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December 18, 2020
Project No. 2329-CR

MLC Holdings, Inc.
5 Peters Canyon Road, Suite 310
Irvine, California 92606

Attention: Mr. Steven Cook

Subject: Additional Infiltration Evaluation
Proposed Single-Family Residential Development
Units 1 through 71, Tract No. 83138
Covina Area of Los Angeles County, California

References: See Page 5

Dear Mr. Cook:

As requested and authorized, GeoTek, Inc. (GeoTek) has performed an additional infiltration evaluation associated with the proposed single-family residential development to be located in the Covina area of Los Angeles County, California. The intent of this study is to evaluate the infiltration properties of the underlying soils within the proposed infiltration areas. This report presents the results of the testing completed by GeoTek.

Site Description

The approximate 9.6-acre rectangular shaped site is located on the north side of East San Bernardino Road in the Covina area of Los Angeles County, California. The site is referenced by the street address of 16209 East San Bernardino Road. The approximate location of the site is noted on the attached Figure 1, Site Location Map. Several structures, associated with a former school facility and associated parking areas, are located in the southern one-half of the site and undeveloped land is located in the northern portion of the property. Topographically, the site is relatively level with less than about 5 feet of elevation differential sloping downward to the south. The site is surrounded by existing residential developments.

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Infiltration Testing

As required and requested, GeoTek performed an additional infiltration evaluation for the project site, following the guidelines for "Large Scale Percolation Testing Procedures" as provided in the referenced guidelines (County of Los Angeles Department of Public Works, 2017).

As per the referenced document (County of Los Angeles Department of Public Works, 2017) and a stormwater quality design volume of 15,000 gallons for the project as provided by the project civil engineer, an approximately 32 square foot area was excavated at the project site with a rubber tire backhoe. The location of the "test basin" was located just northeast of the proposed infiltration basin as our firm was requested to keep damage to the existing facilities (buildings, parking areas, etc.) to a minimum. Hence, a grass area that was no longer maintained was opted for a testing area. The location of our "test basin" is provided on Figure 2.

Prior to our subsurface exploration, a geophysical survey was performed at the site by SubSurface Surveys & Associates, Inc. in order to locate and identify the existence of any pipes, conduits, utilities and other underground obstructions within the vicinity of our proposed "test basin". A copy of the report is included in Appendix A.

A "test basin", approximately 8 feet long by 4 feet wide by 8-½ feet deep was excavated with a rubber tire backhoe. The soils encountered in our "test basin" consisted of silty fine sand to fine sandy silt in the upper approximately 4-½ feet, underlain by a silty fine to coarse sand. The log of the trench is presented in Appendix B.

A vertical measuring rod was installed in the "test basin" which was marked in ½-inch increments. A fire hose attached to a proximal fire hydrant was utilized for our source of water for the test. A relatively heavy metal bucket was utilized in the bottom of the "test basin" to reduce sidewall erosion and disturbance of the "test basin". Water was added to the "test basin" at a rate that maintained a constant head with the water elevation approximately 18-inches above the bottom of the "test basin". The cumulative volume of water in gallons, instantaneous flow rate in gallons per minute and the water surface elevation was recorded approximately every 30 minutes. After the test was completed, the drop on the measuring rod was recorded in inches per minute until the "test basin" was empty.

At the conclusion of our testing, the "test basin" was overexcavated to see if the test water was "impeded" on any restrictive layers or if the water continued to percolate into the underlying soils. No restrictive layers were observed upon overexcavating the "test basin" to a depth of approximately 14 feet.

The results of the testing are provided in Appendix C as a plot of cumulative volume in gallons of water versus time in hours. The stabilized flow rate of water was converted from gallons per hour to cubic feet per hour. An infiltration rate of 57.1 cubic feet per hour was calculated after the water level had stabilized. The stabilized flow rate of 57.1 cubic feet per hour was divided by the surface area of the "test basin" to determine the raw measured rate of 8.12 inches per hour.

As required, a Reduction Factor must be applied to the measured rate to determine the design value that will represent long-term performance of the BMP. As outlined within the LA County Manual, the Total Reduction Factor (Rf) is calculated using the following relationship:

Rf = RFt x RFv x RFs

As required, a Reduction Factor for the test procedure (RFt) must be considered. Also as required, a Reduction Factor for site variability (RFv) and long-term siltation (RFs) must also be considered. As noted in the LA County Manual, a RFt of 2 would be utiled for an "infiltration basin percolation test". Also as noted in the LA County Manual, RFv and RFs should vary between 1 and 3. A RFv of 1 is preliminarily considered suitable and the value to be selected for RFs should be determined by the civil engineer and should be based on the level of pre-treatment and maintenance for the proposed BMPs.

Assuming an RFt value of 2 and RFs and RFv values of 1, we recommend a Total Reduction Factor of 2 be applied to the measured rates obtained.

Based on the above, we recommend a "long term infiltration rate" for the design of the infiltration basin of 4.0 inches per hour.

It should be noted that the infiltration rates provided above were performed in relatively undisturbed native soils. Infiltration rates will vary and are mostly dependent on the underlying consistency of the site soils and relative density. Infiltration rates will be impacted by weight of equipment travelling over the soils, placement of engineered fill and other various factors. GeoTek, Inc. assumes no responsibility or liability for the ultimate design or performance of the storm water facility.

LIMITATIONS

The materials observed on the project site appear to be representative of the basin area; however, soil materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Our conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

Respectfully submitted,
GeoTek, Inc.

Edward H. LaMont
CEG 1892, Exp. 07/31/22
Principal Geologist

Robert R. Russell
GE 2042, Exp. 12/31/22
Senior Project Engineer

Anna M. Scott
Project Geologist

Enclosures: Figure 1 – Site Location and Topography Map
Figure 2 – "Test Basin" Location Map
Appendix A – Geophysical Investigation
Appendix B – Logs of Exploratory Trench
Appendix C – Infiltration Data

Distribution: (1) Addressee via email (PDF file)

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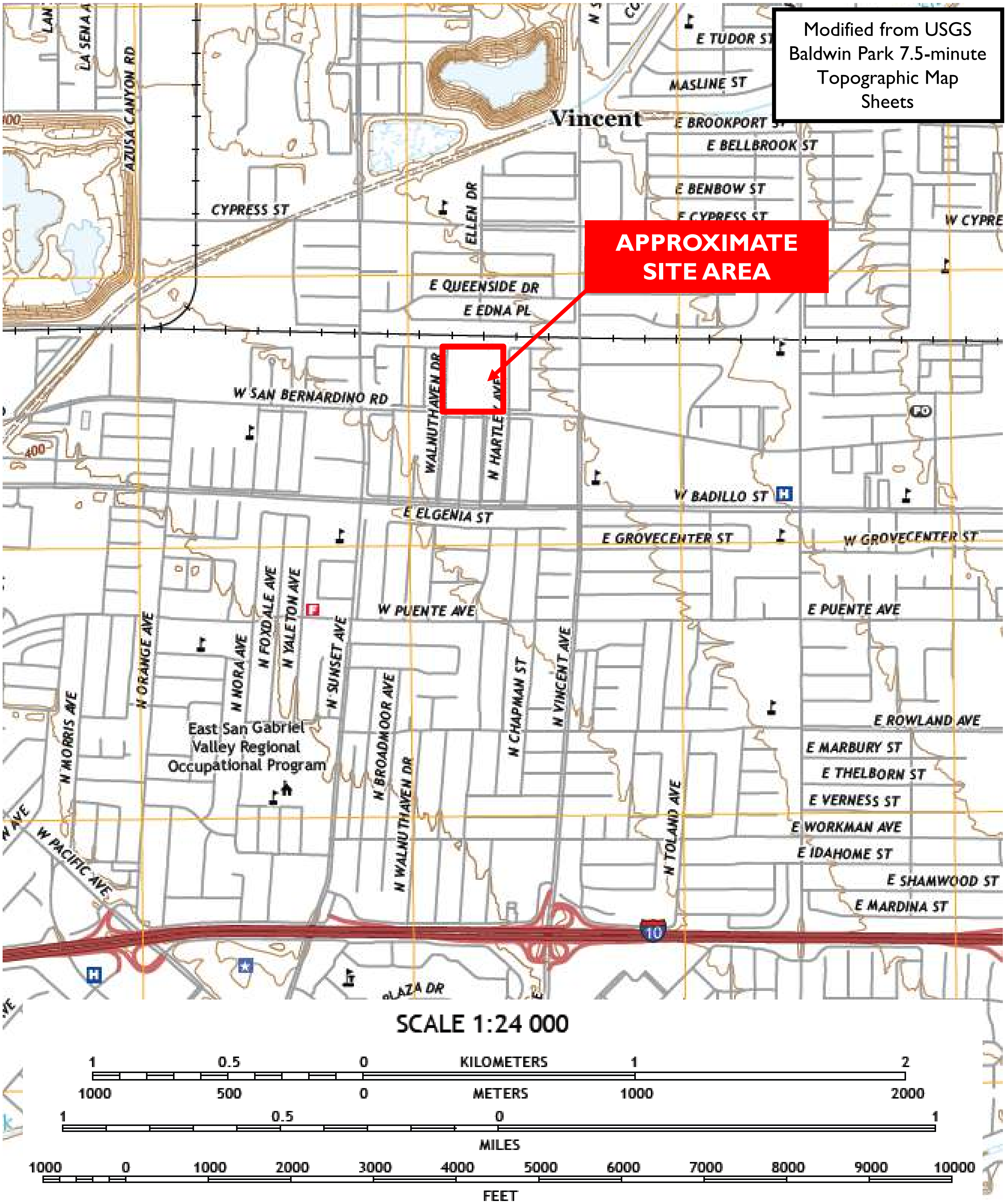
REFERENCES

County of Los Angeles Department of Public Works, Geotechnical and Materials Engineering Division, 2020, "Geologic and Soils Engineering Review Sheet, Tract No. 83183," dated October 26.

______, 2017, "Guidelines for Geotechnical Investigation and Reporting, Low Impact Development Stormwater Infiltration," GS200.2, dated June 30.

GeoTek, Inc., 2020, "Geotechnical and Infiltration Evaluation, Proposed Single-Family Residential Development, Assessor's Parcel No. 8435-006-900, 16209 East San Bernardino Road, Covina Area of Los Angeles County, California," Project No. 2329-CR, dated October 20.

Moran Consulting Corporation, 2020, "Tentative Tract No. 83183," dated October 21.



MLC Holdings, Inc.
Tract No. 83138
Covina Area of Los Angeles County, California

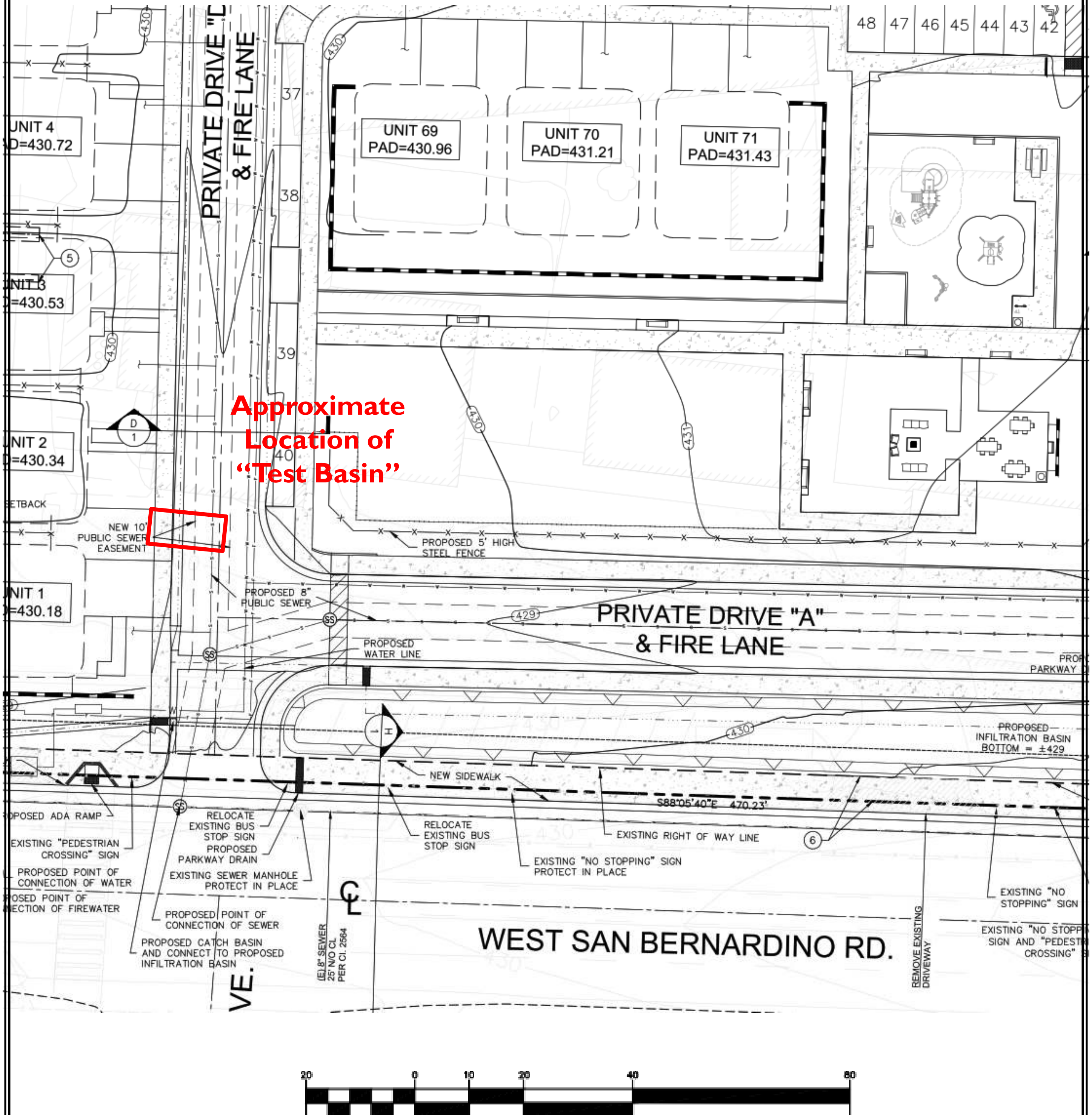
Project No. 2329-CR

NORTH

Figure 1

Site Location and Topography Map

GEOTEK



MLC Holdings, Inc.
Tract No. 83138
Covina Area of Los Angeles County, California

Project No. 2329-CR

NORTH

Figure 2

"Test Basin" Location Map

GEOTEK

APPENDIX A

GEOPHYSICAL INVESTIGATION

Covina Area of Los Angeles County, California
Project No. 2329-CR

GEOTEK

SubSurface Surveys
& Associates, Inc.
An Applied Geophysical Company

2075 Corte Del Nogal, Suite W
Carlsbad, CA 92011
Office: (760) 476-0492
Fax: (760) 476-0493

November 21, 2020

GeoTek, Inc.
1548 North Maple Street
Corona, CA 92880

Project No. 20-514

Attn: Anna Scott

Re: Geophysical Investigation, Adult Education Center, 16209 East San Bernardino Road, Covina, California

This report is to present the results of our geophysical survey carried out over the property of an Adult Education Center located at 16209 East San Bernardino Road in Covina (Figure 1). The survey was performed on November 19, 2020, and its purpose was to locate and identify, insofar as possible, the existence of any pipes, conduits, utilities, and other underground obstructions within a predetermined area of a grass lot.

A combination of electromagnetic induction (EM), magnetometry, and ground penetrating radar (GPR) were brought to the field with anticipation of use. Utility locators with line tracing capabilities were also used where applicable.

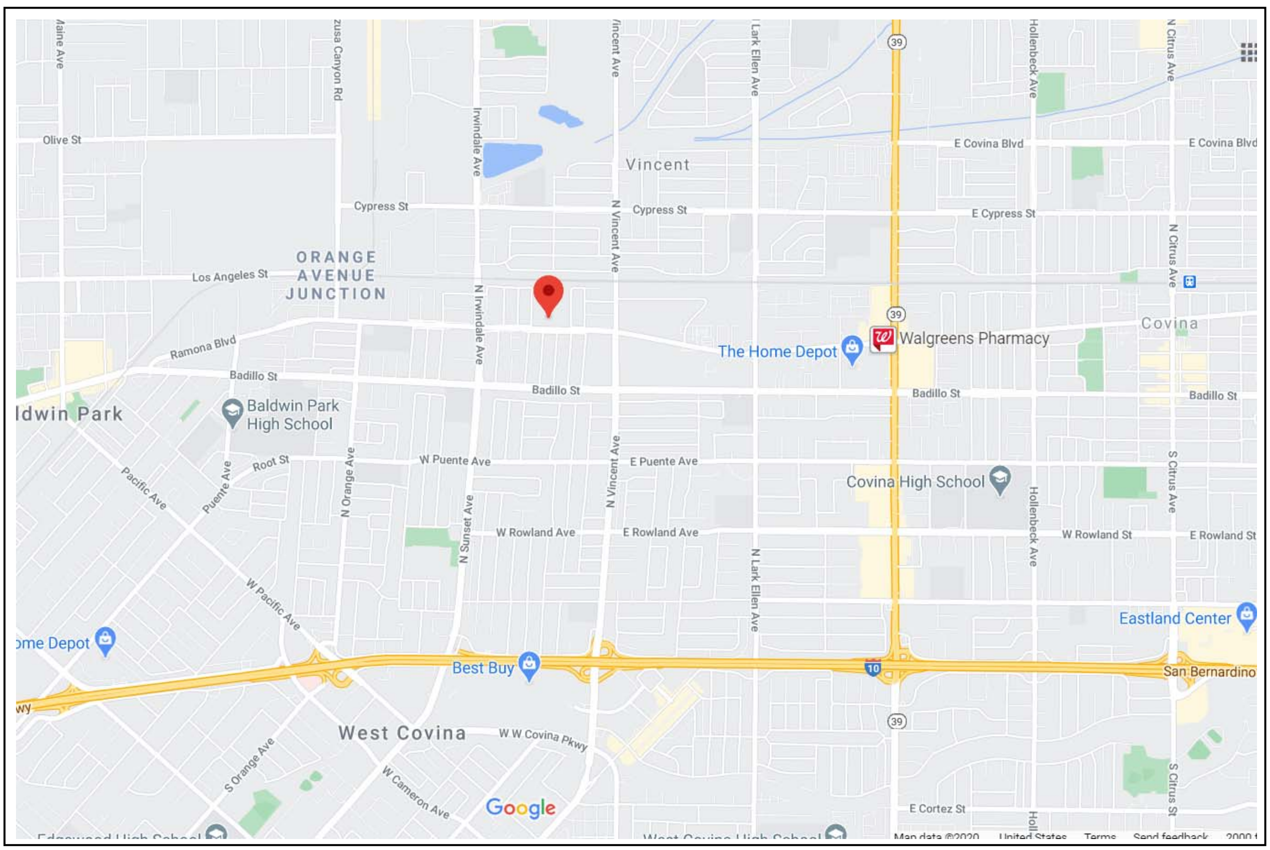


FIGURE 1 – Site location map

Survey Design – The area to be surveyed was identified with a map provided by the client. It included a 64'x25' section of a grass lot.

In site situations and survey objectives such as this, the best use of time is achieved by systematically free-traversing with the instruments while monitoring them continuously to determine which responses are significant and due to true subsurface targets, and which are due to other non-target or above-ground features and must be ignored. Where applicable, the EM devices, magnetic gradiometer, and GPR were traversed systematically over the survey areas in multiple, organized directions. Other traverses were taken for detailing and confirmation where anomalous conditions were found.

In addition, the line tracers were used to impress signals onto pipes, generally through accessible risers and tracer wires when present, to delineate the lines' locations and orientations. The instruments were also used in passive mode, configured to detect 60 Hz electrical signals and other common radio-frequency signals.

Hard copy of the EM data was not acquired, that is, discrete readings on the nodes of a grid were not recorded that could be put into a contoured map format. Rather, the instruments' meters were read continuously, and in real-time, during each traverse. This free-traversing method allowed for immediate detection of anomalous objects and facilitated the opportunity to investigate them further, without the need to first download and process data in the office. The lack of hard copy for EM data sets does not degrade the quality of the survey in any way. Hard copy merely provides a basis for report documentation of these geophysical fields, if such documentation is needed.

A Geonic's model EM61 and a Fischer TW-6 M-Scope were used for the EM sampling. A Sensors & Software Noggin Ground Penetrating Radar unit with a 500 MHz antenna produced the radar images. The a Metrotech 9890 and RIDGID SR-60 SeekTech utility locator rounded out the tools applied.

Brief Description of the Geophysical Methods Applied – The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets.

The M-Scope device energizes the ground by producing an alternating primary magnetic field with AC current in a transmitting coil. If conducting materials are within the area of influence of the primary field, AC eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response as anomalous conditions. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 7 feet below ground surface (bgs) for the M-Scope are sensed. The device is also somewhat focused; that is, it is more sensitive to conductors below the instrument than they are to conductors off to the side.

The line locator is used to passively detect energized high voltage electric lines and electrical conduit (50-60 Hz), VLF signals (14-22 kHz), as well as to actively trace other utilities. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (9.8-82 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

Interpretation and Conclusions - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were telephonically relayed to the client, and further documented with a site map (Figure 2) and site photographs (Figures 3-7).

Utilities detected were marked out with feather chasers and in spray paint using blue for water, yellow for gas, and orange for unknown piping.

Please refer to the attached map and photos for location and orientation of items detected in the survey.

Limitations and Further Recommendations - It should be understood that limitations inherent in geophysical instruments and/or surveying techniques exist at all sites, and nearly all sites exhibit conditions under which such might not perform optimally. Consequently, the detection of buried objects in all circumstances **cannot be guaranteed**. Such limitations are numerous and include, but are not limited to, rebar-reinforced ground cover, abrupt changes in ground cover type, above-ground obstacles preventing full traverses or traverses in one direction only, above-ground conductive objects interfering with instrument signal, nearby power lines or EM transmitters, highly conductive background soil conditions, limited GPR penetration, non-metallic targets, shallower or larger objects shielding deeper or smaller targets, tracing signal jumping from one line to another, and inaccessible risers, cleanouts, valve boxes, and manholes. If one or more geophysical instrument is rendered ineffective and cannot be utilized, the quality of the survey can be somewhat degraded.

For the above reasons, and in the interest of maximum safety, we encourage our clients to take advantage of Underground Service Alert (USA), Dig Alert, or other similar services, when possible. Furthermore, we recommend hand auguring and the use of a drilling method known as air knifing or vacuum extraction, when feasible or if applicable to this project. These methods may significantly limit damage to underground pipes, conduits, and utilities that might not have been detectable during the course of this survey. Please bear in mind, that geophysical surveying is only one of several levels of protection that is available to our clients.

SubSurface Surveys may include maps in some reports. While they are an accurate general representation of the site and our findings, they are not of engineering quality (i.e., measured and mapped by a licensed land surveyor).

SubSurface Surveys and Associates makes no guarantee either expressed or implied regarding the accuracy of the findings and interpretations present. And, in no event will SubSurface Surveys and Associates be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations and opinions presented herewith.

All data generated on this project are in confidential file in this office and are available for review by authorized persons at any time. The opportunity to participate in this investigation is very much appreciated. Please call, if there are questions.

D. L. Matticks
Daniel L. Matticks, MS
Staff Geophysicist

Travis Crosby, GP# 1044
Senior Geophysicist

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Sub Surface Surveys	SITE: **Adult Education Center 16209 East San Bernadino Road Covina, California**	TITLE: **Site Utility Map**	SURVEY DATE: **November 19, 2020**
		PREPARED FOR: **GeoTek, Inc.**	SSS PROJECT NO: **20-514**

LEGEND:

water line

gas line

unknown line

water riser

water vault

survey boundary

N

SCALE
0 10ft

FIGURE 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

SITE:	TITLE:	SURVEY DATE:
Adult Education Center **16209 East San Bernadino Road** **Covina, California**	**Utility Photographs**	**November 19, 2020**
	PREPARED FOR: **GeoTek, Inc.**	SSS PROJECT NO: **20-514**

APPENDIX B

LOG OF EXPLORATORY TRENCH

Covina Area of Los Angeles County, California
Project No. 2329-CR

GEOTEK

GeoTek, Inc.
LOG OF EXPLORATORY TRENCH

CLIENT:	MLC Holdings, Inc.	**LOGGED BY:**	DRW
PROJECT NAME:	Tract No. 83138	**EQUIPMENT**	Backhoe
PROJECT NO.:	2329-CR	**DATE:**	12/7/2020
LOCATION:	See Trench Location Map		

TRENCH NO.: T-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: DCP Blow Count	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
				Alluvium:			
			SM/ML	Silty f-m SAND, to f-m sandy SILT, grayish brown, slightly moist, few rootlets			
5			SM	Silty f-c SAND, grayish brown, slightly moist, trace rootlets			
				Same as above, becomes slightly more coarse grained sand			
				TRENCH TERMINATED FOR INFILTRATION AT 8.5 FEET			
				Continued trenching after infiltration testing			
10			SP	Gravelley f-c SAND, gray, wet			
			GP	F-c sandy GRAVEL, gray, wet, some cobbles			
				TRENCH TERMINATED AT 14 FEET			
15				No groundwater encountered			
				Trench backfilled with excavated soils			

LEGEND

Sample type: ---Ring ---Large Bulk ---Water Table

Lab testing:

AL = Atterberg Limits	EI = Expansion Index	SA = Sieve Analysis	RV = R-Value Test
SR = Sulfate/Resistivity Test	SH = Shear Test	HC= Consolidation	MD = Maximum Density

APPENDIX C

INFILTRATION DATA

Covina Area of Los Angeles County, California
Project No. 2329-CR

G
GEOTEK

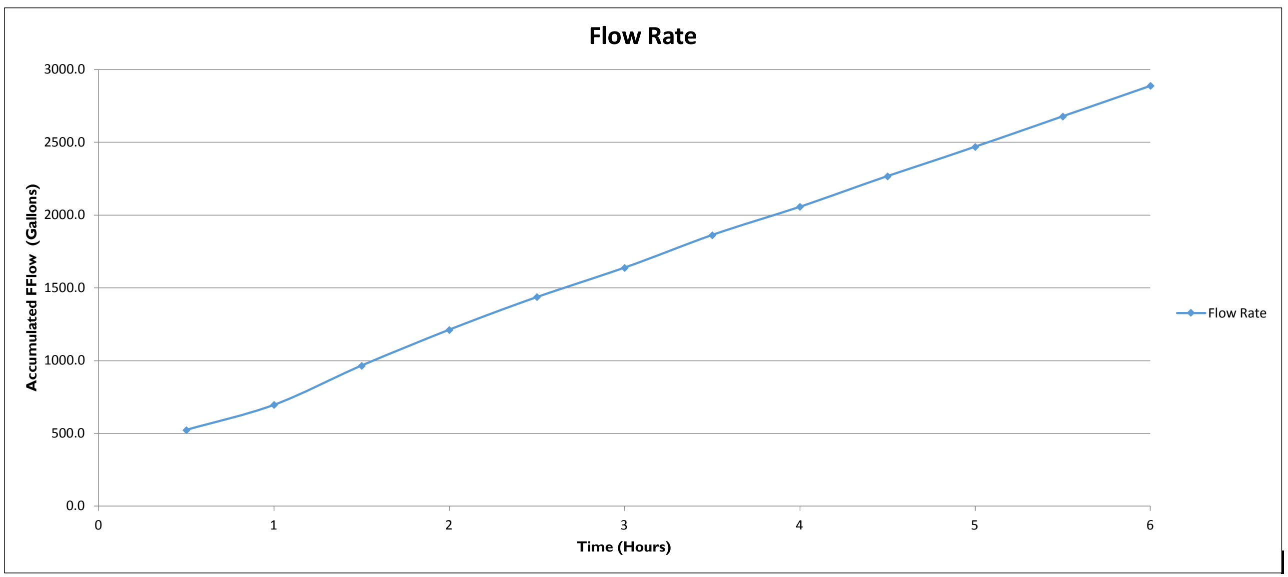
GeoTek, Inc.
PERCOLATION TESTING

Large Scale Percolation Test

Test Pit Dimentions — Width: 4 Feet Length: 8 Feet Depth: 8.5 Feet

Head constant at 18 inches above bottom of test pit

Trial No.	Time	Time Interval (ΔT) Min.	Accumulated Time Hrs.	Accumulated Time Mins.	Cubic Feet	Δ Gallons	Accumulated Flow Gallons	Water Temp °F	GPM	ft^3/min	Notes
1	8:00 AM				167400			68			
	8:30 AM	30	0.5	30	167470	523.60	523.60		17.45	2.33	
2	8:30 AM				167470			68			
	9:00 AM	30	1	60	167493	172.04	695.64		5.73	0.77	
3	9:00 AM				167493			68			
	9:30 AM	30	1.5	90	167529	269.28	964.92		8.98	1.20	
4	9:30 AM				167529			68			
	10:00 AM	30	2	120	167562	246.84	1211.76		8.23	1.10	
5	10:00 AM				167562			69			Minor caving SE corner
	10:30 AM	30	2.5	150	167592	224.40	1436.16		7.48	1.00	
6	10:30 AM				167592			69			
	11:00 AM	30	3	180	167619	201.96	1638.12		6.73	0.90	
7	11:00 AM				167619			69			
	11:30 AM	30	3.5	210	167649	224.40	1862.52		7.48	1.00	
8	11:30 AM				167649			69			
	12:00 PM	30	4	240	167675	194.48	2057.00		6.48	0.87	
9	12:00 PM				167675			70			Minor caving S side
	12:30 PM	30	4.5	270	167703	209.44	2266.44		6.98	0.93	
10	12:30 PM				167703			70			
	1:00 PM	30	5	300	167730	201.96	2468.40		6.73	0.90	
11	1:00 PM				167730			70			
	1:30 PM	30	5.5	330	167758	209.44	2677.84		6.98	0.93	
12	1:30 PM				167758			70			
	2:00 PM	30	6	360	167786	209.44	2887.28		6.98	0.93	



GeoTek, Inc.
PERCOLATION TESTING

Large Scale Percolation Test (Falling Head Test)

Test Pit Dimentions — Width: 4 Feet Length: 8 Feet Depth: 8.5 Feet

Starting test at 18 inches above bottom of basin

Trial No.	Time Interval (ΔT) Min.	Initial Depth (D0) in.	Final Depth (Df) in.	Change In Level (ΔD) in.	Perc Rate (min/in)
1	15	18.00	13.20	4.80	3.13
2	15	13.20	8.70	4.50	3.33
3	15	8.70	4.10	4.60	3.26
4	15	4.10	0.01	4.09	3.67