

# AllWest Environmental

## SECOND 2019 SEMIANNUAL INDOOR AIR QUALITY MONITORING REPORT

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**Police Credit Union, 550 Irving Street, San Francisco, CA 94122**



PREPARED FOR:

Police Credit Union  
2550 Irving Street  
San Francisco, CA 94122

**ALLWEST PROJECT 19086.28.2**  
**January 21, 2020**

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## SECOND 2019 SEMIANNUAL INDOOR AIR QUALITY MONITORING REPORT

2550 Irving Street, San Francisco, California 94122

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### I. EXECUTIVE SUMMARY

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AllWest Environmental, Inc. (AllWest) conducted an indoor air quality monitoring event on December 29 and 30, 2019 at the subject site referenced above (Figures 1 and 2). The purpose of the investigation was to assess the indoor air concentrations of the dry cleaning solvent tetrachloroethene (PCE) during the rainy season.

*This executive summary is provided solely for the purpose of overview. Any party who relies on this report must read the full report. The executive summary may omit details, any one of which could be crucial to the proper understanding and risk assessment of the subject matter.*

To further assess seasonal variations of vapor intrusion impact to the subject property building, four indoor air quality (IAQ) samples (IAQ-1 to IAQ-4) were collected within the first floor of the Police Credit Union (PCU) building. The location of the indoor and outdoor air samples collected in December 2019 were the same as those collected in August 2019. IAQ-1 was located behind the bank teller counter, IAQ-2 was located in the central portion of the bank floor, IAQ-3 was located in the bathroom, and IAQ-4 was located near the southwest corner of the PCU building. One outdoor ambient air (OAA) control sample (OAA-1) was also collected within a fenced-in area situated adjacent to the western exterior wall of the PCU building. The IAQ and OAA samples were collected over a 24-hour period from December 29 to December 30, 2019. IAQ and OAA sample locations are shown on Figure 2.

The IAQ and OAA samples were analyzed by EPA Method TO-15 SIM for PCE and its breakdown products trichloroethene (TCE), 1,1-Dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE) and vinyl chloride.

PCE was detected in all four of the IAQ samples at concentrations ranging from 0.2.9 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) in sample IAQ-1 to 4.3  $\mu\text{g}/\text{m}^3$  in IAQ-1 and IAQ-2. Detected PCE concentrations in all four IAQ samples exceeded the applicable San Francisco Regional Water Quality Control Board (SFRWQCB) commercial/industrial indoor air Environmental Screening Level (ESL) of 2.0  $\mu\text{g}/\text{m}^3$  (based on direct exposure human health risk). PCE was not detected in the outdoor ambient air control sample OAA-1. None of the other analyzed constituents were detected above their respective laboratory detection limits in either indoor and outdoor samples.

AllWest concludes that PCE soil vapor intrusion has impacted the indoor air quality of the subject site building and is a potential human health risk to building occupants. Since the previous August 2019 indoor air monitoring event, PCE concentrations have remained relatively stable, indicating negligible seasonal variations between summer and winter (dry and wet seasons).

AllWest recommends indoor air quality and sub-slab vapor monitoring of existing Vapor Pin™ probes be conducted during the 2020 summer season in accordance with Department of Toxic Substances Control (DTSC) protocols (DTSC, 2011). AllWest recommends this report be submitted to the San Francisco Department of Public Health (SFPDH).

## II. PROJECT BACKGROUND

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### A. Site Location and Description

The subject property, addressed as 2500-2500 Irving Street, is an irregularly-shaped parcel totaling approximately 0.44 acre, located in a mixed residential and commercial area in the Sunset district of San Francisco. The subject property is bound by 26th Avenue to the east, 27th Avenue to the west, Irving Street to the south and residential homes to the north. Access to the property is from Irving Street and/or 27th Avenue. The subject property is developed with a two-story approximately 18,561 square-foot office building and parking lot. The subject building is occupied by the San Francisco Police Credit Union (PCU). The subject property also includes two contiguous, rectangular undeveloped parcels, together comprising 0.12 acres, on the south side of Irving Street (employee parking lot parcels) between 26<sup>th</sup> and 27<sup>th</sup> Avenues at 2525 Irving Street. A site vicinity map is presented as Figure 1, and a site plan as Figure 2.

### B. Previous Investigations

#### Phase I Environmental Site Assessment for 2525 and 2550 Irving Street, San Francisco, CA, AllWest Environmental (February 2019)

AllWest performed a Phase I Environmental Site Assessment (ESA) at the subject property in January and February 2019. The ESA conclusions were presented in the AllWest report titled *Environmental Site Assessment, 2525 & 2550 Irving Street, San Francisco, CA 94122* dated February 8, 2019. AllWest's land use review for the property indicates the PCU employee parking lot parcels on the south side of Irving Street as undeveloped prior to paving and striping as a parking lot in the early-1960s.

The credit union parcel was undeveloped prior to construction of two commercial structures on the middle of the parcel circa 1927 with occupancies including a variety of stores/shops and a clothes cleaner. Another building was constructed on the credit union parcel between the late-1920 and 1932, housing an undertaker through at least the mid-1950s.

From at least 1940 to the mid-1960s, gas stations operated at the 26th (2500 Irving) and 27th Avenue (2550 Irving) corners of the credit union parcel. In 1965, the original, eastern portion of the existing building was constructed on the parcel, occupied by a mortuary/funeral chapel. By 1968, the building increased in size to the current configuration and the customer parking lot added. The mortuary operated at the parcel through the mid-1980s. In 1988, the PCU initiated occupancy on the credit union parcel.

Significant quantities of hazardous materials are not present at the subject property; hazardous waste is not generated. Previous operators of the two gas stations, clothes cleaner and mortuary/undertaker at the subject property are expected to have stored/used hazardous materials in their site operations, although no documentation was available to confirm these assertions. There is no documentation or visual evidence of existing underground storage tanks (USTs) at the subject property.

With the exception of one building permit for installation of a waste oil UST at the 2550 Irving Street gas station (27th Avenue corner) in 1941, no records were available related to UST installations or removals at either subject property gas station. Following cessation of gas station operations, a 1963 aerial photograph of the 2550 Irving Street gas station location showed the concrete slabs associated with the former building and pump island(s) remaining but the structures removed. Subsequently, this area of the property was paved for the customer parking lot. The former location of the 2500 Irving Street gas station was redeveloped with the existing building (AllWest, 2019).

The approximate location of the former service station buildings, concrete slabs and presumed former USTs on the subject property are shown in Figure 2.

AllWest identified Recognized Environmental Conditions (REC) at the property from its historical land use activities as two gas stations (1940 – 1963) and clothes cleaner (1928 – 1949). AllWest also identified a REC on the subject property from an off-site concern, the former operation of a dry cleaning facility on an

up-gradient/adjoining property (2511 Irving Street) for nearly 75 years. Based on the period of time in operation, as well as operation into the 2010s, AllWest assess possibility a dry cleaning solvent release has occurred. Based on the location of the site with respect to the subject property, there is a moderately-low likelihood that impacted ground water from the subject property has migrated beneath the subject property.

Although not considered RECs, AllWest identified a moderate likelihood that USTs remain present on the 2550 Irving Street portion (27<sup>th</sup> Avenue/Irving Street corner) of the parcel, because concrete slab foundations of the station remained present following demolition of the gas station structures prior to paving of the area as the existing parking lot, and no construction has been completed on that area of the subject property.

AllWest recommended further assessment be performed at the subject property (AllWest, 2019).

*Phase II Environmental Site Assessment for 2500-2550 Irving Street, San Francisco, CA, AllWest Environmental (May 2019)*

AllWest conducted a subsurface investigation at the subject property on May 21, 2019, consisting of the advancement of five soil borings (B-1 through B-5) to 10 feet bgs and the installation of two temporary sub-slab Vapor Pin™ type probes inside the subject building (San Francisco Police Credit Union). Five selected soil samples (collected from each of the borings at approximately 4.5-5 feet bgs) were analyzed for total petroleum hydrocarbons as diesel and motor oil (TPH-d and TPH-mo) with silica gel cleanup, total petroleum hydrocarbons as gasoline (TPH-g), volatile organic compounds (VOCs), polynuclear aromatics (PNAs) and polyaromatic hydrocarbons (PAHs), and LUFT-5 metals (cadmium, chromium, lead, nickel and zinc). The two soil vapor samples were analyzed for tetrachloroethene (PCE) and its degradation products trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE) and vinyl chloride, and the leak detection gas helium.

No COCs were detected in any soil samples at concentrations exceeding applicable SFRWQCB ESLs and/or State of California Title 22 TTLC, STLC or TCLP levels. PCE was detected in the sub-slab soil vapor samples collected from VP-1 and VP-2 at 530 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and  $480 \mu\text{g}/\text{m}^3$  exceeding the applicable commercial/industrial SFRWQCB ESL of  $67 \mu\text{g}/\text{m}^3$ . None of the other analyzed constituents were detected above their respective laboratory detection limits.

A ground penetrating radar (GPR) scan of the western parking lot at 2550 Irving Street revealed no evidence of current or former underground storage tanks (USTs); however, a long, narrow anomaly was detected in the southwest corner that may be the former fuel dispenser island concrete slab.

AllWest recommended additional investigation at the subject property to delineate the extent and origin of PCE detected in soil vapor samples.

*Phase II Environmental Site Assessment for 2525 Irving Street, San Francisco, CA, AllWest Environmental (August 2019)*

AllWest conducted a subsurface investigation of the employee parking lot parcels on the south side of Irving Street at 2525 Irving Street on July 17, 2019, consisting of the advancement of two borings (B-6 and B-7) to 12 feet below ground surface (bgs) in the central portion of the parking lot and one boring (B-8) to approximately 47 feet bgs in the northeast corner of the parking lot. Two additional borings (SVP-1 and SVP-2) were advanced to 5.5 feet bgs on the northeast side of the parking lot adjacent to the former dry cleaner at 2511 Irving Street. Two temporary soil vapor probes were installed at a depth of 5 feet bgs within these borings. Groundwater was not encountered in any of the borings.

Sixteen soil samples were collected from the five borings. Ten selected soil samples collected from borings B-6, B-7, SVP-1 and SVP-2 at depth intervals of 1-1.5 feet bgs and 4.5-5 feet bgs, and from borings B-6 and B-7 at depth intervals of 9.5-10 feet bgs, were analyzed for TPH-d and TPH-mo with silica gel cleanup, total petroleum TPH-g, VOCs and LUFT-5 metals. Two selected soil samples collected from boring B-8 at depth intervals of 4.5-5 feet bgs and 9.5-10 feet bgs were analyzed for PCE and its degradation products TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. Soil vapor samples collected from temporary probes SVP-1 and SVP-2 were analyzed for PCE, its degradation products TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride, and the leak detection gas helium.

No constituents of concern (COCs) were detected in any soil samples at concentrations exceeding applicable San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Level (ESLs) and/or State of California Title 22 Total Threshold Limit Concentration (TTL), Soluble Threshold Limit Concentration (STLC) or Toxic Characteristic Leaching Procedure (TCLP levels).

PCE was detected in soil vapor samples collected from borings SVP-1 and SVP-2 at 1,800 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) and 1,300  $\mu\text{g}/\text{m}^3$ , exceeding the applicable commercial/industrial SFRWQCB ESL of 67  $\mu\text{g}/\text{m}^3$ . No other COCs were detected in soil vapor samples.

AllWest concluded the subject 2525 Irving Street parcel had been impacted by a PCE soil vapor plume likely originating from the adjacent former dry cleaner at 2511 Irving Street. AllWest recommended additional investigation to delineate the extent and origin of the PCE soil vapor plume and potential impact to groundwater at the subject 2525 Irving Street parcel.

*Phase II Environmental Site Assessment for 2500-2550 Irving Street, San Francisco, CA, AllWest Environmental (August 2019)*

AllWest conducted a subsurface investigation on July 17 and 18, 2019 at 2500-2550 Irving Street. On July 17, 2019, boring B-9 was advanced to a depth of approximately 52 feet bgs in the northeast corner of the driveway west of the PCU building (2550 Irving Street). Boring B-8 was advanced to approximately 47 feet bgs at the northeast corner of the 2525 Irving Street employee parking lot parcel.

On July 18, 2019, four semi-permanent sub-slab Vapor Pins™ (VP-1A, VP-2A, VP-3 and VP-4) were installed within the PCU building at 2550 Irving Street and one soil boring (B-10) was advanced to approximately 40 feet bgs within the landscaped sidewalk area of the subject site parcel (2550 Irving Street). Boring and vapor pin locations are shown on Figure 2. Groundwater was not encountered during the investigation.

Soil samples were collected from borings B-8, B-9 and B-10 at depth intervals of 1-1.5 feet bgs, 4-4.5 feet bgs, 9.5-10 feet bgs, 19.5-20 feet bgs, 29.5-30 feet bgs and 39.5-40 feet bgs. Samples were analyzed for PCE and its degradation products TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride. No COCs were detected in analyzed soil samples. No groundwater samples were collected or analyzed.

One soil vapor sample was collected from each sub-slab Vapor Pin™ probe (VP-1A, VP-2A, VP-3 and VP-4) on July 19, 2019. Collected soil vapor samples were analyzed for PCE and its degradation products TCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride and the leak detection gas helium. PCE was detected in all soil vapor samples at concentrations ranging from 270 to 1,100  $\mu\text{g}/\text{m}^3$ , exceeding the applicable commercial/industrial SFRWQCB sub-slab soil gas vapor intrusion ESL of 67  $\mu\text{g}/\text{m}^3$ .

No other COCs were detected in any soil vapor samples at concentrations exceeding applicable ESLs.

In addition to collecting semi-annual sub slab soil vapor samples in early 2020, AllWest recommended an indoor air quality assessment be conducted at the property to evaluate PCE concentrations above the slab within the Credit Union building. AllWest also recommended another attempt be made to collect groundwater samples at the property.

*Indoor Air Quality Monitoring Report, 2500-2550 Irving Street, San Francisco, CA, AllWest Environmental (August 2019)*

AllWest conducted an indoor air quality monitoring event on August 19 and 20, 2019 at the subject site. Four IAQ samples were collected within the first floor of the PCU building and one OAA control sample was collected adjacent to the western exterior wall of the PCU building. The IAQ and OAA samples were collected over a 24-hour period from August 19 to August 20, 2019.

PCE was detected in all four of the IAQ samples and in the OAA sample. Detected PCE concentrations in all four IAQ samples exceeded the applicable SFRWQCB commercial/industrial indoor air ESL of 2.0  $\mu\text{g}/\text{m}^3$ . The PCE breakdown products TCE and 1,1-DCE were detected in all OAA and IAQ samples, but at low concentrations not exceeding applicable ESLs.



AllWest concluded that PCE soil vapor intrusion impacted the indoor air quality of the subject site building and is a potential human health risk to building occupants. AllWest recommended additional semiannual indoor air quality and sub-slab vapor monitoring of existing Vapor Pin™ probes be conducted during the winter season in accordance with DTSC protocols. AllWest recommended the report and others assessing soil and groundwater conditions be submitted to the SFDPH.

### III. PURPOSE AND SCOPE OF WORK

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The purpose of the work was to further evaluate a seasonal variation vapor intrusion impact to indoor air quality due to the release of PCE dry cleaning solvents as recommended in our August 2019 *Indoor Air Quality Monitoring Report*.

The scope of work as performed consisted of the following tasks:

- 1) Performed a survey of building characteristics and inventory of household chemicals and hazardous materials stored in the subject building.
- 2) Collected four indoor air quality (IAQ) samples (IAQ-1 through IAQ-4) on the first floor of the PCU building and one outdoor ambient air (OAA) control sample (OAA-1). IAQ-1 was located behind the bank teller counter, IAQ-2 was located in the central portion of the bank floor, IAQ-3 was located in the bathroom, and IAQ-4 was located near the southwest corner of the PCU building. The OAA sample OAA-1 was collected from within a fenced-in area situated adjacent to the western exterior wall of the PCU building. Sample locations are shown on Figure 2. The IAQ and OAA samples were collected over a 24-hour period per procedures outlined in the DTSC *Final – Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, October 2011;
- 3) Maintained samples under chain-of-custody and transported the samples to a California SWRCB, ELAP certified analytical laboratory (Torrent Laboratory, LLC of Milpitas, California) for chemical analyses. Analyzed IAQ and OAA samples for PCE and its degradation products TCE, 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, trans-1,2-DCE and vinyl chloride.
- 4) Prepared a written report describing the field activities, summarizing the laboratory data, presenting investigation findings, and providing conclusions and recommendations.

### IV. MONITORING ACTIVITIES

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#### A. Hazardous Materials Audit

Prior to indoor air quality sampling activities on December 29, 2019, AllWest surveyed building characteristics and household chemicals and hazardous materials potentially containing VOCs stored at the subject property. Several chemical products were stored in a janitorial closet and break room located on the second floor of the PCU. Products included household cleaners, paint, rust remover, etc. The products contained various VOCs, but were not observed to contain PCE or its breakdown products. Building survey forms are included in Appendix B. Hazardous material survey forms are included in Appendix C.

#### B. Indoor Air Quality and Outdoor Ambient Air Sampling

Four IAQ samples (IAQ-1 through IAQ-4) were collected from the first floor of the PCU building on December 29 and 30, 2019. IAQ-1 was located behind the bank teller counter in the western portion of the building, IAQ-2 was located in the central portion of the bank floor, IAQ-3 was located in the bathroom, and IAQ-4 was located near the southeast corner of the PCU building.

One OAA control sample (OAA-1) was collected within a fenced-in area situated adjacent to the western exterior wall of the PCU building.

AllWest collected air quality samples in laboratory prepared 6-liter capacity SUMMA canisters. Flow rates of approximately 3.47 milliliters per minute (ml/min) were used to fill the canisters over an 24-hour period. The canisters were filled to approximately 80% of capacity, or 5 inches of mercury (in Hg) vacuum.

Pertinent field observations, pressure, times and readings were recorded. Air quality field sampling logs are included in Appendix B. Sampling was conducted in general accordance with the DTSC *Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)* (DTSC, 2011).

### **C. Sample Preservation, Storage and Handling**

To prevent the loss of constituents of interest, all SUMMA canisters were removed from the manifold, labeled with sampling information, including initial and final vacuum pressures, and placed in a dark container for transport to the analytical laboratory.

### **D. Chain-Of-Custody Program**

All samples collected for this project were transported under chain-of-custody protocol. The chain-of-custody program allows for the tracing of possession and handling of individual samples from the time of field collection through laboratory analysis. The document includes the signature of the collector, date and time of collection, sample number, number and type of sample containers including preservatives, SUMMA canister and flow controller ID numbers, initial and final SUMMA canister vacuums, parameters requested for analysis, signatures of persons and inclusive dates involved in the chain of possession. Upon delivery to the laboratory the document will also include the name of the person receiving the samples, and date and time samples were received. Chain of custody documents are included in Appendix D.

## **V. ASSESSMENT FINDINGS**

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### **A. Laboratory Analyses and Sampling Data**

Air sample analysis was performed by a State of California ELAP certified independent analytical laboratory, Torrent Laboratory, LLC of Milpitas, California. Four IAQ samples and one OAA control sample were analyzed for PCE and its degradation products TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE and vinyl chloride.

- PCE was detected in all four of the IAQ samples at concentrations ranging from 2.9  $\mu\text{g}/\text{m}^3$  in sample IAQ-3 to 4.3  $\mu\text{g}/\text{m}^3$  in sample IAQ-2. PCE was not detected in OAA sample OAA-1.

No other COCs were detected in any indoor air samples analyzed. Indoor and outdoor air analytical data is summarized in Table 1. The laboratory analytical report is included in Appendix D.

### **B. Laboratory Quality Assurance and Quality Control**

A review of laboratory internal QA/QC report indicates the method blank and sample spike data for all analyses were within the laboratory recovery limits. The samples were also analyzed within the acceptable EPA holding times. The data from Torrent Laboratory is considered to be of good quality. Laboratory QA/QC reports and chain-of-custody records are included in Appendix D.



## VI. DISCUSSION

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### A. Environmental Screening Levels

To assess if the identified COCs in indoor air pose a risk to human health and the environment, AllWest compared analytical data generated during this investigation to ESLs for commercial/industrial land use. The ESLs are compiled by the Regional Water Quality Control Board, San Francisco Bay Region (SFRWQCB) in *User's Guide: Derivation and Application of Environmental Screening Levels (ESLs)*, Interim Final – January 24, 2019 Revision 2 (updated July 25, 2019). ESLs used in this investigation were established using *Table IA-1: Indoor Air: Direct Exposure Human Health Risk Levels*, and *Table IA-2: Indoor Air: Odor Nuisance Levels*, (SFRWQCB, 2019).

Under most circumstances, the presence of a chemical at a concentration below the corresponding ESL is presumed to not pose a significant risk to human health or the environment. The ESLs for the subject site were established with the assumption of commercial/industrial property use.

### B. Indoor Air Analytical Data Compared to Screening Levels

- PCE was detected in all four of the IAQ samples at concentrations ranging from 2.9 µg/m<sup>3</sup> in sample IAQ-3 to 4.3 µg/m<sup>3</sup> in sample IAQ-2. All four IAQ samples exceeded the applicable commercial/industrial ESL of 2.0 µg/m<sup>3</sup> for PCE. None of the other analyzed constituents were detected above their respective laboratory detection limits in the air samples collected.

Analytical data and applicable ESLs are summarized in Table 1 and the laboratory analytical report is included in Appendix D.

## VII. CONCLUSIONS AND RECOMMENDATIONS

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Indoor air quality within the subject property building is impacted to levels above commercial/industrial ESLs by soil vapor intrusion of PCE, and presents a potential human health risk to subject building occupants. Although PCE concentrations in indoor air at the subject property have likely resulted from soil vapor intrusion; it has not been established whether the soil vapor contaminant plume originated from a former neighboring dry cleaning facility or from historical subject property land use.

AllWest concludes, based on the recent indoor air quality sampling data, that soil vapor intrusion from PCE is a potential risk to the human health of building occupants. Since differences in PCE concentrations between the August and December indoor air monitoring events are insignificant, we conclude there is no significant seasonal variation in indoor air PCE concentrations.

AllWest recommends indoor air quality and sub-slab vapor monitoring of existing Vapor Pin™ probes be conducted during the 2020 summer season in accordance with the DTSC protocols (DTSC, 2011). AllWest recommends this report be submitted to the SFDPH.

## VIII. LIMITATIONS

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The work described in this report was performed in accordance with the Environmental Consulting Agreement between Police Credit Union (Client) and AllWest Environmental, Inc, dated December 12, 2019. AllWest has prepared this report for the exclusive use of the Client for this particular project and in accordance with generally accepted practices at the time of the work. No other warranties, certifications or

representations, either expressed or implied are made as to the professional advice offered. The services provided for the Client were limited to their specific requirements; the limited scope allows for AllWest to form no more than an opinion of the actual site conditions. No matter how much research and sampling may be performed, the only way to know about the actual composition and condition of the subsurface of a site is through excavation.

The conclusions and recommendations contained in this report are made based on observed conditions existing at the site, laboratory test results of the submitted samples, and interpretation of a limited data set. It must be recognized that changes can occur in subsurface conditions due to site use or other reasons. Furthermore, the distribution of chemical concentrations in the subsurface can vary spatially and over time. The results of chemical analysis are valid as of the date and at the sampling location only. AllWest is not responsible for the accuracy of the test data from an independent laboratory, or for any analyte quantities falling below the recognized standard detection limits or for the method utilized by the independent laboratories.

Background information that AllWest has used in preparing this report, including but not limited to previous field measurements, analytical results, site plans, and other data, has been furnished to AllWest by the Client, its previous consultants, and/or third parties. AllWest has relied on this information as furnished. AllWest is not responsible, for nor has it confirmed, the accuracy of this information.

## IX. REFERENCES

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AllWest Environmental, Inc. (AllWest), *Indoor Air Quality Monitoring Report, 2500 Irving Street, San Francisco, California 94122*, August 29, 2019.

AllWest, *Phase II Subsurface Investigation Report, 2525 Irving Street, San Francisco, California 94122*, August 19, 2019.

AllWest, *Phase II Subsurface Investigation Report, 2500-2550 Irving Street, San Francisco, California 94122*, August 19, 2019.

AllWest, *Environmental Site Assessment, 2525 & 2550 Irving Street, San Francisco, California 94122*, February 8, 2019.

State of California Department of Toxic Substances Control (DTSC) and California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), *Advisory – Active Soil Vapor Investigations*. July 2015.

DTSC, *Frequently Asked Questions, 2012 Advisory – Active Soil Gas Investigations (ASGI)*, March 2013.

DTSC, *Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)*, October 2011.

State of California San Regional Water Quality Control Board, San Francisco Bay Region (SFRWQCB), *User's Guide: Derivation and Application of Environmental Screening Levels (ESLs)*, Interim Final – January 24, 2019 Revision 2 (updated July 25, 2019).

# TABLES

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**Table 1**  
**Summary of Indoor and Outdoor Air Analytical Data**  
**2550 Irving Street**  
**San Francisco, California 94122**  
**AllWest Project No. 19086.28**

Sample ID	Air Sample Start Date	Air Sample End Date	Tetrachloroethane (PCE) $\mu\text{g}/\text{m}^3$	Trichloroethene (TCE) $\mu\text{g}/\text{m}^3$	1,1-Dichloroethene (1,1-DCE) $\mu\text{g}/\text{m}^3$	cis-1,2-Dichloroethene (cis-1,2-DCE) $\mu\text{g}/\text{m}^3$	trans-1,2-Dichloroethene (trans-1,2-DCE) $\mu\text{g}/\text{m}^3$	Vinyl Chloride $\mu\text{g}/\text{m}^3$
OAQ-1	8/19/2019	8/20/2019	0.305	0.0483	0.0357	ND (<0.0198)	ND (<0.0198)	ND (<0.00768)
OAQ-1	12/29/2019	12/30/2019	ND (<0.017)	ND (<0.013)	NA	ND (<0.099)	ND (<0.099)	ND (<0.013)
IAQ-1	8/19/2019	8/20/2019	<b>3.85</b>	0.0644	1.70	ND (<0.0198)	ND (<0.0198)	ND (<0.00768)
IAQ-1	12/29/2019	12/30/2019	<b>3.6</b>	ND (<0.013)	NA	ND (<0.099)	ND (<0.099)	ND (<0.013)
IAQ-2	8/19/2019	8/20/2019	<b>3.85</b>	0.161	1.56	ND (<0.0198)	ND (<0.0198)	ND (<0.00768)
IAQ-2	12/29/2019	12/30/2019	<b>4.3</b>	ND (<0.013)	NA	ND (<0.099)	ND (<0.099)	ND (<0.013)
IAQ-3	8/19/2019	8/20/2019	<b>2.67</b>	0.0859	2.63	ND (<0.0198)	ND (<0.0198)	ND (<0.00768)
IAQ-3	12/29/2019	12/30/2019	<b>2.9</b>	ND (<0.013)	NA	ND (<0.099)	ND (<0.099)	ND (<0.013)
IAQ-4	8/19/2019	8/20/2019	<b>2.87</b>	0.0698	1.41	ND (<0.0198)	ND (<0.0198)	ND (<0.00768)
IAQ-4	12/29/2019	12/30/2019	<b>3.5</b>	ND (<0.013)	NA	ND (<0.099)	ND (<0.099)	ND (<0.013)
<b>SFRWQCB Tier 2 Commercial/Industrial ESLs, Direct Exposure</b>			<b>2.0</b>	<b>3.0</b>	<b>310</b>	<b>35</b>	<b>350</b>	<b>0.16</b>

**Table 1**  
**Summary of Indoor and Outdoor Air Analytical Data**  
**2550 Irving Street**  
**San Francisco, California 94122**  
**AllWest Project No. 19086.28**

Sample ID	Air Sample Start Date	Air Sample End Date	Tetrachloroethane (PCE) µg/m <sup>3</sup>	Trichloroethene (TCE) µg/m <sup>3</sup>	1,1-Dichloroethene (1,1-DCE) µg/m <sup>3</sup>	cis-1,2-Dichloroethene (cis-1,2-DCE) µg/m <sup>3</sup>	trans-1,2-Dichloroethene (trans-1,2-DCE) µg/m <sup>3</sup>	Vinyl Chloride µg/m <sup>3</sup>
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**Notes:**

Laboratory analyses by Eurofins Calscience, LLC, Garden Grove, CA

OAQ = Outdoor Air Quality (ambient air control sample)

IAQ = Indoor Air Quality

NA = Not analyzed

µg/m<sup>3</sup> = micrograms per cubic meter

1,1-DCE = 1,1-Dichloroethene by EPA Method TO-15

cis-1,2-DCE = cis-1,2-Dichloroethene by EPA Method TO-15

trans-1,2-DCE = trans-1,2-Dichloroethene by EPA Method TO-15

PCE = perchloroethylene / tetrachloroethene by EPA Method TO-15

TCE = Trichloroethene by EPA Method TO-15

Vinyl chloride by EPA Method TO-15

ND = Not detected above the listed reporting limit

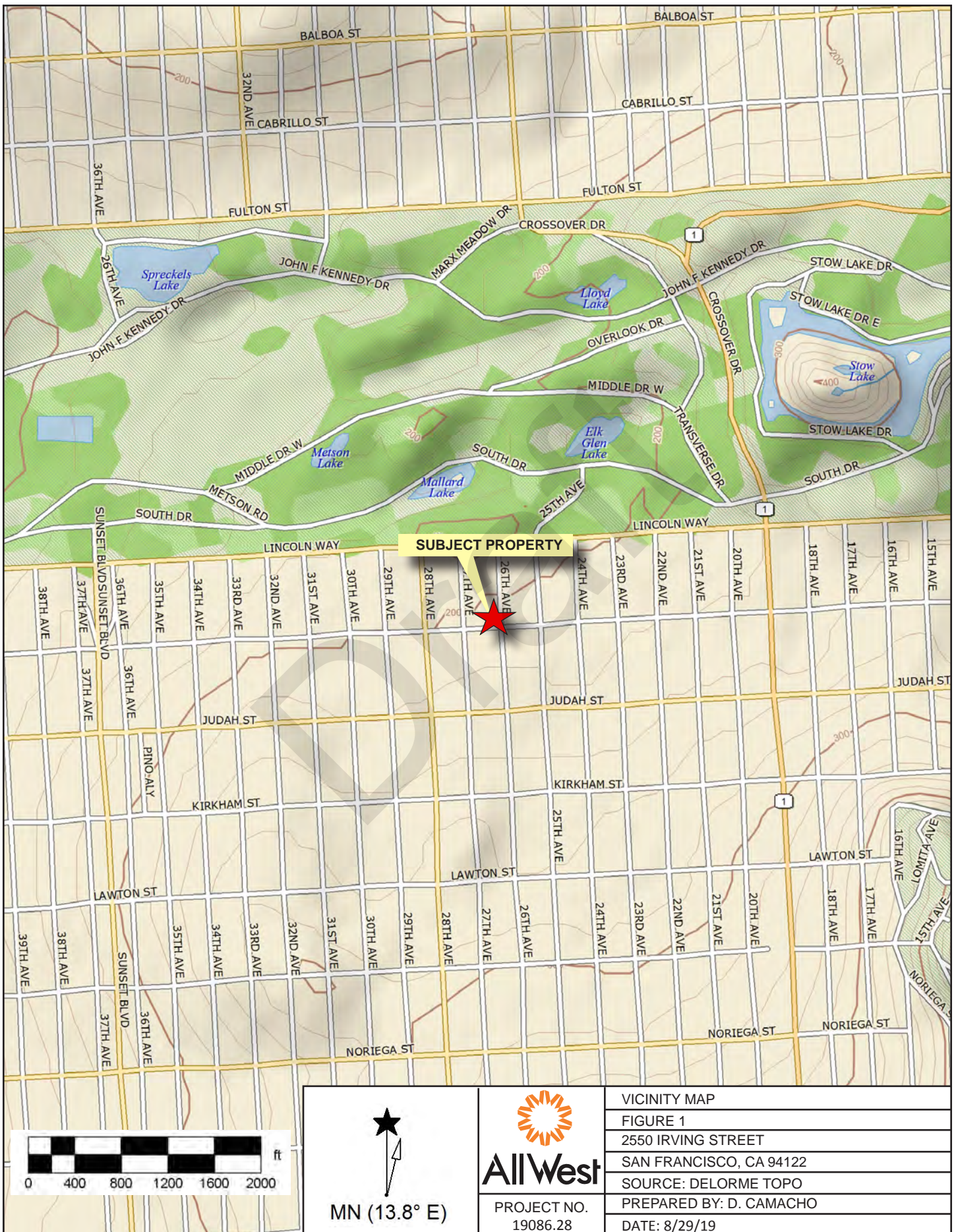
**Bold Font** = Detected values exceed regulatory screening levels.



SFRWQCB Tier 2 ESLs = San Francisco Regional Water Quality Control Board, *User's Guide: Derivation and Application of Environmental Screening Levels (ESLs), Tier 2 ESLs from Table IA-1 - Indoor Air Direct Exposure: Human Health Risk Levels*, Interim Final - January 23, 2019.

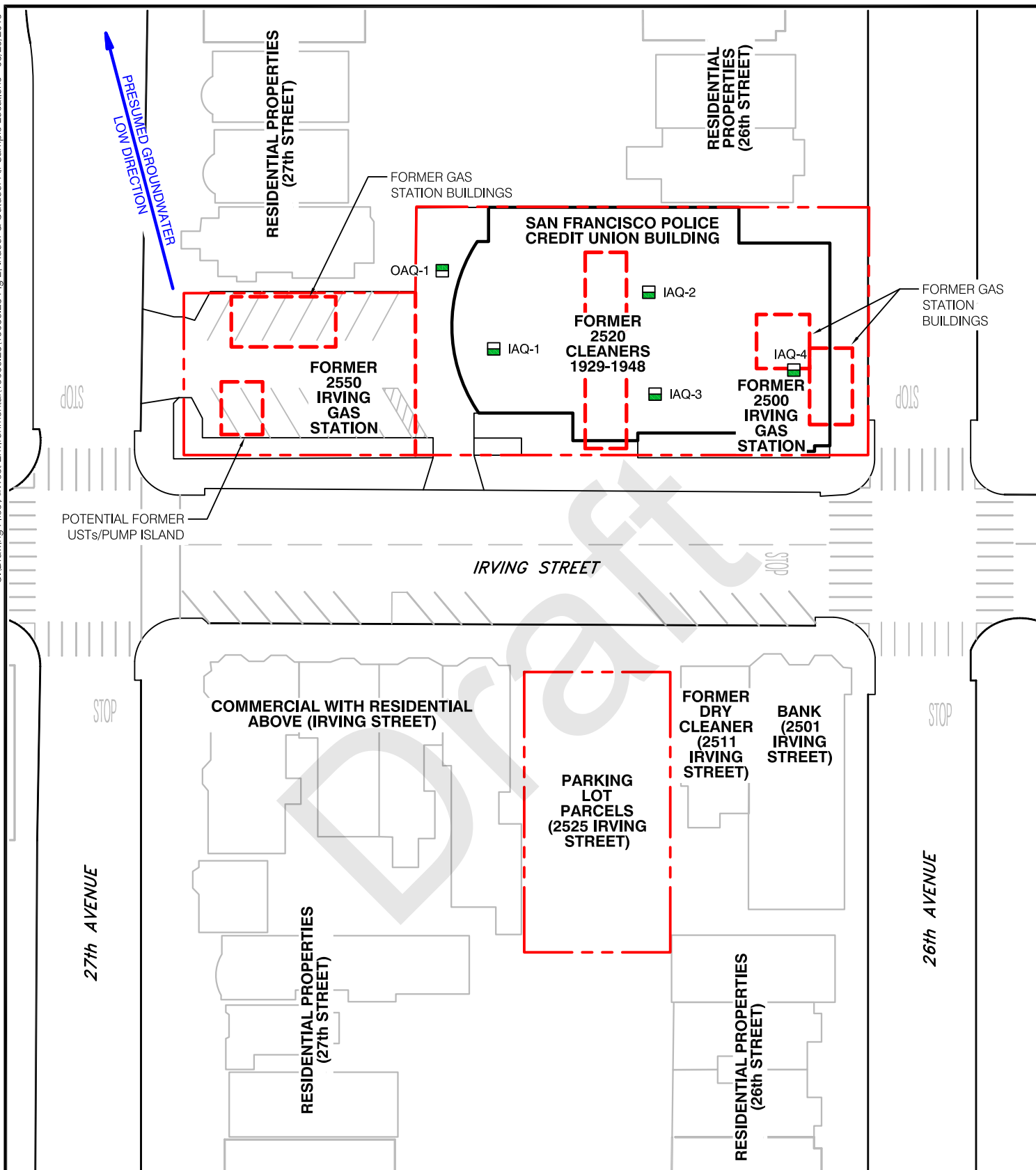
# FIGURES

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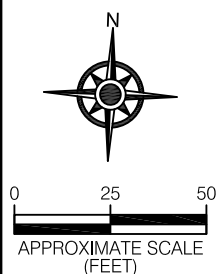


 MN (13.8° E)	 <b>AllWest</b>	VICINITY MAP
		FIGURE 1
	2550 IRVING STREET	
	SAN FRANCISCO, CA 94122	
	SOURCE: DELORME TOPO	
	PREPARED BY: D. CAMACHO	
PROJECT NO. 19086.28		DATE: 8/29/19



**LEGEND**

- OAQ-4 Indoor Air Sample (AllWest, 12/30/19)
- OAQ-1 Outdoor Air Sample (AllWest, 12/30/19)
- Approximate Property Boundaries



PROJECT NO.  
19086.28

**FIGURE 2  
INDOOR AND OUTDOOR  
AIR SAMPLE LOCATIONS**

2500-2550 Irving Street

San Francisco, California

SOURCE: AllWest

DRAWN BY: CM (12/30/19)