintsch Manufactured Gas Plant
MRAP	master remedial action work plan
NFA	no further action
NPTC	Northern Pacific Terminal Company
ORRCO	Oil Re-refining Company
OWRD	Oregon Water Resources Department
P&DC	Processing and Distribution Center
PAH	polynuclear aromatic hydrocarbon
PDC	Portland Development Commission
PPA	prospective purchaser agreement
PPE	personal protective equipment
Property	715 NW Hoyt Street, Portland, Oregon
Prosper Portland	Property Owner
PTRR	Portland Terminal Railroad Company

QAPP	quality assurance project plan
RA	remedial action
RACR	remedial action closure report
RAO	remedial action objective
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	record of decision
SIM	selected ion monitoring
SOW	prospective purchaser agreement scope of work
Stantec	Stantec Consulting Services Inc.
TCE	trichloroethene
TEF	toxic equivalency factor
TEQ	toxic equivalency quotient
TGA	Troutdale Gravel Aquifer
TPH	total petroleum hydrocarbons
USPS	United States Postal Service
UST	underground storage tank
VMF	Vehicle Maintenance Facility
VOC	volatile organic compound

1.0 INTRODUCTION

This Remedial Action Closure Report (RACR) has been prepared by Stantec Consulting Services, Inc. (Stantec) on behalf of Prosper Portland for the former United States Postal Service (USPS) Processing and Distribution Center (P&DC) property located at 715 NW Hoyt Street in Portland, Oregon (the "Property"). The location of the Property is shown on **Figure 1**. Cleanup and redevelopment of the Property is a significant component of the City of Portland's (City's) Broadway Corridor redevelopment project. In 2019, a United States Environmental Protection Agency (EPA) Brownfield Cleanup Grant was awarded to Prosper Portland under Cooperative Agreement Number BF-01J66401 to facilitate cleanup activities at the Property. Significant portions of the Phase 1 cleanup activities were funded by the EPA Brownfield Cleanup Grant.

The Property has been assigned Environmental Cleanup Site Information (ECSI) File No. 2183. The Oregon Department of Environmental Quality (DEQ) issued a Record of Decision (ROD) for the Property on July 8, 2010 (DEQ 2010). Prior to its acquisition of the Property, Prosper Portland negotiated a Prospective Purchaser Agreement (PPA) with the DEQ. In the PPA scope of work (Exhibit C) Prosper Portland made commitments to complete cleanup activities at the Property. This RACR describes partial remedial activities undertaken at the Property in accordance with the 2010 ROD and the 2016 PPA. Cleanup activities were limited to Manufactured Gas Plant (MGP) hot spot soil removal, Vehicle Maintenance Facility (VMF) underground storage tank (UST) decommissioning, VMF soil removal, completion of an exploratory trench to locate potential sewer laterals connected to the Abandoned Tanner Creek Sewer (ATCS), and the decommissioning of existing monitoring wells on the Property. These cleanup activities are referred to as Phase 1 cleanup activities.

This RACR was submitted to the DEQ for review on October 20, 2021 and the DEQ responded with an approval letter dated December 8, 2021. In the letter, the DEQ provided a summary of the remedial actions accomplished, requested additional information related to well abandonment records and also recognized that portions of the Property will be further investigation and/or remediated when redevelopment for urban residential and commercial use occurs. The DEQ approval letter is provided in **Appendix A.** Approval of the RACR by the DEQ is a step toward issuance of a Certificate of Completion and/or Conditional No Further Action (NFA) determination by the DEQ for the Property.

2.0 PROPERTY LOCATION AND BACKGROUND

The Property consists of 13.37 acres comprised of 12 tax parcels identified as tax lots 100–111 of Multnomah County tax map 1N1E34BC. The Property is located within the Pearl subdistrict of the Central City Plan District, bounded to the north by the Lovejoy Street ramp, which rises eastward above grade to the Broadway Bridge; to the east by the NW Broadway ramp, which rises northward above grade to the Broadway Bridge; to the south by NW Hoyt Street; and to the west by NW 9th Avenue. The layout of the Property and vicinity are shown on **Figure 2**.

The Property previously processed all outgoing mail for the state of Oregon, though today the only active permanent Property uses are a parking structure and a retail post office. The Property is also utilized by Prosper Portland for temporary uses including parking, event staging, construction lay down yard, and other temporary uses by select parties. The Property includes a 398,000-square-foot structure formerly used for mail processing and distribution (the "P&DC building"), a 157,400-square-foot multi-story parking structure, and paved surface parking and maneuvering areas. During the summer of 2020, the 10,025-square-foot VMF was demolished after completing asbestos abatement activities (conducted by PBS Engineering and Environmental Inc. and reported under separate cover). The plan is to conduct abatement activities and demolish the P&DC building and then complete Phase 2 cleanup activities by removing hot spot soil concentrations from the Electrical Utility Vault (EUV). This work is expected to occur in 2022. The layout of the Property with current and former buildings is shown on **Figure 2**. Public access is restricted to all portions of the Property except for the parking structure and retail post office situated at the south end of the Property along NW Hoyt Street.

The Property is zoned EXd (Central Employment), as are the surrounding properties to the north and west. Surrounding properties to the east and south are zoned CXd (Commercial). Both the EXd and CXd zones allow for multi-family residential development. The nearest surface water body is the Willamette River, approximately 700 feet to the east.

2.1 PROPERTY HISTORY

The eastern area of the Property (8.96-acre former tax lot 100) was owned by the Northern Pacific Terminal Company (NPTC, later becoming Portland Terminal Railroad Company [PTRR]) from 1882 to 1959. The same entity owned the western portion of the Property (4.41-acre former tax lot 200) from 1882 to 1974. NPTC/PTRR used the entire Property for railyard operations, which included numerous track lines and, for a brief period, a railroad turntable. Rail car repair and cleaning were performed along the west side of the Property in the 1890s and early 1900s (referred to as the Coach Cleaning area), while freight depots operated in the eastern portion of the Property from the 1890s to late 1950s. A MGP operated in the northwest corner of the Property from approximately 1893 to the 1930s, producing compressed gas from naphtha-grade oil for railroad car lighting. MGP process equipment included an aboveground gas holder, high-pressure tanks, a tar well, and oil tanks. No definitive information has been found regarding operations and waste disposal practices at the former MGP; however, investigation efforts suggest that most impacted material associated with gas plant activity came to be located on the

neighboring property to the north (Lovejoy ramp area and adjoining Station Place/Horse Barn site, ECSI #2407) that was initially below grade of the former MGP.

USPS purchased the eastern half of the Property in 1959, and subsequently sold it in 1960. The USPS then leased the eastern portion of the Property and began operation of the P&DC in 1962. In 1974, USPS purchased the eastern and western halves of the Property, forming the Property as it is configured today. The P&DC and VMF buildings were constructed in 1962, and the parking structure was constructed in 1987. In 2017, Prosper Portland purchased and leased-back the Property to the USPS until June 2018, when USPS processing and distribution operations were moved to a new offsite location, leaving the Property vacant, except for the parking structure and retail post office. Prosper Portland has agreed to provide the USPS with space for a retail post office until such time that this operation can be relocated to a nearby site. The VMF building was demolished in 2020, and the plan is to demolish the P&DC building in 2022.

2.2 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

Numerous environmental investigation and cleanup activities have been performed on the Property largely focused on the following areas associated with hazardous substances from historical operations:

- MGP Area;
- Coach Cleaning Area;
- VMF Area;
- EUV Area; and,
- Storm Sewers.

Previous environmental cleanup and investigation activities at the Property are summarized in the following subsections and in the 2010 ROD, the 2016 Master Remedial Action Plan (MRAP) (Stantec 2016), and the 2011 Contaminated Media Management Plan (CMMP) (Exponent 2011). Investigation work completed under DEQ's UST and Voluntary Cleanup Programs is presented in **Section 2.2.1**, investigation work performed independently of DEQ is presented in **Section 2.2.2**, and work performed under an Intergovernmental Agreement between USPS and DEQ is presented in **Section 2.2.3**.

2.2.1 Investigations Under DEQ UST (LUST #26-92-0068) and Voluntary Cleanup (ECSI #2183) Programs

1992–1993 VMF and South Side of P&DC Building. Six USTs used by the USPS to store diesel, gasoline, waste oil, and heating oil were decommissioned by removal in 1992 and 1993. Five USTs were located at the VMF, and one was located on the south side of the P&DC building. Contamination was detected in both areas, and soil remediation was completed. DEQ's Northwest Region UST Program issued an NFA determination for the UST decommissioning activities on June 13, 1997 but noted that some pockets of elevated petroleum contamination were left in both areas due to accessibility issues beneath the two buildings.

1993 UST Decommissioning Report Review & Soil Investigation. This report, prepared by Dames & Moore, presents the results of a soil boring and test pit investigation that was completed at the VMF in the

course of decommissioning five USTs: a 300-gallon waste oil UST, a 1,000-gallon and two 5,000-gallon diesel USTs, and a 10,000-gallon gasoline UST. Hand auger borings (B1 through B18, and EX-1) were advanced to a maximum of 4 feet below ground surface (bgs), with one to two soil samples from each boring analyzed for total petroleum hydrocarbons (TPH). Three deeper test pits were dug south of the VMF and select soil samples were analyzed for TPH. In analyzed hand auger samples, TPH was detected at several locations with a maximum concentration of 71,000 milligrams per kilogram (mg/kg) diesel/heavy oil. Deeper test pit samples were generally non-detect. Soil sampling results from beneath the VMF presented in the report (Dames & Moore 1993a).

1994 UST Decommissioning & Soil Investigation Report. A 25,000-gallon Bunker C UST located immediately south of the P&DC building was decommissioned in 1993. During removal, contamination was observed in the area of the product line, which had been struck during shoring activities. No impacts were observed in the UST excavation. Numerous soil samples were collected during decommissioning of the UST. Results from the investigation and confirmatory sampling are documented in the Dames & Moore 1993 *Geotechnical Investigation, 25,000 Gallon UST Removal* report (Dames & Moore 1993b) and their 1994 *UST Decommissioning & Soil Investigation Report* (Dames & Moore 1994). Impacted soil was removed from this location and transported offsite for disposal. A pocket of residual contamination (up to 770 mg/kg diesel) was left in place next to the foundation of the P&DC building as noted in DEQ's June 13, 1997 NFA letter for the UST removal. A monitoring well was installed in 1993 by Dames & Moore near the southeast corner of the garage associated with the UST decommissioning at this location. Groundwater was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), and no BTEX detections were reported.

2001 Preliminary Assessment Report. Alisto Engineering Group completed a Preliminary Site Assessment for the Property dated March 8, 2001. Work included the advancement of borings to a maximum of 32 feet bgs at nine locations in the northwest corner of the Property (former MGP area), and the collection of deeper soil samples (8 to 32 feet bgs) and shallow groundwater samples from the same areas. Soil samples were analyzed for TPH, BTEX, polycyclic aromatic hydrocarbons (PAHs), and metals, and grab groundwater samples collected from the boreholes were analyzed for TPH and BTEX. Three monitoring wells (MW-1 to MW-3) were subsequently installed and sampled in August 2000. Sample results are discussed below in **Section 2.2.3**.

2.2.2 Independent Investigations Reported to DEQ

1987 Parking Garage Geotechnical Investigation. Geotechnical borings (B-1 and B-2 and CC-1 to CC-4) were completed in 1986 and 1987 in association with construction of the parking garage. It appears from DEQ records that the 1986 work was completed by Cornforth Consultants and the 1987 work by Geotechnical Resources. Borings were advanced to 45 feet bgs. No visual evidence of contamination was noted. No samples were submitted for laboratory analysis.

1993 Geotechnical Investigation. In association with decommissioning of the 25,000-gallon Bunker C UST located south of the P&DC building, a soil and groundwater sample were collected near the UST. No petroleum hydrocarbons were detected in the samples.

1996/1997 Limited Subsurface Environmental Assessment, Proposed Utility Construction. As a prelude to utility construction west of the P&DC building, shallow soil samples were collected from three of four soil borings (B-1 through B-4). In addition, a groundwater sample was collected in late 1996 from monitoring well MW-A. Soil samples were analyzed for TPH, PAHs, and total metals. The groundwater sample was analyzed for TPH, PAHs, and BTEX. The well was resampled in November 1997. There were no detections in either groundwater sample with the exception of fluoranthene at a concentration of <1 microgram per liter (µg/L) in the 1996 groundwater sample, and dissolved lead at a concentration of 1.5 µg/L in the 1997 groundwater sample.

1997 Work Plan, Excavation Monitoring and Oversight. Additional data from the utility trench was included in GeoEngineers' *Work Plan, Excavation Monitoring and Oversight* (GeoEngineers 1997). A composite sample (SS-1/SS-2) collected from stockpiled soil excavated from the utility trench contained diesel and heavy oil concentrations up to 5,170 mg/kg and 3,880 mg/kg, respectively. Individual PAH concentrations up to 292 mg/kg also were detected in the composite sample. Soil sample TS-1, collected from the utility trench following excavation, had reduced levels of hazardous substances. Soil sample USPS-1 had elevated levels of hazardous substances.

1997 Report of Excavation Observation and Monitoring. GeoEngineers' report contained confirmatory sampling data from the five shallow utility trenches that were excavated to facilitate utility construction. Confirmatory samples were collected from depths varying from 1.5 to 13 feet bgs, and analyzed for TPH, metals, volatile organic compounds (VOCs), and PAHs. Elevated TPH, metals (arsenic and lead), and PAHs were detected. At location USPS-T#5-2 (3.5 feet bgs), diesel and heavy oil were detected at up to 175,000 mg/kg and 128,000 mg/kg, respectively. Benzo(a)pyrene and naphthalene were detected at up to 73.1 mg/kg and 246 mg/kg, respectively.

2000/2001 Natural Gas Line. Soil sampling was completed in 2000 and 2001 in conjunction with rerouting of a natural gas line situated along the east side of the Property and in NW Broadway. TPH, PAHs, and metals were detected in the soil samples collected.

2.2.3 Investigations Governed by DEQ/USPS Intergovernmental Agreement

Former MGP Area. Investigation of the former MGP area located in the northwest corner of the Property was initiated in 2000. Initial work focused on soil sampling and VOCs, PAHs, and TPH were detected. Three shallow groundwater wells (MW-1 to MW-3) were subsequently installed and monitored between 2000 and 2003. Contaminants detected in soil and groundwater included primarily petroleum hydrocarbons, VOCs, and PAHs that are likely attributable to former MGP operations and historical railyard activities in the area. Impacts to groundwater were primarily located in the vicinity of MW-3.

Petroleum hydrocarbons and VOCs were not detected in MW-1 or MW-2, located south (upgradient) and east (cross-gradient) of the former MGP footprint. PAHs were detected in both wells at concentrations less than 1 µg/L. At MW-3, located within the footprint of the former MGP, maximum detections of diesel, heavy oil, naphthalene, and benzene were 13,000 µg/L, 3,920 µg/L, 3,900 µg/L, and 1,020 µg/L, respectively. Monitoring of MW-1 and MW-2 was discontinued in 2003 based on a lack of significant

detections. Monitoring of MW-3 was discontinued in 2005 when DEQ determined that groundwater impacts had been adequately delineated.

In 2004, 12 borings (P-3, P-6, and P-9; PP-1 through PP-7; and SS-2 and SS-3) were advanced in the former MGP area. Samples were collected at depths ranging from 3 to 90 feet bgs. Most borings were advanced for collection of shallow soil samples to assess near-surface impacts in the former MGP area to augment the deeper investigation completed in 2001. Boring PP-6 was advanced to the top of the Troutdale Gravel Aquifer (TGA) to determine the depth (elevation) of the TGA on the Property. Borings SS-2 and -3 were advanced to 32 feet bgs to evaluate conditions in the vicinity of the former (abandoned) Tanner Creek Sewer located west of the Property below NW 9th Avenue. Analysis included BTEX, VOCs, PAHs, and petroleum hydrocarbons.

Petroleum hydrocarbons and particularly PAHs were commonly detected, with the greatest concentrations found in deeper unsaturated soil and extending into the top of the water table (7 to 16 feet bgs). The presence of elevated contamination at depth was surmised to be from fill placed on the Property subsequent to former MGP and railroad activities.

At the presumed location of the former MGP tar well, a boring was advanced to the top of the TGA at approximately 90 feet bgs, and samples were collected from multiple intervals for analysis. Hazardous substances typical of historical MGP and railyard activities were observed in soil and groundwater but attenuated with depth. Non-aqueous phase liquid was not observed in the TGA. A monitoring well (TGA-1) was subsequently installed near this location, and groundwater samples were collected from December 2004 through September 2005. Petroleum hydrocarbons, benzene, and naphthalene were detected up to 0.78 milligrams per liter (mg/L), 1.72 µg/L, and 2.27 µg/L, respectively. Based on a lack of significant impact, USPS requested and received DEQ approval to discontinue sampling of TGA-1.

Storm Sewer. Investigation at the nearby Station Place/Horse Barn site (ECSI #2407) and within NW Lovejoy Street during construction of the new ramp in 2003 identified petroleum hydrocarbon, VOC, and PAH contamination in soil and shallow groundwater along the eastern margin of NW 9th Avenue. Former MGP wastes are considered the likely source of this contamination. Subsequent video survey of the sewer and sampling of stormwater within a 27-inch sewer beneath NW Lovejoy Street in the mid-2000s identified former MGP waste (benzene, naphthalene, and other PAHs) within the sewer, but at low levels that did not exceed risk-based screening values at sample collection points (manholes) downstream of the Station Place/Horse Barn site. Ambient water quality samples were collected during both low and high-water flow conditions.

To evaluate conditions in the northwestern area of the Property and in the vicinity of the ATCS, two borings (SS-2 and SS-3) were advanced as close to the sewer line as possible at DEQ's request in 2004. Soil samples were collected from depths between 16 and 32 feet bgs and analyzed for BTEX, VOCs, PAHs, petroleum hydrocarbons, and metals. Petroleum hydrocarbons (up to 1,380 mg/kg), PAHs, and VOCs (excluding benzene and others) were detected, indicating that former MGP contamination extends beyond the Property and beneath NW Lovejoy Street. Groundwater next to the sewer was similarly impacted.

During construction of the new Lovejoy Ramp in the early 2000s, an unknown petroleum product was observed by DEQ seeping from shallow soil in an excavation sidewall. DEQ recalls that the seepage was observed near the northwest corner of the VMF. In contrast, the city indicated that seeps were observed near the northwest corner of the Property and not near the VMF (City of Portland, 2004 as cited in Arcadis, 2006). The city noted that the seep was encountered during installation of a light pole adjacent to the Station Place site on the north side of vacated NW Lovejoy Street. According to DEQ staff, the area of seepage was subsequently covered, and the source of the contamination was not identified.

Electrical Utility Vault. Subsurface petroleum contamination was encountered in 1996 during geotechnical drilling associated with an electrical utility vault expansion west of the P&DC building. Near-surface soil was visually impacted, and subsequent laboratory analysis identified petroleum hydrocarbons, VOCs, PAHs, and lead in the soil. Impacted soil was excavated and transported offsite for disposal at the Hillsboro Subtitle D Landfill. A monitoring well (MW-A) was installed in the impacted area in 1996 by GeoEngineers and groundwater samples were collected during low and high-water conditions, and again in October 2004. Significant groundwater impacts were not observed.

During subsequent investigations completed by Arcadis in 2004, additional borings (UV-1 through UV-8) were advanced, generally to15 feet bgs, to further delineate the area. One boring (UV-8) was advanced to 30 feet bgs and a temporary shallow groundwater monitoring point was constructed. Soil and groundwater samples from the boring and wells (UV-8 and MW-A) were analyzed for BTEX, PAHs, and petroleum hydrocarbons. Elevated contaminants including PAHs were detected in soil. Two PAHs were detected in groundwater in the UV-8 boring; none were detected in monitoring well MW-A.

Coach Cleaning Area. According to Sanborn Fire Insurance Maps and other historical sources, the cleaning of railroad passenger (coach) cars was performed in the west-central portion of the Property. To evaluate environmental conditions in this area, seven borings (CC-1 to CC-7) were advanced to 15 feet bgs in this area in 2004, and two samples (surface and subsurface) at each location were collected and analyzed for VOCs, petroleum hydrocarbons, PAHs, and metals. Organic contaminants generally were detected at low concentrations or were absent. Arsenic and lead concentrations in soil were notably elevated. Detected arsenic ranged from 22 mg/kg to 48 mg/kg, and lead from 244 mg/kg to 1,080 mg/kg. In 2006, three additional borings (CC-8 to CC-10) were advanced in the area. Elevated lead and arsenic were detected up to 3,020 mg/kg and 50.9 mg/kg, respectively.

Parking Garage. As part of the remedial investigation, shallow and deeper soil samples were collected from a boring (EH-1) located immediately south of the parking garage on the Property in 2004 and analyzed for petroleum hydrocarbons, VOCs, and PAHs. Soil samples were not analyzed for metals. Low levels of several PAHs were detected.

Northeast Corner. Sampling was completed in the northeast corner of the Property in 2004. Soil samples were collected from the surface and at depth at three locations (EH-3 through EH-5), with notable detections of petroleum hydrocarbons at EH-3. Soil samples were not analyzed for metals. Soil samples were later collected at two additional locations (EH-6 and EH-7). Petroleum hydrocarbons were detected at 2,000 mg/kg at one location (EH-6), and arsenic at both locations to 17.2 mg/kg.

2.2.4 2006 Risk Assessment and Focused Feasibility Study

A draft human health risk assessment identifying baseline risk associated with soil and groundwater contamination at the Property was submitted in June 2005 as part of the Remedial Investigation (RI) Report (Arcadis 2006). A Final Risk Assessment report was submitted in April 2006 and subsequently approved by DEQ. In these assessments, soil and groundwater sampling results were compared to screening values under two scenarios: the Existing Site Use scenario (current and reasonably likely future use based on continued USPS use), and a Hypothetical Future Site Use scenario where the Property would be sold and redeveloped to include urban residential and occupational use.

In 2008, supplementary risk assessment work was completed as part of the Focused Feasibility Study (FFS) (Arcadis 2008), specifically addressing the potential for future urban residual use under the Hypothetical Future Site Use scenario. DEQ required evaluation of urban resident risk as an amendment to the 2008 FFS, based on the initiation of sale discussions between USPS and Portland Development Commission (PDC, now Prosper Portland).

The FFS was completed by Arcadis in 2008 and approved by the DEQ. The FFS evaluated property risk and accompanying remedial actions under two separate scenarios: a) Existing Site Use (continuing site ownership, occupancy, and use by the USPS); and b) Hypothetical Future Site Use (sale of the property for redevelopment including commercial and urban residential use). The Existing Site Use scenario was in effect until 2018 when USPS vacated the Property. Under Hypothetical Future Site Use, remedies were evaluated to address unacceptable risk to urban residential, commercial worker, excavation worker, and construction worker receptors.

For both the existing use and redevelopment use scenarios, remedial action objectives (RAOs) were established, identification of remediation areas and volumes was completed, and remedial alternatives were recommended. A qualitative evaluation of residual risk was also completed. Based on the analysis, recommended remedial actions were reviewed and adopted in the 2010 ROD for existing site use and hypothetical future site use.

2.3 NATURE, EXTENT, AND CONCENTRATIONS OF CONTAMINATION

Between 1987 and 2006, extensive testing of soil and groundwater at the Property was conducted during multiple phases of environmental site assessments, focused on specific areas of the Property to address specific sources of contamination. The nature and extent of contamination associated with activities at the Property are summarized in the 2006 RI Report (Arcadis 2006). Documented soil and groundwater contamination at the Property from prior investigation activities is summarized below.

2.3.1 Soil Contamination

Shallow soil at the site consists primarily of fill, having a variable grain size and in some cases containing man-made materials including brick, wood, and slag. Willamette River dredge sand is also present in some areas. The fill material is in turn underlain by alluvial/fluvial deposits of Pleistocene to Recent age. The deposits represent a combination of flood deposits of the Willamette River, and fine-grained

sediments associated with the Ice-Age Bretz floods. These are underlain, in turn, by unconsolidated gravels of the Pliocene-age Troutdale Formation. In the northwest corner of the Property Troutdale gravels were encountered at a depth of approximately 80 feet bgs. These gravels are underlain at depth by Miocene-age flood basalts of the Columbia River Basalt Group.

In soil, metals, TPH, and PAHs have been detected at elevated concentrations in several areas of the Property. Outside of the MGP area, contamination is present primarily in shallow soil (less than 5 feet bgs) and appears to be associated primarily with historical use of the Property as a railyard. Arsenic detections commonly exceed DEQ's default background concentration of 8.8 mg/kg, with a maximum of 50.9 mg/kg detected in the northern portion of the Property. Lead is likewise elevated above background in several areas of the Property with a maximum detected concentration of 3,020 mg/kg in the Coach Cleaning Area, but typically below DEQ's urban residential risk-based concentration (RBC) of 400 mg/kg in other areas of the Property. PAHs are notably elevated in the EUV and MGP areas. Impacts in the former are shallow, but in the latter extend below the top of the water table. The primary Property risk-driver is PAHs, in particular benzo(a)pyrene. VOCs have generally not been detected in Property soil.

Contaminant of concerns (COCs) in soils as listed in the 2011 CMMP include:

- Metals: arsenic, lead, and chromium
- TPH: diesel and heavy oil
- VOCs: BTEX
- PAHs: naphthalene, 2-methylnapthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

2.3.2 Groundwater Contamination

Groundwater is typically present at a depth of approximately 10 to 20 feet bgs across the Property. Shallowest groundwater (unconfined water table aquifer) in the westernmost portion of the Property flows to the west, assumed to be influenced by utility corridors located beneath NW 9th Avenue. Shallow groundwater flow in the eastern portion of the Property and in deeper Alluvial Deposits is assumed to be to the north-northeast towards the Willamette River (a regional discharge boundary). Groundwater flow in the underlying TGA, present within unconsolidated gravels of the upper Troutdale Formation, is northeast (towards the Willamette River) based on information from adjacent properties. There is no current or reasonably likely future use of the shallow (Alluvial) aquifer at the Property beyond recharge to the Willamette River. In the past, deeper TGA groundwater was used in the Property vicinity for industrial and irrigation purposes. The only known current use of the TGA within approximately 1 mile of the Property is the City of Portland irrigation well at Waterfront Park, well outside of any Property influence. Water for resident and business use in the Property vicinity is supplied by the City of Portland from a distant surface water source (Bull Run Reservoir).

Groundwater contamination at the Property is confined mainly to the MGP area and related to releases from the MGP. At monitoring well MW-3, detected groundwater contaminants include VOCs and PAHs. In shallow well MW-3 where the greatest impacts were found, diesel and heavy oil were detected to 13,000

and 3,920 µg/L, respectively. Naphthalene and benzo(a)pyrene were detected at concentrations of 3,900 and 27.5 µg/L, respectively. Benzene and other organic compounds were also detected at low levels.

In the EUV area, low level PAHs (less than 1 µg/L) were detected in limited groundwater investigation work. Given the apparent absence of deeper soil impacts, groundwater sampling was not performed in the Coach Cleaning Area, Parking Garage Area, or the eastern portion of the property (including below the main processing building). An exception is groundwater sampling completed during the heating oil UST decommissioning in 1993 ("B-1-93"). Groundwater beneath the VMF building was not encountered during UST decommissioning.

COCs in groundwater as listed in the 2011 CMMP include:

- TPH: diesel and heavy oil
- VOCs: BTEX
- PAHs: naphthalene, 2-methylnapthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

2.4 KEY REMEDIAL ACTION DOCUMENTATION

2.4.1 DEQ Record of Decision

The ROD was issued by the DEQ for the Property on September 14, 2010. In the ROD, remedial actions for Existing Site Use and Hypothetical Future Use were recommended and adopted by the DEQ based on the findings of the RI and FFS; however, only the Hypothetical Future Site Use RAOs are presented herein since the Existing Site Use scenario no longer applies for the Property since USPS has relocated.

Proposed remedial actions for soil and groundwater contaminants under the Hypothetical Future Site Use scenario include:

1. Maintenance of the existing Property cover (paving and buildings) until future redevelopment occurs, and temporary capping and access restrictions if cover is compromised or removed.

2. Concurrent with redevelopment, capping of areas where soil exceeds acceptable risk levels with a demarcation layer and a minimum of two feet of clean fill (landscape areas) or hardscape (buildings and paved areas). Cap specifications for paved/building areas to be determined in a remedial design document and subject to DEQ approval.

3. Excavation of soil exceeding hot spot concentrations (concentration more than 100 times higher than applicable RBC for individual carcinogenic compounds, or 10 times higher for non-carcinogens including petroleum hydrocarbons) in the EUV and MGP areas. Excavated soil requires offsite disposal at a Subtitle D landfill or other DEQ-approved facility. This action will require confirmatory sampling to ensure that all hot spot soils are removed.

4. Installation of a vapor mitigation system beneath future buildings constructed in the MGP and EUV areas to prevent potential exposure of future users to contamination via vapor intrusion, or additional investigation to demonstrate that a vapor mitigation system is not needed to protect human health.

5. Removal of two pockets of petroleum contamination beneath existing Property buildings, as described in DEQ's June 13, 1997 approval letter for decommissioning of Property USTs. Alternatively, completion of a risk analysis confirming that the residual contamination does not pose a risk to human health or the environment under the appropriate Property use scenarios also will be acceptable.

6. Implementation of Engineering Controls for soil following hot spot removal and any other soil removal related to Property development to prevent excavation worker exposure to contaminated soils. Implementation of Engineering Controls for groundwater to prevent excavation worker exposure to contaminated groundwater in an excavation in the former MGP Area. Controls are to be outlined in a CMMP, including protocols for worker notification and requirements for personal protective equipment (PPE), dust suppression, soil management protocols, site access restrictions, etc.

7. Recording of a Sub-Parcel Specific Easement and Equitable Servitude (EES) with the Property deed (unless the 2011 EES recorded by USPS is determined to be adequate), outlining hazards, cap inspection and maintenance requirements, a prohibition of groundwater use for any purpose, and acknowledging the requirements set forth in the CMMP.

Further, the ROD also notes a number of assumptions or conditions with respect to Hypothetical Future Use Remedial Actions. These are summarized below.

1. The selected remedial actions for the Hypothetical Future Us scenario assume that under redevelopment, the Property will include an urban residential element, as is the case with nearly all new development in the area. If redevelopment of a Sub-Parcel does not include an urban residential component, re-evaluation of conclusions regarding hot spots, areas of excess risk requiring remedial action, etc. will need to be revisited. Similarly, as described in the selected remedial actions above, removal of significant soil and/or groundwater contamination under Sub-Parcel development (beyond the required hot spot removal) may reduce or eliminate the amount of contamination requiring remedial action, and thus modify the selected remedy. The DEQ has indicated that modification of the selected remedy is acceptable provided that necessary risk analysis is completed to the DEQ's satisfaction.

2. It is DEQ's expectation that railroad-related shallow soil contamination extends beneath Property buildings and other paved areas where sampling has not been performed. Capping will be required in these areas unless DEQ-approved sampling is performed to confirm the absence of significant contamination.

3. Given the nature of Property contamination, groundwater investigation at the Property has been limited to the areas where deeper soil or groundwater impacts were either observed or inferred (MGP and EUV areas, and the UST near the south Property boundary). If significant contamination (indicated by visible or olfactory evidence) is encountered during redevelopment in areas where analytical data is limited or absent, characterization sampling may be required by DEQ. If contamination is present at depth, DEQ may require groundwater sampling. Note that unexpected contamination applies both to contamination associated with past railroad and MGP operations, and to contamination associated with USPS operations not specifically addressed in the Property remedial investigation.

4. Following or in lieu of UST pocket-in-place removal, DEQ will require confirmatory sampling to verify that 1) the nature and extent of this contamination have been defined, 2) residual contamination does

not pose an unacceptable risk, and 3) contamination does not extend to the water table. Groundwater sampling may be required by DEQ if deeper soil impacts are found.

5. DEQ will not require additional site characterization or remediation of contamination located off-site beneath the adjacent NW 9th Avenue and NW Lovejoy intersection, and extending to the north below NW 9th Avenue within and around the ATCS. The primary source of the contamination appears to be historical releases from the MGP. Investigation and cleanup, as necessary, will be pursued through the historical MGP owner/operator. As part of Property development, however, DEQ will require that any on-site utility connections to the ATCS be located and abandoned. Operating utility connections that may act as a preferential migration pathway for off-site migration of contaminants will likewise need to be addressed. Any unexpected contamination (beyond that identified under the Property RI and Remedial Action [RA]) found during this effort will need to be addressed to DEQ's satisfaction.

6. At the discretion of DEQ and with prior approval, reuse of non-hot spot contaminated soil below Sub-Parcel surface cap features will be permitted. DEQ approval of non-hot spot contaminated soil reuse shall not be unreasonably withheld provided a demonstration is made that soil reuse does not exacerbate Property environmental conditions or present an unacceptable risk to human health or the environment. Reuse of Property demolition debris (primarily asphalt and concrete) also will be permitted (no prior DEQ approval required) provided the debris exhibits negligible visual or olfactory evidence of contamination and has negligible contaminated soil adhered to it.

2.4.2 2011 Contaminated Media Management Plan

The 2011 CMMP was issued to fulfill the requirements stipulated in the ROD for Existing Site Use and Hypothetical Site Use scenarios. The 2011 CMMP included the following:

- Description of the nature and extent of subsurface environmental impacts
- Procedures to notify workers of potential environmental hazards
- Procedures for handling contaminated media
- Description of engineering controls to prevent unacceptable exposure to subsurface contaminants, including inspection and maintenance of the existing cover (including paving and buildings).

2.4.3 Prospective Purchaser Agreement

On September 8, 2016, a Consent Judgement was recorded (Document No. 2016-112772) in Multnomah County, Oregon between the DEQ and Prosper Portland. The mutual objectives of the Consent Judgement were to: (a) to protect public health, safety, and welfare and the environment in accordance with ORS 465.200 through 465.410, and regulations promulgated thereto; (b) to facilitate productive reuse of property; and (c) to provide Prosper Portland with protection from potential liabilities in accordance with applicable law. This Consent Judgement constitutes a PPA.

The PPA included a Scope of Work (SOW) as Exhibit C for activities to be performed during different phases of Property use (e.g., Lease-Back, Pre-Construction, and Redevelopment). The SOW included the MRAP (Stantec 2016) to provide generally applicable remedial action elements approved under the SOW.

2.4.4 2016 Master Remedial Action Plan

The 2016 MRAP provides generalized remedial actions that apply to the Property transition to redevelopment during pre-construction and in accordance with the PPA SOW. The MRAP states that if Prosper Portland elects to initiate an activity that is identified in the ROD as requiring DEQ oversight, then they will prepare a plan for such activity. Plans were prescribed to contain procedures for contaminated media management during the project that would supersede the 2011 CMMP. Stantec prepared an Expanded CMMP (Stantec 2020a) that provides specific procedures for Phase 1 cleanup activities as detailed in Section 4 of the MRAP (Soil Hot Spot and Pocket-in-Place Excavation and Offsite Disposal).

2.4.5 2020 Expanded Contaminated Media Management Plan

The 2020 Expanded CMMP focused on specific remedial actions according to the Hypothetical Future Site Use scenario as presented in the ROD, provided specific media management information to contractors during Phase 1 cleanup activities, and developed changes in DEQ risk screening values for PAHs since the 2011 CMMP submittal. Specific remedial actions recommended in the ROD and memorialized in the PPA and MRAP were planned to be implemented during Phase 1 cleanup activities but were proposed to be conducted using current RBCs and corresponding hot spot concentrations.

3.0 PHASE 1 CLEANUP APPROACH

The Phase 1 cleanup plan presented in the 2020 Expanded CMMP aimed to address measures that should be taken during Phase 1 cleanup activities to comply with the Hypothetical Future Site Use scenario in the ROD and PPA. Select RAOs were planned to be achieved during Phase 1 cleanup. As such, the remedial approach for Phase 1 cleanup activities included the following actions:

- Decommissioning of monitoring wells B-1-93, MW1, MW-2, MW-3, MW-A, and TGA-1 on the Property (**Figure 3**).
- Decommissioning of a 10,000-gallon diesel UST associated with the VMF by a DEQ-licensed service provider (not funded by EPA Brownfield Cleanup Grant).
- Removal of pocket-in-place contaminated soils beneath the VMF building above urban residential direct contact RBCs.
- Trench investigation along NW 9th Avenue to evaluate and abandon (if discovered) potential sewer laterals potentially connected to the ATCS.
- Removal of soils in the MGP Area with concentrations of individual carcinogenic PAHs and a calculated toxic equivalency quotient (TEQ) using toxic equivalency factors (TEFs) for carcinogenic PAHs above urban residential direct contact hot spot concentrations.

Other cleanup actions planned in the 2020 Expanded CMMP including removal of hot spot contaminated soils at the EUV and removal of pocket-in-place contaminated soils beneath the southern end of the P&DC building are planned to be conducted during Phase 2 cleanup activities. These cleanup activities will occur after P&DC building abatement and demolition.

3.1 EXCAVATION AREAS

Phase 1 cleanup activities included four targeted excavations. Excavation areas 1 through 4 are shown on **Figure 4**. The following list summarizes the excavation areas and known COCs associated with each specific area:

- **VMF Area - Excavation 1** (not funded by EPA Brownfield Cleanup Grant) – UST decommissioning and limited soil cleanup to an estimated depth of 10 feet bgs or shallower based on field observations and confirmation soil sample results. Elevated concentrations of TPH were anticipated in this excavation area.

- **VMF Area - Excavation 2** (not funded by EPA Brownfield Cleanup Grant) – The VMF Area pocket-in-place excavation after building demolition and to an approximate depth of 3 feet bgs. Elevated concentrations of commingled hazardous substances and petroleum were expected to be present in this excavation area.

- **Abandoned Tanner Creek Sewer Area - Excavation 3** – There are some historical statements indicating that the former MGP was lower in elevation. However, by 1901, the MGP had to be at or near current ground level as the railyard tracks were present at grade, a 1901 Sanborn® map shows the plant on fill, and a 1920 aerial photograph shows the plant at grade. The 24-inch sewer (installed

in 1916) is approximately 13-16 feet bgs, and the top of the ATCS (abandoned in 1916) is 9 to 9.5 feet bgs (as found during recent investigation work in NW 9th Avenue). A potential connection to the ATCS may be between 8 and 12 feet bgs on the Property based on the street sewer depths, observations in NW 9th Avenue, and the slope down to street sewers. The ATCS exploration trench will be completed to a depth of approximately 12 feet bgs and at least 12 feet from sidewalks and retaining walls within the NW 9th Avenue and NW Lovejoy Street rights-of-way in order to maintain the structural integrity of the surrounding sidewalks, ramps, retaining walls, roadways, and other infrastructure. Elevated concentrations of metals and PAHs were anticipated in this area.

- **MGP Area - Excavation Area 4 –** The MGP Area hot spot excavation was be conducted to a depth of 3 feet bgs. Elevated concentrations of metals and PAHs were anticipated in this area.

3.2 CLEANUP STANDARDS

In 2018, revised and less stringent carcinogenic PAH slope factors were adopted by the DEQ. This resulted in changes to DEQ RBCs for carcinogenic PAHs which are the primary driver for the selected MGP area remedy (hot spot cleanup). These revised RBCs are therefore proposed to be used to facilitate a highly concentrated soil hot spot cleanup in the MGP area. Phase 1 cleanup standards (RBCs and corresponding hot spot concentrations) that are proposed to be used to facilitate cleanup are included in the 2020 Expanded CMMP.

As presented in the ROD and RA, a hot spot soil removal action in the MGP area and EUV area was determined to be the preferred cleanup alternative and was presented for occupational and urban residential receptors under the hypothetical future use scenario. Historical concentrations of carcinogenic PAHs detected in Property environmental assessments were compared to revised RBCs and associated hot spot concentrations. A comparison of proposed excavation areas presented in the 2010 ROD and proposed excavation areas using revised RBCs indicates that, in general, the hot spot cleanup for occupational receptors presented in the 2010 ROD now generally matches a hot spot cleanup for urban residential receptors. This data is presented in the 2020 Expanded CMMP. Urban Residential, Occupational, Construction, and Excavation Worker RBCs were used for the VMF soil removal action.

4.0 REMEDIAL ACTION IMPLEMENTATION

Remedial action implementation for the work described in **Section 3.0** commenced in July 2020 and was completed in September 2020 in general accordance with the 2020 Expanded CMMP, as described in the following sections. Daily field report forms and representative photographs of remedial action implementation are included in daily field reports in **Appendix B**.

4.1 MONITORING WELL ABANDONMENT

On July 30 and 31, 2020, Stantec directed the abandonment of six monitoring wells on the Property (designated B-1-93, MW1, MW-2, MW-3, MW-A, and TGA-1) by Cascade Environmental, an Oregon-licensed well driller. The locations of the wells are shown on **Figure 3**. Well abandonment was conducted in accordance with Oregon Water Resources Department (OWRD) regulations and consisted of removal of monuments, bollards, and well casing and screen (by over drilling) and backfilling/plugging the boreholes with bentonite grout to the ground surface. Soil cuttings and groundwater generated during well abandonment activities were collected into four 55-gallon drums (two drums of soil and two drums of liquids) and staged on the Property pending analytical testing and waste profiling. Two composite samples of the soil and liquid waste were analyzed for the following parameters:

- Gasoline range organics (GRO) by EPA Methods 5035 and method NWTPH-Gx;
- Diesel range organics (DRO) and heavy oil by method NWTPH-Dx;
- VOCs by EPA Methods 5035 and 8260C;
- PAHs by EPA Method 8270 selected ion monitoring (SIM); and,
- Resource Conservation and Recovery Act (RCRA) 8 metals by EPA Method 6020.

The analytical testing results determined that the waste from monitoring well abandonment was non-hazardous (**Appendix C**). As such, three drums were transported by WasteXpress and disposed of at the Waste Management Hillsboro Landfill. Monitoring well abandonment logs from OWRD's online database for the six monitoring wells are included in **Appendix D**

4.2 SOIL EXCAVATIONS

From August 1 through September 24, 2020, Stantec supervised the soil excavations at the VMF and MGP areas conducted by McDonald Excavating (McDE). At the start of excavation activities, the following site preparation activities were performed by McDE in accordance with the 2020 Expanded CMMP:

- Demarcation of work areas using traffic cones and caution tape to signal exclusion zones and restrict access by unauthorized persons;
- Installation of catch basin filter inserts in nearby catch basins to filter potentially contaminated sediment from stormwater runoff;
- Construction of a gravel apron at an existing egress point of the Property to limit track off of potentially contaminated soil (a total of 137 tons of soil and asphalt was excavated from the

construction entrance installation and decommissioning and disposed of at the Waste management Hillsboro Landfill); and,
- Abandonment of key subsurface utilities (power and water).

Excavation volumes indicated in the 2020 Expanded CMMP were approximate based on historical data. Actual excavation dimensions were determined using field observations and confirmation samples in consultation with the DEQ. A total of 2,443 tons of contaminated soil was removed from the Property including the construction entrance and the four excavation areas described in additional detail below. In each excavation area, except for the UST removal discussed in **Section 4.2.1**, confirmation sidewall samples were collected as grab samples approximately every 20 linear feet from the middle of the vertical wall or from the area of greatest observed impact based on visual and olfactory screening methods. Confirmation bottom samples were collected as composite samples with 5 aliquots per composite sample (a 5-point composite sample) representative of up to 400 square-feet. The confirmation soil samples were collected in accordance with the Master Quality Assurance Project Plan (QAPP, Stantec 2020) and analyzed for the following analytes:

- GRO by EPA Methods 5035 and method NWTPH-Gx;
- DRO and heavy oil by method NWTPH-Dx;
- VOCs by EPA Methods 5035 and 8260C;
- PAHs by EPA Method 8270 SIM; and,
- RCRA 8 metals by EPA Method 6020.

Confirmation sampling soil analytical data are presented in **Table 1**, the grab and composite sampling locations are shown on **Figures 5 and 6**, and the laboratory reports are provided in **Appendix C**. Soil excavated during the fieldwork was transported to the Hillsboro Landfill by McDE in accordance with the 2020 Expanded CMMP. The truck logs from McDE are provided in **Appendix E**. Data validation was completed for all confirmation samples collected in accordance with the QAPP. Data validation reports are included in **Appendix F**.

Upon completion of the excavation activities, McDE covered each excavation with orange-colored geotextile fabric (WevTex3200 by Kintex Industries, LLC) to demarcate the extent of the excavations and then backfilled the excavations with 3/4-inch minus crushed rock. The fill material was compacted in lifts by McDE. Results of the excavations are summarized below by excavation area.

4.2.1 UST Decommissioning - Excavation Area 1

On September 1, 2020, Stantec supervised the removal of a 10,000-gallon diesel UST associated with the former VMF by K&S Environmental, Inc. (K&S), an Oregon-licensed UST service provider. K&S was hired and managed by McDE, the general contractor hired by Prosper Portland to implement Phase 1 cleanup activities. The location of the former UST is shown on **Figure 5**. The UST was constructed of double-walled fiberglass and connected to a single dispenser by approximately 30 feet of underground fiberglass piping. The UST was previously emptied and disconnected from the dispenser by K&S in August 2020. No visual or olfactory evidence of petroleum contamination was observed in the excavation completed to a maximum depth of 14 feet bgs, and groundwater was not encountered. Four soil

samples—two from approximately 2 feet below either end of the UST at a total depth of 14 feet bgs, and one each from beneath the dispenser and piping at 3 feet bgs—were analyzed for hydrocarbon identification by method NWTPH-HCID. The sample results were non-detect. The UST was disposed of at the Hillsboro Landfill. A copy of the completed DEQ UST decommissioning forms, Portland Fire & Rescue permit, and a letter report prepared by K&S on behalf of McDE are provided as **Appendix G**.

4.2.2 VMF - Excavation Area 2

Before the VMF area pocket-in-place excavation was completed, the footprint of the former VMF was excavated to a depth of approximately 1-foot bgs. The western and central areas for pocket-in-place excavation were then surveyed and excavated to a depth of approximately 3 feet bgs. The extent of the central area excavation was enlarged to the north-northeast due to the presence of contamination observed using field screening methods. A total of 1,390 tons of contaminated soil was excavated from the VMF Area (including the UST excavation described above) and disposed of at the Waste management Hillsboro Landfill. The final excavation limits are shown on **Figure 5**.

Fifteen confirmation side wall grab samples and seven bottom composite samples were collected from the VMF area excavation. As shown in **Table 1** and **Figure 5**, one or more analytes were reported at concentrations that exceeded applicable Urban Residential RBCs or Portland Basin Background concentration (arsenic only) in the following samples by area:

North-Northeast Corner of Central Area Excavation

- VMF-SW-15-East Wall – arsenic at 9.53 mg/kg;
- VMF-SW-1-NE Corner – benzo(a)pyrene at 0.297 mg/kg, benzo(a)pyrene TEQ at 0.34 mg/kg, and arsenic at 12.1 mg/kg;
- VMF-SW-2-N. Wall – arsenic at 14.8 mg/kg;
- VMF-SW-3-N. Wall – arsenic at 14.7 mg/kg; and,
- VMF-Main-Bot-7-West (ID should have been NE instead of West) – arsenic at 9.94 mg/kg.

Southwest Corner of Central Area Excavation

- VMF-SW-7-SW Wall – benzo(a)pyrene TEQ at 0.27 mg/kg.

Western Area

- VMF-B1-SW-1-NW –arsenic at 13.0 mg/kg; and,
- VMF-B1-SW-2-NE – benzo(a)pyrene TEQ at 0.35 mg/kg and arsenic at 16.7 mg/kg.

None of the reported concentrations for benzo(a)pyrene and benzo(a)pyrene TEQ exceeded the Occupational, Construction Worker, or Excavation Worker RBCs. The sampling results indicate contaminated soils have largely been removed from the VMF to the Urban Residential standard with limited COCs remaining, primarily to the north-northeast of the two excavations extending towards the northern Property boundary. Residual contaminants detected are not volatile and would be suitable for

mitigation with a surface cap engineering control, which is a Property-wide requirement anyway according to the ROD.

4.2.3 Abandoned Tanner Creek Sewer - Excavation Area 3

The ATCS Excavation was completed as a 4.5-foot-wide trench to a depth of approximately 12 feet bgs and located approximately 12 feet from the NW 9th Avenue and NW Lovejoy Street right-of-way, as shown in **Figure 6**. The north-south section measured approximately 62 linear feet, the east-west section measured approximately 60 linear feet, and the connecting trench measured approximately 19 feet. A total of 313 tons of contaminated soil was excavated from the ATCS trench exploration excavation and disposed of at the Waste management Hillsboro Landfill.

One clay pipe orientated east-west was observed in the southern portion of the north-south section of the trench at approximately 2 feet bgs. The pipe was full of sediment and presumed to be a former stormwater drainage pipe. Two pipes orientated north-south were observed just east of the connecting trench at approximately 4 feet bgs and 6 feet bgs. These pipes were camera surveyed to determine the orientation and overall condition. The shallower pipe was 6-inches in diameter and the deeper pipe was 8-inches in diameter. The 6-inch pipe was dry with sediment and the 8-inch pipe contained black, oily sludge with a strong petroleum odor. The trench was extended to the south to further assess the 8-inch pipe, and it was found to be capped with concrete approximately 12 feet south of the east-west trench. 500 gallons of sludge within the pipe was collected (400 gallons of emulsified oil and water and 100 gallons of suspended solids) and transported to the Oil Re-refining Company (ORRCO) in Portland, Oregon for material recycling. The ORRCO waste disposal records are included in **Appendix E**. This section of pipe was removed by McDE. The other section of the 8-inch pipe extended northward approximately 12 feet and then turned 90 degrees downward, where the sewer scope could not pass. The exposed portions of the 6-inch and 8-inch pipes were capped by McDE under NW Natural and DEQ supervision, respectively. Another pipe orientated north-south was found at approximately 4 feet bgs within a brick foundation wall in the east-west portion of the trench adjacent to the MGP Excavation. A large hole was present in the pipe. No pipes suggesting connection to the ATCS were identified.

Groundwater was encountered in the trench at approximately 12 feet bgs. A sheen and small amount of free product were observed on standing water that accumulated in the base of the trench.

4.2.4 MGP - Excavation Area 4

The MGP area hot spot excavation was surveyed and excavated to a depth of approximately 3 feet bgs. The northern extent of the excavation was enlarged northward to the ATCS Excavation due to the presence of contamination (multiple PAHs, GRO, and DRO) and side wall grab sample analytical results indicating soil hot spot concentration exceedances (sample IDs MGP-SW-1-NW and MGP-SW-2-NE). A total of 603 tons of contaminated soil was excavated from the MGP Area and disposed of at the Waste management Hillsboro Landfill. The final excavation limits are shown on **Figure 6**.

Brick foundation-like features were encountered in the north, west, and southwest portions of the original excavation limits and a storm sewer lateral were encountered at approximately 2 feet bgs. Additionally, an

approximate 3-by-3-foot tar-like coated brick structure with a strong odor was encountered in the west central area of the original excavation limits at approximately 3 feet bgs. At the direction of Prosper Portland, the 3-by-3-foot brick structure was removed, and four test pits were completed to assess the extent of the tar-like substance. Impacts were evident to the maximum depth explored at 13 feet bgs in two of the test pits completed at the northwest and central areas of the original excavation limits. Groundwater was encountered at approximately 12–13 feet bgs in the northwest test pit. A sheen was observed on standing water that accumulated in the base of the test pit.

Thirteen confirmation side wall grab samples and five bottom composite samples were collected from the MGP excavation area as shown in **Table 1, Table 2,** and **Figure 6. Table 2** presents MGP Area COCs with detected concentrations that exceed applicable screening levels only.

The reported concentrations of benzo(a)pyrene and/or the calculated TEQ exceeds the hot spot cleanup level in each of bottom composite samples, except the sample from the southeast corner of the excavation (MGP-Bot-3-SE). However, direct contact RBCs and associated hot spot cleanup levels are applicable only in the depth interval 0-3 feet bgs. Only construction/excavation worker RBC exceedances are applicable at a depth between 3 and 15 feet bgs. Comparison of bottom composite sample concentrations to construction/excavation worker RBCs indicates that all samples except for sample MGP-Bot-3-SE exceed the construction worker RBC but not the excavation worker RBC for Benzo(a)pyrene and the calculated PAHs TEQ. None of the detected concentrations in bottom samples exceeded 100 times the construction/excavation worker RBCs (hot spot concentrations). Two side wall samples (MGP-SW-1-NW and MGP-SW-2-NE) exceeded hot spot cleanup levels however the MGP excavation footprint was extended, and soil represented by these two sidewall samples was excavated and disposed of offsite. Therefore, no COCs reported for the side wall samples exceeded hot spot cleanup levels. The sampling results and field observations indicate that contaminated soils remain at depth in the MGP Area but do not appear to extend laterally beyond the excavation limits.

Residual soil concentrations from sidewall and excavation bottom samples were compared to applicable volatilization to outdoor air RBCs for Urban Residential and Occupational receptors and for vapor intrusion into buildings RBCs for Urban Residential and Occupational receptors. Concentrations in confirmation soil samples indicate that benzene, naphthalene, trichloroethene (TCE), and TPH exceed applicable volatilization to outdoor air and/or vapor intrusion into buildings for Urban Residential and/or Occupational receptors in select locations with the MGP Area footprint.

4.3 CONCLUSIONS AND RECOMMENDATIONS

During the Summer and Fall of 2020, Stantec oversaw Phase 1 cleanup activities at the Property. During cleanup activities six monitoring wells were abandoned, a 10,000-gallon diesel UST was decommissioned by removal from the area near the VMF, and 2,443 tons of contaminated soil was removed from the Property and disposed of at the Waste Management Hillsboro. Excavations were completed in three primary areas of the Property and confirmation samples were collected from the VMF Area and MGP Area to determine residual soil concentrations post excavation. The three primary excavation areas are described in additional detail below.

4.3.1 VMF Area

Phase 1 cleanup activities at the VMF Area successfully removed 1,390 tons of contaminated soil and also included the removal of a 10,000-gallon diesel UST. In confirmation soil samples only benzo(a)pyrene in one sample, and the calculated TEQ for PAHS in four samples slightly exceeded the direct contact RBC for Urban Residential receptors. Arsenic also slightly exceeded the Portland Basin background concentration in seven confirmation soil samples. These residual concentrations are not considered to pose an unacceptable risk to current or likely future receptors within the VMF Area. Furthermore, residual detected contaminants in soil confirmations samples are not volatile and would be suitable for mitigation with a surface cap engineering control, which is a Property-wide requirement according to the ROD. As a result, no additional investigation or mitigation measures are recommended for the VMF Area. Demarcation fabric was installed at the base of the VMF excavation, backfilled with 3/4-inch minus crushed rock and compacted in place as a temporary cap until the next phase of Property redevelopment.

4.3.2 ATCS Area

Trenching activities were conducted along the northwest portion of the Property to investigate historical Property connections to the ATCS. No direct connections to the ATCS were observed during Phase 1 Cleanup activities although several pipe connections were identified in the investigation trench which were cut, drained, and plugged, where applicable. 500 gallons of oily sludge was removed from one decommissioned pipe and transported to ORRCO for material recycling. No additional investigation or mitigation measured associated with determining connections to the ATCS are recommended at this time. Demarcation fabric was installed at the base of the ATCS trench excavation, backfilled with 3/4-inch minus crushed rock and compacted in place as a temporary cap until the next phase of Property redevelopment.

4.3.3 MGP Area

In conducting a hot spot interim removal action, 603 tons of contaminated soil was excavated from the MGP Area and disposed of at the Waste Management Hillsboro Landfill. Confirmation soil sampling confirmed that soil containing PAHs at concentrations exceeding direct contact urban residential hot spot concentrations were successfully removed from the MGP Area during Phase 1 Cleanup Activities. Demarcation fabric was installed at the base of the MGP Area excavation, backfilled with 3/4-inch minus crushed rock and compacted in place as a temporary cap.

A comparison of confirmation soil sample testing results to potentially applicable RBCs indicate the following:

<u>Base of Excavation Soil Samples</u>

- Benzo(a)pyrene and the benzo(a)pyrene TEQ were detected at concentrations in four of five soil samples collected from the base of the excavation exceeding DEQ construction worker direct contact

RBCs. These data indicate that mitigation of soils beneath the hot spot excavation footprint remains necessary to protect construction workers during Property redevelopment.

- Benzene, naphthalene, 1,2,4-trimethylbenzene, and GRO were detected at concentrations in one or more soil samples collected from the base of the excavation at concentrations exceeding DEQ urban residential vapor intrusion into building RBCs. These data indicate that mitigation of soils beneath the hot spot excavation footprint remains necessary to protect future urban residential building occupants.
- Benzene and naphthalene were detected at concentrations in one or more soil samples collected from the base of the excavation at concentrations exceeding DEQ occupational vapor intrusion into building RBCs. These data indicate that mitigation of soils beneath the hot spot excavation footprint remains necessary to protect future occupational building occupants.

<u>Sidewall Excavation Soil Samples</u>

- One or more PAHs were detected at concentrations in eight of thirteen (includes two duplicate samples) soil samples collected from the sidewalls of the excavation exceeding DEQ urban residential direct contact RBCs. These data indicate that mitigation of soils in the MGP Area outside the excavation footprint remains necessary to protect future post-redevelopment urban residential receptors.
- One or more PAHs were detected at concentrations in four of thirteen (includes two duplicate samples) soil samples collected from the sidewalls of the excavation exceeding DEQ occupational direct contact RBCs. These data indicate that mitigation of soils in the MGP Area outside the excavation footprint remains necessary to protect future post-redevelopment occupational receptors.
- Arsenic was detected at concentrations in three of thirteen (includes two duplicate samples) soil samples collected from the sidewalls of the excavation exceeding background concentrations, and both urban residential and occupational direct contact RBCs. These data indicate that mitigation of soils in the MGP Area outside the excavation footprint remains necessary to protect future post-redevelopment urban residential and occupational receptors.
- Benzene in one sidewall soil sample and trichloroethene in two sidewall soil samples were detected at concentrations exceeding DEQ urban residential vapor intrusion into building RBCs. Benzene in one sidewall soil sample was detected at a concentration exceeding DEQ occupational vapor intrusion into building RBCs. These data indicate that mitigation of soils in the MGP Area outside the excavation footprint remains necessary to protect future urban residential and occupational building occupants.

The ROD for the Property (DEQ 2010) stipulates that:

Concurrent with redevelopment, capping of areas of where soil exceeds acceptable risk levels with a demarcation layer and a minimum of two feet of clean fill (landscape areas) or hardscape (buildings and paved areas). Cap specifications for paved/building areas to be determined in a remedial design document and subject to DEQ approval.

Capping (e.g., two feet of clean fill, hardscape, or buildings) would be an appropriate method to mitigate risk to human health associated with direct contact with soil containing contaminant concentration that exceed applicable screening values. If construction plans for the Property include excavation of soils

containing residual contaminant concentrations exceeding screening levels, consistent with the Contaminant Media Management Plan (Stantec, 2020a) these soils could be mitigated through 1) disposal at an appropriate off-Property disposal facility (e.g., solid waste landfill), or re-used on the Property provided reuse areas are capped.

The ROD for the Property (DEQ 2010) stipulates that:

Installation of a vapor mitigation system in the Pintsch Plant and Electrical Vault areas to prevent exposure to soil contamination via vapor migration, or additional investigation to demonstrate that a vapor mitigation system is not needed.

A vapor mitigation system would be an appropriate method to mitigate risk to human health associated with vapor intrusion into buildings sourced from soils and/or groundwater containing contaminant concentrations that exceed applicable screening values. Alternatively, if subgrade parking or other deep excavations are completed within the MGP Area as part of redevelopment, residual concentrations above vapor intrusion RBCs could be mitigated. Also, the ROD does allow for additional investigation as a means to demonstrate that installation of a vapor mitigation system is not necessary to protect human health. To date, both soil and groundwater samples have been collected at the Property that contain contaminant concentrations that exceed vapor intrusion into building screening values. No soil vapor sampling has been conducted at the Property. Additional investigation consisting of soil vapor sample collection in the MGP Area could result in the DEQ withdrawing its requirement for a vapor mitigation system in the MGP area as soil vapor concentration data is considered a more reliable indicator of risk than either soil or groundwater data. Additional investigation consisting of soil vapor sample collection might also, if soil vapor screening values are exceeded, confirm the need for a vapor mitigation system.

5.0 CLOSING

Stantec appreciates the opportunity to work with Prosper Portland on this cleanup project. Any questions or comments regarding the information presented in this report should be directed to the undersigned at (503) 273-0071.

Regards,

Stantec Consulting Services Inc.

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February 1, 2013

Ms. Nancy Katyl
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

RE: Transmittal of Remedial Excavation Implementation Report
PG&E Treat Avenue Parking Lot
401 Treat Avenue
San Francisco, California

Dear Ms. Katyl:

Pacific Gas & Electric Company (PG&E) is pleased to present the attached *Remedial Excavation Implementation Report* prepared by Stantec Consulting Services Inc.

If you have any questions regarding this document, please contact me at (925) 415-6381, or Neil Doran (Stantec project manager) at (916) 384-0722.

Sincerely,

Anne Conner

Anne Conner
Sr. Project Manager
PG&E Environmental Remediation

Enclosure

Remedial Excavation Implementation Report PG&E Treat Avenue Parking Lot

401 Treat Avenue
San Francisco, California
Stantec PN: 185702610

February 1, 2013

Limitations and Certifications

This report was prepared in accordance with the scope of work outlined in Stantec's contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of Pacific Gas and Electric Company and the Regional Water Quality Control Board. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

Prepared by:

Tristan Rhodes
Geologic Project Specialist

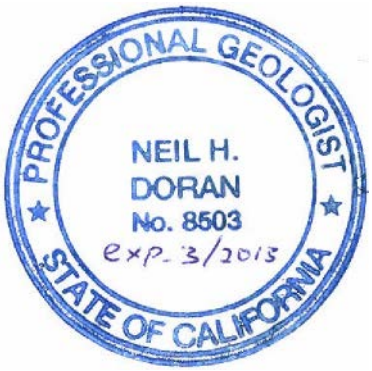
Reviewed by:

Neil Doran, P.G.
Senior Geologist

Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

Licensed Reviewer:

Neil Doran, P.G., #8503
Senior Geologist



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List of Abbreviations and Acronyms

ASTM	American Society for Testing and Materials
BAAQMD	Bay Area Air Quality Management District
bgs	below ground surface
BMP	best management practice
BTI	BTI, Inc.
Cal/EPA	California Environmental Protection Agency
Calscience	Calscience Environmental Laboratories, Inc.
CCR	California Code of Regulations
CFR	Code of Federal Regulations
COC	chemical of concern
Cornerstone	Cornerstone Environmental Contractors, Inc.
CT	carbon tetrachloride
CY	cubic yard
e.g.,	exempli gratia, meaning “for example” (Latin)
EHD	Environmental Health Department
EPA	Environmental Protection Agency
ESL	environmental screening level
EVO	emulsified vegetable oil
HASP	Health and Safety Plan
HERD	Human and Ecological Risk Division
HI	hazard index
i.e.,	id est, meaning “that is” (Latin)
J&E	Johnson and Ettinger
LRL	laboratory reporting limit
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic meter
NCM	NCM Demolition and Remediation, LP.
NES	NES, Inc.
PCE	tetrachloroethene
PG&E	Pacific Gas and Electric Company
PID	photoionization detector
ppm	part per million
RAO	remedial action objective
RWQCB	Regional Water Quality Control Board
Stantec	Stantec Consulting Services Inc.
SWRCB	State Water Resources Control Board
TCE	trichloroethene

List of Abbreviations and Acronyms - continued

TestAmerica	TestAmerica Laboratories, Inc.
$\mu g/m^3$	microgram per cubic meter
VOC	volatile organic compound

1.0 Introduction

Stantec Consulting Services Inc. (Stantec), on behalf of Pacific Gas and Electric Company (PG&E), has prepared this report documenting remedial excavation activities at the PG&E Treat Avenue parking lot located at 401 Treat Avenue San Francisco, California (the Site; see Figure 1). In November/December 2012, Stantec oversaw excavation and removal of approximately 1,200 cubic yards (CY; 2,093 tons) of chemically-impacted soils. The proposed scope of work was presented in Stantec's document entitled, *"Remedial Excavation Work Plan,"* (Work Plan) dated January 23, 2012, and approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in correspondence dated April 24, 2012.

2.0 Background

The 1.7-acre site is located between 17th and 18th Streets and between Treat Avenue and Harrison Street in San Francisco, California (see Figure 1) and is used as a parking lot for employees of PG&E's San Francisco Service Center, which is located immediately to the south across 18th Street. PG&E purchased the site from Southern Pacific Transportation Company in approximately 1986, and has used it as a parking lot since that time.

Previous environmental investigations identified volatile organic compounds (VOCs) in soil, soil gas, and shallow groundwater beneath portions of the Site, most notably carbon tetrachloride (CT), chloroform, and trichloroethene (TCE). A zone of VOC-impacted soil and groundwater was identified in the central portion of the Site. Subsequent soil gas sampling identified VOCs in soil gas above Environmental Screening Levels (ESLs), risk-based screening levels used by the San Francisco Bay RWQCB.

During a meeting held with the RWQCB on December 6, 2010, PG&E and RWQCB staff agreed that excavation to remove VOC-impacted soils would be an appropriate remedial measure for the Site. Due to widespread regional degradation associated with the Site's urbanized setting, shallow groundwater is not currently used as a drinking water resource and is not anticipated to be considered appropriate as a drinking water resource in the reasonably foreseeable future.

3.0 Remedial Action Objectives and Goals

As presented in the Work Plan, remedial action objectives (RAOs) for the Site were established to protect human health and the environment, and to allow for potential future unrestricted use of the Site. Specifically, the RAOs are to:

- Prevent human incidental ingestion and direct dermal contact with contaminants in subsurface soil that pose a cumulative excess cancer risk for all carcinogens greater than 10^{-6} or a cumulative hazard index (HI) greater than 1.0 for all non-carcinogens; and,

- Prevent human inhalation of VOCs diffusing from subsurface soil vapor to indoor air that pose a cumulative excess cancer risk for all carcinogens greater than 10^{-6} or a cumulative HI greater than 1.0 for all non-carcinogens.

Because groundwater underlying the Site is not currently used for drinking water, groundwater ingestion is not considered a complete, direct exposure pathway. However, because VOCs in groundwater may subsequently volatilize and diffuse into indoor air, reducing concentrations of VOCs in groundwater to levels that are protective of the vapor intrusion pathway is a remedial objective.

Site-related chemicals of concern (COCs) were identified by comparing soil, soil gas, and groundwater chemical data to residential ESLs established by the RWQCB. These health-based screening levels are based on residential land use, and as such, are also protective of other less sensitive land uses (*e.g.,* recreational or commercial/industrial).

Based on comparison of Site data to ESLs, the following Site-related COCs were identified:

- CT and chloroform in soil;
- CT and TCE in groundwater; and,
- CT, chloroform, tetrachloroethene (PCE), and TCE in soil gas.

The Work Plan presented numerical remedial action goals for COCs in soil to meet the RAOs. As specified in the Work Plan, the limits of excavation were defined by the pre-excavation soil data set, and therefore, confirmation soil sampling was not performed. Residential ESLs for shallow (<3 meters) and deep (>3 meters) soils were adopted as soil remedial action goals, as summarized in the following table.

Chemical	Remedial Action Goal (mg/kg)
Carbon Tetrachloride	0.020 (<3 meters) and 1.9 (>3 meters)
Chloroform	0.68 (<3 meters) and 9.8 (>3 meters)

mg/kg = milligrams per kilogram

Remedial action goals were not developed for soil gas or groundwater. The human health risk posed by potential vapor intrusion into future buildings constructed at the Site will be evaluated using post-remediation soil gas data and the Johnson and Ettinger (J&E) model modified by the California Environmental Protection Agency (Cal/EPA) Human and Ecological Risk Division (HERD). As volatilization of VOCs from groundwater into indoor air is the only applicable exposure pathway for shallow groundwater, achievement of groundwater RAOs will also be based on soil gas data and J&E modeling. Post-remediation vapor sampling is described elsewhere in this document.

4.0 Remedial Excavation

The details of the remedial excavation conducted in November/December 2012 are presented in the following sections. Excavation and related activities were performed by Cornerstone Environmental Contractors, Inc. (Cornerstone), and overseen by Stantec.

4.1 PRELIMINARY ACTIVITIES

Stantec and/or Cornerstone completed the preliminary activities described below:

- Abandoned monitoring well MW-3 by pressure grouting, under permit from the City and County of San Francisco Environmental Health Department (EHD), and completed a State Water Resources Control Board (SWRCB) well destruction form. Copies of the permit and well destruction form are attached as Appendix A.
- Marked the excavation area in white paint, and notified Underground Service Alert approximately one week before excavation to allow member utilities to respond to the work notification.
- Prepared a Site-specific Health and Safety Plan (HASP) in accordance with state and federal standards for Hazardous Waste Operations and Emergency Response, California Code of Regulations (CCR), Title 8, Section 5192; 29 Code of Federal Regulations (CFR) 1910.120.
- Obtained permits from the City of San Francisco Building Department and Department of Public Works (attached as Appendix A).
- Notified RWQCB staff of pending excavation activities.
- Provided pre-project notification to the Bay Area Air Quality Management District (BAAQMD) in accordance with agency regulations.
- Notified adjacent property owners of the pending work and distributed a formal work notice to nearby tenants.
- Prepared and positioned meteorological and dust monitoring equipment to be operated during work activities, with controls to be used as appropriate to minimize any impacts to existing facilities, on-Site workers, and the public.
- Sealed the balconies of several residential balconies located at 2130 Harrison Street.

4.2 TRUCK INSPECTIONS

Haul trucks operated by BTI, Inc. (BTI) were staged at PG&E's Hunter's Point facility, approximately 3 miles southeast of the Site. Pre-haul inspection of six trucks operated by BTI was performed on November 16, 2012, by NES, Inc. (NES) at the Hunter's Point staging area. One truck was found to have defective turn signals and was taken out of service for repair. The truck inspection report is attached as Appendix B.

4.3 RESIDENTIAL BALCONY CONTAINMENT

Prior to beginning excavation activities, several residents of the adjacent residential property at 2130 Harrison Street requested that their balconies be sealed during the project. Stantec contracted with NCM Demolition and Remediation, LP (NCM) to seal the balconies using plastic sheeting installed over wooden frames. The work was performed on November 13 and 14, 2012.

4.4 DUST AND VAPOR MITIGATION MEASURES

Stantec and Cornerstone employed best management practices (BMPs) to control generation of dust and volatile vapors during excavation, loading, and backfilling operations. The area exposed for excavation was minimized so that only the portion being actively excavated was exposed, and trucks were loaded on the asphalt parking lot surface to minimize dust and track-out of material. Water was kept at the ready to apply as necessary to soils being excavated and loaded, and an odor control agent was kept on hand for immediate deployment as necessary. Soil stockpiles were stored on and beneath plastic, and the excavation was completely covered with plastic at the end of each work day. These practices, in conjunction with a moist sandy soil type and humid weather conditions resulted in no visible dust or noxious vapors being observed or recorded during Site operations.

4.5 EXCAVATION AND REMOVAL OF SOILS

Excavation and removal of soils was completed between November 14 and December 11, 2012, by Cornerstone working under supervision of Stantec staff. The site layout and excavation limits are illustrated on Figure 2. Prior to excavation, Cornerstone installed barrier fabric along the fence line surrounding the Site, and placed protective steel plates or diversion barriers over storm drains. Soils were excavated using a track-mounted excavator and loaded directly into end-dump trucks operated by BTI.

Excavation sidewalls were benched at a slope of 1:1 to ensure sidewall stability, and overburden soils were stockpiled separately for characterization and reuse. Stockpiled soil was placed on and beneath 10-mil plastic sheeting, surrounded with fiber rolls and secured with sandbags and/or other anchoring devices. During excavation activities, the open excavation was surrounded by traffic delineators and caution tape, and ingress and egress corridors to Harrison Street were established. The Site setup and workflow during excavation activities are illustrated on Figure 3.

The excavation proceeded in staggered phases, whereby clean overburden soils were initially removed and stockpiled, followed by direct loading and removal of VOC-impacted soil. At the end of each day, the excavation was covered with 10-mil plastic sheeting and anchored with sandbags, surrounded with fiber rolls, traffic delineators and caution tape, and the gates to the Site were locked. Security personnel were present at the Site during nights and weekends.

Using chemical data obtained during previous investigations, soil was pre-profiled for disposal at Republic Services' Ox Mountain Landfill in Half Moon Bay, California as Class II nonhazardous waste. Soils were removed via 85 truckloads over four days. During the work, appropriate signage was placed along Harrison Street and 17th Street warning motorists of trucks entering and exiting the roadway, and entry and egress to and from the Site was assisted by two groups of flaggers. Weight tags and waste manifests for approximately 2,090 tons of soil removed are attached as Appendix C. A photographic log documenting the progress of the excavation is attached as Appendix D.

4.6 WASTEWATER MANAGEMENT

During rain events, work was stopped and the excavation was covered with 10-mil plastic sheeting so that rain water collected in a corner of the excavation. Collected rainwater was pumped into one of two 10,000-gallon holding tanks supplied by BTI. Due to the slow infiltration of groundwater at approximately below 8 feet below ground surface (bgs), some pumping occurred after the 10-mil plastic sheeting was removed from the excavation. Over the course of the remediation project, approximately 25,000 gallons of water was pumped from the excavation. Water removed from the excavation was transported from the Site by Asbury Environmental Services and disposed of as non-hazardous liquid waste at Seaport Environmental in Redwood City, California. Water waste manifests are attached as Appendix C.

4.7 APPLICATION OF CARBON SUBSTRATE

Upon completing the soil-removal phase of the excavation, Stantec applied a carbon substrate to the deepest part of the excavation which is in communication with the first-encountered water-bearing zone, in order to stimulate reductive dechlorination of VOCs in groundwater. The carbon substrate consists of emulsified vegetable oil (EVO, trade name LactOil™). LactOil™ soy micro emulsion is a stable, self-emulsifying, blended substrate for the remediation of chlorinated solvents, metals, and perchlorates. LactOil™ contains 80 percent fermentable carbon in the form of ethyl lactate (readily soluble substrate) and emulsified soybean oil (slow soluble substrate). LactOil™ is designed to combine the hydrogen donor properties of readily soluble carbon substrates with enhanced longevity of emulsified vegetable oil products.

Prior to the application of LactOil™, 1.5-inch drain rock was placed in the deepest part of the excavation in order to bridge over the groundwater that had collected. Once freeboard of the drain rock was observed over the static water level, 110 gallons of LactOil were mixed with 400 gallons of potable water, and the solution was evenly distributed over the drain rock. After adding the LactOil™, the drain rock was covered with landscaping fabric and prior to backfilling with imported fill material.

4.8 CHARACTERIZATION AND REUSE OF OVERBURDEN SOILS

Approximately 320 CY of overburden soils were removed during benching of the excavation. These soils were screened for reuse as backfill material by collecting one 4-point composite sample per 250 CY of material (two 4-point composite samples in total). Samples were collected by a Stantec geologist into laboratory-supplied glassware and stored on ice pending transport to Calscience Environmental Laboratories, Inc. (Calscience) or TestAmerica Laboratories, Inc. (TestAmerica) for analysis of CT and chloroform by Environmental Protection Agency (EPA) Method 8260B. No constituents were detected above laboratory reporting limits (LRLs), and reporting limits were sufficiently below the remedial action goals for CT and chloroform in soil. Laboratory analytical results are presented in Table 1, and laboratory analytical reports are attached as Appendix E.

4.9 AIR MONITORING

Continuous air monitoring was conducted during remediation to ensure that conditions were protective of Site workers and the public. The air monitoring plan presented as Appendix C of the Work Plan stipulated the following air monitoring goals:

- Volatile emissions at the Site boundary would not exceed daily background, as determined by four consecutive measurements obtained at the beginning of each work day;
- Volatile emissions in the work zone would not exceed 10 parts per million (ppm). This level was adjusted downward to 5 ppm, as documented in the Site-specific HASP; and,
- Particulate emissions classified as 10 microns (PM10) would not exceed 1 microgram per cubic meter ($\mu g/m^3$) at the Site perimeter. The Work Plan stated that this level may be adjusted upwards based on background PM10 concentrations.

BAAQMD from a nearby monitoring station located on Arkansas Street revealed background particulate concentrations in 2011 averaged 19.5 $\mu g/m^3$ with a high of 45.6 $\mu g/m^3$. Background particulate monitoring conducted at the Site by Stantec reported ambient concentrations consistent with this range. Based on this evaluation, Stantec used the upper range of reported background concentrations (45.6 $\mu g/m^3$) as the point of compliance at the Site perimeter. Stantec also conducted daily background PM10 measurements before the start of activities each day. If measured background particulate concentrations exceeded 45.6 $\mu g/m^3$, the daily compliance goal was adjusted accordingly. This modification to the Work Plan was detailed in electronic correspondence to the RWQCB dated November 15, 2012.

Stantec erected three air monitoring stations: 1) the western station adjacent to Treat Avenue; 2) the eastern station adjacent to Harrison Street; and 3) the southern station at the southern property boundary. Air monitoring station locations are illustrated on Figure 3. Air monitoring equipment consisted of Thermo ADR-1200S dust monitors and Thermo 580B photoionization detectors (PIDs) equipped with 11.8 electron volt lamps. Because the 'west' station was deemed to be an upwind location based on predominantly western wind direction, this station was not monitored for volatile organic vapors. Dust monitors were fitted with omnidirectional heated influent ports to minimize interference due to moisture, and the pumps drew air at a constant rate of 2 liters per minute. All air monitoring equipment was calibrated prior to the start of work each day in accordance with manufacturer specifications.

Instantaneous and time-weighted accrued-average concentrations were recorded every 15 minutes, beginning at least 0.5 hour prior to the start of work to establish background levels each day. As described above, daily background particulate monitoring was performed to determine if background concentrations of PM10 were higher than the local background value of 0.046 milligrams per cubic meter (mg/m^3). Daily background concentrations exceeding 0.046 mg/m^3 were measured on November 15 (0.082 mg/m^3), November 26 (0.103 mg/m^3), November 27 (0.117 mg/m^3), and December 11 (0.069 mg/m^3). On these days, the measured background concentrations were used as the compliance levels at the Site perimeter.

Daily perimeter air monitoring results for PM10 and VOCs are illustrated on charts attached as Appendix F. Periodic peaks in PM10 concentrations above daily background were observed and attributed to specific Site activities (*i.e.,* the positioning of trucks near monitoring stations) or unrelated offsite activities (*i.e.,* the presence of a leaf-blower along the sidewalk adjacent to a monitoring station). Where such causal relationships were observed, the charts include this information. Background VOC concentrations were consistently at 0 ppm, and this level was established as the compliance point for the Site perimeter.

During no part of the excavation were sustained concentrations of PM10 concentrations above background observed, and no visible dust was observed during excavation or loading of material. Concentrations of volatile vapors were typically at 0 ppm, consistent with daily measured background.

4.10 BACKFILLING AND SITE RESTORATION

Backfill materials consisted of 1.5-inch drain rock to 6 feet bgs, followed by overburden soils and quarry fines supplied by Stevens Creek Quarry in Cupertino, California to 1-foot bgs. The top foot consisted of base rock capped with 3 to 4 inches of asphalt. Backfill materials between 6 feet bgs and final grade were placed in 1-foot lifts, and compacted to 90 percent or greater relative compaction. The final 1-foot layer of base rock was compacted to at least 95 percent relative compaction. Compaction testing was performed by Emery Smith San Francisco using the Modified Proctor method (American Society for Testing and Materials [ASTM] standard D1557). Compaction testing forms are included as Appendix G.

Upon completion of the asphalt cap, the surface was pressure washed and re-striped for parking lot use.

5.0 Post-Remediation Monitoring and Effectiveness Evaluation

Post-remediation soil gas sampling and analysis will be conducted to confirm that the remedial excavation has achieved the RAOs stipulated in the Work Plan. Stantec proposes collecting soil gas data approximately six and twelve months following the excavation (June and December 2013, respectively). Two soil gas probes will be installed within the former excavation and two probes will be installed at locations just outside the excavation to evaluate variability of soil gas conditions within and outside the former excavation. The probes will be completed similarly to existing probes at the Site, with the vapor implant installed at 5 feet bgs. An additional soil gas sample will be collected from SG-9C, in the vicinity of well MW-1. In December 2013, groundwater samples will be collected from existing wells MW-1 and MW-2 and a grab groundwater sample will be collected from within the excavation limits to evaluate the effectiveness of the carbon substrate in accelerating the breakdown of chlorinated hydrocarbons in groundwater. Soil gas samples will be analyzed for VOCs using EPA Method TO-15, and groundwater samples will be analyzed for VOCs using EPA Method 8260B.

Soil gas data will be input into the J&E model modified by the Cal/EPA HERD to assess human health risks posed by potential vapor intrusion into future buildings constructed on the Site. The J&E modeling results will be used to evaluate whether the RAOs for soil gas and groundwater have been met. The groundwater results will also be used to assess the effectiveness of enhanced reductive dechlorination in reducing VOCs in groundwater, and thus reducing VOC flux from groundwater into overlying soil gas.

A report documenting the post-remediation monitoring and effectiveness evaluation will be presented to the RWQCB in December 2013.

6.0 Conclusions

Approximately 2,000 tons of VOC-impacted soil was removed during remedial excavation activities at the Site. The soil removal action was successful in removing soils containing VOCs at concentrations exceeding the remediation goals. Accordingly, the remedial action achieved the objective of eliminating human incidental ingestion and direct dermal contact exposure pathways associated with current and potential future Site occupants. Soil gas sampling and analysis data will be used to confirm that potential vapor intrusion risk from volatile subsurface vapors has been successfully mitigated.

Pesticide-Impacted Soil Management Report

The Vale Development Project
915 DeGuigne Drive
Sunnyvale, California
Stantec PN: 185703308

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June 21, 2017

Limitations and Certifications

This report was prepared in accordance with the scope of work and Master Services Agreement between Stantec and LS-Sunnyvale LLC. The opinions expressed and data collected are based on the conditions of the Site existing at the time of the field investigation. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third-party information, but Stantec cannot guarantee the completeness or accuracy of this information. Except as set forth in the Master Services Agreement, no other warranties, expressed or implied are made by Stantec.

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Information, conclusions, and recommendations provided by Stantec in this document have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.

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Appendix D UST Removal Documentation

Abbreviations and Acronyms

a-BHC	a-Hexachlorocyclohexane
AMD	Advanced Micro Devices
bgs	below ground surface
City	City of Sunnyvale
COA	Conditions of Approval
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
EPA	United Stated Environmental Protection Agency
ESL	environmental screening level
GETS	groundwater extraction and treatment system
HASP	Health and Safety Plan
i.e.	id est, meaning “that is” (Latin)
MDR	Mini Data Ram
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic meter
MMRP	Mitigation Measures Response Plan
OCP	organochlorine pesticide
OCP-SMA	organochlorine pesticide soil management area
Order	Water Board Order No. 91-101
PSMP	Pesticide Soil Management Plan
PSMR	Pesticide Soil Management Report
Proposition 65	California’s Safe Drinking Water and Toxic Enforcement Act of 1986
SDC	Submicron Development Center
SHL	safe harbor level
SMA	Soil Management Area
SMP	Soil Management Plan
SRP	Soil Remediation Plan
Stantec	Stantec Consulting Services Inc.
T&R	Treadwell & Rollo
UST	underground storage tank
VOC	volatile organic compound
Water Board	Regional Water Quality Control Board

1.0 INTRODUCTION AND BACKGROUND

Stantec Consulting Services Inc. (Stantec) has prepared this *Pesticide-Impacted Soil Management Report* (PSMR) on behalf of LS-Sunnyvale LLC to document organochloride pesticide (OCP)-impacted soil management activities completed at the former property located at 915 DeGuigne Drive and former adjacent properties located at 943 DeGuigne Drive and 936 E Duane Avenue in Sunnyvale, California (see Figure 1; collectively referred to as the Vale Development Project or the Site and separately identified as 915 DeGuigne, 943 DeGuigne, and 936 E Duane). The work presented in this report was conducted on behalf of LS-Sunnyvale LLC and in accordance with the *Pesticide-Impacted Soil Management Plan (*PSMP), dated July 1, 2016 (PSMP; Stantec 2016). The PSMP was prepared under the direction of the San Francisco Bay Regional Water Quality Control Board (Water Board) as proposed within the Mitigation, Monitoring or Reporting Program section of the Recommended Conditions of Approval and Standard Development Requirements dated December 14, 2015 [COA/MMRP] in order to address the handling of OCP-impacted soil during Site redevelopment. Soil handling and mitigation measures taken align with those identified in the MMRP for the proposed redevelopment project. The MMRP identified 915 DeGuigne and adjacent property 943 DeGuigne as Parcel 1 and 936 E Duane as Parcel 2 (Park Site). Under the proposed redevelopment plan, Parcel 1 will be developed as residential housing and Parcel 2 will be developed as a public park (Park Site), which will be donated to the City of Sunnyvale. Implementation of the PSMP was conducted during the demolition phase of the redevelopment.

The PSMP was developed in accordance with MMRP to adapt the approved Soil Management Plan (SMP; approved by the Water Board on October 3, 2014) to specifically address the handling of OCP-impacted soil. After implementation of the PSMP, the SMP will be amended with an updated map documenting the location of the buried OCP-impacted soil for inclusion in the land covenant. With this report, the PSMP will be complete and the SMP will endure as the document providing the guidelines for all future soil excavation activities at the Site.

This PSMR presents a summary of the on-site soil management activities conducted for the OCP-impacted soil. As further described in Section 1.3.2 of this report, the PSMR Soil Remediation Areas include: (1) OCP-impacted Soil Management Areas (OCP-SMAs) identified in the PSMP, (2) OCP-impacted soil from the Relocated Groundwater and Extraction Treatment System (GETS) and (3) the upper 2 feet of soil from the Park Site. Following the approved PSMP and Soil Remediation Plan (SRP), these soils were placed under certain building foundations on Parcel 1 (OCP Burial Areas, further described in Section 4.4 of this report). The PSMP directed OCP-impacted soil to be placed 5 feet above groundwater and 2 feet below final grade in landscaped areas and directly beneath building foundations. The SRP identified all building foundations as potential areas for placement of OCP-impacted soil (approximately one foot inside the edge of the building footprint).

The following appendices are included in this report:

- Appendix A Grading Permit (Soil Remediation)
- Appendix B Photographic Summary
- Appendix C Laboratory Analytical Reports for Park Site Soil MIS and Discrete Confirmation Samples
- Appendix D UST Removal Documentation

1.1 PESTICIDES MANAGEMENT OBJECTIVES AND APPLICABILITY

Implementation of the PSMP was conducted to address OCP-impacted soil only and to meet the following objectives:

- Adhere to guidelines for appropriate health and safety precautions for the planned on-site construction or maintenance workers who may access soil or be exposed to soil that could contain residual OCPs;

- Adhere to procedures for short-term (i.e., during construction activities) and long-term management of residual chemical constituents present in soil at the Site;

- Render the portion of the Site to be used for a public park safe for the public park purpose and to meet City of Sunnyvale Park Standards; and

- Render the remainder of the Site to be used for residential purposes safe for residential use and occupancy.

The PSMP was available to contractors during remediation activities to address potential chemical exposure or environmental issues associated with construction and maintenance activities that involve soil disturbance. This PSMR does not cover demolition and decommissioning of the existing structures.

1.2 SITE DESCRIPTION AND USE HISTORY

The Site encompasses approximately 25.9 acres of land previously occupied by four commercial and industrial buildings (totaling approximately 400,000 square feet of space), parking areas, and landscaping (Treadwell & Rollo [T&R] 2011a). During OCP soil management activities, buildings, parking areas, and dewatering systems had been either recently demolished, were being prepared for demolition, or were in the process of being removed or relocated. Debris from demolished buildings, parking areas, and landscaping were stockpiled for break-down and loading for off-site recycling or disposal that took place concurrently with OCP soil management activities.

The Site was previously occupied by two large low-rise buildings, connected by a hallway at the 915 DeGuigne address, including: the former AMD (Advanced Micro Devices) 915 DeGuigne Drive main building (the larger building with an east-west orientation) and the former AMD Submicron Development Center (SDC) building on the southwest portion of the Site. The remainder of 915 DeGuigne consisted of paved parking areas and landscaping. A small warehouse building occupied 943 DeGuigne and a commercial building and surrounding parking area occupied 936 E Duane.

Prior to the construction of the 915 DeGuigne building in 1974, the Site was primarily used for agricultural purposes (T&R 2011a). From 1974 to 2003, AMD utilized 915 DeGuigne as a semiconductor fabrication and research development facility. In 2003, AMD transferred ownership of 915 and 943 DeGuigne to FASL LLC, a joint venture of Fujitsu and AMD. In December 2005, FASL LLC became Spansion, Inc. (Spansion), a corporation specializing in flash memory devices (EPA 2009). In approximately 1991, the SDC building was built and used for flash memory manufacturing until 2009 when it and 915 and 943 DeGuigne were decommissioned (T&R 2011a).

The former 943 DeGuigne warehouse building was previously utilized for new chemical storage for Spansion and AMD. The 936 E Duane Avenue property was formerly used by Sandis, Inc., a geotechnical engineering and survey company until mid-2015.

The western and eastern portions of the 915 DeGuigne building previously had basement dewatering systems which consisted of a gravel layer that was drained by a network of 4-inch perforated polyvinyl chloride pipes terminating at five basement dewatering sumps. The dewatering system extended to approximately 14 feet below ground surface (bgs; Engineering Science 1988), intercepting groundwater within the shallow (A-zone) hydrogeologic unit.

As part of the site redevelopment, prior to LS-Sunnyvale LLC purchasing the property, Watt Investments @ Sunnyvale LLC (per the remediation agreement with AMD) relocated the existing GETS to the northwestern corner of the Site and installed 12 new groundwater extraction wells along East Duane Avenue (see Figure 2 and the Final GETS Relocation Report dated August 29, 2016, prepared by Stantec). AMD owns and is responsible for operation and maintenance of the relocated GETS. Extracted groundwater is treated on-site using granular activated carbon prior to being discharged under a National Pollutant Discharge Elimination System permit. The previous network of 41 groundwater monitoring wells was decommissioned (some wells were preserved for use after grading) and a network of new monitoring wells will be installed upon completion of final grading as described in the Well Destruction and Installation Work Plan prepared by Stantec (dated June 30, 2016, and approved by the Water Board on July 1, 2016). The new well network will be used to monitor volatile organic compounds (VOCs) in groundwater.

1.3 ORGANOCHLORINE PESTICIDES IN SOIL

The following sections summarize pertinent historical investigations, describe the previous extent of OCPs in soil, and presents the screening criteria for OCP concentrations in soil.

1.3.1 Summary of Historical Investigations

Environmental investigations conducted at the Site since 1981 have identified the presence of OCPs in shallow soils beneath the three parcels. Additional information regarding investigation and remediation activities performed to date can be found at the Site's GeoTracker website and in the Water Board's hard copy files. Results of historical investigations of OCPs in soil are summarized below.

In November 2011, T&R collected soil samples at 25 locations across the 915 DeGuigne Site for analysis of OCPs. Samples at each location were collected at depths between 1.5 and 3 feet bgs. Dieldrin, a-Hexachlorocyclohexane (a-BHC), and p,p-Dichlorodiphenyldichloroethylene (p,p-DDE) were detected in 9 of 75 samples at concentrations exceeding their respective Residential Environmental Screening Levels (ESLs; Water Board 2013). Concentrations of dieldrin, p,p-DDE, and a-BHC ranged from below laboratory reporting limits to 0.15, 3.2, and 0.097 milligrams per kilogram (mg/kg), respectively. Concentrations exceeding Residential ESLs were reported in samples collected from 1.5 and 2 feet bgs and were distributed across the Site. Concentrations of OCPs did not exceed Residential ESLs in samples collected from 3 feet bgs (T&R 2011b).

In April 2013, an investigation of shallow soil was conducted by Ground Zero Analysis, Inc. on behalf of the City of Sunnyvale as part of previous proposed redevelopment plans that included the dedication of approximately 5.8 acres of the Site to the City of Sunnyvale as a public park. Twelve soil borings were advanced at locations within the parcel associated with 943 DeGuigne and an adjacent portion of 915 DeGuigne. Samples were collected from the upper 2 feet of native soil. Low concentrations of dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), dichlorodiphenyltrichloroethane (DDT), dieldrin, and endrin were detected in each of the shallow soil samples. Dieldrin was the only OCP to exceed Residential ESLs. Concentrations of dieldrin exceeded the screening level of 0.034 mg/kg in 3 of 12 samples collected between 0.5 and 1 feet bgs; concentrations in samples from 1.25 to 2 feet bgs did not exceed Residential ESLs.

In November 2013, ENGEO Inc. (ENGEO) advanced18 soil borings at locations across the 915 and 943 DeGuigne sites to evaluate OCPs in near-surface soils. The maximum reported concentrations of DDE and dieldrin were 0.35 and 0.031 mg/kg, respectively (ENGEO 2013) with none of the samples exceeding Residential ESLs.

Compiling all historical analytical results, OCPs were reported at concentrations above Residential ESLs in only 12 of 147 samples collected from the upper 2 feet bgs across the entire site. The low concentrations observed in shallow soil are representative of standard historical agricultural practices.

In July 2014, ENGEO completed a Phase II site assessment of the 936 E Duane property which included advancing soil borings at four locations for collection of soil samples at two intervals (0 to 12 inches and 18 to 30 inches) for characterization of OCPs. Five of the eight soil samples reported concentrations of OCPs. Only dieldrin (0.052 mg/kg) from one sample collected between 0 and 12 inches exceeded Residential ESLs.

In January 2015, Stantec completed an evaluation of three soil samples for OCPs from 0 to 6 inches in the former Pacific Gas and Electric substation on the southwest corner of Parcel 1. No OCPs were detected above Residential ESLs at any of the sample locations. More details of the soil chemical data and sample location maps associated with historical investigations can be found in the PSMP.

1.3.2 PSMR Soil Remediation Areas

The remediation areas identified in this PSMR include the following:

1. OCP-SMAs (upper 2 feet) – The second of the two soil excavation areas identified in Section 7.3.1 of the PSMP was soil from the upper 2 feet of the OCP-SMAs in Parcel 1. Final delineation of OCP-SMAs correspond to areas proposed for excavation as identified in the PSMP and illustrated on Figure 2 with seven blue rectangles (2 rectangles are adjacent to each other and appear as one large OCP-SMA) and one brown square. All of this soil was placed within the identified OCP Burial Areas.

2. Relocated GETS Soil – As referenced in Section 3.2 of the PSMP, soil from a narrow approximately 20-foot-wide strip along the northern property boundary adjacent to East Duane Avenue was excavated to 2 feet bgs prior to installation of the new groundwater extraction system. This excavation was documented in the GETS Relocation Phase 1 Report dated December 15, 2015 (Stantec 2015). Approximately 4,200 cubic yards was stockpiled on the 915 DeGuigne Avenue site (Parcel 1). Approximately 70 cubic yards that tested below residential ESLs was used to form the pad for the GETS foundation. Although testing indicated approximately 2,200 cubic yards of the remaining soil had OCP concentrations above residential ESLs and below commercial ESLs, all of the stockpiled soil was placed within the identified OCP Burial Areas.

3. Park Site Soil (upper 2 feet) – The first of the two soil excavation areas identified in Section 7.3.1 of the PSMP was soil from the upper 2 feet of the 936 E Duane Avenue site (Parcel 2). This soil was to be removed and stockpiled on Parcel 1. All of this soil was placed within the identified OCP Burial Areas.

Regarding Item 1 (OCP-SMAs) above, in February 2016, Stantec proposed to the Water Board conducting further delineation of the lateral and vertical extent of the OCP-SMAs by collecting soil samples 20 feet north, south, east, and west of the observed historical OCP exceedance locations at depths of 0 to 0.5 feet, 1 foot, and 2 feet. At that time, the Water Board also requested sampling at additional infill locations identified as PIF-1, PIF-3, PIF-4, and PIF-5 shown on Figure 2.

- Stantec conducted soil sampling March 23, 2016 and April 14, 2016, stepping out from the original OCP exceedances that defined the center of each of the eight rectangles shown on Figure 2. Soil samples were collected with hand augers and submitted under chain-of-custody to Curtis and Tompkins Ltd. for analysis of OCPs. If the initial 20-foot step-out location exceeded the Residential ESL, another sample was collected 5 feet further in the same direction (east, west, north, or south). If that sample exceeded the Residential ESLs, subsequent samples were collected until none of the depth discrete samples exceeded the Residential ESL. The results of the step-out sampling locations are shown on Figure 2. Details of the step-out sample results, number of step outs, and select soil analytical laboratory data are included in the PSMP (Stantec 2016).

- Excavation boundaries were fully delineated including the depth of excavation prior to soil management activities. Figure 2 illustrates the OCP-SMAs with seven blue rectangles indicating OCPs impacted to a depth of 1.5 feet with a proposed excavation depth of 2 feet bgs and one brown square indicating OCPs impacted to a depth of 2 feet with a proposed excavation depth of 2.5 feet bgs. On Parcel 1, excavations in the OCP-SMAs were extended to the lateral and vertical point at which a location was identified where OCP concentrations in all depth discrete samples were below or at the Residential ESLs.

Regarding Item 3 (Park Site) above, excavation of the top 2 feet of native soil across the parcel was completed and exported to approved OCP Burial Areas on Parcel 1 as defined by both the approved PSMP and Soil Remediation Plan (see Figure 3).

2.0 PREPARATORY ACTIVITIES

2.1 GRADING PERMIT (SOIL REMEDIATION)

LS-Sunnyvale LLC applied for and received a soil remediation grading permit for the OCP-impacted soil management activities and the permit was available on-site at all times (see Appendix A).

2.2 UTILITY CLEARANCE AND NOTIFICATIONS

Dig areas were marked with white paint, and a one-call utility owner notification system (Underground Service Alert) was notified by R&B Equipment, the demolition contractor, at least two working days in advance of initiating subsurface activities associated.

2.3 SITE MOBILIZATION

Delivery of light and heavy equipment occurred prior to and during OCP-impacted soil management activities as needed for both OCP-impacted soil management and building demolition activities. Heavy equipment used for OCP-impacted soil management included a blade with ripper, scraper, track excavator with bucket, compactor, end-dump truck, and water truck. Heavy equipment was fueled by light-duty trucks that were used to fuel other equipment on-site. Support equipment included a portable sanitation area, portable restrooms, a diesel powered electric generator, and a single 20,000-gallon water tower to store water for dust control.

Slatted chain-link fence was installed along the property lines to delineate the Project boundaries. Site access was available from two driveways along DeGuigne Drive. Prior to excavating in OCP-SMAs, surface areas were cleared of asphalt paving, gravel, and other surface impeding features or objects such as curbing and potted trees.

3.0 HEALTH AND SAFETY

The contractor prepared a Site-specific Health and Safety Plan (HASP) for the proposed demolition activities. In addition, Stantec updated its previous Site-specific HASP to include activities required to carry out the PSMP.

The HASPs identified potential physical and chemical hazards associated with the demolition and PSMP activities and established personnel protection standards and safety practices and procedures for use during the field activities. The HASPs also included information on chemical compounds suspected to be encountered, a list of monitoring equipment, the required protective clothing and equipment, a map and directions to the nearest hospital, and a list of emergency telephone numbers. The HASPs were available on-site at all times during the field activities. Personnel working on-site were required to review, sign, and comply with the provisions put forth in the respective HASPs.

The following sections describe Proposition 65 considerations and the general health and safety program followed during implementation of PSMP activities.

3.1 PROPOSITION 65

Chemicals (various VOCs) identified under California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) known to cause cancer and reproductive toxicity have been identified in soil, soil vapor, and groundwater at the Site. Proposition 65 warnings are required if the estimated exposure to a person exceeds State of California Office of Environmental Health Hazard Assessment "safe harbor level" (SHL). SHLs are referred to as 'no significant risk levels' for carcinogens and 'maximum allowable dose levels' for chemicals with reproductive end points. It was recommended that contractors independently evaluate the need for Proposition 65 notification to their workers. All OCP concentrations detected in the OCP-SMAs were below commercial/industrial ESLs indicating that there was no unacceptable risk for construction workers.

3.2 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment worn by on-site field personnel at a minimum included steel-toed boots, hard hat, protective clothing, protective eye wear, and at times, ear protection (Level D). The HASPs included action levels for field personnel to upgrade to Level C, which was to include the use of an air purifying respirator with organic vapor and particulate cartridges, which were available at all times to personnel. No exceedances of breathing zone action levels occurred during the project.

3.3 AIR QUALITY MONITORING

During soil management of OCP soils, dust and air monitoring was performed to ensure that Site workers and off-site populations were not exposed to unsafe concentrations of airborne contaminants, as established in the site-specific HASP. Field-monitoring instruments were calibrated daily or in conformance with the manufacturer's recommendations.

3.3.1 Perimeter Monitoring

Stantec performed perimeter air and dust monitoring ("perimeter monitoring") during active excavation in OCP-SMAs. Perimeter monitoring was performed within 50 feet of the boundary of the soil-disturbing activity to verify that contractor-implemented control measures were adequate to prevent dust and volatile contaminants from leaving the Site.

Real-time air monitoring of total dust was performed using Mini Data Rams (MDRs), which provide total dust concentrations present in air. The MDRs were positioned along the perimeter of the work site, with downwind locations primary along the eastern fence and southeastern fence along DeGuigne Drive. These downwind locations were in the direction of off-site dust migration from the excavation and dependent on the wind direction on the day and time of work. The two downwind MDRs were placed at a height of 5 feet on fences to monitor for dust being generated in the excavation. One MDR was placed upwind of the current excavation to measure ambient dust concentrations. The upwind location included being within the center of the Site when excavation took place at the Park Site or along the fence along E Duane Drive when excavations took place at other OCP-SMAs.

The action level for dust particle concentrations was 0.150 milligrams per cubic meter (mg/m^3) at the property boundary, and was monitored using the instruments along the fence lines outside of the excavation area. This action level is equivalent to the Environmental Protection Agency (EPA) National Ambient Air Quality Standards, which are based on risk to human health.

Of the seven days that OCP-impacted soil was handled, time-weighted averages of upwind ambient dust measurements ranged from 0.028 to 0.052 mg/m^3 and downwind dust measurements ranged from 0.040 to 0.072 mg/m^3. Neither the instantaneous nor the time-weighted average for each workday in which OCP soil was handled exceeded the target level of 0.150 mg/m^3.

Dust suppression methods included routine watering of excavation areas during handling; watering of all active construction areas including transportation routes, and watering during soil compaction during placement of OCP soil within planned Cluster Buildings C-1 through C-6, L-5 and L-23 areas, during compaction and soil placement (as well as future potential OCP Burial Areas beneath Cluster Buildings C-7 and C-8 as shown on Figure 3).

4.0 UST AND OCP-IMPACTED SOIL EXCAVATION

The following sections summarize the OCP-impacted soil management activities completed in accordance with the PSMP and underground storage tank (UST) removal and excavation with City of Sunnyvale Fire Department oversight. OCP-impacted soil management activities took place over seven non-consecutive days on the following dates: August 17 to 19, 2016; August 25 and 26, 2016; August 29 and 30, 2016; and September 1 and 2, 2016. Management of the OCP-impacted soil stockpile took place on August 25, 2016. A photographic log of activities is included in Appendix B. Figure 2 shows the final excavation boundaries and Figure 3 the location of the soil OCP Burial Areas (one foot within the foundation boundary) beneath the foundations of buildings C-1 through C-6, and L-5 and L-23 areas, during compaction and soil placement (as well as future potential OCP Burial Areas beneath Cluster Buildings C-7 and C-8). Excavation activities were also conducted in accordance with the grading permit (see Appendix A).

Based on the dimensions and depth of the final excavations areas of the OCP-SMAs, a total volume of approximately 8,000 cubic yards of OCP-impacted soil was excavated and buried on-site, including approximately 4,200 cubic yards from the OCP-impacted soil stockpiled during the relocation of the GETS relocation (see GETS Relocation: Phase I Report dated December 15, 2015).

On August 24, 2016, the demolition contractor identified two former excavation areas in the Park Site in the vicinity of where former USTs from the 1970's were believed to be located. Within the smaller of the two backfilled areas, they uncovered a 200-gallon waste oil UST which was subsequently removed under the oversight of the Sunnyvale Fire Department (see Appendix D for documentation of the removal and Figure 5 for location of the excavations and subsequent confirmation sampling). Soil samples collected from the 200-gallon UST tank cavity reported only minor concentrations of total petroleum hydrocarbons as diesel and motor oil below residential ESLs. The large backfill area (dimensions of approximately 40 feet by 30 feet) did not contain any USTs, but did contain soil at approximately 8 feet bgs with concentrations of petroleum hydrocarbons above residential ESLs (see Figure 5 and Appendix D). Soil was removed, disposed of at an appropriate landfill, and confirmation samples collected as described in the following sections (see Appendix D for documentation of excavation and disposal).

4.1 EXCAVATION BOUNDARY DELINEATION

The excavation boundaries for OCP-impacted soil and the boundaries of the two former UST cavities on the Park Site were delineated by the demolition contractor. Other OCP-SMAs areas and the boundaries of the final UST excavation were delineated by Stantec using a Trimble Geo 7X GPS unit, a handheld unit with real-time sub-meter accuracy. Site features such as existing extraction wells were also used to determine OCP-SMAs in the field.

4.2 GENERAL SOIL OBSERVATIONS

Soil in the northwestern area of the Site was observed to be gravelly silts and clays. Soil in the east, center, and west of the Site was observed to be dominated by clays. Increased silt was observed in soil in the southern area of the Site. Backfill from the Park Site USTs was lighter in color with a similar particle size distribution as the other soils in the area.

4.3 FINAL EXTENT OF EXCAVATION

The final extent of OCP-SMA excavation is shown on Figure 2. The final lateral extent of the OCP-SMAs agrees with boundaries set forth in the PSMP. The Park Site over-excavation area, UST locations, and larger UST cavity excavation area are shown on Figures 4 and 5.

4.4 OCP BURIAL AREAS

OCP-impacted soil as identified in Section 1.3.2 (PSMR Soil Remediation Areas), was buried beneath Cluster Buildings C-1 through C-6, L-5 and L-23 (referred to as OCP Burial Areas), as shown on Figure 3. The PSMP directed OCP-impacted soil to be placed 5 feet above groundwater and 2 feet below final grade in landscaped areas and directly beneath building foundations. The Soil Remediation Plan identified all building foundations as potential areas for placement of OCP-impacted soil (approximately one foot inside the edge of the building footprint). Figure 3 also identifies "potential" OCP Burial Areas under the foundations of buildings C-7 and C-8. With the sale of the Cluster product to another builder, these areas will be used by the other builder if any of the previously placed OCP impacted soil under buildings C-1 through C-6 is identified in their footing/plumbing spoils (potential location of OCPs). All OCP impacted soil was kept outside of landscaped areas to limit potential future exposure to site construction workers, landscape maintenance workers, and future home owners.

4.5 UST SOIL DISPOSAL

Soil was excavated from the larger of the two former UST cavity areas by the contractor from ground surface to a depth of approximately 10 feet as delineated in Figure 5. Soil was disposed of to a certified landfill (Republic Services Inc., Keller Canyon Landfill, Pittsburg, California) and manifests are included in Appendix D. Approximately 2,000 cubic yards of soil were disposed of off-site.

5.0 PARK SITE CONFIRMATION SOIL SAMPLING

Confirmation sampling in the OCP and UST cavity areas were collected in accordance to the PSMP, City of Sunnyvale Fire Department requirements, City COAs, and City Park Standards. The following sections describe the sampling and results.

5.1 SAMPLING AND ANALYSIS PROCEDURES

In order to document the removal of OCP-impacted soil, post-excavation confirmation soil sampling was conducted at the Park Site. The Park Site, with an approximate dimension of 200 feet by 180 feet was divided into a 40-foot by 40-foot grid pattern starting at the southwest corner. The northernmost grids were combined into one sample due the planned 40 by 40 foot grids being truncated. The grid resulted in 20 sample areas for the incremental sampling grids.

On October 6, 2016, the 21 grids were field delineated and one sample was submitted per grid, comprised of 30 randomly collected surface soil samples within each grid. Soil samples were placed into a laboratory-supplied soil sampling jar and submitted to Curtis and Tompkins, Ltd. Located in Berkeley, California, a state-certified laboratory under chain-of-custody procedures. In order to comply with the City of Sunnyvale Department of Public Works Standards for Land Donation (City Park Standards), Stantec collected nine discrete samples on October 11, 2016, across the site as depicted in Figure 4 (see analytical reports included in Appendix C).

In compliance with City of Sunnyvale Fire Department requirements, soil samples were also collected from the former UST excavations and sampled for metals, OCPs, total petroleum hydrocarbons, VOCs, polyaromatic hydrocarbons, and polychlorinated biphenyls (see Appendix D for a summary of the analytical testing). Post-excavation soil confirmation samples were also collected from the large UST area as shown in Figure 5. One side wall sample was collected from each sidewall and two bottom samples were collected from the excavation bottom.

5.2 SAMPLING RESULTS

Summary of the Park Site confirmation soil analytical results are presented in Table 1. All incremental samples (MI) were below the residential ESLs. Two (P-4 and P-5) of nine discrete samples exceeded the residential ESL. Additional soil was excavated in an approximately 30-foot by 30-foot area around each exceedance to a depth of 3 to 6 inches. Four confirmation samples were collected from the two exceedance areas and all detections were below residential ESLs. Analytical laboratory reports are included in Appendix C.

Confirmation samples for the large UST cavity area were collected on September 23 and October 12, 2016, and were all below residential ESLs. Analytical are tabulated in Table 1 and Table 2 and laboratory reports are included in Appendix D.

6.0 CONCLUSIONS

OCP-impacted soil removal from Parcel 1 and the Park Site and on-site burial is complete. The OCP-impacted soil OCP Burial Areas have been surveyed and plotted on Figure 3 for inclusion in the updated SMP upon submission of the SMP report. This report completes LS-Sunnyvale's obligations under the PSMP to the Water Board and finalized OCP soil remediation.

7.0 REFERENCES

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January 25, 2024
File: 185706400

Attention: Katherine Ward, PG
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Ms. Ward,

Reference: Enhanced In Situ Bioremediation (EISB) Implementation Report – 960 Industrial Road, San Carlos, CA

Stantec Consulting Services Inc. (Stantec), on behalf of Northrop Grumman Mission Systems (Northrop), has prepared this *Enhanced In Situ Bioremediation (EISB) Implementation Report* (EISB Report) describing remediation activities at the former Litton facility located at 960 Industrial Road in San Carlos, California (the Site, see Figure 1). The scope of work presented herein was described in Stantec's December 2022 *Investigation Work Plan*[1] and approved by the San Francisco Bay Regional Water Quality Control Board (RWQCB) in electronic correspondence dated January 9, 2023.

BACKGROUND

The Site was historically operated by Litton Electron Devices (Litton) between 1956 and 2001 for design, manufacture, and distribution of microwave components. Northrop purchased Litton (and the Site) in 2001, and subsequently sold the facility to L3 Communications in 2002. Site operations by Northrop and L3 Communications generally consisted of design and manufacture of advanced electronic components. L3 Communications ceased operations at the Site in 2018 and sold the property to Alexandria Real Estate (ARE). Portions of the Site are currently leased for various commercial operations.

The main building at the Site is a C-shaped, one- and two-story structure totaling approximately 200,000 square feet. The main building is comprised of five sections constructed at various times beginning in the mid-1950s. As documented in previous reports, an elementary neutralization unit (ENU) historically located south of Building 3A had been used to neutralize acidic industrial process fluids from metals finishing operations inside Building 3A before discharge to the sanitary sewer. During removal of the ENU and approximately 60 feet of outlet piping in September 1999 it was discovered that a disintegrated pipe fitting was the likely historical release point for effluent

[1] Investigation Work Plan (Stantec). December 16, 2022.

containing volatile organic compounds (VOCs). Investigation and removal of the ENU were summarized in the *ENU Removal Report*[2].

VOC-impacted groundwater in the former ENU area was treated using EISB between 2008 and 2013. Treatment consisted of injecting food-grade carbon substrate and dechlorinating bacteria into the subsurface to create anaerobic conditions and stimulate dechlorination (i.e., degradation) of trichloroethene (TCE) into its progressive breakdown products 1,2-dichloroethene, vinyl chloride, and ethene. As documented in the 2014 *Supplemental Site Investigation Report*[3] and confirmed during groundwater monitoring events, EISB treatment successfully reduced concentrations of TCE and related compounds to below aquatic habitat screening criteria in all wells, except for well MW-16, located hydraulically downgradient of the former ENU. As of February 2022, the concentration of TCE in well MW-16 was 852 micrograms per liter (µg/l). The locations of the former ENU, EISB performance monitoring wells MW-13 through MW-16, and the approximate extent of residual TCE in groundwater in the vicinity of MW-16, are illustrated on Figure 2.

OBJECTIVES AND SCOPE OF WORK

Stantec developed an EISB treatment program to address residual concentrations of TCE present in MW-16. As referenced in previous reports, EISB conducted at the Site between 2008 and 2013 successfully reduced concentrations of TCE sourced from the former ENU to sustained non-detect levels. The objective of additional treatment is to similarly reduce concentrations of TCE in groundwater at MW-16.

Treatment Area

The treatment zone is generally defined as the area immediately upgradient of MW-16 beneath Building 3A. The treatment program consisted of four direct-push injection locations within Building 3A, and injection into existing injection wells IW-6 and IW-7. The extent of the EIST treatment area and injection locations are depicted on Figure 3.

Baseline Monitoring

Prior to injection, Stantec's subcontractor (Blaine Tech Services, Inc.) collected baseline samples from MW-16 and injection wells IW-1, -3, and -4. Groundwater was monitored in the field for pH, temperature, oxidation reduction potential (ORP), dissolved oxygen (DO), and ferrous iron, and groundwater samples were submitted for laboratory analysis of total organic carbon (TOC), VOCs, and dissolved gases as methane, ethane, and ethene. Groundwater chemical analyses were

[2] ENU Removal Report (SECOR International Inc.). November 29, 2000.
[3] Supplemental Site Investigation Report (Stantec). December 5, 2014.

performed by SunStar Laboratories, Inc. in Lake Forest, California. The sample from MW-16 was additionally analyzed for *Dehalococcoides* bacteria by SiREM in Guelph, Ontario, Canada.

Substrate Injections

Carbon substrate injections were performed on May 24 and 25, 2023, by Cascade working under direction of a Stantec field geologist. Prior to advancing direct-push boreholes, Stantec marked the work areas in white paint, opened a one-call dig ticket, and coordinated with responding utilities. Stantec retained a private utility locator (GPRS, Inc.) to confirm that proposed drilling locations were free of detectable subsurface utilities or obstructions.

The carbon substrate solution consisted of sugar, Lactoil™, water, nutrient solution, sodium bicarbonate buffer and an inoculant (SiREM microbial inoculant KB-1). Lactoil™ is a proprietary soybean oil emulsification containing approximately 35% ethyl lactate, a readily soluble substrate; 45% soybean oil, with moderate solubility; and 20% water. The treatment solution included 150 pounds of Tersus powdered activated carbon (PAC) per injection point to sequester VOCs and enhance EISB treatment. The injection points each received 100 pounds of sugar, 46 gallons of Lactoil™, 1.5 gallons of nutrient reagent, 1 liter of inoculum, and 150 pounds of PAC mixed with water to a final volume of 600 gallons. Each batch of reagent was prepared using mixing water which was deoxygenated using 0.5 liters of calcium polysulfide.

Carbon substrate was introduced to the subsurface via direct-push injection points DP-1 through DP-4 advanced within Building 3A and existing injection wells IW-6 and IW-7 located outside the building. Direct push injection points received approximately 200 gallons of reagent at each of three intervals: 10 – 13 feet below ground surface (bgs), 14 – 18 feet bgs, and 18 – 20 feet bgs. Each of the four direct push injection points, and each of the two injection wells located outside the building, received 600 gallons of substrate.

All mixing and conveyance equipment was supplied by Cascade. Substrate was injected at approximately 5 gallons per minute (gpm). At each injection point, substrate was bioaugmented with approximately one liter of KB-1 *Dehalococcoides* bacterial culture. The bacteria was introduced at the approximate mid-point of each injection volume using approximately 20 gallons of anaerobic water, followed by the second half of the substrate material.

Post-Injection Monitoring and Reporting

Following injection, Stantec conducted performance monitoring of wells MW-16 and IW-1 to evaluate EISB effectiveness. Performance monitoring criteria are generally summarized below.

- Generation and maintenance of anaerobic conditions favorable to reductive dechlorination such as low DO, negative ORP, presence of ferrous iron, and detectable dissolved gases (methane, ethane, and/or ethene gas).
- Reduction and maintenance of VOC concentrations in groundwater to below risk-based screening levels.

Blaine Tech conducted post-treatment monitoring and sampling of wells MW-16 and IW-1 at intervals of one-, three-, and six-months following injection. Purging and sampling was performed using a low-flow bladder pump with dedicated tubing for each well. During purging, groundwater was periodically monitored for pH, temperature, ORP, and DO. At the time of sampling, a representative groundwater sample was analyzed in the field for ferrous iron using a Hach field test kit.

Groundwater samples were collected and submitted to SunStar for analysis of VOCs by USEPA Method 8260B; for dissolved gases as methane, ethene, and ethane by USEPA Method RSK-175; and for total organic carbon (TOC) by wet chemistry methods. The groundwater sample collected from MW-16 during the six-month monitoring event was additionally analyzed by SiREM for *Dehalococcoides* bacteria during PCR DNA assay.

Waste Management

Soil cuttings and purged groundwater were contained in 55-gallon steel drums and stored onsite at the direction of the Site owner pending characterization and offsite disposal.

EISB PERFORMANCE ASSESMENT

The following sections present baseline and post-injection EISB performance data. Baseline and performance monitoring data are summarized on Table 1 (VOCs in groundwater) and Table 2 (dissolved gases, TOC, field parameters, and *Dehalococcoides* analyses). Pre- and post-treatment VOC concentrations in EISB performance monitoring wells MW-16 and IW-1 are presented on Figure 4. Laboratory analytical reports are included as Attachment 1.

Selection of Screening Criteria

Because Pulgas Creek forms the southeastern boundary of the Site, groundwater chemical data have historically been compared to groundwater screening criteria protective of aquatic habitat receptors. Table 1, which summarizes VOC groundwater chemical data, includes groundwater Environmental Screening Levels (ESLs) protective of aquatic habitat receptors and of potential vapor intrusion from groundwater under commercial site use.

Geochemical and Biological Conditions

The goal of injecting fermentable carbon substrate into the subsurface is to create reducing (anaerobic) geochemical conditions favorable to reductive dechlorination of halogenated VOCs by native and introduced bacteria. ORP measurements collected before and following injection confirm that reducing conditions were established at MW-16, as evidenced by negative ORP observed during the 3- and 6-month monitoring events. Similar reducing conditions are observed at IW-1, although only one negative ORP reading has been observed. Overall, ORP measurements (and the presence of ferrous iron) indicate that reducing conditions amenable to reductive dechlorination have been established in the vicinity of MW-16.

Groundwater samples from IW-1 and MW-16 were analyzed for dissolved gases as methane, ethene, and ethane. Ethene is a degradation product of chlorinated ethenes including TCE, and its presence can be used to confirm that TCE degradation is occurring. Ethene was not detected in performance monitoring data, a condition that is not unusual owing to the transient nature of ethene and the relatively low concentrations of TCE and cis-1,2-DCE in MW-16 baseline samples. The robust concentration of methane (10,400 µg/l) observed during the 6-month sampling event indicates increased methanogenic activity by bacterial populations in response to the substrate injections, which suggests strong reducing conditions supportive of reductive dechlorination. The increase and subsequent decrease in cis-1,2-DCE and small amount of vinyl chloride generates suggest that complete dechlorination has occurred and treatment was successful.

Pre- and post-injection concentrations of *Dehalococcoides* bacteria were measured in samples from MW-16. The four-fold increase in bacteria populations between baseline and 6-month post-injection samples confirms that a robust population of *Dehalococcoides* has been established in the treatment zone which further supports the conclusion that complete dechlorination has occurred in the treatment area.

Distribution of Carbon

Baseline and performance monitoring samples were analyzed for total organic carbons (TOC) as a means to measure the distribution of carbon substrate following injection. A notable increase in TOC in MW-16 (from 1.8 milligrams per liter [mg/l] baseline to 230 mg/l after six months) confirms that carbon substrate has migrated from injection points to MW-16. A smaller increase in TOC was observed in IW-1 whereby the reported concentration approximately doubled between the baseline and 1-month sampling event before returning to near-baseline conditions in subsequent monitoring events. The delay in arrival at MW-16 suggests that TOC may increase over time, although VOC concentrations are already below regulatory limits.

Chemical Concentration Trends

Post-injection monitoring has documented reduced concentrations of TCE and related degradation products in the EISB treatment area. Pre- and post-injection VOC concentrations are illustrated on Figure 4, and time-concentration plots of VOC concentrations in wells IW-1 and MW-16 are illustrated on Figures 5 and 6, respectively.

Prior to injection, only low concentrations of TCE breakdown products (cis/trans-1,2-DCE and vinyl chloride) and 1,1-dichloroethane (1,1-DCA) were observed at IW-1; during the November 2023 6-month performance monitoring event, all compounds were non-detect. Similarly, pre-treatment concentrations of TCE and related compounds in MW-16 have decreased, most notably TCE, concentrations of which have decreased from 840 ug/l to below the laboratory reporting limit of 1.0 µg/l. Concentrations of cis-1,2-DCE increased an order of magnitude over baseline during the 1- and 3-month performance monitoring events, indicating a significant increase in reductive dechlorination by native and introduced bacteria; similar to TCE, the 6-month cis-1,2-DCE concentration was below the laboratory reporting limit. Vinyl chloride was detected at a low concentration (1.3 µg/l) during the November 2023 monitoring event. This is the only compound exceeding the vapor intrusion screening level, and no compounds exceed the aquatic habitat screening level. Because vinyl chloride degrades both aerobically and anaerobically, the vinyl chloride observed in MW-16 is expected to be transient and will further decrease over time, given the elevated residual TOC, strong reducing conditions and relatively aerobic conditions downgradient.

CONCLUSIONS AND RECOMMENDATIONS

Application of EISB at the Site, consisting of injecting carbon substrate and dechlorinating bacteria, has successfully created geochemical conditions amenable to reductive dechlorination. As documented during post-injection performance monitoring, decreased concentrations of TCE and related daughter compounds indicate that the approach is successfully addressing residual TCE impacts in the vicinity of MW-16. The continued success of the program will be evaluated during future groundwater monitoring events. Stantec recommends completing two additional post-injection monitoring of MW-16 and IW-1 at approximate six-month intervals (approximately May and November 2024). The May 2024 event will be expanded to sample all Site groundwater monitoring wells to provide an updated understanding of VOCs in groundwater across the Site.

Reference: **Enhanced In Situ Bioremediation (EISB) Implementation Report – 960 Industrial Road, San Carlos, CA**

CLOSING

Should you have any questions regarding this proposed scope of work, please contact John Kehs (Northrop Grumman project manager) at 410-765-9143, or the undersigned.

Regards,

Stantec Consulting Services Inc.

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Attachments: Table 1 – EISB Performance Monitoring – VOCs in Groundwater
Table 2 - EISB Performance Monitoring – Dissolved Gases / TOC / Field Parameters / Dhc

Figure 1 – Site Location Map
Figure 2 – Site Plan and EISB Treatment Area
Figure 3 – EISB Treatment Area
Figure 4 – Pre- and Post-EISB Groundwater Chemical Data
Figure 5 – Time-Concentration Plots – Well IW-1
Figure 6 – Time-Concentration Plots – Well MW-16

Attachment 1 – Laboratory Analytical Reports

c. John Kehs, Northrop Grumman

TABLES

Table 1
EISB Performance Monitoring - VOCs in Groundwater
Former Litton Electron Devices Facility
960 Industrial Road
San Carlos, California

EISB Performance Monitoring Well ID	Sampling Event	Volatile Organic Compounds (USEPA Method 8260B) - Results in µg/L								
		TCE	*cis* - 1,2-DCE	*trans* -1,2-DCE	1,1-DCE	1,1-DCA	VC	CTC	CHFM	Other Detected Compounds
IW-3	Baseline - 05/05/23	<1.0	<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<1.0	
IW-4	Baseline - 05/05/23	<1.0	**2.9**	**1.8**	<1.0	**1.2**	**7.0**	<0.50	<1.0	
IW-1	Baseline - 05/05/23	<1.0	**2.9**	<1.0	<1.0	**1.5**	**6.0**	<0.50	<1.0	
	1 Month - 06/20/23	<1.0	**3.1**	<1.0	<1.0	<1.0	**6.0**	<0.50	<1.0	Acetone - 5.0
	3 Months - 08/23/23	<1.0	**3.9**	**1.4**	<1.0	<1.0	**21**	<0.50	<1.0	
	6 Months - 11/20/23	<1.0	<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<1.0	
MW-16	Baseline - 05/05/23	**840**	**65**	<10	**27**	<10	<5.0	**5.3**	<10	
	1 Month - 06/20/23	**500**	**360**	**5.5**	**22**	<2.0	<1.0	**2.5**	**5.1**	
	3 Months - 08/23/23	**13**	**620**	**6.5**	**19**	<2.0	<1.0	<1.0	<2.0	
	6 Months - 11/20/23	<1.0	<1.0	**6.1**	<1.0	**1.0**	**1.3**	<0.50	<1.0	Chloroethane - 1.2; benzene - 2.1; acetone - 17; MEK - 200
Groundwater ESLs - Aquatic Habitat [1]		200	590	590	25	47	780	240	620	
Groundwater ESLs - Vapor Intrusion [1]		7.5	210	920	280	33	0.14	1.9	3.6	

Notes and Abbreviations:
Bold text indicates detections above laboratory reporting limits.

1 - Groundwater Environmental Screening Levels (ESLs), San Francisco Bay Regional Water Quality Control Board (2019).

< Constituent not detected at or above specified reporting limit.

µg/L = micrograms per liter
TCE = Trichloroethene
cis -1,2-DCE = *cis* -1,2-Dichloroethene
trans -1,2-DCE = *trans* -1,2-Dichloroethene
1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
VC = vinyl chloride
VC = Vinyl chloride
CTC = Carbon tetrachloride
CHFM = Chloroform

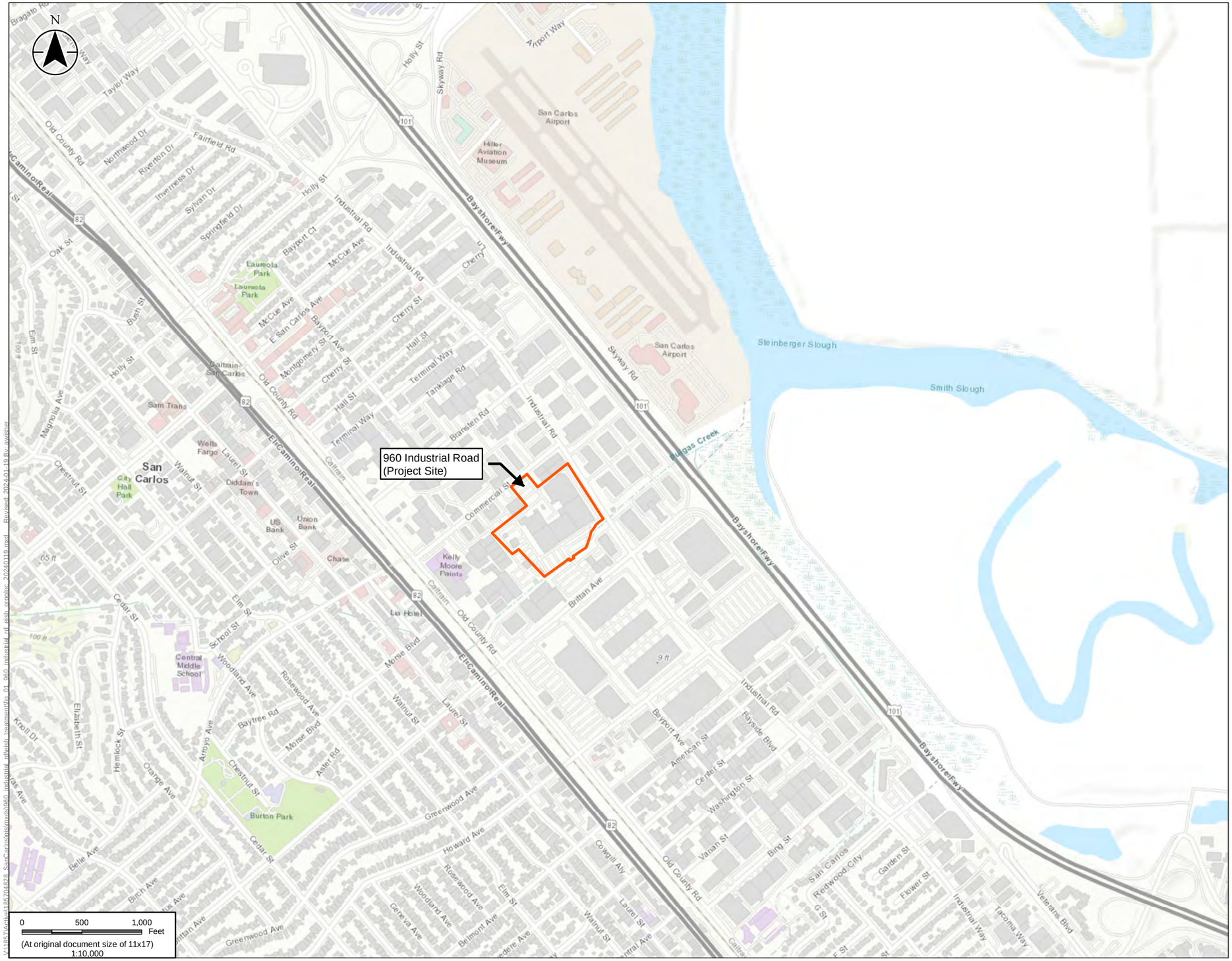
Table 2
EISB Performance Monitoring - Dissolved Gases / TOC / Field Parameters / Dhc
Former Litton Electron Devices Facility
960 Industrial Road
San Carlos, California

EISB Performance Monitoring Well ID	Sampling Event	Dissolved Gases - RSK 175 - µg/L			Wet Chem Method	Field Parameters		Dehalococcoides (Dhc)
		Methane	Ethene	Ethane	Total Organic Carbon (mg/L)	ORP (mV)	Fe^{2+} (mg/l)	(cells/liter)
IW-3	Baseline - 05/05/23	**71.9**	<5.74	<6.15	**13**	**122.1**	**0**	--
IW-4	Baseline - 05/05/23	**2,540**	<5.74	<6.15	**14**	**175.1**	**1.5**	--
IW-1	Baseline - 05/05/23	**395**	<5.74	<6.15	**10**	**176.7**	**2.0**	--
	1 Month - 06/20/23	**238**	<5.74	<6.15	**19.3**	**20.4**	**0.5**	--
	3 Months - 08/23/23	**232**	<5.74	<6.15	**12.0**	**-23.0**	**1.0**	--
	6 Months - 11/20/23	**3.70**	<5.74	<6.15	**11.5**	**1.9**	**1.9**	--
MW-16	Baseline - 05/05/23	<3.28	<5.74	<6.15	**1.8**	**169.7**	**0**	**3×10^3**
	1 Month - 06/20/23	**14.4**	<5.74	<6.15	**89.2**	**50.3**	**0**	--
	3 Months - 08/23/23	**35.8**	<5.74	<6.15	**9.00**	**-318.2**	**1.0**	--
	6 Months - 11/20/23	**10,400**	<5.74	<6.15	**230**	**-176.2**	**0**	**2×10^7**

Notes and Abbreviations:
Bold text indicates detections above laboratory reporting limits.

< Constituent not detected at or above specified reporting limit.
µg/L = micrograms per liter
mg/l = milligrams per liter
mV = millivolts
-- = not analyzed
Fe^{2+} = ferrous iron

FIGURES



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Approximate Site Boundary

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Project Location

960 Industrial Road
San Carlos, California

Client/Project 185706400

Northrop Grumman
Former Litton Electron Devices Facility
EISB Implementation Report

Title

Site Location Map

Figure No.

1

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Groundwater Monitoring Well
EISB Treatment Area
Approximate Property Boundary

Notes
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Project Location
960 Industrial Road
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Title
Site Plan and EISB Treatment Area

Figure No.
2

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- EISB Injection Well
- Wells Used for 2023 EISB Injection
- Direct Push EISB Injection Points
- Groundwater Monitoring Well
- EISB Treatment Area
- Approximate Property Boundary

Notes
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Project Location
960 Industrial Road
San Carlos, California

Client/Project 185706164
Northrop Grumman
Former Litton Electron Devices Facility
EISB Implementation Report

Title
EISB Treatment Area

Figure No.
3

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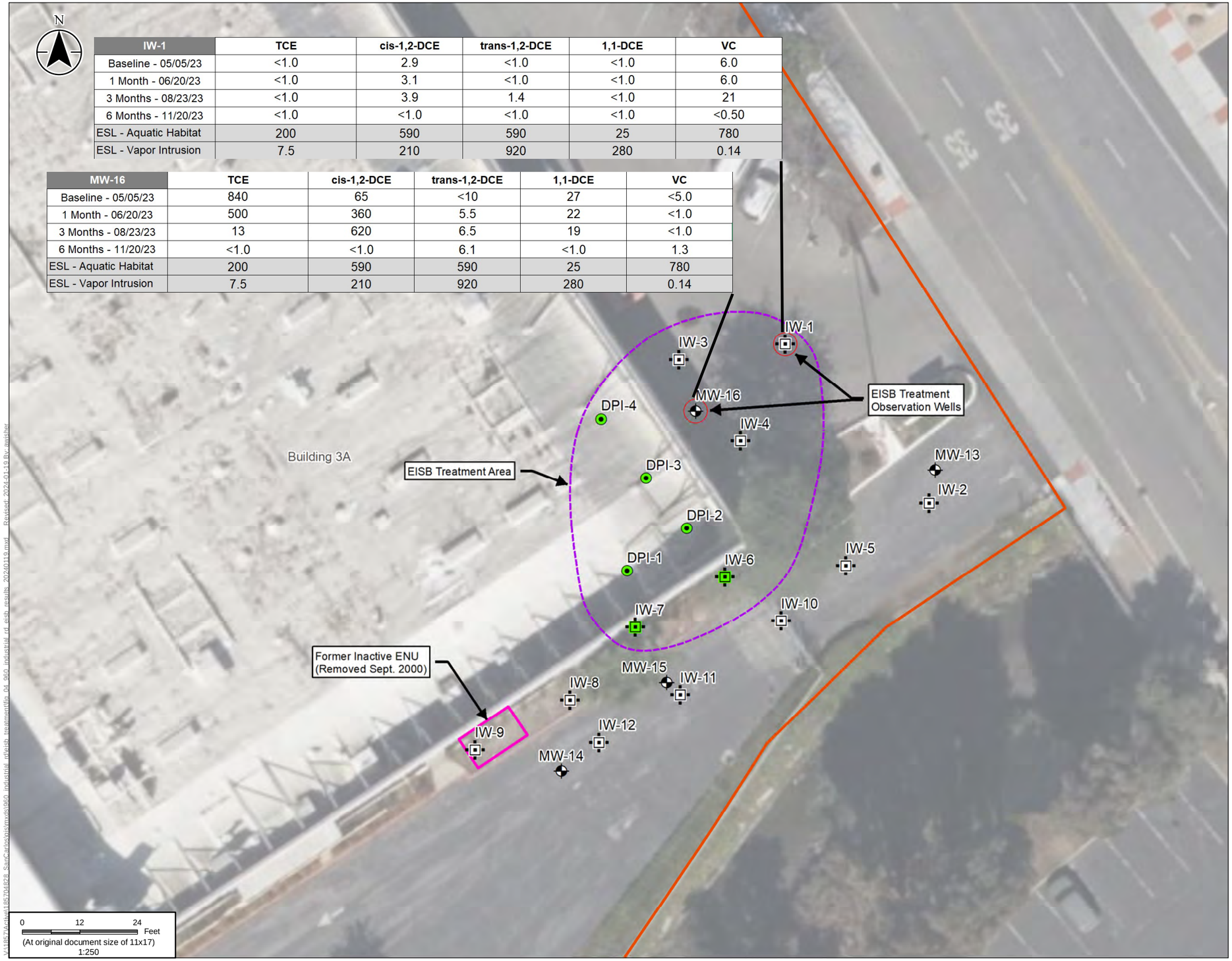

IW-1	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	VC
Baseline - 05/05/23	<1.0	2.9	<1.0	<1.0	6.0
1 Month - 06/20/23	<1.0	3.1	<1.0	<1.0	6.0
3 Months - 08/23/23	<1.0	3.9	1.4	<1.0	21
6 Months - 11/20/23	<1.0	<1.0	<1.0	<1.0	<0.50
ESL - Aquatic Habitat	200	590	590	25	780
ESL - Vapor Intrusion	7.5	210	920	280	0.14

MW-16	TCE	cis-1,2-DCE	trans-1,2-DCE	1,1-DCE	VC
Baseline - 05/05/23	840	65	<10	27	<5.0
1 Month - 06/20/23	500	360	5.5	22	<1.0
3 Months - 08/23/23	13	620	6.5	19	<1.0
6 Months - 11/20/23	<1.0	<1.0	6.1	<1.0	1.3
ESL - Aquatic Habitat	200	590	590	25	780
ESL - Vapor Intrusion	7.5	210	920	280	0.14

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- EISB Injection Well
- Wells Used for 2023 EISB Injection
- Direct Push EISB Injection Points
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- Approximate Property Boundary

Notes
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Former Litton Electron Devices Facility
EISB Implementation Report

Title
Pre- and Post-EISB Groundwater Chemical Data

Figure No.
4

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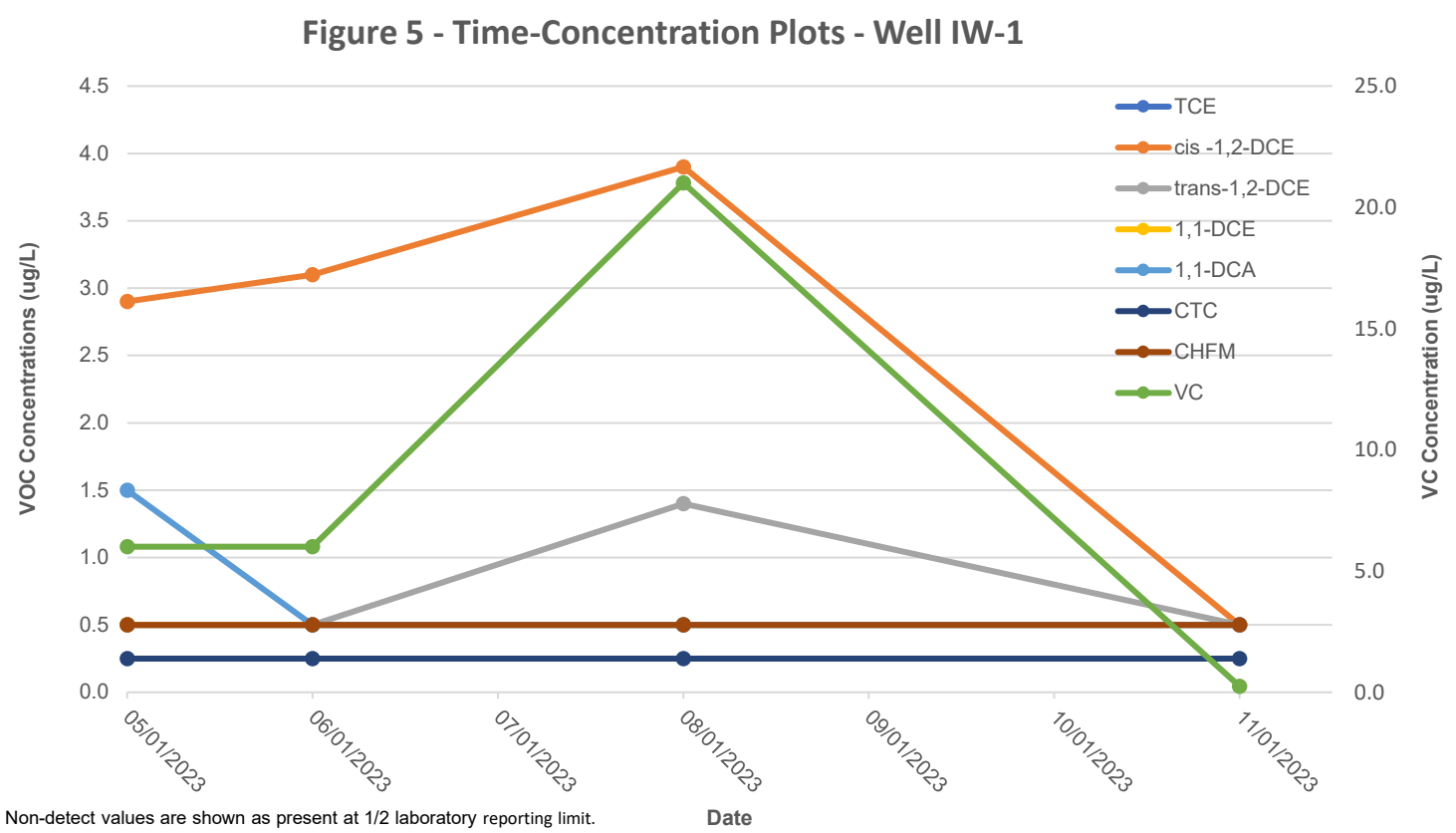

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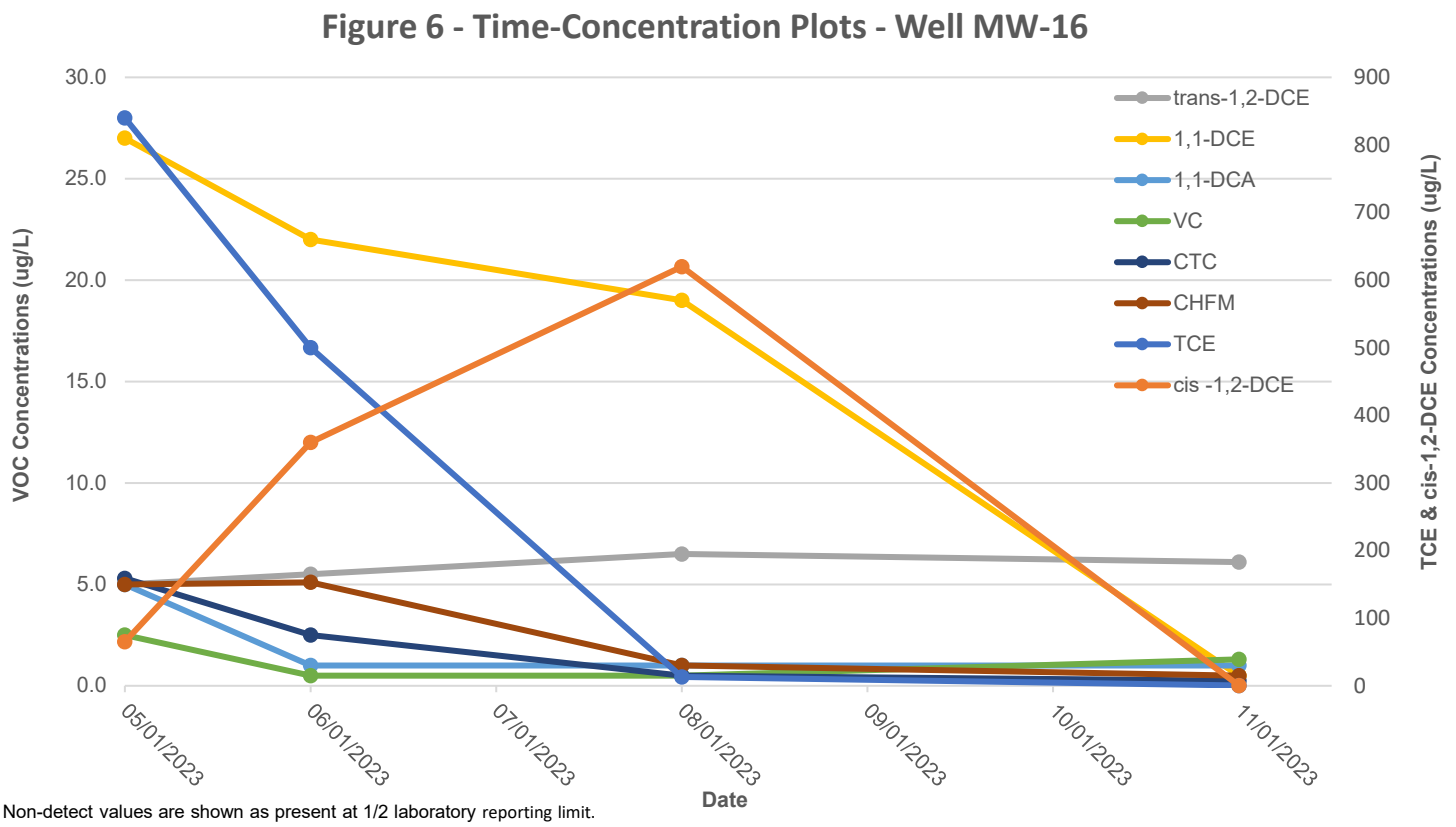

Non-detect values are shown as present at 1/2 laboratory reporting limit.

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