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Boring	Northing	Easting	Ground Elevation (ft-msl)	Depth (ft)	Bottom Elevation (ft-msl)
GA-17	525247.6	2950132	578.2	110.0	468.2
GA-18	524465.1	2950260	597.3	103.0	494.3
GA-19	523996.2	2951615	579.1	110.0	469.1
GA-20	523359.8	2950551	588.2	95.0	493.2
GA-21	523002.7	2949612	566.5	70.0	496.5
GA-22	525705.8	2950797	557.1	73.0	484.1
GA-23	524605.2	2951837	564.6	68.0	496.6
GA-24	523949.4	2950751	599.7	105.0	494.7
GA-25	522924.2	2951295	575.4	80.0	495.4
GA-26	522517.5	2949749	560.0	65.0	495.0
GA-27	525404.7	2949722	571.3	41.0	530.3
GA-28	524772.4	2951431	571.8	38.0	533.8
GA-29	525162.2	2950476	589.8	46.0	543.8
GA-30	524829.3	2951052	588.4	44.0	544.4
GA-31	524816.3	2950518	600.6	56.0	544.6
GA-32	524786.5	2949727	583.3	39.0	544.3
GA-33	524513.8	2950596	601.0	52.0	549.0
GA-34	524326.8	2951031	594.8	47.0	547.8
GA-35	524259.1	2950567	601.9	59.0	542.9
GA-36	524326.1	2949895	587.2	46.0	541.2
GA-37	524090.5	2950151	595.3	49.0	546.3
GA-38	524062.8	2949852	586.7	41.0	545.7
GA-39	523566.6	2950476	595.2	61.0	534.2
GA-40	523767.4	2949707	581.8	39.0	542.8
GA-41	523352.8	2948905	570.0	40.0	530.0
GA-42	524062.6	2951236	590.3	60.0	530.3

5.2 Site Stratigraphy

The site stratigraphy has been illustrated through a series of seven cross-sections, as shown on Figures III-4-13.1 through III-4-13.7. These cross-sections utilize previous borings at the site in conjunction with new borings installed in 2014 and 2015 by Golder. No water was observed by Golder during drilling of the new borings installed in 2014 and 2015. Initial water levels were not recorded from borings where wet rotary techniques were used as they were not representative measurements. The results of the subsurface investigations show that the site is underlain by three distinct strata, which is consistent with previous studies and permitting at the site, namely (in order from ground surface down):

- Stratum I – Residual clay in the lower Taylor Marl - Ozan Formation: Stiff to hard, dark brown to tan, low plasticity clay, with high plasticity clay with organic content comprising the top of the stratum in some areas.
- Stratum II – Weathered claystone in the Ozan Formation: Weathered, extremely weak to weak, tan and light gray, with orange mottling, claystone.
- Stratum III – Unweathered claystone in the Taylor Group: Slightly weathered to fresh (unweathered), massive, weak to strong, light gray claystone.

All three stratums belong to the Cretaceous Gulf Series of the Navarro-Taylor Groups. Stratum I, a low-plasticity clay with pockets of high plasticity clay and organic content, is the product of Stratum II clay weathering. The interface between Stratum I and II was not always easily defined because of the gradual transition from residual soil to rock. Also, multiple criteria were considered in determining the top of Stratum III, which included the change of rock type, change in color, SPT N-values, and change from completely/highly weathered, fissile claystone to slightly weathered/unweathered, massive claystone.

5.3 Soil Properties

In accordance with 30 TAC §330.63(e)(5), the geotechnical properties of the predominant strata at the site are summarized in the following sections.

5.3.1 Stratum I

This stratum is described as hard, dark brown, tan or gray (with frequent orange mottling), high plasticity clay. The thickness of Stratum I ranges from 0 to 28 ft. Table III-4-5 summarizes the properties of Stratum I. This Stratum roughly corresponds to the uppermost soil type or topsoil described in Permit MSW-692A.

Table III-4-1: Regional Geologic Units and Their Water Bearing Properties

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (feet)	~~Character of Rocks~~Lithology	Water Bearing Properties/ Hydraulic Conductivities	Depositional Environment
Quaternary	Recent		Alluvium	Alluvium and Terrace Deposits	60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with coarser materials usually concentrated in the lower section.	Yields small to very large quantities of fresh to slightly saline water, chiefly along the Colorado River in eastern Travis County. K= ≤2,400 feet per day for gravel alluvium from the Brazos River (Ryder 1996).	Alluvial
	Pleistocene		Terrace Deposits		60	Water-stratified deposits of unconsolidated calcareous gravel, sand, silt, and clay, with the coarser materials at the base.	Yields very small to moderate quantities of fresh to moderately saline water.	Alluvial
			High gravel		20	Gravel and sand, sometimes mixed with clay from underlying formations.		Alluvial
Tertiary	Eocene	Wilcox	Simsboro Sand Member	Wilcox	200	Fine-to-coarse sand and sandstone, sandy clay, with lenses of limestone and lignite.	Yields small to moderate quantities of fresh to moderately saline water. K= 2-204 ft/day (Thorkildsen and Price 1991).	Detrital sediments at or near a transgressive shoreline.
		Midway		Midway	300	Clay, silt, glauconitic sand, and thin beds of limestone and sandstone with gypsum, phosphatic nodules, and calcareous concretions.	Yields very small quantities of fresh to moderately saline water.	Detrital sediments at or near a transgressive shoreline.

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (feet)	~~Character of Rocks~~Lithology	Water Bearing Properties/ Hydraulic Conductivities	Depositional Environment
Cretaceous	Gulf	Navarro		Navarro and Taylor Groups	700	Massive beds of shale and marl with clayey chalk, clay, sand, and some nodular and phosphatic zones.	Yields very small quantities of fresh to moderately saline water.	Sediments deposited in a low-energy marine environment.
		Taylor						Sediments deposited in a low-energy marine environment.
		Austin		Austin Chalk	200	Massive beds of chalk and marl with bentonitic seams, glauconite, pyrite nodules.	Yields small quantities of fresh water.	Sediments deposited in a low-energy open marine shelf environment.
		Eagle Ford		Confining Unit	40	Massive calcareous shale with thin interbeds of silty and sandy, flaggy limestone.	Not known to yield water in Bell County	Marginal (lagoonal) to open marginal marine.
	Comanche	Washita	Buda Limestone		50	Massive, fine-grained, borrowed, shell-fragment limestone. The upper portion is harder and bluff-forming.	Not known to yield water Bell County.	Shallow subtidal and intertidal.
			Del Rio Clay	Confining Unit	60	Clay and marl with gypsum, pyrite, and a few thin siltstone and sandstone beds.	Not known to yield water in Bell County.	Lagoonal
			Georgetown Formation	Edwards and associated limestones	75	Thin interbeds of richly fossiliferous, nodular, massive fine-grained limestone and marl.	Yields small to very large quantities of fresh water, especially from cavernous zones in the Edwards Limestone.	Open-shelf subtidal.

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (feet)	~~Character of Rocks~~Lithology	Water Bearing Properties/ Hydraulic Conductivities	Depositional Environment
							K = 0.01 – 30,000 ft/day (mean of 9 ft/day) (Jones 2003).	
		Fredericksburg	Kiamichi Formation		100	Marl, thin limestone seams, clay, and shell aggregates. Not present in Bell County.	NA	Variety of carbonate marine environments (reef, lagoonal, shoal, basinal, and supratidal.
			Edwards Limestone		200	Massive, brittle, vugular limestone and dolomite with nodular chert, gypsum, anhydrite, and solution-collapse features.	Yields small to very large quantities of fresh water, especially from cavernous zones. K = 0.01 – 30,000 ft/day (mean of 9 ft/day) (Jones 2003).	Variety of carbonate marine environments (reef, lagoonal, shoal, basinal, and supratidal).
			Comanche Peak Limestone		50	Fine-grained, fairly hard, nodular, fossiliferous, marly, extensively burrowed limestone.	Yields little or no water in Bell County. K = 0.01 – 30,000 ft/day (mean of 9 ft/day) (Jones 2003).	Variety of carbonate marine environments (reef, lagoonal, shoal, basinal, and supratidal.
			Walnut Formation		100	Hard and soft limestones, marls, clays, and shell beds.	Yields little or no water in Bell County.	Lagoonal or subtidal.
		Trinity	Paluxy Formation	Upper Trinity	10	Fine-grained quartz sand, in part indurated by calcium carbonate cement. Locally contains thin beds of limestone and marl.	Yields very small to moderate quantities of fresh and occasionally slightly saline water. K= 1-31 ft/day for	Sand bar deposited in shallow marine environment.

System	Series	Group	Stratigraphic Unit		Hydrologic Unit	Approximate Maximum Thickness (feet)	~~Character of Rocks~~Lithology	Water Bearing Properties/ Hydraulic Conductivities	Depositional Environment
								overall Trinity aquifer (Ryder 1996).	
			Glen Rose	Upper Member		600	Alternating beds of limestone, dolomite, shale, and marl with some anhydrite and gypsum.	Yields very small to moderate quantities of fresh and occasionally slightly saline water. K= 1-31 ft/day for overall Trinity aquifer (Ryder 1996).	Marine.
			Glen Rose	Lower Member	Middle Trinity	330	Massive, fossiliferous limestone and dolomite in the basal part grading upward into thin beds of limestone, shale, marl, and gypsum.	Yields very small to moderate quantities of fresh to moderately saline water. K= 1-31 ft/day for overall Trinity aquifer (Ryder 1996).	Marine.
			Travis Peak	Hensell Sand Member	Middle Trinity	75	Sand gravel, conglomerate, sandstone, siltstone, and shale.		Fluvial.
			Travis Peak	Cow Creek Limestone Member	Middle Trinity	80	Massive, often sandy, dolomitic limestone, frequently forming cliffs and water falls. Contains gypsum and anhydrite beds.		Marine.
			Travis Peak	Hammett Shale Member	Confining Unit	30	Shale and clay with some sand, dolomite, and limestone.	Not known to yield water in Bell County.	Marine.

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (feet)	~~Character of Rocks~~Lithology	Water Bearing Properties/ Hydraulic Conductivities	Depositional Environment
			Sligo Member	Lower Trinity	300	Limestone, dolomite, occasionally sandy, and shale. Thins to the west.	Yields small to moderate, and with acidizing, large quantities of fresh to moderately saline water. K= 1-31 ft/day for overall Trinity aquifer (Ryder 1996).	Subtidal to supratidal.
			Hosston Member		800	Basal conglomerate grading upward into a mixture of sand, siltstone, and shale, with some limestone beds.		Fluvial.
Pennsylvanian	Lower Pennsylvanian	Strawn			800	Alternating beds of sandstone and shale, with some conglomerates.	Not known to yield water in Bell County.	Subtidal.
		Bend	Smithwick Shale		500	Shale with sandstone and siltstone in the upper portion. Metamorphosed to phyllites and quartzites in the Quachita Fold Belt.	Not known to yield water Bell County.	Open marine.
			Marble Falls Limestone		400	Cavernous, massive, siliceous, fossiliferous limestone	Not known to yield water in Bell County, but may yield small to moderate quantities of slightly to moderately saline water.	Open marine and shoals.

Notes:

Modified from Duffin, G. and S.P. Musick. 1991. TWDB Report 326