

November 8, 2021

Project No. 192851-12A

Dr. Milan Chakrabarty
CHAKRABARTY, LLC
1003 East Florida Avenue, Suite 101
Hemet, CA 92543

Subject: **Infiltration Testing for Water Quality Treatment Areas, Proposed Commercial Development, Assessor Parcel Number 476-010-060, Located on the South West Corner of Winchester Road and Keller Road, City of Winchester, Riverside County, California**

INTRODUCTION

Earth Strata Geotechnical Services is pleased to present this infiltration feasibility report for the proposed commercial development, located on the southwest corner of Winchester Road and Keller Road, Assessor Parcel Number 476-010-060, in the City of Winchester, Riverside County, California. The purpose of our study was to determine the infiltration rates and physical characteristics of the subsurface earth materials at the approximate depth of the proposed WQMP area within the proposed development. This feasibility report provides the infiltration rates to be used for the design and the development of the water quality management plan, where applicable.

PROPERTY DESCRIPTION

The subject property is located on the southwest corner of Winchester Road and Keller Road in the City of Winchester, Riverside County, California. The approximate location of the site is shown on the Vicinity Map, Figure 1.

The subject property is comprised of approximately 5.25 acres of undeveloped land. The site has not been graded. Topographic relief at the subject property is relatively low with the terrain being generally flat. Elevations at the site range from approximately 1,413 to 1,428 feet above mean sea level (msl), for a difference of about 15± feet across the entire site. Drainage within the subject property generally flows to the northeast.

The site is currently bordered by a residential development to the west, Winchester Road to the south and east, and Keller Road to the north. Most of the vegetation on the site consists of light to moderate amounts of annual weeds/grasses throughout the subject site.

PROPOSED CONSTRUCTION

Based on the proposed development as illustrated on the conceptual grading plans will consist of a RV and Self-Storage development complete with interior streets, utilities, driveways, park, and an onsite water quality treatment basin.

SUBSURFACE EXPLORATION

Subsurface Exploration

Subsurface exploration within the subject site was performed on November 2, 2021, for the exploratory excavations. A truck mounted hollow-stem-auger drill rig was utilized to drill one (1) boring to a maximum depth of 20 feet. The exploratory holes were excavated for geotechnical evaluation purposes with respect to the proposed developments and to interpret whether groundwater or impermeable soil layers were present. An underground utilities clearance was obtained from Underground Service Alert of Southern California, prior to the subsurface exploration. The approximate locations of the exploratory excavations are shown on the attached Infiltration Location Map, Plate 1 and descriptive logs are presented in Appendix A.

Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions may have been reconciled to reflect laboratory test results with regard to ASTM D 2487.

Earth Materials

A general description of the earth materials observed on site is provided below.

Quaternary Alluvium (Qa): Quaternary Alluvium was encountered directly from the surface to a maximum depth of 5 feet. These materials were found to be light brown and in a dry, dense state.

Metasedimentary Rocks (ms): The bedrock deposits were encountered below the alluvium materials to the full depth of the excavation. This bedrock unit consists predominately of interbedded light to medium brown, fine to medium grained silty sand, fine to coarse grained sandstone, with occasional siltstone and claystone layers.

INFILTRATION TESTING

The double ring infiltrometer test method was utilized to perform a total of four (4) infiltration tests on November 3, 2021 to evaluate near surface infiltration rates in order to estimate the amount of storm water runoff that can infiltrate into the onsite water quality treatment plan areas. The infiltration tests were performed in general accordance with the requirements of double ring infiltration testing, ASTM D3385 and Appendix A of the Riverside County Flood Control and Water Conservation District.

The infiltration tests were performed using double ring infiltrometer and Mariotte tubes at a depth of 6 feet below existing grades. The locations of the infiltration tests are indicated on the attached infiltration Location Map, Plate 1. The double ring infiltrometer tests were located by property boundary measurement on the site plan and by using geographic features. Infiltration test data recorded in the field are summarized in the following table and is included within Appendix B including the graph of Infiltration Rate versus Elapsed Time.

Infiltration Test Summary

TEST NUMBER	INFILTRATION HOLE DEPTH (ft.)	INFILTRATION RATE (in/hr)	DESCRIPTION
DR-1	5	0.0	CLAY
DR-2	5	0.0	CLAY
DR-3	5	0.0	CLAY
DR-4	5	0.0	CLAY

The infiltration test rates were documented to be 0.0 inches per hour (in/hr). The observed hard compacted clay and bedrock material caused the infiltration testing to fail.

CONCLUSIONS AND RECOMMENDATIONS

General

From geotechnical and engineering geologic points of view, the proposed WQMP areas, where tested, is considered unsuitable for infiltration for the proposed development.

Groundwater

Groundwater was not observed during our subsurface exploration to a total depth of 20 feet.

Based on the data presented in this report and the recommendations set forth herein, it is the opinion of Earth Strata Geotechnical Services that a WQMP area cannot be utilized for infiltration at the subject site.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **Mr. Milan Chakrabarty** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata not be accorded the opportunity to review the project plans and specifications, we are not responsible for misinterpretation of our recommendations.

Earth Strata should be retained to provide observations during construction to validate this report. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property.

The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata during construction. This report is considered valid for a period of one year from the time the report was issued.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES



Stephen M. Poole, PE 40219
President
Principal Engineer

SMP/jmr

Distribution: (1) Addressee



Attachments: Figure 1 – Vicinity Map (*Rear of Text*)
Appendix A – Exploratory Logs (*Rear of Text*)
Appendix B – Infiltration Test Sheets (*Rear of Text*)
Plate 1 – Infiltration Location Map (*Rear of Text*)

FIGURE 1
VICINITY MAP



APPENDIX A

EXPLORATORY LOGS

Geotechnical Log MW-1

Date: May 13, 2021	Project Name: Winchester and Keller - Winchester	Page: 1 of 1
Project Number: 192851-11A	Logged By: JMR	
Drilling Company: Drilling IT	Type of Rig: B-61	
Drive Weight (lbs): -	Drop (in): -	Hole Diameter (in): -
Top of Hole Elevation (ft): See Map	Hole Location: See Geotechnical Map	

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						Quaternary Alluvium (Qa):
					SM	Silty SAND; light brown, dry, dense, fine to coarse sand with gravel
						Metasedimentary Rocks (ms):
					CL	yellowish brown, dry, hard, fine to coarse grained, breaks down to clay
5						
						very hard
10						
15						
20						Total Depth: 20 feet
25						
30						

42184 Remington Avenue, Temecula, CA 92590

Earth Strata Geotechnical Services, Inc.

Geotechnical, Environmental and Materials Testing Consultants

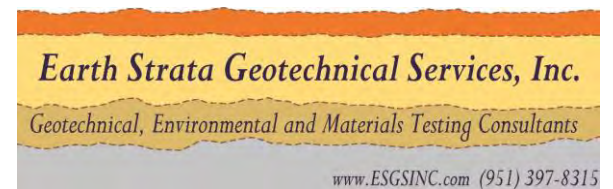
www.ESGSINC.com (951) 397-8315

APPENDIX B

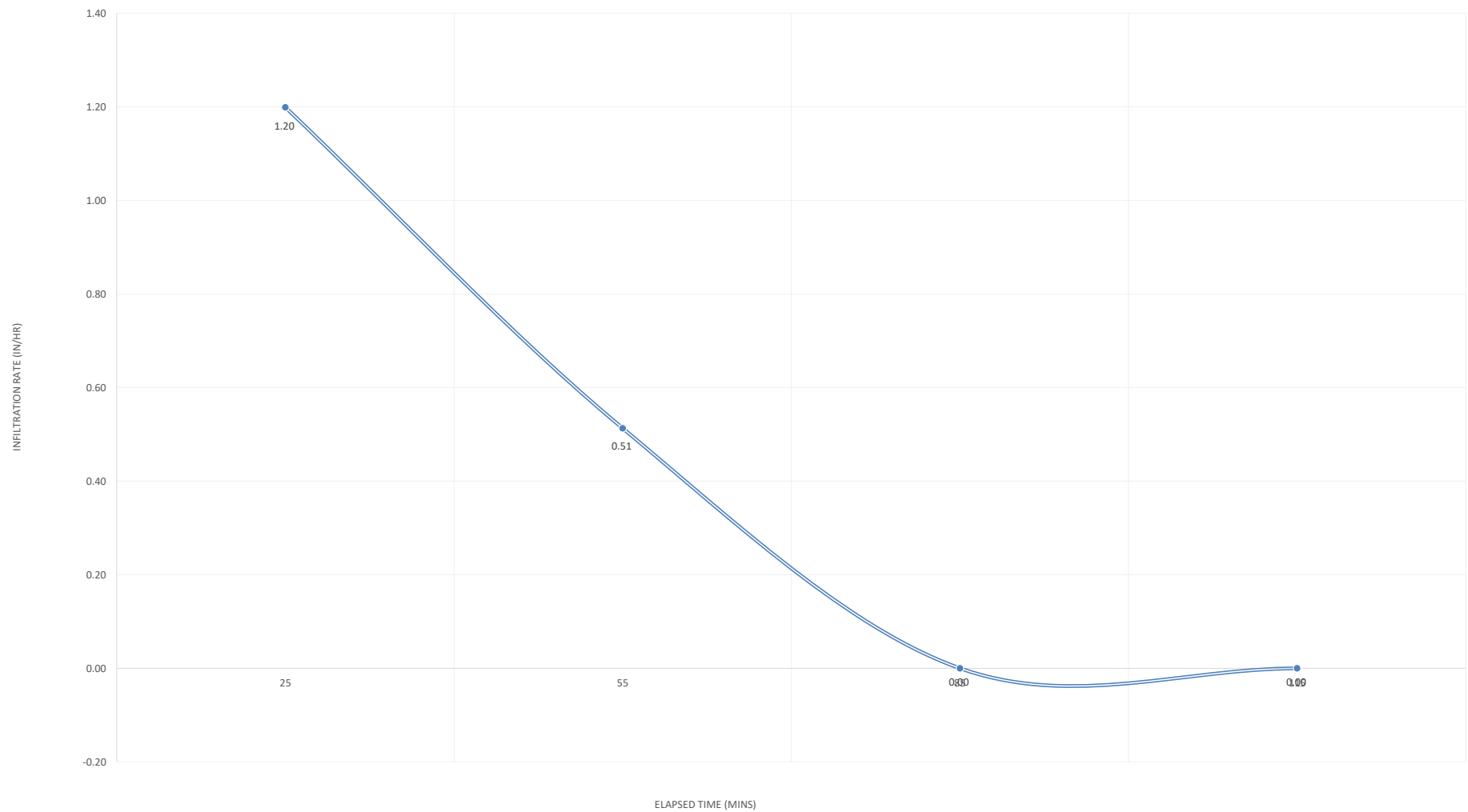
INFILTRATION TEST SHEETS

[illegible]

Project Identification:	192851-12A		
Test Location:	DR-1		
Liquid Used:	TAP WATER	pH:	8.0
Tested By:	JMR/GG		
Depth to water table:	400		

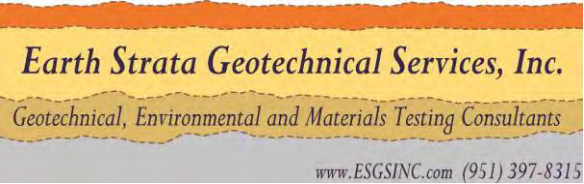


ELAPSED TIME VS. INFILTRATION RATE

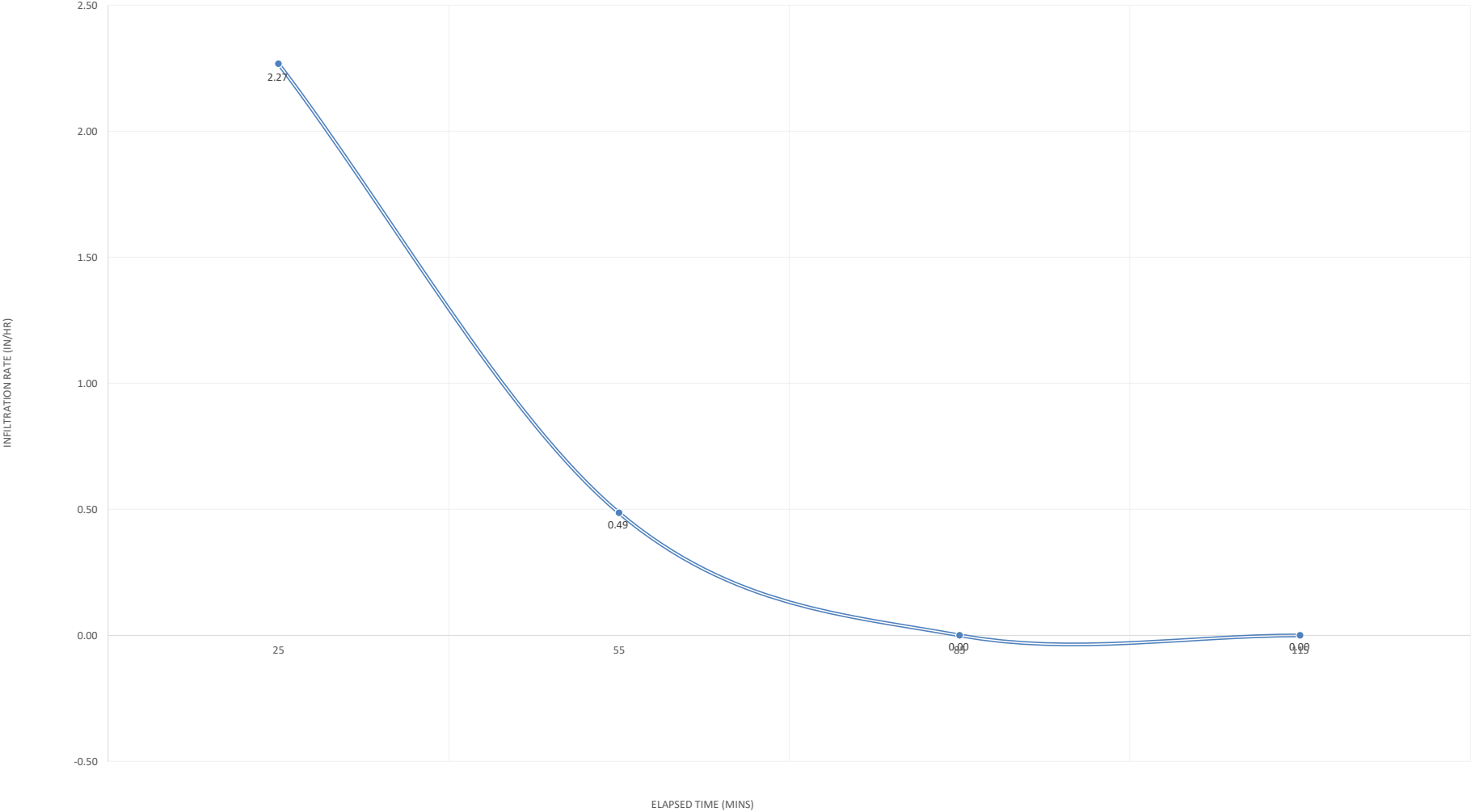


[illegible]

Project Identification:	192851-12A		
Test Location:	DR-2		
Liquid Used:	TAP WATER	pH:	8.0
Tested By:	JMR/GG		
Depth to water table:	400		

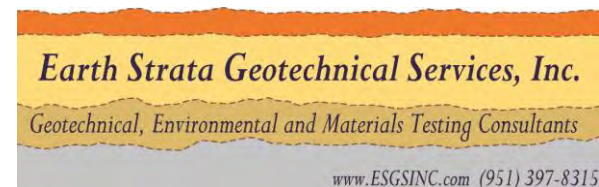


ELAPSED TIME VS. INFILTRATION RATE

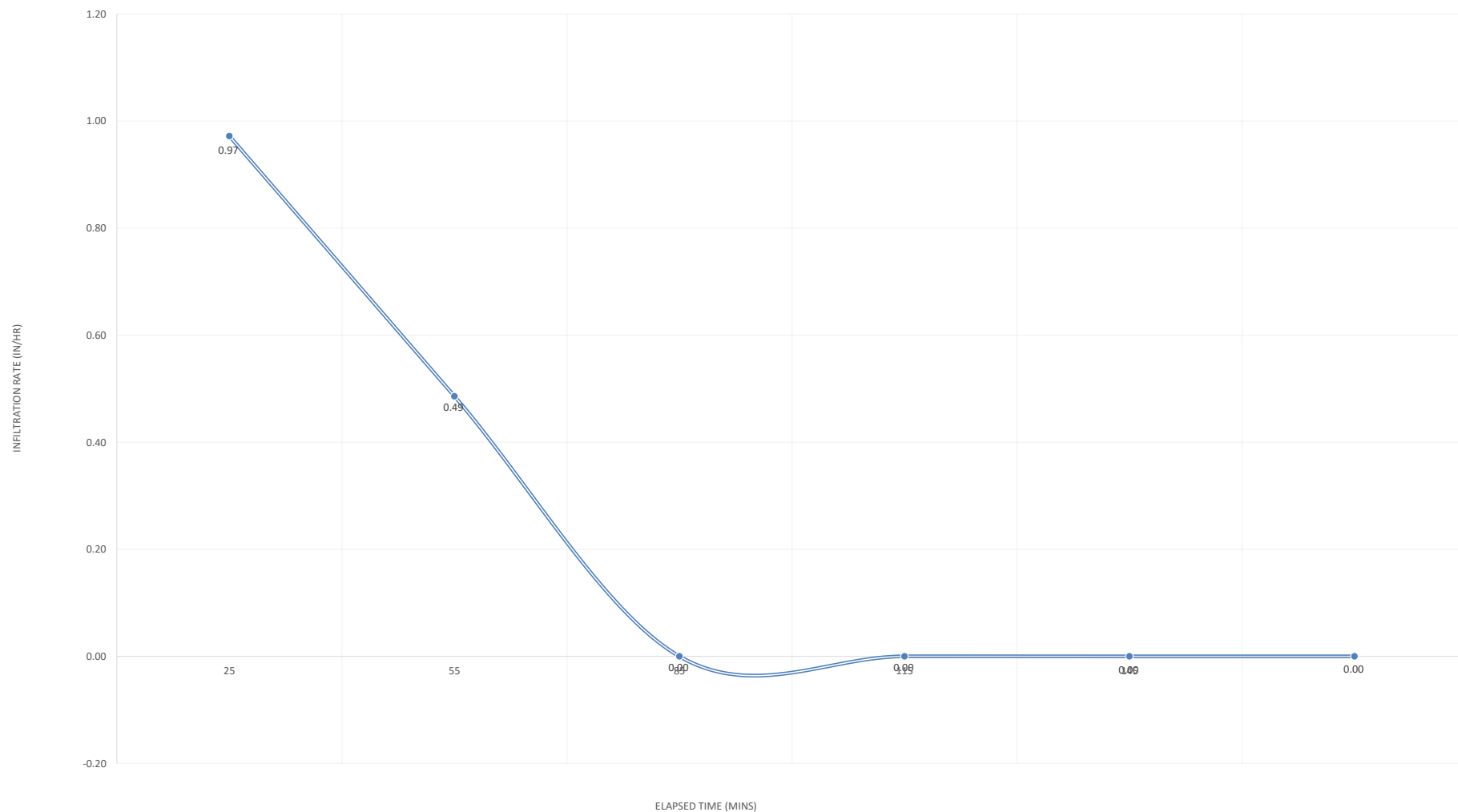


[illegible]

Project Identification:	192851-12A		
Test Location:	DR-3		
Liquid Used:	TAP WATER	pH:	8.0
Tested By:	JMR/GG		
Depth to water table:	400		



ELAPSED TIME VS. INFILTRATION RATE



[illegible]

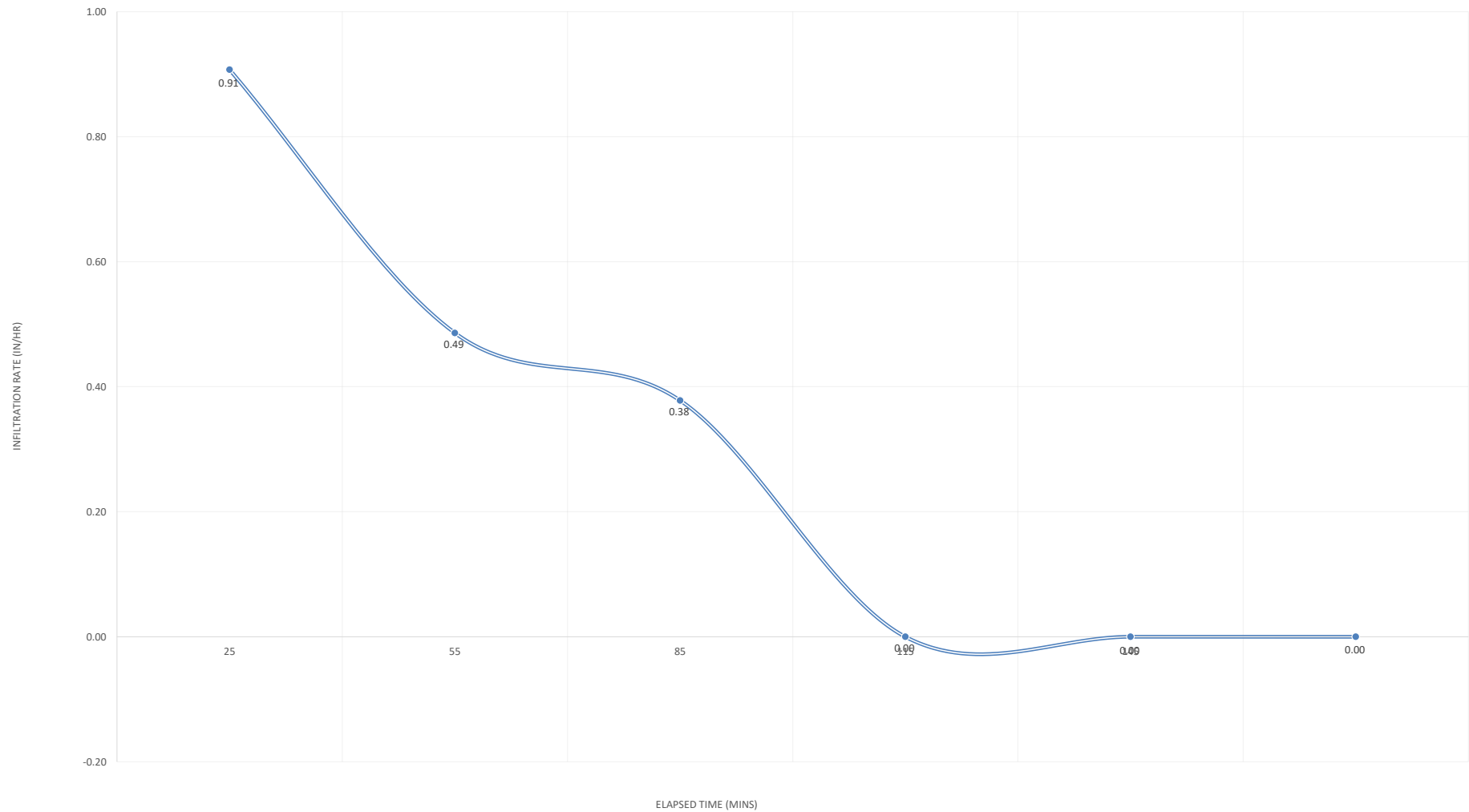
Project Identification:	192851-12A		
Test Location:	DR-4		
Liquid Used:	TAP WATER	pH:	8.0
Tested By:	JMR/GG		
Depth to water table:	400		

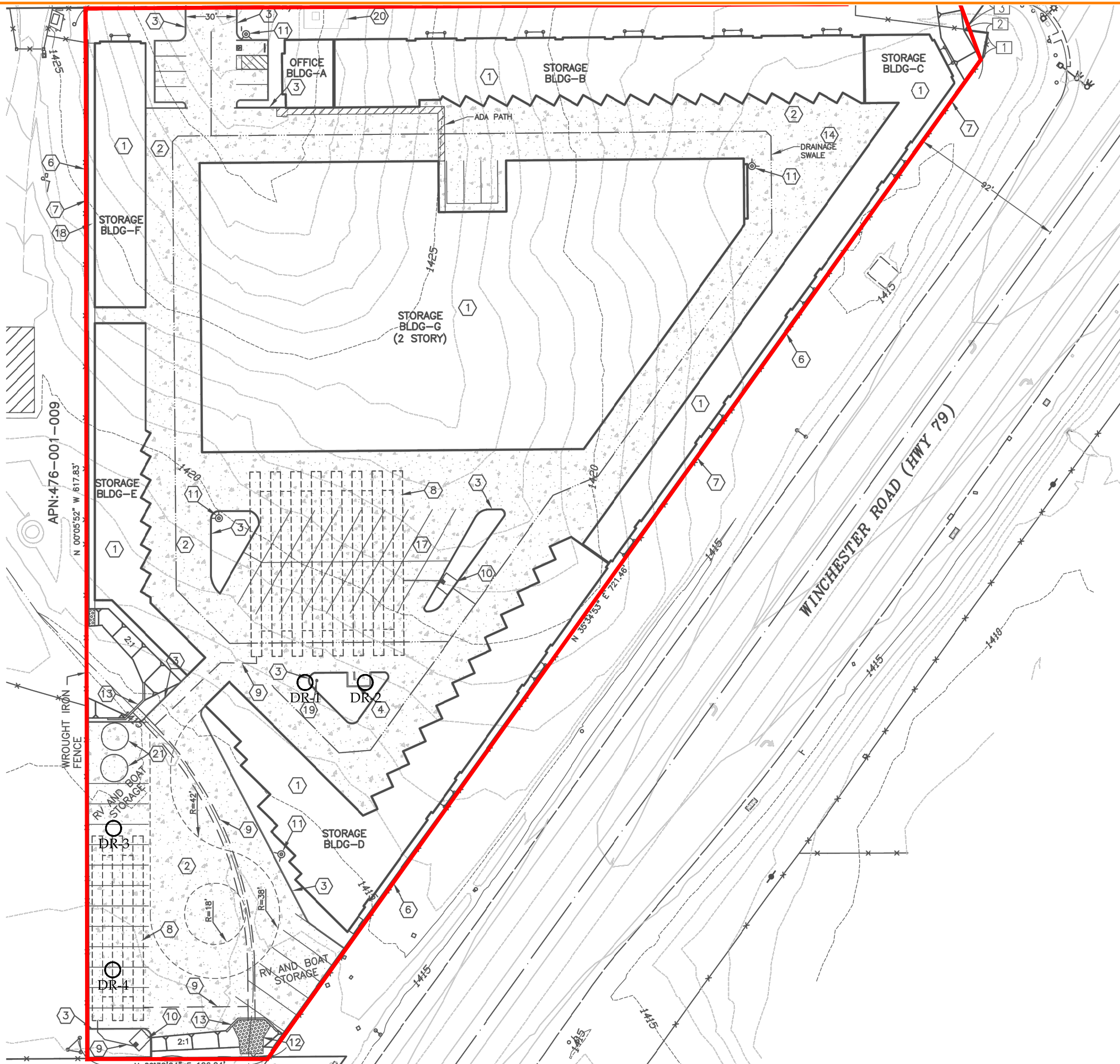
Earth Strata Geotechnical Services, Inc.

Geotechnical, Environmental and Materials Testing Consultants

www.ESGSINC.com (951) 397-8315

ELAPSED TIME VS. INFILTRATION RATE



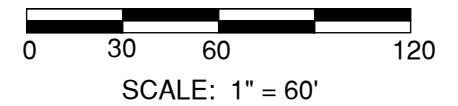


LEGEND

Locations are Approximate

Symbols

-  - Limits of Report
-  - Double Ring Test Location



INFILTRATION LOCATION MAP

LOCATED ON THE SOUTHWEST CORNER OF WINCHESTER ROAD
AND KELLER ROAD, CITY OF WINCHESTER, RIVERSIDE COUNTY, CALIFORNIA
APN 476-010-060

PROJECT	PROPOSED SINGLE FAMILY RESIDENCE		
CLIENT	DR. MILAN CHAKRABARTY		
PROJECT NO.	192851-12A		
DATE	NOVEMBER 2021		
SCALE	1" = 60'		
DWG XREFS			
REVISION			
DRAWN BY	JDG	PLATE	1 OF 1