

Geotechnical Investigation



Rancho Vistoso Valley Vista – Lot 20 [REDACTED] Residence

803 East Romsdalen Road
Oro Valley, Arizona
ProTeX Job No.: 12804



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Rancho Vistoso Valley Vista – Lots 20
803 East Romsdalen Road
Oro Valley, Arizona
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October 27, 2022

Pulte Tucson Land
3011 West Ina Road
Tucson, Arizona 85741

Re: **Geotechnical Investigation - Forensics**

Project: **Rancho Vistoso Valley Vista- Lot 20**
803 East Romsdalen Road
Oro Valley, Arizona

ProTeX Job No.: 12804

Attention: Mr. Andy Martinez

At your request, ProTeX has completed a soil investigation for the subject project. The accompanying report includes field observations and laboratory testing with conclusions and recommended design parameters for analysis of the existing concrete slabs, privacy walls and the surrounding area subgrade improvements.

Prepared By,

Kimberly Nepesa
Staff Geologist

Respectfully submitted,
ProTeX - the PT Xperts, LLC



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Expires: 9/30/25
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1.0 INTRODUCTION

1.1 Scope

ProTeX was retained by Pulte Group to analyze the surface and subsurface soil conditions associated with the existing house slab/foundations and privacy walls on the sides of the lot located at 803 East Romsdalen Road (Lot 20) in Oro Valley, Arizona. The common area with a Pump/Booster station owned and maintained by Pima County that is located between lots 19 and 20, was also evaluated. As a part of the investigation, the following were performed:

- Review of the earthwork/grading report associated with the Project
- Subsurface sampling of soils associated with the slab and privacy walls (backfill and foundation bearing) of the lots as well as common areas such as streets and retention basins.
- Visual observation of the privacy wall structures associated with the lots.

This report contains the findings from the field exploration and laboratory testing, conclusions and recommendations.

1.2 Terms and Conditions

This report was prepared for Pulte Group. The contents of this report may not be relied upon by any other party without the expressed written permission of ProTeX - the PT Xperts, LLC and the written permission of Pulte Group. The report presents site conditions at the time of the investigation and for the aforementioned proposed development. The report should be updated prior to construction if a maximum of one year has elapsed from the issued date.

2.0 FIELD AND LABORATORY TESTING

2.1 Geotechnical Site Reconnaissance

The site consists of one Booster station in the common area located just south of a single-family residential lot (Lot 20 – [REDACTED] Residence) within the Rancho Vistoso Valley Vista Master planned community near Kalalau Drive and Romsdalen Road in Oro Valley, Arizona. Specific address information at the time of this report include:

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- 1) 803 East Romsdalen Road, Lot 20, [REDACTED] Residence
- 2) 12550 North Moore Loop, Booster Station within the common area.

The subject lot within the community is located near the southeastern corner of the residential community, adjacent to and near the existing wash which is located directly east and south of Lot 20. At the time of the field visit and sampling on February 25, 2022, May 5, 2022, July 1, 2022 and September 1, 2022, the front yard for the residential lot as well as the common areas were completely landscaped. The privacy walls associated with the lot were noted to be on the left and right sides of the lot, and view fencing was observed in the back portions of the residential lot. The booster station in the common area was surrounded by block walls with view/entry fence gates observed on the north side.

Preliminary field site visits, observations, drilling or reviews were conducted on February 8, 2022, February 25, 2022, May 5, 2022, July 1, 2022 and September 1, 2022. Manometer (floor elevation) surveys for Lot 20, including interior inspections, were performed on April 12, 2022. An additional manometer survey was performed for Lot 20 on May 12, 2022.

Document Review:

Geotechnical investigation: The original geotechnical investigation was performed by ProTeX - the PT Xperts, LLC under the title “Rancho Vistoso Neighborhood 5 Parcels X and W” (Job No. 7466 dated February 20, 2018). The foundation section of the report requires the pads to bear on 12 inches of compacted fill. The report recommends an allowable bearing capacity of 1250psf for a minimum of 1.5 feet embedment below lowest adjacent grade. Compaction specifications stated in the geotechnical report are 95% of the maximum dry density at $\pm 2\%$ of optimum moisture content based on ASTM D698 or AASHTO T-99 compaction method.

Grading Report: The “5X and 5W Mass Grading at Rancho Vistoso Valley Vista (Phase 1A)” testing and observation was conducted by ProTeX - the PT Xperts and the report was prepared on June 13, 2019. The report was reviewed and indicates that the grading specific to Lot 20 included fill



depths as much as 8 feet across portions of the pad. Passing density and moisture tests were recorded in the report.

The project's grading sheets for the common area, between Lots 19 and 20 and adjacent to the Booster station, showed that the projected fills were as much as 10 feet. Projected fill depths around the street areas near Kalalau Drive and Romsdalen Road were as much as 4 to 5 feet.

2.2 Field Investigation

Field Soil Sampling: For the purpose of this forensic study and in evaluating the subsurface conditions, a total of nineteen (19) test holes were completed in the residential development. Ten (10) of the test holes were completed in the common area of the Booster station and the street corner, including one (1) test hole located in the street directly adjacent to Lot 20, and the detention basin on the northwest portion of the street corner. Overall, two (2) test holes were completed on Lot 19, near the front bedroom of the existing house and adjacent to the front sidewalk. One (1) test hole was completed on Lot 18, adjacent to the front sidewalk. Two (2) test holes were completed along Lauterbrunnen Lane, one (1) adjacent to the existing drainage channel immediately south and adjacent to Lot 31 and one (1) in the front yard of Lot 31. Four (4) test holes were completed in wash areas, located south and east of the southeastern corner of the residential community. More specifically, the wash areas behind Lots 15, 19, 20 and 22. The test holes were advanced to depths ranging from 25 to 71 feet below the existing site grade.

Blow Counts using a ring-lined barrel sampler and a bullnose tip as well as the field observations indicate that the subsurface soils are very loose/soft, experiencing varying levels of moisture content. See the table below and the attached boring logs in Appendix C.



Table 1 – Moisture Content Summary of Subsurface Soils

Test Hole Number	Degree of Saturation (Field observations) -Very damp to wet soils-	Depth of Saturation (Field observations)	Depth of Maximum Saturation (WET) (Field observations)	Moisture Content (%) (Lab Testing/Results)	Soil Type (USCS)
FB1A	N/A	N/A	N/A		
FB2A	N/A	N/A	N/A		
FB3/A	Slightly moist to very moist soils	0 – 26'	N/A	1' – 7.6 5' – 8.6 10' – 8.7 15' – 8.6 20' – 9.0 25' – 26.4	(SM) Silty Sand (CL) Lean Clay
FB4A	N/A	N/A	N/A		
FB5/A	Slightly moist to very moist soils	0 – 26'	N/A	1' – 8.3 5' – 9.7 15' – 22.8 20' – 5.7 25' – 13.2	(SM) Silty Sand (SM) Silty Sand Silty Clayey Sand (SC-SM) (SM) Silty Sand
FB6A	Blow counts indicate softer/possibly moist soils	2' – 3.5'	N/A		
FB7/A	Moist to wet soils	0 – 26'	0 - 10'	1' – 7.9 5' – 9.9 10' – 6.1 25' – 8.9	(SM) Silty Sand Silty Clayey Sand (SC-SM)
FB8	Moist to wet soils	0 – 61'	5' – 20' 25' – 30' 45' – 50' 60' – 61'	1.5' – 6.8 5' – 10.2 10' – 8.1 15' – 6.1 20' – 7.5 25' – 5.3 30' – 4.7 35' – 4.5 40' – 5.4 45' – 9.4 50' – 17.3 60' – 6.8	(SM) Silty Sand (SM) Silty Sand Silty Clayey Sand (SC-SM) (CL) Sandy Clay
FB11	Moist to wet soils	0 – 25'	10' – 20'	1.5' – 6.3 5' – 7.2 10' – 8.5	



				15' – 4.9 20' – 5.2 25' – 9.4 30' – 6.6 35' – 2.1 40' – 1.7 45' – 2.9	Silty Clayey Sand (SC-SM) Silty Clayey Sand (SC-SM)
FB12/A	Moist soils	5' – 10' and 40' – 45'	N/A	35' – 5.8	Silty Clayey Sand (SC-SM)
FB13	Moist to slightly wet	0 – 35'	15'	1.5' – 7.3 5' – 6.6 10' – 11.0 15' – 24.0 20' – 7.8 25' – 11.8 30' – 13.8 35' – 5.3 40' – 3.2 45' – 8.0 50' – 6.0	Silty Clayey Sand (SC-SM) (CL) Sandy Clay (CL) Sandy Clay (CL) Sandy Clay
FB14	Very damp	35'	N/A	10' – 4.0 15' – 5.2 20' – 6.3 25' – 21.3 30' – 15.9 35' – 6.8 50' – 9.1 55' – 3.7 60' – 6.1 65' – 6.2	(SM) Silty Sand (SM) Silty Sand (SC) Clayey Sand
FB15	Very damp	0' and 24.5'	N/A	25' – 20.6 30' – 4.9 50' – 6.2	(SM) Silty Sand
FB16	Very damp	5'–25'	N/A	20' – 6.4 40' – 4.6 50' – 8.1	(SM) Silty Sand and (SC) Clayey Sand
FB17	Very damp	5'	N/A	-	(SM) Silty Sand
FB18	N/A	N/A	N/A	2.5' – 10.2 5' – 3.7 10' – 20.6 15' – 17.0 20' – 5.9 25' – 7.0	(SM) Silty Sand (CL) Lean Clay (CL) Lean Clay

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				30' – 6.6 35' – 13.0 40' – 5.6	(CL) Lean Clay
FB19	N/A	N/A	N/A	2.5' – 9.6 10' – 13.9 20' – 4.9	(SM) Silty Sand (SM) Silty Sand

At each test hole location, the soils encountered were visually observed, classified, logged and representative samples were obtained where applicable. Refer to the site plan in Appendix B for approximate test hole locations.

2.3 Historical Aerial Investigation

The following descriptions and Aerial Photographs were obtained from Google Earth (<https://earth.google.com/web/>) which show historical site conditions prior to construction of the current residential community.

Aerial photographs show evidence of native desert conditions at the time of the earliest available aerial images in the region, in April of 1992. The photographs also show a natural, mid to large size, waterway from higher elevations to lower elevations, draining into Big Wash, through the southeast portion of the recently built residential community of Rancho Vistoso Valley Vista. The residential community appears in the aerial photographs from December 2020 to present-day. See figures below.

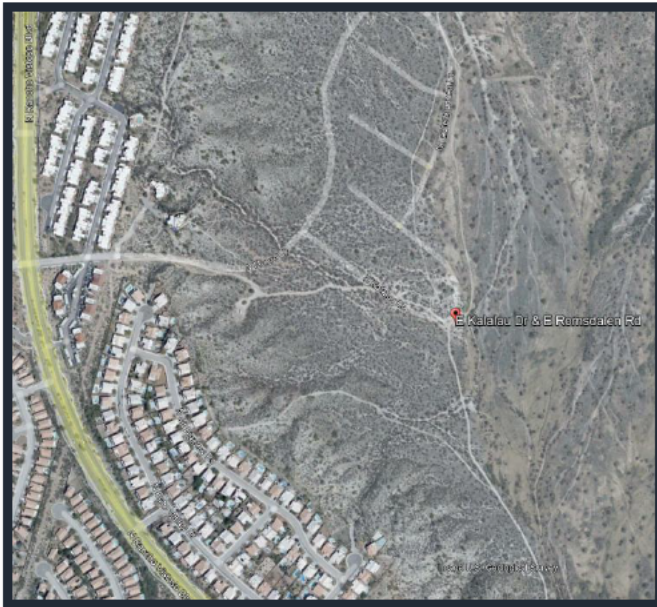


Figure 1: March, 2011, showing the historical pattern of the existing waterway into Big Wash

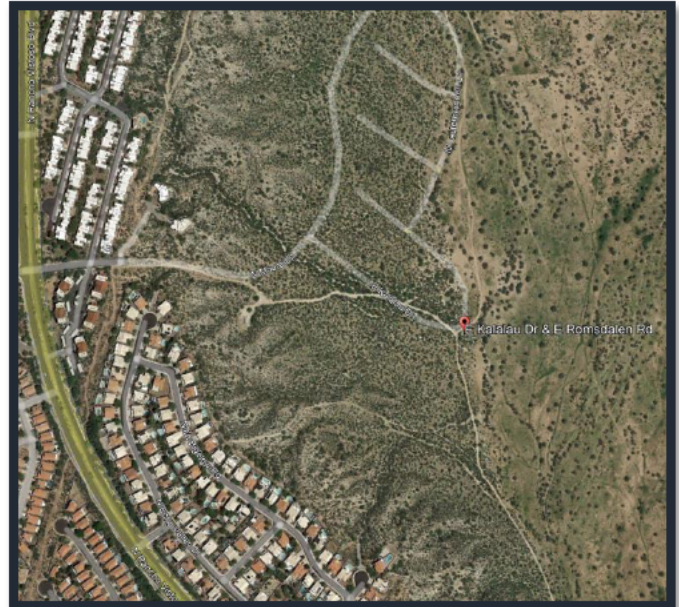


Figure 2: August, 2018, showing abundant vegetation along waterway, before the construction of the residential community

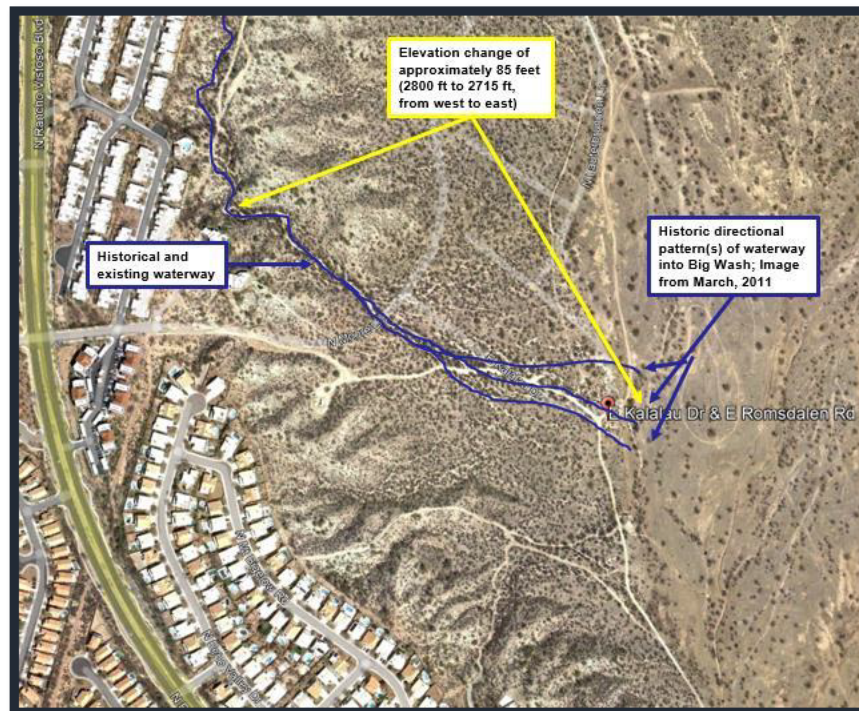


Figure 2: March, 2011, highlighting waterway patterns

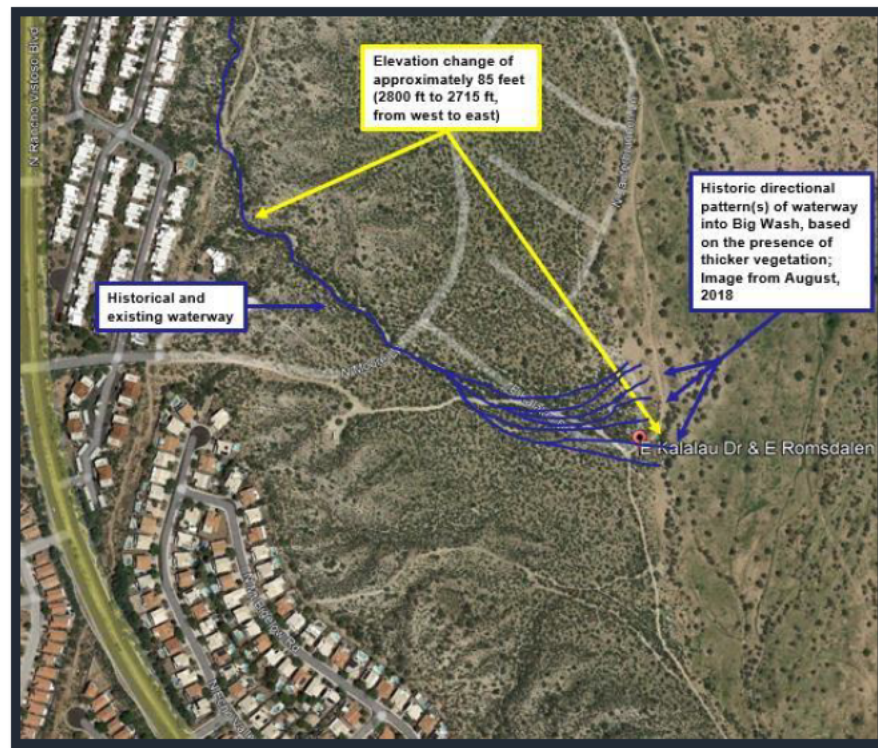


Figure 4: August, 2018, highlighting waterway patterns

3.0 GENERAL SITE CONDITIONS

3.1 Soil Stratigraphy

Based on the field exploration and laboratory testing, the subsurface profile primarily consists of interlayered beds of non-plastic silty sand, low plasticity silty clayey sand and poorly graded silty fine sands, low to medium plasticity clayey sand and lean to sandy clay of low-medium to high plasticity. Refer to the boring logs in Appendix C for a detailed description of the subsurface soil profile.



3.1 Flood Plains

ProTeX reviewed the Federal Emergency Management Agency (FEMA) Flood Maps and determined the subject site is not directly located within the 100-year flood zone. The site is located adjacent to Zone A, a Special Flood Hazard Area (without Base Flood Elevation (BFE)). A partial copy of the FEMA Flood Map with site location is shown below.

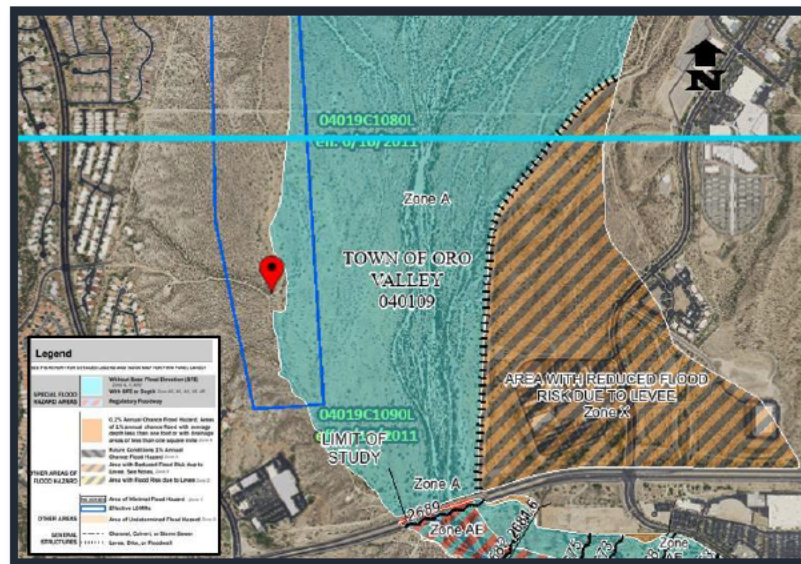


Figure 3: Flood map for areas adjacent to project site

The map indicates the subject site is located in an area generally unaffected by direct flooding. The FEMA map reviewed is Map Number 04019C080L and revision date of June 16, 2011. There was a Letter of Map Revision (LOMR), 20-09-1126P, on November 19, 2020 to include recent changes to the flood zone.



3.2 Groundwater

ProTeX reviewed the Arizona Department of Water Resources (ADWR), GIS Groundwater Data and referenced monitored wells within the vicinity of the subject site. Wells located within this radius indicated depths of water ranging from approximately 116 to 476 feet below ground surface.

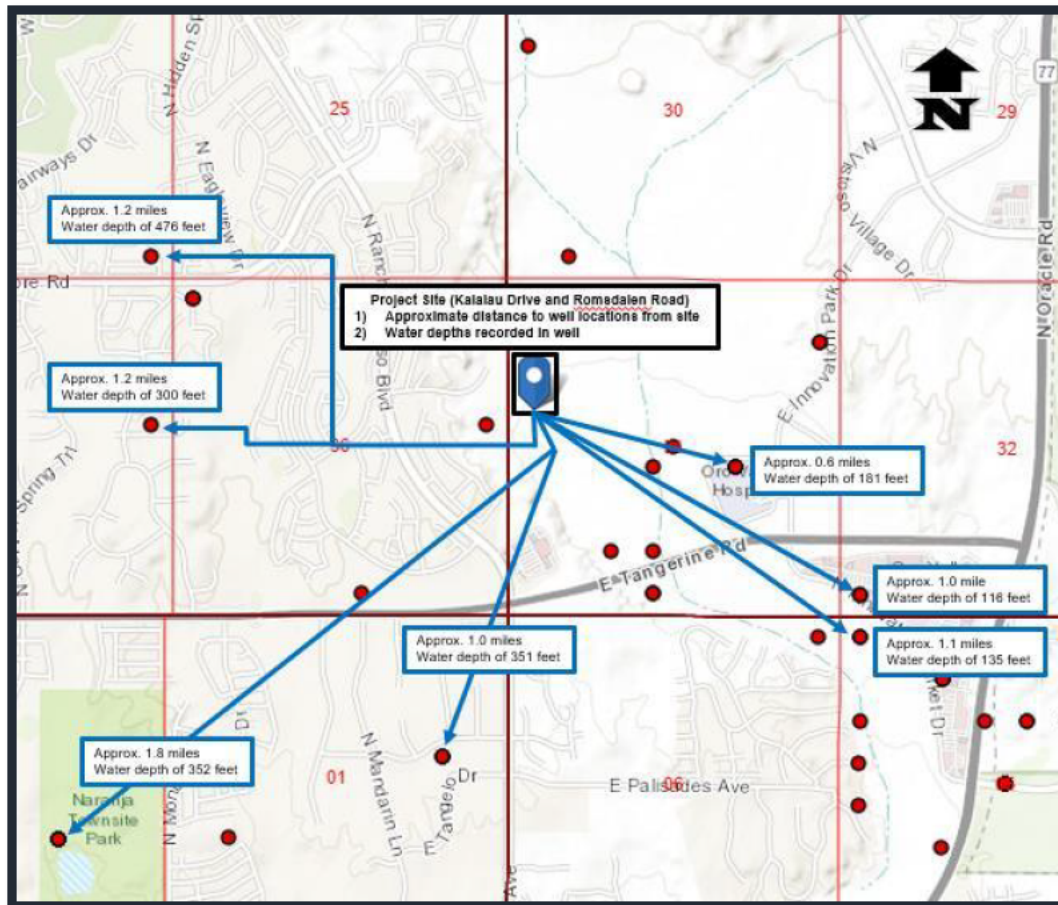


Figure 1: Well data in the vicinity of the project site

Wells were measured using different techniques such as ADWR calibrated electric sounder and steel tape.

3.3 Potential for Soil Hydro-Collapse (Settlement Potential)

Laboratory testing generally indicate that the subsurface soils, in their current state, have variable potentials for settlement (negative vertical movement recorded from the response to wetting testing of in-situ soil samples) at the estimated overburden loads ranging between 500 and 8000 psf



depending on the depth below finished site grade. See the attached laboratory test results in Appendix A. Blow Counts using the ring-lined barrel sampler and a Bullnose tip at the test locations indicated soils have variable densities at various depths below existing site grade. In general, the tested subsurface in-situ densities around the Booster common area and surrounding Lot 20 ranged between 70% and 97% based on the relative compaction using ASTM D698-A maximum density parameters (see boring logs in Appendix C).

Concrete Slab Observations:

Field investigations to evaluate the concrete slab for the house located on Lot 20 and the concrete slab for the driveway on Lot 20, were initially performed on February 8, 2022. Separation cracks in the driveway concrete reported by the homeowner and Pulte Homes were visually inspected on Lot 20.

- Homeowners indicated that the reported cracks in the concrete slabs started off as hairline thicknesses and have progressively widened over time. Separation of concrete slab panels, side yard pavers as well as cracks in the soil were observed around the property. See pictures on the next page.



Figure 1: Lot 20, cracking in concrete driveway

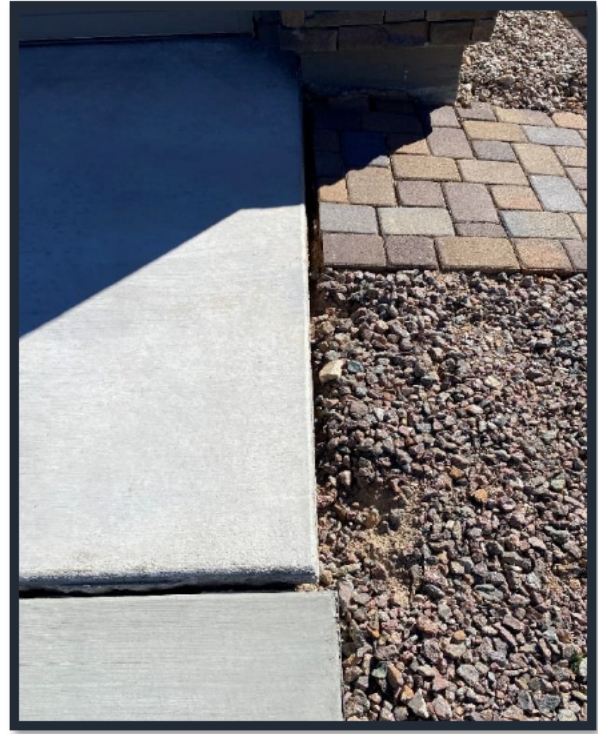


Figure 2: Lot 20, separation and vertical/horizontal offset of concrete slab in driveway

Manometer Survey and Interior Inspections: Floor elevation surveys were taken on the slabs that were placed monolithically with the foundations using a water level system. The elevations were measured to the nearest tenth of an inch. The points recorded in the home on Lot 20 were mapped to determine the current contour of the slabs.

In Lot 20, the elevation difference between the highest and lowest surveyed points is 0.8". The lowest elevations were noted to be confined mostly towards the south to southwest portions of the house whereas the highest elevations were located near the central east portions of the house.



Site Wall Evaluation: The site walls on the right and left sides of the lot were visually observed to document the reported signs of distress.

Lot 20 - South Block Wall:

The privacy wall system on the south side of Lot 20 consists of a single wall that borders the common area for the Booster station. Evaluation of the general condition of the privacy wall system was noted to have undergone minimal deflections. However, stair-step separation cracks, measuring up to approximately 2 inches, were observed in the wall. Also, separation cracking was observed in the soil along the base of the house and the paver walkway of the side yard, along the base of the privacy wall and house.

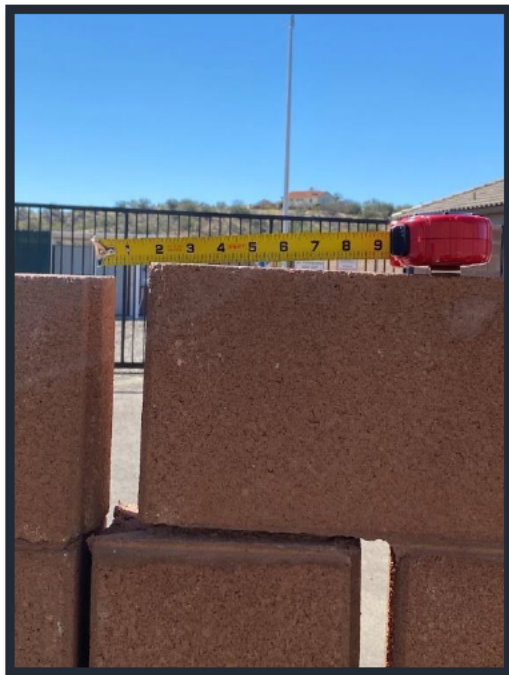


Figure 1: Lot 20 separation in block wall, measuring about 2 inches

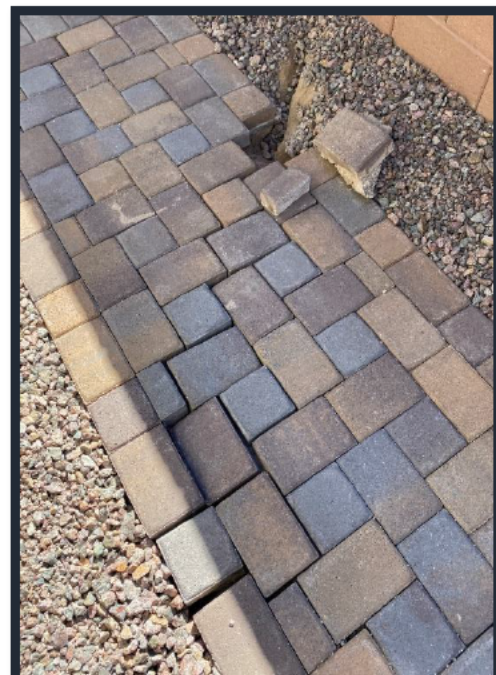


Figure 2: Lot 20 cracking of soil and pavers at base of house and block wall



Figure 3: Cracking in common area of booster station, in the asphalt pavement, and leading to Lot 20. Similar residual cracking patterns in both wall and asphalt pavement



Figure 4: Lot 20 cracking observed in block wall and pavers at base of the privacy wall



Figure 5: Lot 20 cracking of soil along base of the house

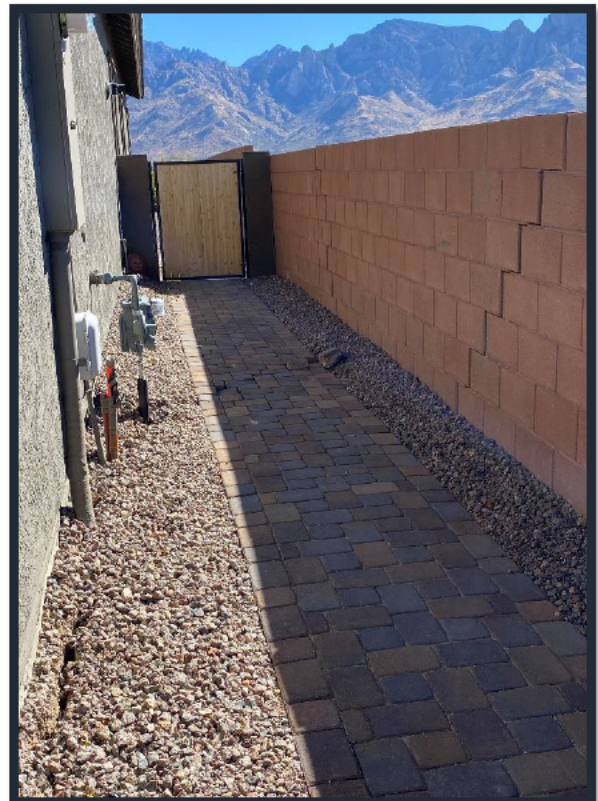


Figure 6: Lot 20 cracks in block wall, paver walkway and in the soil along the house



Common Area Observations: The common areas within the project area exhibited some signs of distress. Numerous cracks in the asphalt drive were observed at various locations.

Corner of Residential Roadway: Kalalau Drive and Romsdalen Road

The local residential roadway where Kalalau Drive and Romsdalen Road connect, is currently paved with asphalt. The condition of the asphalt pavement was noted to have developed cracks at various locations. It also appears that this area has had the asphalt pavement replaced.

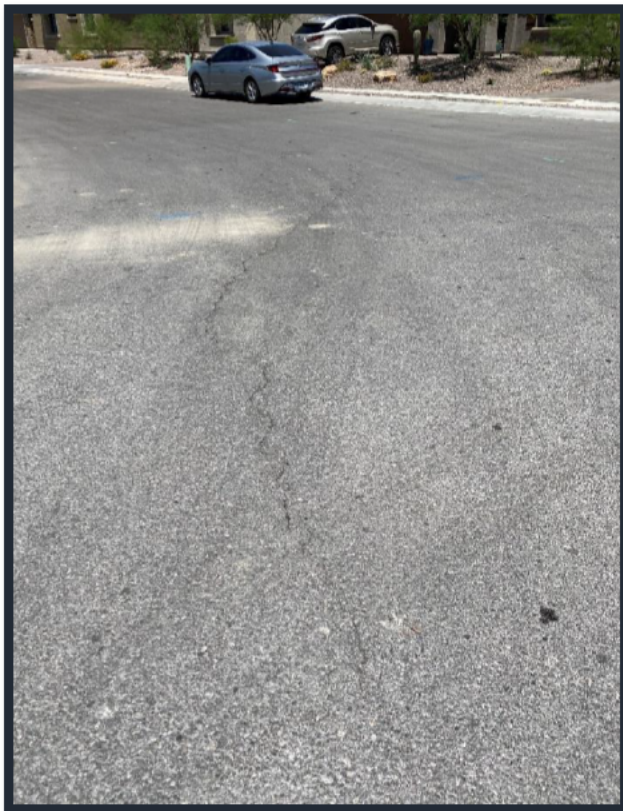


Figure 1: Cracks in the asphalt, looking northeast from middle of the road

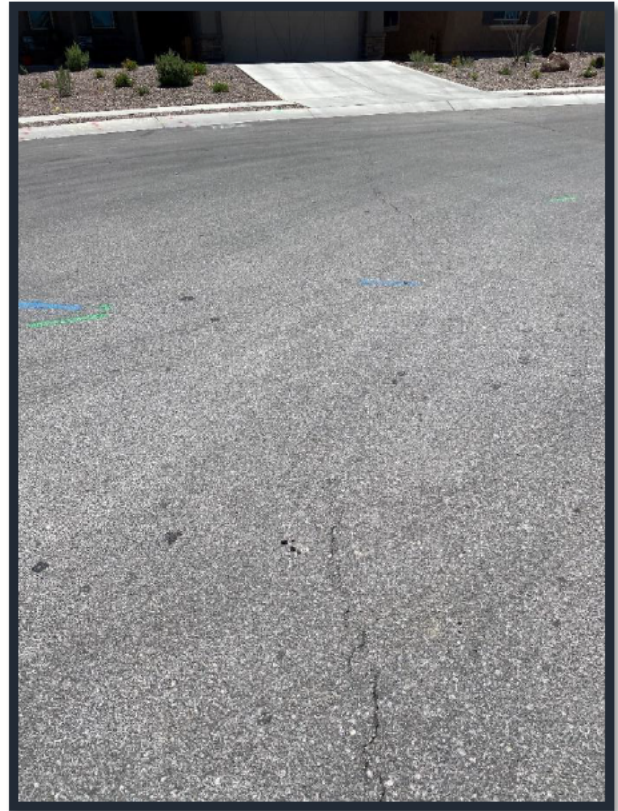


Figure 2: Cracks in the asphalt, looking southwest from middle of the road



Common Area adjacent to Booster Station:

This area is currently paved with asphalt and includes small gravel areas with smaller utility housing. Cracks in the asphalt were observed, trending southwest to northeast. The patterns in both the block wall and the cracks in the asphalt pavement appear to follow similar trends.



Figure 1: Cracking in common area of booster station, in the asphalt pavement, and leading to Lot 20. Similar residual cracking patterns in both wall and asphalt pavement



3.4 Laboratory Testing

Subsequent to the field investigation, soil samples were submitted for laboratory testing. Tests were performed to determine the following:

- **Response to Wetting Testing-** Relatively undisturbed soil samples were subjected to surcharge pressures equivalent to the estimated in-situ overburden pressure and the estimated applied structural loads of about 1000 psf. The samples were allowed free access to water and the vertical volume decrease (compression) recorded. Applied load pressures at saturation ranged between 500 psf and 8000 psf.
- **Sieve Analysis and Atterberg Limits-** Used for formal classification of soils in general accordance with the Unified Soil Classification System (USCS) per ASTM Test Method D2487. Sieve analysis is performed in general accordance with ASTM Test Methods D421, D422 and D1140. The Atterberg Limits were determined in general accordance with ASTM Test Method D4318.
- **Moisture Density (Proctor)-** performed to determine a relative density to compare in-situ density test results in accordance with ASTM D698.



Laboratory Test Summary

Location	Depth (feet)	Plasticity Index (PI)	Percent Passing #200 Sieve	USCS Soil Classification
FB3	1-3	NP	22	SM
FB3	11-13	NP	26	SM
FB5	1-3	NP	22	SM
FB5	6-8	NP	24	SM
FB5	17-19	6	22	SC-SM
FB7	1-3	NP	17	GM
FB7	13-15	NP	23	SM
FB8	0-3	NP	16	SM
FB8	10-12	NP	24	SM
FB8	51-53	10	53	CL
FB12	0-3	6	27	SC-SM
FB12	12-14	7	36	SC-SM
FB12	17-19	NP	18	SM
FB14	0-3	NP	19	SM
FB14	6-8	NP	22	SM
FB14	11-13	3	25	SM
FB14	16-18	NP	23	SM
FB14	22-24	NP	22	SM
FB15	0-3	NP	19	SM
FB15	6-8	NP	22	SM
FB15	11-13	NP	23	SM
FB15	16-18	5	28	SC-SM
FB15	22-24	NP	21	SM
FB16	0-3	NP	14	SM
FB16	5-7	NP	14	SM
FB16	11-13	NP	23	SM
FB16	16-18	NP	21	SM
FB16	22-24	8	28	SC
FB17	0-3	NP	20	SM
FB17	6-8	NP	15	SM
FB17	11-13	NP	15	SM
FB17	16-18	NP	21	SM
FB17	22-24	NP	15	SM
FB18	0-3	NP	33	SM
FB18	6-8	NP	38	SM
FB18	11-13	11	78	CL
FB18	16-18	6	83	CL-ML
FB18	22-24	11	87	CL
FB19	0-3	NP	24	SM
FB19	5-7	NP	35	SM
FB19	12-14	5	77	CL-ML
FB19	17-19	6	71	CL-ML
FB19	23-25	10	75	CL

See Appendix A for a detailed compilation of the laboratory test results.

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Summary of Response to Wetting Testing and In-situ Soil Properties

Location	Depth (feet)	Surcharge (psf)	Compression at Surcharge (%)	Dry Density (PCF)	Moisture Content (%)	Maximum Density (lb/ft ³)	Relative Compaction (%)
FB3	1-2	600	0.29	115.3	7.6	128.2	90
FB3	5-6	750	0.99	113.2	8.6	128.8	88
FB3	10-11	1250	0.80	118.1	8.7	128.8	92
FB3	15-16	2000	1.30	116.1	8.6	131.3	88
FB3	20-21	2500	1.84	116.8	9.0	130.1	90
FB3	25-26	3000	6.31	90.7	26.4	130.1	70
FB5	1-2	600	1.10	117.8	8.3	128.2	92
FB5	5-6	750	0.71	119.6	9.7	128.8	93
FB5	15-16	2000	5.91	96.2	22.8	131.3	73
FB5	20-21	2500	2.28	116.3	5.7	130.1	89
FB5	25-26	3000	2.87	111.5	13.2	130.1	86
FB7	1-2	600	0.63	122.3	7.9	128.2	95
FB7	5-6	750	1.14	125.2	9.9	128.8	97
FB7	10-11	1250	1.23	121.3	6.1	128.0	95
FB7	25-26	3000	2.05	111.3	8.9	129.9	86
FB8	1.5-2.5	600	0.60	115.3	6.8	128.7	90
FB8	50-51	6000	1.93	105.9	17.3	129.9	82
FB8	60-61	7000	2.94	114.6	6.8	129.9	88
FB11	25-26	3000	3.09	110.1	9.4	128.0	86
FB11	40-41	4500	4.86	112.6	1.7	128.0	88
FB12	35-36	4000	6.33	112.1	5.8	130.7	86
FB13	30-31	3500	3.26	115.3	13.8	130.7	88
FB14	10-11	750	2.10	107.6	4.0	129.5	83
FB14	15-16	2000	2.46	110.1	5.2	129.5	85
FB14	20-21	2500	1.50	111.3	6.3	129.5	86
FB14	25-21	3000	4.51	99.0	21.3	128.0	77
FB14	30-31	3500	4.44	107.2	15.9	128.0	84
FB14	35-36	4000	3.89	114.8	6.8	128.0	90
FB14	50-51	6000	4.46	112.8	9.1	128.0	88
FB14	55-56	6000	5.04	112.7	3.7	128.0	88
FB14	60-61	7000	9.75	101.7	6.2	128.0	79
FB14	65-66	7500	7.42	107.0	6.1	128.0	84
FB15	25-26	3000	3.15	99.4	20.6	128.0	78
FB15	30-31	3500	3.71	111.9	4.9	128.0	87
FB15	50-51	6000	8.51	102.9	6.2	128.0	80
FB16	20-21	2500	2.90	110.6	6.4	129.5	85
FB16	40-41	4500	9.56	109.4	4.6	128.0	85
FB16	50-51	6000	7.20	92.7	8.1	128.0	72
FB18	2.5-3.5	600	1.91	120.4	10.2	128.7	94
FB18	5-6	1250	1.62	105.1	3.7	128.7	82
FB18	10-11	1250	5.20	85.1	20.6	129.5	66
FB18	15-16	2000	2.47	86.5	17.0	129.5	75



Location	Depth (feet)	Surcharge (psf)	Compression at Surcharge (%)	Dry Density (PCF)	Moisture Content (%)	Maximum Density (lb/ft ³)	Relative Compaction (%)
FB18	20-21	2500	6.48	97.7	5.9	129.5	75
FB18	25-26	3000	1.73	89.7	7.1	128.0	70
FB18	30-31	3500	2.29	94.2	6.6	128.0	74
FB18	35-36	4000	4.35	80.6	13.0	128.0	63
FB18	40-41	4000	13.10	90.8	5.6	128.0	71
FB19	2.5-3.5	600	0.88	119.9	9.6	128.7	93
FB19	10-11	1250	1.31	87.3	13.9	129.5	67
FB19	20-21	2500	6.72	97.5	4.9	129.5	75

See Appendix A for a detailed compilation of the laboratory test results.

4.0 CONCLUSIONS

Based on visual field observations and results of the field and laboratory testing, soils around and adjacent to the Booster station as well as around and adjacent to Lot 20 have experienced significant settlement and downwards movement which has affected the exterior concrete slabs, the site wall foundations and backfill zones for underground utilities prior to this geotechnical evaluation. There is also highly elevated moisture content associated with the subgrade soil around the subject site(s). We have concluded that the subgrade soil has, at some point, experienced water inundation likely during and/or after the construction phase. Elevated moisture content was recorded as deep as 50 feet below the existing site grade.

A historical analysis of the local geology, based on aerial photographs from Google Earth, site observations, research and local experience, indicates a historic directional pattern of the existing waterway running from higher elevations of approximately 2800 feet above sea level in the northwest, to lower elevations of approximately 2715 feet above sea level in the southeast and along the edge of the existing Big Wash.

Historically, the path of this waterway appeared to run through the southeast portion of the current residential community, before being deposited into Big Wash. Historical patterns of both surface and subsurface water pathways, over time, may contribute to the area's continuous movement and/or settlement of deeper subsurface soils.



The subsurface soils in the vicinity surrounding Lot 20 and the Booster station, primarily near depths of approximately 7 to 10 feet and at other places extending to depths of 25 to 60 feet below existing site grade, are relatively loose based on the field blow counts and lab consolidation data. The loose soil conditions as well as the elevated levels of moisture saturation permeating the subgrade soils likely may have caused the soil to be highly susceptible to progressive settlement and lateral displacement. The settlement has manifested itself through movements observed in the slabs, asphalt pavement and site walls. It is highly likely that there is significant loss of soil support under certain foundation elements for the houses and site walls as well as underground utilities.

This firm offers the following recommendations:

1. Stabilize the foundations on the side and front portions of the houses including the front patio columns. Based on the relatively low in-situ densities recorded in the site soils at various depths, we recommend that the foundations be stabilized against the current and potential future movements using helical piers driven until stable or competent subgrade soil is encountered as determined by the foundation remediation contractor/ structural engineer of record. We have determined that at this time, Lot 20 will not require elevation adjustments following the pier installation.
2. Foundations for the site or privacy walls should be stabilized against further displacement. We recommend piers to be integrated into the foundation system of the site walls. A structural engineer should be retained alongside the foundation remediation contractor to provide an effective method of achieving the stabilization process.
3. Following removal and prior to replacement of any patio or other concrete slabs, recompact the subsurface soil to minimize future differential settlements.
4. The surrounding subsurface soil around the houses and booster station will require grouting compaction or other suitable methods to minimize future settlement. The required depth to advance the grouting compaction would be determined by the remediation contractor/ structural engineer of record.



5. Perform a full drainage evaluation following subgrade re-compaction to provide the proper lot's positive drainage away from foundation elements.
6. Maintain 3 feet or more between the rear and side yard walls and any landscaping plants. Avoid excessive watering of plants to minimize further settlement and a build-up of soil surcharge pressures against the wall foundations.
7. Additional manometer or floor level surveys are recommended to evaluate the status of the floor slab after installation of helical piers to assess the relative elevations of the slab. We recommend annual manometer surveys for the period of at least two years (two full seasonal cycles).

It should be noted that once subgrade repairs are made to the structure, there will be a period of readjustment. We recommend allowing about 90 days before interior repairs, if any, are undertaken. During the readjustment period, cracks could re-occur or new cracks develop. The complete adjustment period is typically a full cycle of seasons, which is about 1 year.

5.0 CLOSURE

5.1 Limitations

This report is issued with the understanding that it is the responsibility of the owner to see that its provisions are carried out or brought to the attention of those concerned.

The scope of services for this project does not include any structural adjustments and environmental assessment of the site or identification of contaminated or hazardous materials or conditions.

The findings of this report are considered valid as of the present date. However, changes in the conditions of the site can occur with the passage of time, whether due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge.

Rancho Vistoso Valley Vista – Lots 20
803 East Romsdalen Road
Oro Valley, Arizona
ProTeX Job No.: 12804



Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

Appendix A

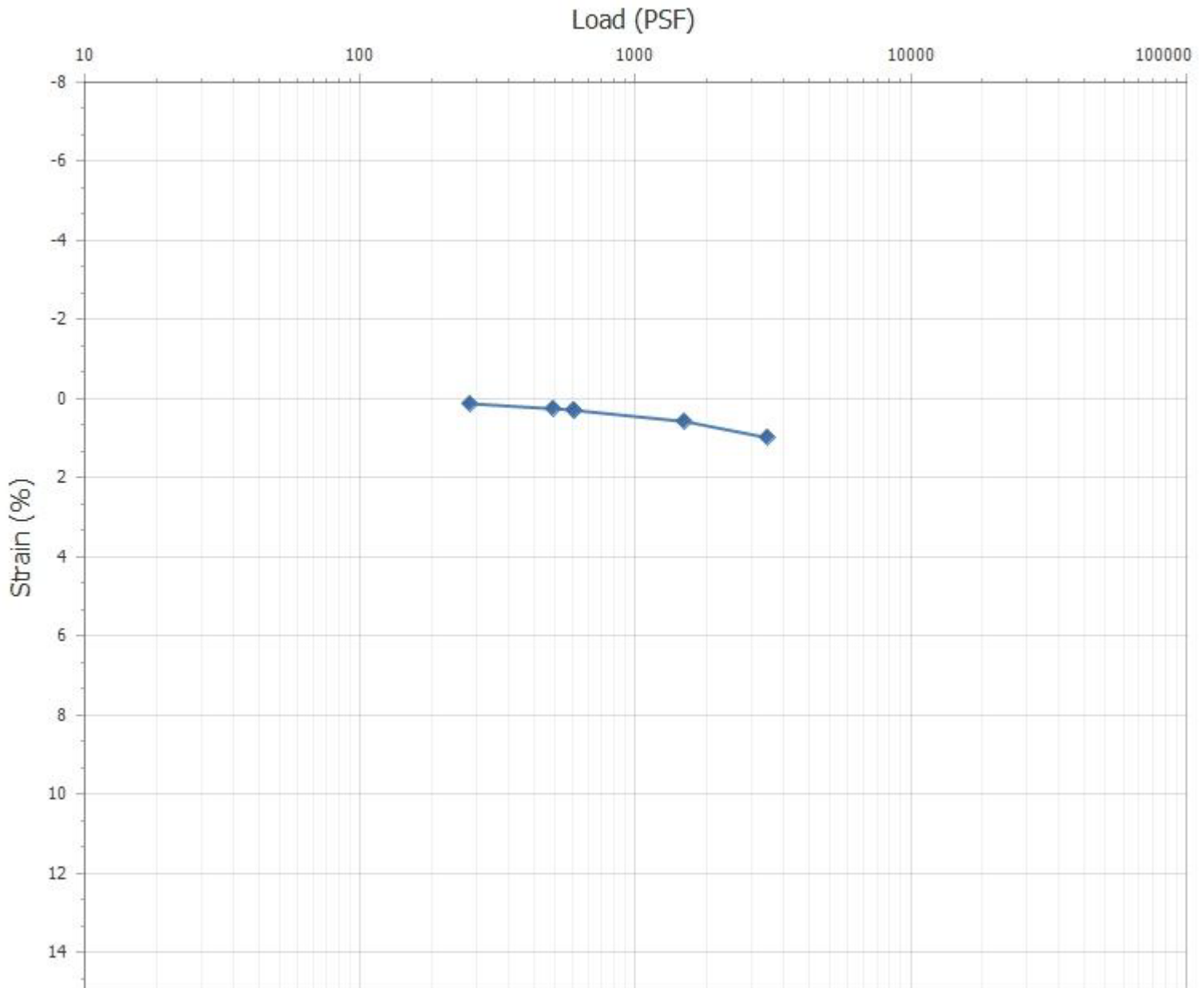


ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 1')

ProTeX Job No: 12804
ProTeX Lab No: 2202215 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB3 - Ring 1'

Moisture Content: 7.6 %

Sample Type: Undisturbed

Dry Unit Weight: 115.3 lb/ft³

Load at Saturation: 600 PSF

Remarks:

Reviewed By: jgrossarth

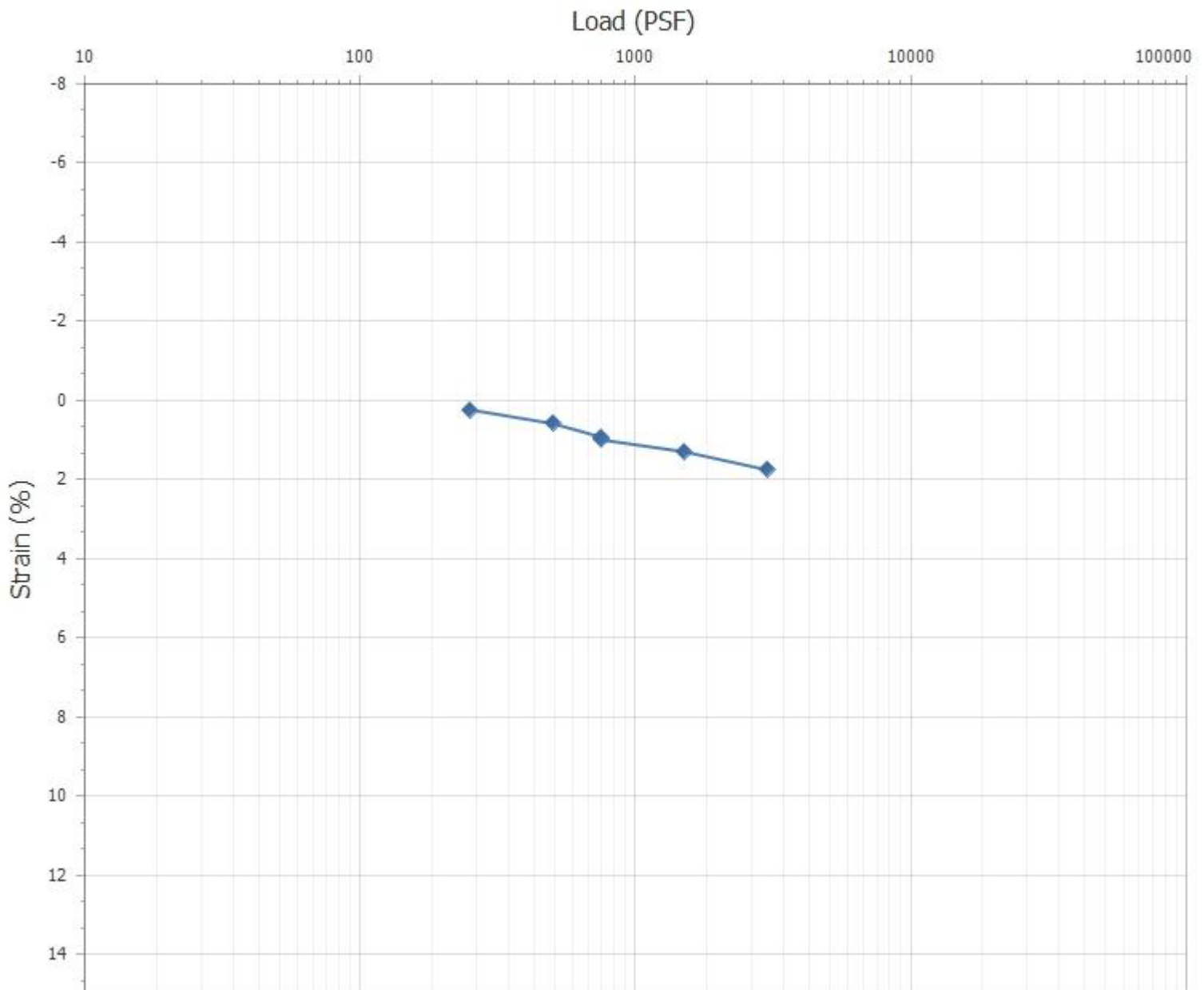


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 5')

ProTeX Job No: 12804
ProTeX Lab No: 2202216 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB3 - Ring 5'

Moisture Content: 8.6 %

Sample Type: Undisturbed

Dry Unit Weight: 113.2 lb/ft³

Load at Saturation: 750 PSF

Remarks:

Reviewed By: jgrossarth

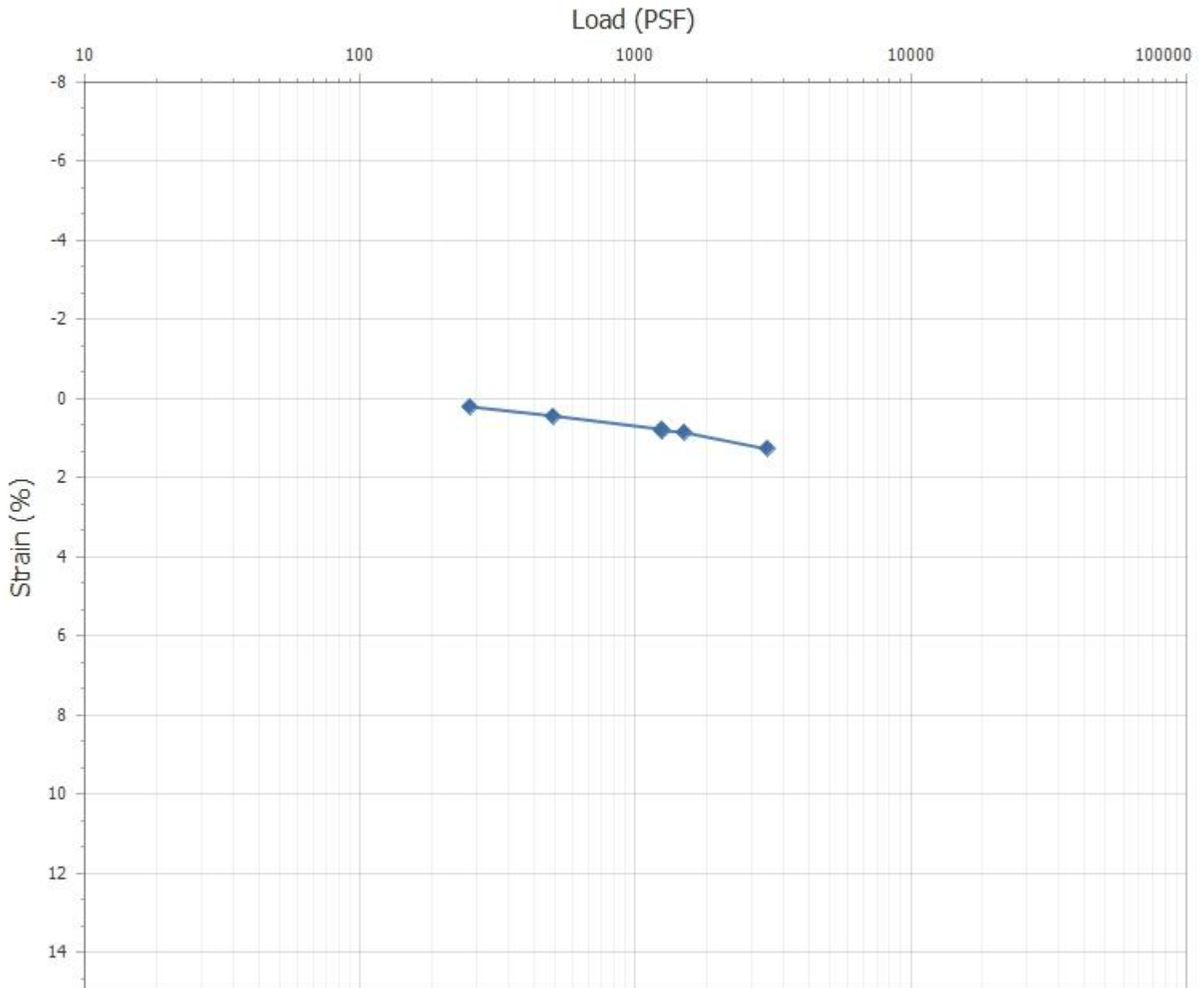


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2202217 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB3 - Ring 10'

Moisture Content: 8.7 %

Sample Type: Undisturbed

Dry Unit Weight: 118.1 lb/ft³

Load at Saturation: 1250 PSF

Remarks:

Reviewed By: jgrossarth

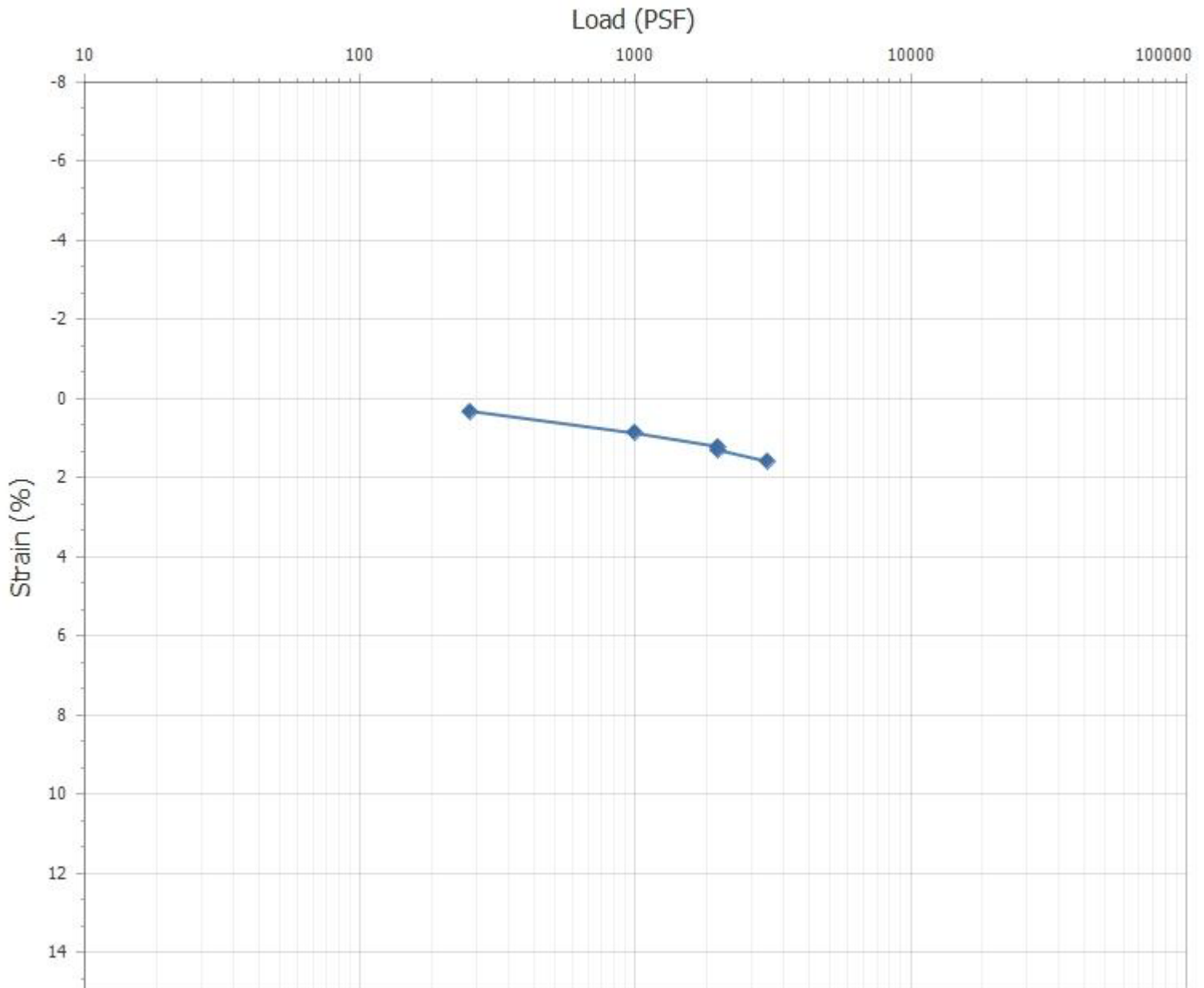


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 15')

ProTeX Job No: 12804
ProTeX Lab No: 2202218 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB3 - Ring 15'

Moisture Content: 8.6 %

Sample Type: Undisturbed

Dry Unit Weight: 116.1 lb/ft³

Load at Saturation: 2000 PSF

Remarks:

Reviewed By: jgrossarth

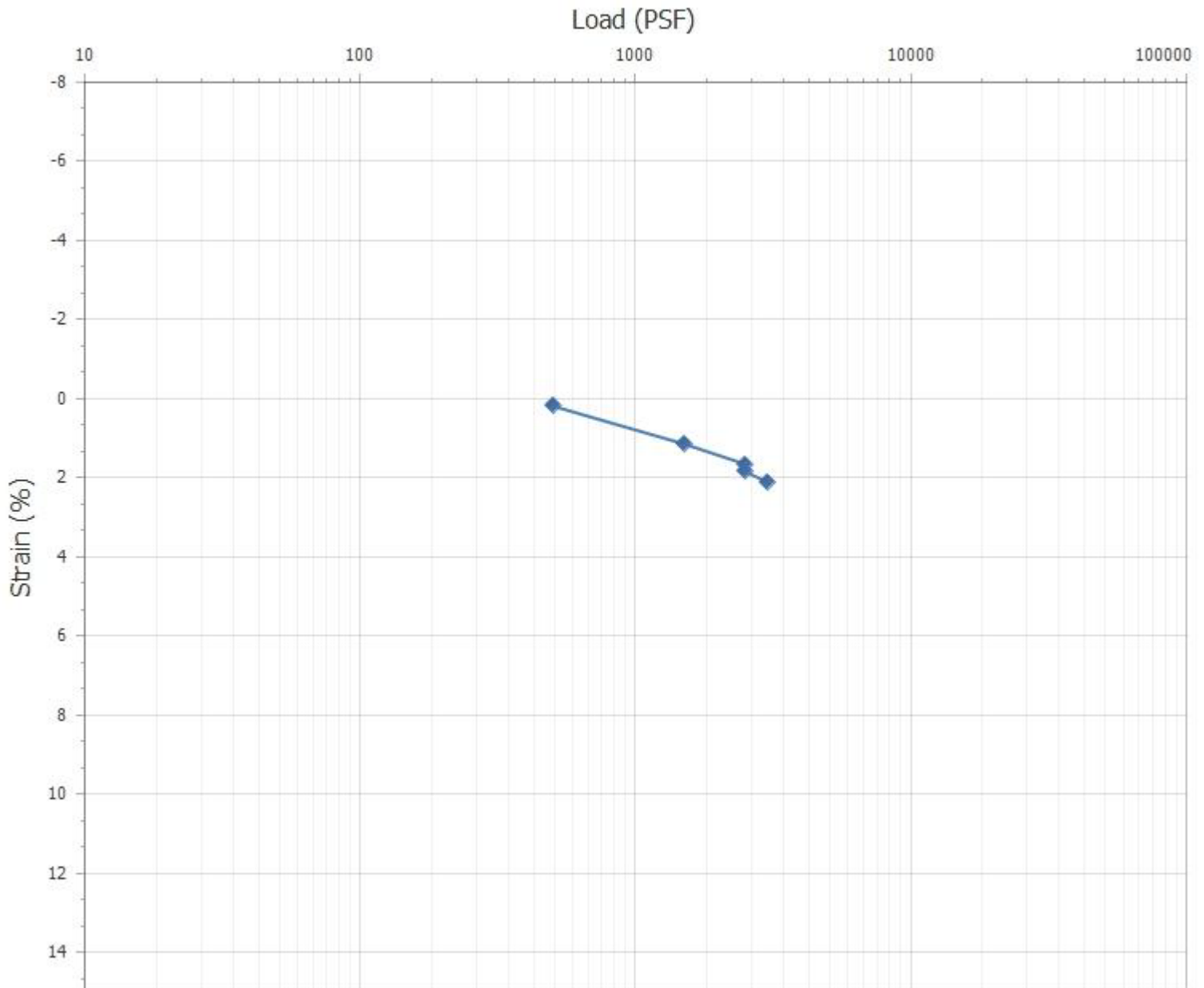


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2202219 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa



Source: FB3 - Ring 20'

Moisture Content: 9.0 %

Sample Type: Undisturbed

Dry Unit Weight: 116.8 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

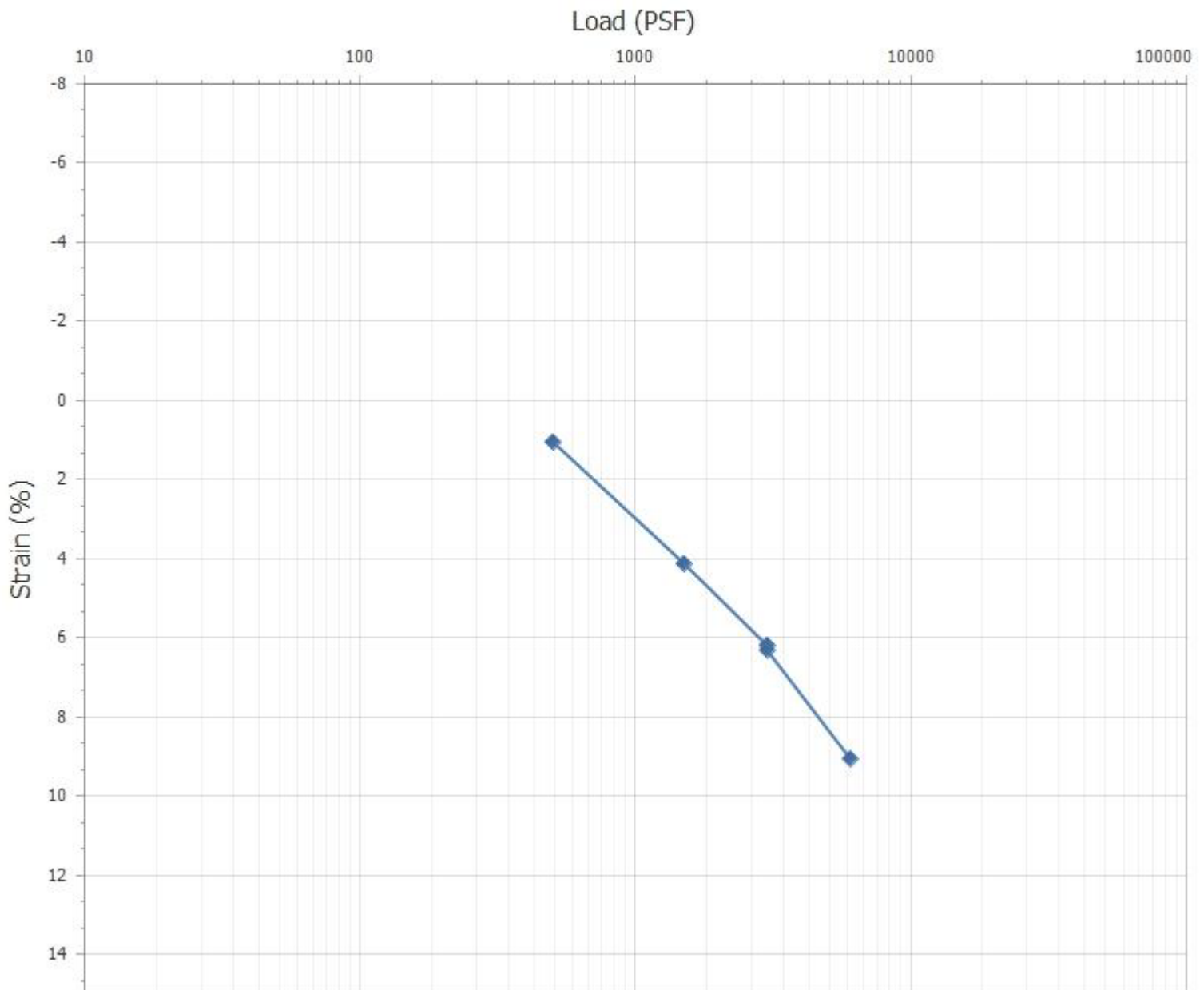


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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB3 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2202220 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB3 - Ring 25'

Moisture Content: 26.4 %

Sample Type: Undisturbed

Dry Unit Weight: 90.7 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

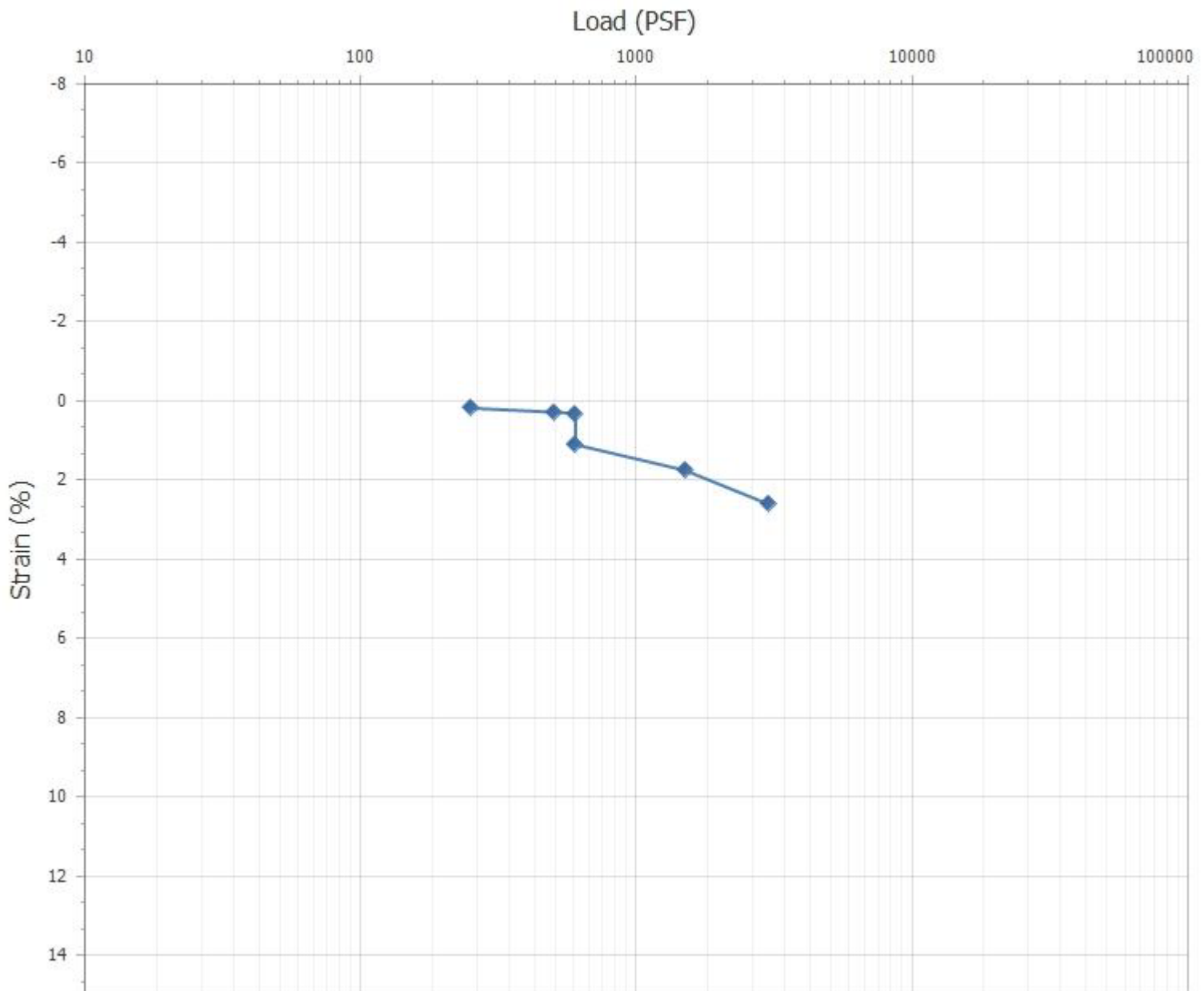


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB5 (Ring 1')

ProTeX Job No: 12804
ProTeX Lab No: 2202221 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB5 - Ring 1'

Moisture Content: 8.3 %

Sample Type: Undisturbed

Dry Unit Weight: 117.8 lb/ft³

Load at Saturation: 600 PSF

Remarks: _____

Reviewed By: jgrossarth

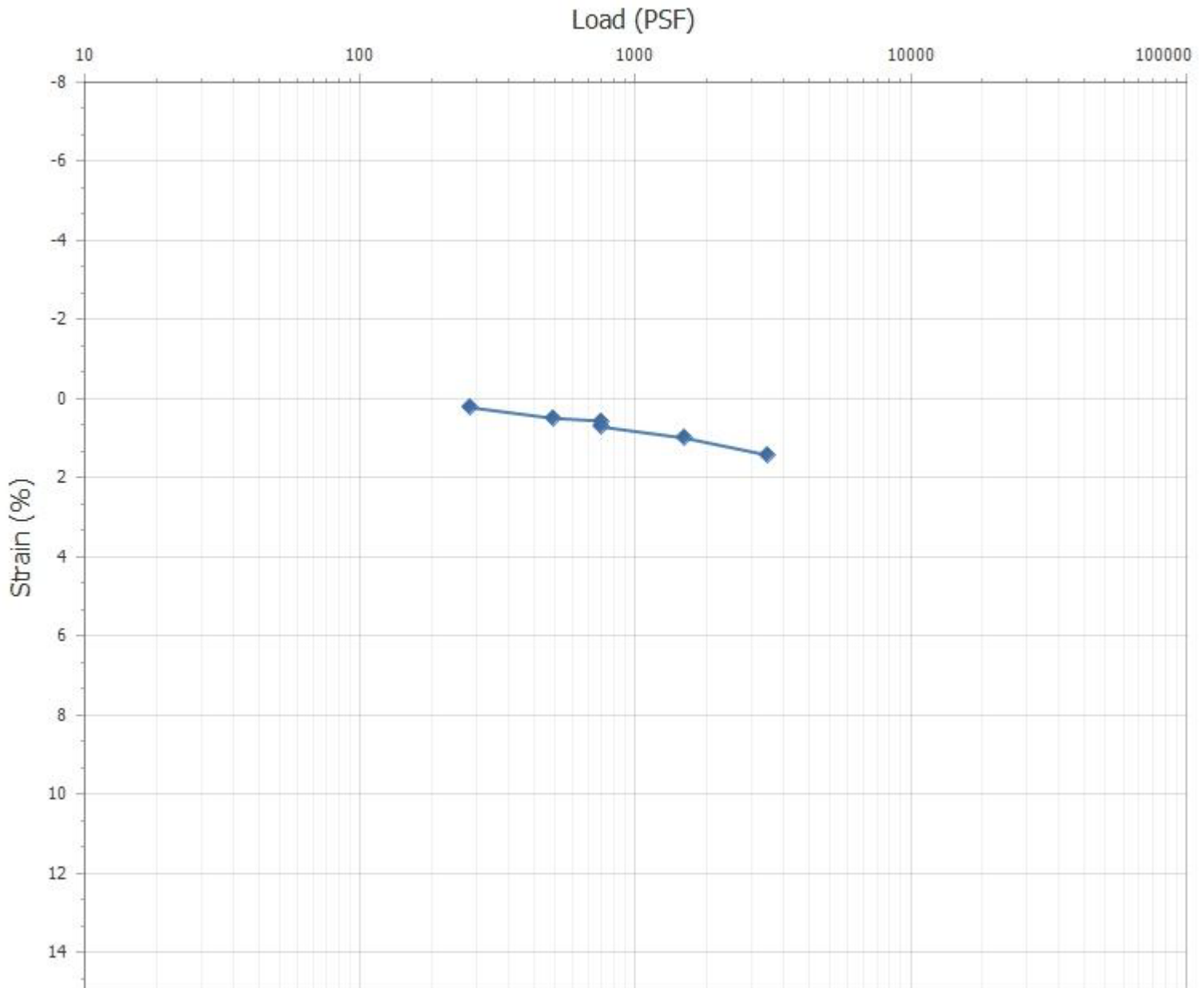


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB5 (Ring 5')

ProTeX Job No: 12804
ProTeX Lab No: 2202222 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB5 - Ring 5'

Moisture Content: 9.7 %

Sample Type: Undisturbed

Dry Unit Weight: 119.6 lb/ft³

Load at Saturation: 750 PSF

Remarks:

Reviewed By: jgrossarth

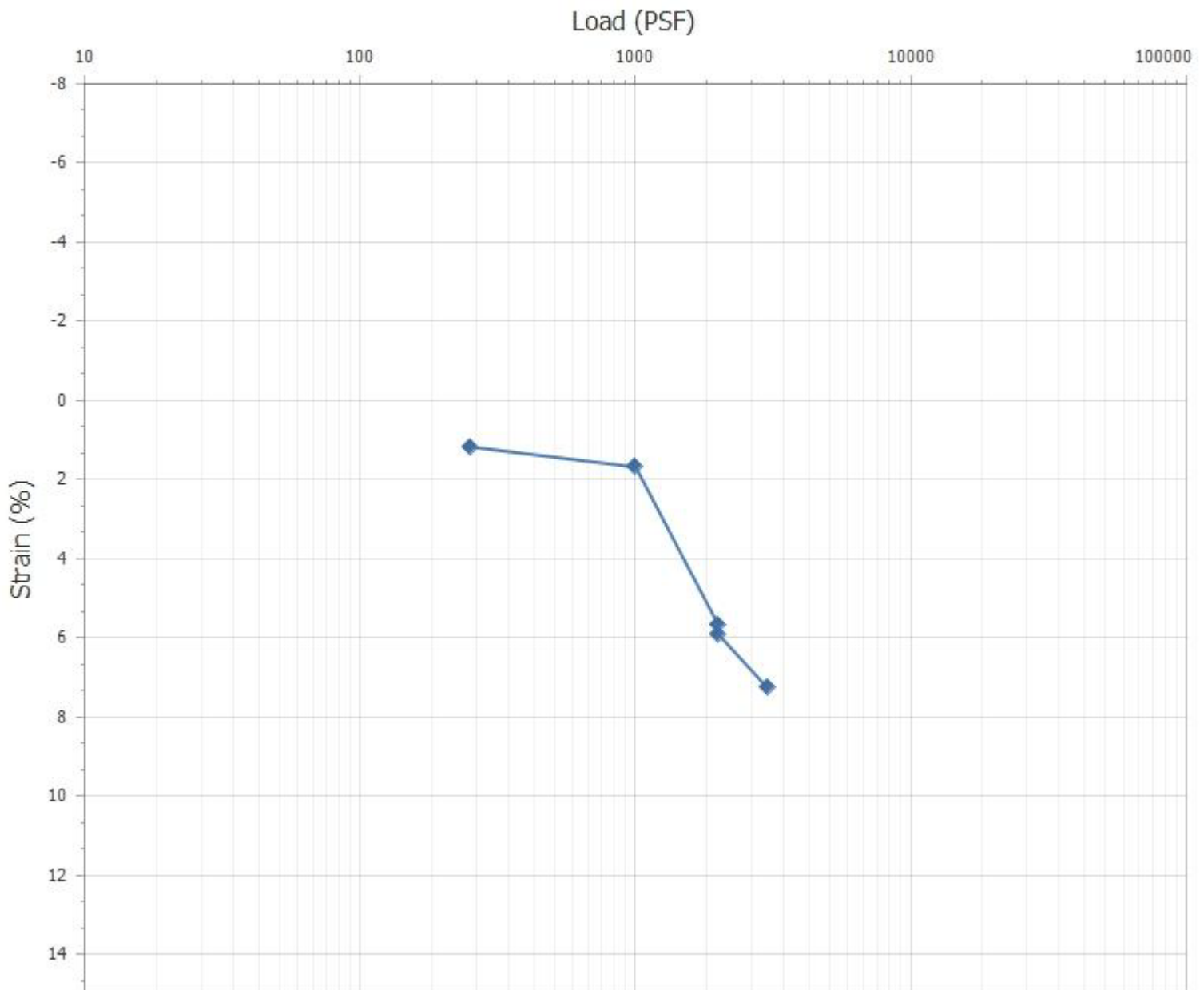


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB5 (Ring 15')

ProTeX Job No: 12804
ProTeX Lab No: 2202224 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB5 - Ring 15'

Moisture Content: 22.8 %

Sample Type: Undisturbed

Dry Unit Weight: 96.2 lb/ft³

Load at Saturation: 2000 PSF

Remarks:

Reviewed By: jgrossarth

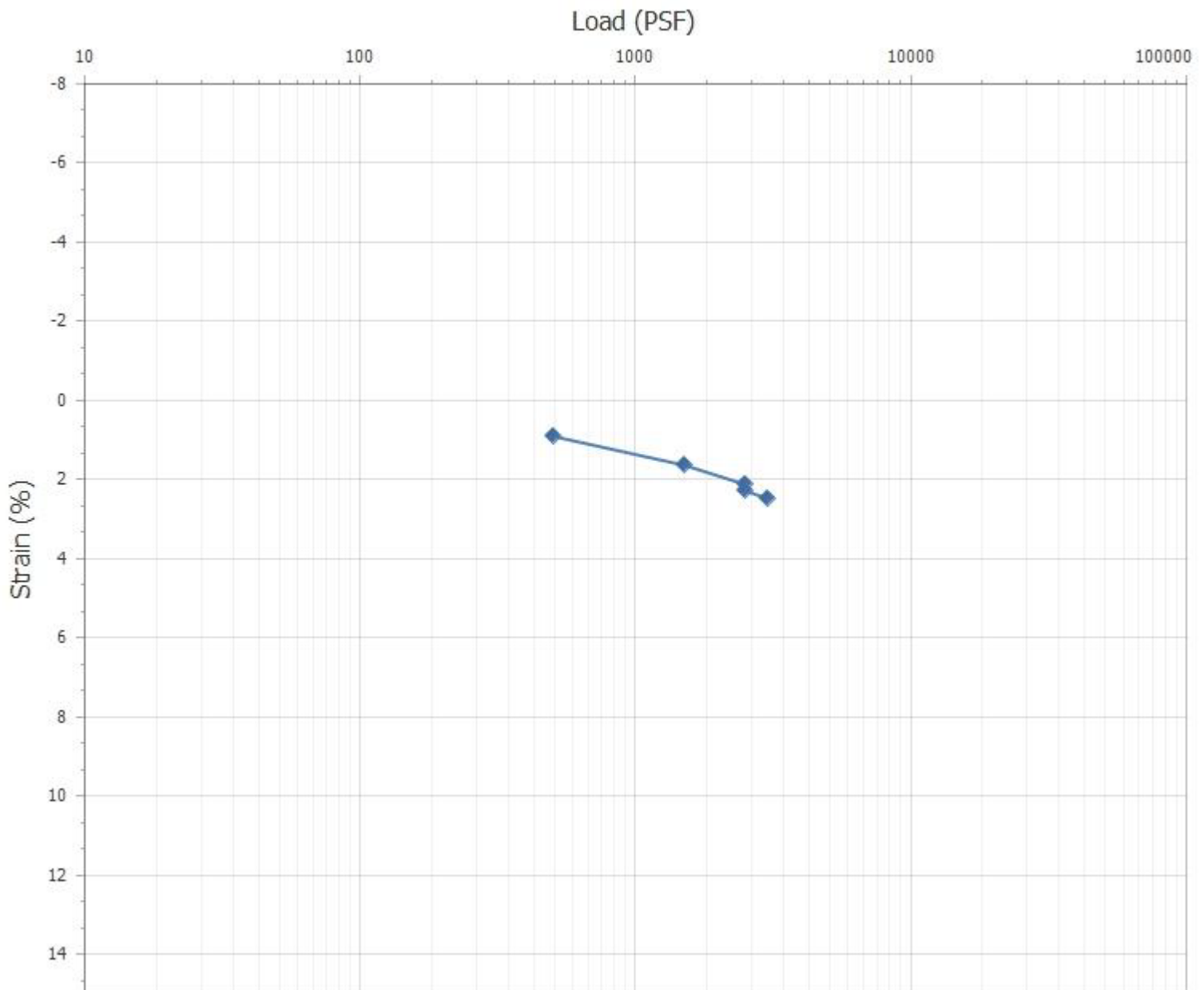


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB5 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2202225 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB5 - Ring 20'

Moisture Content: 5.7 %

Sample Type: Undisturbed

Dry Unit Weight: 116.3 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

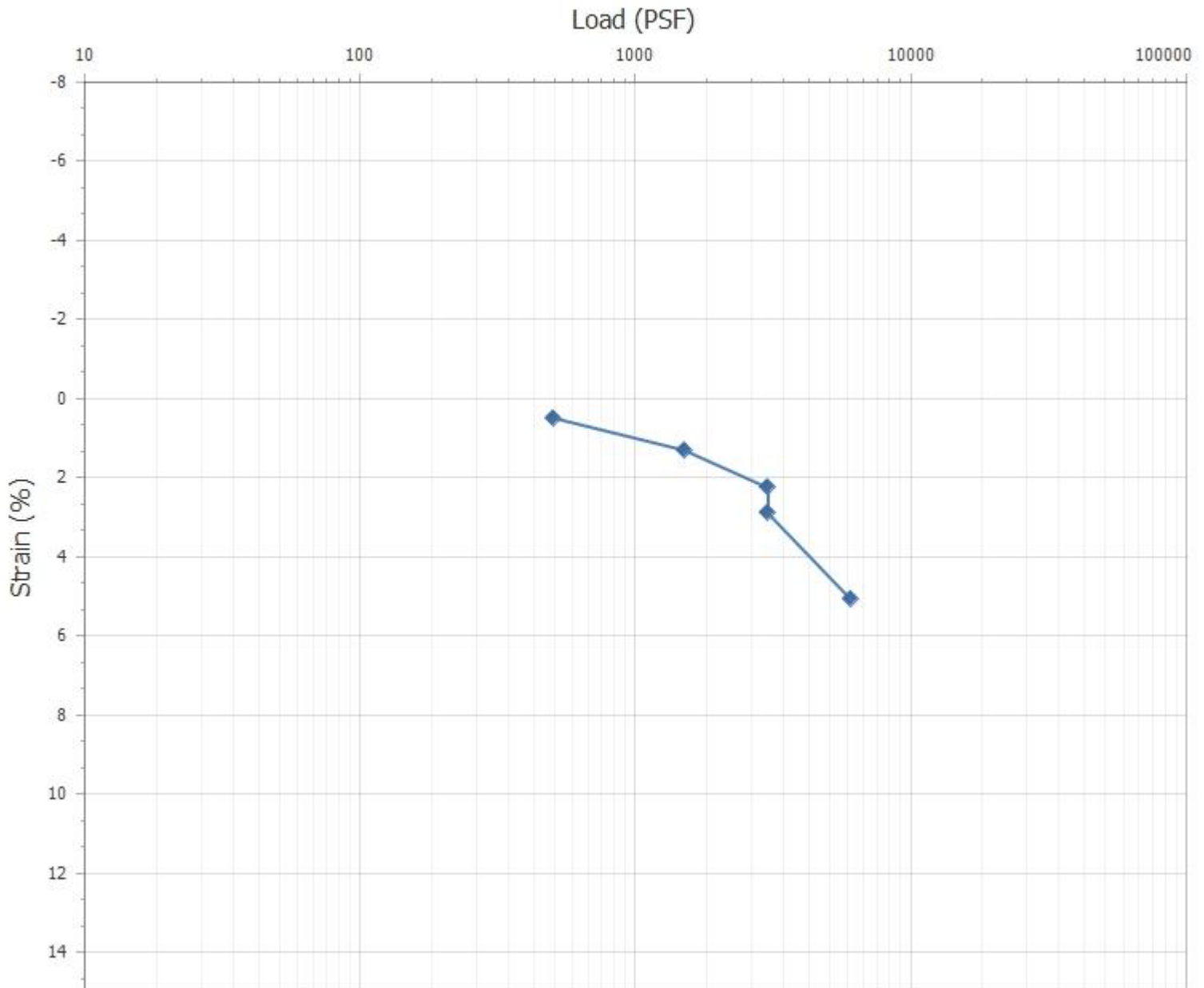


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB5 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2202226 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB5 - Ring 25'

Moisture Content: 13.2 %

Sample Type: Undisturbed

Dry Unit Weight: 111.5 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

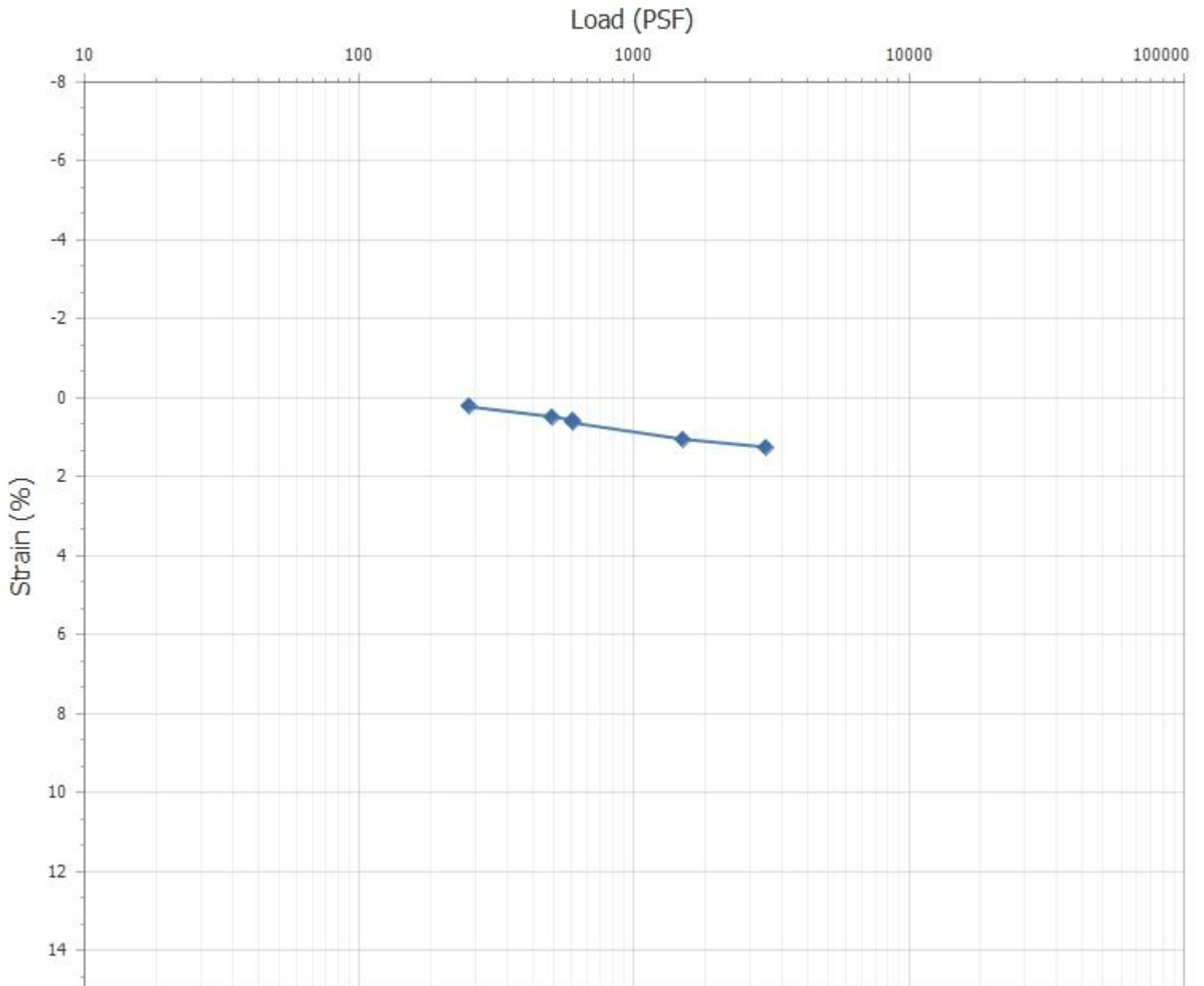


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB7 (Ring 1')

ProTeX Job No: 12804
ProTeX Lab No: 2202227 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa



Source: FB7 - Ring 1'

Moisture Content: 7.9 %

Sample Type: Undisturbed

Dry Unit Weight: 122.3 lb/ft³

Load at Saturation: 600 PSF

Remarks:

Reviewed By: jgrossarth

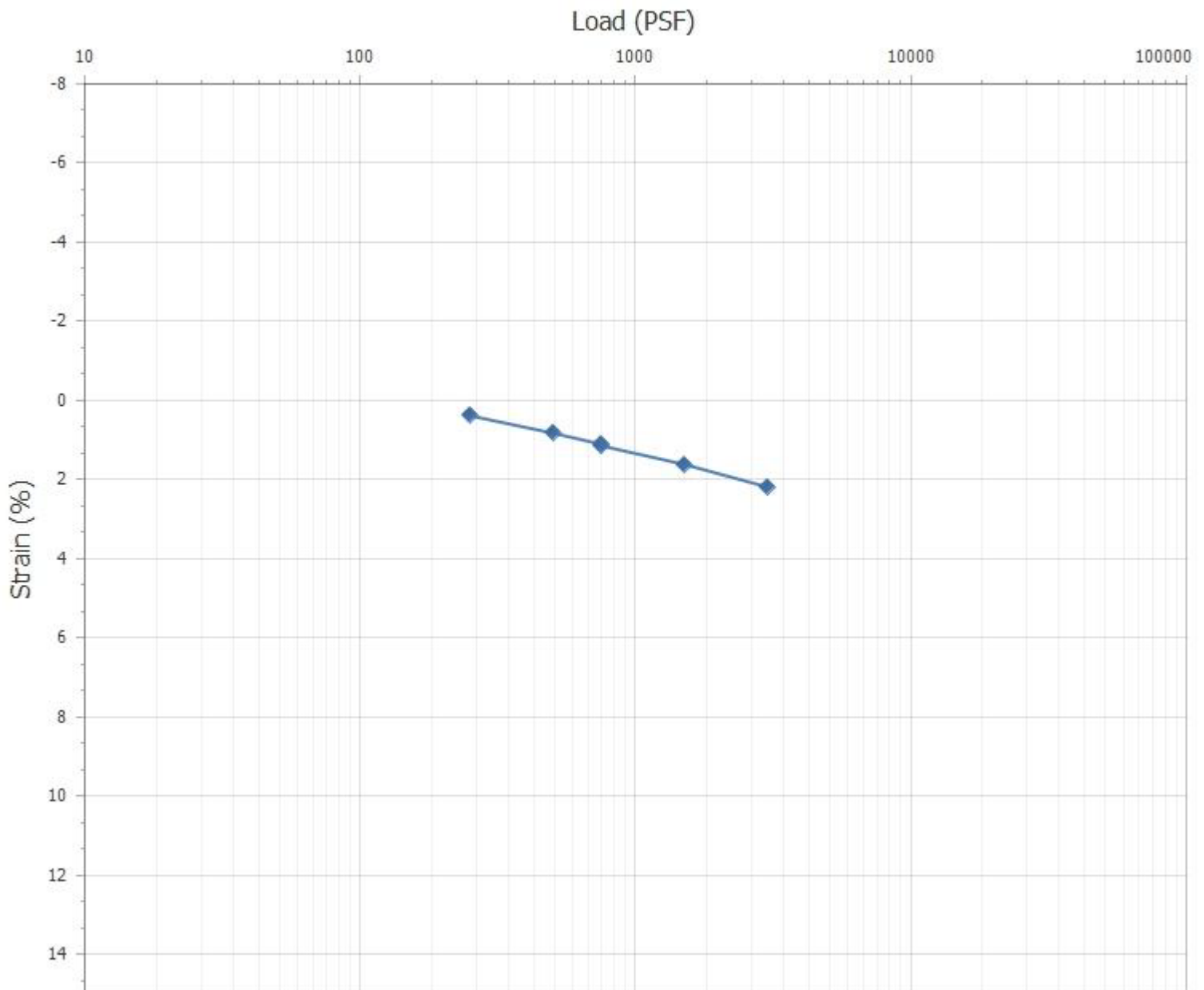


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB7 (Ring 5')

ProTeX Job No: 12804
ProTeX Lab No: 2202228 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa



Source: FB7 - Ring 5'

Moisture Content: 9.9 %

Sample Type: Undisturbed

Dry Unit Weight: 125.2 lb/ft³

Load at Saturation: 750 PSF

Remarks:

Reviewed By: jgrossarth

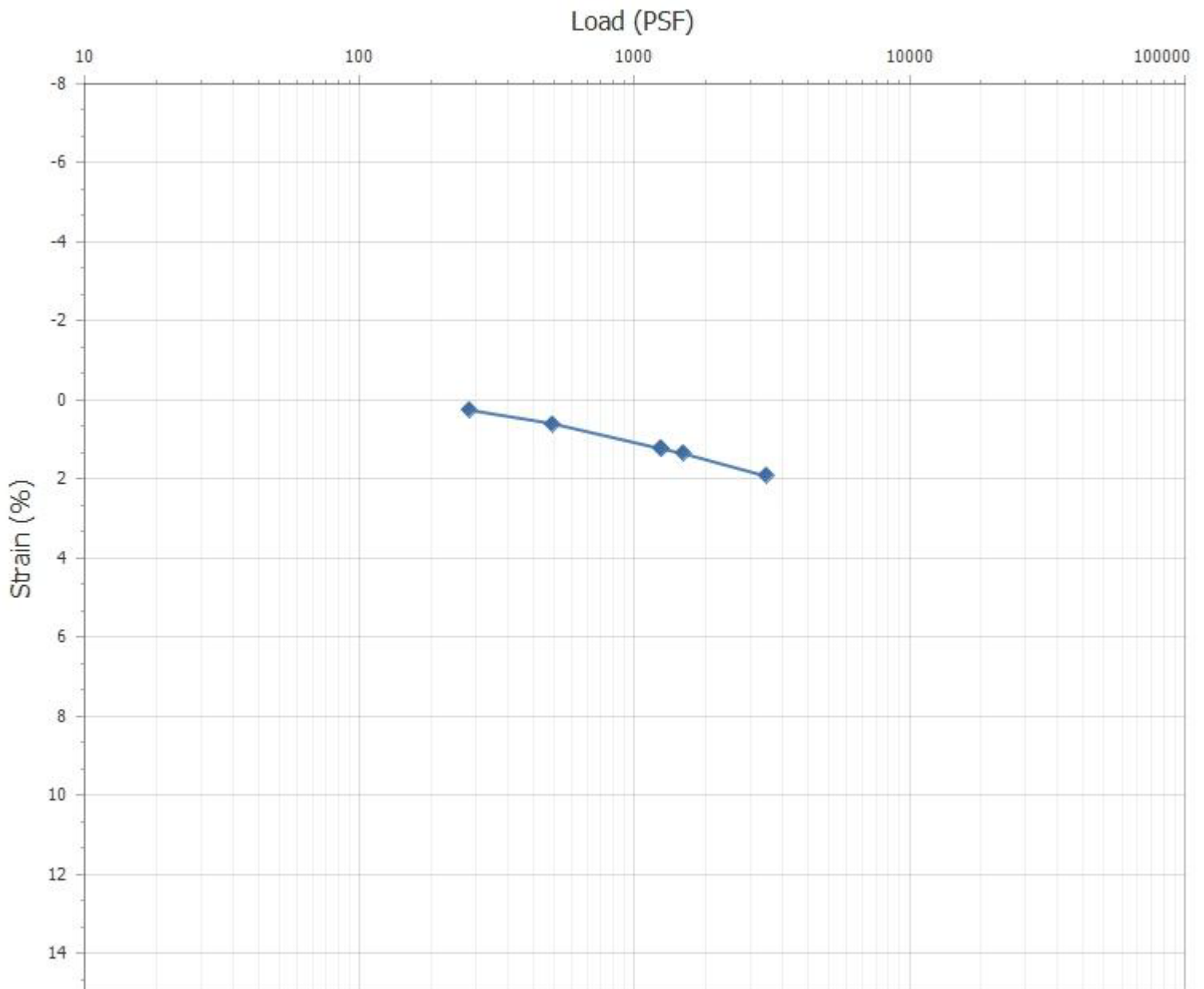


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB7 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2202229 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB7 - Ring 10'

Moisture Content: 6.1 %

Sample Type: Undisturbed

Dry Unit Weight: 121.3 lb/ft³

Load at Saturation: 1250 PSF

Remarks: _____

Reviewed By: jgrossarth

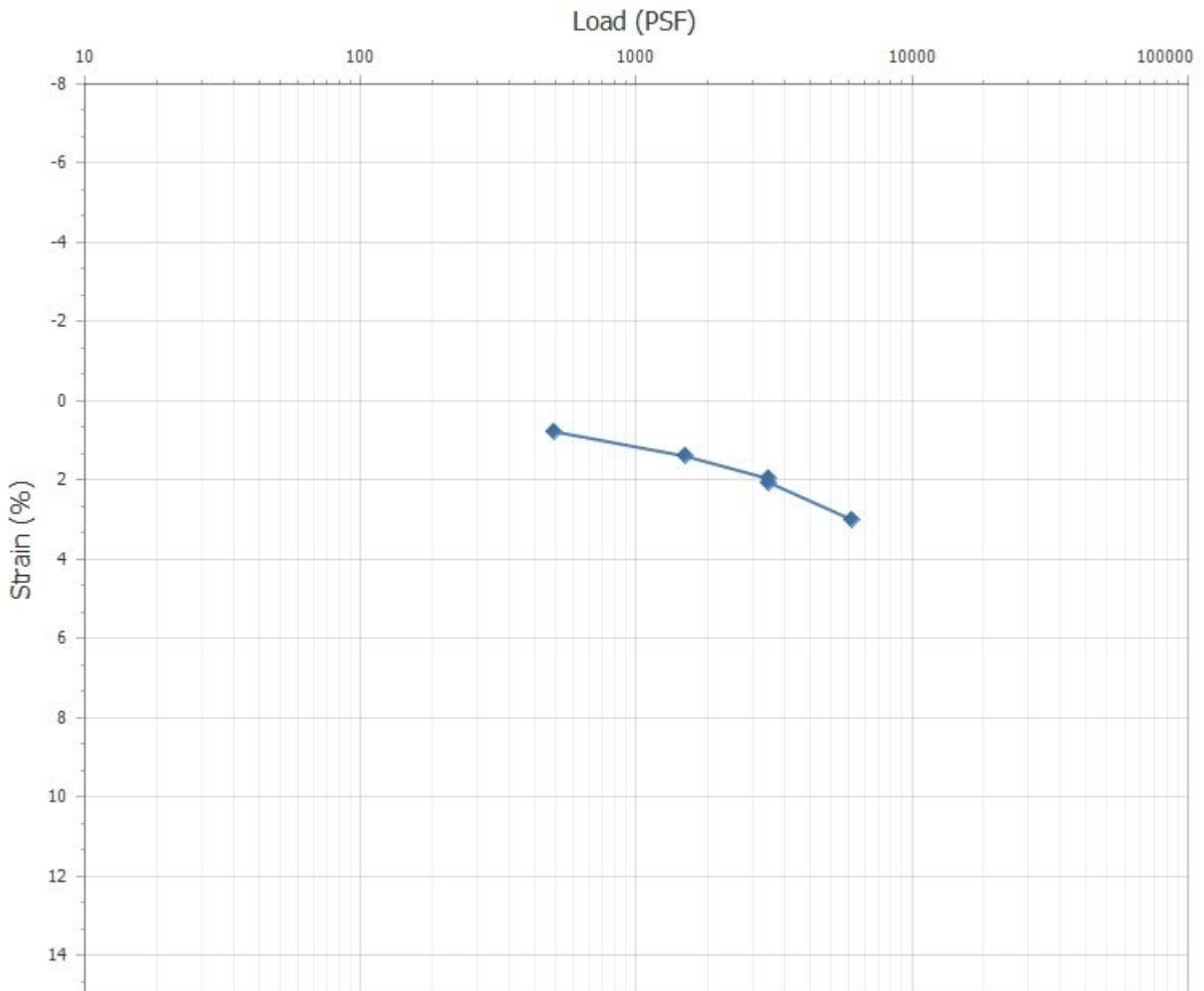


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB7 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2202232 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa



Source: FB7 - Ring 25'

Moisture Content: 8.9 %

Sample Type: Undisturbed

Dry Unit Weight: 111.3 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

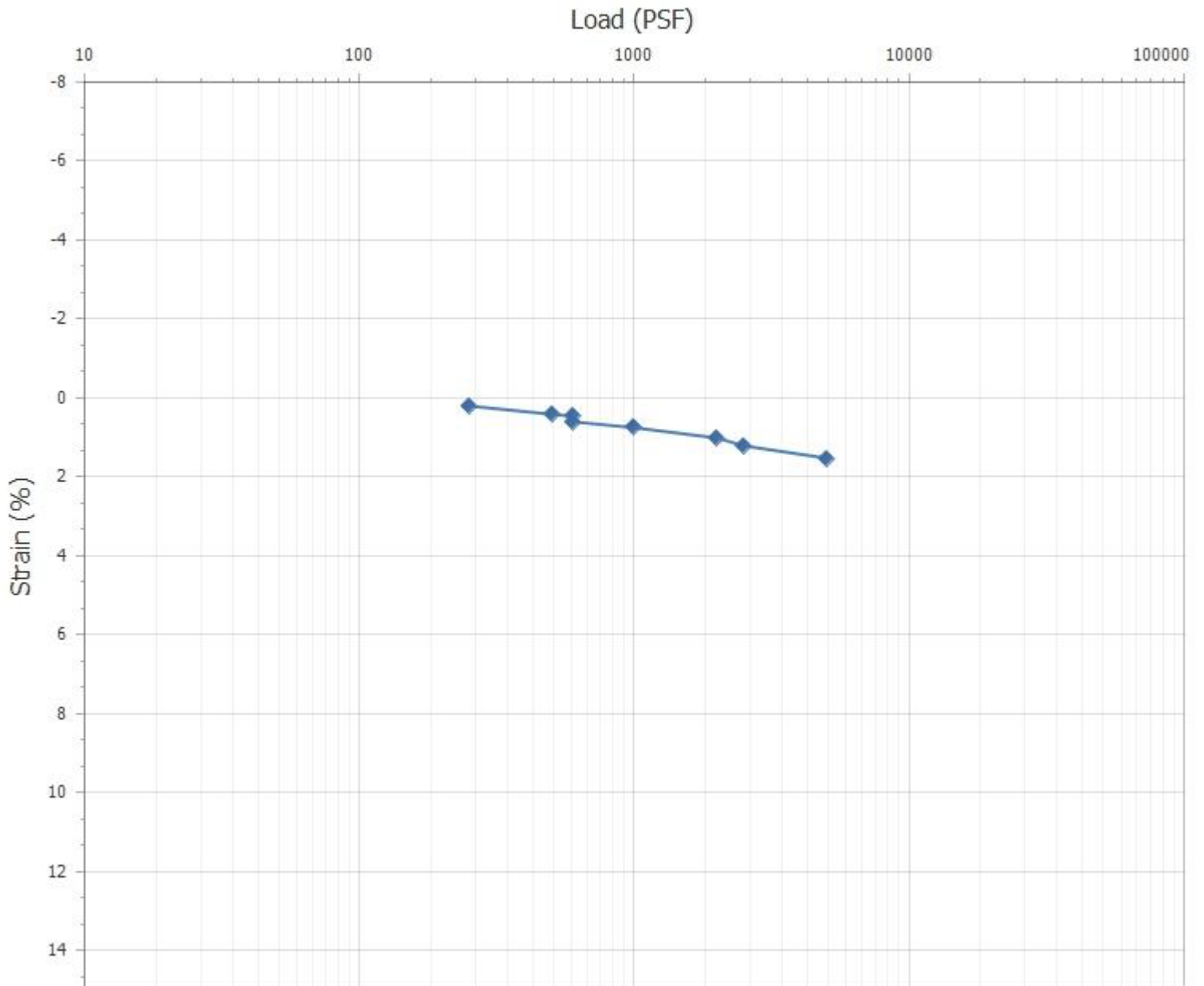


ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB8 (Ring 1.5')

ProTeX Job No: 12804
ProTeX Lab No: 2205273 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB8 - Ring 1.5'

Moisture Content: 6.8 %

Sample Type: Undisturbed

Dry Unit Weight: 115.3 lb/ft³

Load at Saturation: 600 PSF

Remarks:

Reviewed By: jgrossarth

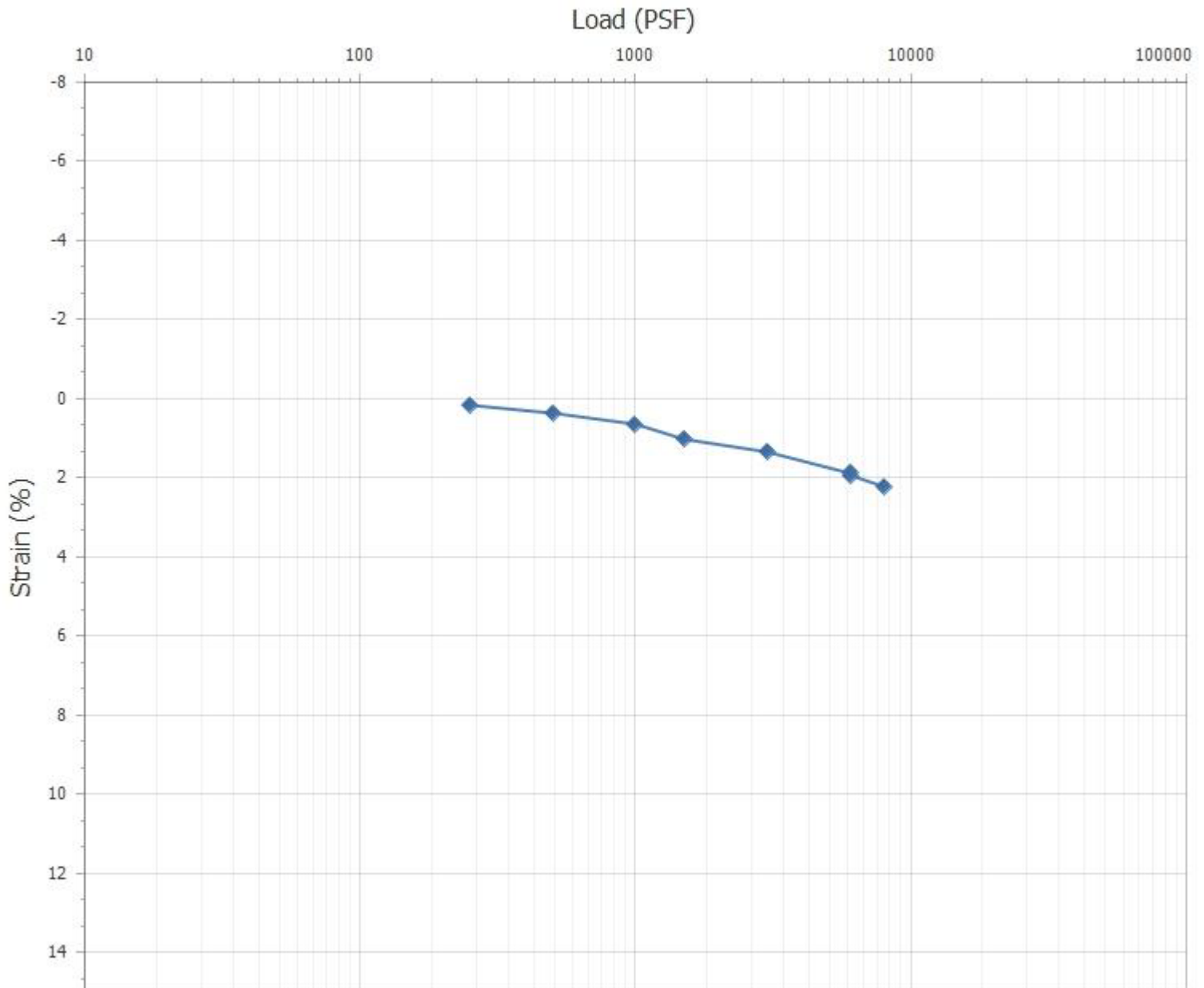


ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB8 (Ring 50')

ProTeX Job No: 12804
ProTeX Lab No: 2205274 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa



Source: FB8 - Ring 50'

Moisture Content: 17.3 %

Sample Type: Undisturbed

Dry Unit Weight: 105.9 lb/ft³

Load at Saturation: 6000 PSF

Remarks:

Reviewed By: jgrossarth

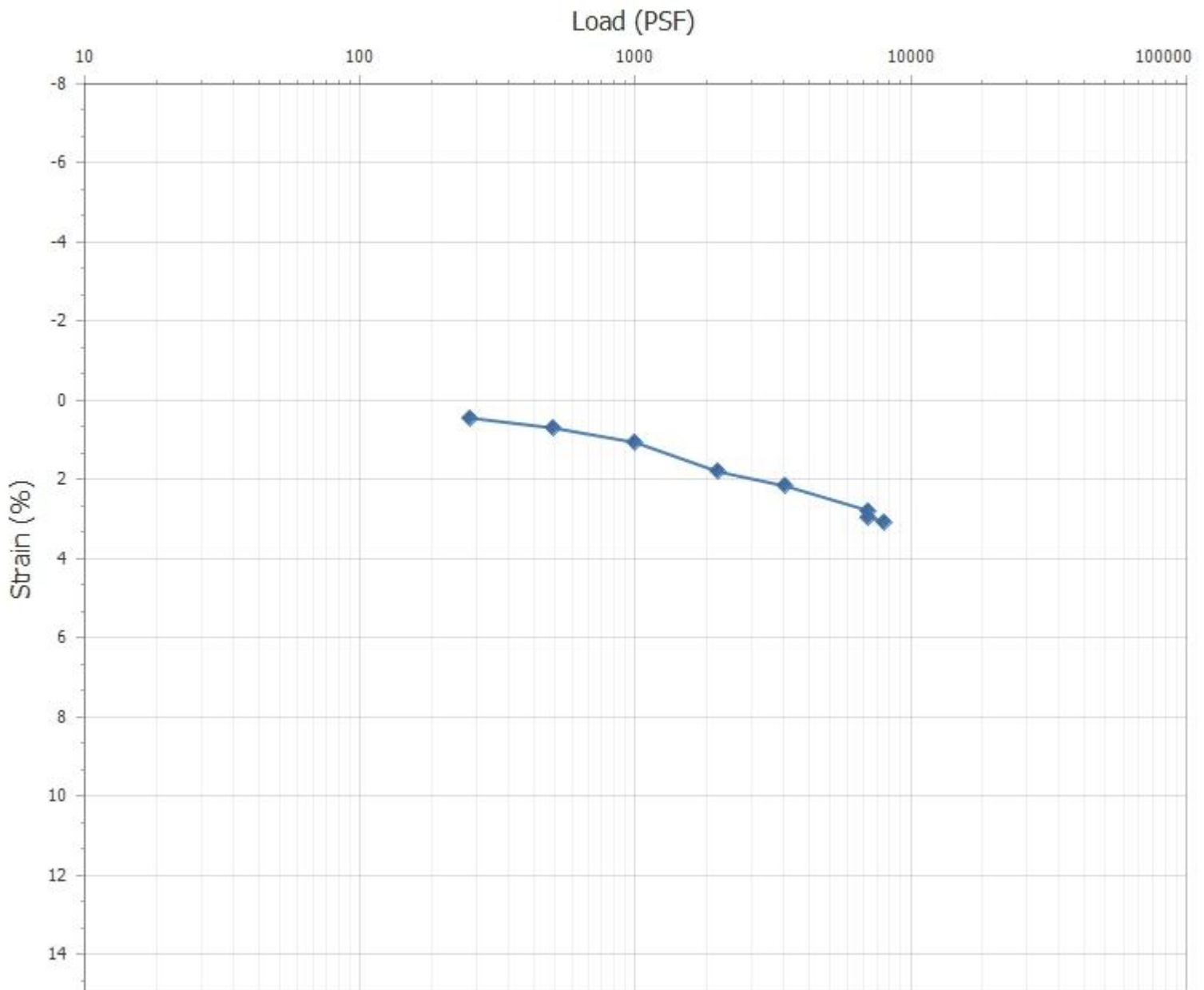


ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB8 (Ring 60')

ProTeX Job No: 12804
ProTeX Lab No: 2205275 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB8 - Ring 60'

Moisture Content: 6.8 %

Sample Type: Undisturbed

Dry Unit Weight: 114.6 lb/ft³

Load at Saturation: 7000 PSF

Remarks:

Reviewed By: jgrossarth

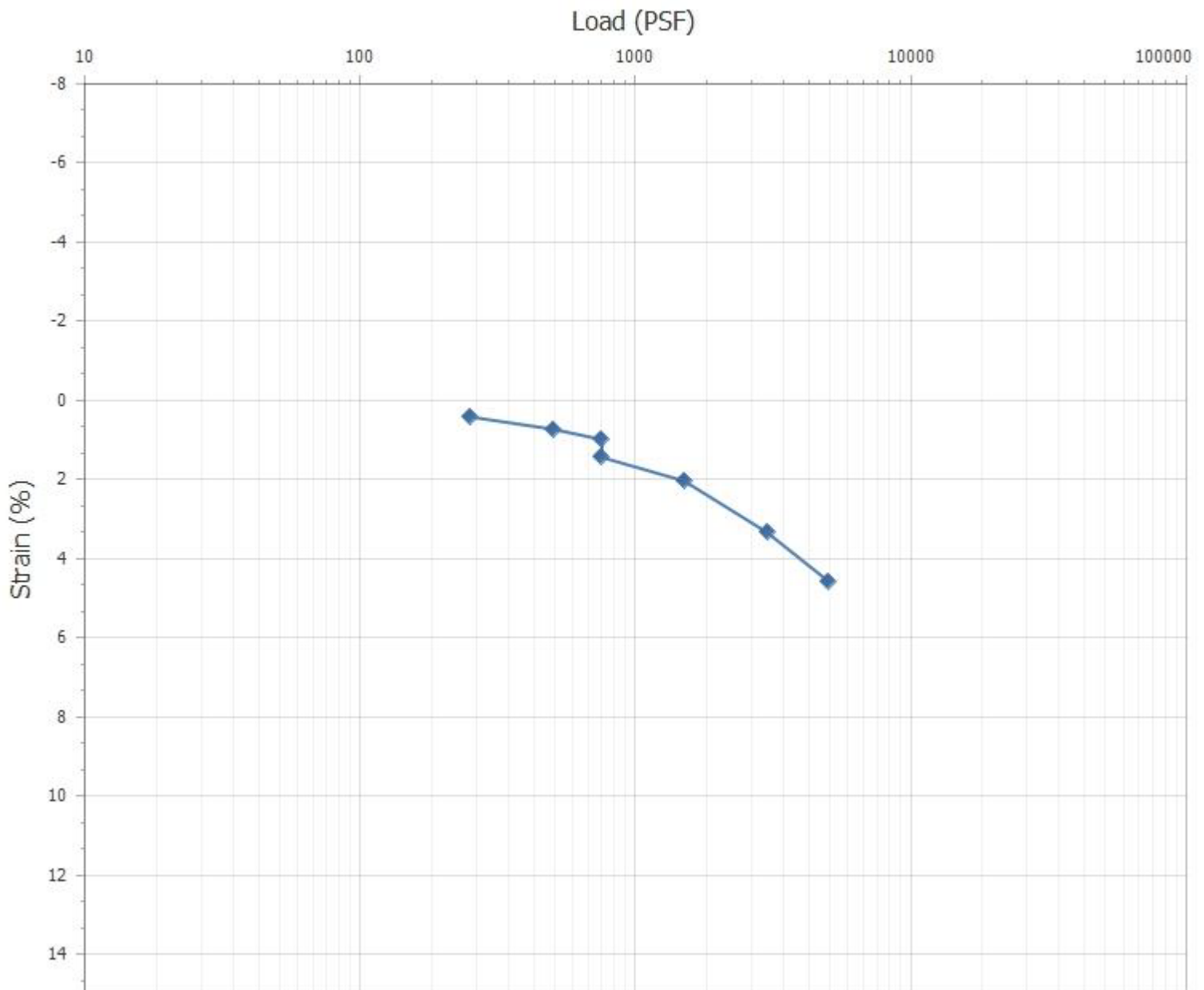


ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB9 (Ring 5')

ProTeX Job No: 12804
ProTeX Lab No: 2205276 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB9 - Ring 5'

Moisture Content: 4.7 %

Sample Type: Undisturbed

Dry Unit Weight: 112.7 lb/ft³

Load at Saturation: 750 PSF

Remarks:

Reviewed By: jgrossarth

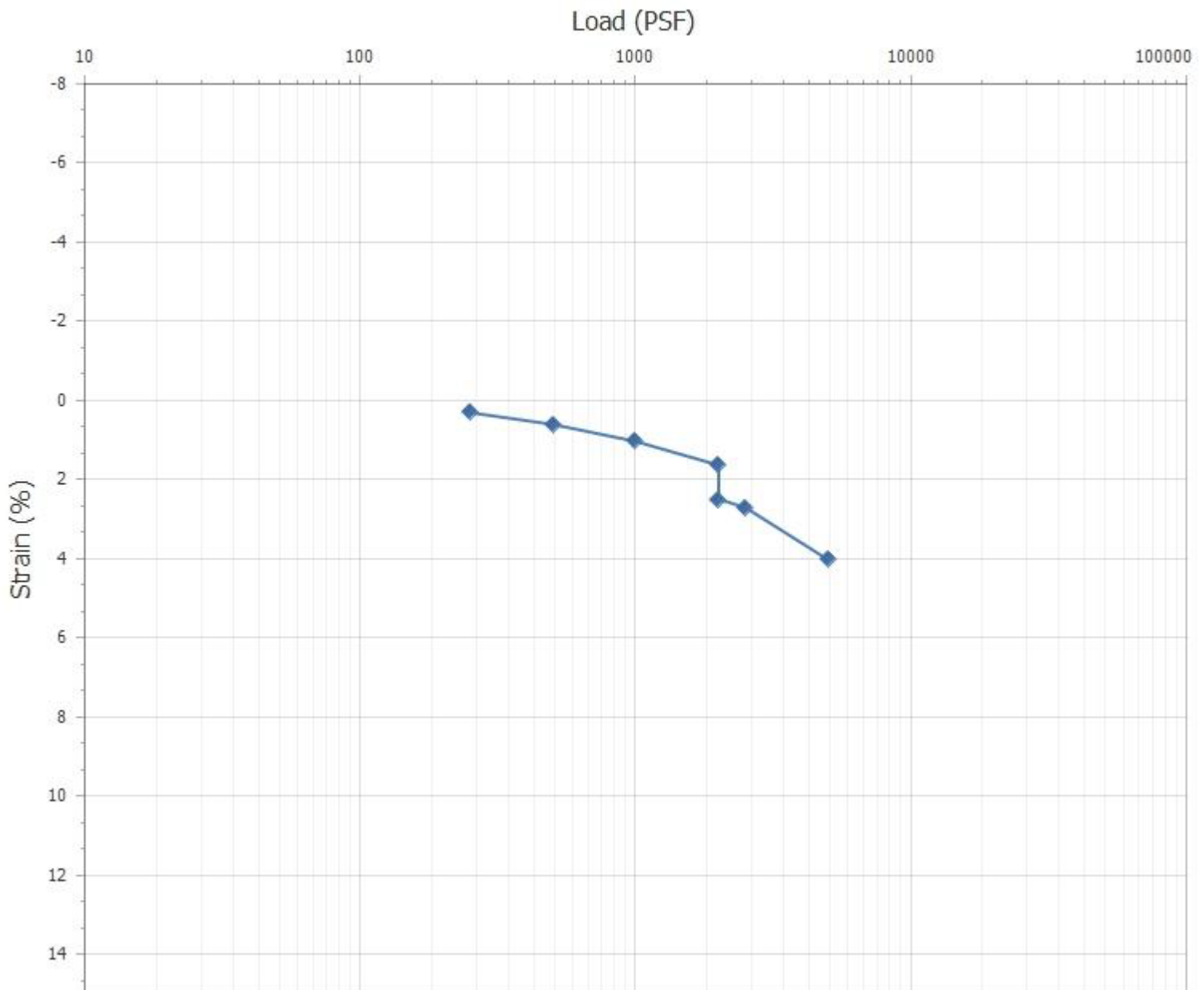


ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB9 (Ring 15')

ProTeX Job No: 12804
ProTeX Lab No: 2205277 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB9 - Ring 15'

Moisture Content: 4.1 %

Sample Type: Undisturbed

Dry Unit Weight: 110.8 lb/ft³

Load at Saturation: 2000 PSF

Remarks:

Reviewed By: jgrossarth

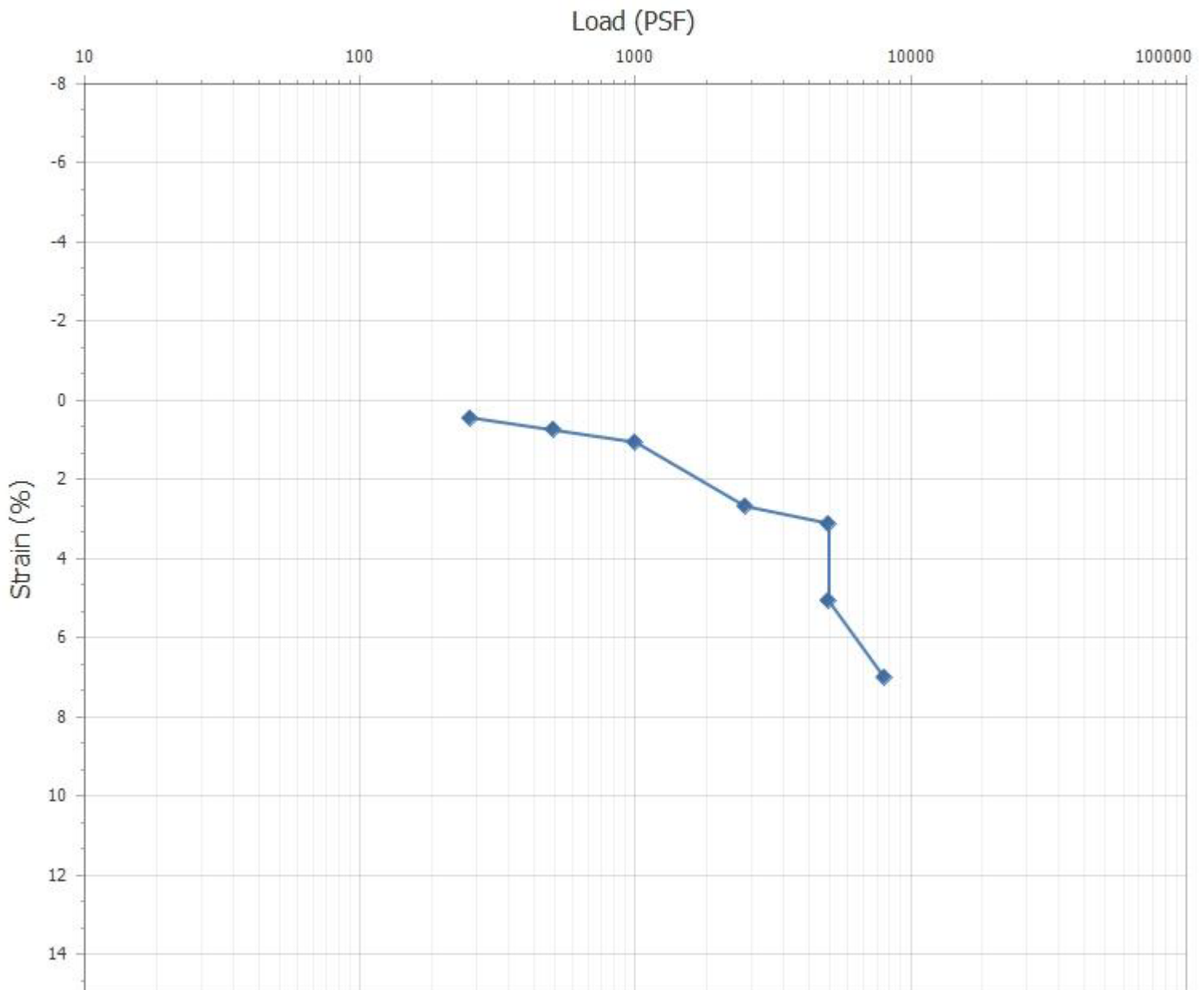


ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB9 (Ring 45')

ProTeX Job No: 12804
ProTeX Lab No: 2205278 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB9 - Ring 45'

Moisture Content: 6.5 %

Sample Type: Undisturbed

Dry Unit Weight: 107.0 lb/ft³

Load at Saturation: 5000 PSF

Remarks:

Reviewed By: jgrossarth

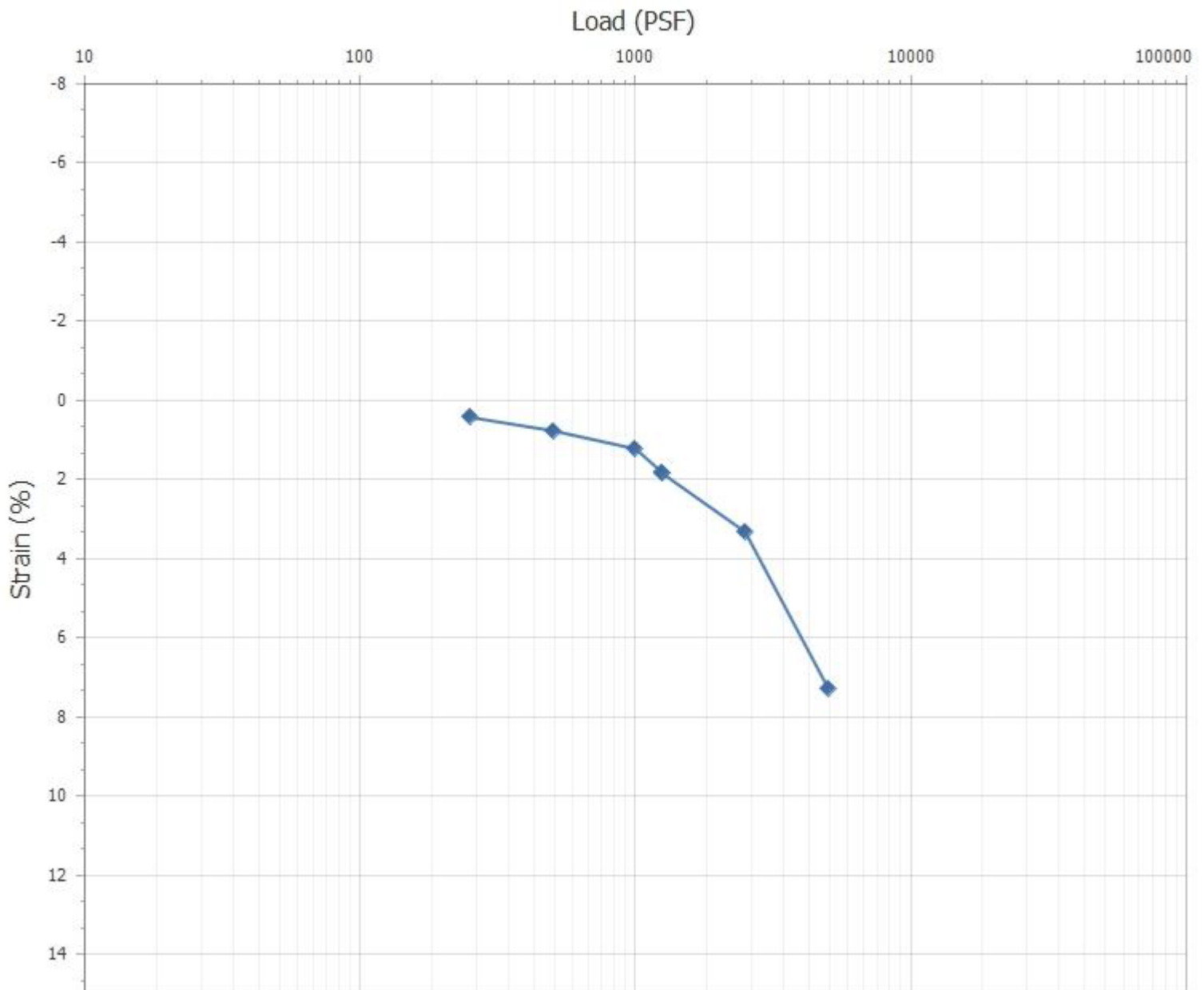


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB10 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2205279 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB10 - Ring 10'

Moisture Content: 15.3 %

Sample Type: Undisturbed

Dry Unit Weight: 101.8 lb/ft³

Load at Saturation: 1250 PSF

Remarks:

Reviewed By: jgrossarth

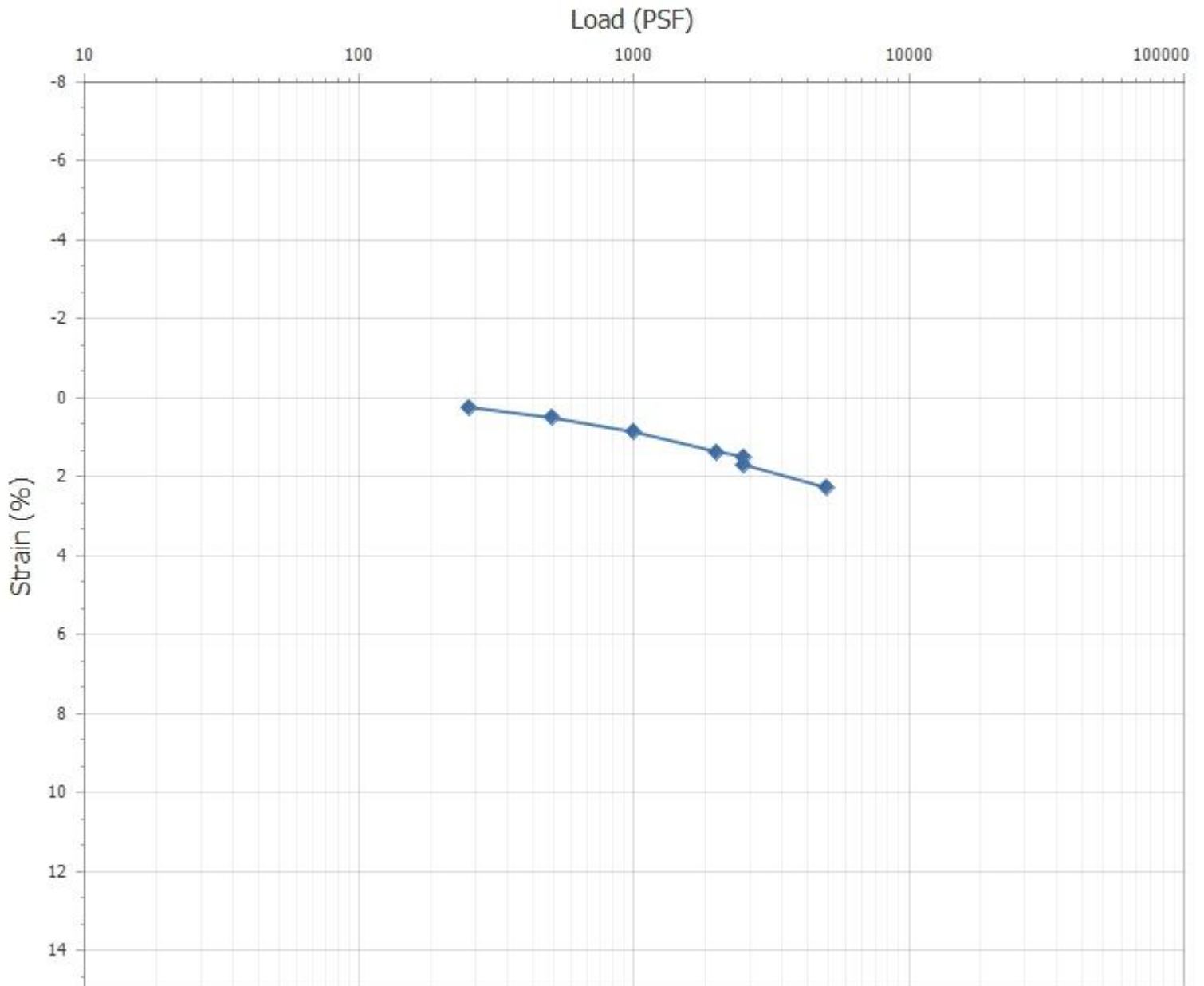


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB10 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2205280 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB10 - Ring 20'

Moisture Content: 4.4 %

Sample Type: Undisturbed

Dry Unit Weight: 111.9 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

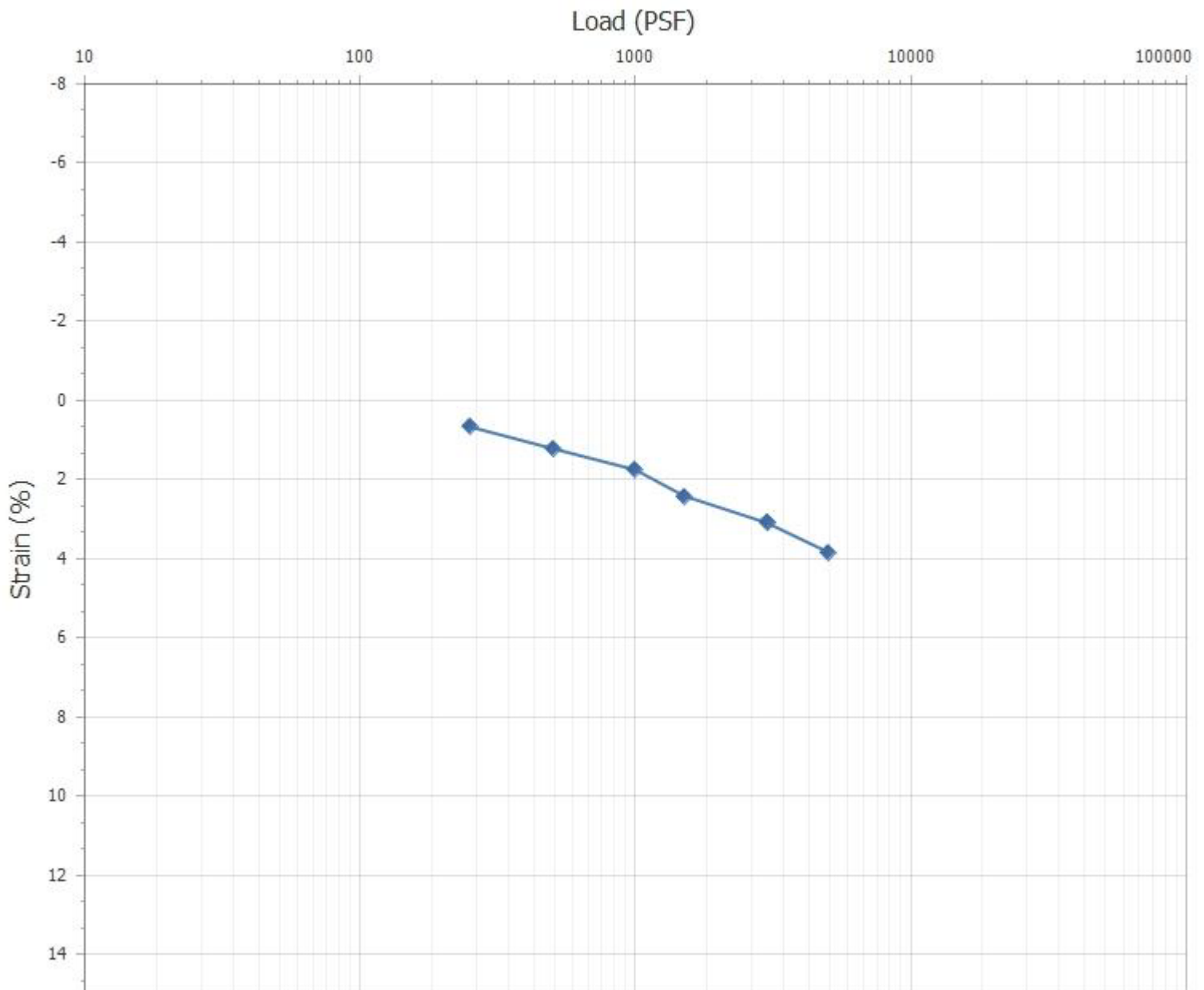


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB11 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2205281 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB11 - Ring 25'

Moisture Content: 9.4 %

Sample Type: Undisturbed

Dry Unit Weight: 110.1 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

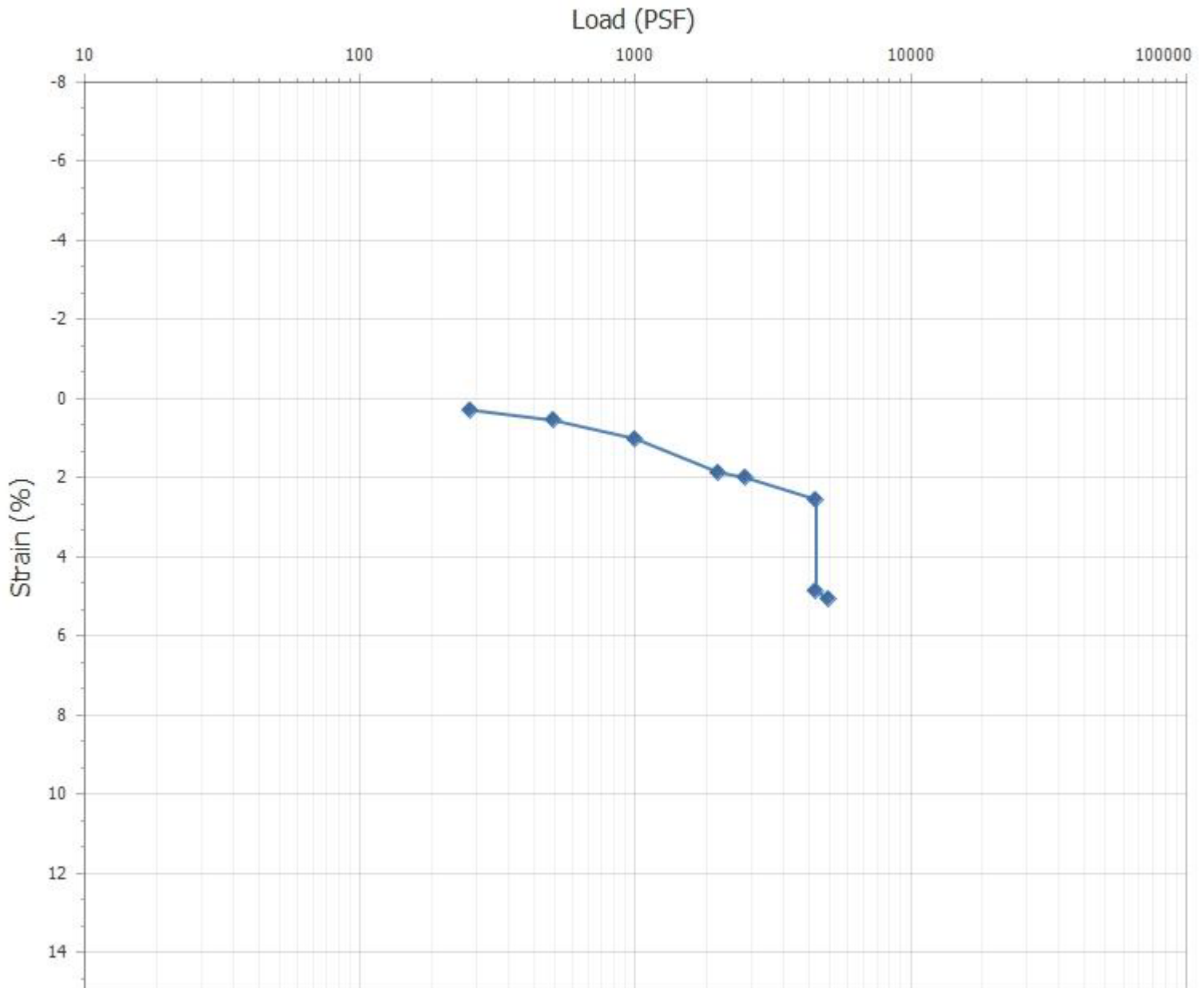


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB11 (Ring 40')

ProTeX Job No: 12804
ProTeX Lab No: 2205282 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB11 - Ring 40'

Moisture Content: 1.7 %

Sample Type: Undisturbed

Dry Unit Weight: 112.6 lb/ft³

Load at Saturation: 4500 PSF

Remarks:

Reviewed By: jgrossarth

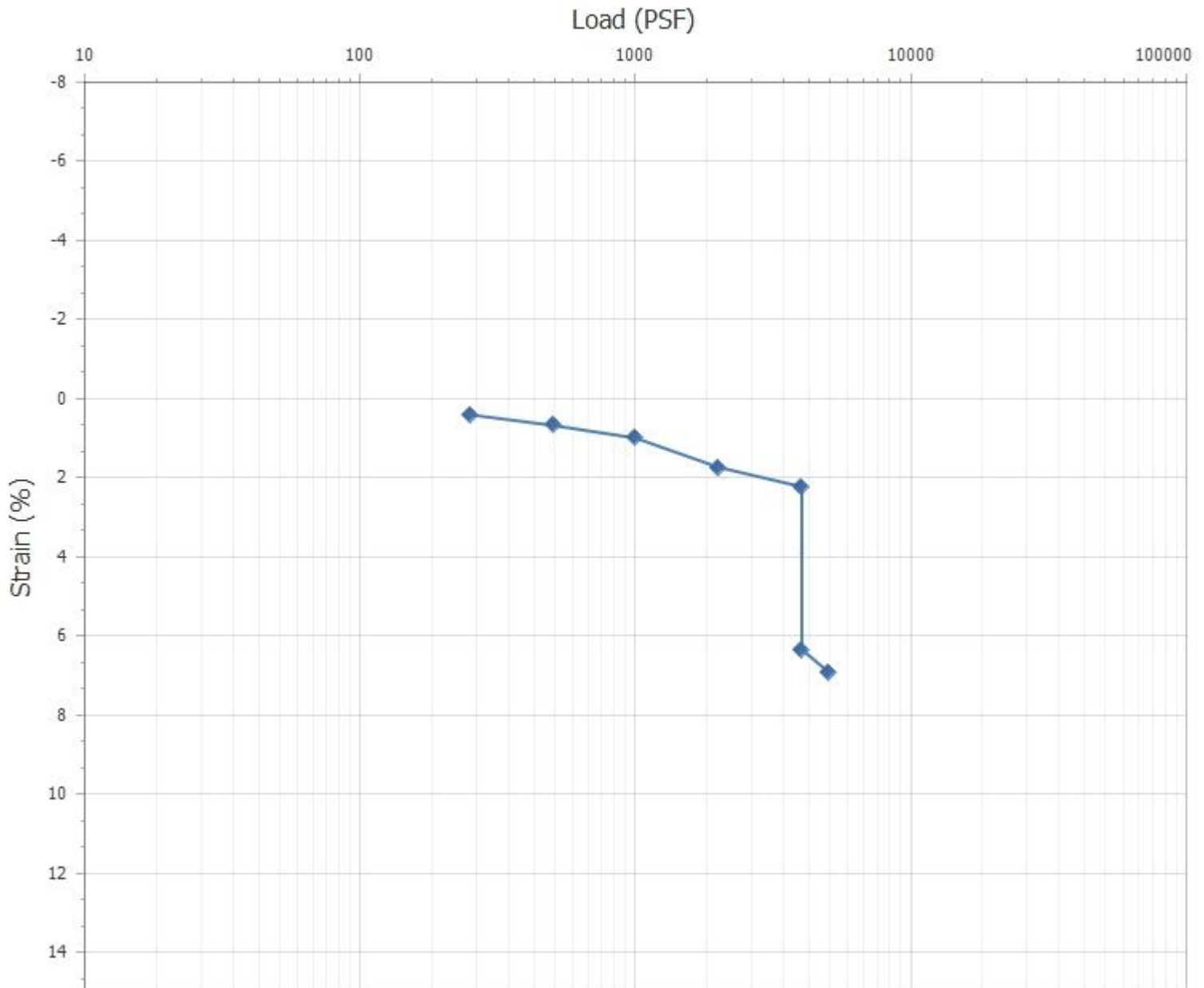


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB12 (Ring 35')

ProTeX Job No: 12804
ProTeX Lab No: 2205283 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB12 - Ring 35'

Moisture Content: 5.8 %

Sample Type: Undisturbed

Dry Unit Weight: 112.1 lb/ft³

Load at Saturation: 4000 PSF

Remarks:

Reviewed By: jgrossarth

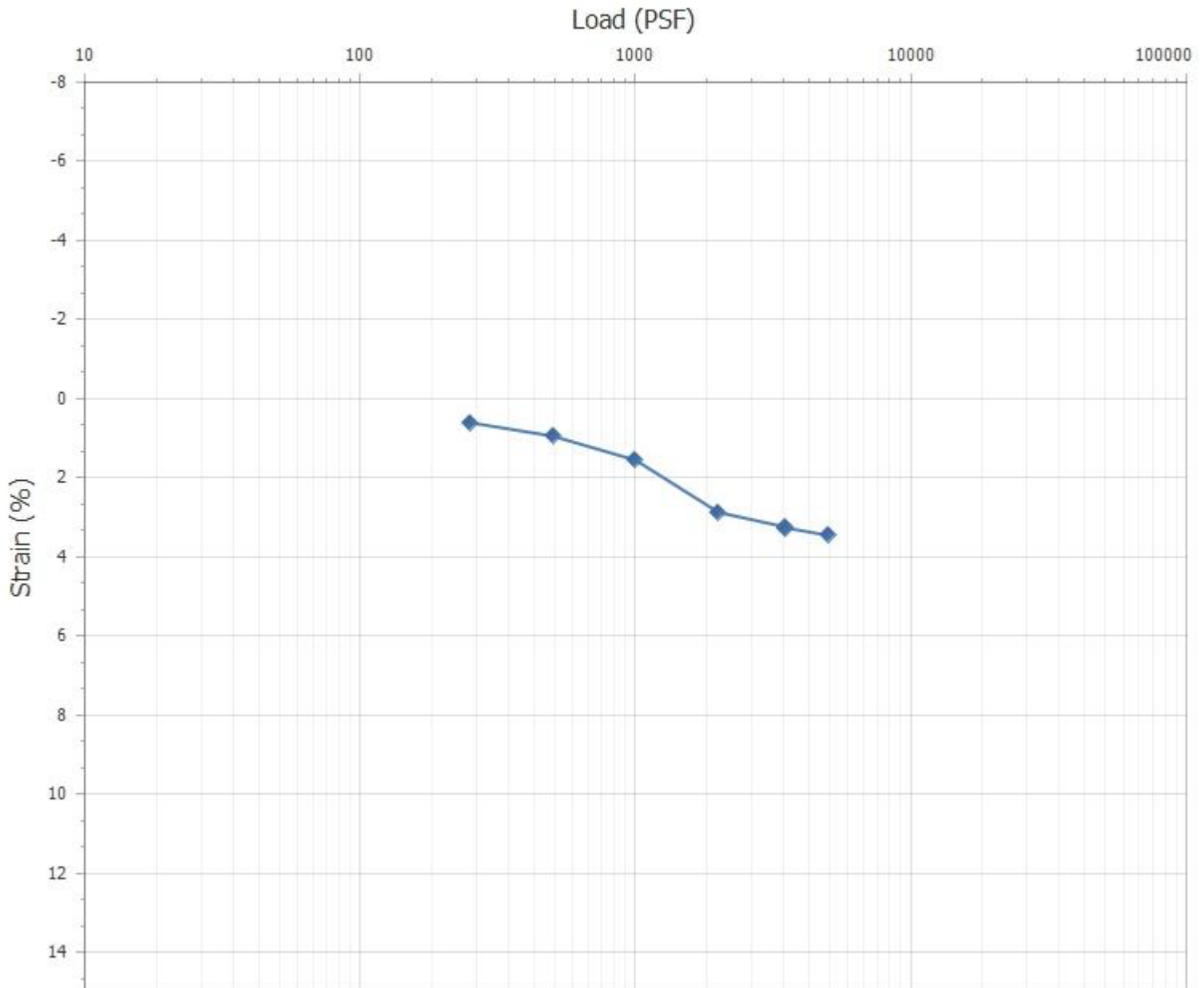


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB13 (Ring 30')

ProTeX Job No: 12804
ProTeX Lab No: 2205284 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa



Source: FB13 - Ring 30'

Moisture Content: 13.8 %

Sample Type: Undisturbed

Dry Unit Weight: 115.3 lb/ft³

Load at Saturation: 3500 PSF

Remarks:

Reviewed By: jgrossarth

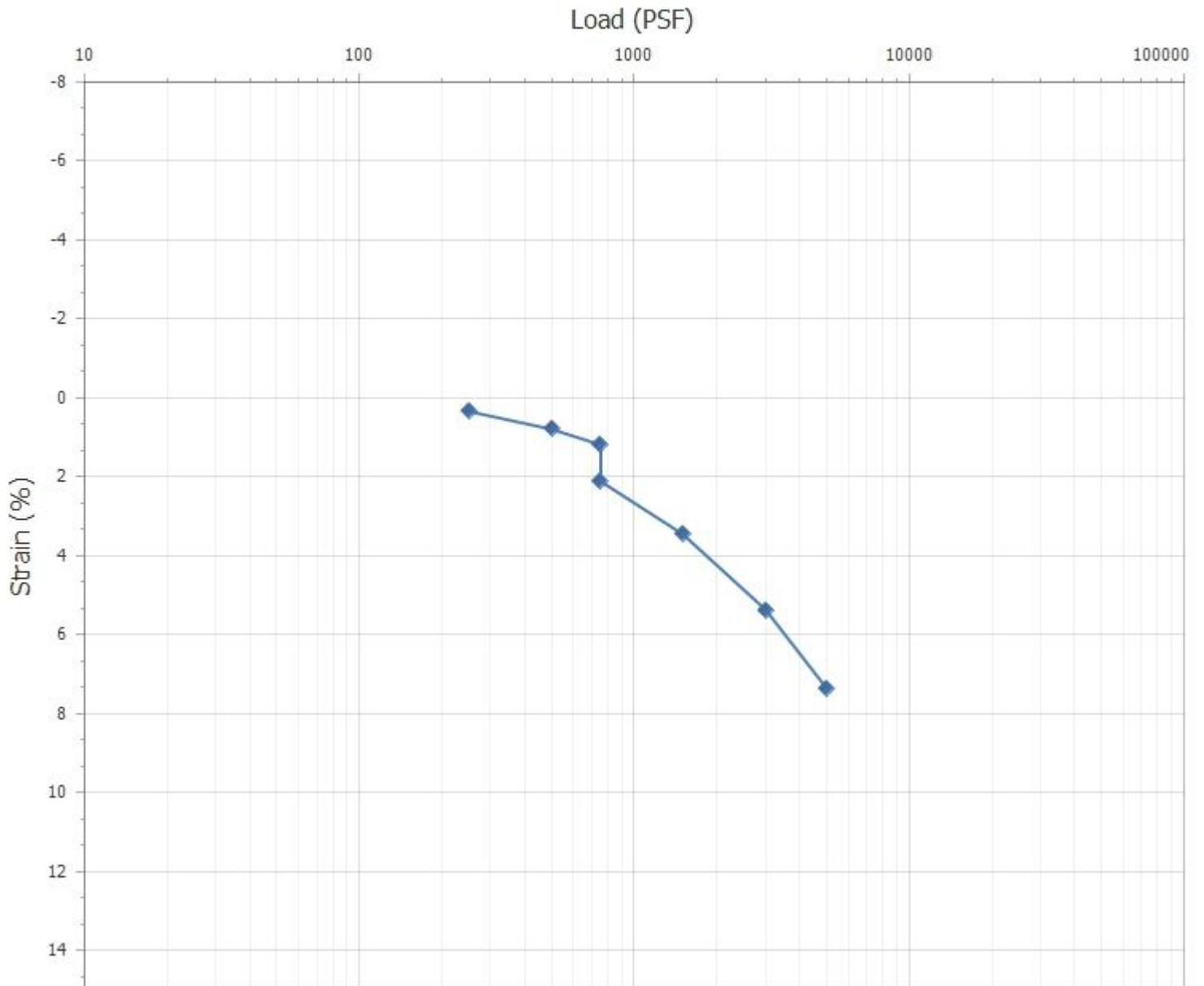


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2208470 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 10'

Moisture Content: 4.0 %

Sample Type: Undisturbed

Dry Unit Weight: 107.6 lb/ft³

Load at Saturation: 0 PSF

Remarks:

Reviewed By: jgrossarth

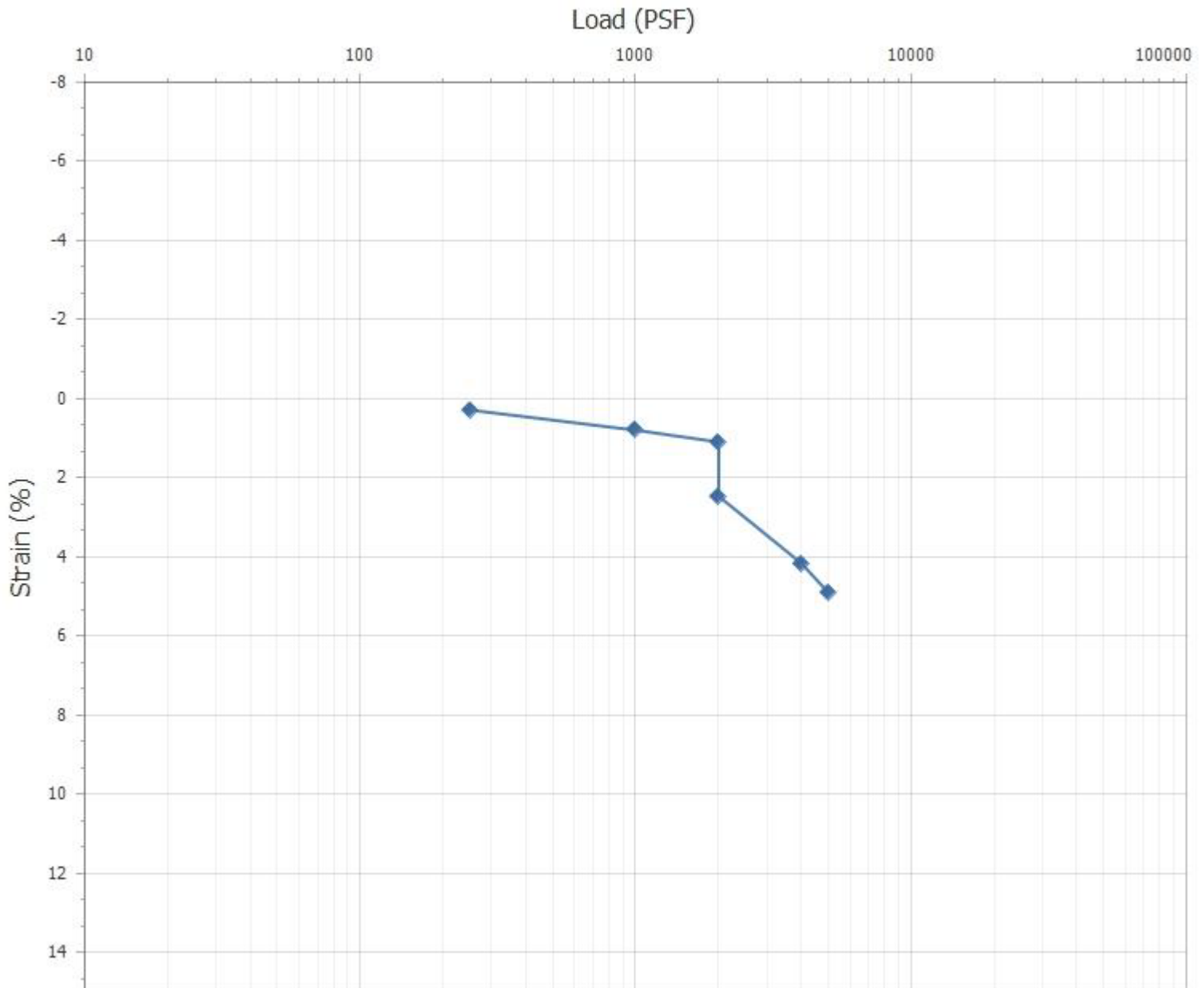


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 15')

ProTeX Job No: 12804
ProTeX Lab No: 2208471 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 15'

Moisture Content: 5.2 %

Sample Type: Undisturbed

Dry Unit Weight: 110.1 lb/ft³

Load at Saturation: 2000 PSF

Remarks:

Reviewed By: jgrossarth

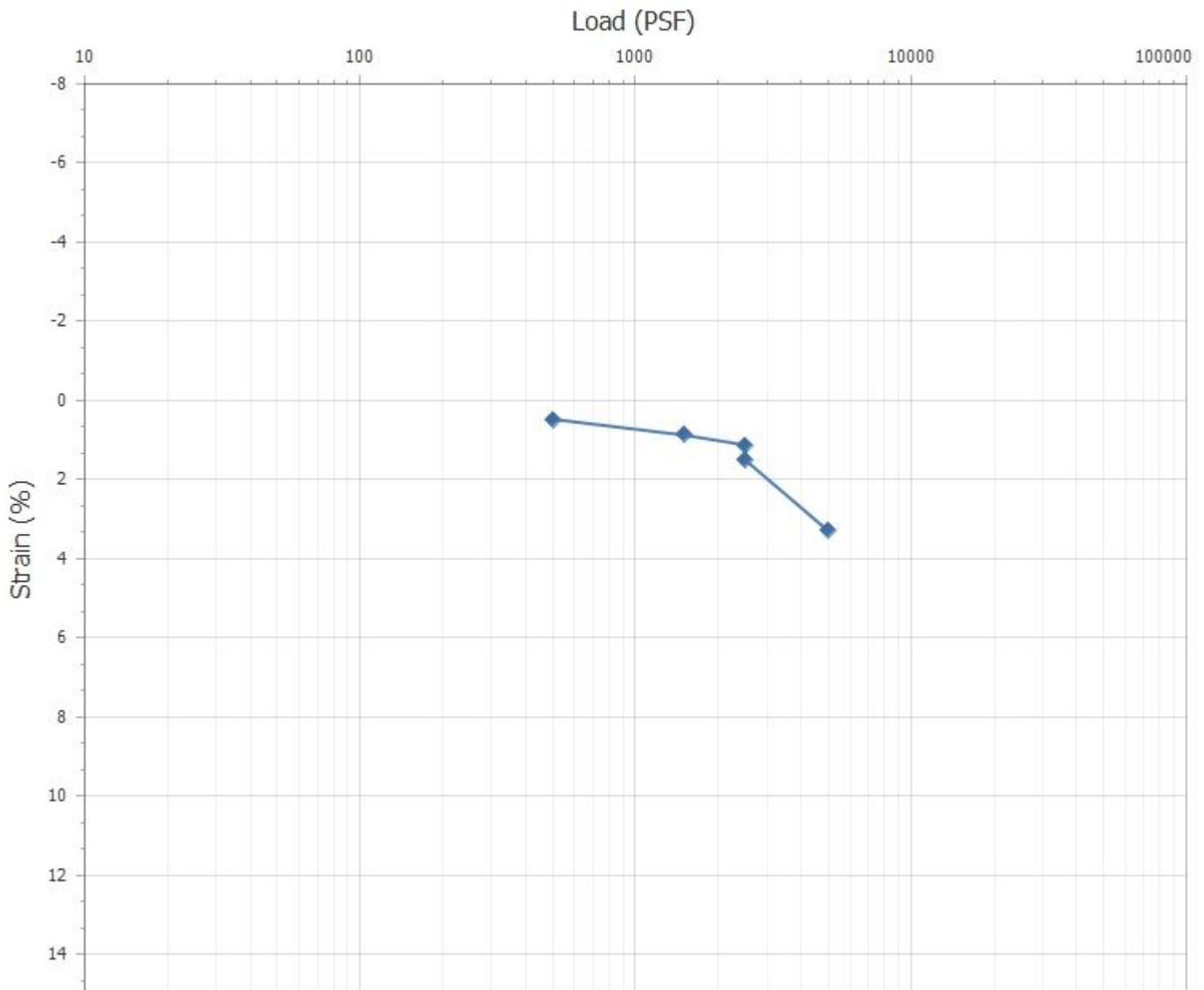


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2208472 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 20'

Moisture Content: 6.3 %

Sample Type: Undisturbed

Dry Unit Weight: 111.3 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

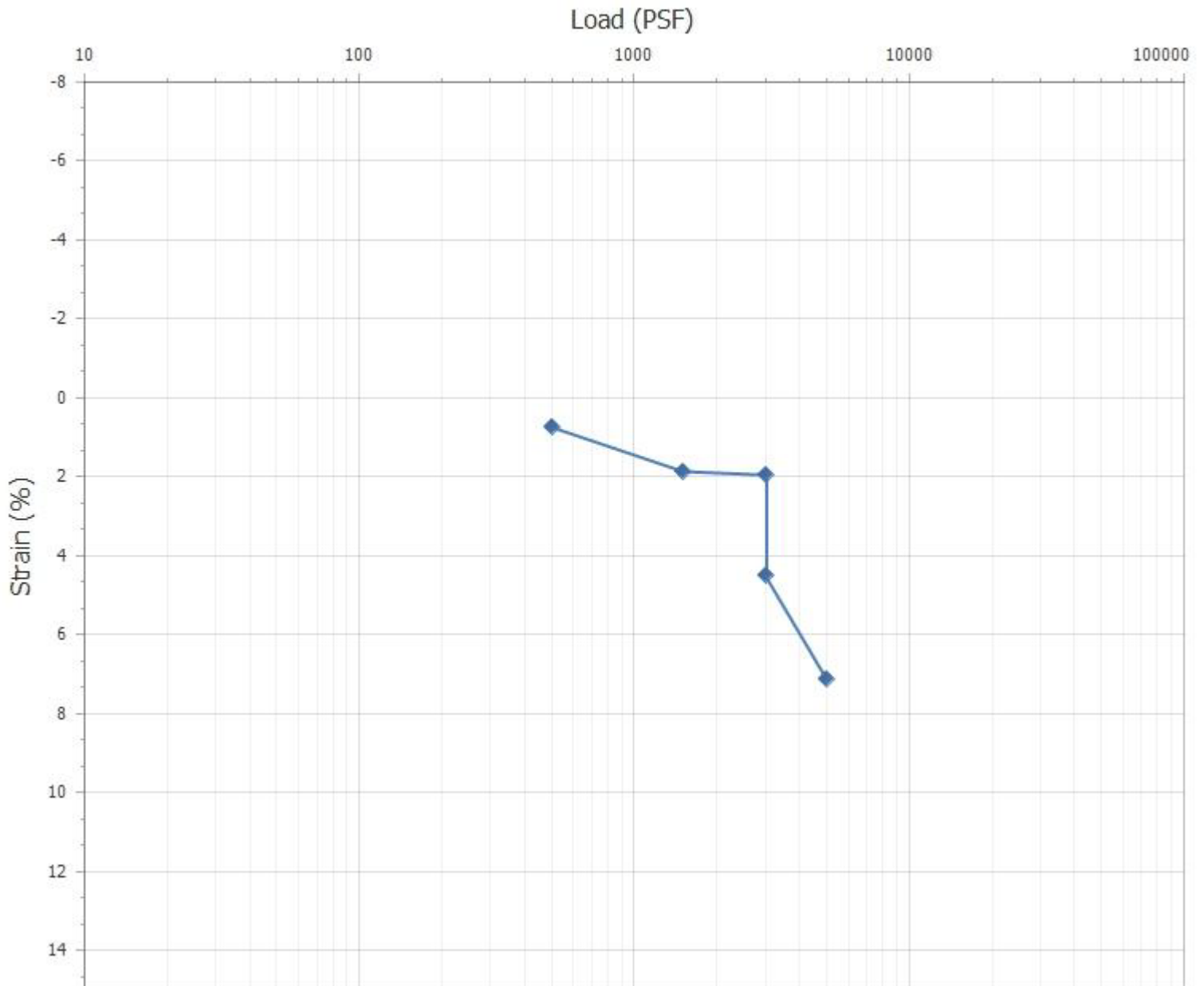


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2208473 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 25'

Moisture Content: 21.3 %

Sample Type: Undisturbed

Dry Unit Weight: 99.0 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

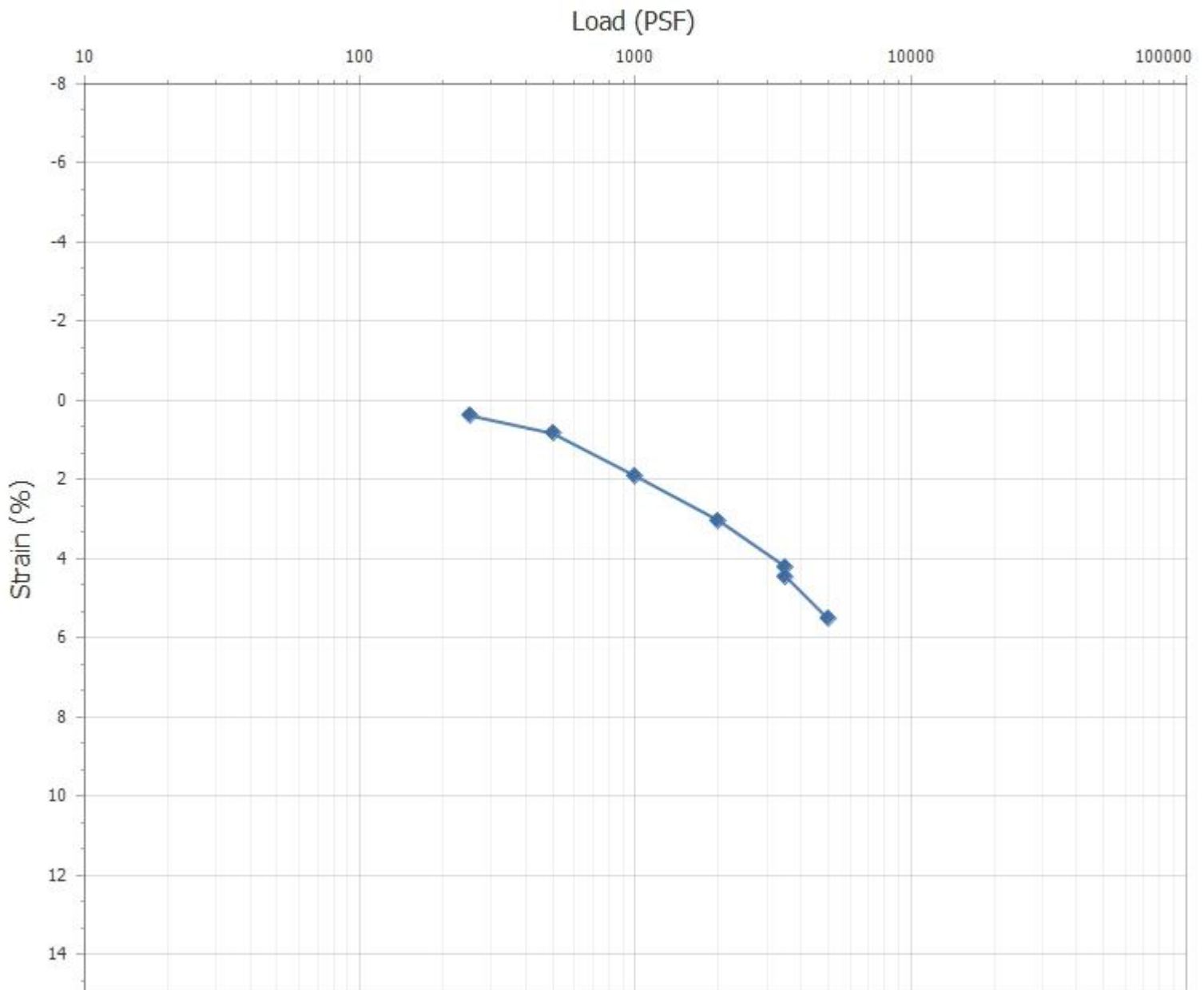


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 30')

ProTeX Job No: 12804
ProTeX Lab No: 2208474 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 30'

Moisture Content: 15.9 %

Sample Type: Undisturbed

Dry Unit Weight: 107.2 lb/ft³

Load at Saturation: 3500 PSF

Remarks:

Reviewed By: jgrossarth

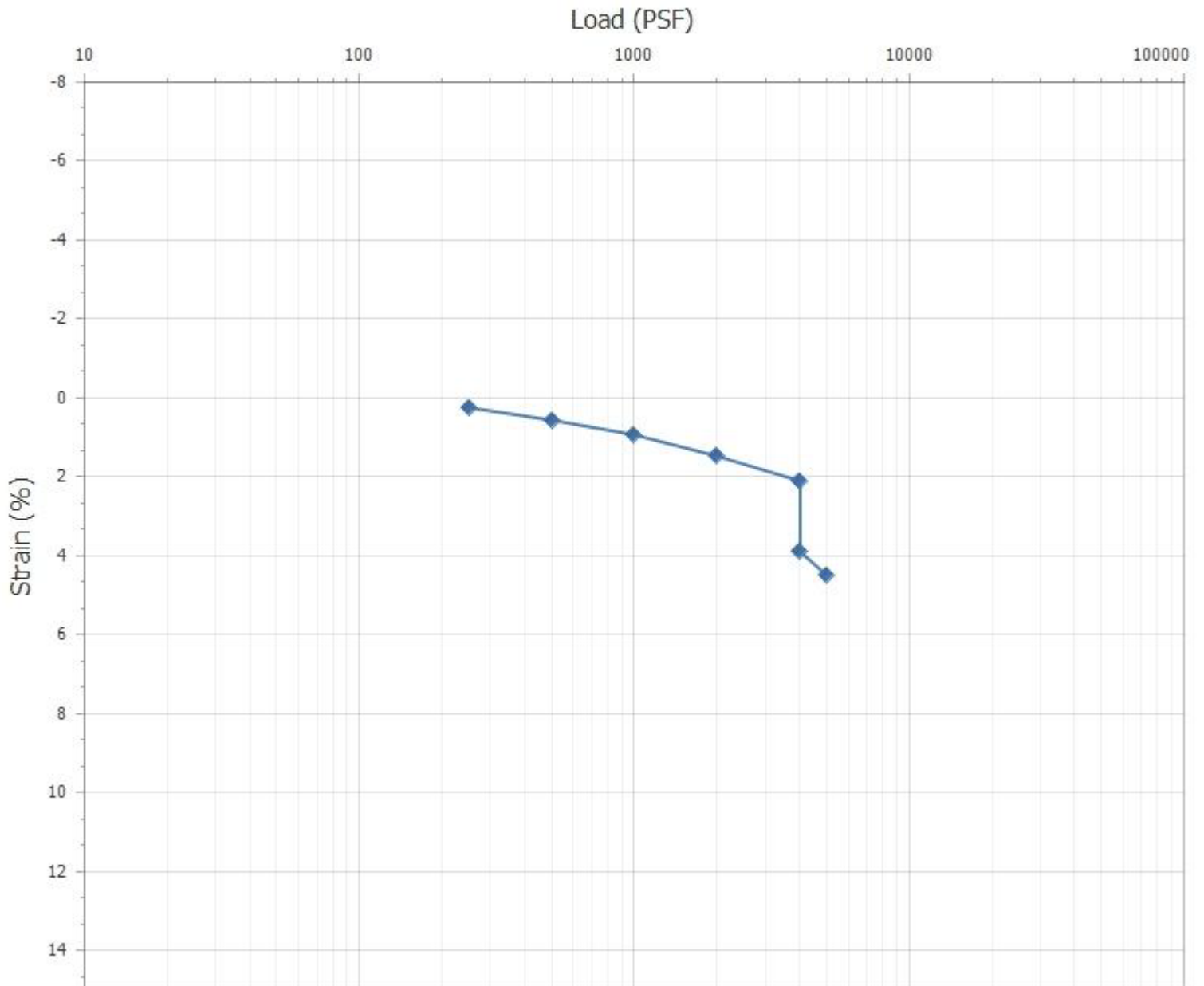


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 35')

ProTeX Job No: 12804
ProTeX Lab No: 2208475 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 35'

Moisture Content: 6.8 %

Sample Type: Undisturbed

Dry Unit Weight: 114.8 lb/ft³

Load at Saturation: 4000 PSF

Remarks:

Reviewed By: jgrossarth

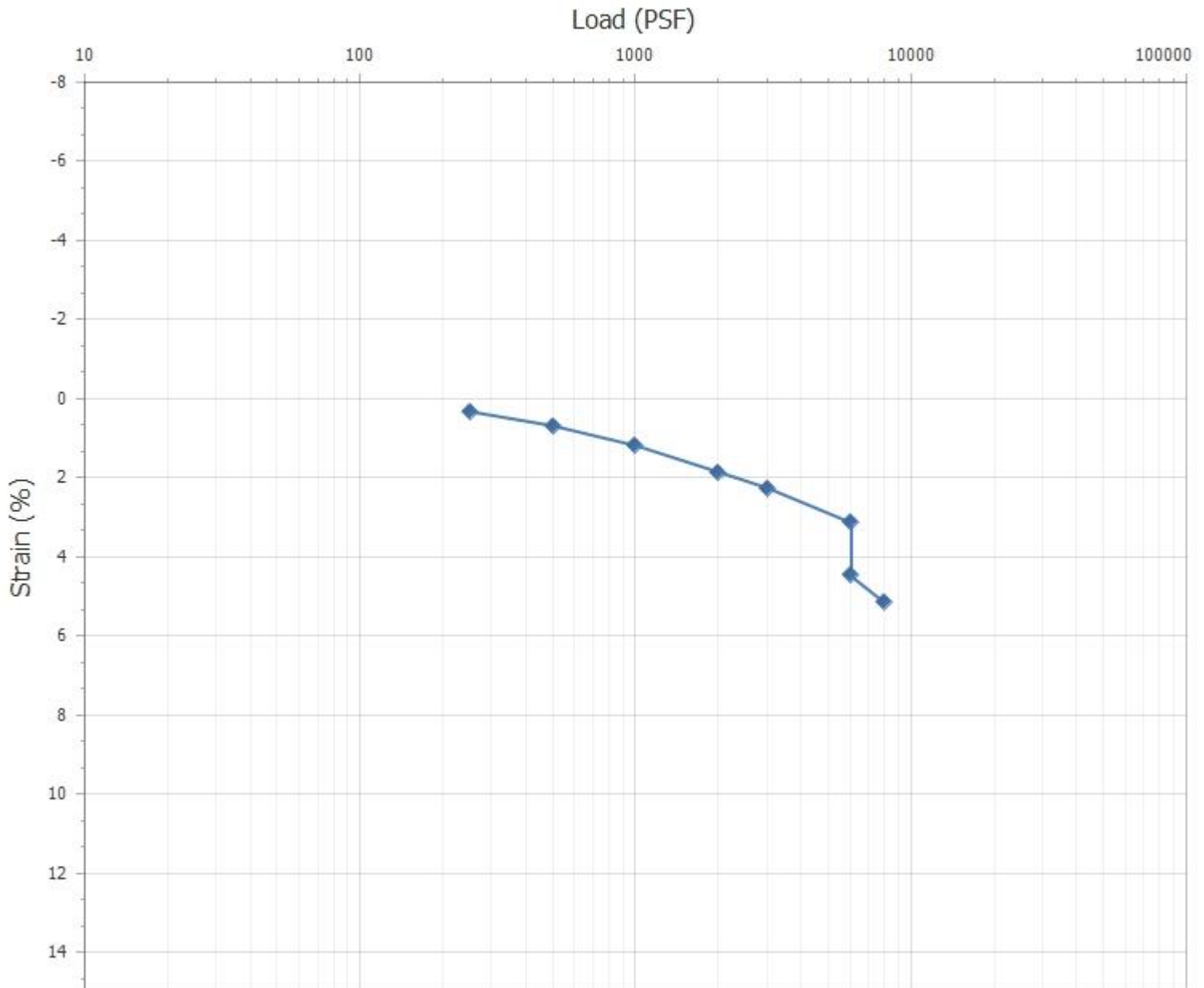


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 50')

ProTeX Job No: 12804
ProTeX Lab No: 2208477 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 50'

Moisture Content: 9.1 %

Sample Type: Undisturbed

Dry Unit Weight: 112.8 lb/ft³

Load at Saturation: 6000 PSF

Remarks:

Reviewed By: jgrossarth

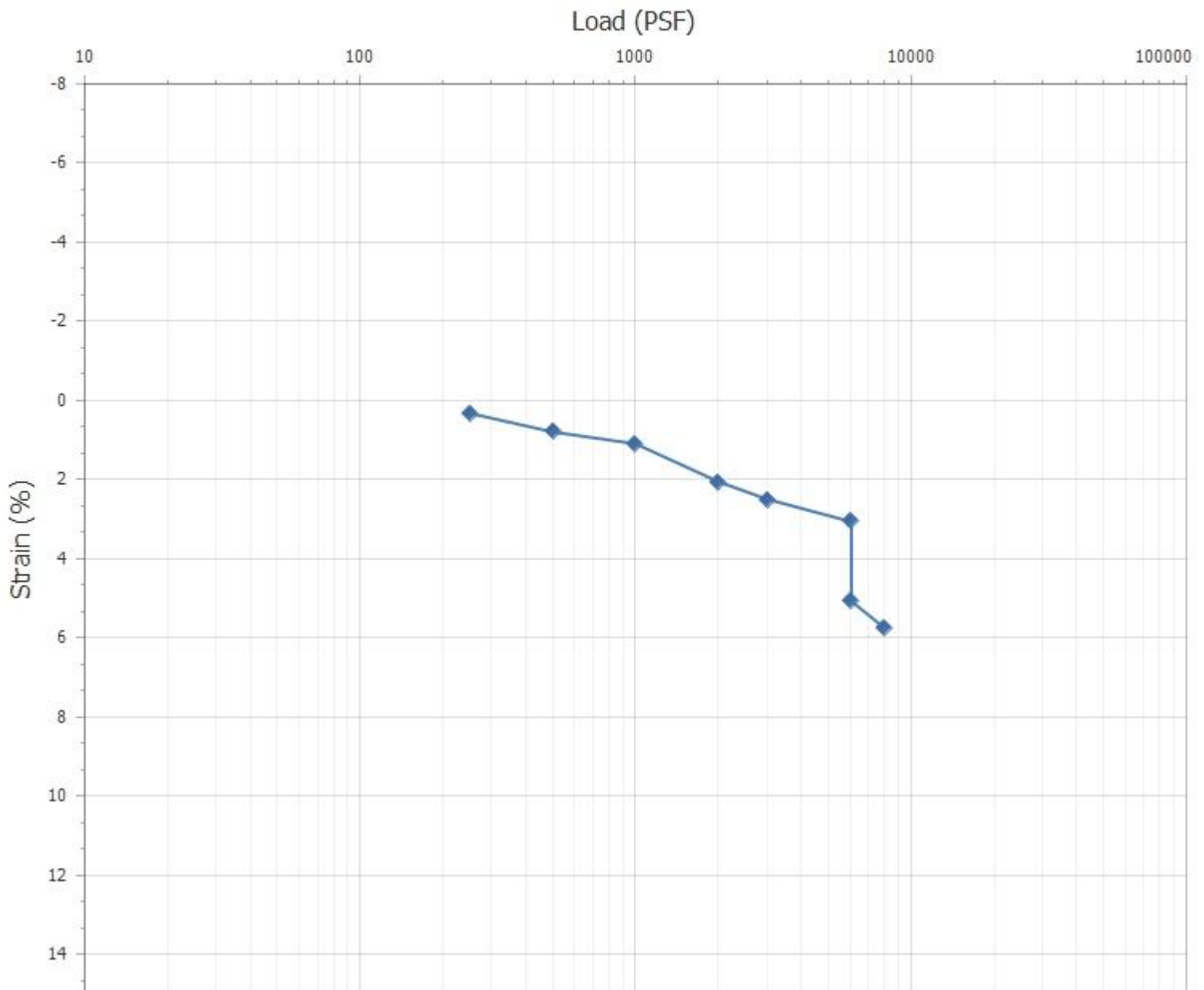


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 55')

ProTeX Job No: 12804
ProTeX Lab No: 2208478 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 55'

Moisture Content: 3.7 %

Sample Type: Undisturbed

Dry Unit Weight: 112.7 lb/ft³

Load at Saturation: 6000 PSF

Remarks:

Reviewed By: jgrossarth

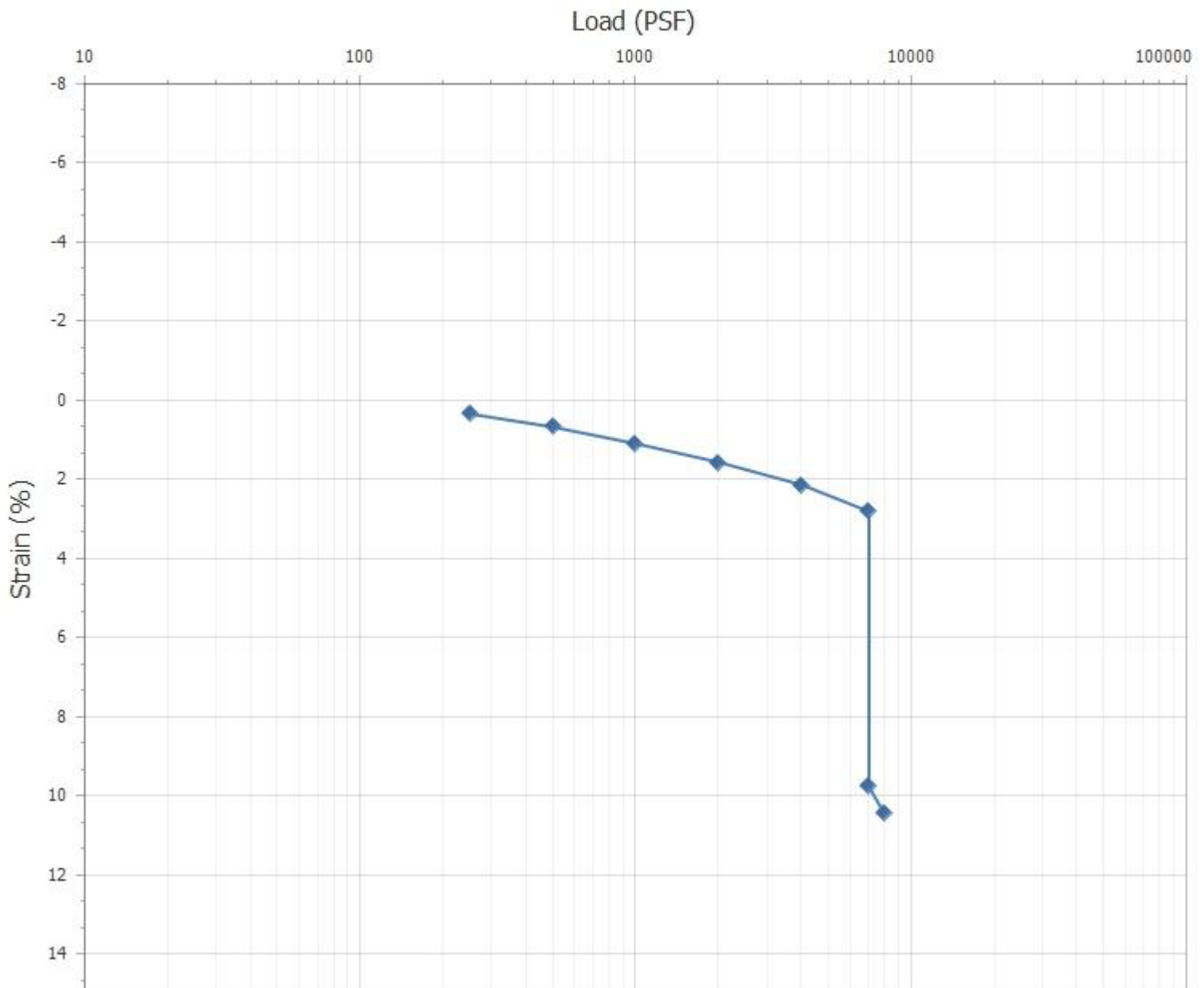


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 60')

ProTeX Job No: 12804
ProTeX Lab No: 2208479 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 60'

Moisture Content: 6.2 %

Sample Type: Undisturbed

Dry Unit Weight: 101.7 lb/ft³

Load at Saturation: 7000 PSF

Remarks:

Reviewed By: jgrossarth

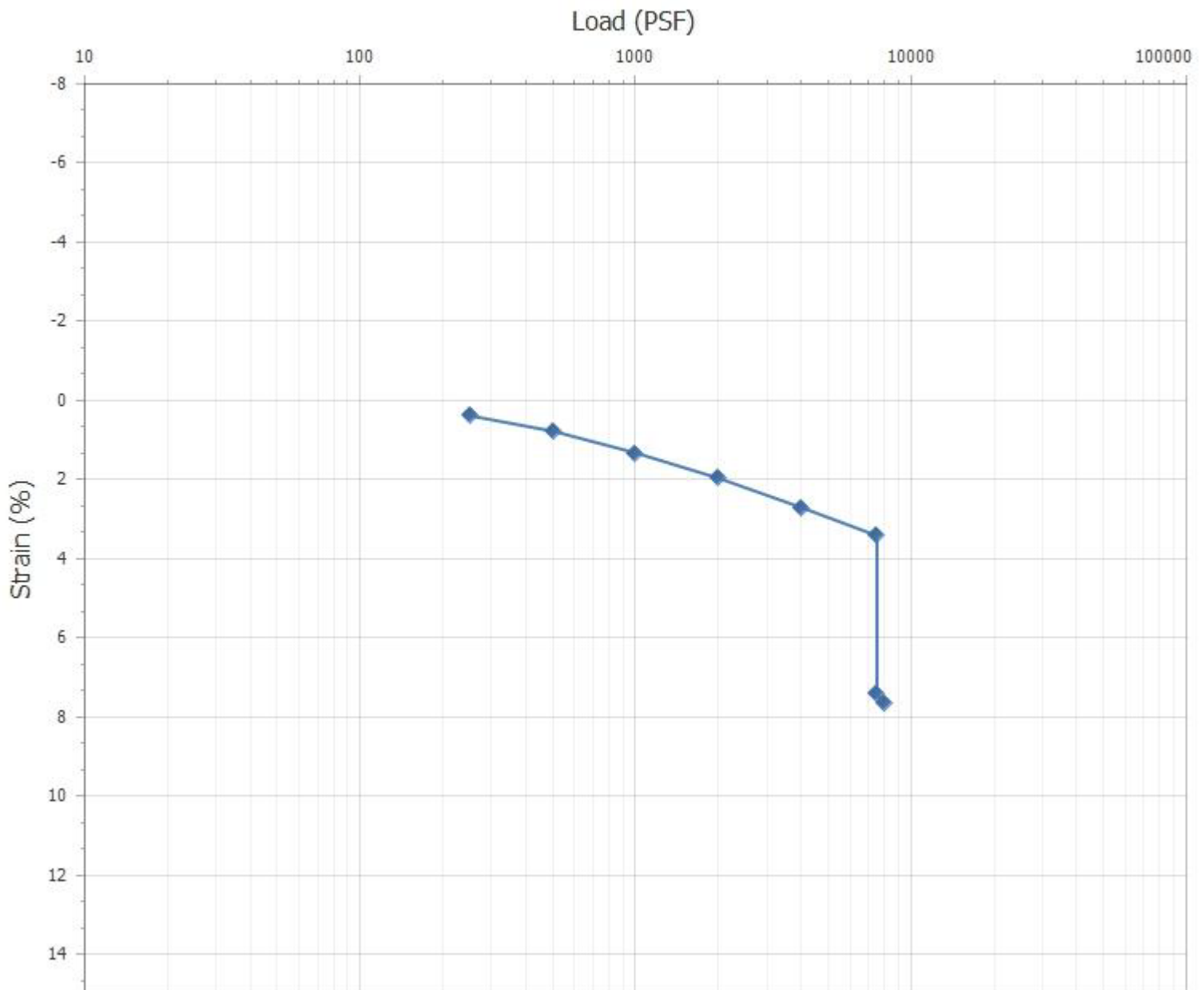


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (Ring 65')

ProTeX Job No: 12804
ProTeX Lab No: 2208480 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB14 - Ring 65'

Moisture Content: 6.1 %

Sample Type: Undisturbed

Dry Unit Weight: 107.0 lb/ft³

Load at Saturation: 0 PSF

Remarks:

Reviewed By: jgrossarth

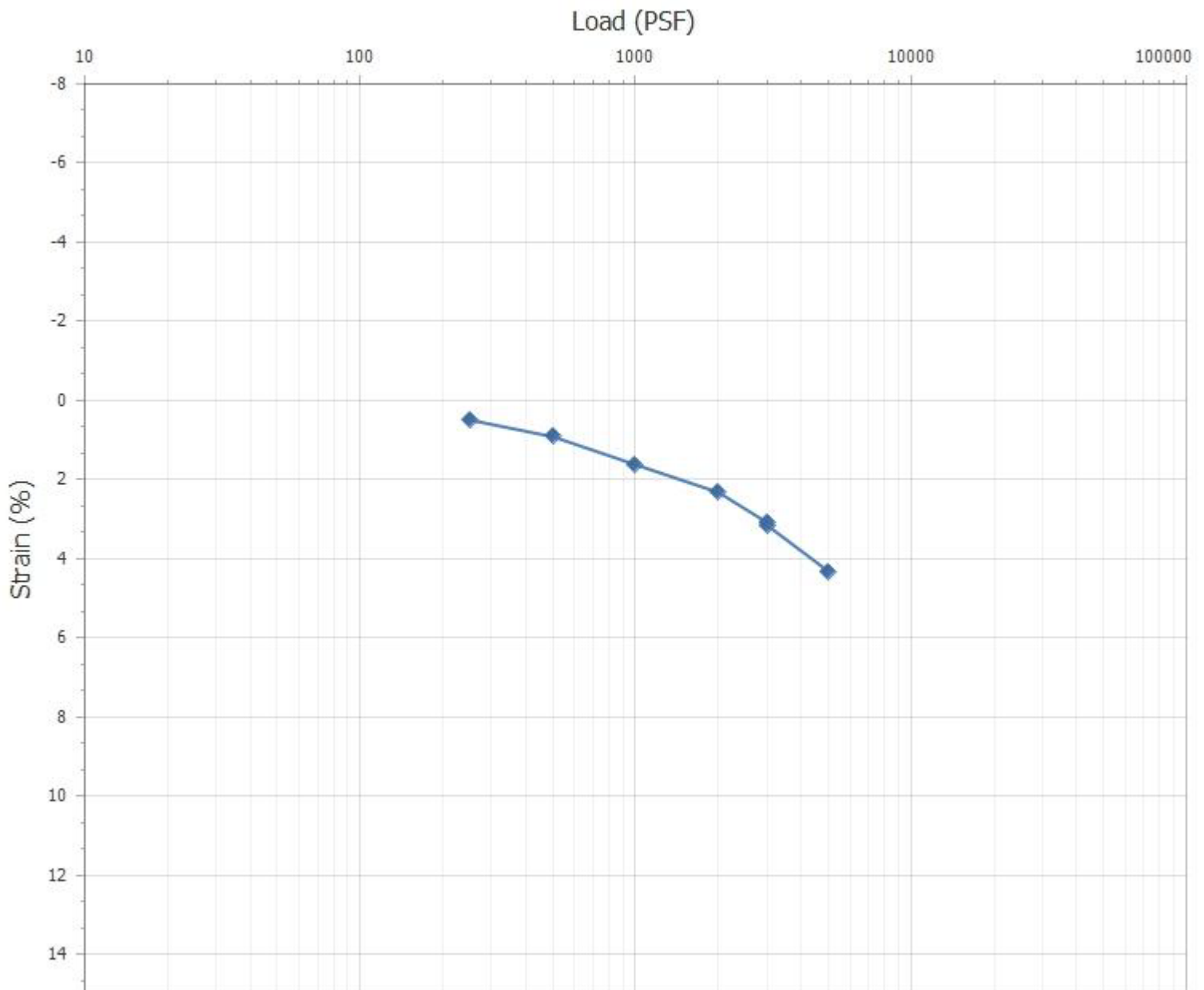


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2208485 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB15 - Ring 25'

Moisture Content: 20.6 %

Sample Type: Undisturbed

Dry Unit Weight: 99.4 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

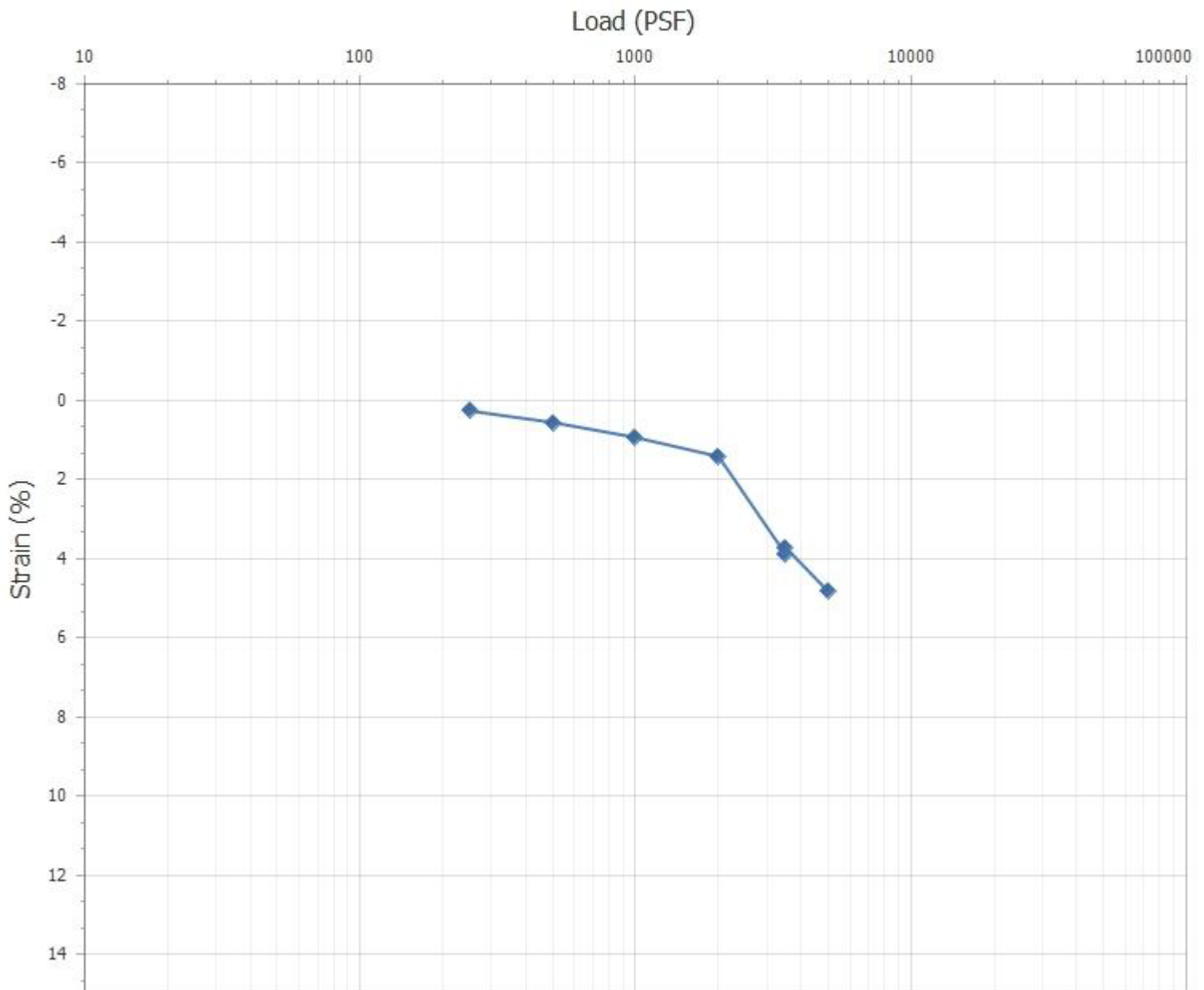


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (Ring 30')

ProTeX Job No: 12804
ProTeX Lab No: 2208486 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB15 - Ring 30'

Moisture Content: 4.9 %

Sample Type: Undisturbed

Dry Unit Weight: 111.9 lb/ft³

Load at Saturation: 3500 PSF

Remarks:

Reviewed By: jgrossarth

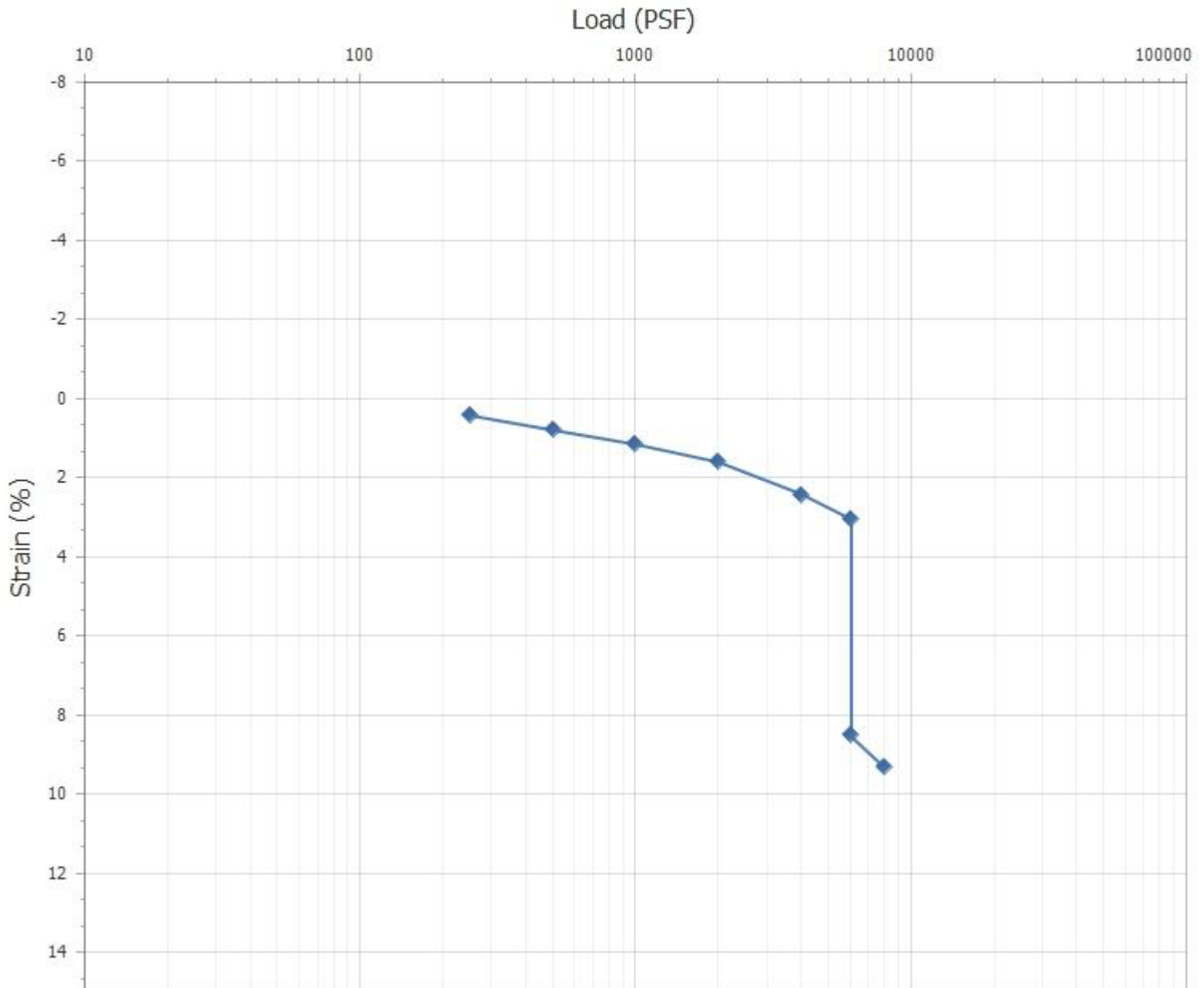


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (Ring 50')

ProTeX Job No: 12804
ProTeX Lab No: 2208489 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa



Source: FB15 - Ring 50'

Moisture Content: 6.2 %

Sample Type: Undisturbed

Dry Unit Weight: 102.9 lb/ft³

Load at Saturation: 6000 PSF

Remarks:

Reviewed By: jgrossarth

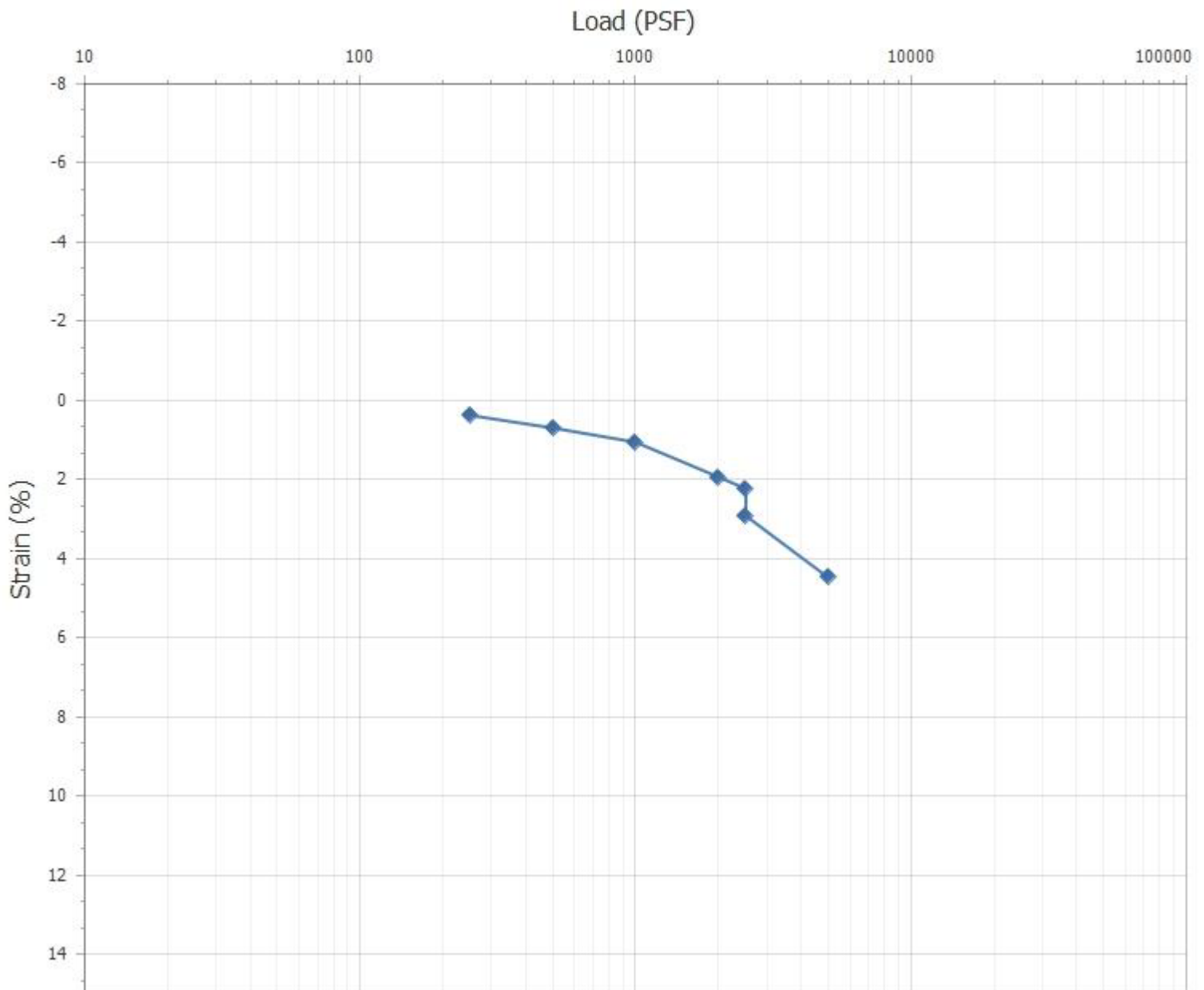


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2208504 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy



Source: FB16 - Ring 20'

Moisture Content: 6.4 %

Sample Type: Undisturbed

Dry Unit Weight: 110.6 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

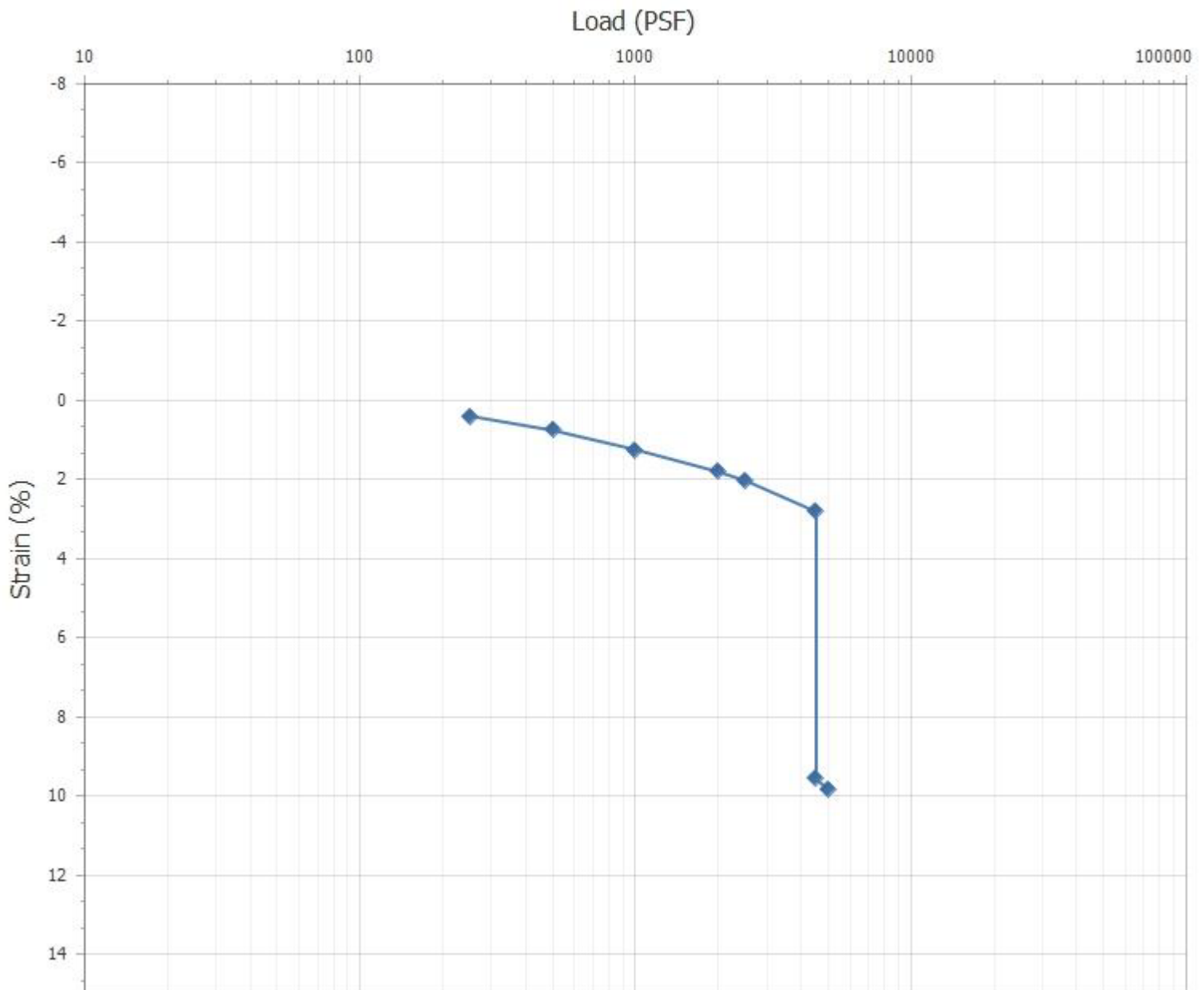


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (Ring 40')

ProTeX Job No: 12804
ProTeX Lab No: 2208508 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy



Source: FB16 - Ring 40'

Moisture Content: 4.6 %

Sample Type: Undisturbed

Dry Unit Weight: 109.4 lb/ft³

Load at Saturation: 4500 PSF

Remarks:

Reviewed By: jgrossarth

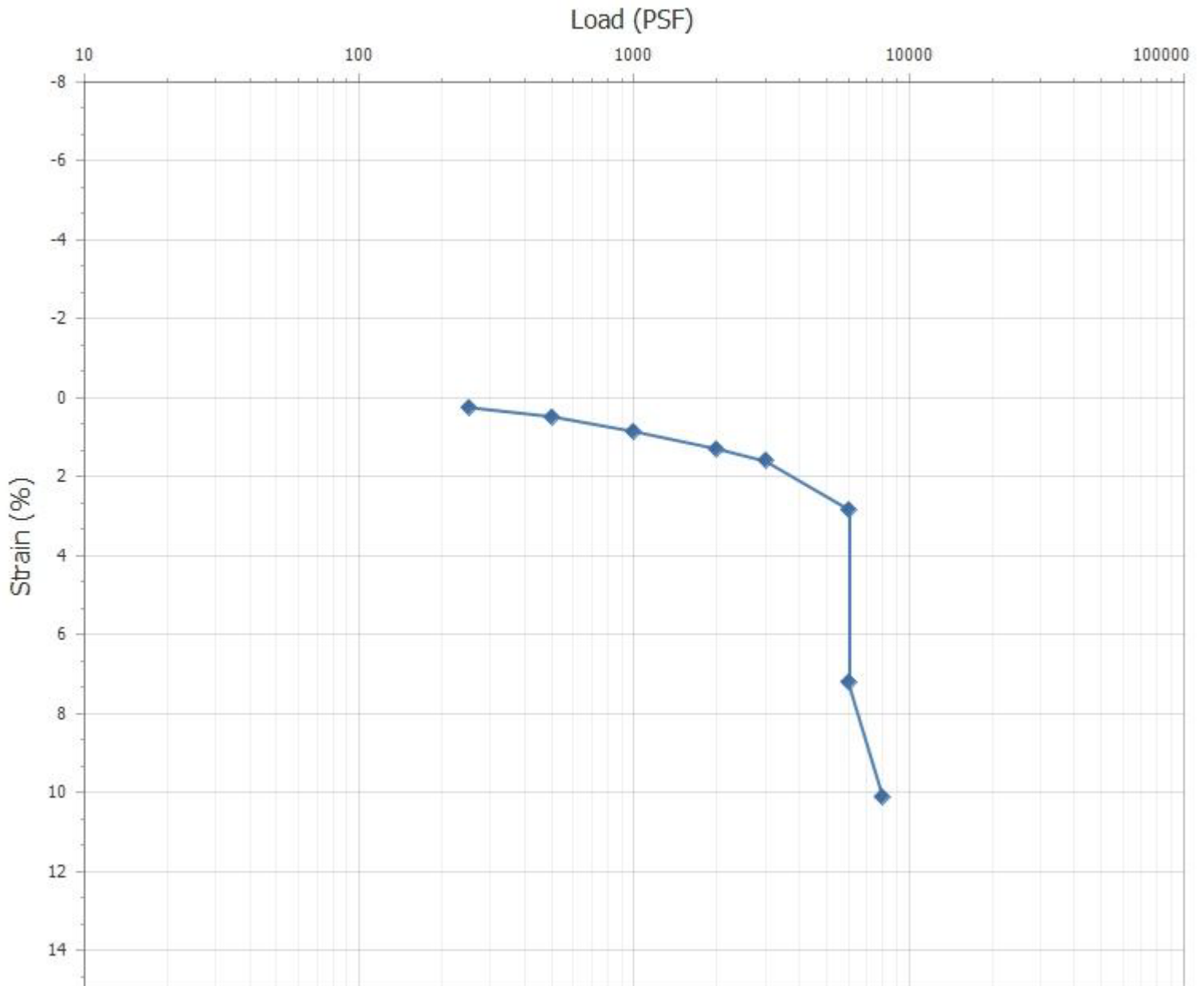


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (Ring 50')

ProTeX Job No: 12804
ProTeX Lab No: 2208510 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy



Source: FB16 - Ring 50'

Moisture Content: 8.1 %

Sample Type: Undisturbed

Dry Unit Weight: 92.7 lb/ft³

Load at Saturation: 6000 PSF

Remarks:

Reviewed By: jgrossarth

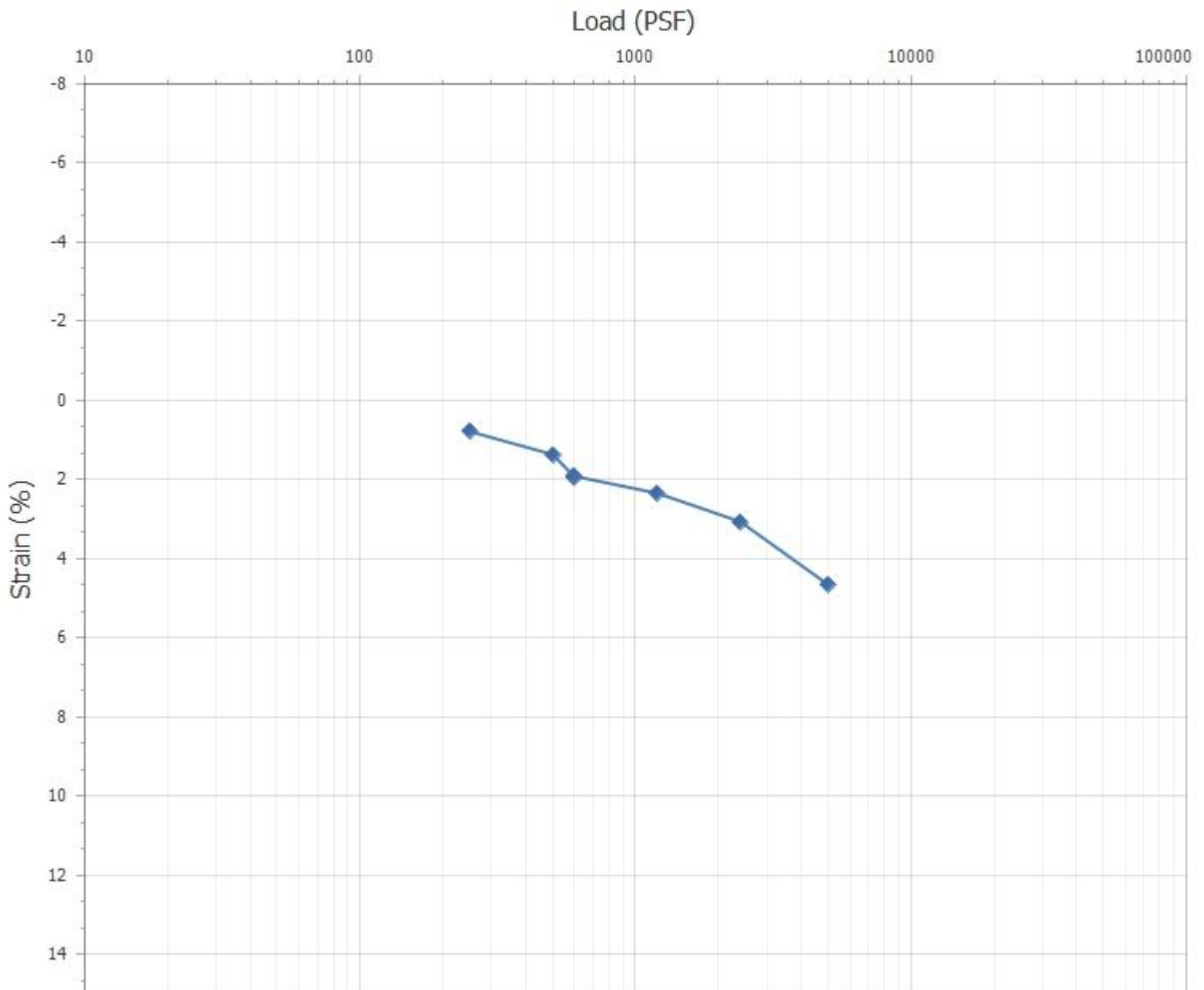


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 2.5')

ProTeX Job No: 12804
ProTeX Lab No: 2208528 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 2.5'

Moisture Content: 10.2 %

Sample Type: Undisturbed

Dry Unit Weight: 120.4 lb/ft³

Load at Saturation: 600 PSF

Remarks:

Reviewed By: jgrossarth

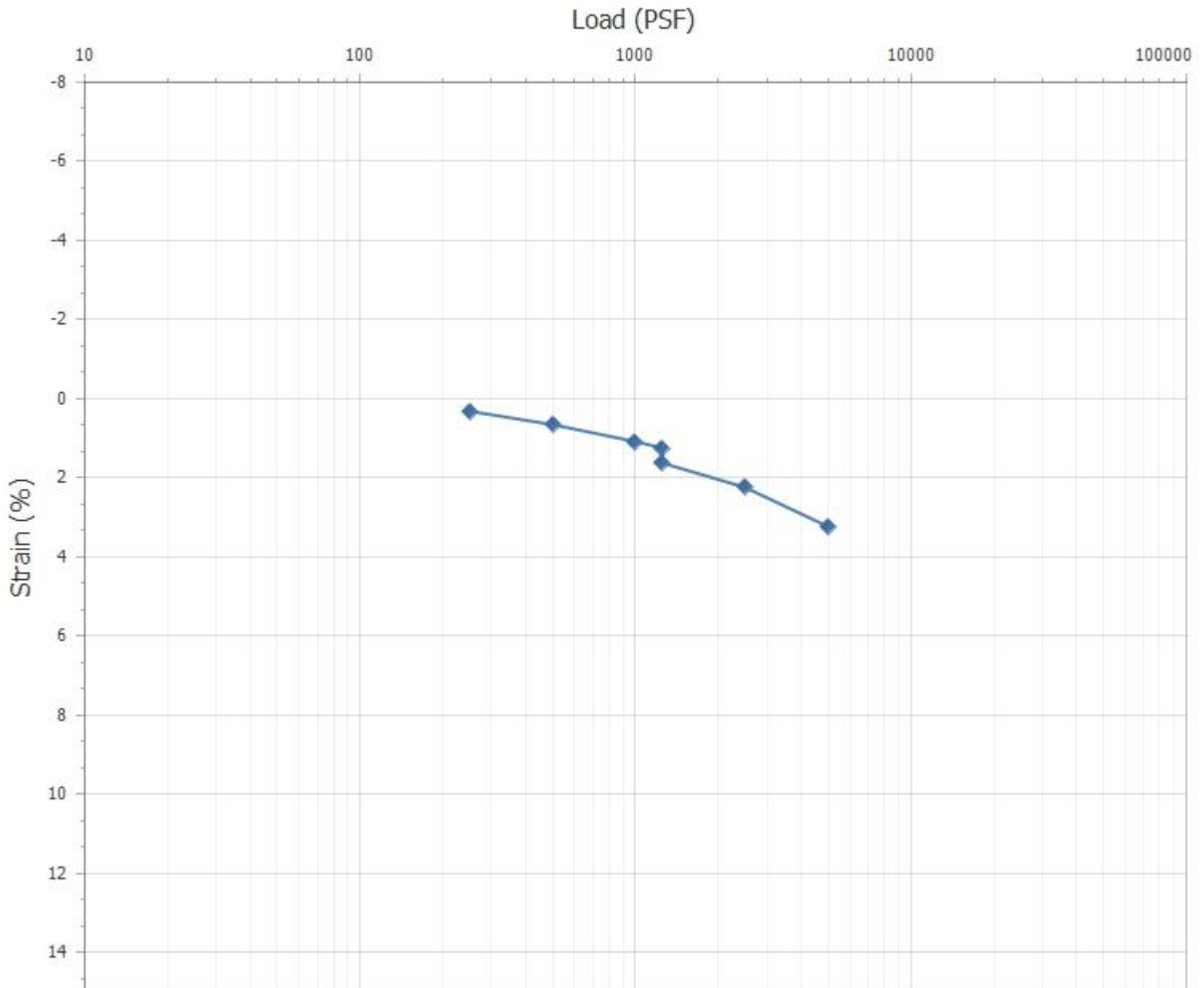


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 5')

ProTeX Job No: 12804
ProTeX Lab No: 2208529 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 5'

Moisture Content: 3.7 %

Sample Type: Undisturbed

Dry Unit Weight: 105.1 lb/ft³

Load at Saturation: 1250 PSF

Remarks:

Reviewed By: jgrossarth

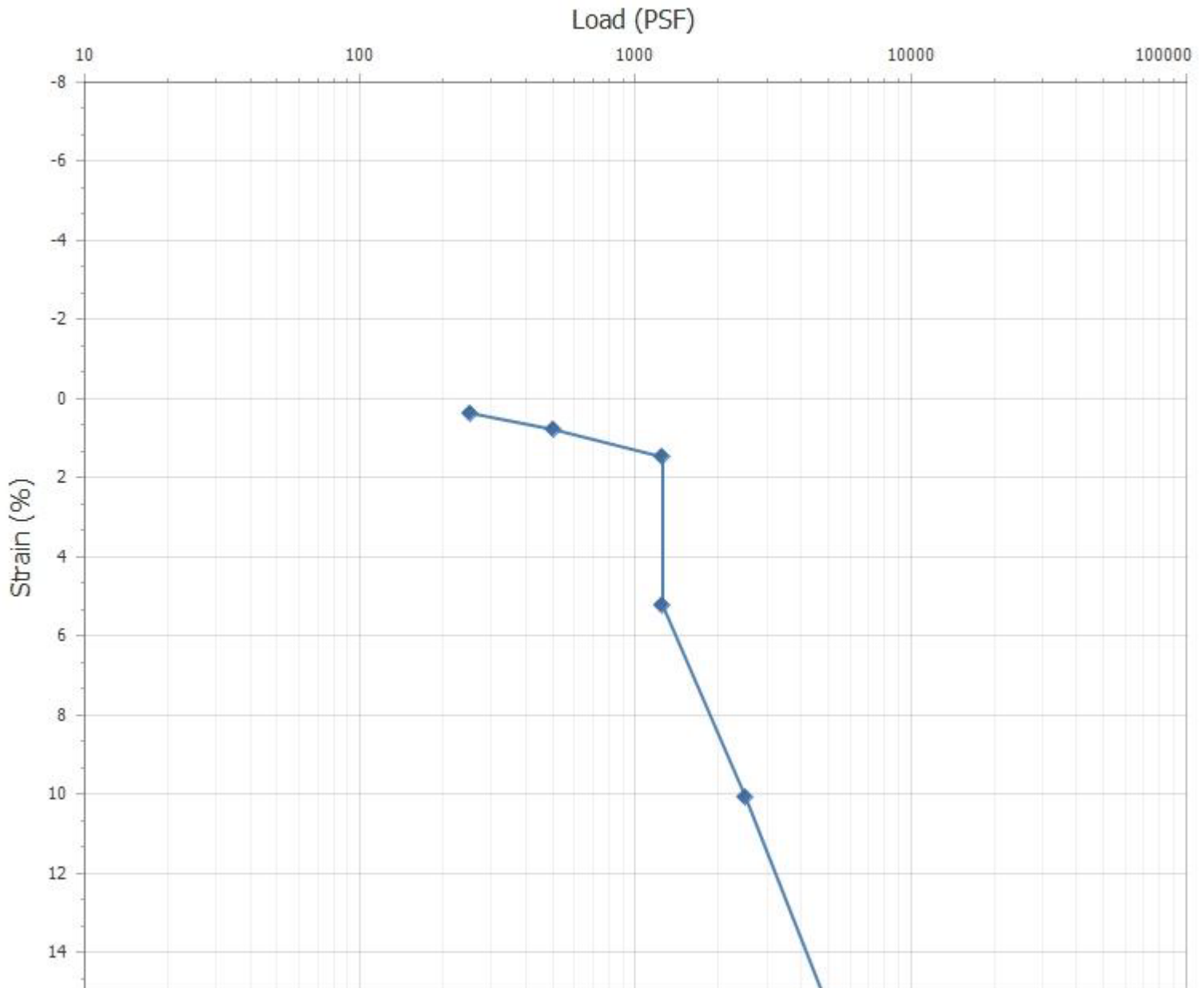


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2208530 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 10'

Moisture Content: 20.6 %

Sample Type: Undisturbed

Dry Unit Weight: 85.1 lb/ft³

Load at Saturation: 1250 PSF

Remarks:

Reviewed By: jgrossarth

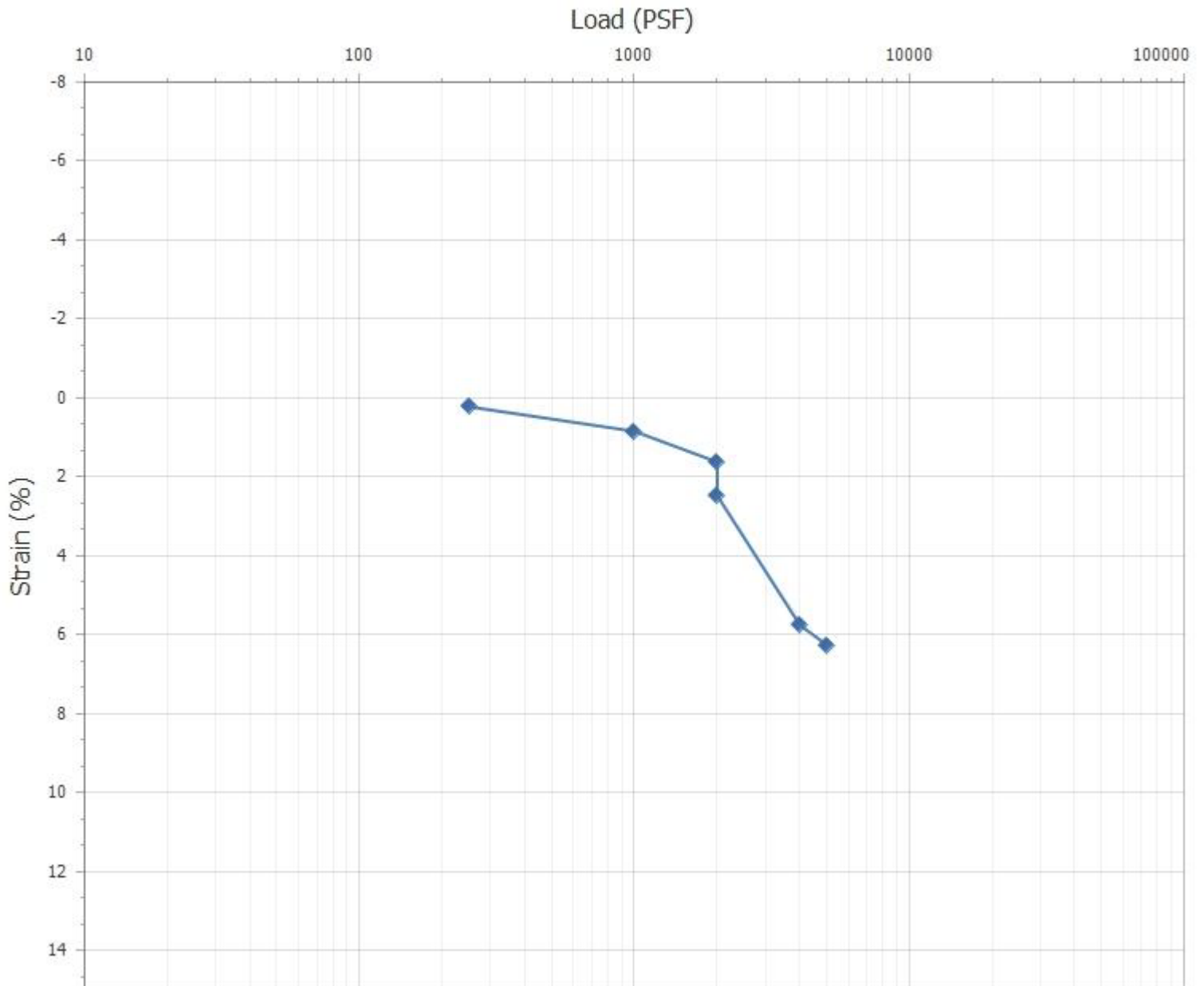


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 15')

ProTeX Job No: 12804
ProTeX Lab No: 2208531 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 15'

Moisture Content: 17.0 %

Sample Type: Undisturbed

Dry Unit Weight: 86.5 lb/ft³

Load at Saturation: 2000 PSF

Remarks:

Reviewed By: jgrossarth

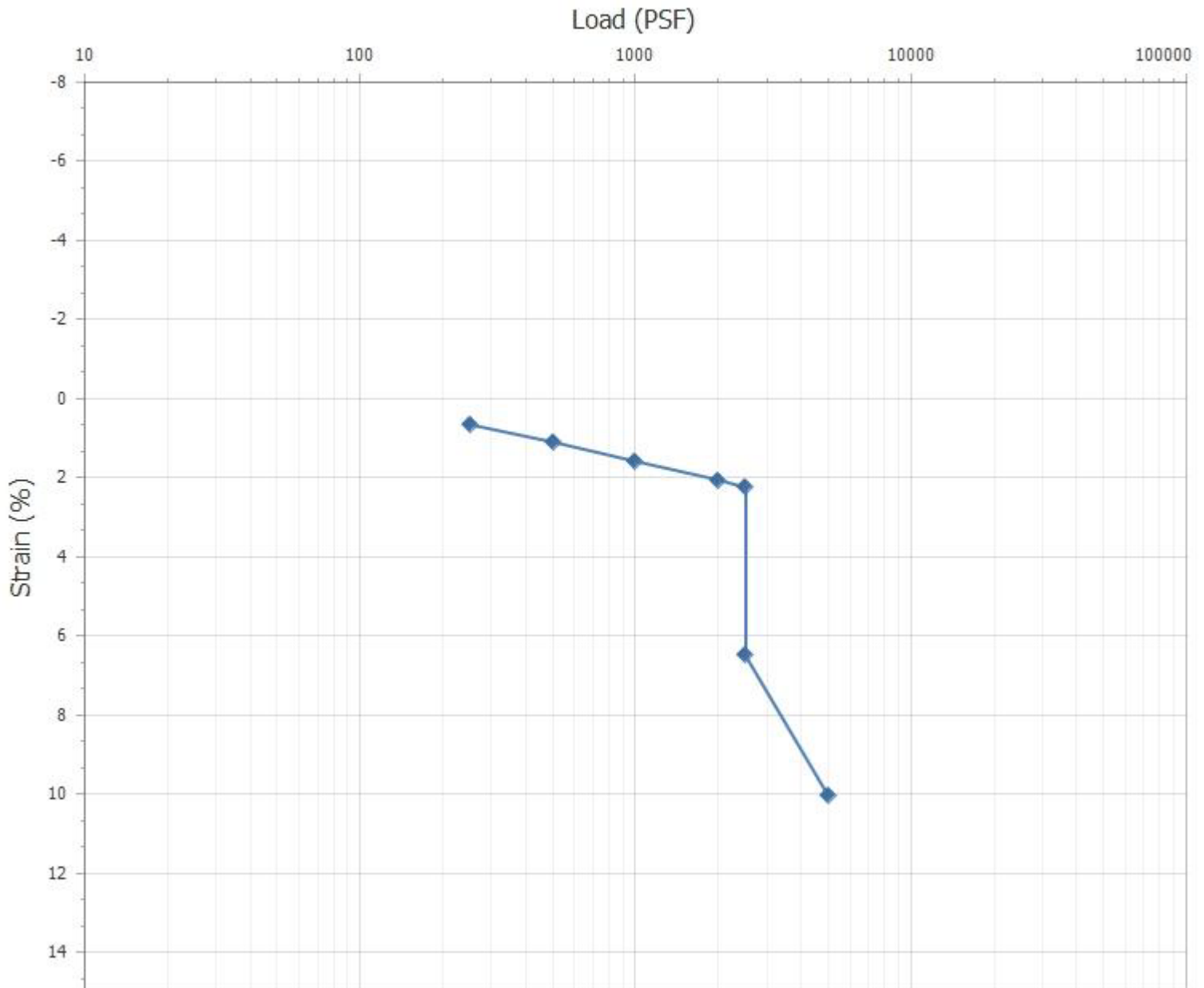


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2208532 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 20'

Moisture Content: 5.9 %

Sample Type: Undisturbed

Dry Unit Weight: 97.7 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth

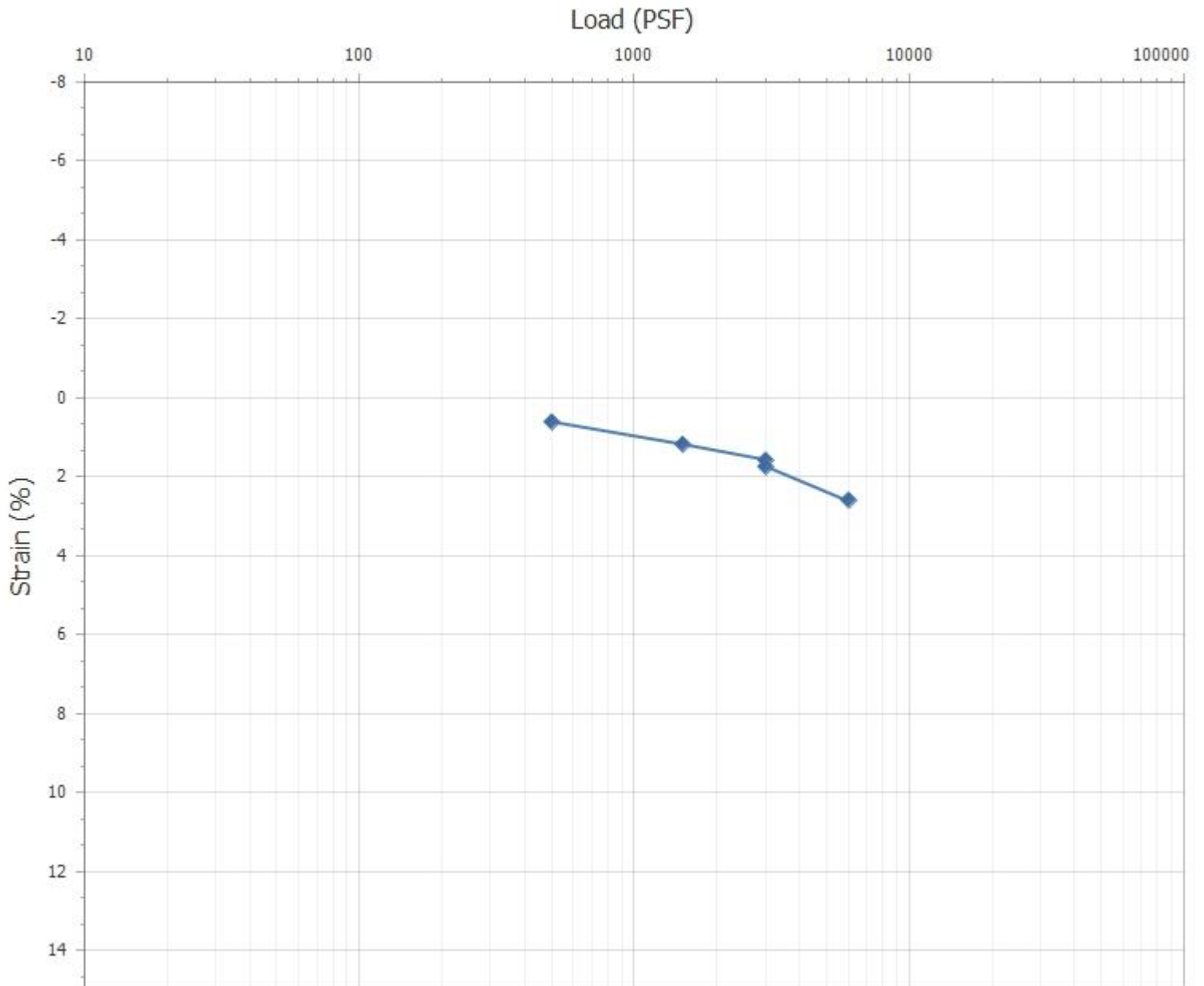


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 25')

ProTeX Job No: 12804
ProTeX Lab No: 2208533 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 25'

Moisture Content: 7.1 %

Sample Type: Undisturbed

Dry Unit Weight: 89.7 lb/ft³

Load at Saturation: 3000 PSF

Remarks:

Reviewed By: jgrossarth

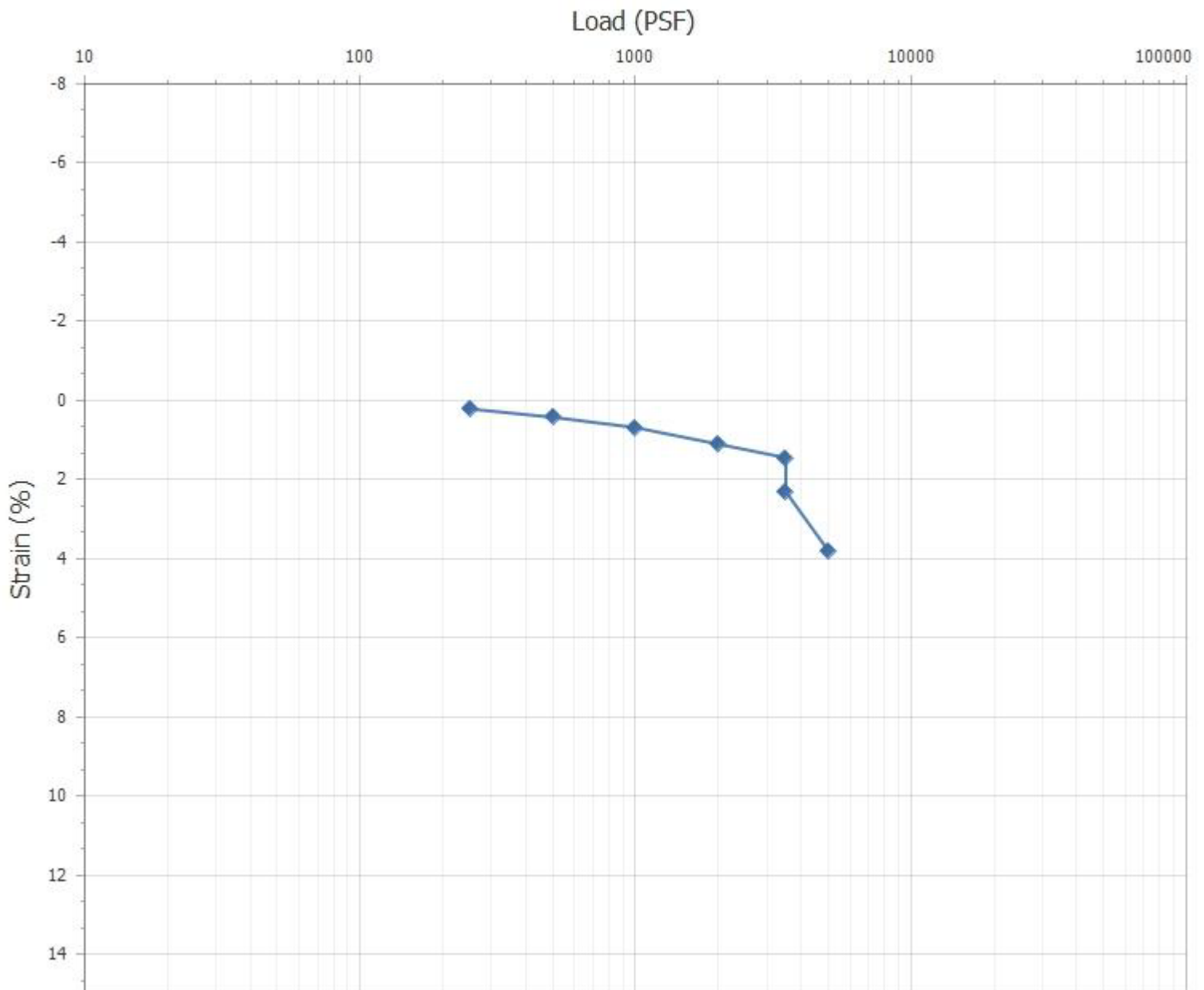


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 30')

ProTeX Job No: 12804
ProTeX Lab No: 2208534 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 30'

Moisture Content: 6.6 %

Sample Type: Undisturbed

Dry Unit Weight: 94.2 lb/ft³

Load at Saturation: 3500 PSF

Remarks:

Reviewed By: jgrossarth

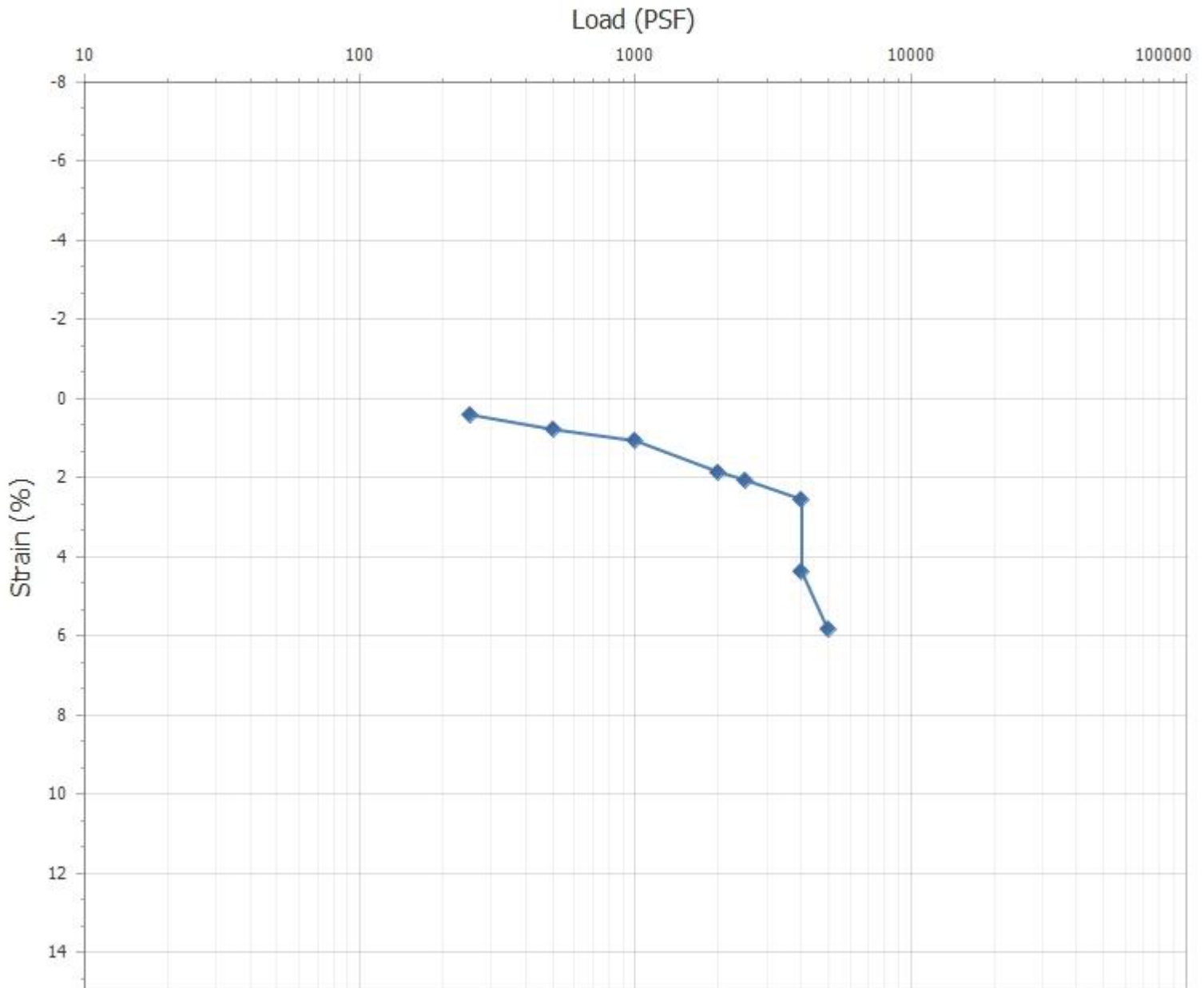


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 35')

ProTeX Job No: 12804
ProTeX Lab No: 2208535 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 35'

Moisture Content: 13.0 %

Sample Type: Undisturbed

Dry Unit Weight: 80.6 lb/ft³

Load at Saturation: 4000 PSF

Remarks:

Reviewed By: jgrossarth

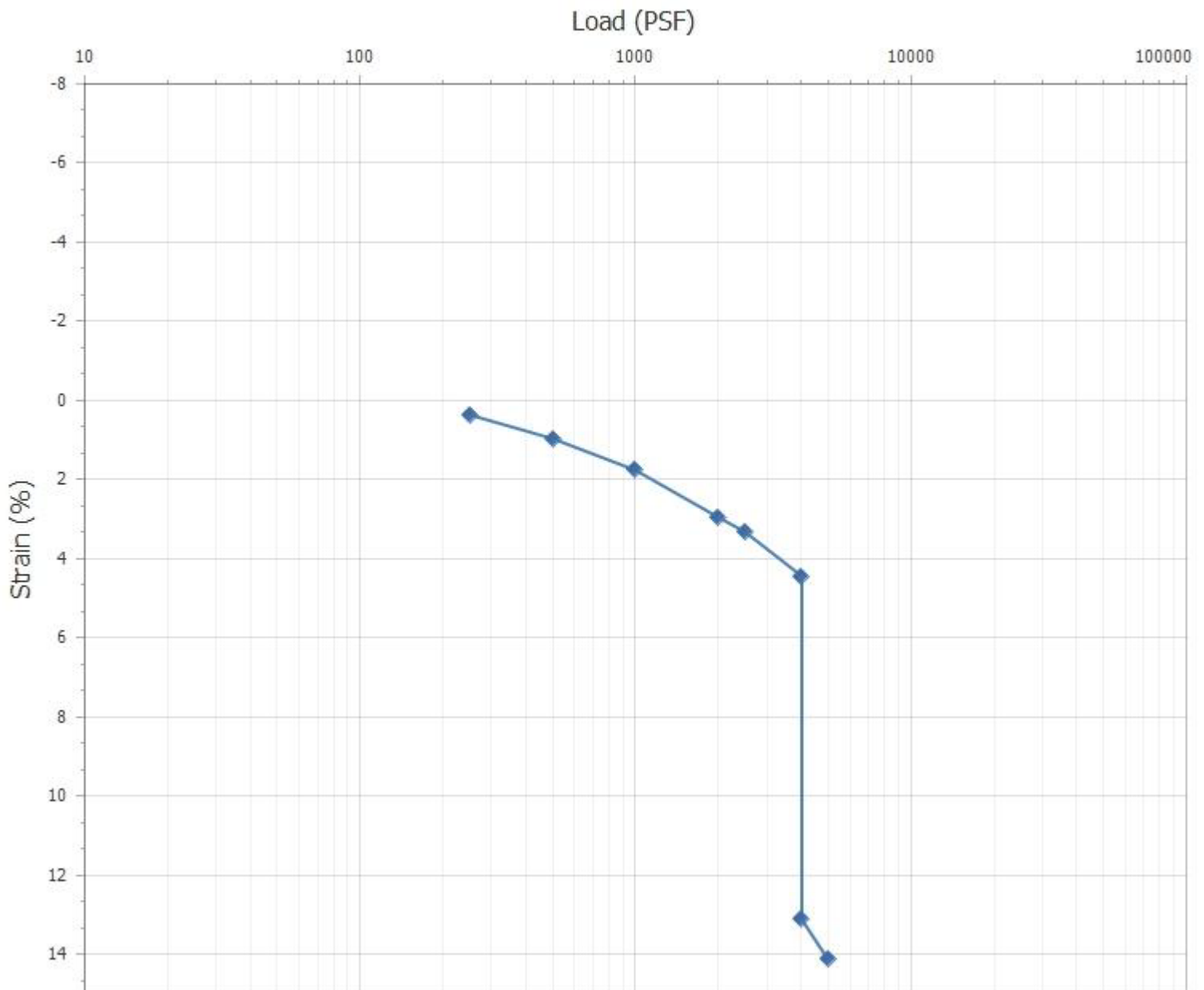


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (Ring 40')

ProTeX Job No: 12804
ProTeX Lab No: 2208536 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB18 - Ring 40'

Moisture Content: 5.6 %

Sample Type: Undisturbed

Dry Unit Weight: 90.8 lb/ft³

Load at Saturation: 4000 PSF

Remarks:

Reviewed By: jgrossarth

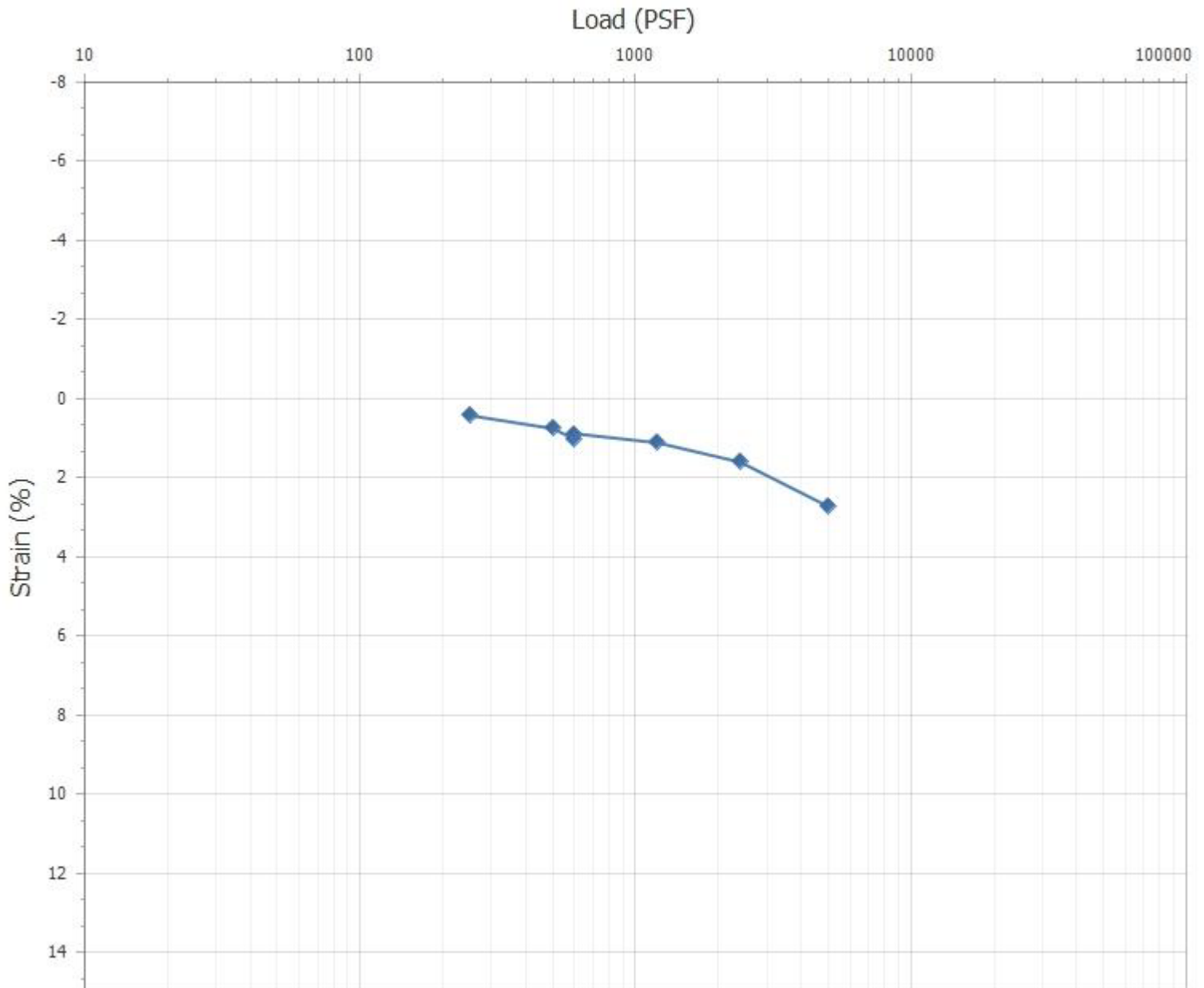


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (Ring 2.5')

ProTeX Job No: 12804
ProTeX Lab No: 2208539 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB19 - Ring 2.5'

Moisture Content: 9.6 %

Sample Type: Undisturbed

Dry Unit Weight: 119.9 lb/ft³

Load at Saturation: 600 PSF

Remarks:

Reviewed By: jgrossarth

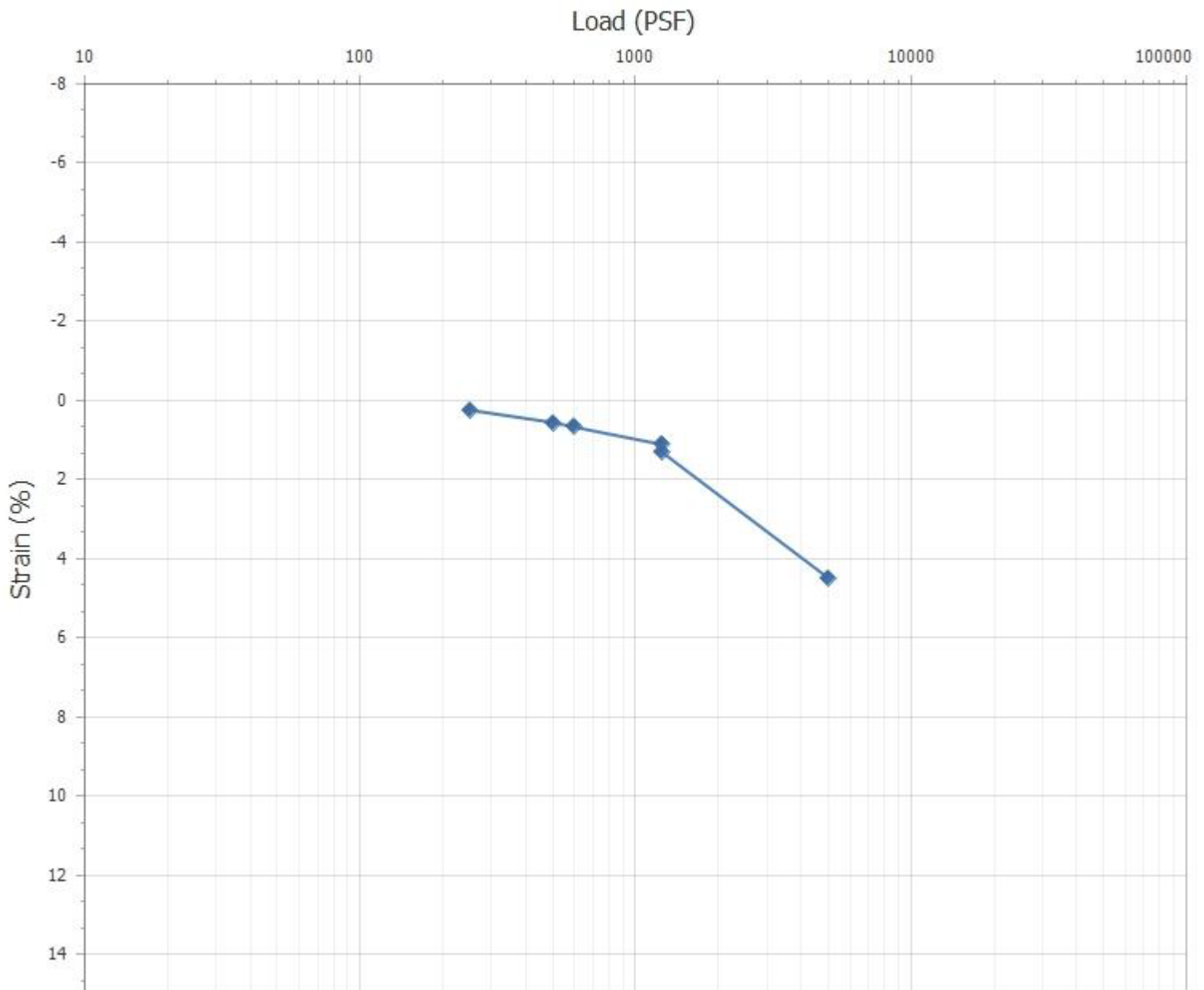


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (Ring 10')

ProTeX Job No: 12804
ProTeX Lab No: 2208541 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB19 - Ring 10'

Moisture Content: 13.9 %

Sample Type: Undisturbed

Dry Unit Weight: 87.3 lb/ft³

Load at Saturation: 1250 PSF

Remarks:

Reviewed By: jgrossarth

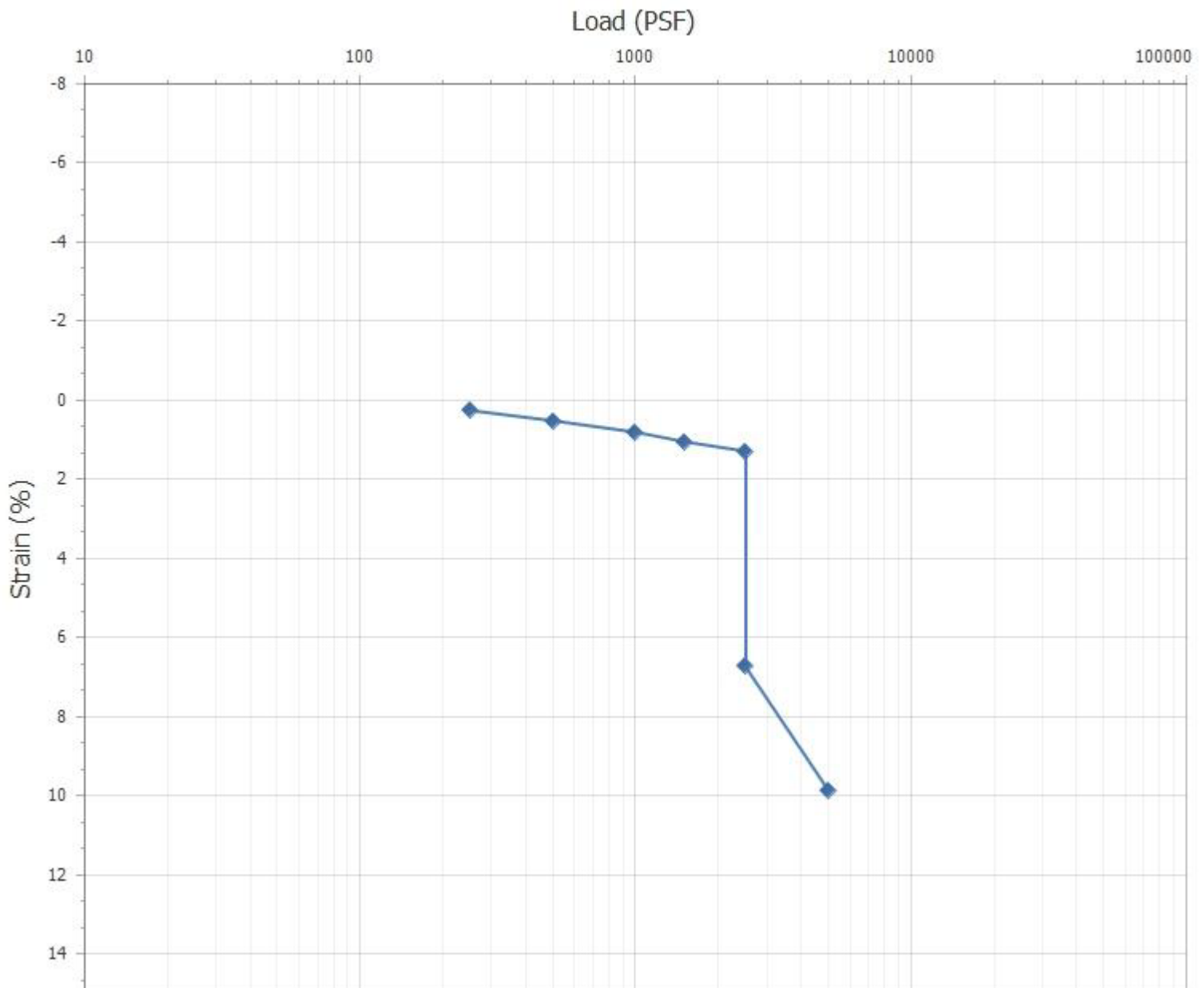


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Consolidation

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (Ring 20')

ProTeX Job No: 12804
ProTeX Lab No: 2208543 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy



Source: FB19 - Ring 20'

Moisture Content: 4.9 %

Sample Type: Undisturbed

Dry Unit Weight: 97.5 lb/ft³

Load at Saturation: 2500 PSF

Remarks:

Reviewed By: jgrossarth



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Soils Summary

Client: Pulte Tucson Land
 Project Name: Rancho Vistoso Valley Vista
 Job Name: Lots 19 and 20 Forensic Study
 Material: Geo (Onsite)
 Material Supplier:
 Sample Location: FB3 (1-3')

ProTeX Job No: 12804
 ProTeX Lab No: 2202205 - Phoenix
 Date Received: 3/8/2022
 Sampled By: Kimberly Nepsa
 Date Sampled: 2/25/2022
 Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

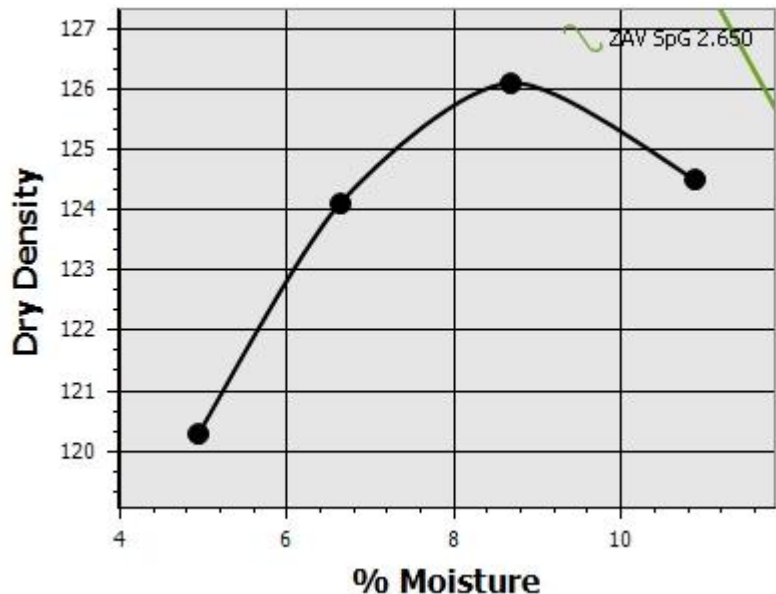
Class: Silty sand
 Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	126.1
Opt. Moisture %	8.7
Corr. Max. Dry Density	128.5
Corr. Opt. Moisture %	8.1
% Rock	8

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	92		
#10	78		
#40	42		
#100	28		
#200	22		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB3 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2202206 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand

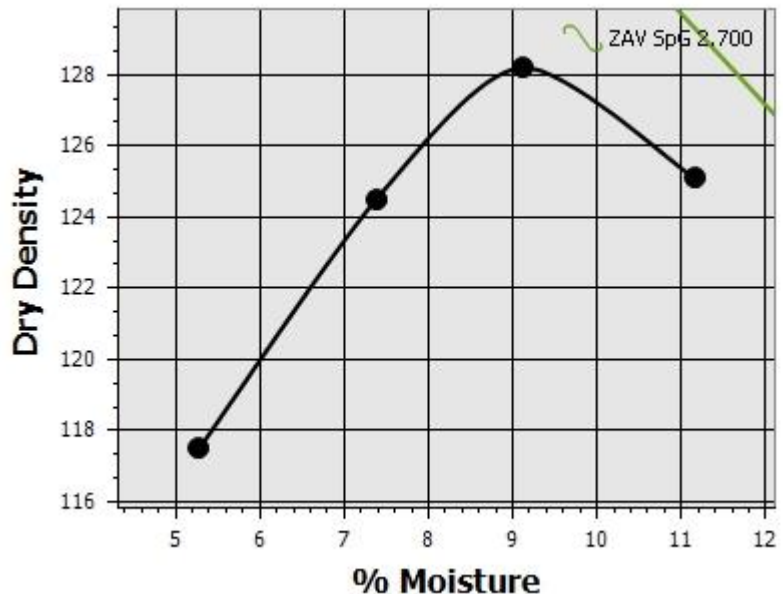
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.2
Opt. Moisture %	9.2
Corr. Max. Dry Density	129.7
Corr. Opt. Moisture %	8.7
% Rock	5

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	95		
#10	80		
#40	46		
#100	32		
#200	26		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB3 (21-23')

ProTeX Job No: 12804
ProTeX Lab No: 2202207 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa

Plasticity Index	
Liquid Limit	NA
Plastic Limit	NA
Plasticity Index	NA

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

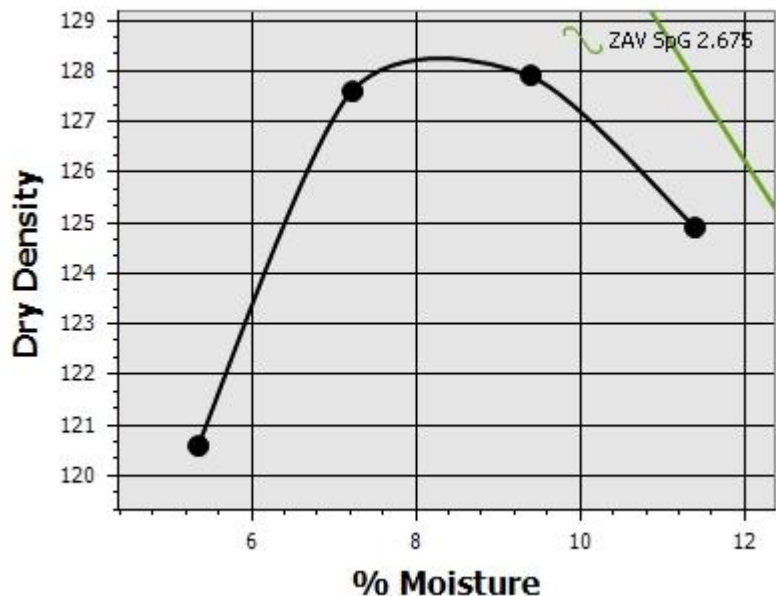
pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: _____
Symbol: _____

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.4
Opt. Moisture %	8.3
Corr. Max. Dry Density	132.2
Corr. Opt. Moisture %	7.5
% Rock	13

* = out of specification

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB5 (1-3')

ProTeX Job No: 12804
ProTeX Lab No: 2202208 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

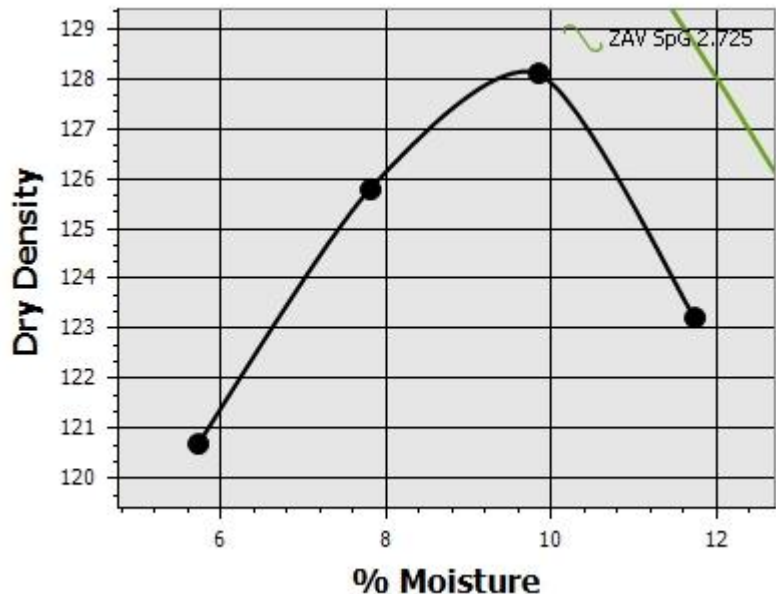
Class: Silty sand
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.2
Opt. Moisture %	9.6
Corr. Max. Dry Density	130.1
Corr. Opt. Moisture %	9.0
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	93		
#10	80		
#40	42		
#100	28		
#200	22		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB5 (6-8')

ProTeX Job No: 12804
ProTeX Lab No: 2202209 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand

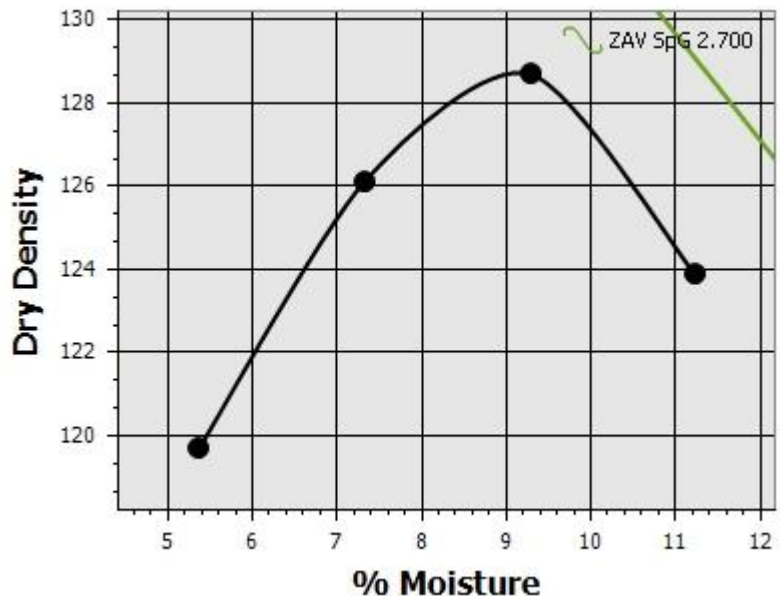
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.8
Opt. Moisture %	9.1
Corr. Max. Dry Density	130.3
Corr. Opt. Moisture %	8.6
% Rock	6

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	94		
#10	81		
#40	46		
#100	31		
#200	24		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB5 (17-19')

ProTeX Job No: 12804
ProTeX Lab No: 2202210 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa

ASTM D4318	
Plasticity Index	
Liquid Limit	23
Plastic Limit	17
Plasticity Index	6

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty, clayey sand

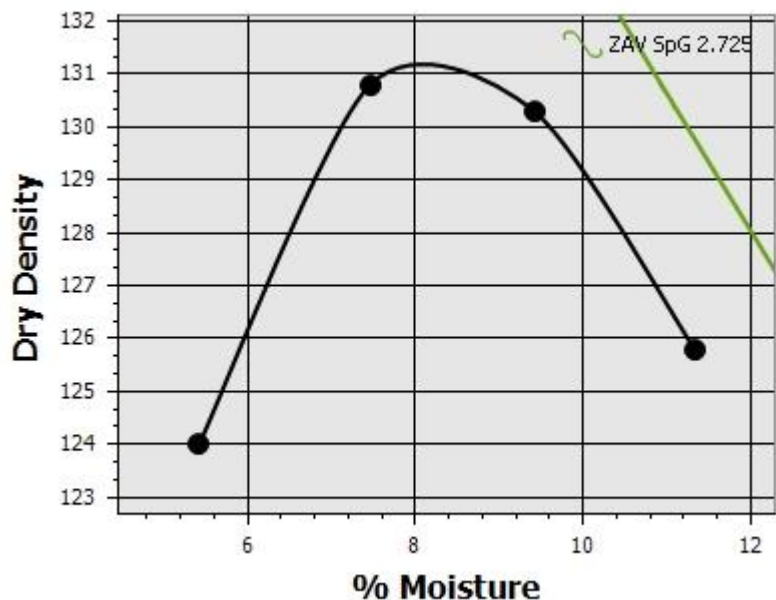
Symbol: SC-SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	131.3
Opt. Moisture %	8.2
Corr. Max. Dry Density	133.0
Corr. Opt. Moisture %	7.7
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	93		
#10	46		
#40	32		
#100	26		
#200	22		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
 Project Name: Rancho Vistoso Valley Vista
 Job Name: Lots 19 and 20 Forensic Study
 Material: Geo (Onsite)
 Material Supplier:
 Sample Location: FB5 (23-25')

ProTeX Job No: 12804
 ProTeX Lab No: 2202211 - Phoenix
 Date Received: 3/8/2022
 Sampled By: Kimberly Nepsa
 Date Sampled: 2/25/2022
 Submitted By: Kimberly Nepsa

Plasticity Index	
Liquid Limit	NA
Plastic Limit	NA
Plasticity Index	NA

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

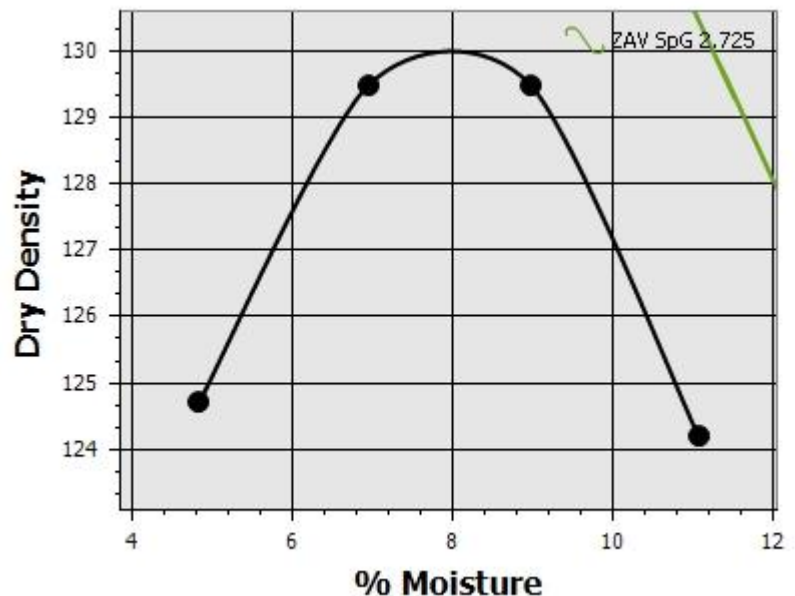
pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: _____
 Symbol: _____

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	130.1
Opt. Moisture %	8.0
Corr. Max. Dry Density	131.8
Corr. Opt. Moisture %	7.6
% Rock	6

* = out of specification

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier: _____
Sample Location: FB7 (1-3')

ProTeX Job No: 12804
ProTeX Lab No: 2202212 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepesa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepesa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	3

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	97		
#10	85		
#40	40		
#100	23		
#200	17		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB7 (13-15')

ProTeX Job No: 12804
ProTeX Lab No: 2202213 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

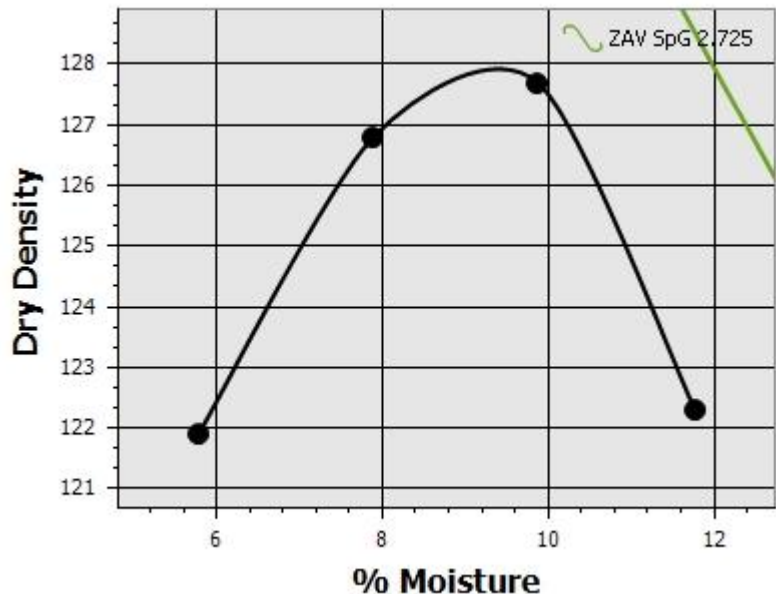
Class: Silty sand
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.0
Opt. Moisture %	9.3
Corr. Max. Dry Density	130.7
Corr. Opt. Moisture %	8.5
% Rock	9

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	91		
#10	74		
#40	40		
#100	29		
#200	23		

Moisture Vs. Density



Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo (Onsite)
Material Supplier:
Sample Location: FB7 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2202214 - Phoenix
Date Received: 3/8/2022
Sampled By: Kimberly Nepsa
Date Sampled: 2/25/2022
Submitted By: Kimberly Nepsa

Plasticity Index	
Liquid Limit	NA
Plastic Limit	NA
Plasticity Index	NA

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

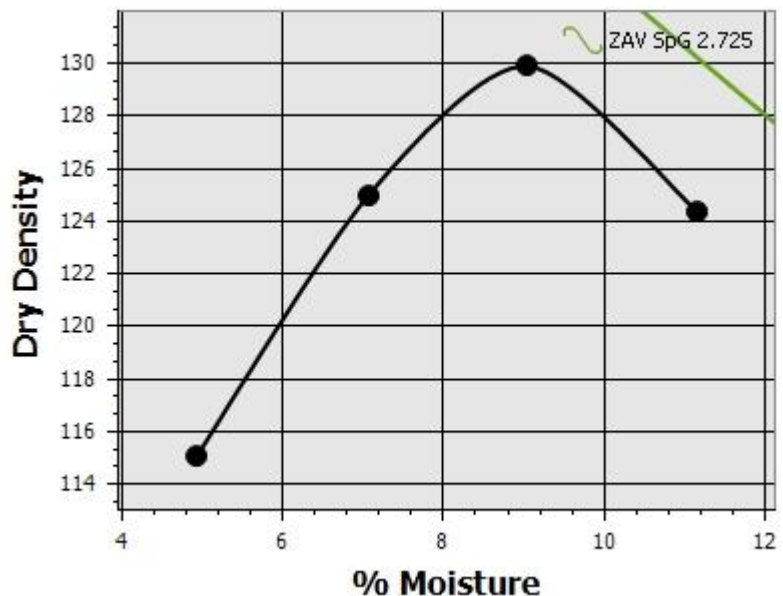
pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: _____
Symbol: _____

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	129.9
Opt. Moisture %	9.0
Corr. Max. Dry Density	132.2
Corr. Opt. Moisture %	8.4
% Rock	8

* = out of specification

Moisture Vs. Density



Remarks:

Reviewed By:

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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier:
Sample Location: FB8 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2205266 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

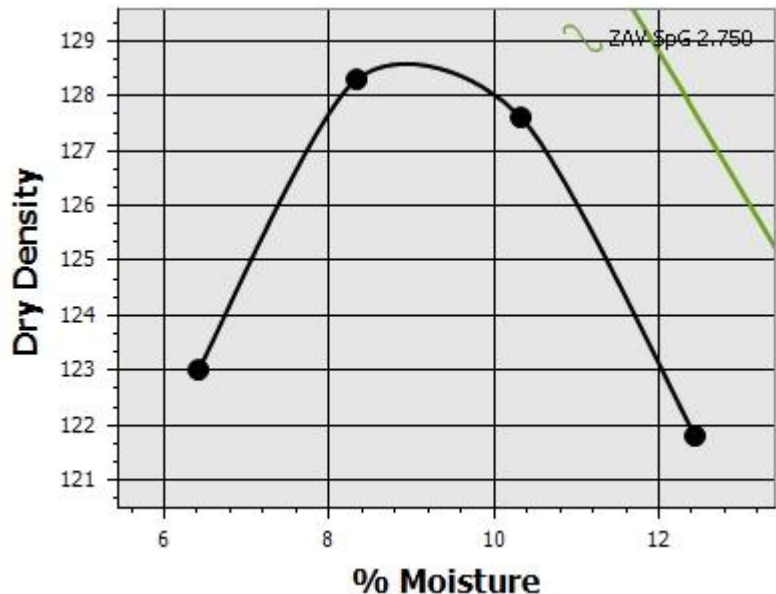
Class: Silty sand
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.7
Opt. Moisture %	9.1
Corr. Max. Dry Density	131.0
Corr. Opt. Moisture %	8.3
% Rock	9

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	96		
#4	91		
#10	77		
#40	37		
#100	22		
#200	16		

Moisture Vs. Density



Remarks: Combine w/ FB8 @ 5-7'

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier:
Sample Location: FB8 (10-12')

ProTeX Job No: 12804
ProTeX Lab No: 2205267 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

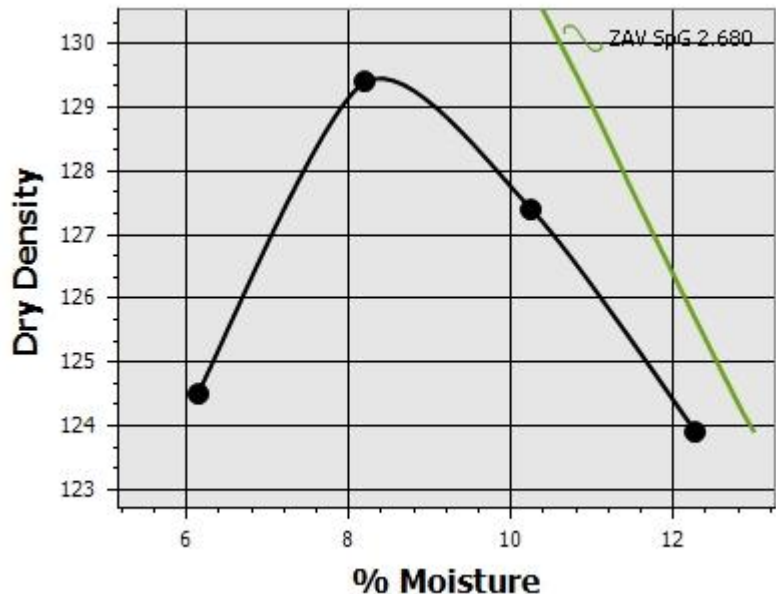
Class: Silty sand with gravel
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	129.5
Opt. Moisture %	8.5
Corr. Max. Dry Density	133.8
Corr. Opt. Moisture %	7.2
% Rock	16

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	90		
1/2"	89		
#4	84		
#10	69		
#40	39		
#100	29		
#200	24		

Moisture Vs. Density



Remarks: Combine w/ FB8 @ 16-18' & 21-23'

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB8 (51-53')

ProTeX Job No: 12804
ProTeX Lab No: 2205268 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	26
Plastic Limit	16
Plasticity Index	10

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Sandy lean clay
Symbol: CL

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	1

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	99		
#10	96		
#40	76		
#100	62		
#200	53		

Remarks:

Reviewed By:

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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier:
Sample Location: FB10 (17-19')

ProTeX Job No: 12804
ProTeX Lab No: 2205269 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	23
Plastic Limit	15
Plasticity Index	8

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

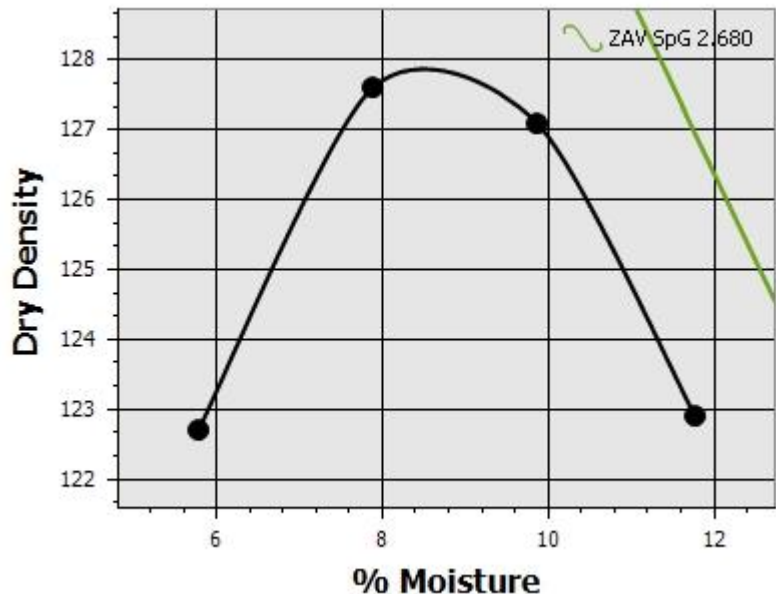
Class: Clayey sand
Symbol: SC

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	128.0
Opt. Moisture %	8.6
Corr. Max. Dry Density	129.8
Corr. Opt. Moisture %	8.1
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	93		
#10	71		
#40	43		
#100	35		
#200	30		

Moisture Vs. Density



Remarks: Combine w/ FB10 @ 23-25'

Reviewed By:

Jerald W Grossarth

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier:
Sample Location: FB12 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2205270 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	22
Plastic Limit	16
Plasticity Index	6

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

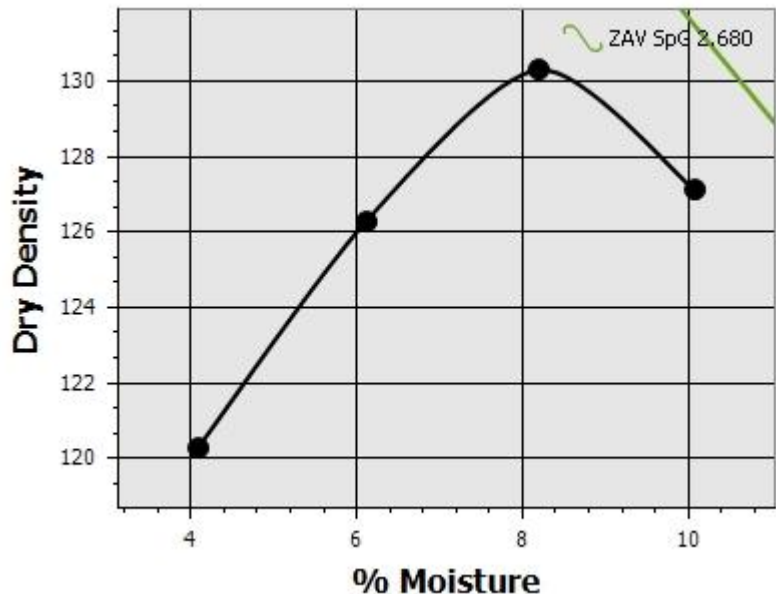
Class: Silty, clayey sand
Symbol: SC-SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	130.3
Opt. Moisture %	8.3
Corr. Max. Dry Density	131.6
Corr. Opt. Moisture %	7.9
% Rock	5

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	95		
#10	78		
#40	44		
#100	33		
#200	27		

Moisture Vs. Density



Remarks: Combine w/ FB12 @ 6-8'

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier: _____
Sample Location: FB12 (12-14')

ProTeX Job No: 12804
ProTeX Lab No: 2205271 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepesa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepesa

ASTM D4318	
Plasticity Index	
Liquid Limit	23
Plastic Limit	16
Plasticity Index	7

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty, clayey sand
Symbol: SC-SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	6

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	94		
#10	77		
#40	49		
#100	41		
#200	36		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Lots 19 and 20 Forensic Study
Material: Geo - Forensic Study (On-site)
Material Supplier:
Sample Location: FB12 (17-19')

ProTeX Job No: 12804
ProTeX Lab No: 2205272 - Phoenix
Date Received: 6/2/2022
Sampled By: Kimberly Nepsa
Date Sampled: 5/5/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand

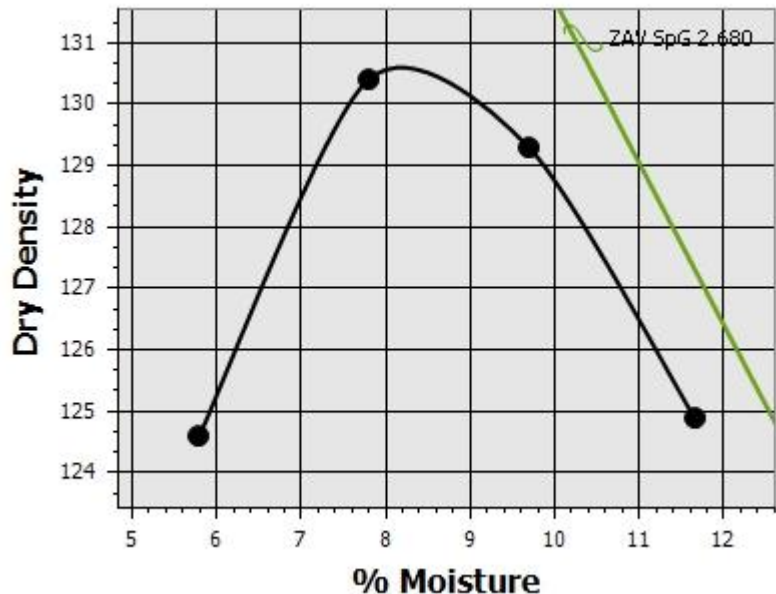
Symbol: SM

ASTM D698-A	
Moisture Density (Proctor)	
Max. Dry Density	130.7
Opt. Moisture %	8.3
Corr. Max. Dry Density	133.1
Corr. Opt. Moisture %	7.6
% Rock	10

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	90		
#10	70		
#40	32		
#100	23		
#200	18		

Moisture Vs. Density



Remarks: Combine w/ FB12 @ 21-23'

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208459 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	12

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	88		
#10	74		
#40	37		
#100	24		
#200	19		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (6-8')

ProTeX Job No: 12804
ProTeX Lab No: 2208460 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	9

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	91		
#10	74		
#40	38		
#100	27		
#200	22		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2208461 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	20
Plastic Limit	17
Plasticity Index	3

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	93		
#10	72		
#40	38		
#100	29		
#200	24		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (16-18')

ProTeX Job No: 12804
ProTeX Lab No: 2208462 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	12

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	95		
#4	88		
#10	67		
#40	37		
#100	28		
#200	23		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB14 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2208463 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	11

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	89		
#10	64		
#40	34		
#100	26		
#200	22		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208464 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	10

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	97		
#4	90		
#10	76		
#40	38		
#100	24		
#200	19		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (6-8')

ProTeX Job No: 12804
ProTeX Lab No: 2208465 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	9

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	96		
#4	91		
#10	74		
#40	40		
#100	27		
#200	22		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2208466 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	8

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	92		
#10	69		
#40	37		
#100	27		
#200	23		

Remarks:

Reviewed By:

Jerald W Grossarth



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Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (16-18')

ProTeX Job No: 12804
ProTeX Lab No: 2208467 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	22
Plastic Limit	17
Plasticity Index	5

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty, clayey sand
Symbol: SC-SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	9

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	91		
#10	69		
#40	41		
#100	33		
#200	27		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB15 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2208468 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 8/30/2022
Submitted By: Kimberly Nepsa

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	8

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	92		
#10	59		
#40	31		
#100	25		
#200	21		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208490 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	13

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	93		
#4	87		
#10	74		
#40	35		
#100	20		
#200	14		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (5-7')

ProTeX Job No: 12804
ProTeX Lab No: 2208491 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	5

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	95		
#10	82		
#40	37		
#100	19		
#200	14		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2208492 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	17

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	92		
#4	83		
#10	69		
#40	39		
#100	29		
#200	23		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (16-18')

ProTeX Job No: 12804
ProTeX Lab No: 2208493 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion
0 - 20	Very Low
21 - 51	Low
52 - 90	Medium
91 - 130	High
> 130	Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand with gravel

Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	21

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	93		
#4	79		
#10	57		
#40	29		
#100	24		
#200	21		

Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB16 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2208494 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	24
Plastic Limit	16
Plasticity Index	8

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Clayey sand

Symbol: SC

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	93		
#10	70		
#40	39		
#100	33		
#200	28		

Remarks:

Reviewed By:


Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB17 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208495 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	3

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	97		
#10	84		
#40	40		
#100	25		
#200	20		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB17 (6-8')

ProTeX Job No: 12804
ProTeX Lab No: 2208496 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	7

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	93		
#10	78		
#40	33		
#100	20		
#200	15		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB17 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2208497 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	8

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	92		
#10	75		
#40	30		
#100	19		
#200	15		

Remarks:

Reviewed By:

Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB17 (16-18')

ProTeX Job No: 12804
ProTeX Lab No: 2208498 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	6

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	94		
#10	74		
#40	35		
#100	26		
#200	21		

Remarks:

Reviewed By:

Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (On-Site)
Material Supplier: -
Sample Location: FB17 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2208499 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/1/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	5

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	95		
#10	82		
#40	37		
#100	20		
#200	15		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208518 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	6

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	98		
#4	94		
#10	85		
#40	56		
#100	41		
#200	33		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (6-8')

ProTeX Job No: 12804
ProTeX Lab No: 2208519 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion	Expansion Index
0 - 20		Very Low	EI = NA
21 - 51		Low	
52 - 90		Medium	
91 - 130		High	
> 130		Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	6

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	99		
#4	94		
#10	83		
#40	58		
#100	44		
#200	38		

Remarks:

Reviewed By:


Jerald W Grossarth



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1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (11-13')

ProTeX Job No: 12804
ProTeX Lab No: 2208520 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	31
Plastic Limit	20
Plasticity Index	11

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Lean clay with sand

Symbol: CL

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	1

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	99		
#10	98		
#40	90		
#100	84		
#200	78		

Remarks:

Reviewed By:

Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (16-18')

ProTeX Job No: 12804
ProTeX Lab No: 2208521 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	27
Plastic Limit	21
Plasticity Index	6

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty clay with sand
Symbol: CL-ML

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	0

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	100		
#10	99		
#40	98		
#100	93		
#200	83		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB18 (22-24')

ProTeX Job No: 12804
ProTeX Lab No: 2208522 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	31
Plastic Limit	20
Plasticity Index	11

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Lean clay
Symbol: CL

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	NV

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	100		
#10	100		
#40	99		
#100	95		
#200	87		

Remarks:

Reviewed By:

Jerald W Grossarth



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Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (0-3')

ProTeX Job No: 12804
ProTeX Lab No: 2208523 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	4

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	96		
#10	84		
#40	51		
#100	33		
#200	24		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (5-7')

ProTeX Job No: 12804
ProTeX Lab No: 2208524 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	NV
Plastic Limit	NP
Plasticity Index	NP

Expansion Index, (EI)	Potential Expansion	Expansion Index
0 - 20	Very Low	EI = NA
21 - 51	Low	
52 - 90	Medium	
91 - 130	High	
> 130	Very High	

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty sand
Symbol: SM

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	10

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	94		
#4	90		
#10	81		
#40	58		
#100	44		
#200	35		

Remarks:

Reviewed By:


Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (12-14')

ProTeX Job No: 12804
ProTeX Lab No: 2208525 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	26
Plastic Limit	21
Plasticity Index	5

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty clay with sand

Symbol: CL-ML

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	1

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	99		
#10	99		
#40	96		
#100	87		
#200	77		

Remarks:

Reviewed By:

Jerald W Grossarth



ProTeX the PT Xperts LLC
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Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (17-19')

ProTeX Job No: 12804
ProTeX Lab No: 2208526 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	25
Plastic Limit	19
Plasticity Index	6

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Silty clay with sand

Symbol: CL-ML

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	NV

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	100		
#10	100		
#40	97		
#100	86		
#200	71		

Remarks:

Reviewed By:

Jerald W Grossarth



ProTeX the PT Xperts LLC
1102 W. Southern Ave., Ste. 4 Office: (602)-272-7891
Tempe, AZ 85282 Fax: (602) 272-7892

Soils Summary

Client: Pulte Tucson Land
Project Name: Rancho Vistoso Valley Vista
Job Name: Forensic Study - Various Lots
Material: Geo (Native)
Material Supplier: -
Sample Location: FB19 (23-25')

ProTeX Job No: 12804
ProTeX Lab No: 2208527 - Phoenix
Date Received: 9/7/2022
Sampled By: Amos McCurdy
Date Sampled: 9/2/2022
Submitted By: Amos McCurdy

ASTM D4318	
Plasticity Index	
Liquid Limit	29
Plastic Limit	19
Plasticity Index	10

Expansion Index, (EI)		Potential Expansion
0 - 20		Very Low
21 - 51		Low
52 - 90		Medium
91 - 130		High
> 130		Very High

Expansion Index	
EI =	NA

Percent Swell of Soil	
% Swell	NV
Notes:	

pH and Resistivity	
pH Reading:	NA
Resistivity (ohms-cm)	NA

Class: Lean clay with sand
Symbol: CL

Moisture Density (Proctor)	
Max. Dry Density	NV
Opt. Moisture %	NV
Corr. Max. Dry Density	NV
Corr. Opt. Moisture %	NV
% Rock	NV

* = out of specification

ASTM D1140 / D422			
Sieve	% Pass	Specs	*
1"	100		
1/2"	100		
#4	100		
#10	99		
#40	95		
#100	86		
#200	75		

Remarks:

Reviewed By:

Jerald W Grossarth

Appendix B



Legend:



Approximate Proposed Boring Location



Site Plan

Scale: N.T.S.

Drawn by: KJN

Date: 06/08/2022

Rancho Vistoso Valley Vista – Lots 18, 19 and 20

Kalalau Drive and Romsdalen Road

Oro Valley, Arizona



ProTeX Job No.: 12804



Legend:



Approximate Proposed Boring Location



Site Plan

Scale: N.T.S.

Drawn by: KJN

Date: 09/27/2022

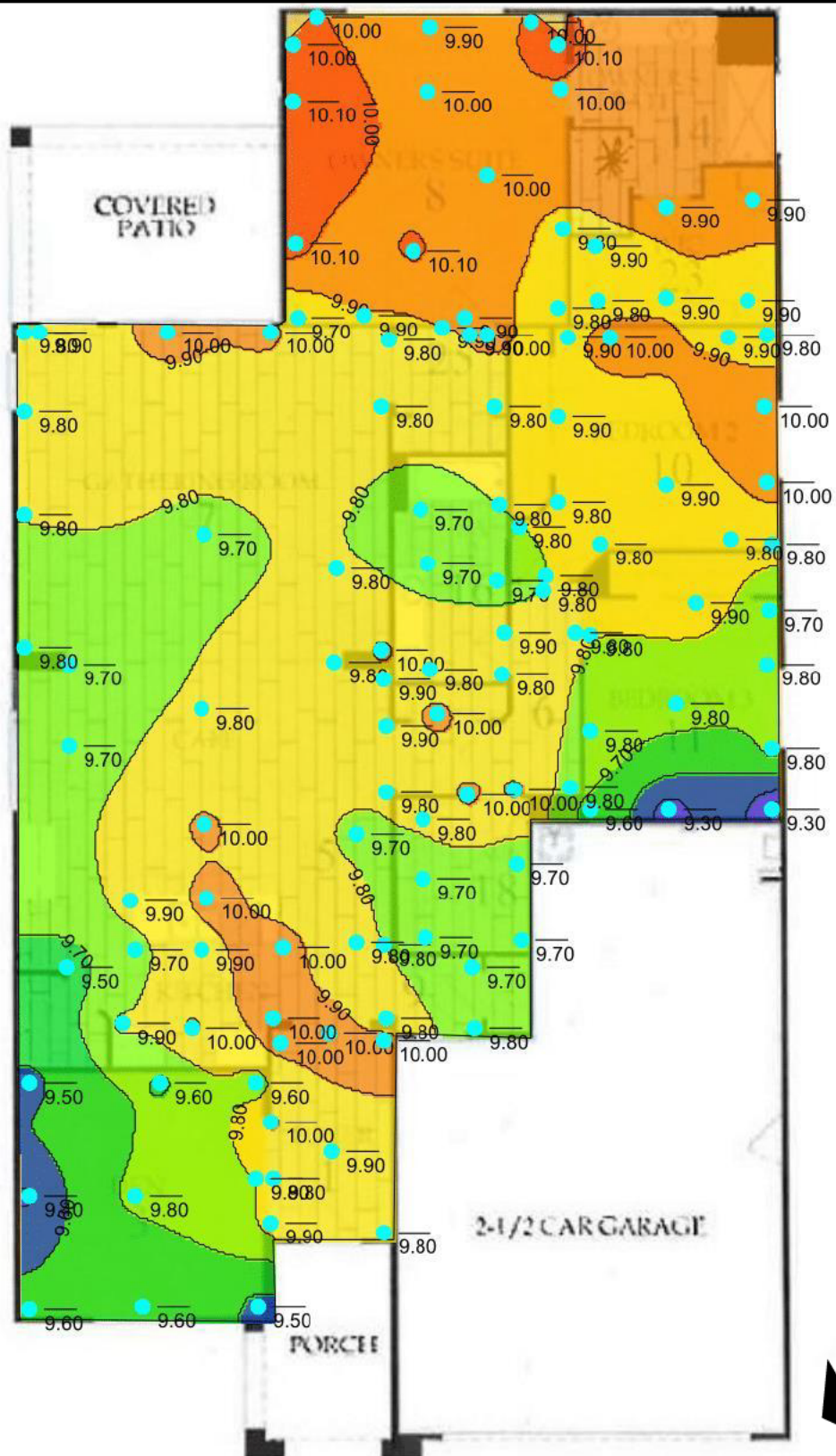
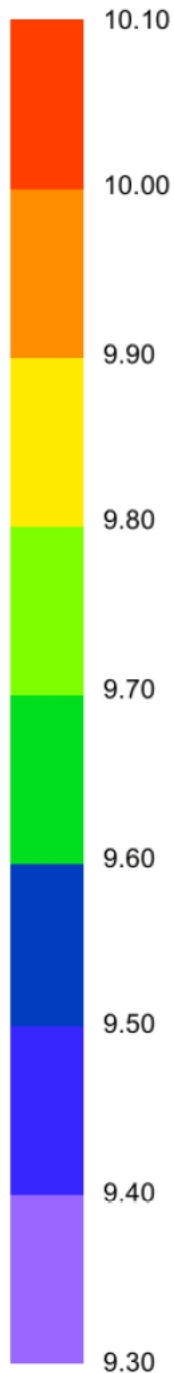
Rancho Vistoso Valley Vista – Lot 20

803 East Romsdalen Road

Oro Valley, Arizona



ProTeX Job No.: 12804



Manometer Survey 4/12/22

Scale: N.T.S.

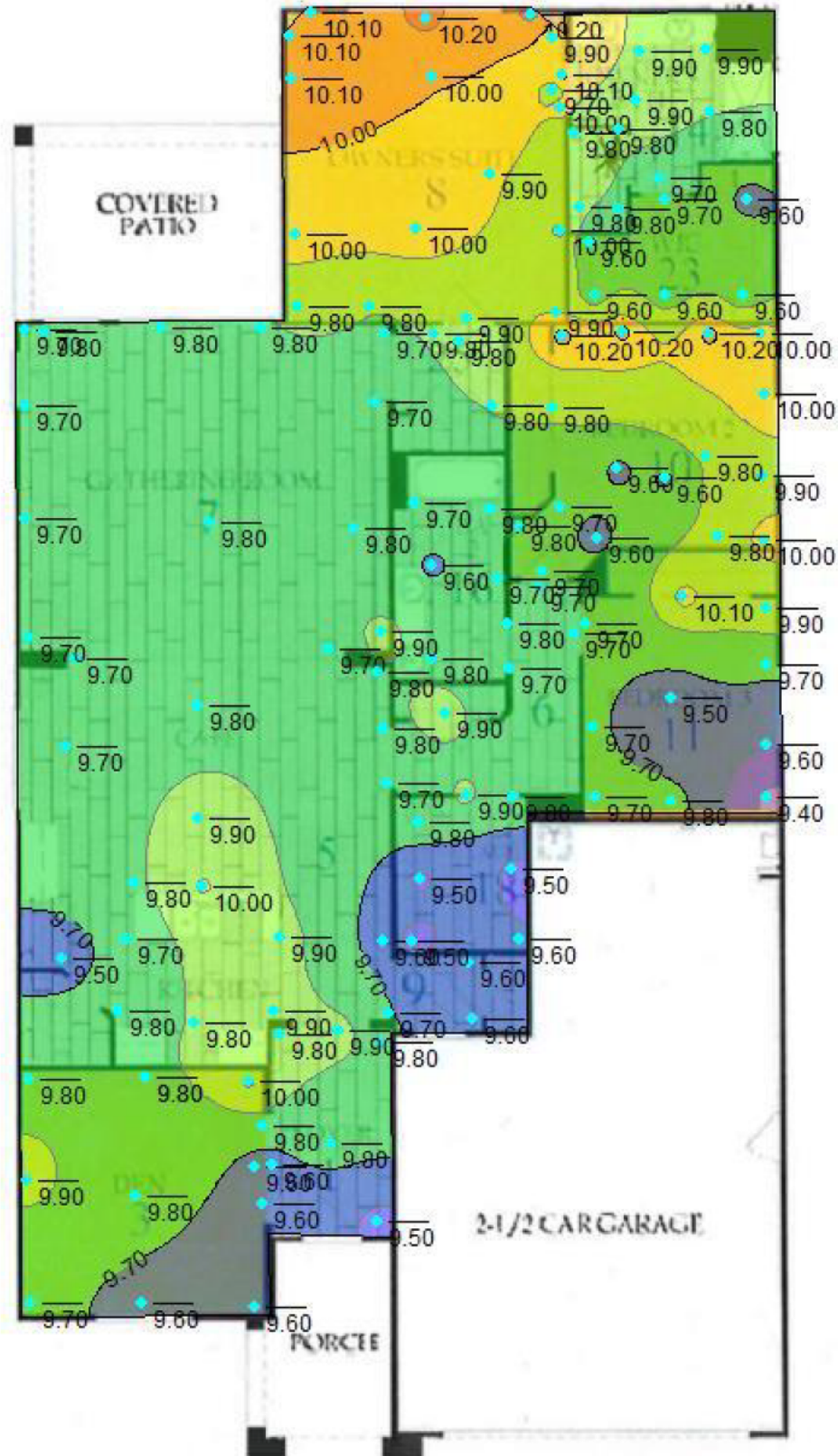
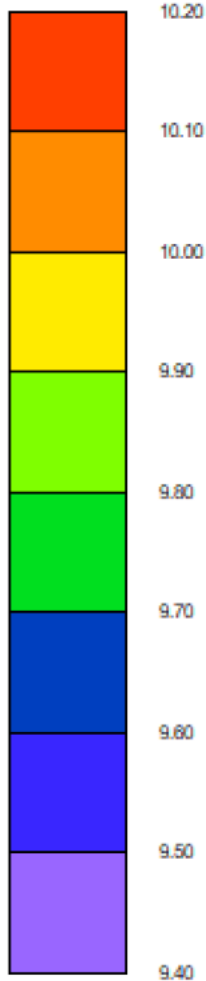
Drawn by: BBR

Date: 10/28/2022

Rancho Vistoso Valley Vista – Lot 20
803 East Romsdalen Road
Oro Valley, Arizona



ProTeX Job No.: 12804



Manometer Survey 5/12/22

Scale: N.T.S.

Drawn by: BBR

Date: 05/12/2022

Rancho Vistoso Valley Vista – Lot 20
803 East Romsdalen Road
Oro Valley, Arizona



ProTeX Job No.: 12804

Appendix C



LOG OF BORING No. FB1A

PROJECT: Rancho Vistoso Valley Vista - Forensic PROJECT NO.: 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan ELEVATION: _____
DRILLER: RCS LOGGED BY: KN
DRILLING METHOD: Bullnose DATE: 2/25/22
DEPTH TO - WATER> INITIAL: ∅ AFTER 24 HOURS: ∅ CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
0				14						
				17						
				14						
				14						
				18						
				17						
				20						
4				21						
				17						
				21						
				26						
				24						
				29						
				25						
				28						
8				20						
				26						
				26						
				17						
				13						
				13						
				12						
12				12						
				10						
				12						
				10						
				12						
				11						
				12						
				10						
16				14						
				12						
				15						
				14						
				14						
				15						
				16						
				15						
				13						
20				15						
				14						
				19						
				17						
				17						
				16						
				16						
				18						
24				15						
				17						
				14						
	Boring terminated at 25 ft.									
28										



LOG OF BORING No. FB2A

PROJECT: Rancho Vistoso Valley Vista - Forensic PROJECT NO.: 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan ELEVATION: _____
DRILLER: RCS LOGGED BY: KN
DRILLING METHOD: Bullnose DATE: 2/25/22
DEPTH TO - WATER> INITIAL: ∅ AFTER 24 HOURS: ∅ CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

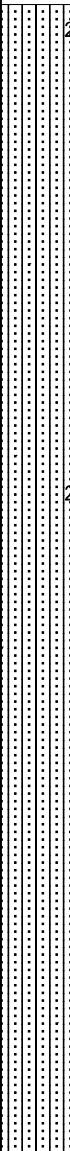
Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
0				9						
				10						
				13						
				11						
				12						
				14						
				17						
4				15						
				18						
				18						
				23						
				24						
				20						
				23						
				22						
8				22						
				22						
				16						
				13						
				13						
				18						
				19						
12				18						
				17						
				16						
				20						
				24						
				27						
				21						
				14						
16				13						
				14						
				14						
				15						
				14						
				16						
				17						
				13						
20				15						
				16						
				14						
				15						
				14						
				16						
				15						
24				14						
				11						
				16						
				15						
				16						
	Boring terminated at 26 ft.									
28										



LOG OF BORING No. FB3

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
						Water Content -				
						Penetration -				
						10	20	30	40	50
	(SM) Silty Sand, trace Gravel, non-plastic, brown, slightly moist		2202205	R 6 5	22					
4										
	Moist			R 2 2						
8										
	Very moist			R 1 4	26					
12										
				R 3 3						
16										
				R 4 5						
20										
24										
	(CL) Lean Clay, high plasticity, brown, moist		25	R 4 9						
	Boring terminated at 26 ft.									
28										



LOG OF BORING No. FB3A

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: Bullnose **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	-----			Liquid Limit
						Water Content -	•			
						Penetration -				
0				8		10	20	30	40	50
				8						
				4						
				3						
				3						
				2						
				1						
				2						
5				1						
				1						
				1						
				2						
				2						
				1						
				2						
				2						
				1						
				1						
10				1						
				2						
				2						
				1						
				2						
				2						
				1						
				1						
				2						
				2						
15				2						
				3						
				3						
				4						
				3						
				4						
				3						
				3						
				2						
20				3						
				5						
				4						
				3						
				3						
				4						
				3						
				4						
				3						
				3						
25				2						
				2						
				2						
				3						
				2						
				4						
				2						
				3						
				2						
				3						
30				3						
				6						
				4						
				7						
				4						
				5						
				6						
				6						
				6						
35				5						
				7						
				6						
	Boring terminated at 36 ft.									



LOG OF BORING No. FB4A

PROJECT: Rancho Vistoso Valley Vista - Forensic PROJECT NO.: 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan ELEVATION: _____
DRILLER: RCS LOGGED BY: KN
DRILLING METHOD: Bullnose DATE: 2/25/22
DEPTH TO - WATER> INITIAL: ∅ AFTER 24 HOURS: ∅ CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
0				12						
				13						
				14						
				14						
				19						
				17						
				14						
4				21						
				32						
				39						
				45						
				32						
				24						
				24						
				22						
8				16						
				14						
				13						
				15						
				16						
				16						
				18						
				16						
12				18						
				17						
				14						
				13						
				16						
				14						
				17						
				15						
16				16						
				18						
				18						
				16						
				16						
				14						
				15						
				12						
20				11						
				11						
				13						
				13						
				10						
				11						
				11						
24				10						
				11						
				12						
				12						
	Boring terminated at 25.5 ft.									
28										



LOG OF BORING No. FB5

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS	
					Plastic Limit Water Content - •	Liquid Limit
0	(SM) Silty Sand, trace Gravel, non-plastic, brown, moist		2202208	R 7 8	22	
4	Very moist		2202209	R 4 5	24	
8				R 4 7		
12				R 9 11		
16						
17-19	(SC-SM) Silty Clayey Sand, trace Gravel, low plasticity, brown, moist		2202210		22	
20				R 4 5		
24						
25	(SM) Silty Sand, non-plastic, brown, slightly moist			R 5 7		
	Boring terminated at 26 ft.					
28						



LOG OF BORING No. FB5A

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: Bullnose **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit				Liquid Limit
						Water Content -	•			
						Penetration -				
0				4		10	20	30	40	50
				3						
				4						
				3						
				1						
				1						
				1						
4				0						
				0						
				3						
				2						
				2						
				2						
				1						
8				1						
				0						
				1						
				2						
				2						
				1						
				1						
12				1						
				1						
				1						
				4						
				4						
				4						
				3						
16				3						
				3						
				2						
				3						
				2						
				3						
				4						
				4						
20				3						
				2						
				3						
				4						
				3						
				4						
				3						
				2						
24				3						
				2						
				3						
				3						
				3						
				4						
				4						
				3						
28				5						
				5						
	Boring terminated at 28.5 ft.									



LOG OF BORING No. FB6A

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: Bullnose **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS					
						Plastic Limit		Liquid Limit			
						Water Content -		•			
						Penetration -		▨			
0						10	20	30	40	50	
				16							
				11							
				6							
				4							
				2							
				3							
				1							
4				5							
				10							
				14							
				18							
				23							
				18							
				15							
				17							
8				15							
				12							
				10							
				12							
				11							
				10							
12				11							
				12							
				12							
				10							
				12							
				11							
16				10							
				11							
				10							
				12							
				12							
				10							
				12							
				10							
20				12							
				11							
				12							
				10							
				10							
				9							
				9							
				10							
24				11							
				15							
				17							
	Boring terminated at 25 ft.										
28											



LOG OF BORING No. FB7

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 2/25/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS	
						Plastic Limit	Liquid Limit
						Water Content - •	
						Penetration -	
						10 20 30 40 50	
	(SM) Silty Sand, non-plastic, brown, wet		2202212	R 5 9	17		
4							
				R 13 21			
8							
	Moist			R 11 8			
12							
	Trace Gravel		2202213	23			
16				R 2 3			
20							
	(SC-SM) Silty Clayey Sand, low plasticity, brown, moist			R 6 8			
24							
	Weak cementation			R 4 7			
28	Boring terminated at 26 ft.						



LOG OF BORING No. FB7A

PROJECT: Rancho Vistoso Valley Vista - Forensic PROJECT NO.: 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan ELEVATION: _____
DRILLER: RCS LOGGED BY: KN
DRILLING METHOD: Bullnose DATE: 2/25/22
DEPTH TO - WATER> INITIAL: ∅ AFTER 24 HOURS: ∅ CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
0				5						
				10						
				14						
				13						
				14						
				17						
				21						
4				22						
				19						
				24						
				22						
				19						
				22						
				29						
				32						
8				42						
				36						
				30						
				28						
				19						
				15						
				15						
				14						
12				15						
				13						
				13						
				13						
				12						
				12						
				13						
				11						
16				12						
				12						
				13						
				14						
				13						
				13						
				12						
				13						
				12						
20				13						
				12						
				12						
				12						
				12						
				12						
24				12						
				11						
				13						
				12						
	Boring terminated at 25.5 ft.									
28										



LOG OF BORING No. FB8

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 5/5/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS	
						Plastic Limit	Liquid Limit
0	(SM) Silty Sand, trace Gravel, non-plastic, brown, moist		2205266	17			
	Wet			R 2 3			
				R 10 18			
9	With Gravel		2205267	24			
				R 2 3			
				R 3 4			
18	(SP-SC) Clayey Sand, low plasticity, brown, wet						
	Moist			R 3 4			
				R 3 4			
27	(CL) Sandy Clay, medium plasticity, brown, wet						
				R 6 6			
				R 3 5			
	(SP) Poorly graded Sand, non-plastic, brown, very moist						
				R 6 7			
36	(SP-SM) Poorly graded Sand with Silt, non-plastic, brown, moist						
				R 5 6			
				R 5 5			
45	(SC-SM) Silty Clayey Sand, low-medium plasticity, brown, wet						
				R 4 4			
				R 5 7			
54	(CL) Sandy Clay, low-medium plasticity, brown, very moist		2205268	53			
	Wet			R 7 7			
63	Boring terminated at 61 ft.						



LOG OF BORING No. FB9

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 5/5/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Water Content -	Liquid Limit	Penetration -	
0	(SM) Silty Sand, non-plastic, brown, moist			R 3 8						
7	(SC-SM) Silty Clayey Sand, low plasticity, brown, very moist			R 6 7						
14	(SM) Silty Sand, non-plastic, brown, moist			R 2 3						
15	(SC-SM) Silty Clayey Sand, low plasticity, brown, moist			R 3 3						
21	(SM) Silty Sand, non-plastic, brown, moist			R 4 4						
28				R 5 6						
30	(SP) Poorly graded Sand, non-plastic, brown, moist			R 5 7						
35	Slightly moist			R 5 8						
42	(SC-SM) Silty Clayey Sand, low plasticity, brown, moist			R 5 7						
45	(SM) Silty Sand, non-plastic, brown, damp			R 5 6						
49	Slightly damp			R 12						
	Boring terminated at 51 ft.			15						



LOG OF BORING No. FB10

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 5/5/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Water Content -	Liquid Limit	Penetration -	
0	(SM) Silty Sand, non-plastic, brown, moist			R 3 4						
5	(SC-SM) Silty Clayey Sand, low plasticity, brown, moist			R 4 3						
10	(SC) Clayey Sand, low plasticity, brown, moist			R 3 3						
15	(SP) Poorly graded Sand, and Gravel, brown, moist			R 2 2						
17-19	(SC) Clayey Sand, trace Gravel, low plasticity, brown, moist		2205269	30						
25	(SC-SM) Silty Clayey Sand, low plasticity, brown, wet			R 3 4						
28	Moist			R 5 8						
35	(SM) Silty Sand, non-plastic, brown, very damp			R 5 6						
42	Slightly damp			R 10 12						
45	(SM-ML) Poorly graded Silty Sand, non-plastic, brown, slightly damp			R 9 13						
49	Boring terminated at 51 ft.			R 14 25						



LOG OF BORING No. FB11

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** KN
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 5/5/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Water Content -	Liquid Limit	Penetration -	
0	(SM) Silty Sand, non-plastic, brown, moist			R 53						
6.5	(SC-SM) Silty Clayey Sand, low plasticity, brown, moist			R 25						
13	Wet			R 84						
19.5	And Gravel			R 35						
26	Very moist to wet			R 34						
32.5	Moist			R 35						
35	Very damp			R 35						
39	(SM) Silty Sand, non-plastic, brown, slightly damp			R 68						
45.5	Trace Gravel, dry			R 89						
45	(SM-ML) Poorly graded Silty Sand, non-plastic, light brown, slightly damp, weak cementation			R 1116						
	Boring terminated at 46 ft.									



LOG OF BORING No. FB12

PROJECT: Rancho Vistoso Valley Vista - Forensic
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan
ELEVATION:
DRILLER: Southlands Engineering
LOGGED BY: KN
DRILLING METHOD: 7" Hollow Stem Auger
DATE: 5/6/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS			
					% < #200	Plastic Limit	Water Content -	Liquid Limit
0	(SC-SM) Silty Clayey Sand, trace Gravel, low plasticity, brown, damp		205270	27				
	Moist			R 2 5				
7.5				R 2 2				
	(CL) Sandy Clay, medium plasticity, brown, moist			R 4 5				
10								
	(SC-SM) Silty Clayey Sand, trace Gravel, low plasticity, brown, damp		205271	36				
12-14								
15				R 5 6				
	(SM) Silty Sand, trace Gravel, non-plastic, brown, damp		205272	18				
17-19								
22.5				R 5 9				
	(SM) Silty Sand, non-plastic, brown, damp			R 7 11				
30								
				R 6 8				
35	(SC-SM) Silty Clayey Sand, low plasticity, brown, damp			R 5 8				
37.5								
	Moist			R 8 9				
45								
	(CL) Sandy Clay, medium-high plasticity, brown, moist			R 3 4				
50.5								
52.5	(SM) Silty Sand, non-plastic, brown, very damp			R 9 16				
	Boring terminated at 51 ft.							



LOG OF BORING No. FB12A

PROJECT: Rancho Vistoso Valley Vista - Forensic PROJECT NO.: 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan ELEVATION: _____
DRILLER: Southlands Engineering LOGGED BY: KN
DRILLING METHOD: 7" Hollow Stem Auger DATE: 5/6/22
DEPTH TO - WATER> INITIAL: ∅ AFTER 24 HOURS: ∅ CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

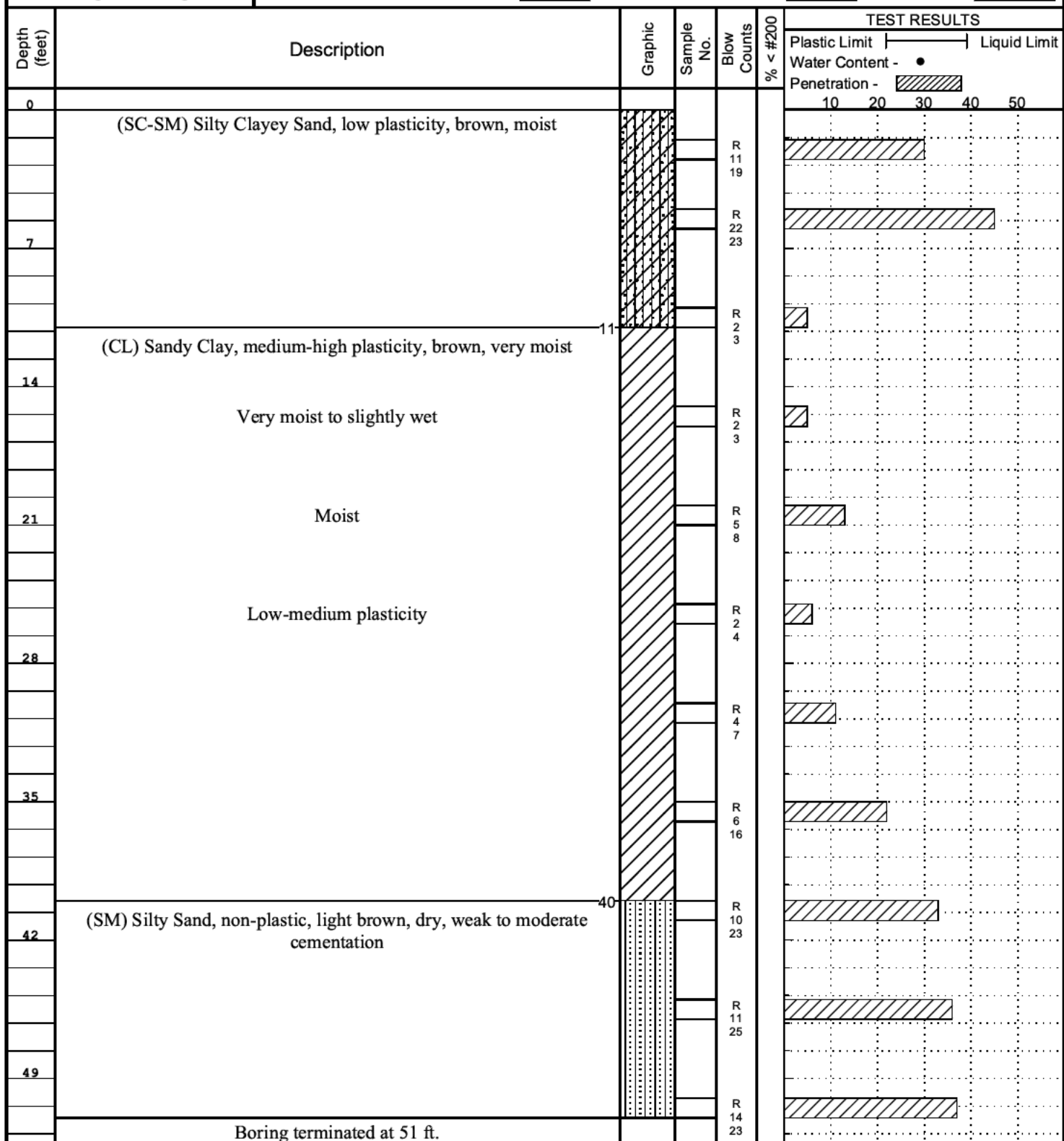
Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS				
						Plastic Limit	Liquid Limit			
0				3						
				7						
				5						
				4						
				2						
				3						
				3						
				3						
5				2						
				3						
				1						
				2						
				1						
				1						
				1						
				1						
				2						
10				3						
				3						
				2						
				3						
				2						
				3						
				3						
				3						
				3						
15				4						
				3						
				3						
				3						
				3						
				3						
				4						
				4						
				4						
				3						
				4						
20				4						
				4						
				4						
				5						
				4						
				5						
				5						
				5						
				7						
25				6						
				5						
				4						
				6						
				7						
				7						
				9						
				10						
				8						
				8						
				9						
30				7						
				8						
				8						
				10						
				7						
				7						
				8						
				8						
				7						
				9						
35				8						
	Boring terminated at 35 ft.									



LOG OF BORING No. FB13

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: Southlands Engineering **LOGGED BY:** KN
DRILLING METHOD: 7" Hollow Stem Auger **DATE:** 5/6/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

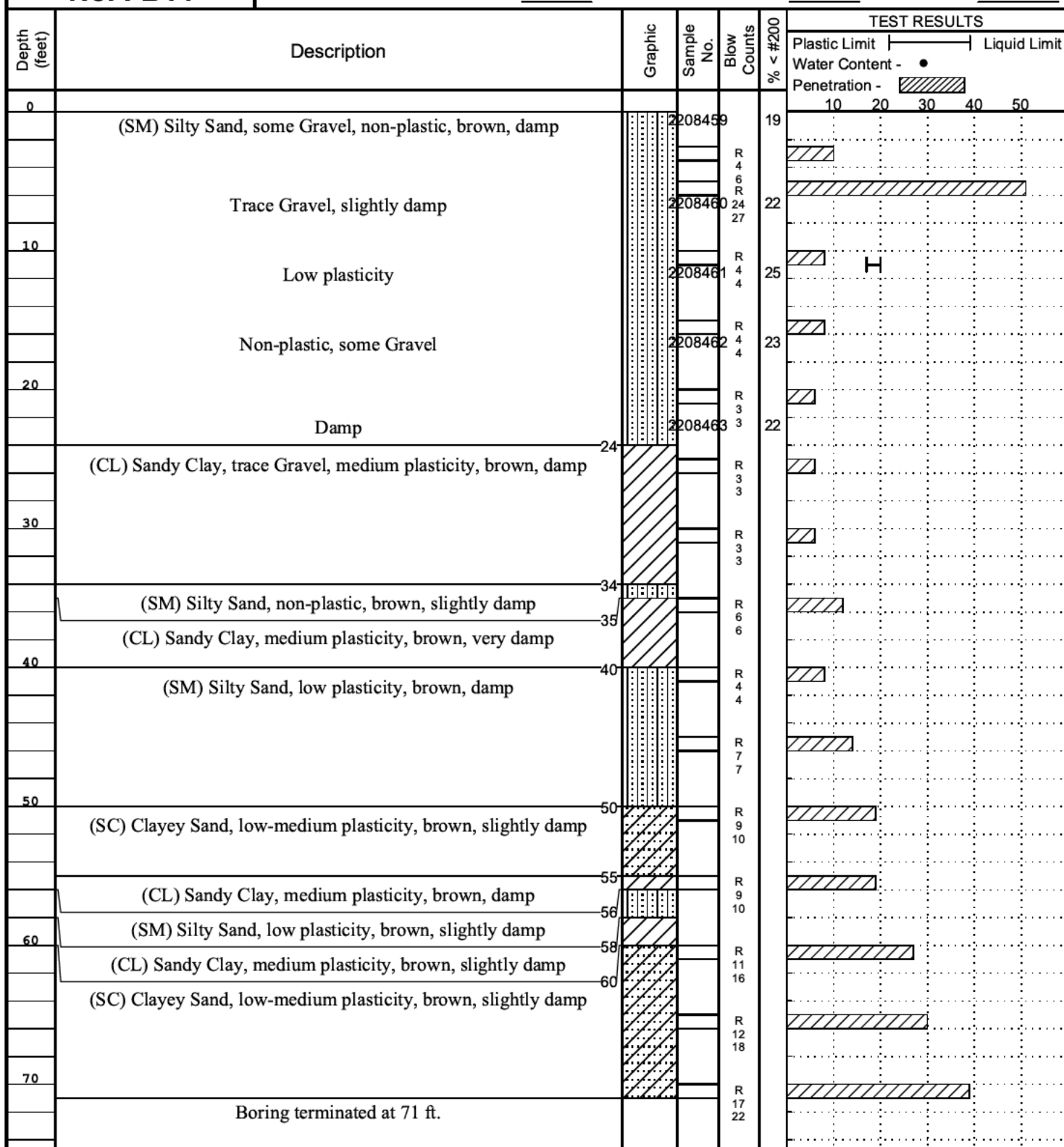




LOG OF BORING No. FB14

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** AM
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 8/30/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.





LOG OF BORING No. FB15

PROJECT: Rancho Vistoso Valley Vista - Forensic
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan
DRILLER: RCS
DRILLING METHOD: 8" Hollow Stem Auger
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞
PROJECT NO.: 12804
ELEVATION:
LOGGED BY: AM
DATE: 8/30/22
CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS				
					% < #200	Plastic Limit	Water Content -	Liquid Limit	Penetration -
0	(SM) Silty Sand, some Gravel, non-plastic, brown, very damp		2208464	19					
				R 7 8					
7.5	Trace Gravel		2208465	22					
				R 2 2					
			2208466	23					
				R 2 2					
15			2208467	28					
	(SC-SM) Silty Clayey Sand, trace Gravel, low plasticity, brown, damp			R 2 3					
				R 4 4					
22.5	(SM) Silty Sand, trace Gravel, non-plastic, brown, damp		2208468	21					
				R 3 4					
	(CL) Sandy Clay, medium plasticity, brown, very damp			R 4 4					
30				R 9 10					
	(SM) Silty Sand, non-plastic, light brown, slightly damp			R 11 15					
37.5				R 11 14					
	(SC) Clayey Sand, low-medium plasticity, light brown, slightly damp			R 17 22					
45									
52.5	Boring terminated at 51 ft.								



LOG OF BORING No. FB16

PROJECT: Rancho Vistoso Valley Vista - Forensic
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan
DRILLER: RCS
DRILLING METHOD: 8" Hollow Stem Auger
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞
PROJECT NO.: 12804
ELEVATION:
LOGGED BY: AM
DATE: 9/1/22
CAVING> C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS				
					% < #200	Plastic Limit	Water Content -	Liquid Limit	Penetration -
0	(SM) Silty Sand, some Gravel, non-plastic, brown, damp		2208490	14					
	Trace Gravel, very damp		2208491	14					
9	With Gravel		2208492	23					
18			2208493	21					
22-24	(SC) Clayey Sand, trace Gravel, low-medium plasticity, brown, very damp		2208494	28					
27	Light brown, slightly damp								
29	(SM) Silty Sand, low plasticity, light brown, slightly damp								
36									
40	(SC) Clayey Sand, trace Gravel, low-medium plasticity, light brown, slightly damp								
45									
54									
63	Boring terminated at 61 ft.								



LOG OF BORING No. FB17

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** AM
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 9/1/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS	
					Plastic Limit	Liquid Limit
					Water Content - •	
					Penetration -	
0	(SM) Silty Sand, non-plastic, brown, damp		220849	20		
				R 8 8		
				R 5 5		
7.5	Trace Gravel, very damp		2208496	15		
				R 5 6		
				R 5 6		
15				R 5 7		
				R 7 11		
22.5	Some Gravel, light brown, slightly damp		2208499	15		
				R 12 12		
30				R 8 10		
				R 9 14		
37.5				R 11 11		
45				R 10 12		
52.5	Boring terminated at 51 ft.			R 15 21		



LOG OF BORING No. FB18

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** AM
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 9/1/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	TEST RESULTS				
					% < #200	Plastic Limit	Water Content -	Liquid Limit	Penetration -
0	(SM) Silty Sand, trace Gravel, non-plastic, brown, damp		2208518	33					
				R 5 6					
				R 4 6					
7.5			2208519	38					
				R 4 4					
	(CL) Lean Clay, low-medium plasticity, brown, damp		2208520	78					
15				R 3 3					
	(CL-ML) Sandy Silty Clay, low plasticity, brown, damp		2208521	83					
				R 10 12					
22.5	(CL) Lean Clay, low-medium plasticity, brown, damp		2208522	87					
	Light brown, slightly damp			R 7 9					
				R 7 8					
30				R 7 10					
				R 7 9					
37.5				R 11 15					
45	(SM) Silty Sand, non-plastic, light brown, slightly damp			R 14 18					
52.5	Boring terminated at 51 ft.								



LOG OF BORING No. FB19

PROJECT: Rancho Vistoso Valley Vista - Forensic **PROJECT NO.:** 12804
CLIENT: Pulte Tucson Land
PROJECT LOCATION: Rancho Vistoso Boulevard and Tangerine Road
LOCATION: See Site Plan **ELEVATION:** _____
DRILLER: RCS **LOGGED BY:** AM
DRILLING METHOD: 8" Hollow Stem Auger **DATE:** 9/1/22
DEPTH TO - WATER> INITIAL: ∞ **AFTER 24 HOURS:** ∞ **CAVING>** C

This information pertains only to this boring and should not be interpreted as being indicative of the site.

