September 20, 2017

Ms. Dilan Roe
Chief – Land Water Division
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94501-6577

Subject: **Monitoring Well Installation Report**
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California
Site Cleanup Program Case No. RO0003014

Dear Ms. Roe:

Enclosed please find the *Monitoring Well Installation Report* ("Report") for the Former Crown Chevrolet North Parcel site at 7544 Dublin Boulevard, in Dublin, California (Site Cleanup Program Case No. RO0003014, GeoTracker Global ID T10000001616). This Report was prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., on behalf of Dublin Apartment Properties, LLC. The Report documents the installation of groundwater monitoring wells located at and adjacent to the Former Crown Chevrolet North Parcel property.

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's GeoTracker website.

Please contact me at (408) 680-4938 or Avery Whitmarsh of Amec Foster Wheeler at (510) 663-4154 if you have any questions regarding this document.

Sincerely yours,

Pete Beritzhoff
Dublin Apartment Properties, LLC

Attachment: Monitoring Well Installation Report

cc: Colleen Winey, Zone 7 Water Agency (electronic only)
Gregory Shreeve, City of Dublin (electronic only)

Monitoring Well Installation Report

Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

Prepared for:

Dublin Apartment Properties, LLC
Dublin, California

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
180 Grand Avenue, Suite 1100
Oakland, California 94612

September 2017

Project No. 8617170810

MONITORING WELL INSTALLATION REPORT
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

September 20, 2017
Project 8617170810

This document was prepared by the staff of Amec Foster Wheeler under the supervision of the Geologist whose signature appears hereon.

The findings, recommendations, specifications, or professional opinions are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practice. No warranty is expressed or implied.

Douglas C. Bablitch

Doug C. Bablitch, PE #C64096
Principal Engineer

Avery Whitmarsh, PG #8541
Senior Associate Geologist

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Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

1.0 INTRODUCTION

Amec Foster Wheeler Environment & Infrastructure, Inc. ("Amec Foster Wheeler") has prepared this *Monitoring Well Installation Report* ("Report") on behalf of Dublin Apartment Properties, LLC for the Former Crown Chevrolet North Parcel site located at 7544 Dublin Boulevard, Dublin, California (the "site;" Figure 1).[1] This Report describes the methods for installation of groundwater monitoring and performance monitoring wells at and adjacent to the site.

In accordance with the *Revised Additional Investigation and Soil Removal Work Plan* (AMEC, 2014a), five on-site monitoring wells were installed to replace on-site monitoring wells that were destroyed prior to the start of site redevelopment. Additionally, six performance monitoring wells were installed within and adjacent to a permeable reactive barrier (PRB) that is located beneath Golden Gate Drive, just west and hydraulically upgradient of the site.

The well installation activities were performed in accordance with the *Work Plan for Monitoring Well Installation* ("Work Plan"), which was included as Appendix L to the *Vapor Mitigation and Permeable Reactive Barrier Basis of Design Report* ("Design Report;" Amec Foster Wheeler, 2015a). The sampling and reporting of the wells will be conducted in accordance with the *Operations, Maintenance, and Monitoring Plan for Permeable Reactive Barrier* ("OMM PLAN;" Amec Foster Wheeler, 2017a).

1.1 SITE BACKGROUND

The site was developed in 1968 as Crown Chevrolet, a car dealership with auto body shops, on land that appears to have been previously used for agricultural purposes. Operations as a car dealership and auto body shop continued from 1968 through 2013. Investigations performed from 2009 through 2014 indicated the presence of volatile organic compounds (VOCs) in soil, groundwater, and soil vapor. More detailed site history and the results of previous investigations can be found in the *Soil, Groundwater, and Soil Vapor Investigation Report* (AMEC, 2012) and the Design Report.

[1] Documents associated with future site work are associated with the Aster Apartments case at 6775 Golden Gate Drive, Dublin, California (Site Cleanup Program Case No. RO0003252 and GeoTracker Site ID T10000010517).

1.2 CONSTITUENTS OF CONCERN

Two main areas of soil, groundwater, and/or soil vapor impacts have been identified at the site. A summary of the constituents of concern (COCs) for the site, as well as their distribution in affected media and suspected origin, is as follows:

- Volatile organic compounds (VOCs), primarily tetrachloroethene (PCE) and trichloroethene (TCE), are present in shallow groundwater throughout the northern portion of the site. The PCE and TCE are attributed to an off-site source; the specific source has not been identified. Soil vapor impacts (PCE, TCE, and associated breakdown products) have been identified in the vicinity of the groundwater plume, extending approximately 200 to 240 feet south from the northern property boundary, as summarized in the FS/CAP (AMEC, 2014b). Groundwater monitoring at the site has indicated that concentrations of VOCs in groundwater are generally stable or declining (Amec Foster Wheeler, 2015b).
- Past releases at the site impacted soil with chlorobenzene and related compounds at a former front-end alignment pit ("former F.E. Pit") and former sump beneath the current parking garage. Limited groundwater and soil vapor impacts have also been identified at the former sump.

Remedial activities were performed to address the chlorobenzenes and petroleum hydrocarbons at the former F.E. Pit and sump. These included excavation of these features and surrounding soil in 2011 and removal of other subsurface features and impacted soils in 2015, as summarized in the *Remediation Report* (AMEC Geomatrix, 2011) and *Post-Demolition Investigation and Soil Removal Completion Report* (Amec Foster Wheeler, 2015c).

1.3 SITE REDEVELOPMENT AND CORRECTIVE ACTIONS

The property was sold in the fall of 2014, and the site buildings were demolished in December 2014 in preparation for redevelopment. Site redevelopment was conducted from 2015 through 2017. There are currently mixed residential/commercial buildings at the site, comprising 313 apartments, plus and retail space at ground level along Dublin Boulevard (Figure 2).

Corrective actions were implemented for the site to meet the requirements set forth in an August 16, 2013 letter from Alameda County Department of Environmental Health (ACDEH, 2013). First, a vapor mitigation system (VMS) was constructed beneath site buildings in the northern portion of the site to mitigate potential risks to future building occupants from VOC-impacted soil vapor. Second, the PRB is present just west and hydraulically upgradient of the site to treat VOC-impacted groundwater as it enters the site from the west (Figure 2). The final design for these corrective actions is described in the Design Report. The VMS, which includes a vapor barrier and sub-slab ventilation system beneath applicable mixed use commercial and residential buildings at the site, was installed in 2016 during building construction (Amec Foster Wheeler, 2017b), and the PRB was installed in 2015 (Amec Foster Wheeler, 2016).

The PRB is an approximately 146-foot-long permeable trench backfilled with a treatment media consisting of a zero valent iron (ZVI) and sand mixture. The PRB intersects the shallow groundwater zone to intercept and treat impacted off-site groundwater entering the site from the west. The treatment media is significantly more permeable than the native soils, which allows groundwater to flow passively through the PRB under natural hydraulic gradients; no pumping is required. The PRB is keyed into the underlying clay in order to prevent underflow of shallow groundwater affected by VOCs beneath the PRB.

2.0 WELL INSTALLATION

Five monitoring wells were installed in the norther portion of the site, downgradient of the PRB, to replace the previously destroyed on-site monitoring wells. Additionally, six performance monitoring wells were installed within and upgradient of the PRB. Three of the performance monitoring wells were installed within the PRB trench (e.g., in-barrier monitoring wells) and three were installed west of the PRB, each directly upgradient of an in-barrier well. Each upgradient well is screened at approximately the same depth as its companion in-barrier well.

The performance monitoring and on-site monitoring well locations are shown on Figure 2 and well construction details are presented in Table 1.

2.1 PRE-FIELD ACTIVITIES

Prior to well installation, drilling permits were obtained from Zone 7 Water Agency (Appendix A) and a site-specific health and safety plan was prepared. Underground Service Alert of Northern California was contacted to identify public utilities near the well locations at least two business days prior to the start of work. Additionally, a private underground utility locator was contracted to identify and mark below-grade building utilities in the vicinity of the well locations.

2.2 FIELD ACTIVITIES

All borings were drilled and the wells installed by Gregg Drilling & Testing, Inc. (Gregg Drilling), a C-57 licensed drilling contractor of Martinez, California, under the supervision of a California-licensed Professional Geologist. Soil cores from each location were logged following ASTM International Standard D2488, which is based on the Unified Soil Classification System. Recovered soil was screened for the presence of VOCs using a photoionization detector (PID). PID readings and well construction details are included on the geologic logs prepared for each boring (Appendix B).

The specific methods used to install the wells are described in the following sections.

2.2.1 Upgradient PRB Performance Monitoring Well Installation

The upgradient PRB performance monitoring wells were installed from November 8 through 10, 2016, using a Marl M5T drill rig equipped with a Macro-Core MC5 Sampling System to facilitate continuous soil core recovery. A hand auger was used to advance the first 5 feet of

each boring. A 2.5-inch-diameter pilot boring for each upgradient PRB performance monitoring well was advanced to approximately 28 feet below the original grade (i.e., the top of the identified clay layer that the PRB is keyed into).[2] The screen interval for the upgradient well in each pair was determined in the field based on soils encountered in the boring; as noted in the Work Plan, each upgradient well was to be screened within the coarsest-grained soil encountered within the vertical interval of the PRB (which is between approximately 10 and 28 feet below original grade).

Once the desired screen interval was determined at each location, the bottom of the boring was backfilled with bentonite chips, using the Macro-Core casing as a tremie pipe, until the top of the chips was at the desired total depth of the well. Each borehole was then overdrilled using 8.25-inch-diameter hollow-stem augers. Each monitoring well casing and all annular materials were placed into the well through the augers as they were retracted, to prevent bridging or borehole collapse. Each monitoring well was constructed with 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC) blank well casing with 5 feet of 0.010-inch slotted well screen. The annular space between the well screen and borehole was backfilled from the bottom of the borehole to at least 1 foot above the well screen with #2/12 filter pack sand. Approximately 2 feet of bentonite chips were placed above the filter pack sand and hydrated with potable water. The annular space above the bentonite seal was then backfilled using neat cement to approximately 2 feet below original grade.

2.2.2 In-Barrier PRB Performance Monitoring Well Installation

The Design Report indicated that three 8-inch-diameter cylindrical concrete forms (e.g., Sonotube™) would be installed within the PRB to facilitate future monitoring well construction. These forms were installed by the PRB contractor along the centerline of the PRB in October 2015 to provide a conductor casing through the controlled density backfill (CDF) above the PRB treatment media. The Sonotube forms were installed to a depth of approximately 10 feet below original grade (slightly into the PRB media), corresponding with the interface between the CDF and the PRB treatment media and were covered with steel plates pending installation of the in-barrier wells. Each steel plate was removed using a forklift immediately prior to well installation.

The in-barrier PRB performance monitoring wells were installed from November 8 through 10, 2016. A Marl M5T drill rig equipped with a Macro-Core MC5 Sampling System was used to lower direct-push rods to the bottom of the Sonotube and subsequently advance them through the PRB media (starting at approximately 9 feet below original grade) to a total depth that

[2] The PRB performance monitoring wells were installed prior to road widening activities in the vicinity of the PRB, which required removal of soil in the vicinity of four wells, as shown in Table 1. Measurements referenced in this document for the PRB performance monitoring wells are relative to the original grade. Table 1 also includes adjusted “below ground surface” measurements reflecting current site conditions.

matched the depth of the corresponding upgradient well. After drilling to the targeted depth (equal to the depth of the bottom of the filter pack in the companion upgradient well), the well materials were lowered through the direct-push rods. Each in-barrier well was constructed with 1.5-inch-diameter, Schedule 40 PVC blank well casing with 5 feet of 0.010-inch slotted well screen. The depth of the screened interval of each well was targeted to match that of its adjacent upgradient well.

Because the grain-size distribution and permeability of the ZVI/sand treatment media is similar or more permeable/coarser than typical filter pack sand, the PRB backfill material was used to serve as the filter pack for the in-barrier wells. After the well screen and casing were placed at the appropriate depth, the direct-push rods were slowly retracted to the depth of the PRB Media/CDF interface and the ZVI/sand material was allowed to collapse inward around the well casing. The annular space above the PRB and within the Sonotube forms was then backfilled to 1 foot above the ZVI/sand interface with #2/12 filter pack sand. Approximately 2 feet of bentonite chips were placed above the filter pack sand and hydrated with potable water. The annular space above the bentonite seal was backfilled using neat cement to approximately 2 feet below original grade.

2.2.3 On-Site Monitoring Well Installation

Due to access restrictions related to ongoing construction activities, the on-site monitoring wells were installed in two mobilizations. Wells MW-07 through MW-10 were installed on April 12 and 13, 2017, and well MW-11 was installed on June 30, 2017.

A 2.5-inch-diameter pilot boring for each on-site monitoring well was advanced to approximately 20 feet ground surface (bgs) using a Marl M5T drill rig equipped with a Macro-Core MC5 Sampling System to facilitate continuous soil core recovery. A hand auger was used to advance the first 5 feet of each boring. As noted in the Work Plan, each well was to be screened within the coarsest-grained soil encountered within the saturated zone. Once the desired screen interval was determined at each location, the borehole was overdrilled using 8.25-inch-diameter hollow-stem augers. Each monitoring well was constructed with 2-inch-diameter, Schedule 40 PVC blank well casing with 5 feet of 0.010-inch slotted well screen. The annular space between the well screen and borehole was backfilled from the bottom of the borehole to at least 1 foot above the well screen with #2/12 filter pack sand. Approximately 2 feet of bentonite chips were placed above the filter pack sand and hydrated with potable water. The annular space above the bentonite seal was then backfilled using neat cement to approximately 2 feet bgs.

2.3 SURFACE COMPLETION

All on-site monitoring wells were completed at the ground surface using flush-mounted, traffic-rated boxes set into concrete immediately following installation. A locking, watertight plug was placed in the top of each well casing.

The PRB performance monitoring wells were installed prior to regrading of the area in preparation for the widening of Golden Gate Drive. Therefore, permanent well boxes were not installed at these wells immediately following well installation. Instead, immediately following installation, the PVC casing of each well was cut such that the top of the casing was several inches below the ground surface at the time, and a locking, watertight plug was placed in the top of each well casing. Steel plates were placed over each well to provide protection prior to regrading activities. During regrading activities in May 2017, the steel plates were removed and the location of each well was marked using delineators and caution tape. The grade immediately adjacent to each well location (i.e., up to approximately a 2-foot radius from the well) was lowered using hand tools to avoid damaging the well casings.

In June 2017, following the completion of regrading activities, the well casings were cut under Amec Foster Wheeler supervision such that the top of each casing was below the final grade. Flush-mounted, traffic-rated well boxes were temporarily placed over each well to provide protection during street paving in June 2017. Following paving the traffic-rated well boxes were set into concrete in July 2017.

3.0 WELL DEVELOPMENT

PRB performance monitoring wells were developed on November 14, 2016, and on-site monitoring wells were developed on April 17, 2017 (MW-7 through MW-10) and July 3, 2017 (MW-11). Each well was developed no sooner than 48 hours after installation was completed. Each well was developed using a combination of bailing, surging, and pumping until field parameters (e.g., dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance) stabilized and the water became visibly clear and free of solids. Well development logs are included in Appendix C.

4.0 WASTE MANAGEMENT

Investigation-derived waste (IDW), including soil cuttings, purge water, and equipment wash water, was contained onsite in appropriately labeled Department of Transportation-approved 55 gallon drums. All IDW was disposed of at an off-site permitted facility following laboratory analysis for waste characterization and profiling.

5.0 WELL SURVEY

On July 14, 2017, a licensed surveyor established the horizontal coordinates of each well to an accuracy of 0.1 foot relative to City of Dublin basis of survey benchmarks; these coordinates were subsequently converted to the State Plane Coordinate System, North American Datum of 1983. The vertical elevations of the north side of the top of the well casing and ground surface elevation was surveyed to an accuracy of 0.01 foot relative to the National Geodetic Vertical Datum of 1929 (NGVD29).

6.0 REFERENCES

Alameda County Health Care Services Agency, Department of Environmental Health (ACDEH), 2013. Fuel Leak Case No. RO0003014 and GeoTracker Global ID T00000001616, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard and 6707 Golden Gate Drive, Dublin, California, 94568, August 16.

AMEC Environment & Infrastructure, Inc. (AMEC), 2012. Soil, Groundwater, and Soil Vapor Investigation Report, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard and 6707 Golden Gate Drive, Dublin, California, Fuel Leak Case No. RO003014, October 19.

AMEC, 2014a. Revised Additional Investigation and Soil Removal Work Plan, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard, Dublin, California, August 27.

AMEC, 2014b. Final Feasibility Study and Corrective Action Plan, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard and 6707 Golden Gate Drive, Dublin, California, May 1.

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler), 2015a. Vapor Mitigation and Permeable Reactive Barrier Basis of Design Report, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard, Dublin, California, June 11.

Amec Foster Wheeler, 2015b. Third and Fourth Quarter 2014 Groundwater Monitoring Report, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard, Dublin, California, April 21.

Amec Foster Wheeler, 2015c. Post-Demolition Investigation and Soil removal Completion Report, Former Crown Chevrolet North Parcel, 7544 Dublin Boulevard, Dublin, California, June 26.

Amec Foster Wheeler, 2016. Dublin Apartments Permeable Reactive Barrier Construction Completion Certification, Former Crown Chevrolet North Parcel, 7544 Dublin Boulevard, Dublin, California, January 28.

Amec Foster Wheeler, 2017a. Operations, Maintenance and Monitoring Plan for Permeable Reactive Barrier, Former Crown Chevrolet North Parcel, 7544 Dublin Boulevard, Dublin, California, July.

Amec Foster Wheeler, 2017b. Vapor Mitigation System Construction Completion Certification, Former Crown Chevrolet North Parcel, 7544 Dublin Boulevard, Dublin, California, July 17.

AMEC Geomatrix, Inc., 2011. Remediation Report, Crown Chevrolet Cadillac Isuzu, 7544 Dublin Boulevard and 6707 Golden Gate Drive, Dublin, California, Fuel Leak Case No. RO003014, December 21.

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TABLE

TABLE 1

SUMMARY OF WELL CONSTRUCTION DETAILS
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

Well ID	Date Installed	Northing (feet NAD83)	Easting (feet NAD83)	Ground Surface Elevation (feet NGVD 29)	Top of Casing Elevation (feet NGVD 29)	Casing Removed Prior to Grading (feet) [1]	Soil Removed during Grading (feet) [1]	Depth of Borehole (feet bgs) [2]	Depth of Well (feet btoc)	Borehole Diameter (inches)	Casing Diameter (inches)	Filter Pack Material	Screen Interval (feet bgs) [2] Top	Screen Interval (feet bgs) [2] Bottom	Screen Interval (feet NGVD 29) Top	Screen Interval (feet NGVD 29) Bottom
PRB Performance Monitoring Wells																
MW-04	11/8/16	2081942.97	6148208.82	340.54	339.90	-1.2	-1.0	27.0	22.7	8.25	2	#2/12 sand	18.4	22.9	322.1	317.6
PRB-01	11/8/16	2081944.64	6148214.16	340.46	339.80	-0.6	-0.9	23.1	22.5	2.5	1.5	ZVI	18.2	22.7	322.3	317.8
MW-05	11/9/16	2081907.50	6148223.79	340.42	339.64	-1.0	-0.8	27.2	20.8	8.25	2	#2/12 sand	16.7	21.2	323.7	319.2
PRB-02	11/9/16	2081908.62	6148227.92	340.35	339.64	-0.9	-0.3	21.9	21.2	2.5	1.5	ZVI	17.0	21.5	323.3	318.8
MW-06	11/10/16	2081871.68	6148238.79	340.20	339.60	0	0	28.0	23.8	8.25	2	#2/12 sand	19.4	23.9	320.8	316.3
PRB-03	11/10/16	2081871.53	6148242.77	340.11	339.32	0	0	25.0	24.3	2.5	1.5	ZVI	20.1	24.6	320.0	315.5
On-Site Monitoring Wells																
MW-07	4/13/17	2081902.90	6148271.43	340.19	339.85	0	0	20.0	18.8	8.25	2	#2/12 sand	14.2	18.8	326.0	321.4
MW-08	4/13/17	2081924.18	6148328.26	340.17	339.85	0	0	20.0	19.1	8.25	2	#2/12 sand	14.4	18.9	325.8	321.3
MW-09	4/12/17	2081955.38	6148421.51	339.56	339.22	0	0	20.0	18.9	8.25	2	#2/12 sand	14.3	18.8	325.3	320.8
MW-10	4/12/17	2081907.02	6148394.19	339.31	338.98	0	0	20.0	19.1	8.25	2	#2/12 sand	14.5	19.0	324.8	320.3
MW-11	6/30/17	2081906.04	6148644.18	338.83	338.42	0	0	20.0	18.9	8.25	2	#2/12 sand	14.5	19.0	324.3	319.8

Notes

1. The PRB performance monitoring wells were installed prior to road widening activities in the vicinity of the PRB, which required removal of PVC well casing and soil in the vicinity of the wells. The amount of casing removed was measured. The amount of soil removed was calculated based on initial measurements during well construction and post-grading survey data.
2. The “below ground surface” measurements for wells have been adjusted as necessary to account for changes to the grade made during road widening activities and reflect current site conditions.

Abbreviations

bgs = below ground surface
btoc = below top of casing
NAD83 = relative to North American Datum of 1983
NGVD 29 = relative to National Geodetic Vertical Datum of 1929
PRB = permeable reactive barrier
ZVI = zero valent iron and sand mixture (PRB construction material)

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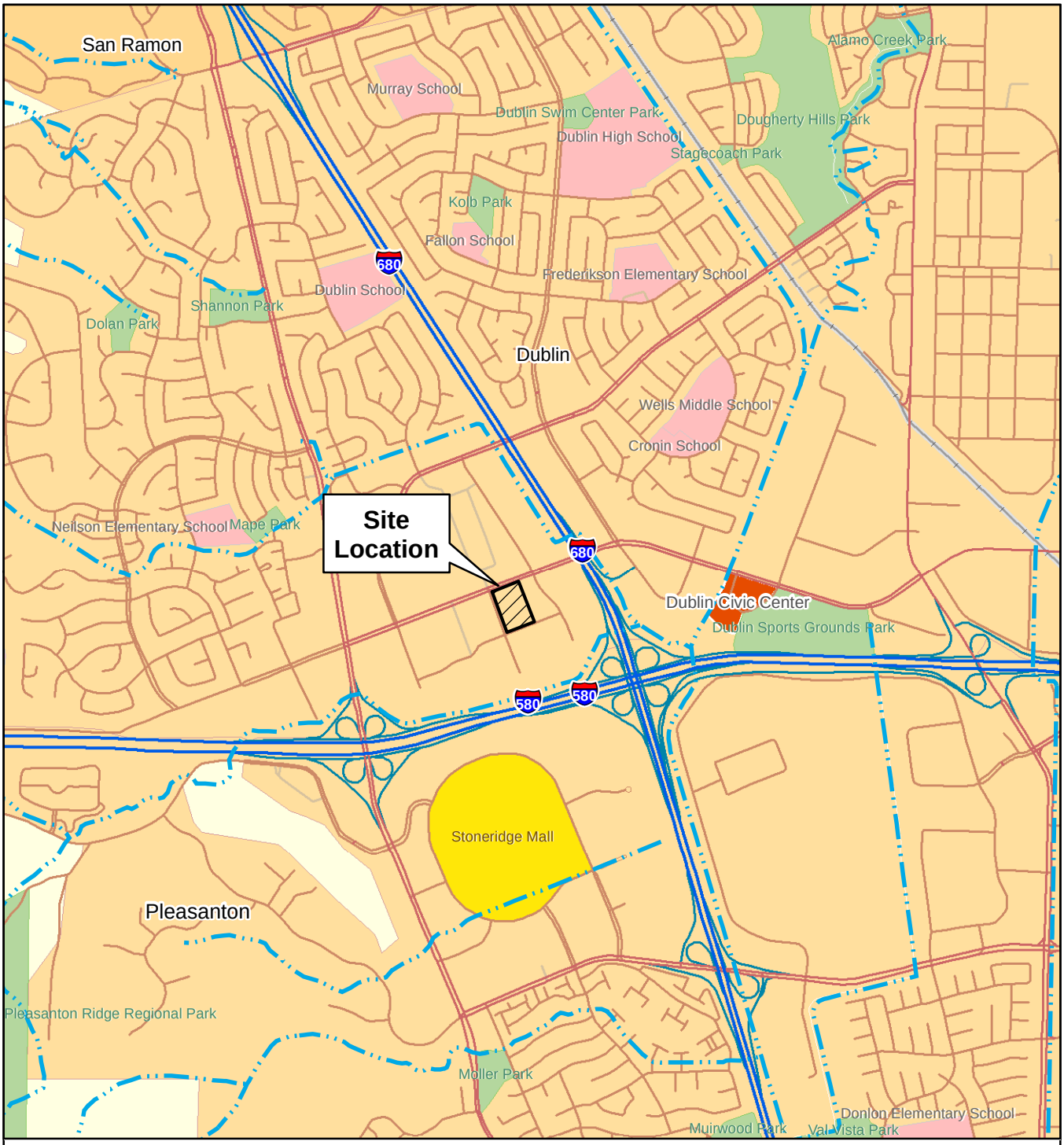
FIGURES



Street map from ESRI, 2007.

0 2,000 4,000 Feet

N

SITE LOCATION MAP
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

amec foster wheeler

Date: 04/27/2017 | Project No. 8617170810.1.1

Figure 1

S:\OD17\8617170810\phase_1.1\17_0425_PRB_fig_01.mxd

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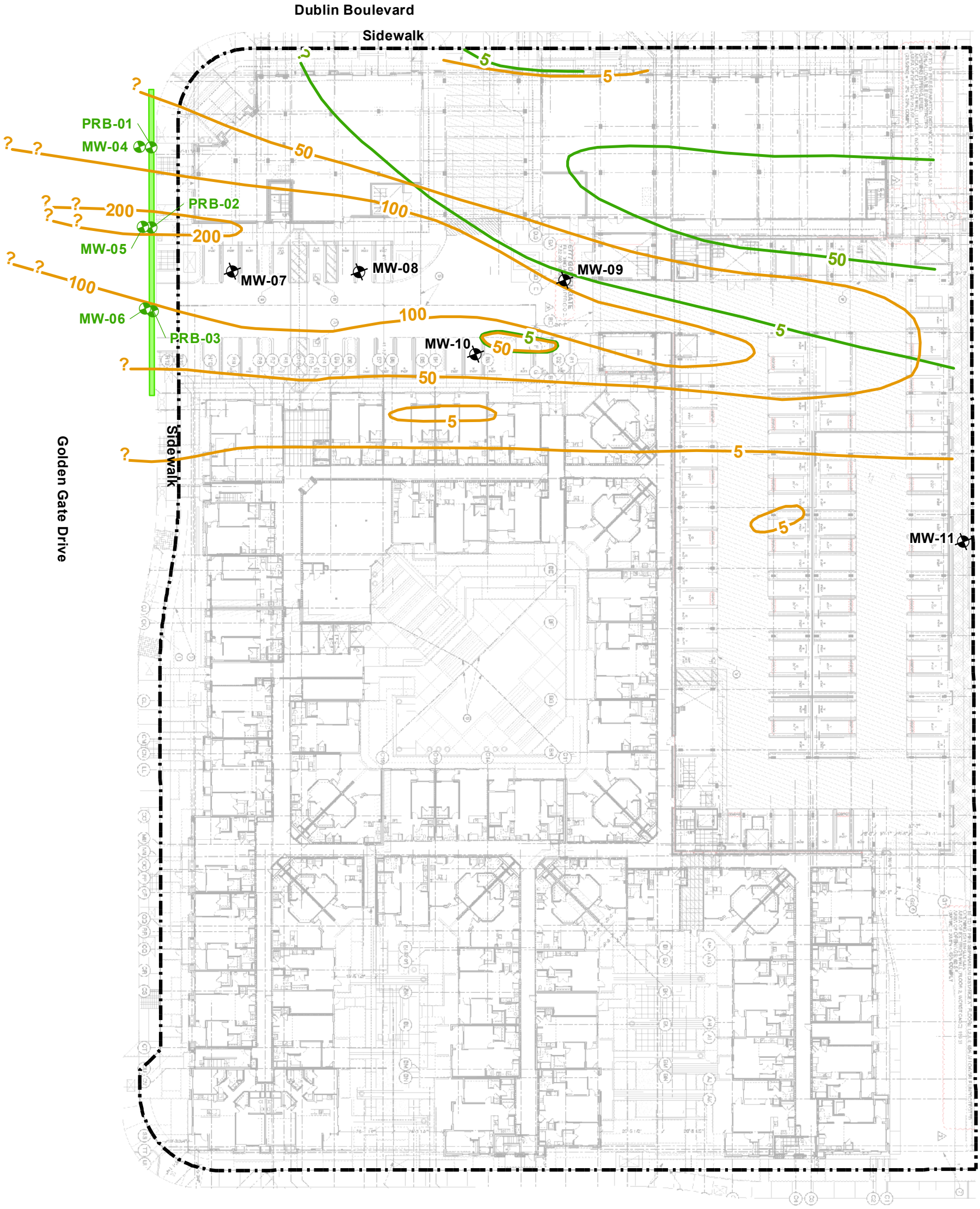

Explanation

- PRB performance monitoring well location
- On-site monitoring well location
- 50 — Approximate line of equal PCE concentration (2012)
- 50 — Approximate line of equal TCE concentration (2012)
- Extent of permeable reactive barrier
- Property line

Abbreviations:
PCE = tetrachloroethene
TCE = trichloroethene

Notes:
1. Units for lines of equal concentration are micrograms per liter.
2. PRB performance monitoring wells are paired, with one in barrier, and the other upgradient with an approximate 5 foot offset.
3. Locations of structures and foundation layouts provided by Carlon, Barbee, & Gibson, Inc., and BDE Architecture in January 2015. Building site plan and interior details provided by BDE Architecture, dated 02/28/2017.

0 50
APPROXIMATE SCALE IN FEET

PRB PERFORMANCE MONITORING AND ON-SITE MONITORING WELL LOCATIONS
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

Date: 09/20/2017 | Project No. 8617170810.1.1

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Figure 2

APPENDIX A

Drilling Permit

APPLICATION FOR DRILLING PERMIT

Zone 7 Water Agency
100 North Canyons Parkway
Livermore, CA 94551
(925) 454-5000
wellpermits@zone7water.com

For Office Use

Permit No.: 2016122	Permit Date: 11/7/16	Receipt No.: 042424 & 719710	Well No.: see attached

For Applicant to Complete

Applicant: Gregg Drilling & Testing, Inc.	Client: Dublin Apartment Properties, llc
Address: 950 Howe Road	Address: 2 Henry Adams St., Ste. 450
City, State, Zip: Martinez, CA 94553	City, State, Zip: San Francisco, CA 94103
Phone: 925.313.6800 Email:mwalden@greggdrilling.com	Phone: 415-509-1441 Email:adam@baywestdevelopment.com

Site

Project Location: 6775 Golden Gate Drive, Dublin, CA 94568	Is Client the Property Owner?: Y / N (If not, attach Prop. Owner Info)
	Assessor's Parcel Number: 941-1500-015-09
GeoTracker or EnviroStor ID:	Latitude: Longitude:

Project Type

- ☒ Well Construction ($397/well)
- ☐ Well Destruction ($397/well)

Proposed or Previous Well Use:

- ☐ Domestic
- ☐ Irrigation
- ☐ Cathodic Protection
- ☐ Geothermal
- ☐ Inclinometer
- ☐ Municipal
- ☐ Dewatering
- ☐ Industrial
- ☒ Monitoring (11)
- ☐ Other: _____

☐ Exploratory Borings ($265/site)

Type of Investigation:

- ☐ Geotechnical
- ☐ Environmental
- ☐ Soil Vapor
- ☐ Other: _____

☐ Remediation System ($265/site)

Type of System:

- ☐ Groundwater Extraction
- ☐ Vapor Extraction
- ☐ In-Situ Treatment
- ☐ Other: _____

Drilling

Drilling Method

- ☐ Mud Rotary
- ☐ Air Rotary
- ☐ Cable Tool
- ☒ Hollow Stem Auger
- ☐ Direct Push
- ☐ Other: _____

Drilling Company: Gregg Drilling & Testing, Inc. 950 Howe Road Martinez, CA 94553

Driller's C57 License No.: 485185

Well Specs.

Owner Well ID	Borehole Diameter	Casing Material	Casing Diameter	Surface Seal Depth	Total Well Depth
PRB-01	1.5"	PVC (3S/1W-1E31)	1.5"	5'	25'
PRB-02	1.5"	PVC (3S/1W-1E32)	1.5"	5'	25'
PRB-03	2.0"	PVC (3S/1W-1E33)	2.0"	5'	25'
MW-07	2.0"	PVC (3S/1W-1E37)	2.0"	5'	20'

For Well Destruction Projects

Destruction Method: ☐ Perforate (Mills Knife) ☐ Pressure Grout ☐ Drill Out ☐ Other: _____

For Exploratory Boring Projects

Number of Borings:	Borehole Diameter:	Maximum Depth:	Estimated Depth-to-Water:

For All Projects

Estimated Starting Date: 11/8/16	Estimated Completion Date: 11/10/16

* Please attach a Site Plan including all proposed drilling locations, existing wells, significant site features, and adjacent streets *

I hereby agree to comply with all requirements of this permit (see Page 2) and Alameda County Ordinance No. O-2015-20.

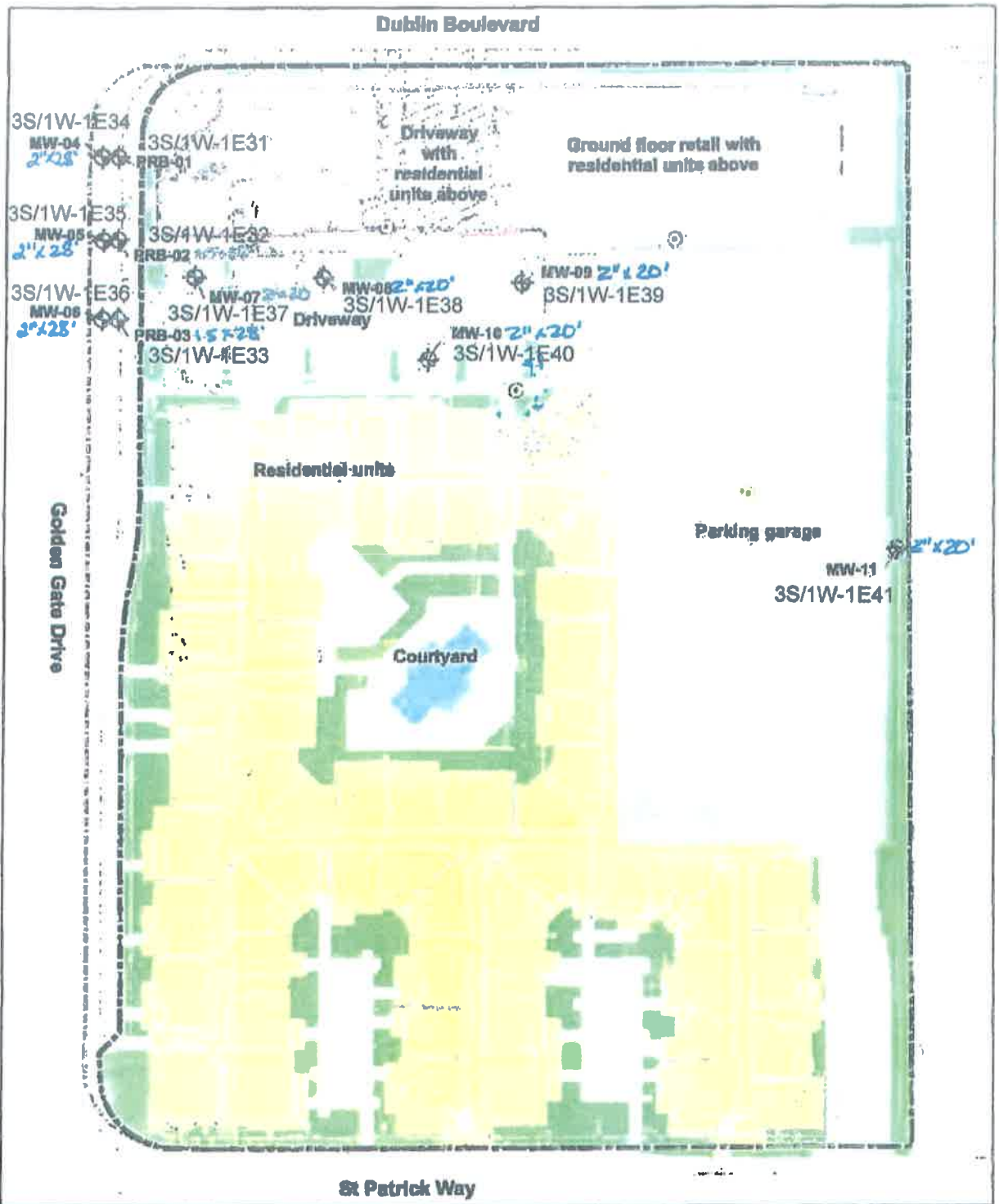
Applicants Signature: Meg Walden Date: 11/1/16

For Office Use

Approved: Wyman Hong Date: 11/7/16

Rev 01/20/2016

	Borehole Diameter	Casing Material	Casing Diameter	Surface Seal Depth	Total Well depth	
MW-08	2.0"	PVC	2.0"	8'	20'	3S/1W-1E38
MW-09	2.0"	PVC	2.0"	8'	20'	3S/1W-1E39
MW-10	2.0"	PVC	2.0"	8'	20'	3S/1W-1E40
MW-11	2.0"	PVC	2.0"	8'	20'	3S/1W-1E41
MW-04	2.0"	PVC	2.0"	8'	28'	3S/1W-1E34
MW-05	2.0"	PVC	2.0"	8'	28'	3S/1W-1E35
MW-06	2.0"	PVC	2.0"	8'	28'	3S/1W-1E36



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SITE PLAN WITH PLANNED NEW CONSTRUCTION AND PROPOSED MONITORING WELL LOCATIONS
Former Crown Chevrolet North Parcel
7544 Dublin Boulevard
Dublin, California

amec foster wheeler

Date: 06/24/2016 | Project No. OD14170600

Figure 1

amec foster wheeler

APPENDIX B

Boring Logs and Well Construction Diagrams

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California		**Log of Well No. Explanation**	
BORING LOCATION:		TOP OF CASING ELEVATION AND DATUM:	
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH (ft.): 15.0	SCREEN INTERVAL (ft.):
DRILLING EQUIPMENT:		DEPTH TO WATER (ft.): FIRST / COMPL.	CASING:
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation:		WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
1					**Notes:** 1. Soil described using visual-manual procedures of American Society of Testing and Materials (ASTM) Standard D 2488 for guidance; a Standard based on the Unified Soil Classification System.		
2					2. Soil color described according to Munsell Color Chart.		
3					3. Dashed lines separating soil strata represent inferred boundaries between sampled intervals that may be abrupt or gradual transitions.		
4							
5					4. Solid lines represent approximate boundaries observed within sample intervals.		
6					5. OVM = organic vapor meter, reading in volumetric parts per million (ppm).		
7							
8							
9							
10					Interval of recovered soil collected with a continuous core sampler.		
11					Interval of non-recovery		
12							
13							
14							
15							

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-04**
BORING LOCATION: Northing: 2081942.9704, Easting: 6148208.8202	TOP OF CASING ELEVATION AND DATUM: 339.90 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/8/16 / DATE FINISHED: 11/8/16
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 27.0 / SCREEN INTERVAL (ft.): 18.4 - 22.9
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 15.8, COMPL. 10.30 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: A. Rosenthal
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 340.54' (NGVD 29)	
0					ASPHALTIC CONCRETE (approximately 6 inches)	Traffic-rated well box Locking expansion cap
					AGGREGATE BASE (approximately 18 inches)	
1						Concrete
2					LEAN CLAY with SAND (SC): dark grayish brown (10YR 4/2), moist, 85% low plasticity fines, 15% fine sand, firm	Note: 1. Hand augered to 5 feet bgs
3						
4					grayish brown (10YR 5/2), 80% low plasticity fines, 20% fine sand	
5						
6						8.25" diameter borehole
7						
8						2" diameter Schedule 40 PVC casing
9						
10						Neat cement grout
11					LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 95% low plasticity fines, 5% fine sand, hard	
12						
13						
14						
15						

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

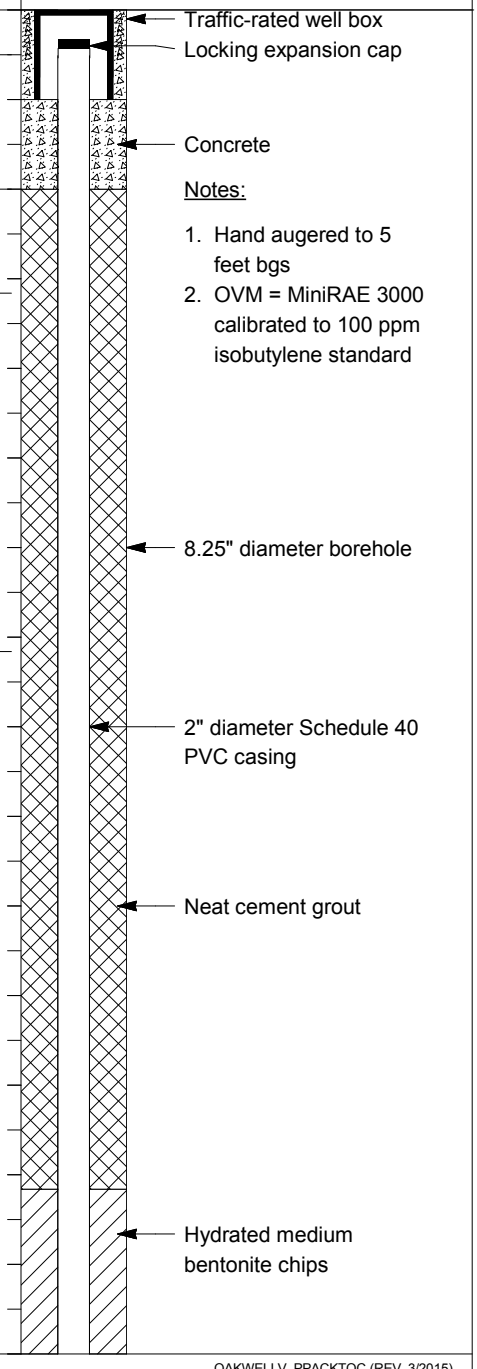
Log of Well No. MW-04 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16					LEAN CLAY (CL): continued	
					CLAYEY SAND (SC): grayish brown (10YR 5/2), wet, 60% fine sand, 40% low plasticity fines	Hydrated medium bentonite chips
17					SANDY LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 70% low plasticity fines, 30% fine sand, soft	8.25" diameter borehole
18						2" diameter Schedule 40 PVC casing
19						
20						#2/12 filter pack sand
					Note: free water observed inside acetate liner	
21						2" diameter Schedule 40 PVC, 0.010" slot screen
22						
23					60% low plasticity fines, 40% fine sand	2" diameter Schedule 40 PVC endcap
24						
						Direct push pilot boring
25						
						Hydrated medium bentonite chips
26					LEAN CLAY with SAND (CL): grayish brown (10YR 5/2), moist, 85% low plasticity fines, 15% fine sand, firm	
						Native backfill
27					Bottom of boring at 27.0 feet	
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-05**
BORING LOCATION: Northing: 2081907.5004, Easting: 6148223.7862	TOP OF CASING ELEVATION AND DATUM: 339.64 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/9/16 / DATE FINISHED: 11/9/16
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 27.2 / SCREEN INTERVAL (ft.): 16.7 - 21.2
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 16.0, COMPL. 9.80 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: A. Rosenthal
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Surface Elevation: 340.42' (NGVD 29)
					ASPHALTIC CONCRETE (approximately 6 inches)
					AGGREGATE BASE (approximately 18 inches)
2					CLAYEY GRAVEL with SAND (GC): brown (10YR 4/3), moist, 40% fine to coarse gravel, 30% fine to coarse sand, 30% low plasticity fines [FILL]
4					LEAN CLAY with SAND (CL): grayish brown (10YR 5/2), moist, 80% low plasticity fines, 20% fine sand, firm
5		X		0	
6				0	
7				0	LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 95% low plasticity fines, 5% fine sand, firm
8				0	
9				0	
10				0	
11				0	
12				0	
13				0	
14				0	
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Notes:

1. Hand augered to 5 feet bgs
2. OVM = MiniRAE 3000 calibrated to 100 ppm isobutylene standard

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. MW-05 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	LEAN CLAY (CL): continued	
					CLAYEY SAND (SC): wet	2" diameter Schedule 40 PVC casing
17				0		8.25" diameter borehole
18				0		
					CLAYEY SAND (SC): wet	
19				0		2" diameter Schedule 40 PVC, 0.010" slot screen
					CLAYEY SAND (SC): grayish brown (10YR 5/2), wet, 70% fine sand, 30% low plasticity fines	
20				0		#2/12 filter pack sand
21				0	SANDY LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 70% low plasticity fines, 30% fine sand, firm	2" diameter Schedule 40 PVC endcap
22				0		
23				0		Direct push pilot boring
24				0		Hydrated medium bentonite chips
25				0	LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 95% low plasticity fines, 5% fine sand, hard	
26				0		
27				0	Bottom of boring at 27.2 feet	
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. MW-06

BORING LOCATION: Northing: 2081871.6774, Easting: 6148238.7942

TOP OF CASING ELEVATION AND DATUM: 339.60 feet (NGVD 29)

DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.

DATE STARTED: 11/10/16 | DATE FINISHED: 11/10/16

DRILLING METHOD: Direct push/Hollow-stem auger

TOTAL DEPTH (ft.): 28.0 | SCREEN INTERVAL (ft.): 19.4 - 23.9

DRILLING EQUIPMENT: Marl M5T

DEPTH TO WATER (ft.): FIRST 19.5 | COMPL. 8.82 | CASING: 2" Sch. 40 PVC

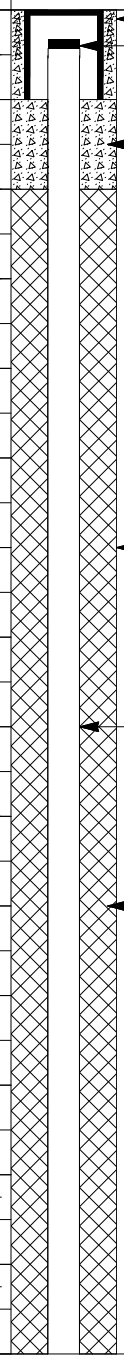
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']

LOGGED BY: A. Rosenthal

HAMMER WEIGHT: NA | DROP: NA

RESPONSIBLE PROFESSIONAL: A. Rosenthal | REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Surface Elevation: 340.20' (NGVD 29)
					ASPHALTIC CONCRETE (approximately 6 inches)
					AGGREGATE BASE (approximately 18 inches)
2					CLAYEY GRAVEL with SAND (GC): brown (10YR 4/3), moist, 40% fine to coarse gravel, 30% fine to coarse sand, 30% low plasticity fines [FILL]
3					LEAN CLAY with SAND (CL): dark grayish brown (10YR 4/2), moist, 80% low plasticity fines, 20% fine sand, firm
5				0	
6				0	
7				0	
8				0	
9				0	LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 90% low plasticity fines, 10% fine sand, firm
10				0	
11				0	
12				0	
13				0	CLAYEY SAND (SC): grayish brown (10YR 5/2), moist, 60% fine sand, 40% low plasticity fines
14				0	LEAN CLAY with SAND (CL): grayish brown (10YR 5/2), moist, 80% low plasticity fines, 20% fine sand, soft
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

Notes:

1. Hand augered to 5 feet bgs
2. OVM = MiniRAE 3000 calibrated to 100 ppm isobutylene standard

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

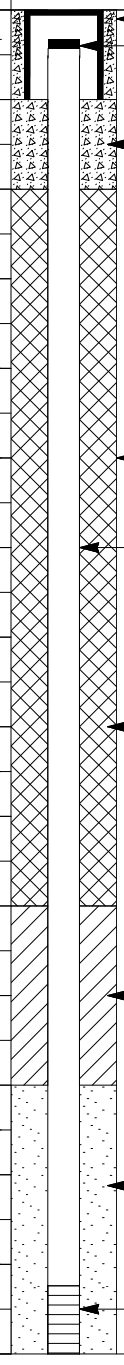
Log of Well No. MW-06 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	LEAN CLAY with SAND (CL): continued	Neat cement grout
17				0		8.25" diameter borehole
18				0	CLAYEY SAND (SC): grayish brown (10YR 5/2), moist, 60% fine sand, 40% low plasticity fines	Hydrated medium bentonite chips
19				0	LEAN CLAY (CL)	2" diameter Schedule 40 PVC casing
20					wet	
21					Note: free water observed inside acetate liner	#2/12 filter pack sand
22					SANDY LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 60% low plasticity fines, 40% fine sand, soft	
23						2" diameter Schedule 40 PVC, 0.010" slot screen
24				0		2" diameter Schedule 40 PVC endcap
25				0		
26				0		
27				0	LEAN CLAY (CL): grayish brown (10YR 5/2), moist, 95% low plasticity fines, 5% fine sand, hard	Direct push pilot boring Hydrated medium bentonite chips
28					Bottom of boring at 28.0 feet	
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-07**
BORING LOCATION: Northing: 2081902.8954, Easting: 6148271.4342	TOP OF CASING ELEVATION AND DATUM: 339.85 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 4/13/17 / DATE FINISHED: 4/13/17
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 20.0 / SCREEN INTERVAL (ft.): 14.2 - 18.8
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 17.0, COMPL. 9.42 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: M. Bona
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Surface Elevation: 340.19' (NGVD 29)
0					ASPHALTIC CONCRETE (4 inches)
					LEAN CLAY (CL): very dark gray (10YR 3/1), moist, 90% low plasticity fines, 10% fine to medium sand, trace gravel, firm
3					dark gray (10YR 4/1)
4					CLAYEY SAND (SC): brown (10YR 4/3), moist, 70% fine sand, 30% low plasticity fines
5				0	SANDY LEAN CLAY (CL): olive brown (2.5Y 4/3), moist, 70% low plasticity fines, 30% fine sand, firm
6				0	
7				0	
8				0	
9				0	CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 60% fine sand, 40% low plasticity fines
10				0	
11				0	
12				0	
13				0	LEAN CLAY with SAND (CL): dark grayish brown (2.5Y 4/3), moist, 75% low plasticity fines, 25% fine sand, firm
14				0	CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 65% fine sand, 35% low plasticity fines
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

- Traffic-rated well box
- Locking expansion cap
- Concrete

Notes:

1. Hand augered to 5 feet bgs
2. OVM = MiniRAE 3000 calibrated to 100 ppm isobutylene standard

- 8.25" diameter borehole
- 2" diameter Schedule 40 PVC casing
- Neat cement grout
- Hydrated medium bentonite chips
- #2/12 filter pack sand
- 2" diameter Schedule 40 PVC, 0.010" slot screen

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

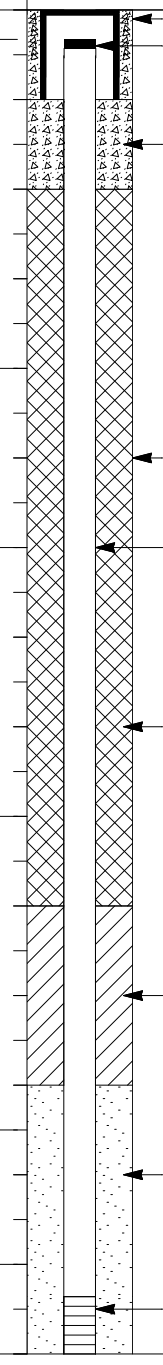
Log of Well No. MW-07 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	CLAYEY SAND (SC): continued	#2/12 filter pack sand
17				0	CLAYEY SAND with GRAVEL (SC): wet	2" diameter Schedule 40 PVC, 0.010" slot screen
18				0	moist, 60% fine sand, 40% low plasticity fines	8.25" diameter borehole
19				0	LEAN CLAY (CL): olive brown (2.5Y 4/3), moist, 90% low plasticity fines, 10% fine sand, firm	2" diameter Schedule 40 PVC endcap
20				0	Bottom of boring at 20.0 feet	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-08**
BORING LOCATION: Northing: 2081924.1794, Easting: 6148328.2582	TOP OF CASING ELEVATION AND DATUM: 339.85 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 4/13/17 / DATE FINISHED: 4/13/17
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 20.0 / SCREEN INTERVAL (ft.): 14.4 - 18.9
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 17.0, COMPL. 9.58 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: M. Bona
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 340.17' (NGVD 29)
0					ASPHALTIC CONCRETE (4 inches)
					LEAN CLAY (CL): very dark gray (10YR 3/1), moist, 90% low plasticity fines, 10% fine sand, firm
4					LEAN CLAY with SAND (CL): very dark gray (10YR 3/1), moist, 85% low plasticity fines, 15% fine to medium sand, trace gravel, firm
5				0	SANDY LEAN CLAY (CL)
6				1	SANDY LEAN CLAY (CL): dark grayish brown (10YR 4/2), moist, 60% low plasticity fines, 40% fine sand, firm
7				2	
8				0	
9					LEAN CLAY with SAND (CL)
				0	CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 60% fine sand, 40% low plasticity fines
10				0	
11				0	
				0	
12				0	
13				0	LEAN CLAY (CL): dark grayish brown (2.5Y 4/2), moist, 90% low plasticity fines, 10% fine sand, firm
14				0	CLAYEY SAND (SC): olive brown (2.5Y 4/2), moist, 60% fine sand, 40% low plasticity fines
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

- Traffic-rated well box
- Locking expansion cap
- Concrete

Notes:

1. Hand augered to 5 feet bgs
2. OVM = MiniRAE 3000 calibrated to 100 ppm isobutylene standard

- 8.25" diameter borehole
- 2" diameter Schedule 40 PVC casing
- Neat cement grout
- Hydrated medium bentonite chips
- #2/12 filter pack sand
- 2" diameter Schedule 40 PVC, 0.010" slot screen

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

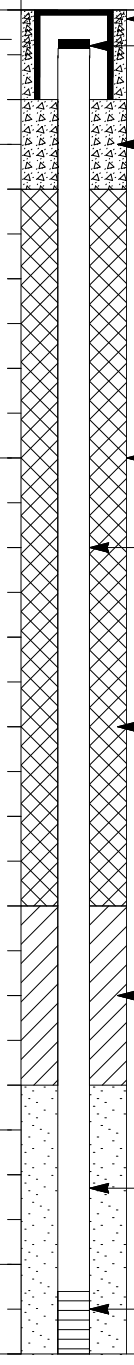
Log of Well No. MW-08 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	CLAYEY SAND (SC): continued	#2/12 filter pack sand
17				0	CLAYEY SAND with GRAVEL (SC): olive brown (2.5Y 4/3), wet, 70% fine to coarse sand, 15% fine gravel, 15% low plasticity fines	2" diameter Schedule 40 PVC, 0.010" slot screen
18				0	CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 70% fine sand, 30% low plasticity fines	8.25" diameter borehole
19				0		2" diameter Schedule 40 PVC endcap
20					SANDY LEAN CLAY (CL): olive brown (2.5Y 4/3), moist, 70% low plasticity fines, 30% fine sand, firm Bottom of boring at 20.0 feet	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-09**
BORING LOCATION: Northing: 2081955.3764, Easting: 6148421.5072	TOP OF CASING ELEVATION AND DATUM: 339.22 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 4/12/17 / DATE FINISHED: 4/12/17
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 20.0 / SCREEN INTERVAL (ft.): 14.3 - 18.8
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 16.5, COMPL. 9.33 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: M. Bona
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Surface Elevation: 339.56' (NGVD 29)
0					ASPHALTIC CONCRETE (4 inches)
					AGGREGATE BASE (14 inches)
1					
2					LEAN CLAY (CL): very dark gray (10YR 3/1), moist, 90% low plasticity fines, 10% fine sand, firm
3					black (10YR 2/1)
4					
5				0	CLAYEY SAND (SC): dark grayish brown (2.5Y 4/2), moist, 50% fine to coarse sand, 10% gravel, 40% low plasticity fines
6				0	65% fine sand, 35% low plasticity fines
7				0	
8				0	grayish brown (2.5Y 5/2)
9				0	
10				0	moist, 60% fine sand, 40% low plasticity fines
11				0	
12				0	
13				0	LEAN CLAY (CL): dark gray (2.5Y 4/1), moist, 90% low plasticity fines, 10% fine sand, firm
14				0	CLAYEY SAND (SC): dark gray (2.5Y 4/1), moist, 60% fine sand, 40% low plasticity fines
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

- Traffic-rated well box
- Locking expansion cap
- Concrete
- 8.25" diameter borehole
- 2" diameter Schedule 40 PVC casing
- Neat cement grout
- Hydrated medium bentonite chips
- 2" diameter Schedule 40 PVC casing
- 2" diameter Schedule 40 PVC, 0.010" slot screen

Notes:

1. Hand augered to 5 feet bgs
2. OVM = MiniRAE 3000 calibrated to 100 ppm isobutylene standard

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

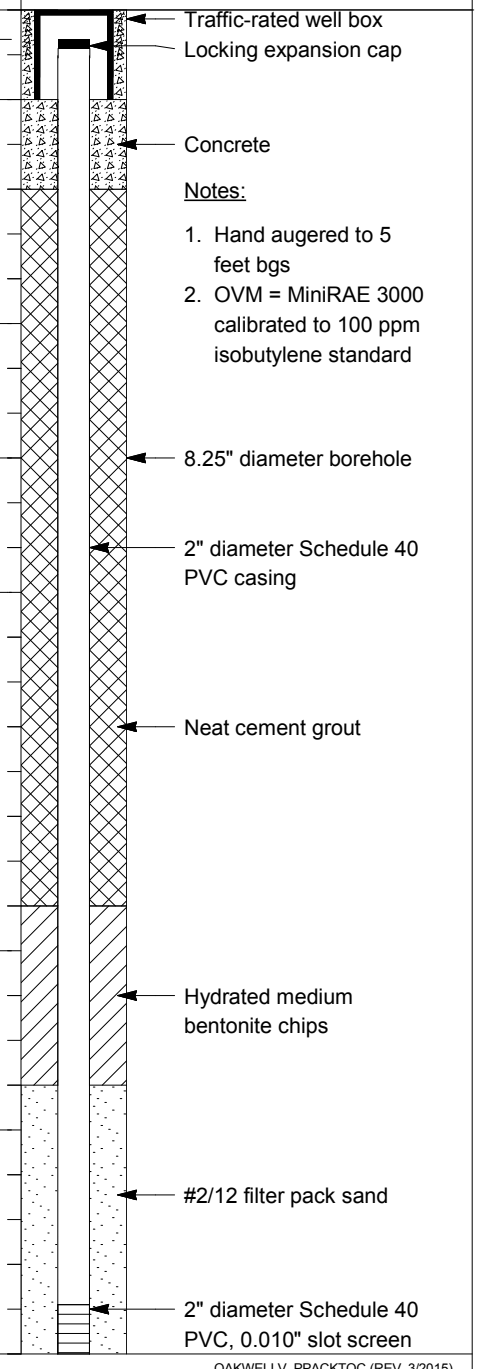
Log of Well No. MW-09 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	CLAYEY SAND (SC): continued	#2/12 filter pack sand
17				0	CLAYEY SAND with GRAVEL (SC): wet	2" diameter Schedule 40 PVC, 0.010" slot screen
18				0	CLAYEY SAND (SC): light olive brown (2.5Y 5/3), moist, 60% fine sand, 40% low plasticity fines	8.25" diameter borehole
19				0		2" diameter Schedule 40 PVC endcap
20				0	LEAN CLAY (CL): dark gray (2.5Y 4/1), moist, 90% low plasticity fines, 10% fine sand, firm Bottom of boring at 20.0 feet	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. MW-10**
BORING LOCATION: Northing: 2081907.0174, Easting: 6148394.1892	TOP OF CASING ELEVATION AND DATUM: 338.98 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 4/12/17 / DATE FINISHED: 4/12/17
DRILLING METHOD: Direct push/Hollow-stem auger	TOTAL DEPTH (ft.): 20.0 / SCREEN INTERVAL (ft.): 14.5 - 19.0
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST 12.0, COMPL. 8.82 / CASING: 2" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: M. Bona
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Surface Elevation: 339.31' (NGVD 29)
					ASPHALTIC CONCRETE (4 inches)
					AGGREGATE BASE (8 inches)
1					LEAN CLAY (CL): very dark gray (10YR 3/1), moist, 90% medium plasticity fines, 10% fine sand, firm
2					
3					black (10YR 2/1)
4					LEAN CLAY with SAND (CL): black (10YR 2/1), moist, 85% low plasticity fines, 15% fine to medium sand, firm
5				1	dark gray (2.5Y 4/1) CLAYEY SAND (SC): dark gray (2.5Y 4/1), moist, 70% fine to coarse sand, 30% low plasticity fines, trace fine gravel
6				2	
7				2	SANDY LEAN CLAY (CL): dark gray (2.5Y 4/1), moist, 70% low plasticity fines, 30% fine sand, soft
8				0	
9				0	
10				0	moist, 60% low plasticity fines, 40% fine sand, soft
11				0	CLAYEY SAND (SC): brown (2.5Y 4/3), moist, 60% fine sand, 40% low plasticity fines
12				0	CLAYEY SAND with GRAVEL (SC): wet
13				0	LEAN CLAY with SAND (CL): grayish brown (2.5Y 5/3), moist, 85% low plasticity fines, 15% fine sand, soft
14				0	
15					



WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. MW-10 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16				0	LEAN CLAY with SAND (CL): continued	#2/12 filter pack sand
				0		
17				0	CLAYEY SAND (SC): grayish brown (2.5Y 5/3), wet, 70% fine to coarse sand, 10% fine gravel, 20% low plasticity fines	2" diameter Schedule 40 PVC, 0.010" slot screen
18				0	moist, 65% fine sand, 35% low plasticity fines	8.25" diameter borehole
19				0	LEAN CLAY with SAND (CL): grayish brown (2.5Y 5/3), moist, 85% low plasticity fines, 15% fine sand, firm	2" diameter Schedule 40 PVC endcap
20				0	Bottom of boring at 20.0 feet	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. MW-11

BORING LOCATION: Northing: 2081906.0404, Easting: 6148644.1772

TOP OF CASING ELEVATION AND DATUM: 338.42 feet (NGVD 29)

DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.

DATE STARTED: 6/30/17 | DATE FINISHED: 6/30/17

DRILLING METHOD: Direct push/Hollow-stem auger

TOTAL DEPTH (ft.): 20.0 | SCREEN INTERVAL (ft.): 14.5 - 19.0

DRILLING EQUIPMENT: Marl M5T

DEPTH TO WATER (ft.): FIRST 16.5 | COMPL. NA | CASING: 2" Sch. 40 PVC

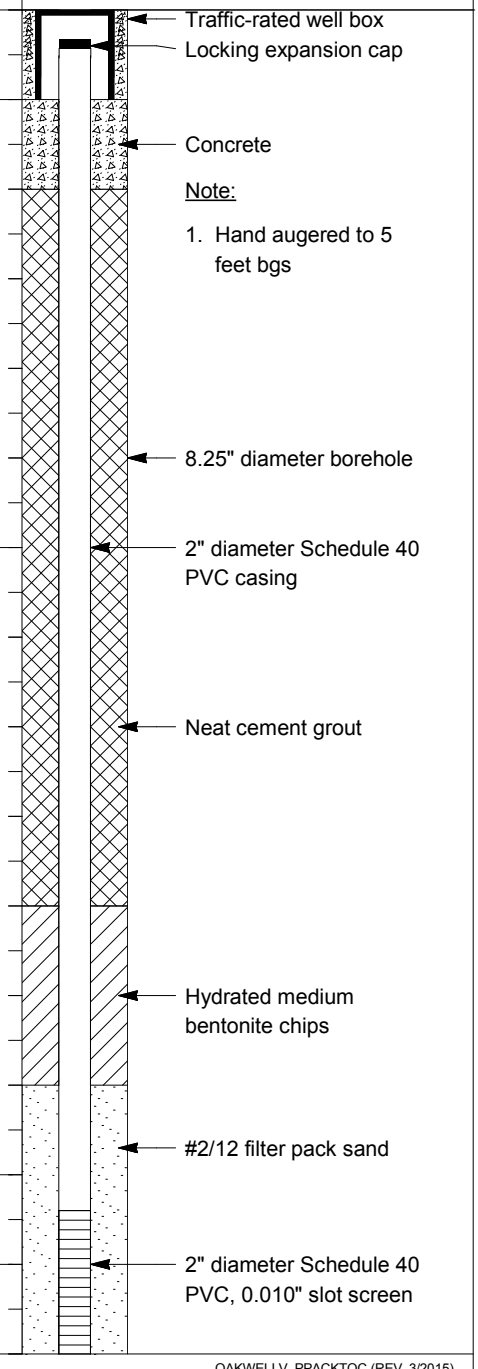
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']

LOGGED BY: M. Bona

HAMMER WEIGHT: NA | DROP: NA

RESPONSIBLE PROFESSIONAL: A. Rosenthal | REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION: NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Surface Elevation: 338.83' (NGVD 29)
					AGGREGATE BASE (12 inches)
1					LEAN CLAY (CL): very dark gray (10YR 3/1), moist, 90% low plasticity fines, 10% fine sand, firm
2					
3					
4					very dark grayish brown (10YR 3/2)
5					dark grayish brown (2.5Y 4/2)
6					CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 60% fine sand, 40% low plasticity fines
7					
8					POORLY-GRADED SAND WITH GRAVEL (SP)
9					
10					
11					olive brown (2.5Y 4/4), 75% fine sand, 25% low plasticity fines
12					contains trace gravel
					60% fine sand, 40% low plasticity fines
13					CLAYEY SAND (SC): olive brown (2.5Y 4/4), moist, 80% fine sand, 20% low plasticity fines
14					LEAN CLAY with SAND (CL): dark olive brown (2.5Y 3/3), moist, 80% low plasticity fines, 20% fine sand, firm
15					



OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. MW-11 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16					LEAN CLAY WITH SAND (continued)	8.25" diameter borehole #2/12 filter pack sand
17					CLAYEY SAND (SC): dark olive brown (2.5Y 3/3), wet, 70% fine sand, 30% low plasticity fines	2" diameter Schedule 40 PVC, 0.010" slot screen
18						2" diameter Schedule 40 PVC endcap
19					LEAN CLAY with SAND (CL): olive brown (2.5Y 4/3), moist, 80% low plasticity fines, 20% fine sand, firm	
20					CLAYEY SAND (SC): olive brown (2.5Y 4/3), moist, 80% fine sand, 20% low plasticity fines Bottom of boring at 20.0 feet	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. PRB-01**
BORING LOCATION: Northing: 2081944.6384, Easting: 6148214.1592	TOP OF CASING ELEVATION AND DATUM: 339.80 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/8/16 / DATE FINISHED: 11/8/16
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 23.1 / SCREEN INTERVAL (ft.): 18.2 - 22.7
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST NA, COMPL. 10.24 / CASING: 1.5" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: A. Rosenthal
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 340.46' (NGVD 29)	
0					ASPHALTIC CONCRETE (approximately 6 inches)	Traffic-rated well box Locking expansion cap
					AGGREGATE BASE (approximately 18 inches)	
1						Concrete
2					CONTROLLED DENSITY FILL	8" diameter HDPE pipe set during construction of permeable reactive barrier
3						
4						1.5" diameter Schedule 40 PVC casing
5						
6						Hydrated medium bentonite chips
7						#2/12 filter pack sand
8					PEARMEABLE REACTIVE BARRIER: zero valent iron/sand mixture consisting of 55% iron and 45% sand	2.5" diameter borehole
9						
10						Zero valent iron/sand mixture
11						
12						
13						
14						
15						

OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. PRB-01 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16					PEARMEABLE REACTIVE BARRIER: continued	2.5" diameter borehole Zero valent iron/sand mixture 1.5" diameter Schedule 40 PVC casing 1.5" diameter Schedule 40 PVC, 0.010" slot screen 1.5" diameter Schedule 40 PVC endcap
17						
18						
19						
20						
21						
22						
23					Bottom of boring at 23.1 feet	
24						
25					Note: Monitoring well installed within permeable reactive barrier (PRB). The top 8 feet of the well was installed within an HDPE pipe that was placed during construction of the PRB. Below 8 feet bgs, the well was installed within the PRB material, which was allowed to backfill the boring to provide a filter pack.	
26						
27						
28						
29						
30						
31						
32						
33						

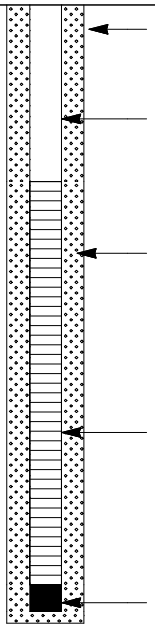
OAKWELLV_PPACKTOC (REV. 3/2015)

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. PRB-02**
BORING LOCATION: Northing: 2081908.6194, Easting: 6148227.9172	TOP OF CASING ELEVATION AND DATUM: 339.64 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/9/16 / DATE FINISHED: 11/9/16
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 21.9 / SCREEN INTERVAL (ft.): 17.0 - 21.5
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST NA, COMPL. 10.34 / CASING: 1.5" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: A. Rosenthal
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 340.35' (NGVD 29)	
0					ASPHALTIC CONCRETE (approximately 6 inches)	Traffic-rated well box Locking expansion cap
					AGGREGATE BASE (approximately 18 inches)	
1						Concrete
2					CONTROLLED DENSITY FILL	
3						8" diameter HDPE pipe set during construction of permeable reactive barrier
4						
5						1.5" diameter Schedule 40 PVC casing
6						
7						Hydrated medium bentonite chips
8						#2/12 filter pack sand
9					PEARMEABLE REACTIVE BARRIER: zero valent iron/sand mixture consisting of 55% iron and 45% sand	2.5" diameter borehole
10						
11						Zero valent iron/sand mixture
12						
13						
14						
15						

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. PRB-02 (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16					PEARMEABLE REACTIVE BARRIER: continued	
17						
18						
19						
20						
21						
22					Bottom of boring at 21.9 feet	
23						
24					Note: Monitoring well installed within permeable reactive barrier (PRB). The top 8.75 feet of the well was installed within an HDPE pipe that was placed during construction of the PRB. Below 8.75 feet bgs, the well was installed within the PRB material, which was allowed to backfill the boring to provide a filter pack.	
25						
26						
27						
28						
29						
30						
31						
32						
33						

PROJECT: Former Crown Chevrolet North Parcel 7544 Dublin Boulevard, Dublin, California	**Log of Well No. PRB-03**
BORING LOCATION: Northing: 2081871.5254, Easting: 6148242.7662	TOP OF CASING ELEVATION AND DATUM: 339.32 feet (NGVD 29)
DRILLING CONTRACTOR: Gregg Drilling & Testing, Inc.	DATE STARTED: 11/10/16 / DATE FINISHED: 11/10/16
DRILLING METHOD: Direct push	TOTAL DEPTH (ft.): 25.0 / SCREEN INTERVAL (ft.): 20.1 - 24.6
DRILLING EQUIPMENT: Marl M5T	DEPTH TO WATER (ft.): FIRST NA, COMPL. 9.08 / CASING: 1.5" Sch. 40 PVC
SAMPLING METHOD: MC5 Sampling System [1.5" x 4.0']	LOGGED BY: A. Rosenthal
HAMMER WEIGHT: NA / DROP: NA	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. PG 9387

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
					Surface Elevation: 340.11' (NGVD 29)	
0					ASPHALTIC CONCRETE (approximately 6 inches)	Traffic-rated well box Locking expansion cap
					AGGREGATE BASE (approximately 18 inches)	
1						Concrete
2					CONTROLLED DENSITY FILL	
3						8" diameter HDPE pipe set during construction of permeable reactive barrier
4						
5						1.5" diameter Schedule 40 PVC casing
6						
7						Hydrated medium bentonite chips
8						#2/12 filter pack sand
9					PEARMEABLE REACTIVE BARRIER: zero valent iron/sand mixture consisting of 55% iron and 45% sand	
10						2.5" diameter borehole
11						
12						Zero valent iron/sand mixture
13						
14						
15						

PROJECT: Former Crown Chevrolet North Parcel
7544 Dublin Boulevard, Dublin, California

Log of Well No. PRB-03 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
16					PEARMEABLE REACTIVE BARRIER: continued	2.5" diameter borehole
17						Zero valent iron/sand mixture
18						
19						1.5" diameter Schedule 40 PVC casing
20						
21						
22						1.5" diameter Schedule 40 PVC, 0.010" slot screen
23						
24						
25					Bottom of boring at 25.0 feet	1.5" diameter Schedule 40 PVC endcap
26						
27					Note: Monitoring well installed within permeable reactive barrier (PRB). The top 9 feet of the well was installed within an HDPE pipe that was placed during construction of the PRB. Below 9 feet bgs, the well was installed within the PRB material, which was allowed to backfill the boring to provide a filter pack.	
28						
29						
30						
31						
32						
33						

amec foster wheeler

APPENDIX C

Well Development Logs

amec

1 casing volume = 1.12 gal ≈ 1 gal

WELL DEVELOPMENT FORM

Job Number: OD14170800.01

Project: Crown BWD

Development Method Pump

Well No. PRB-01

Personnel: C. Buffa

Total Depth: 23.10 ft-btoc

Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	mS/cm Electrical Conductivity	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
1417	10.85	0	\	\	\	\	\	\	\	\	TD = 23.10 ft-btoc, setup pump
1426	11.40	6	27.2	6.80	13.84	2.75	2.78	-437	\	\	Pumping @ 2gpm
1429	11.42	6	10.1	7.10	13.73	2.82	1.71	-478	\	\	
1432	11.59	12	9.2	7.28	13.76	2.81	1.47	-477	\	\	
1435	11.72	18	8.8	7.40	13.67	2.81	1.38	-475	\	\	
1438	11.87	24	9.5	7.57	13.67	2.81	1.33	-483	\	\	
1441	11.88	30	9.2	7.68	13.67	2.82	1.27	-491	\	\	
1444	11.92	36	8.3	7.77	13.66	2.80	1.36	-482	\	\	
1447	11.96	42	10.0	7.86	13.66	2.81	1.46	-474	\	\	
1450	12.00	48	9.3	7.95	13.66	2.81	1.18	-484	\	\	

Subtotal Gallons Removed: 48

Total Gallons Removed: 48 (42.9 casing volumes)

Reviewed by _____

amec

WELL DEVELOPMENT FORM

1 casing volume ≈ 1 gal

Job Number: OD14170800.01

Project: Crown BWD

Development Method: Pump

Well No.: PRB-02

Personnel: C. Buffa

Total Depth:

Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	Electrical Conductivity (mS/cm)	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
1219	10.90	0	\	\	\	\	\	\	\		TD = 21.50
1230	10.90	0	24.9	7.21	13.30	2.52	4.05	-490	\	\	Begin pumping @ 1.5 gpm
1233	10.17	4.5	20.2	7.77	13.83	2.56	1.85	-471	\	\	
1236	11.21	9	9.2	8.00	13.91	2.59	1.70	-482	\	\	
1239	11.22	13.5	6.9	8.25	13.95	2.59	1.43	-506	\	\	
1242	11.22	18	5.9	8.49	13.99	2.60	1.33	-513	\	\	~~Development~~ (EB) ~~complete~~
1245	11.28	22.5	5.5	8.70	13.97	2.60	2.60	-520	\	\	
1248	11.31	27	5.1	8.84	14.01	2.60	1.16	-525	\	\	
1251	11.31	31.5	5.4	8.96	14.04	2.61	1.14	-524	\	\	
1254	11.32	36	4.9	9.06	14.04	2.61	1.11	-529	\	\	Development complete.

Subtotal Gallons Removed: 36

Total Gallons Removed: 36 (36 casing volumes)

Due to casing size bail and surge not possible

Reviewed by

amec

WELL DEVELOPMENT FORM

1 casing volume = 1.35 gal

Job Number: OD14170800.01

Project: Crown BWD

Development Method: Bail + pump

Well No.: PRB-03

1.5 gal

Personnel: C. Buffa

Total Depth:

Date: 11/14/16

btoc

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	uS/cm Electrical Conductivity	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
0855	9.70	0	-	-	-	-	-	-	-	-	TD (as built = 24.98') 24.40 hard bot
0910	9.73	0	33.5	9.02	11.45	3.11	4.48	-483	-	-	Begin pumping @ 0.5 gpm
0911	-	-	-	-	-	-	-	-	-	-	Pause pumping
0920	10.00	1.5	10.5	8.42	12.10	3.12	12.11	-461	-	-	Resume pumping @ 0.5 gpm
0923	10.05	3.0	8.1	8.19	12.67	3.08	2.90	-485	-	-	
0926	10.11	4.5	3.5	8.18	12.98	3.06	2.55	-491	-	-	
0929	10.15	6.0	3.1	8.23	12.91	3.06	2.61	-473	-	-	
0932	10.19	7.5	2.1	8.28	13.04	3.05	2.25	-468	-	-	
0935	10.23	9.0	2.1	8.32	13.17	3.04	2.29	-473	-	-	
0938	10.22	10.5	2.5	8.40	13.20	3.03	2.07	-482	-	-	Move pump after taking parameters
0941	10.19	12.0	5.1	8.45	13.27	3.02	1.89	-476	-	-	
0944	10.20	13.5	1.1	8.52	13.27	3.03	1.89	-476	-	-	
0947	10.20	15	0.9	8.61	13.30	3.03	1.91	-499	-	-	

Subtotal Gallons Removed: 15

Total Gallons Removed: 15 (10 casing volumes)

Reviewed by _____

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number MW-054 | Borehole Diameter _____ | Qty. of Drilling Fluid Lost _____

Date 11/19/16 | Screen Length 5 ft | Minimum Gal. to be Purged 20 gal

Time Start: _____ End: _____ | Measured Depth (pre-development) ~~11.60~~ 23.90' | Development Method Bail, surge, pump

Client _____ | Measured Depth (post-development) _____ | Purging Equipment _____

Project _____ | Static Water Level (ft.) _____ | Water Level Equipment _____

Job Number _____ | Standing Water Column (ft.) _____ | pH/EC Meter _____

Installation Date _____ | One Casing Volume (gal.) 2 gal | Turbidity Meter _____

Well Diameter _____ | One Annulus Vol. (gal.) _____ | Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	mS/cm EC	Turbidity	mg/L D.O.	Temperature	~~SAL.~~ ORP(mV)	GPM / W.L.		
1449	0								Initial DTW=11.60 TD=23.90	
									Bail 6 gal surge bail 6 gal	
1456	12	8.06	1.76	71000	1.99	13.98	-77	12.58	DTW = 12.58	
1459	18	7.82	1.65	71000	3.68	14.04	109	12.62		
1502	24	7.51	1.64	359	1.37	14.02	161	12.61		
1505	30	7.42	1.65	150	1.50	14.00	181	12.61		
1508	36	7.27	1.64	123	1.43	13.99	207	12.61		
1511	42	7.18	1.64	94.9	1.55	14.00	227	12.62		
1514	48	7.11	1.66	106	1.51	14.00	236	12.61		
1517	54	7.05	1.63	96.4	1.53	13.99	247	12.61		
1520	60	7.00	1.63	55.2	1.41	13.99	256	12.62		
FINAL FIELD PARAMETER MEASUREMENTS										

GREGG

MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☐ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number MW-09 | Borehole Diameter _____ | Qty. of Drilling Fluid Lost _____

Date _____ | Screen Length _____ | Minimum Gal. to be Purged _____

Time Start: _____ End: _____ | Measured Depth (pre-development) _____ | Development Method _____

Client _____ | Measured Depth (post-development) _____ | _____

Project _____ | Static Water Level (ft.) _____ | Purging Equipment _____

Job Number _____ | Standing Water Column (ft.) _____ | Water Level Equipment _____

Installation Date _____ | One Casing Volume (gal.) 2 gal | pH/EC Meter _____

Well Diameter _____ | One Annulus Vol. (gal.) _____ | Turbidity Meter _____

Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC (mS/cm)	Turbidity	D.O. (mg/L)	Temperature	ORP ~~SAL~~ mV	GPM / W.L.		
1523	66	6.96	1.63	59.4	1.46	14.00	266	12.62		
1526	72	6.92	1.63	48.7	1.78	14.02	276	12.62		
1529	78	6.96	1.63	37.3	1.73	14.00	298	12.62		

FINAL FIELD PARAMETER MEASUREMENTS | 39 casing volumes removed

amec

WELL DEVELOPMENT FORM

Job Number: OD14170800.01

1 case volume < 1.74 approximate to 2 gal

Project: Crown BWD

Development Method Bail, surge, pump Well No. MW-05

Personnel: C. Buffa

Total Depth: 21.87 ft-btoc Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	mS/cm Electrical Conductivity	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
1220	11.22	0	\	\	\	\	\	\	\	\	TD = 21.87' ft-btoc
1230	\	6	\	\	\	\	\	\	\	\	Begin bail
1240	\	6	\	\	\	\	\	\	\	\	Begin surge
1300	\	~~5~~ 6	\	\	\	\	\	\	\	\	Begin bail
1310	11.60	12	\	\	\	\	\	\	\	\	Begin setup to pump @ 2gpm
1303	11.64	18	>1000	8.21	14.05	1.75	2.35	233	\	\	
1306	11.63	24	963	8.11	14.16	1.68	2.06	227	\	\	
13.09	11.62	30	468	8.02	1420	1.67	1.77	225	\	\	
~~1325~~	11.41	36	467	7.26	14.19	1.65	1.59	216	\	\	// Pause development to button up PRB-3 / MW-6 location
1328	11.47	42	221	7.20	14.19	1.64	1.54	233	\	\	
13 31	11.65	46	116	7.13	14.23	1.64	1.43	243	\	\	
1334	11.65	52	141	7.07	14.27	1.65	1.37	253	\	\	

Subtotal Gallons Removed: 52

Total Gallons Removed:

Reviewed by _____

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WELL DEVELOPMENT FORM

Job Number: OD14170800.01

Project: Crown BWD

Development Method Bail, surge, pump Well No. MW-05

Personnel: C. Buffa

Total Depth: 21.87 ft-btoc Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	Electrical Conductivity	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
1337	11.69	58	98.1	7.03	14.21	1.62	1.86	280	\	\	
1340	11.70	64	77.9	7.00	14.14	1.62	1.91	287	\	\	
1343	11.71	66	66.1	6.99	14.10	1.62	1.51	283	\	\	
1346	11.74	72	114	6.96	14.08	1.62	1.65	298	\	\	
1349	11.74	78	129	6.93	14.09	1.62	1.48	295	\	\	Move pump
1352	11.75	84	762	6.92	14.09	1.61	1.63	309	\	\	
1355	11.75	90	150	6.90	14.01	1.66	1.59	313	\	\	
1358	11.69	96	48.7	6.88	14.12	1.62	1.75	321	\	\	
1401	11.68	102	30.0	6.87	14.05	1.61	1.74	323	\	\	

Subtotal Gallons Removed: 48

Total Gallons Removed: 102 (58.6 casing volumes)

Reviewed by _____

amec

WELL DEVELOPMENT FORM

Job Number: OD14170800.01

1 case volume = 2.25 gal round to 2.5 gal

Project: Crown BWD

Development Method Bail, ~~Surge~~, pump Well No. MW-06

Personnel: C. Buffa

Total Depth: 23.95 ft-btoc

Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	uS/cm Electrical Conductivity	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
0957	10.10	0	~	~	~	~	~	~	~	~	Initial. TD = 23.95 Begin bail
1010	23.00	6	~	~	~	~	~	~	~	~	Bail complete. Allow recharge.
1020	10.10	8	~	~	~	~	~	~	~	~	Begin surging.
1040	~	6	~	~	~	~	~	~	~	~	Setup to pump @ 2 gpm
1048	10.62	6	71000	8.34	12.79	1.69	2.83	163	~	~	
1051	10.73	12	71000	7.98	13.81	1.61	2.37	197	-	-	
1054	10.74	18	653	7.72	13.90	1.59	2.15	225	-	-	
1057	10.72	24	385	7.57	14.01	1.59	2.02	234	-	-	
1100	10.73	30	262	7.40	14.04	1.59	1.85	235	-	-	
1103	10.72	36	243	7.28	14.11	1.58	1.59	243	-	-	
1106	10.67	42	222	7.19	14.15	1.58	1.48	251	-	-	
1109	10.68	48	292	7.08	14.14	1.58	1.50	258	-	-	

Subtotal Gallons Removed: 48

Total Gallons Removed:

Reviewed by _____

amec

WELL DEVELOPMENT FORM

Job Number: OD14170800.01

Project: Crown BWD

Development Method: Bail, surge, pump

Well No.: MW-06

Personnel: C. Buffa

Total Depth: 23.95 ft-btoc

Date: 11/14/16

Time	Depth to water ft.	Gallons Removed	Turbidity (Ntu)	pH	Temp C	Electrical Conductivity (ms/cm)	D.O. mg/liter	Redox Mv	Recovery Rate Inches/min.	Recovery Rate gpm	
1112	10.65	54	79.2	7.05	14.16	~~264~~ 1.58	1.54	264	–	–	
1115	10.66	60	48.6	7.06	14.16	1.57	1.53	272	–	–	
1118	10.66	66	44.2	6.95	14.16	1.58	1.50	274	–	–	Development complete

Subtotal Gallons Removed: 12

Total Gallons Removed: 66 (26.4 casing volumes)

Reviewed by _____

GREGG

MONITORING WELL DEVELOPMENT LOG

Page 1 of _____

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Qty. of Drilling Fluid Lost _____

Well Number MW-11
Date 4/17/17
Time Start: 8:45am End: 10:00am
Client Bay West
Project Dublin Apartments
Job Number D2160503
Installation Date _____
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5"
Measured Depth (pre-development) 18.4'
Measured Depth (post-development) 18.7'
Static Water Level (ft.) 8.5'
Standing Water Column (ft.) 10'
One Casing Volume (gal.) 1.7 gallon
One Annulus Vol. (gal.) _____

Minimum Gal. to be Purged 10 well 17 gallons
Development Method Bail / surge Bail / Pump
Purging Equipment _____
Water Level Equipment Solinst
pH/EC Meter Oakton
Turbidity Meter "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured: pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM / W.L.	Comments	Field Tech.
8:50am	4gal								Bail / surge / Bail	
9:25am	6gal	7.78	.409	999	-2.55	16.9°	0.04	1gpm / 8.9'		
9:26am	8gal	7.69	.324	999	-.63	16.9	0.01	2gpm / 8.9'	Pump	
9:27am	10gal	7.61	.854	999	-1.80	16.9	0.03	2gpm / 8.9'		
9:30am	12gal	7.51	.470	652	-.95	16.9	0.01	2gpm / 8.9'		
9:32am	14gal	7.41	.813	373	-1.41	16.9	0.01	2gpm / 8.7'		
9:36am	16gal	7.30	.261	295	-.48	16.9	0.01	2gpm / 8.7'		
9:38am	18gal	7.21	.302	133	-.57	16.9	0.01	2gpm / 8.7'		
9:41am	20gal	7.15	.306	120	-.67	16.9	0.01	1 1		
9:42am	22gal	7.08	.262	88	-.44	16.9	0.01	11		
9:44am	24gal	7.05	.262	20	-.49	16.9	0.01	11		
FINAL FIELD PARAMETER MEASUREMENTS										
9:46am	26gal	6.98	.247	10	-.61	17°	0.01	11		

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MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number MW-9
Date 4/17/17
Time Start: 10:07 End: 11:08
Client Bay West
Project Dublon Apartments
Job Number D2160508
Installation Date _____
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) 18.9'
Measured Depth (post-development) _____
Static Water Level (ft.) 8'
Standing Water Column (ft.) 10.9'
One Casing Volume (gal.) 1.85 gal
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost _____
Minimum Gal. to be Purged 19 gal
Development Method Bail, surge, Bail pump
Purging Equipment Pump
Water Level Equipment Solinst
pH/EC Meter Orion
Turbidity Meter "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM / W.L.		
10:10	4 gal	7.06	.1608	999	-2.89	16.3	.04	2gpm/14.9'	Bail, surge, Bail	
10:34	6 gal	6.95	.1626	999	-1.70	16.4	.02	2gpm/14.4'		
10:36	8 gal	6.91	.343	999	-.90	16.0	.01	2gpm/14.4'		
10:38	10 gal	7.05	.304	149	-1.05	16.8°	.01	1gpm/13.7'		
10:45	12 gal	6.98	.496	145	-.83	16.6°	.01	"		
10:47	14 gal	6.96	.323	74	-.96	16.6°	.01	1gpm/13.5'		
10:49	16 gal	6.92	.401	43	-.33	16.6°	.01	"		
10:51	18 gal	6.93	.444	10	-.56	16.6°	.01	"		
10:53	20 gal	6.93	.542	10	-.93	16.5°	.01	"		

FINAL FIELD PARAMETER MEASUREMENTS

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MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID ____

Well Number MW-8
Date 4/17/17
Time Start: 11:20 End: 12:20
Client Bay West
Project Dublin Apartments
Job Number D2160508
Installation Date ____
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) 18.9'
Measured Depth (post-development) 18.9
Static Water Level (ft.) 8.7'
Standing Water Column (ft.) 10.2'
One Casing Volume (gal.) 1.73
One Annulus Vol. (gal.) ____

Qty. of Drilling Fluid Lost ____
Minimum Gal. to be Purged 18 gal
Development Method Bail, Surge, Bail, pump
Purging Equipment Pump
Water Level Equipment Solinst
pH/EC Meter Horiba
Turbidity Meter 11
Other ____

Time	Amount Purged (gal.)	Field Parameters Measured						GPM / W.L.	Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.			
11:20	4 gal	7.24	.666	999	-.77	17.4°C	1gpm/11.1'		Bail, Surge, Bail	
11:40	6 gal	7.11	.404	999	-.97	17.0°C	"		Pump	
11:44	8 gal	7.05	.589	841	-.72	17.4°C	"			
11:46	10 gal	7.06	.491	756	-.99	17.4°C	1gpm/14.6'			
11:59	12 gal	7.09	.543	282	-1.12	17.4°C	14.1'			
12:02	14 gal	7.06	.401	191	-.76	17.4°C	"			
12:04	16 gal	7.01	.541	108	-.86	17.4°C	"			
12:06	18 gal	7.03	.400	81	-.84	17.5°C	"			
12:08	20 gal	7.00	.431	60	-.76	17.5°C	"			
12:12	22 gal	7.05	.444	22	-.89	17.4°C	"			
12:14	24 gal	6.98	.521	12	-.93	17.4°C	"			

FINAL FIELD PARAMETER MEASUREMENTS

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MONITORING WELL DEVELOPMENT LOG

Page _____ of _____

All measurements taken from: ☑ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID _____

Well Number MW-7
Date 4/17/17
Time Start: 12:35 End: 1:38pm
Client Bay West
Project Dublin Apartments
Job Number D2760502
Installation Date _____
Well Diameter 2"

Borehole Diameter 8"
Screen Length 5'
Measured Depth (pre-development) 18.6'
Measured Depth (post-development) 18.6'
Static Water Level (ft.) 8.5'
Standing Water Column (ft.) 10.5'
One Casing Volume (gal.) 1.785
One Annulus Vol. (gal.) _____

Qty. of Drilling Fluid Lost 0
Minimum Gal. to be Purged 18gal
Development Method Bail/surge, Bail/Pump
Purging Equipment Pump
Water Level Equipment Solinest
pH/EC Meter Horiba
Turbidity Meter "
Other _____

Time	Amount Purged (gal.)	Field Parameters Measured							Comments	Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.	GPM / W.L.		
12:37	4gal	7.03	1.64	999	-.57	18°C	.04	1gpm/11.1'	Bail/surge, Bail/	
1:00	6gal	7.04	1.52	999	-.71	18°C	.06	"		
1:02	8gal	7.10	.556	794	-1.21	18.1°C	.02	"		
1:08	10gal	7.07	.505	374	-1.06	18.0°C	.02	"		
1:14	12gal	7.06	.359	214	-.71	18.0°C	.01	"		
1:16	14gal	7.04	.335	129	-.68	18.0°C	.01	"		
1:18	16gal	7.02	.391	117	-.54	18.0	.01	"		
1:20	18gal	7.00	.345	63	-.31	18.0	.01	"		
1:24	20gal	6.97	.431	20	-.71	18.0	.01	"		
1:26	22gal	6.98	.660	13	-.41	18.0	.01	"		
1:28	24gal	6.81	.423	10	-.23	18.1	.01	"		

FINAL FIELD PARAMETER MEASUREMENTS

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MONITORING WELL DEVELOPMENT LOG

All measurements taken from: ☒ Top of Casing ☐ Protective Casing ☐ Ground Level

Sample ID X

Well Number MW-11
Date 7/31/17
Time Start: 800 End: 1100
Client BayWEST Development
Project Dublin Apartments, Dublin, CA
Job Number D2160508
Installation Date
Well Diameter 2"

Borehole Diameter 8"
Screen Length 10 FT
Measured Depth (pre-development) 18.00
Measured Depth (post-development) 18.95
Static Water Level (ft.) 10.102
Standing Water Column (ft.) 8.3
One Casing Volume (gal.) 1.411
One Annulus Vol. (gal.)

Qty. of Drilling Fluid Lost X
Minimum Gal. to be Purged 14.11
Development Method Bail-Surge
Bail-pump
Purging Equipment SS Bailer-2" pump
Water Level Equipment Solinst
pH/EC Meter Horiba U52
Turbidity Meter Horiba U52
Other

Time	Amount Purged (gal.)	Field Parameters Measured						GPM / W.L.	Comments		Field Tech.
		pH	EC	Turbidity	D.O.	Temperature	SAL.		W.L.		
1011	15	7.50	1.24	166	-	10.84	0.6	1/2	11.56	Bail-2 gal	
1015	17	7.44	1.26	63.9	-	10.71	0.6	1/2	12.19	Surge-10 min	
1019	19	7.24	1.26	32.1	-	10.68	0.6	1/2	13.46	Bail-2 gal	
1023	21	7.25	1.24	17.4	-	10.70	0.6	1/2	13.42		
1027	23	7.26	1.26	11.5	-	10.71	0.6	1/2	13.42		
1031	25	7.26	1.25	9.3	-	10.61	0.6	1/2	13.42		

FINAL FIELD PARAMETER MEASUREMENTS

amec foster wheeler

APPENDIX D

Well Survey Data

MONITORING WELLS

WELL ID	NORTHING	EASTING	LATITUDE (DD)	LONGITUDE (DD)	TOR (ELEVATION)	FS/NG (ELEVATION)	TOC (ELEVATION)	RISER_HT
PRB-01	2081944.64	6148214.16			340.41	340.46	339.80	-0.65
PRB-02	2081908.62	6148227.92			340.31	340.35	339.64	-0.71
PRB-03	2081871.53	6148242.77			340.06	340.11	339.32	-0.79
MW-04	2081942.97	6148208.82			340.50	340.54	339.90	-0.64
MW-05	2081907.50	6148223.79			340.37	340.42	339.64	-0.77
MW-06	2081871.68	6148238.79			340.17	340.20	339.60	-0.60
MW-07	2081902.90	6148271.43			340.20	340.19	339.85	-0.34
MW-08	2081924.18	6148328.26			340.15	340.17	339.85	-0.32
MW-09	2081955.38	6148421.51			339.58	339.56	339.22	-0.34
MW-10	2081907.02	6148394.19			339.31	339.31	338.98	-0.33
MW-11	2081906.04	6148644.18			338.93	338.83	338.42	-0.40

Professional's Name: Mark Weber

Professional's License Type:
Professional Surveyor

Professional's License Number: 7960

9/12/17

NOTE:
RISER_HT - RISER HEIGHT
RISER HEIGHT: THE MEASURED DISTANCE FROM GROUND SURFACE TO TOP OF WELL CASING
DD: DECIMAL DEGREES
TOR: TOP OF RIM
TOC: TOP OF CASING
FS: FINISHED SURFACE
NG: NATURAL GROUND

DATE OF SURVEY: 7/14/2017

BENCHMARK: CITY OF DUBLIN BENCHMARK "DUB-680"
ELEVATION = CHISELED T PAINTED YELLOW ON TOP CENTER
NORTHERLY CURB ABOVE DRAIN INLET 121.5± FEET WESTERLY
OF CENTERLINE OF I-680, NORTH SIDE OF DUBLIN BLVD.
ELEVATION: 331.597 FEET (NGVD 29)

COORDINATES: THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CENTERLINE
OF DUBLIN BOULEVARD AS SHOWN ON PARCEL MAP 8876 (294 PM 40)
THE BEARING BEING N69°08'15"E.