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May 23, 2022 Project No. V21081-13A

Mr. Daniel Seagondollar
P.O. Box 1482
Rancho Cucamonga, CA 91729

Subject: Revised Feasibility Report for Seepage Pit Design, Proposed Rivers Edge Ranch Development, Assessor's Parcel Number 0453-062-14-0000, Located at 33433 Haynes Road, Lucerne Valley Area, San Bernardino County, California

Patel & Associates, Inc. is pleased to present this sewage disposal feasibility report for the proposed Rivers Edge Ranch development, located at 33433 Haynes Road, Assessor's Parcel Number 0453-062-14-0000, in the Lucerne Valley area of San Bernardino County, California. The purpose of our feasibility study was to determine the seepage pit percolation rates, physical characteristics of the subsurface earth materials within the vicinity of the proposed disposal area. We will then provide guidelines for the design of onsite sewage disposal systems, where applicable. This study is intended to provide adequate data to satisfy the San Bernardino County, Environmental Health Services Division (SBCEHSD), San Bernardino Local Agency Management Program (LAMP), and the Regional Water Board guidelines for residential development approval.

PROPERTY DESCRIPTION AND LOCATION

The subject property is located at 33433 Haynes Road, in the Lucerne Valley area of San Bernardino County, California (see Figure 1). The subject property consists of a partially developed parcel of land with relatively flat terrain, no rock outcrops or streams. Water wells have been drilled for domestic use and are noted on Plate 1. The subject property is underlain by undocumented artificial fill and alluvium.

PROPOSED CONSTRUCTION

Based on information provided by you, the proposed development includes four (4) on-site sewage disposal systems redesign.

SUBSURFACE EXPLORATION AND PERCOLATION TESTING PROCEDURE

SUBSURFACE EXPLORATION

Subsurface exploration of the subject site consisted of eight (8) seepage pit percolation test holes and five (5) deep monitoring well holes, excavated on December 31, 2021 and January 3 and 21, 2022. The deeper monitoring well

test hole was left open to check for groundwater after testing was completed. The deep exploratory boring was excavated to interpret whether groundwater or impermeable soil layers were present. A drill rig with an 8-inch hollow-stem-auger was utilized to drill the exploratory and percolation test holes. Selective sampling was done on an as-needed basis in general accordance with the guidelines of San Bernardino LAMP. Earth materials encountered within the deep exploratory boring were classified and logged using the guidelines of ASTM 2487. The approximate location of the deep exploratory boring is shown on the attached Exploratory Boring and Percolation Test Map, Plate 1. In addition, the deep exploratory test hole was excavated and logged, and has been included within Appendix A.

PERCOLATION TESTING PROCEDURE

Falling-head percolation test method was utilized to perform percolation testing on ten test holes throughout 5 separate testing areas on January 21 and February 10, 2022 in accordance with the procedures described in the referenced San Bernardino LAMP. After drilling, 3-inch diameter perforated pipe was inserted into the percolation test holes to help prevent cave-ins. Pre-saturation of the test holes occurred on January 20 and February 9, 2022. From a fixed reference point, the drop-in water level was measured and recorded for two twenty-five (25) minute intervals and then seven (7) ten-minute intervals over a period of 2 hours. The percolation test holes were filled with clear water to the ground surface and to four feet below the soil surface (the assumed inlet depth) for the last two readings. After each measurement, water was refilled to the ground surface with the exception of the last two readings. The Percolation Test Results are included in Appendix B

FINDINGS

EARTH MATERIALS

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

- Artificial Fill, Undocumented (map symbol Afu): Undocumented artificial fill materials were encountered throughout the site within the upper 2 feet during exploration. These materials are typically locally derived from the native materials and consist generally of light brown to pale yellow to light yellowish-brown silty sand and silty gravel. These materials are generally inconsistent, poorly consolidated fills.

- Quaternary Young Alluvial Fan Deposits (map symbol Qyf): Quaternary young alluvial fan deposits were encountered beneath the undocumented artificial fill to the full depth of our exploration. These young alluvial fan deposits consist predominately of olive brown to yellowish brown fine to coarse grained poorly-graded gravel with varying amounts of sand and silt. These deposits were generally noted to be in a dry medium dense to very dense state.

Laboratory test results, consisting of -200 sieve analysis, are presented herein and are utilized for classification of earth materials.

GROUNDWATER

Groundwater was not observed within the deep exploratory borings excavated to a maximum depth of 41 feet. The recent well drilled in the northeast of the property encountered water at 400 feet.

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300 gallons per one half acre is the maximum flow rate. For the 20 acre site, a maximum flow rate will be 12,000 gallons per day.

PERCOLATION TEST RESULTS

PERCOLATION TEST SUMMARY

TEST NUMBER	AREA	TANK SIZE (gal)	HOLE DEPTH (FT.)	FINAL PERCOLATION RATE (MPI)	EARTH MATERIAL DESCRIPTION
SP-1	B	2000	40	4.645	Silty SAND
SP-2	B	2000	40	72.000	Silty SAND
SP-3	C	2000	40	72.000	Silty SAND
SP-4	C	2000	40	10.286	Silty SAND
SP-5	D	1000	40	11.478	Silty SAND
SP-6	D	1000	40	11.478	Silty SAND
SP-7	E	2000	40	10.286	Silty SAND
SP-18	E	2000	40	13.970	Silty SAND

The measured percolation test rates varied from 4.6 to 7.2 gallons per square foot per day (gal/sf/day). A design percolation rate (Q) of 4.0 is to be used per the design methodology stated in the referenced documents.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Our conclusion is that the subject property has sufficient area to support sewage disposal systems in those areas with test results meeting the current codes and standards of the SBCEHSD, based on the data presented in this report and the recommendations set forth herein. Additionally, it is our conclusion that the groundwater table will not encroach within the current allowable limit set forth by San Bernardino County and California State requirements. The designed system shall be located in natural undisturbed soil at the depth of the tests performed.

SEWAGE DISPOSAL DESIGN RECOMMENDATIONS

AREA 2

The proposed sewage disposal system will consist of a 2,000-gallon, a 2,750-gallon, and a 4,500-gallon septic tanks with a seepage pit system. The areas for both a primary system and a 100 percent expansion system are required. Septic tanks should be located upslope from the seepage pits to provide gravity flow from the septic tank to the seepage pits. Descriptions of the general design and construction of sewage disposal systems is provided below.

> **Septic Tank Capacity**: The minimum septic tank capacity for the proposed development is based on the estimated daily flow, or the number of fixture units as determined by the California Plumbing Code, whichever is greater.

Allowable Design Percolation Rate: A design percolation rate (Q) of 4.0, has been utilized for the design of the seepage pit system. The following Table shows the calculation of the minimum seepage pit capacity for the proposed residential development.

Primary System: The primary system will consist of a 4,500-gallon tank and seepage pit disposal areas for the proposed development. The seepage pits will be constructed into the native materials as tested.

100 Percent Expansion System: In accordance with SBCEHSD, sufficient area must be set aside for future construction of a backup system of equal size in the event the primary system fails. The area required for the 100 percent expansion system is identical to that of the primary system.

PERCOLATION RATE CALCULATION

Chapter 3.5 from Referenced SBCEHSD Guidelines

1. $Q = \frac{9\ ^{F}/_{T}\ D}{L\ (avg)}$

2. $\frac{\text{Septic Tank Capacity}}{Q \cdot (15.7 \text{ or } 18.8)}$

Q = Rate in gallons per square foot of sidewall per day
F = Drop during time interval in feet
T = Time interval in hours
D = Diameter of hole in feet
L (avg) = Average wetted depth during time interval in feet

15.7 for 5-foot diameter seepage pits
18.8 for 6-foot diameter seepage pits

Percolation Design Rate = Q (Gal/ft²/day)	***Calculated Minimum Seepage Pit Depth Below Septic Tank Inlet[1] (minimum 4 feet) 5-foot Diameter Seepage Pit***	***Recommended Number of Seepage Pits and Total Depth for 5-foot Diameter Seepage Pit***
	4,500 gal Septic Tank	*4,500 gal Septic Tank*
**4.0	72 feet	3 @ 28 feet

** - Per County maximum allowable design rates
Assume 4 feet inlet

AREA 3

The proposed sewage disposal system will consist of a 2,750-gallon tank and a seepage pit system. The areas for both a primary system and a 100 percent expansion system are required. Septic tanks should be located upslope from the seepage pits to provide gravity flow from the septic tank to the seepage pits. Descriptions of the general design and construction of sewage disposal systems is provided below.

Septic Tank Capacity: The minimum septic tank capacity for the proposed development is based on the estimated daily flow, or the number of fixture units as determined by the California Plumbing Code, whichever is greater.

Allowable Design Percolation Rate: A design percolation rate (Q) of 4.0, has been utilized for the design of the seepage pit system. The following Table shows the calculation of the minimum seepage pit capacity for the proposed residential development.

Primary System: The primary system will consist of a 2,750-gallon tank and two (2) seepage pit disposal areas for the proposed development. The seepage pits will be constructed into the native materials as tested.

100 Percent Expansion System: In accordance with SBCEHSD, sufficient area must be set aside for future construction of a backup system of equal size in the event the primary system fails. The area required for the 100 percent expansion system is identical to that of the primary system.

PERCOLATION RATE CALCULATION

Chapter 3.5 from Referenced SBCEHSD Guidelines

1. $Q = \frac{9\ ^{F}/_{T}\ D}{L\ (avg)}$

2. $\frac{\text{Septic Tank Capacity}}{Q \cdot (15.7 \text{ or } 18.8)}$

Q = Rate in gallons per square foot of sidewall per day
F = Drop during time interval in feet
T = Time interval in hours
D = Diameter of hole in feet
L (avg) = Average wetted depth during time interval in feet

15.7 for 5-foot diameter seepage pits
18.8 for 6-foot diameter seepage pits

Percolation Design Rate = Q (Gal/ft²/day)	***Calculated Minimum Seepage Pit Depth Below Septic Tank Inlet[1] (minimum 4 feet) 5-foot Diameter Seepage Pit***	***Recommended Number of Seepage Pits and Total Depth for 5-foot Diameter Seepage Pit***
	2,750 gal Septic Tank	*2,750 gal Septic Tank*
**4.0	44 feet	2 @ 26 feet

** - Per County maximum allowable design rates
Assumes 4 feet inlet

AREA 4

The proposed sewage disposal system will consist of a 2,000-gallon tank and a seepage pit system. The areas for both a primary system and a 100 percent expansion system are required. Septic tanks should be located upslope

from the seepage pits to provide gravity flow from the septic tank to the seepage pits. Descriptions of the general design and construction of sewage disposal systems is provided below.

Septic Tank Capacity: The minimum septic tank capacity for the proposed development is based on the estimated daily flow, or the number of fixture units as determined by the California Plumbing Code, whichever is greater.

Allowable Design Percolation Rate: A design percolation rate (Q) of 4.0, has been utilized for the design of the seepage pit system. The following Table shows the calculation of the minimum seepage pit capacity for the proposed residential development.

Primary System: The primary system will consist of a 2,000-gallon tank and seepage pit disposal areas for the proposed development. The seepage pits will be constructed into the native materials as tested.

100 Percent Expansion System: In accordance with SBCEHSD, sufficient area must be set aside for future construction of a backup system of equal size in the event the primary system fails. The area required for the 100 percent expansion system is identical to that of the primary system.

PERCOLATION RATE CALCULATION

Chapter 3.5 from Referenced SBCEHSD Guidelines

1. $Q = \frac{9\ ^{F}/_{T}\ D}{L\ (avg)}$

2. $\frac{\text{Septic Tank Capacity}}{Q \cdot (15.7 \text{ or } 18.8)}$

Q = Rate in gallons per square foot of sidewall per day
F = Drop during time interval in feet
T = Time interval in hours
D = Diameter of hole in feet
L (avg) = Average wetted depth during time interval in feet

15.7 for 5-foot diameter seepage pits
18.8 for 6-foot diameter seepage pits

Percolation Design Rate = Q (Gal/ft²/day)	***Calculated Minimum Seepage Pit Depth Below Septic Tank Inlet[1] (minimum 4 feet) 5-foot Diameter Seepage Pit***	***Recommended Number of Seepage Pits and Total Depth for 5-foot Diameter Seepage Pit***
	2,000 gal Septic Tank	*2,000 gal Septic Tank*
**4.0	32 feet	2 @ 20 feet

** - Per County maximum allowable design rates
Assume 4 feet inlet

AREA 5

The proposed sewage disposal system will consist of a 2,500-gallon tank and a seepage pit system. The areas for both a primary system and a 100 percent expansion system are required. Septic tanks should be located upslope from the seepage pits to provide gravity flow from the septic tank to the seepage pits. Descriptions of the general design and construction of sewage disposal systems is provided below.

Septic Tank Capacity: The minimum septic tank capacity for the proposed development is based on the estimated daily flow, or the number of fixture units as determined by the California Plumbing Code, whichever is greater.

Allowable Design Percolation Rate: A design percolation rate (Q) of 4.0, has been utilized for the design of the seepage pit system. The following Table shows the calculation of the minimum seepage pit capacity for the proposed residential development.

Primary System: The primary system will consist of a 2,500-gallon tank and seepage pit disposal areas for the proposed development. The seepage pits will be constructed into the native materials as tested.

100 Percent Expansion System: In accordance with SBCEHSD, sufficient area must be set aside for future construction of a backup system of equal size in the event the primary system fails. The area required for the 100 percent expansion system is identical to that of the primary system.

PERCOLATION RATE CALCULATION

Chapter 3.5 from Referenced SBCEHSD Guidelines

1. $Q = \frac{9\ ^{F}/_{T}\ D}{L\ (avg)}$

2. $\frac{\text{Septic Tank Capacity}}{Q \cdot (15.7 \text{ or } 18.8)}$

Q = Rate in gallons per square foot of sidewall per day
F = Drop during time interval in feet
T = Time interval in hours
D = Diameter of hole in feet
L (avg) = Average wetted depth during time interval in feet

15.7 for 5-foot diameter seepage pits
18.8 for 6-foot diameter seepage pits

Percolation Design Rate = Q (Gal/ft²/day)	***Calculated Minimum Seepage Pit Depth Below Septic Tank Inlet[1] (minimum 4 feet) 5-foot Diameter Seepage Pit***	***Recommended Number of Seepage Pits and Total Depth for 5-foot Diameter Seepage Pit***
	2,500 gal Septic Tank	*2,500 gal Septic Tank*
**4.0	40 feet	2 @ 24 feet

** - Per County maximum allowable design rates
Assume 4 feet inlet

ADDITIONAL DESIGN CONSIDERATIONS AND RECOMMENDATIONS

A minimum horizontal clearance of 8 feet is required between the seepage pits, proposed structures, and property lines. A minimum horizontal clearance of 5 feet is also required between the septic tank and proposed structures, and a minimum horizontal clearance of 18 feet on-center (12 feet from sidewalls) between seepage pits.

In the event that future access to the 100 percent expansion area is compromised by the development (ex., garden walls, etc.), consideration should be given to constructing the expansion system at the same time as the primary system. If the systems are not constructed concurrently, consideration should be given to accessibility of the 100 percent expansion area after all site improvements are constructed.

The seepage pits should be observed by the geotechnical consultant during and after excavation. The site observations are to verify the suitability of the exposed earth materials. Necessary revisions or modifications may be needed if unforeseen conditions exposed during construction, such as hard impermeable rock. Revisions could include adding additional lines or a redesign of the system that conforms to the site conditions.

The disposal field areas should not be used for recreation, horse corrals or other uses that would compact the earth materials at the surface. The ground surface over the disposal areas should be seeded or sodded to mitigate erosion.

The property owners should take note that proper use and maintenance are crucial to extending the effective design life of the sewage disposal system. The use of excessive water, introduction of detergents or chemicals, and solid food waste from garbage disposals can cause premature system failures. Properly maintained sewage disposal systems can function for many years. However, a rest period of roughly 10 to 15 years is generally needed to promote bacterial decay and a chance to dry up. After this resting period, the primary system can often be reactivated and alternated with the 100 percent expansion system.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **Mr. Daniel Seagondollar** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Patel & Associates 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 Patel & Associates not be accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

Patel & Associates 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.

Patel & Associates 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 Patel & Associates 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,

PATEL & ASSOCIATES, INC.,

Stephen M. Poole, PE 40219
President
Principal Engineer

I, Stephen M. Poole, am duly registered in the State of California and hereby attest that I have personally prepared this report, assume full professional responsibility for its validity, and for any errors or omissions herein.

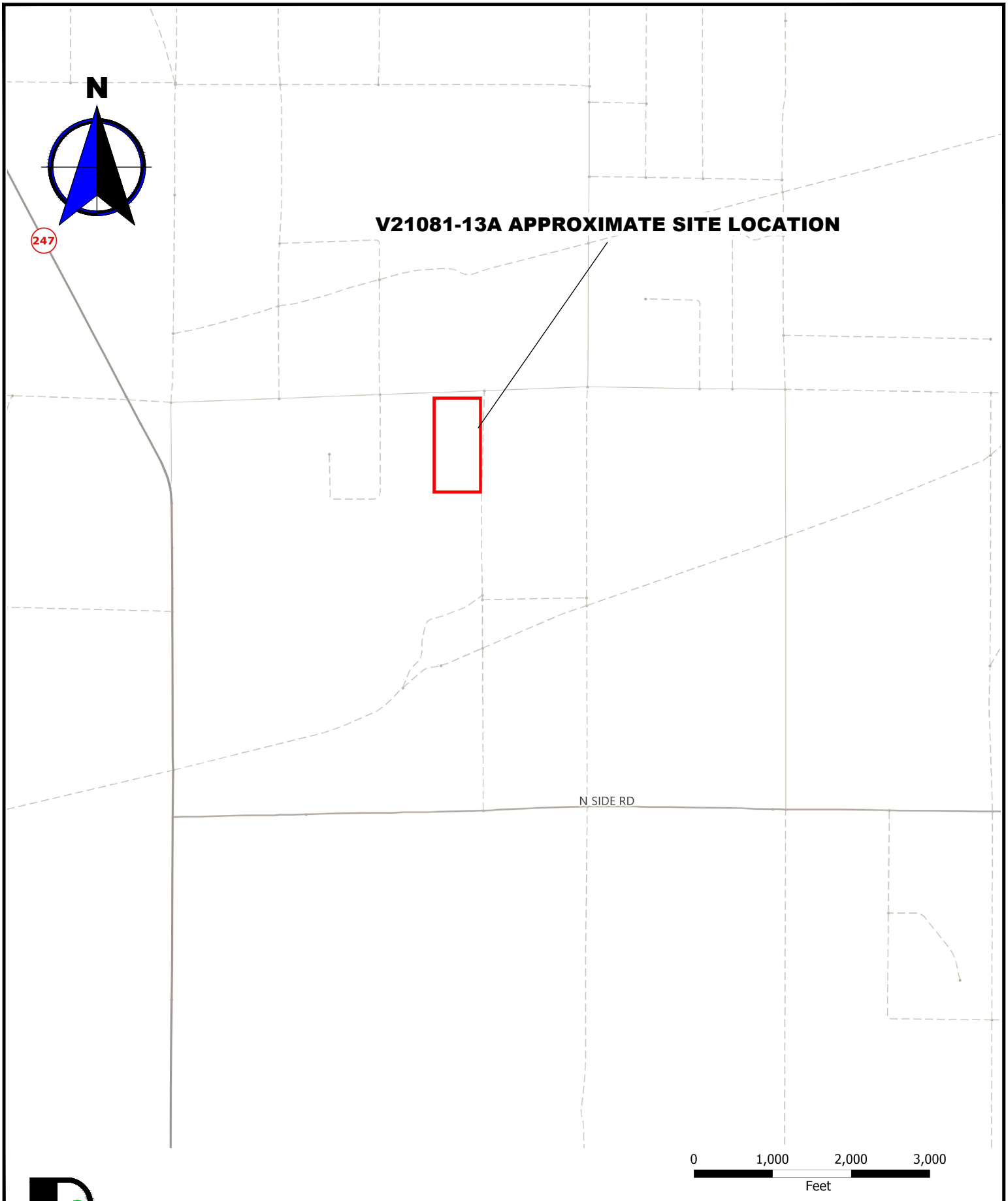
SMP/jmr

Distribution: (4) Addressee

Attachments: Figure 1 – Vicinity Map *(Rear of Text)*
Appendix A – Exploratory Logs *(Rear of Text)*
Appendix B – Percolation Test Results *(Rear of Text)*
Appendix C – Calculations *(Rear of Text)*
Plate 1 – Percolation Location Map *(Rear of Text)*

FIGURE 1

VICINITY MAP



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PROPOSED RIVERS EDGE RANCH DEVELOPMENT		V21081-13A
VICINITY MAP	SEE BAR SCALE	
	APR 2022	FIGURE 1

APPENDIX A

EXPLORATORY LOGS

Geotechnical Seepage Pit Log SP-1 (Area #1)

Date: December 31, 2021	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; brown, moist, dense, fine to coarse grain
	44	2.5'	137.2	0.5		
5	63	5'	108.5	13.6		
						Quaternary Alluvium (Qa):
	30	7.5'	110.4	13.6	SM	Silty SAND; orangish brown, slightly moist, dense, fine to medium grain
					SC	Clayey SAND; light brown, slightly moist, very dense, caliche
10	79/9"	10'	109.4	16.7		
15	77/8"	15'	102.2	16.2		
					SC	Clayey SAND; brown, slightly moist, very hard
20						
					SM	Silty SAND; dark brown, moist, dense, trace clay
25						
					SC	Clayey SAND; gray, slightly moist, hard, silt with gravel
30						

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Geotechnical Seepage Pit Log SP-1 (Area #1)

Date: December 31, 2021	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					CL	Clayey SILT; gray, moist, dense
35						
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-2 (Area #1)

Date: December 31, 2021	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; dark brown, moist, loose
5						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; light brown, moist, medium dense
					SC	Clayey SAND; light brown, moist, dense, gravel
10						
15						
20						
25						
30						

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Geotechnical Seepage Pit Log SP-2 (Area #1)

Date: December 31, 2021	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; dark brown, moist, dense
35						
40					SC	Clayey SAND; gray, moist, dense, rock
45						End of Boring: 45 feet
						No Groundwater
50						
55						
60						

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Geotechnical Seepage Pit Log SP-3 (Area #2)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; dark brown, moist, dense
	38	2.5'	122.6	4.9		
5						**Quaternary Alluvium (Qa)**
	50/6"	5'	-	9.1	SM	Silty SAND; light brown, slightly moist, very dense, stone, caliche
	51	7.5'	-	8.3		
					SC	Clayey SAND; orangish brown, slightly moist, dense
10	66	10'	108.3	5.6		
					SC	Clayey SAND; orangish brown, slightly moist, very dense, caliche
15	50/5"	15'	109.3	1.8		
					SC	Clayey SAND; light brown, slightly moist, dense, caliche
20	54	20'	115.8	2.8		
					SM	Silty SAND; orange, slightly moist, dense
25	46	25'	117.8	4.8		
30						

Geotechnical Seepage Pit Log SP-3 (Area #2)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; greyish brown, slightly moist, dense, gravel
					CL	Sandy CLAY; gray, moist, dense
35						
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-4 (Area #2)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
						Quaternary Alluvium (Qa):
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5						
					SM	Silty SAND; light brown, slightly moist, medium dense
10						
15					SC	Clayey SAND; dark brown, moist, dense
20						
25					SC	Clayey SAND; light brown, slightly moist, dense, gravel
30						

Geotechnical Seepage Pit Log SP-4 (Area #2)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
35						
					SC	Clayey SAND; gray, slightly moist, very dense, gravel
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-5 (Area #3)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
	40	2.5'	117.7	9.6		**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5	60	5'	104.5	5.0		
	49	7.5'	112.2	4.9		
					SM	Silty SAND; light brown, slightly moist, medium dense
10	50/6"	10'	113.4	9.8		
15	70/9"	15'	107.3	10.6		
20	80	20'	119.2	9.8		
25	50/6"	25'	115.8	7.0	SC	Clayey SAND; light brown, slightly moist, dense, gravel
30						

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Geotechnical Seepage Pit Log SP-5 (Area #3)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
35					SC	Clayey SAND; gray, slightly moist, very dense, gravel
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-6 (Area #3)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
						Quaternary Alluvium (Qa):
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5						
					SM	Silty SAND; light brown, slightly moist, medium dense
10						
15						
20					SC	Clayey SAND; light brown, slightly moist, dense, gravel
25						
30						

Geotechnical Seepage Pit Log SP-6 (Area #3)

Date: January 3, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
35					SC	Clayey SAND; gray, slightly moist, very dense, gravel
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-7 (Area #4)

Date: January 21, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
	40	2.5'	117.8	4.2		**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5	50/5"	5'	117.0	4.2		
	50/6"	7.5'	105.4	17.1		
10	50/6"	10'	106.5	5.4	SM	Silty SAND; light brown, slightly moist, medium dense
15	83/11"	15'	127.0	6.1		
20	81/11"	20'	125.0	5.9		
					SC	Clayey SAND; light brown, slightly moist, dense, gravel
25						
30						

Geotechnical Seepage Pit Log SP-7 (Area #4)

Date: January 21, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**<u>Quaternary Alluvium (Qa):</u>**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
					SC	Clayey SAND; gray, slightly moist, very dense, gravel
35						
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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PATEL & ASSOCIATES, INC.

Geotechnical Seepage Pit Log SP-8 (Area #4)

Date: January 21, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
						Quaternary Alluvium (Qa):
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5						
					SM	Silty SAND; light brown, slightly moist, medium dense
10						
15						
20					SC	Clayey SAND; light brown, slightly moist, dense, gravel
25						
30						

Geotechnical Seepage Pit Log SP-8 (Area #4)

Date: January 21, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
35					SC	Clayey SAND; gray, slightly moist, very dense, gravel
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-9 (Area #5)

Date: February 10, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
	58	2.5'	118.8	7.6		**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5	50/6"	5'	104.8	11.4		
	43	7.5'	118.1	7.0	SM	Silty SAND; light brown, slightly moist, medium dense
10	53	10'	89.6	7.1		
15	50/5"	15'	112.2	10.1		
20	59	20'	111.0	4.0		
					SC	Clayey SAND; light brown, slightly moist, dense, gravel
25	50/6"	25'	107.8	3.3		
30						

Geotechnical Seepage Pit Log SP-9 (Area #5)

Date: February 10, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
					SC	Clayey SAND; gray, slightly moist, very dense, gravel
35						
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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Geotechnical Seepage Pit Log SP-10 (Area #5)

Date: February 10, 2022	**Project Name: Eagle Ranch** **Page: 1 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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						**Topsoil:**
					SC	Clayey SAND; reddish brown, moist, loose
						Quaternary Alluvium (Qa):
					SC	Clayey SAND; light brown, moist, loose, fine to medium gravel
5						
10					SM	Silty SAND; light brown, slightly moist, medium dense
15						
20						
					SC	Clayey SAND; light brown, slightly moist, dense, gravel
25						
30						

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Geotechnical Seepage Pit Log SP-10 (Area #5)

Date: February 10, 2022	**Project Name: Eagle Ranch** **Page: 2 of 2**
Project Number: V21081-13A	**Logged By: MWG**
Drilling Company: GP	**Type of Rig: B-61**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
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
30						**Quaternary Alluvium (Qa):**
					SC	Clayey SAND; slightly moist, very dense, medium sand, fine to medium gravel
35						
					SC	Clayey SAND; gray, slightly moist, very dense, gravel
40						End of Boring: 40 feet
						No Groundwater
45						
50						
55						
60						

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APPENDIX B

PERCOLATION TEST RESULTS

PERCOLATION SHEET

Job Number: V21081-13A
Job Name: Lucerne Valley
Test Hole Number: A-1 SP-1
Soil Classification: ClayeySAND
Depth of Test Hole Tested(ft): 40
Actual Depth of Boring 40

Tested By: MWG
Test Hole Diameter (inches): 8
Date Excavated: 3/7/2022
Date Tested: 3/8/2022

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start
Stop
Time Interval of Presoak
Measured Units Feet
Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
9:10 9:40	30	0.50	0	8	8.00	36.00	2.667	40
9:42 10:12	30	0.50	0	5	5.00	37.50	1.600	40
10:14 10:44	30	0.50	0	3.5	3.50	38.25	1.098	40
10:46 11:16	30	0.50	0	1.5	1.50	39.25	0.459	40
11:18 11:48	30	0.50	0	1	1.00	39.50	0.304	40
11:48 12:18	30	0.50	1	3.5	2.50	37.75	0.795	40
12:20 12:50	30	0.50	0	1	1.00	39.50	0.304	40
12:50 13:20	30	0.50	1.00	3.00	2.00	38.00	0.632	40
13:20 13:50	30	0.50	2.00	5.00	3.00	36.50	0.986	40
13:50 14:20	30	0.50	5.00	7.00	2.00	34.00	0.706	40
14:20 14:50	30	0.50	7.00	9.00	2.00	32.00	0.750	40
14:50 15:20	30	0.50	9.00	11.00	2.00	30.00	0.800	40

PERCOLATION SHEET

Job Number: V21081-13A
Job Name: Lucerne Valley
Test Hole Number: A-1 SP-2
Soil Classification: ClayeySAND
Depth of Test Hole Tested(ft): 40
Actual Depth of Boring 40

Tested By: MWG
Test Hole Diameter (inches): 8
Date Excavated: 3/7/2022
Date Tested: 3/8/2022

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start
Stop
Time Interval of Presoak
Measured Units Feet
Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
9:13 9:43	30	0.50	0	12	12.00	34.00	4.235	40
9:45 10:15	30	0.50	0	11	11.00	34.50	3.826	40
10:17 10:47	30	0.50	0	6	6.00	37.00	1.946	40
10:49 11:19	30	0.50	0	5	5.00	37.50	1.600	40
11:22 11:52	30	0.50	0	5	5.00	37.50	1.600	40
11:54 12:24	30	0.50	0	4.5	4.50	37.75	1.430	40
12:26 12:56	30	0.50	0	4	4.00	38.00	1.263	40
12:58 13:28	30	0.50		4.00	4.00	38.00	1.263	40
13:30 14:00	30	0.50		4.00	4.00	38.00	1.263	40
14:02 14:32	30	0.50		4.00	4.00	38.00	1.263	40
14:34 14:54	20	0.33		8.00	8.00	36.00	4.000	40
14:54 15:24	30	0.50		4.00	4.00	38.00	1.263	40

PERCOLATION SHEET

Job Number: V21081-13A
Job Name: Lucerne Valley
Test Hole Number: B-2 SP-3
Soil Classification: ClayeySAND
Depth of Test Hole Tested(ft): 40
Actual Depth of Boring 40

Tested By: MWG
Test Hole Diameter (inches): 8
Date Excavated: 3/7/2022
Date Tested: 3/9/2022

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start
Stop
Time Interval of Presoak
Measured Units Feet
Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
9:20 9:50	30	0.50	0	20	20.00	30.00	8.000	40
9:54 10:24	30	0.50	0	14	14.00	33.00	5.091	40
10:27 10:57	30	0.50	0	13	13.00	33.50	4.657	40
11:01 11:11	10	0.17	0	8	8.00	36.00	8.000	40
11:13 11:23	10	0.17	0	8	8.00	36.00	8.000	40
11:28 11:38	10	0.17	0	6	6.00	37.00	5.838	40
11:39 11:49	10	0.17	0	6.5	6.50	36.75	6.367	40
11:50 12:01	11	0.18		6.00	6.00	37.00	5.307	40
12:03 12:13	10	0.17		7.00	7.00	36.50	6.904	40
12:13 12:23	10	0.17	7.00	11.00	4.00	31.00	4.645	40

PERCOLATION SHEET

Job Number: V21081-13A

Tested By: MWG

Job Name: Lucerne Valley

Test Hole Number: B-2 SP-4

Test Hole Diameter (inches): 8

Soil Classification: ClayeySAND

Date Excavated: 3/7/2022

Depth of Test Hole Tested(ft): 40

Date Tested: 3/9/2022

Actual Depth of Boring 40

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start

Time Interval of Presoak

Stop

Measured Units Feet

Refrence Point top

Time	Time Interval (min.)	Time Interval (Hours)	Initial Water Level (FEET)	Final Water Level (FEET)	Water Level Drop (FEET)	avg wetted depth (Feet)	Percolation Rate (Q)	Seepage Pit Test Hole Depth (Feet)
9:23 9:53	30	0.50	0	17	17.00	31.50	6.476	40
10:00 10:30	30	0.50	0	12	12.00	34.00	4.235	40
10:34 11:04	30	0.50	0	10	10.00	35.00	3.429	40
11:07 11:17	10	0.17	0	7	7.00	36.50	6.904	40
11:20 11:30	10	0.17	0	7	7.00	36.50	6.904	40
11:33 11:43	10	0.17	0	6	6.00	37.00	5.838	40
11:45 11:55	10	0.17	0	6	6.00	37.00	5.838	40
11:58 12:08	10	0.17		6.00	6.00	37.00	5.838	40

PERCOLATION SHEET

Job Number: V21081-13A

Tested By: MWG

Job Name: Lucerne Valley

Test Hole Number: C-3 SP-5

Test Hole Diameter (inches): 8

Soil Classification: ClayeySAND

Date Excavated: 3/7/2022

Depth of Test Hole Tested(ft): 40

Date Tested: 3/10/2022

Actual Depth of Boring 40

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start

Time Interval of Presoak

Stop

Measured Units Feet

Refrence Point top

Time	Time Interval (min.)	Time Interval (Hours)	Initial Water Level (FEET)	Final Water Level (FEET)	Water Level Drop (FEET)	avg wetted depth (Feet)	Percolation Rate (Q)	Seepage Pit Test Hole Depth (Feet)
9:37 10:07	30	0.50	0	16	16.00	32.00	6.000	40
10:08 10:38	30	0.50	0	25	25.00	27.50	10.909	40
10:41 10:51	10	0.17	0	8	8.00	36.00	8.000	40
10:52 11:02	10	0.17	0	7	7.00	36.50	6.904	40
11:03 11:13	10	0.17	0	7	7.00	36.50	6.904	40
11:14 11:24	10	0.17	0	6.5	6.50	36.75	6.367	40
11:25 11:35	10	0.17	0	6	6.00	37.00	5.838	40
11:40 11:50	10	0.17		4.00	4.00	38.00	3.789	40

PERCOLATION SHEET

Job Number: V21081-13A

Tested By: MWG

Job Name: Lucerne Valley

Test Hole Number: C-3 SP-6

Test Hole Diameter (inches): 8

Soil Classification: ClayeySAND

Date Excavated: 3/7/2022

Depth of Test Hole Tested(ft): 40

Date Tested: 3/10/2022

Actual Depth of Boring 40

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start

Time Interval of Presoak

Stop

Measured Units Feet

Refrence Point top

Time	Time Interval (min.)	Time Interval (Hours)	Initial Water Level (FEET)	Final Water Level (FEET)	Water Level Drop (FEET)	avg wetted depth (Feet)	Percolation Rate (Q)	Seepage Pit Test Hole Depth (Feet)
9:32 10:02	30	0.50	0	17	17.00	31.50	6.476	40
10:05 10:35	30	0.50	0	17	17.00	31.50	6.476	40
10:37 10:47	10	0.17	0	12	12.00	34.00	12.706	40
10:48 10:58	10	0.17	0	11	11.00	34.50	11.478	40
11:00 11:10	10	0.17	0	11	11.00	34.50	11.478	40
11:12 11:22	10	0.17	0	10.5	10.50	34.75	10.878	40
11:23 11:33	10	0.17	0	7	7.00	36.50	6.904	40
11:38 11:48	10	0.17		10.00	10.00	35.00	10.286	40

PERCOLATION SHEET

Job Number: V21081-13A

Tested By: MWG

Job Name: Lucerne Valley

Test Hole Number: A-4 SP-7

Test Hole Diameter (inches): 8

Soil Classification: ClayeySAND

Date Excavated: 3/7/2022

Depth of Test Hole Tested(ft): 40

Date Tested: 3/9/2022

Actual Depth of Boring 40

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start

Time Interval of Presoak

Stop

Measured Units Feet

Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
12:56 13:26	30	0.50	0	29	29.00	25.50	13.647	40
13:31 14:01	30	0.50	0	22	22.00	29.00	9.103	40
14:04 14:14	10	0.17	0	15	15.00	32.50	16.615	40
14:16 14:26	10	0.17	0	15	15.00	32.50	16.615	40
14:27 14:37	10	0.17	0	12	12.00	34.00	12.706	40
14:39 14:49	10	0.17	0	10	10.00	35.00	10.286	40
14:51 15:01	10	0.17	0	11	11.00	34.50	11.478	40
15:02 15:12	10	0.17		11.00	11.00	34.50	11.478	40

PERCOLATION SHEET

Job Number: V21081-13A

Tested By: MWG

Job Name: Lucerne Valley

Test Hole Number: A-4 SP-8

Test Hole Diameter (inches): 8

Soil Classification: ClayeySAND

Date Excavated: 3/7/2022

Depth of Test Hole Tested(ft): 40

Date Tested: 3/9/2022

Actual Depth of Boring 40

Date / Time | **Presoak Period** | **Amount of Water Used / Comments**

Start

Time Interval of Presoak

Stop

Measured Units Feet

Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
13:02 13:32	30	0.50	0	27	27.00	26.50	12.226	40
13:37 14:07	30	0.50	0	24	24.00	28.00	10.286	40
14:10 14:20	10	0.17	0	13	13.00	33.50	13.970	40
14:23 14:33	10	0.17	0	13	13.00	33.50	13.970	40
14:35 14:45	10	0.17	0	13	13.00	33.50	13.970	40
14:48 14:58	10	0.17	0	11	11.00	34.50	11.478	40
15:00 15:10	10	0.17	0	11	11.00	34.50	11.478	40
15:12 15:22	10	0.17		11.00	11.00	34.50	11.478	40

PERCOLATION SHEET

Job Number: V21081-13A
Job Name: Lucerne Valley
Test Hole Number: E-5 SP-9
Soil Classification: ClayeySAND
Depth of Test Hole Tested(ft): 40
Actual Depth of Boring 40

Tested By: MWG
Test Hole Diameter (inches): 8
Date Excavated: 3/7/2022
Date Tested: 3/9/2022

Date / Time	Presoak Period	Amount of Water Used / Comments
Start	Time Interval of Presoak	
Stop	Measured Units Feet	
Refrence Point top		

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
10:00 10:30	30	0.50	0	21	21.00	29.50	8.542	40
10:33 11:03	30	0.50	0	21	21.00	29.50	8.542	40
11:06 11:36	30	0.50	0	19	19.00	30.50	7.475	40
11:39 11:49	10	0.17	0	10	10.00	35.00	10.286	40
11:50 12:00	10	0.17	0	10	10.00	35.00	10.286	40
12:01 12:11	10	0.17	0	11	11.00	34.50	11.478	40
12:12 12:22	10	0.17	0	11	11.00	34.50	11.478	40
12:23 12:33	10	0.17		10.00	10.00	35.00	10.286	40
12:34 12:44	10	0.17		10.00	10.00	35.00	10.286	40

PERCOLATION SHEET

Job Number: V21081-13A
Job Name: Lucerne Valley
Test Hole Number: E-5 SP-10
Soil Classification: ClayeySAND
Depth of Test Hole Tested(ft): 40
Actual Depth of Boring 40

Tested By: MWG
Test Hole Diameter (inches): 8
Date Excavated: 3/7/2022
Date Tested: 3/9/2022

Date / Time **Presoak Period** **Amount of Water Used / Comments**

Start
Stop
Time Interval of Presoak
Measured Units Feet
Refrence Point top

Time	*Time Interval (min.)*	*Time Interval (Hours)*	*Initial Water Level (FEET)*	*Final Water Level (FEET)*	*Water Level Drop (FEET)*	*avg wetted depth (Feet)*	*Percolation Rate (Q)*	*Seepage Pit Test Hole Depth (Feet)*
9:29 9:59	30	0.50	0	22	22.00	29.00	9.103	40
10:04 10:34	30	0.50	0	22	22.00	29.00	9.103	40
10:40 11:20	40	0.67	0	22	22.00	29.00	6.828	40
11:24 11:34	10	0.17	0	13	13.00	33.50	13.970	40
11:35 11:45	10	0.17	0	12	12.00	34.00	12.706	40
11:46 11:56	10	0.17	0	11	11.00	34.50	11.478	40
11:57 12:07	10	0.17	0	11	11.00	34.50	11.478	40
12:08 12:18	10	0.17		13.00	13.00	33.50	13.970	40
12:20 12:30	10	0.17		13.00	13.00	33.50	13.970	40

APPENDIX C

CALCULATIONS

Patel & Associates

Appendix C

Seepage Pit Length = Tank Capacity/Q(15.7)

15.7 for 5 feet diameter pit Q=4.0 maximum allowed

1) <u>Area 2 – 4,500 gallon tank</u>
4,500/4.0x15.7 = 71.7 Use 72 feet
72/3 = 24 feet + 4 feet = 28 foot deep pit
3 pits at 28 feet

2) <u>Area 3 – 2,750 gallon tank</u>
2,750/4.0x15.7 = 44 feet Use 44 feet
Length = 44/2 = 22 feet+ 4 feet = 26 feet
2 pits at 26 feet

3) <u>Area 4 – 2,000 gallon tank</u>
2.000/4.0x15.7 = 32 feet Use 32 feet
Length = 32/2 = 16 feet + 4 feet = 20 feet
2 pits at 20 feet

4) <u>Area 5 – 2,500 gallon tank</u>
2.500/4.0x15.7 = 40 feet Use 40 feet
Length = 40/2 = 20 feet + 4 feet = 24 feet
2 pits at 24 feet

Plate 1

Percolation Location Map