YOVAISH
ENGINEERING SERVICES, LLC

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

August 26, 2024
(Revised March 18, 2025)

Reader Communities
5850 T.G. Lee Blvd
Suite 200
Orlando, FL 32822

Attention: Mr. Dean A. Barberree

Subject: **Progress Report No. 1, Subsoil, Groundwater and Limited Hydrogeologic Investigation, Proposed Lake Hills, County Road 48 & State Road 19, Town of Howey-in-the-Hills, Florida (PN 24-E2180.02)**

Dear Mr. Barberree:

Our August 26, 2024 investigation has been updated to include additional field investigation and geotechnical recommendation for the proposed entrance roadway crossing over the noted depressional feature. The recommendations presented herein supercede the evaluations presented in the August 2024 report.

With the exception of the limits of the depressional feature, our geotechnical evaluations with respect to developing the site for residential lots are unchanged. Normal site preparation procedures will allow the construction of the entrance right-of-way over the noted depressional feature. As you are aware, the design of the site development plans is on going and we will perform additional geotechnical evaluations that will be required for the project design and permitting.

We appreciate the opportunity to be of service on this portion of your site evaluations and trust that the enclosed data and evaluation are sufficient for your needs. If you have any questions concerning the contents of this report, please do not hesitate to contact our office.

Sincerely,

Yovaish Engineering Services, LLC
Certificate of Authorization No. 30214

Rachel Roseland, P.E.
Project Engineer

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ATTACHMENTS
SUBSOIL, GROUNDWATER AND LIMITED HYDROGEOLOGIC INVESTIGATION
PROPOSED LAKE HILLS, COUNTY ROAD 48 & STATE ROAD 19
TOWN OF HOWEY-IN-THE-HILLS, FLORIDA
(PN 24-E2180.02)

SUBSOIL, GROUNDWATER AND LIMITED HYDROGEOLOGIC INVESTIGATION
PROPOSED LAKE HILLS, COUNTY ROAD 48 & STATE ROAD 19
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1.0 SITE AND DEVELOPMENT DESCRIPTION

1.1 Site Description

The project site comprises approximately 220.21± acres located on the north side of County Road 48, west of the intersection with County Road 19, in Howey-in-the-Hills, Florida. The site is located within Sections 22 and 23, Township 20 South, Range 25 East in Lake County, Florida. A Vicinity Map, reproduced from the Howey in the Hills, Florida USGS Quadrangle Map, depicting the approximate site location and configuration has been prepared and is presented on Plate 1, attached.

1.1.1 Wetlands: As depicted by the submerged marsh/swamp symboling on the USGS Quadrangle Map (see Plate 1 and Figure 1D) and as confirmed by the survey provided to us, several wetlands exist within the lower elevations of the site. Based upon review of historic aerial photographs (see Exhibit 1), these wetland areas were excavated and reshaped as part of the planted grove operations. As depicted on the historic aerials, this work occurred some time after 1947 and before 1958. It is instructive to note that the approximate limits of the affected areas are mapped as Fill land, loamy materials (Fm) on the SCS Soil Survey (see Plate 2 and Figure 1E).

The approximate limits of the man-made ponds, canals/ditches and affected wetlands are depicted on the Location Plans on Figures 1A and 1B. As depicted on the preliminary site plan, the wetland limits will remain (for the most part) undisturbed as part of the design of the proposed site development. The wetland areas to be impacted by the construction limits are indicated by the blue hatched areas on the Location Plan on Figure 1B.

1.1.2 Existing Site Conditions: At the time of our field investigation, the site vegetative cover generally comprised overgrown grasses and remnants of the former grove operation. Photographs of the encountered site conditions were obtained and are contained in our project file. A recent aerial photograph, depicting the existing site conditions (at the time of this study), is included on the Location Plan on Figure 1A.

1.1.3 Site Topography: Based upon topographic information provided to us, ground elevations within the site generally vary from approximately +130 feet (within the southeast corner of the site) and slope downwards to +65 feet (along the northern property boundary comprising Lake Harris). The available ground elevation contours are included on the Location Plan on Figure 1B. It is instructive to note that existing grades within the southeast corner of the site are relatively steep (exceeding 10 percent).

1.1.4 Closed Depression: The site ground elevation contours are punctuated by a closed somewhat circular-shaped depressional area (top elevation approximately 90.0 feet and bottom elevation of approximately +75.0 feet) located near the southern site boundary. Review of historic aerials (see Exhibit 1) indicate that the depressional area was excavated and re-worked at the time of the aforementioned re-working of the wetlands.

The proposed site layout and existing topography are depicted on the Location Plan on Figure 1B. As depicted on the Location Plan on Figure 1B, a portion of the entrance roadway is planned over the depressional feature, while one lot is planned adjacent to the upper top of bank of the same.

1.2 Proposed Site Improvements

Based upon the site layout provided by Madden, Moorhead & Stokes, Inc. (MMS), we understand that the proposed site development will consist of single family residential lots with attendant roadway areas and a master stormwater management system. The approximate configuration and location of the proposed site improvements are depicted on the Location Plan on Figure 1B.

The proposed site grading plan was not available at the time of this report. As preliminary input to our planning our field investigation, we reviewed the budgetary cut fill sheet prepared by the Briar Team (see Figure 1C). As depicted on the cut/fill sheet, significant cuts (up to 30 feet) may be required within portions of the site.

2.0 FIELD INVESTIGATION AND LABORATORY TESTING

2.1 Field Investigation

2.1.1 Auger Borings: Eight-seven (87) auger borings were performed to depths varying from approximately 10.0 to 35.0 feet below existing grades. The approximate location of each boring is shown on the Location Plans on Figures 1A through 1E and are labeled as RB-1 through RB-58 and PB-1 through PB-29.

2.1.2 Standard Penetration Test (SPT) Borings: A total of six (6) Standard Penetration Test (SPT) borings were performed within and adjacent to the depressional area and to depths varying from approximately 60.0 to 85.0 feet below the existing grades. The SPT borings were performed using trac-mounted rotary-wash drilling equipment. The soils were sampled at frequent intervals with a split-barrel sampler driven by a 140-pound hammer, falling 30 inches, in general accordance with ASTM D-1586 testing procedures. The approximate location of each SPT boring is presented on the Location Plans on Figures 1A through 1E and are labeled as SPT-1 through SPT-6.

The initial boring locations were marked in the field using handheld GPS devices and measuring from existing on-site landmarks. Thereafter, the boring locations and elevations were determined by the Project Surveyor.

2.1.3 Muck Probes: Muck probes are planned to be performed within the wetland limits (to be impacted) by the construction limits. The results of the muck probeswill be presented under separate cover.

2.2 Laboratory Testing

2.2.1 Index Property Testing: Representative samples from each soil layer encountered at each test boring location were sealed in air-tight containers in the field to prevent moisture loss and returned to our laboratory for examination by a geotechnical engineer. Representative samples were tested for their index properties to aid in soil classification. Laboratory tests performed included natural moisture content, organic content and percent passing the U.S. No. 200 Sieve. The results of laboratory testing performed on the samples obtained from the test borings are shown adjacent to the Soil Profiles on Figures 2 through 14, attached. The Unified Soil Classification Symbol for each soil stratum is presented in the attendant Soil Legend.

2.2.3 Permeability Testing: Laboratory permeability tests were performed on relatively undisturbed tube soil samples obtained at select boring locations. The hydraulic conductivity tests indicate that the shallow fine sands tested have a vertical coefficient of permeability ranging from approximately 16 to 53 feet per day. The permeability test results are shown adjacent to the corresponding Soil Profiles on Figures 2 through 5. Based upon our experience, the horizontal coefficient of permeability is usually 1.5 to 2.0 times the vertical coefficient for the fine sand encountered at this site.

3.0 SUBSOIL AND GROUNDWATER LEVEL CONDITIONS

3.1 SCS Soil Delineations

The soil types within the area under study were mapped by the U.S.D.A. - Soil Conservation Service (SCS) and subsequently published in the Lake County Soil Survey Report. The approximate horizontal extent of each soil type mapped within the study area is depicted on SCS Vicinity Map on Plate 2 and Figure 1E. A complete description of the on-site soils is provided in the Lake County Soil Survey. A brief description of each soil type mapped is presented in Table 1, below.

Table 1. USDA-SCS Soil Delineations.

Soil Type	*Drainage Characteristics*	*Seasonal High Groundwater Level Depth*
Albany Sand, 0 to 5% slopes (AbB)	somewhat poorly drained	3.5' - 5.0'
Anclote and Myakka Soils (Am)	very poorly drained	ponded in undrained areas
Astatula sand, dark surface, 0 to 5% slopes (AtB)	excessively drained	greater than 10.0'
Astatula sand, dark surface, 5 to 12% slopes (AtD)	excessively drained	greater than 10.0'

Soil Type	*Drainage Characteristics*	*Seasonal High Groundwater Level Depth*
Astatula sand, dark surface, 12 to 40% slopes (AtF)	excessively drained	greater than 10.0'
Fill land, loamy materials (Fm)	mixed, reworked, & leveled by earth moving equip.	2.5' - 5.0'
Immokalee sand (Is)	poorly drained	1.0' - 3.5'
Lake sand, 0 to 5% slopes (LaB)	well to excessively drained	greater than 10.0'
Myakka sand (Mk)	poorly drained	1.0' - 3.5'
Swamp (Sw)	very poorly drained	ponded
Tavares sand (Ta)	moderately well drained	3.5' - 5.0'

The Fill land, loamy materials (Fm) soil type is typically located in former low-lying areas, adjacent to canals, ponds and/or lakes that have been reworked, shaped and/or filled by dredging and/or earthmoving equipment. As such, highly variable texture and compactness of soils can exist with no orderly sequence to the fill/disturbed materials.

3.2 Encountered Soil Conditions

3.2.1 Surficial: For the most part, the ecountered surficial soil layer generally consisted of gray fine sand or slightly silty fine sand with occasional small roots, tilled topsoil (Strata 1A and 1B) in the upper approximately 1.0 to 2.0 feet.

As exceptions, the following dissimilar surficial soil conditions were encountered:

- mixed/disturbed soil conditions were encountered at several boring locations and to depths generally varying from 2.0 to 5.0 feet.

- dark gray silty to slightly clayey fine sand (Stratum 1D) and buried peat (Stratum 1C) were encountered at the locations of borings PB-24 and PB-25.

In general, the dissimilar surficial soil conditions were encountered within or adjacent to the aforementioned re-worked wetland areas and within the limits of the site mapped as the soil type Fill land, loamy materials (Fm). We recommend that the mixed/disturbed/reworked soil stratigraphy be further explored by performing test pits. The test pit operations may be performed at the time of construction and should be monitored by a representative of Yovaish Engineering Services, LLC.. Any unsuitable materials encountered by the test pits should be removed in their entirety from the construction limits.

3.2.2 Subsurface Soils: Underlying the surficial layers described above, the subsoil conditions encountered comprised alternating layers of fine sands (Strata 2 through 6) and slightly silty to silty fine sands (Strata 7, 7A, and 8) to depths varying from 5.0 to greater than 25.0 feet. Thereafter, silty and slightly clayey to clayey fine sands (Strata 9, 9A, 10 through 12) and occasional sandy clay (Stratum 13) were encountered to the boring termination depths.

For the most part, the underlying low permeable silty and clayey sands (Strata 9, 9A, 10 through 13) were encountered at depths greater than 4.0 feet. As an exception, low permeable soils were encountered at depths of 4.0 feet or less at some boring locations, predominately located within the southern portion of the site. The preliminary estimated horizontal limits of the relatively shallow low permeable soils are presented by the red shaded areas on the Location Plan on Figure 1B.

A more detailed representation of the subsoil conditions encountered, with respect to stratigraphy, is presented in the form of Soil Profiles on Figures 2 through 13. The borings are presented on a elevation basis, using the surveyed elevation data provided by the Project Surveyor.

3.2.3 Deep Standard Penetration Test (SPT) Borings: Relatively uniform subsoil conditions were encountered by the deeper test borings. As a comparison, it is instructive to note that the encountered soil stratigraphy agrees with the regional hydrogeologic stratigraphy presented in Attachment A.

Similar subsoil conditions, consisting of a relatively thin layer of fine sands (Strata 2 through 4), underlain by silty to slightly clayey fine sands (Strata 9, 9A, 10, 11 and 12) were encountered at the SPT boring locations and to depths varying from 28.0 to 33.0 feet. Thereafter, clayey fine sand to sandy clay with traces of phosphates (Strata 14 and 14A) were encountered to depths varying from 45.0 to 56.0 feet.

It is instructive to note that the clayey fine sand to sandy clay (Stratum 14 and 14A) contains trace of phosphates, which is normally associated with the regional geologic unit identified as the Hawthorne Group (Undifferentiated). This formation (when intact and continuous) is relatively impermeable and acts as a confining layer retarding the exchange of water between the surficial and the Floridan aquifers.

Below the sandy clay layer, pale yellowish brown limestone (Stratum 15) was encountered to the boring termination depths. A more detailed representation of the subsoil conditions encountered by the SPT borings, with respect to stratigraphy and N-values (blow-counts), are presented in the form of Soil Profiles on Figure 14. The SPT borings are presented on a elevation basis, using the surveyed elevation data provided by the Project Surveyor (where available) and/or interpolation of the available topographic information.

3.2.4 Relative Compaction: Based upon our evaluation of the Standard Penetration Testing (SPT) Procedures, the relative compaction of the soils are relatively uniform and normal. The penetration test results, in the form of blow-counts per foot, are included adjacent to the Soil Profiles on Figure 14. In general, the relative compaction and/or consistency of the soils may be interpreted as follows:

Table 2. Typical Correlations Between SPT "N" Values and Relative Consistency

Sandy (Granular) Soils		Clayey (Cohesive Soils)	
N	**Relative Compactness**	**N**	**Consistency**
0 - 4	very loose	0 - 2	very soft
4 - 10	loose	2 - 4	soft
10 - 30	medium dense	4 - 8	firm
30 - 50	dense	8 - 15	stiff
>50	very dense	15 - 30	very stiff
		>30	hard

As indicated by blow-counts "WR" adjacent to the Soil Profiles of SPT-2 on Figure 14, very soft/loose soil conditions were encountered at a depth interval from approximately 38.0 to 45.0 feet below existing grade. As a comparison, no soft/ravelled zones (normally associated with on-going sinkhole activity) were encountered at the remaining test boring locations.

3.2.5 Circulation Losses: During the drilling of SPT borings, drilling fluid (usually consisting of water and bentonite) is continuously circulated within the borehole. The purpose of using drilling fluid is to help maintain an open borehole during the drilling activity (i.e. minimize the amount of soil sloughing from the sides of the borehole) and to remove soil and rock cuttings that may be deposited in the bottom of the borehole. A circulation loss occurs when the drilling fluid is lost from the open borehole. In order for a circulation loss to occur, fissures, voids, or very porous zones must be present in the substrata into which the drilling fluids drain and/or flow.

As presented adjacent to the Soil Profiles and with the exception of SPT-2, circulation losses were typically noted near the contact with the limestone layer and at depths varying from approximately 29.0 to 63.0 feet. It is our opinion that the loss of drilling fluids were the result of the penetration into the more permeable limestone formation.

As an exception, a circulation loss was noted at a depth of approximately 38.0 feet at the location of SPT-2. In consideration of the very soft clay encountered combined with the localized circulation loss of drilling fluids at test boring SPT-2, it is our opinion that the soft layer is an anomalous condition associated with historic sinkhole activity.

3.3 Groundwater Level Conditions

3.3.1 Measured Groundwater Levels: The depth to the shallow groundwater table was measured in the open auger bore holes at the time the borings were performed and recorded again at least 24 hours later, by installing piezometers. The groundwater table was encountered at depths varying from

approximately 3.3 to 22.9 feet below the existing ground surface. As an exception, the groundwater table was not encountered within the termination depth of several of the shallow auger borings performed within the higher elevations of the site, as indicated by N. E. (not encountered). The measured groundwater levels (where encountered) are indicated adjacent to the Soil Profiles on Figures 2 through 13. Due to the drilling fluids utilized to stabilize the SPT bore holes, stabilized groundwater levels could not be recorded.

3.3.2 Normal Seasonal High Groundwater Levels: The groundwater table on this site will fluctuate according to the following:

- U.S.D.A. - S.C.S. Soil Survey maps for the site (see Plate 2 and Figure 1E)
- the soil stratigraphy encountered during this investigation
- the recorded elevations of Lake Harris (see Exhibit 2),
- ground elevations along the periphery of wetlands and/or submerged marsh depicted on the USGS Quadrangle Maps (see Figure 1D)
- the antecedent rainfall conditions prior to the time the groundwater levels were measured
- site specific topographic information

Based upon experience with similar soil and groundwater level conditions, we have estimated that the seasonal high groundwater level will occur as follows:

- approximately 3.0 to 5.0 feet above the measured levels, where encountered
- temporarily "perch" approximately 1.0 to 1.5 feet above the low permeable soils (comprising Strata 7 through 13, 7A and 9A), following periods of heavy and frequent rainfall

The estimated normal seasonal high groundwater levels (apparent and "perched") are included adjacent to the Soil Profiles on Figures 2 through 13. A summary of the estimated seasonal high groundwater levels within each of the preliminary pond locations is included on Table 4, attached.

4.0 EVALUATIONS AND CONCLUSIONS

4.1 General

Based on the results of the investigation outlined herein and with the exception of the aforementioned soft soil conditions encountered at boring SPT-2, (see **Section 4.2, below**), it is our opinion that the subsoils encountered are suitable for the support of the proposed development using normal site preparation procedures. The normal site preparation procedures should include the usual

clearing, stripping and grubbing to remove the existing vegetation and topsoil (where present) followed by compaction from the stripped grade and compaction of any fill soils needed to achieve final grade within the building and roadway areas.

Based upon our experience with developments in the vicinity of the site, the most dominate characteristic of this site which will affect the design of the site development is the shallow hydraulically restrictive soils and potentially perched groundwater levels. Careful consideration must be given to the existing site grades and subsurface drainage in order to minimize fill requirements and/or the use of underdrains.

As exceptions and depending upon the final site layout, the following **"above normal site preparation"** may be required:

- over-excavation of the hydraulically restrictive layers (Strata 9 through 13 and 9A) from within 4.0 below the bottom of the pavement center line grade and finished floor elevations of the building areas, see red shaded areas on Figure 1B.

- removal of the accumulated soft sediments/organic soils estimated to be present within the wetland areas to be impacted by the construction limits, see blue hatched areas on Figure 1B. As discussed previously herein, muck probes are planned and will be presented under separate cover.

- test pits to explore the horizontal extent of the mixed/disturbed/reworked soils. As discussed previously herein, the test pit operations may be performed at the time of construction and should be monitored by a representative of Yovaish Engineering Services, LLC.. Any unsuitable materials encountered by the test pits should be removed in their entirety from the construction limits.

- where the recommended minimum safe setback from the location of boring SPT-2 cannot be provided for the proposed lots, above normal site work will be required

More detailed discussion and geotechnical recommendations for the over-excavation procedures are presented in the follow subheadings.

4.2 Depressional Area Boring SPT-2

As discussed previously herein, it is our opinion that the soft zone encountered at boring SPT-2 was the result of ancient sinkhole activity. Based upon our experience, it is the usual standard of practice to avoid the construction of settlement sensitive site improvements over such soil conditions. As input to design of the site layout, we have performed an assessment of the encountered soil conditions relative to corresponding recommended safe setback for proposed lot areas.

The recommended safe setback (from SPT-2) is included on the Location Plan on Figure 1B. As depicted on Figure 1B and with the exception of one (1) lot, the proposed site plan provides for the aforementioned recommended safe setback. Provided this portion of the site may be designed as open space, no remedial efforts will be required.

4.3 Site Grading Considerations

As geotechnical input the design of the site grades and associated earthwork requirements, we prepared the cut and fill recommendations and guidelines below.

4.3.1 Undercut Low Permeable Soil: In order to prevent adverse affects of the perched groundwater table on the proposed lot and roadway areas, we recommend that the low permeable soils encountered within 3.0 feet of the final grades of the building pad and roadway right of way areas be removed to a depth of 4.0 feet. The entire width of the roadway right-of-way area should be undercut to a minimum depth 4.0 feet (as measured from the centerline grade) to remove the low-permeable soils (where required). Upon inspection and approval by the Geotechnical Engineer, the affected areas maybe backfilled with clean fine sands with less than 5 percent passing the U.S. No. 200 sieve. The fine sands and slightly silty fine sands comprising Strata 2 through 6 should be suitable as backfill. The fill soil and backfill soils within roadway right-of-way should be placed in 12 inch uniform lifts and compacted to a minimum density equivalent to 98 percent of the soils Modified Proctor Density Value (ASTM D-1557).

As input to the design team, the preliminary estimated horizontal limits of the shallow (4.0 feet or less) hydraulically restrictive soils are depicted by the red shaded areas on the Location Plan on Figure 1B.

The unsuitable silty/clayey fine sand (Strata 9, 9A, 10 through 13) generated during the site preparation should be disposed of as directed by the owner. Conversely, the silty/clayey fine sand (Strata 9, 9A, and 10) material may be improved and/or used as bulk fill within non-structural areas (see **Section 4.6.1 Borrow Suitability,** below).

4.3.2 Individual Lot Grading and Drainage: To mitigate the potential adverse impacts of surface ponding and perched groundwater levels, we recommend that the lot grading plan be designed using 1-½ percent minimum slopes to allow for positive surface drainage.

In addition, it should be noted that where the low permeable soil are encountered within 2.0 feet of the final cut grades within the side lot swales areas, the low permeable soils should be over excavated to a depth 1.5 feet below final grade within the lawn and planned open green areas.

4.4 Foundation Support

Provided that the building pad areas are prepared as discussed above and the recommended safe setback can be provided (see Figure 1B), it is our preliminary opinion that the soils encountered are

suitable to provide adequate support for single family residences on conventional shallow foundations (using normal site preparation procedures). Foundation related site work is estimated to require the usual stripping and clearing of existing vegetation and associated topsoil, followed by compaction of the foundation soils to improve bearing capacity and provide more uniform foundation support throughout the structural areas. Applicable design bearing pressures should range from 2,000 to 2,500 psf.

Once the final grading plan and building locations have been determined and specific test borings for each building area are performed, we can provide more specific recommendations with respect to foundation design and corresponding foundation related site work.

4.5 Roadways/Pavement Areas

Based on our evaluation of the subsoils encountered and provided that the recommended safe setback can be provided for the roadway right-of-way, it is our opinion that the subsoils encountered are suitable for support of a flexible or semi-flexible pavement section using normal site preparation procedures. As input to designing the pavement grades, we recommend that a minimum separation of 18 inches be provided between the bottom of the roadway base course and the estimated seasonal high groundwater elevation.

The preliminary estimated seasonal high groundwater tables presented adjacent to the Soil Profiles should be helpful in the design of the site and pavement grades. Where this separation is not provided between the naturally occurring normal seasonal high groundwater levels, pavement underdrains may be installed to protect the pavement from groundwater related damage.

4.5.1 Pavement Section Recommendations: Based upon our experience with similar developments, our recommendations for a typical roadway section that may be used for the interior roadways are as follows:

- 12-inches of stabilized subgrade, minimum LBR equal to 40, and compacted to a minimum density equivalent to 98 percent of the soil's Modified Proctor Density Value as determined by AASHTO T-180 test method.

- 6-inches of crushed concrete or limerock base from a FDOT approved material provider, meeting the minimum LBR and gradation requirements of Section 911, and compacted to a density of not less than 98 percent of the material's Modified Proctor Density Value as determined by AASHTO T-180 test method.

- 1-1/2 inches of Florida DOT asphaltic concrete mix of Type SP-9.5 placed and compacted in accordance with Florida Department of Transportation specifications.

4.6 Pond Areas

4.6.1 Borrow Suitability: We envision that the materials to be excavated from the proposed pond(s) will be used to attain final grades within the planned development. A detailed summary of the encountered soil types and recommendations for their use as fill is presented in Table 3, attached.

4.6.2 Pond Exfiltration: Based on our evaluation of the encountered subsoil conditions, it is our preliminary opinion that natural exfiltration from the pond areas will vary from low to moderate, depending upon the final pond grades.

It should be noted that the silty and clayey soils (Strata 7 through 13, 7A and 9A) can adversely affect the pond exfiltration performance. Depending upon the final pond grades, the hydraulically restrictive soils may occur near or be exposed at the pond bottoms. In order to improve the exfiltration performance of the ponds, the silty and clayey soils may require over-excavation. To account for the presence of the surrounding low-permeable soils, a weighted average permeability value should be applied when establishing aquifer parameters.

For dry bottom ponds, we typically recommend that the pond bottom be a minimum of 3.0 feet above the estimated seasonal high groundwater levels (apparent and "perched"). If adequate recovery from lateral seepage in the upper fine sands can be demonstrated, this value may be reduced to 18 inches. Alternatively and if an outfall is available, the required separation may be reduced by providing an underdrain system. The final pond grades should be determined by performing seepage analyses.

Once the pond configurations are finalized and stormwater calculations are available, we would be pleased to perform further geotechnical evaluations required as input to the pond design and permitting by your Civil Engineer.

4.7 Additional Geotechnical Evaluations

As you are aware, the design of the site and review and approval of the site development plans by the regulatory agencies is on going. As such and as may be required, we will perform additional evaluations that will be required as input to the project team.

Table 3. Summary of Encountered Soil Types And Recommendations for Their Use as Fill Material, Progress Report No. 1, Subsoil, Groundwater and Limited Hydrogeologic Investigation, Proposed Lake Hills, County Road 48 & State Road 19, Town of Howey-in-the-Hills, Florida (PN 24-E2180.02)

Stratum Number	*Unified Soil Classification*	*Soil Description*	*% Passing No. 200 Sieve*	*Soil Characteristics*	*Comments*
1A	(SP)	Gray brown fine sand with occasional small roots, tilled topsoil	4	Clean sands with trace silts and occasional small roots, normally associated within topsoil, in the upper few inches.	Provided the upper few inches containing roots are stripped and removed, the material is suitable for use as structural fill.
1B	(SP-SM)	Medium gray to dark gray slightly silty fine sand with occasional small roots	7 - 9		
1C	(PT)	Dark reddish brown peat	16	Peat with roots and organic matter	Not suitable for use as structural fill.
2	(SP)	Orangish brown fine sand	2 - 5	Clean sands that are moderately well drained	Suitable for use as structural fill.
3		Brown to strong brown fine sand	2 - 5		
4		Light gray to light grayish brown fine sand	3 - 6		
5	(SP)(SP-SM)	Gray to grayish brown sand to slightly silty fine sand	4 - 11	Clean sands with trace to some silt that are somewhat moderately well drained	Suitable for use as structural fill.
6		Dark gray to dark gray brown fine sand to slightly silty fine sand	4 - 6		
7	(SP-SM)(SM)	Grayish brown slightly silty to silty fine sand	13 - 19	Clean sands with silt that are somewhat poorly drained	Suitable for use as structural fill. May be difficult to dry and compact. May be capped with 18 inches of fine sand to improve drainage within green areas.
7A		Orangish brown slightly silty to silty fine sand	12 - 18		
8		Reddish brown to dark reddish brown slightly silty to silty fine sand	7 - 10		

Note: Materials excavated from below the water table may require air drying in order to mix and/or compact.

Table 3. Summary of Encountered Soil Types And Recommendations for Their Use as Fill Material, Progress Report No. 1, Subsoil and Groundwater Level Investigation, Proposed Roadways and Retention Pond Areas, Banning Ranch Phase 3, City of Leesburg, Florida (PN 24-E2302.25)

Stratum Number	*Unified Soil Classification*	*Soil Description*	*% Passing No. 200 Sieve*	*Soil Characteristics*	*Comments*
1D	(SM-SC)(SC)	Dark gray silty to slightly clayey fine sand	-	Fine sand containing silt and/or clay fines that are poorly drained.	**Marginally** suitable for use as structural fill. May be difficult to dry and compact. May be improved by blending with fine sand (50/50 mix). Otherwise, suitable for use as structural fill in deep fill areas (minimum 4 feet below final grades). Should be capped with 18 inches of fine sand to improve drainage within yards and open green areas.
9		Light grayish brown silty to slightly clayey fine sand with occasional pink mottling	20 - 23		
9A		Very light gray silty to slightly clayey fine sand	14 - 21		
10		Orangish brown silty to slightly clayey fine sand	11 - 23		
11	(SC)	Orange brown clayey fine sand	21 - 31	Fine sand containing clay fines that are very poorly drained	Not suitable for use as structural fill.
12		Gray to grayish brown slightly clayey to clayey fine sand with occasional orange and/or yellow mottling	22 - 31		
13	(SC)(CL)	Gray to very light blue gray clayey fine sand to sandy clay	24 - 48	Fine sand containing clay fines that are very poorly drained	Not suitable for use as structural fill.

Note: Materials excavated from below the water table may require air drying in order to mix and/or compact.

TABLE 4
SUMMARY OF ESTIMATED SEASONAL HIGH GROUNDWATER LEVELS
PONDS B1 THROUGH B14
PROPOSED LAKE HILLS - COUNTY RD 48 STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA
(PN 24-E2180.02)

Pond	Borings	Encountered Groundwater Elevation (ft)	Estimated Normal Seasonal High Groundwater Elevation	Estimated Average Normal Seasonal High Groundwater Elevation (ft)
		Jul-24		
B1	PB-1	63.2	69.2	69.0
	PB-2	63.5	67.7	
	PB-3	65.5	70.0	
B2	PB-4	67.9	74.0	74.0
	PB-5	70.0	74.0	
B3	PB-6	65.6	74.0	74.0
	PB-7	68.7	74.0	
B4	PB-8	N.E. @ 72.3	76.0	76.0
	PB-9	N.E. @ 77.9	77.9	
	PB-10	71.7	76.0	
B5	PB-29	62.3	64.5	64.5
B6	PB-11	70.4	76.0	76.0
	PB-12	70.3	76.0	
	PB-13	71.0	76.0	
B7	PB-14	66.5	69.0	69.0
B8	PB-15	62.7	65.5	65.0
	PB-16	61.1	64.5	
	PB-17	62.6	65.0	
B9	PB-18	61.3	64.5	64.0
	PB-19	60.6	63.5	
B10	PB-20	62.8	65.5	65.5
	PB-21	62.9	65.5	
B11	PB-22	62.0	65.0	64.5
	PB-23	59.8	64.0	
B12	PB-24	61.2	64.5	64.5
	PB-25	61.8	64.5	
B13	PB-26	61.8	64.5	64.5
	PB-27	62.0	64.5	
B14	PB-28	68.0	72.5	72.5

ATTACHMENT A
REGIONAL HYDROGEOLOGY

As additional input to our evaluations, we reviewed the information presented in the publication entitled, "*Ground Water in Lake County, Florida (Knochenmus 1971).*" For the purpose of reference herein, excerpts are included on Plate 3 through 5, attached. As depicted on Plate 4, the typical stratigraphy in the site area can be summarized as follows:

1. upper stratum of Pleistocene to recent age sands that vary in thickness from approximately 30 to 80 feet.
2. Underlying the surficial sands is the Miocene age Hawthorn Group. Regionally, the Hawthorn Group is estimated to be approximately 25 feet thick at the site location and generally consists of low permeability clayey sand, silty sand, clay, and silt.
3. Directly underneath the Hawthorn are the Eocene age, regional limestone formations. The first limestone formation that underlies the Hawthorn Group is the Ocala limestone. Below the Ocala Limestone, is the Eocene age Avon Park Formation which is a hard dolomitic stratum which overlies a semi-confining hydrologic unit composed of dense limestone with low water bearing properties. The dolomite beds form lower section of the upper Floridan aquifer.

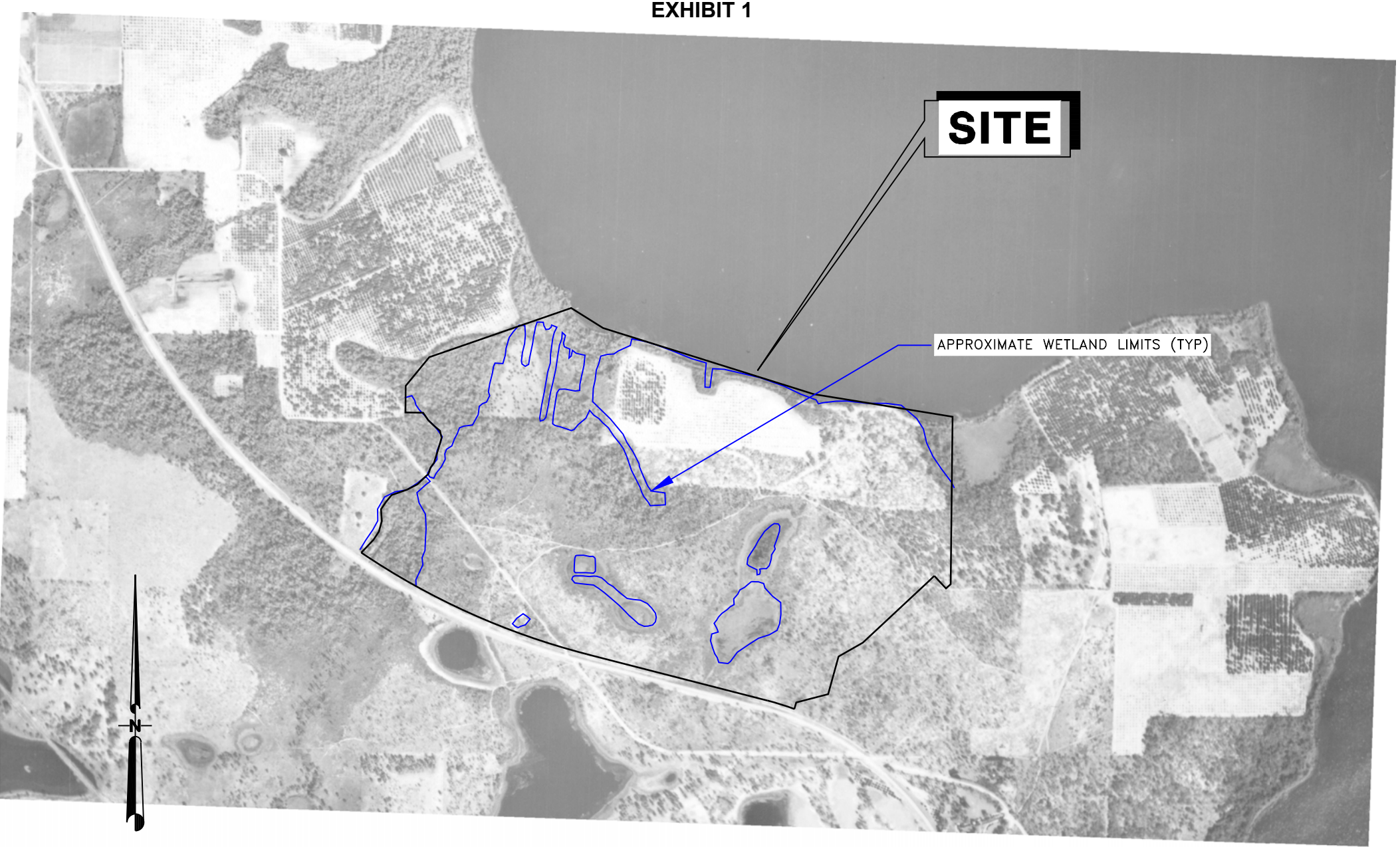
For the most part, the encountered soil stratigraphy agrees with the regional stratigraphy as described above. The presence of phosphates and/or consolidated clay is used as a marker for the Hawthorn formation, which should underlie the surface sand deposits and overlie the limestone bedrock.

Aquifers

As presented previously herein, the groundwater level throughout the site was encountered at elevations generally varying from +65 to +75 feet (NAVD88). The major source of water in central Florida is the regionally extensive Floridan aquifer which occurs in the limestone formations below the unconsolidated surface deposits. This aquifer yields high quantities of groundwater used for drinking water and agricultural supplies. As presented on Plate 5, the potentiometric level in the site vicinity is estimated to occur at approximately +65 to +70 feet (NGVD).

In summary, there is little to no downward gradient between the potentiometric level of the upper Floridan and the on-site groundwater levels. As such, the hydraulic characteristics of the underlying aquifer system indicate a minimal downward gradient which tends to help minimize the potential for sinkhole development.

EXHIBIT 1



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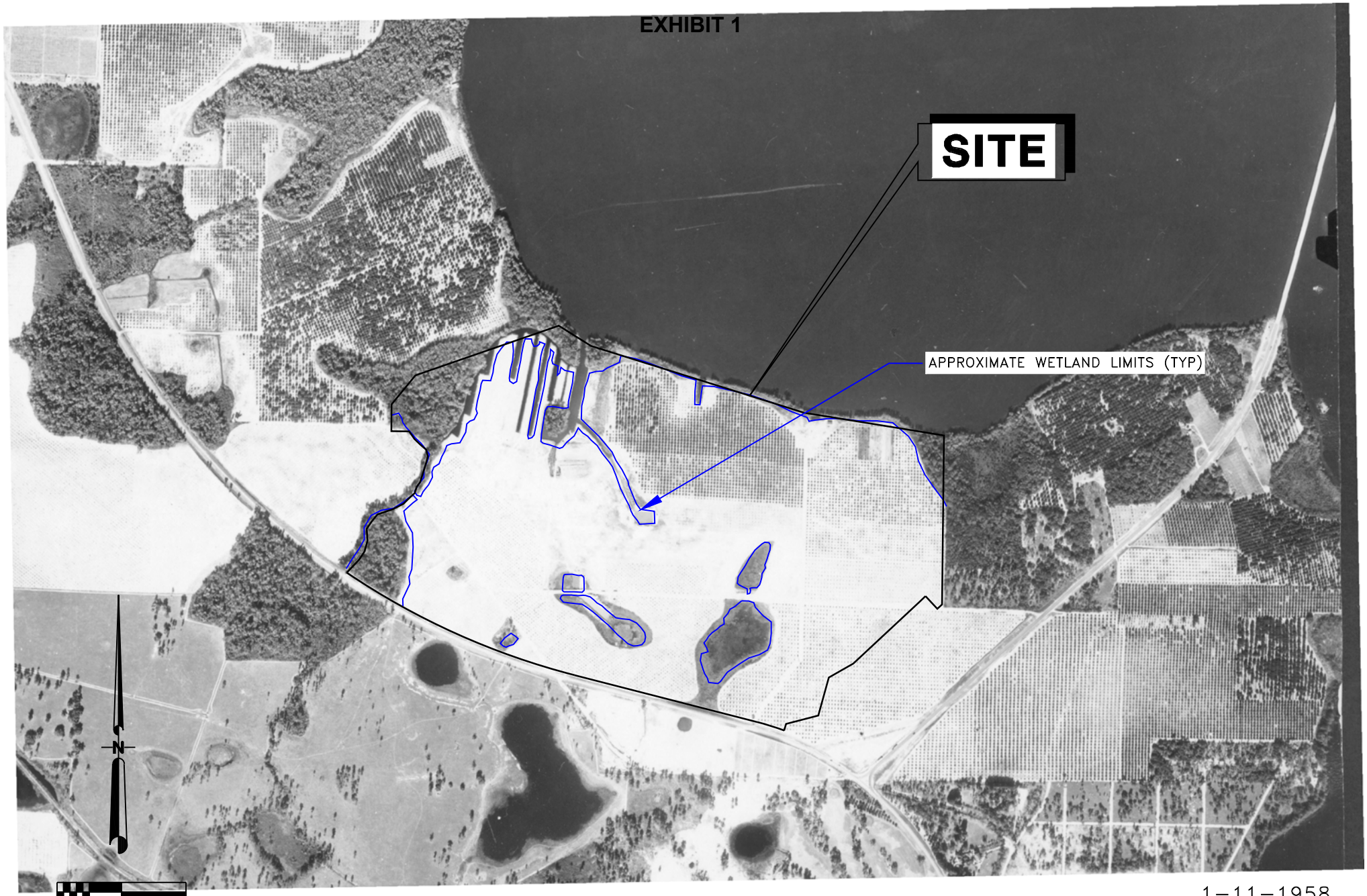

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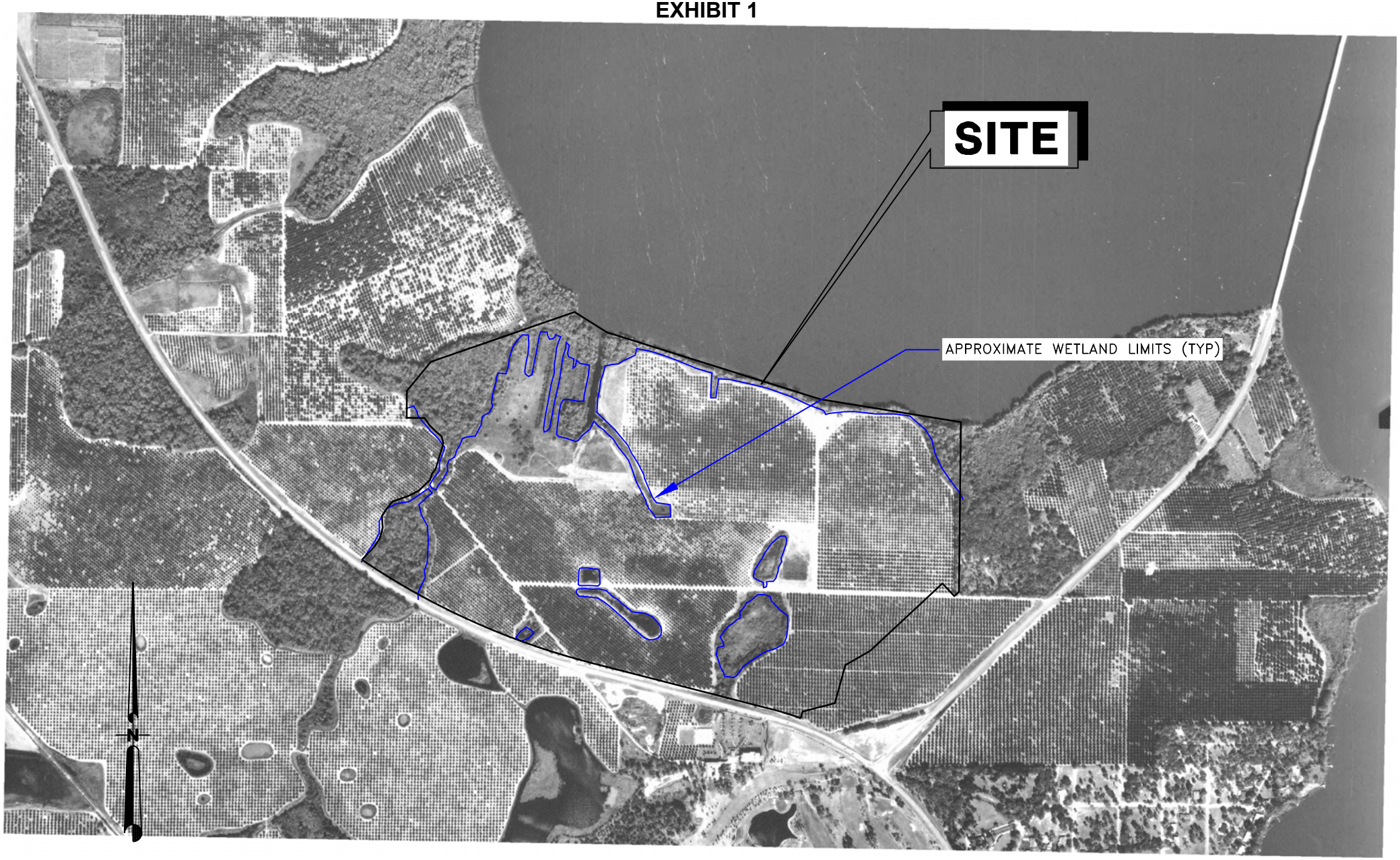

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3 of 3

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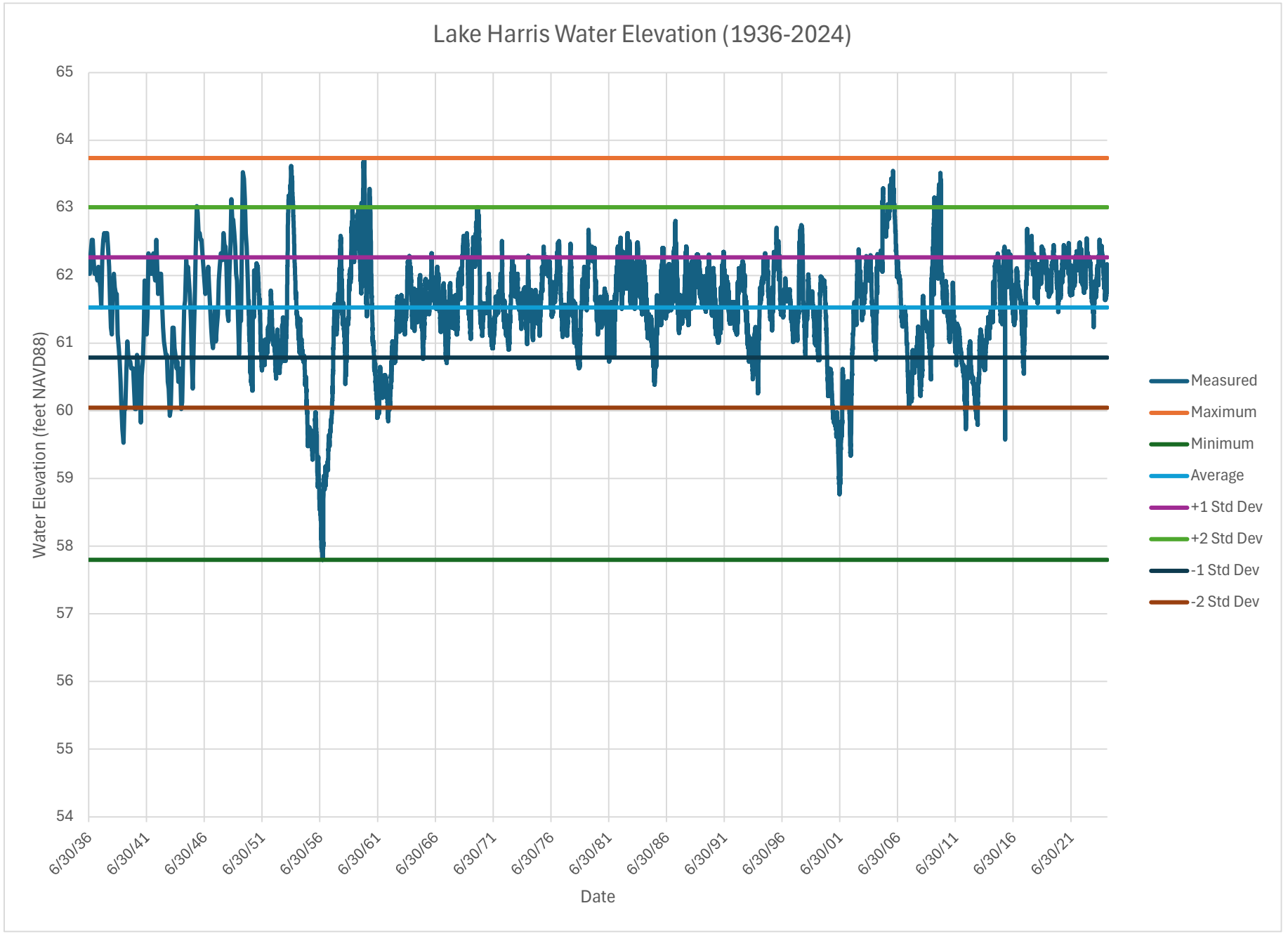
Lake Harris Water Elevation (1936-2024)
Water Elevation (feet NAVD88)
65
64
63
62
61
60
59
58
57
56
55
54
6/30/36
6/30/41
6/30/46
6/30/51
6/30/56
6/30/61
6/30/66
6/30/71
6/30/76
6/30/81
6/30/86
6/30/91
6/30/96
6/30/01
6/30/06
6/30/11
6/30/16
6/30/21
Date
Measured
Maximum
Minimum
Average
+1 Std Dev
+2 Std Dev
-1 Std Dev
-2 Std Dev

HOWEY IN THE HILLS, FLA
QUADRANGLE MAP

SECTION 23
TOWNSHIP 20 SOUTH
RANGE 25 EAST

VICINITY MAP

0 500 1000 2000

Scale in Feet

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	PLATE:
DJY	8/26/2024	1

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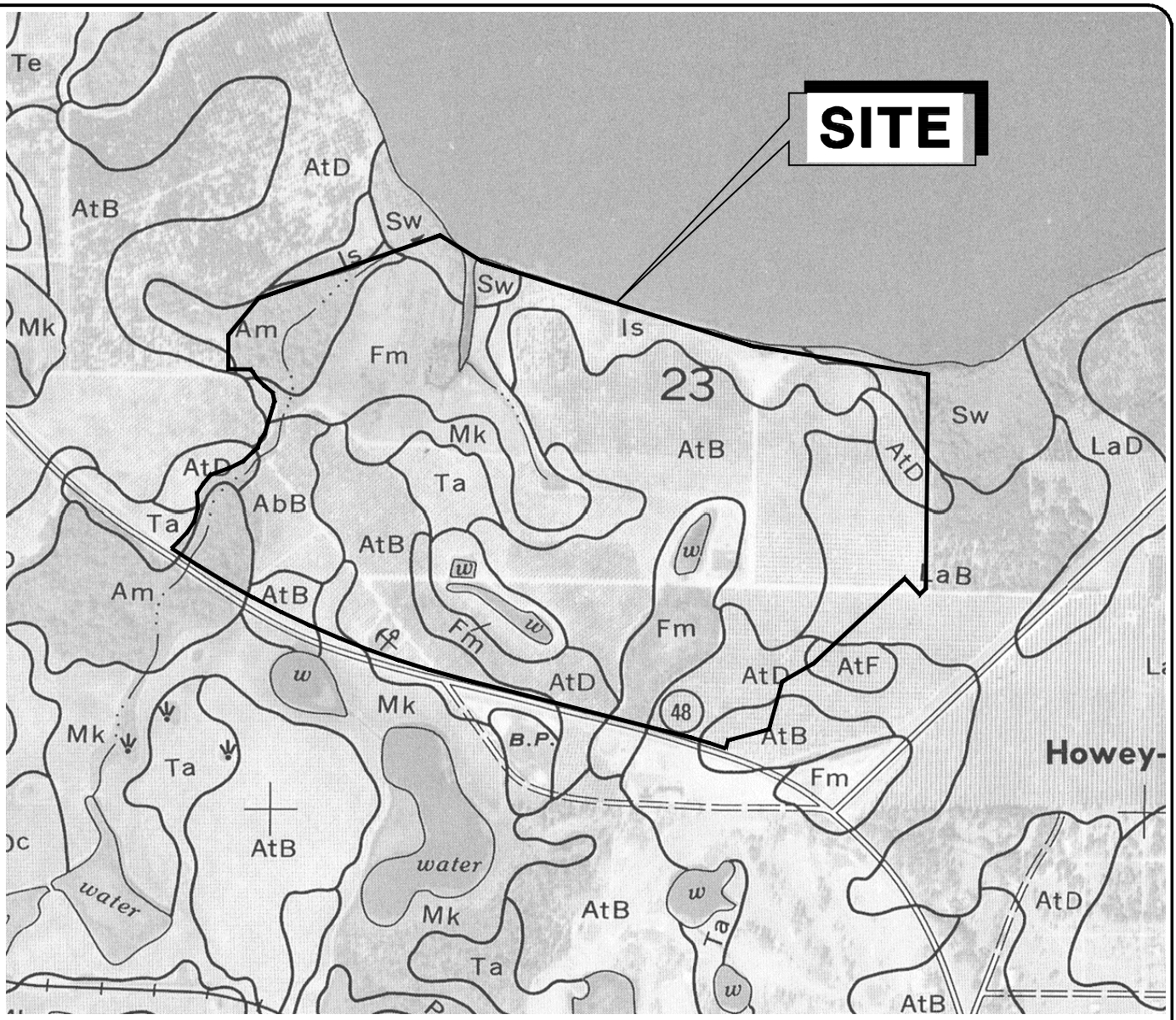
VICINITY



SCS VICINITY MAP

0 250 500 1000

Scale in Feet

LEGEND

AbB	ALBANY SAND, 0 TO 5% SLOPES
Am	ANCLOTE AND MYAKKA SOILS
AtB	ASTATULA SAND, DARK SURFACE, 0 TO 5% SLOPES
AtD	ASTATULA SAND, DARK SURFACE, 5 TO 12% SLOPES
AtF	ASTATULA SAND, DARK SURFACE, 12 TO 40% SLOPES
Fm	FILL LAND, LOAMY MATERIALS
Is	IMMOKALEE SAND
LaB	LAKE SAND, 0 TO 5% SLOPES
Mk	MYAKKA SAND
Sw	SWAMP
Ta	TAVARES SAND

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

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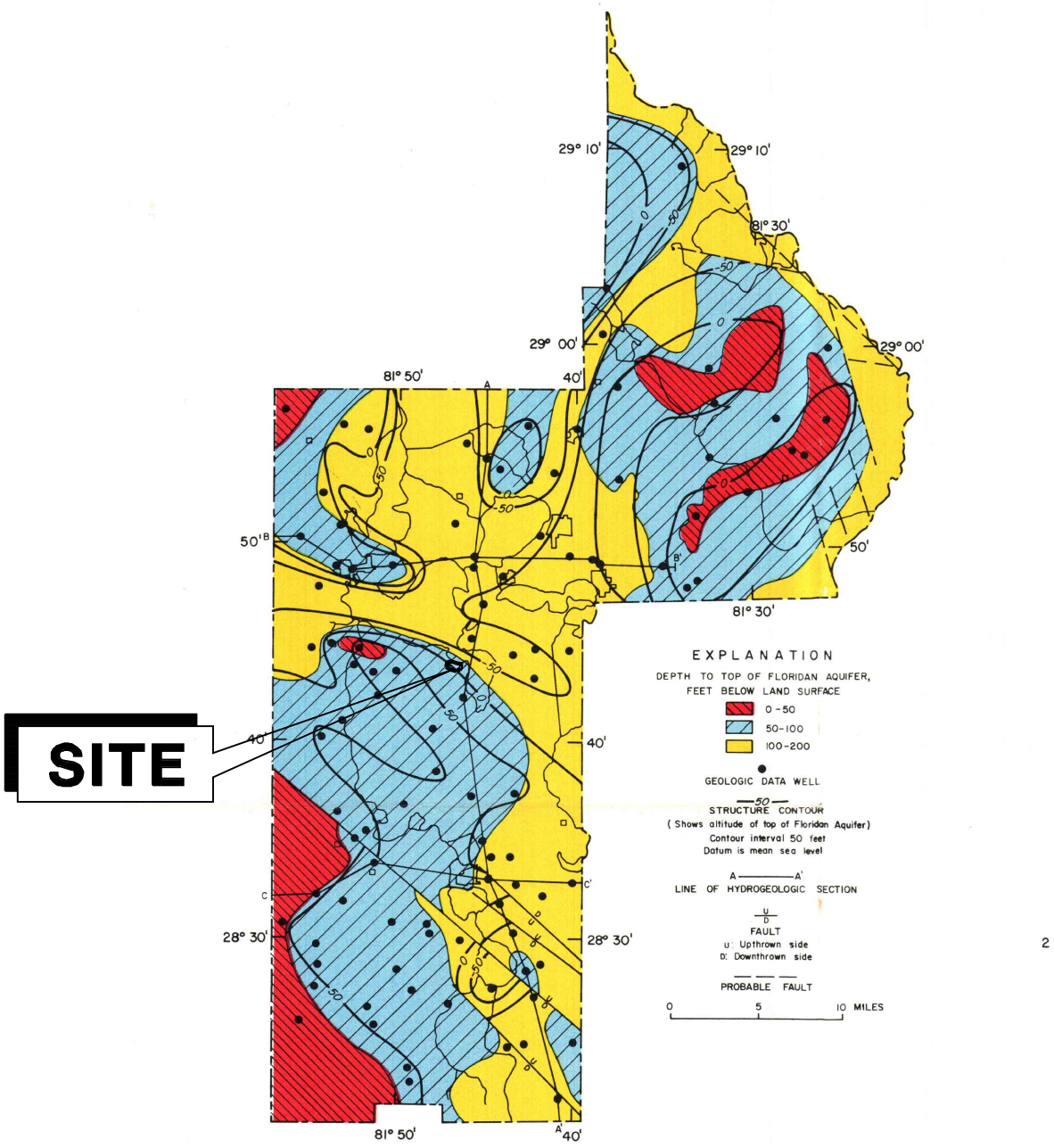
SCS VICINITY



HYDROGEOLOGIC SECTION LOCATION PLAN

0 2.5 5 10

Scale in Miles

REPRODUCED FROM OFGS MAP SERIES NO. 44 ENTITLED:
"GROUND WATER IN LAKE COUNTY, FLORIDA"
(KNOCHENMUS 1971)

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	PLATE:
DJY	8/26/2024	3

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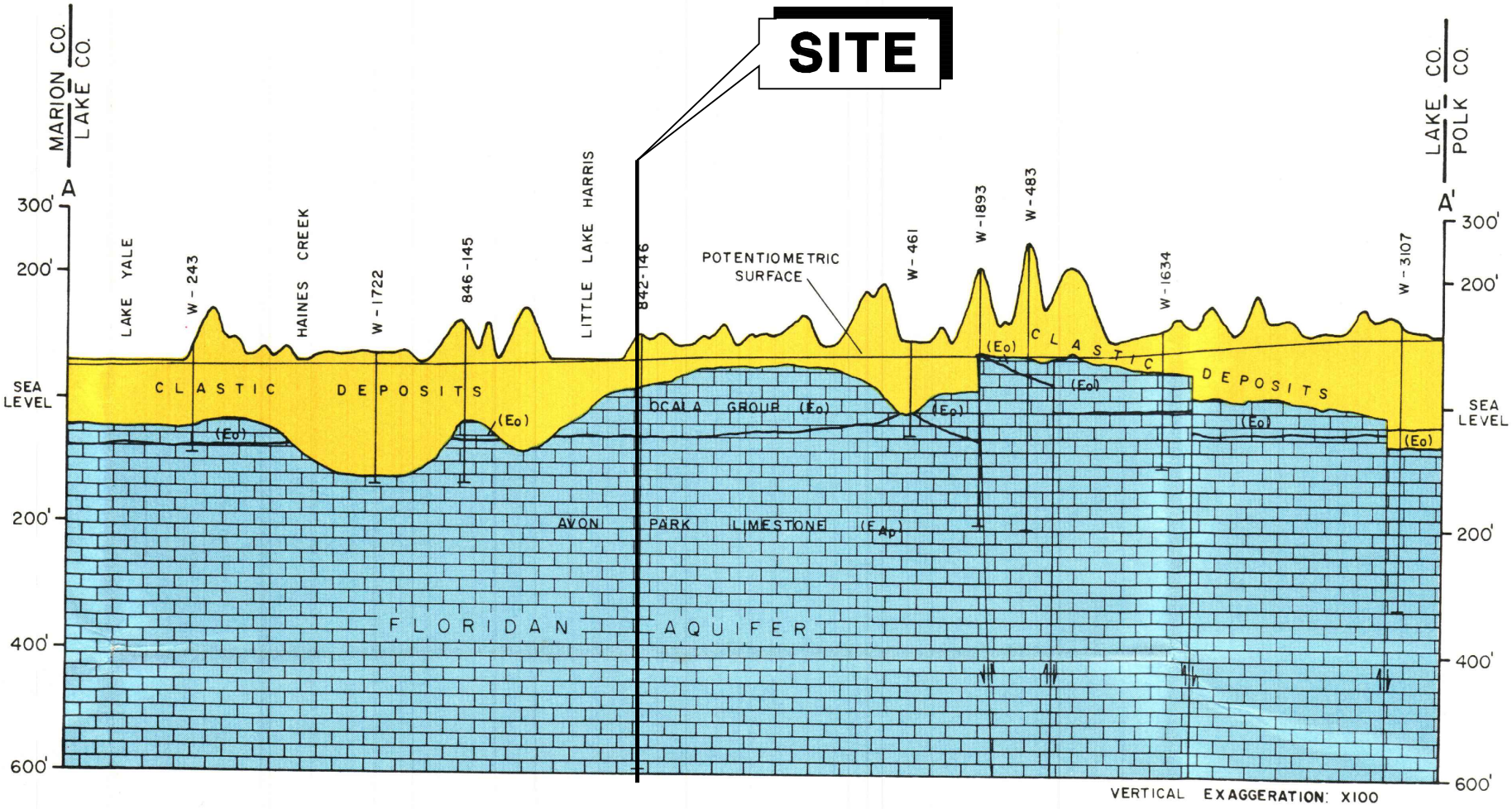
HYDROGEOLOGIC SECTION LOCATION



HYDROGEOLOGIC CROSS SECTION

0 2.5 5

Scale in Miles

REPRODUCED FROM OFGS MAP SERIES NO. 44 ENTITLED:
"GROUND WATER IN LAKE COUNTY, FLORIDA"
(KNOCHENMUS 1971)

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN : RNR	SCALE : NOTED	JOB NO. : 24-E2180.01
APPROVED : DJY	DATE : 8/26/2024	PLATE: 4

HYDROGEOLOGIC SECTION

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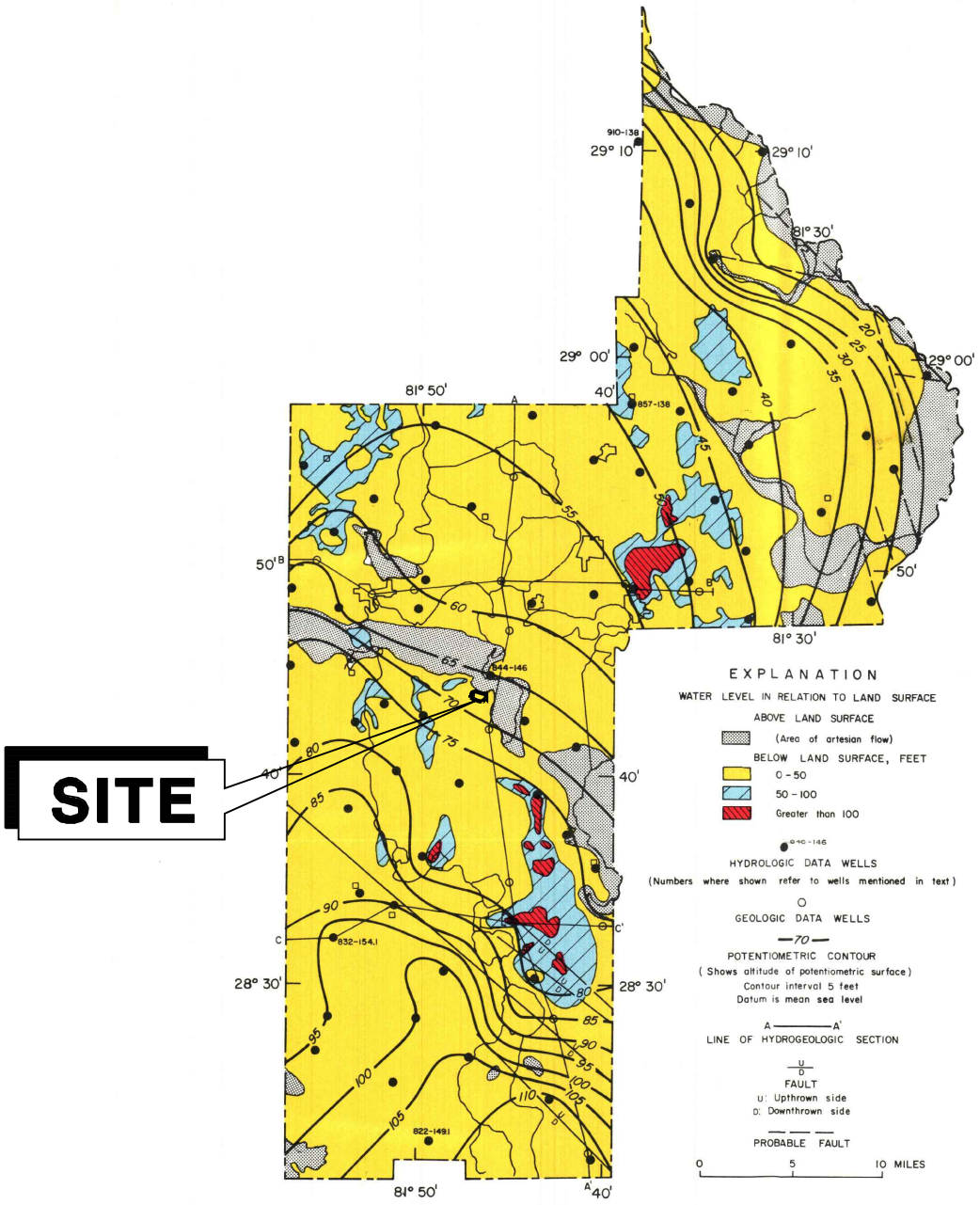

POTENTIOMETRIC SURFACE ELEVATION OF THE UPPER FLORIDAN

0 2.5 5 10

Scale in Feet

REPRODUCED FROM OFGS MAP SERIES NO. 44 ENTITLED:
"GROUND WATER IN LAKE COUNTY, FLORIDA"
(KNOCHENMUS 1971)

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	PLATE:
DJY	8/26/2024	5

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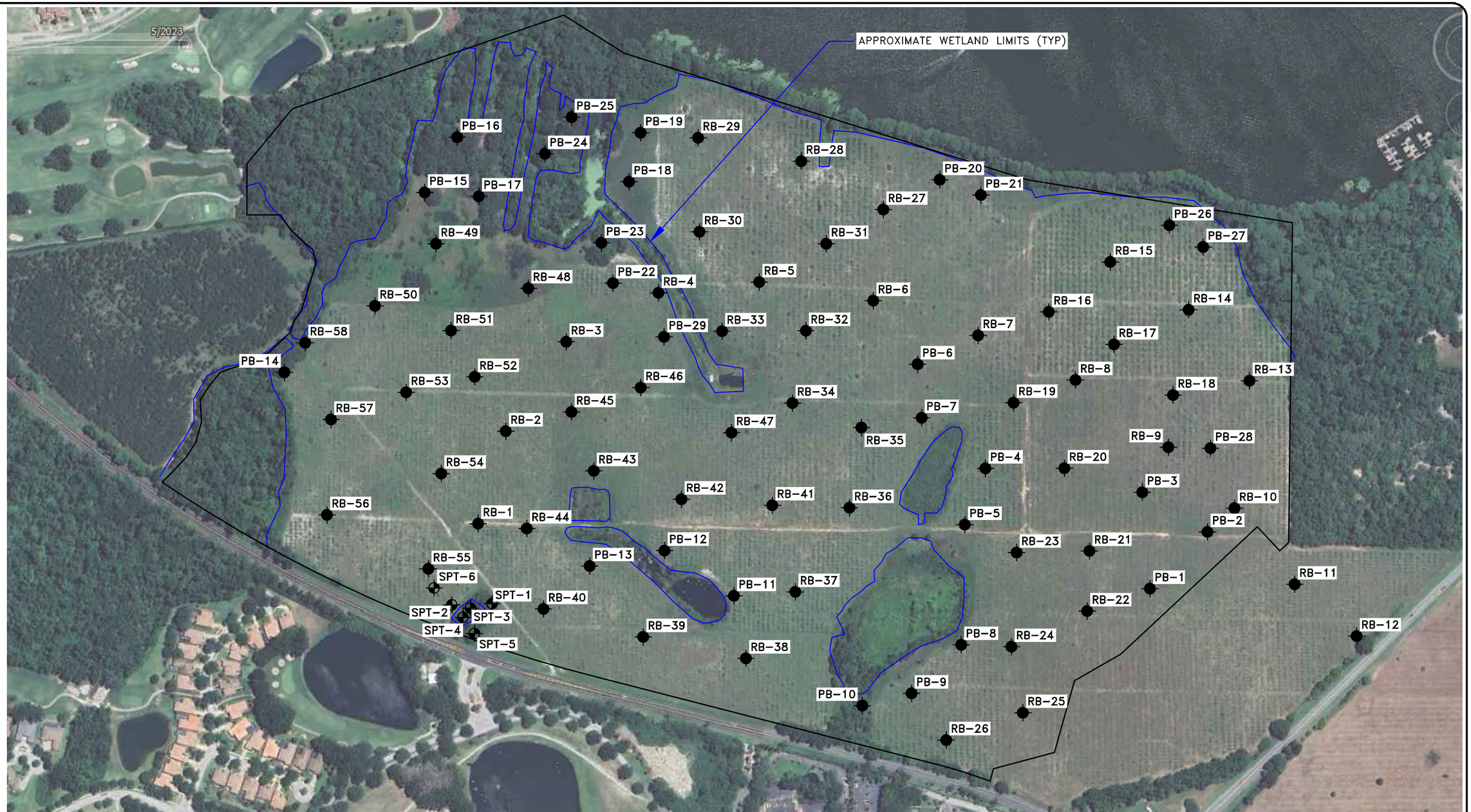
POTENTIOMETRIC SURFACE



LEGEND

- AUGER BORING LOCATION
- STANDARD PENETRATION TEST (SPT) BORING LOCATION

LOCATION PLAN - AERIAL

0 100 200 400

Scale in Feet

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS

COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.01
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DJY	3/18/2025	1A

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LOC PLAN - AERIAL

LOCATION PLAN - SITE

0 75 150 300

Scale in Feet

LAKE HARRIS

RED SHADED AREAS (TYP) DEPICT PRELIMINARY ESTIMATED HORIZONTAL LIMITS OF SHALLOW LOW PERMEABLE SOILS (LESS THAN OR EQUAL TO 4.0 FT)

BLUE HATCHED AREAS (TYP) DEPICT WETLAND LIMITS TO BE IMPACTED

PRELIMINARY RECOMMENDED SAFE SETBACK FROM THE DEPRESSIONAL AREA FOR BUILDING PADS AND ROADWAY RIGHT OF WAYS (SEE ATTACHED REPORT)

CONCRETE FLUME

GUARDRAIL

MASONRY WALL

COUNTY ROAD 48 (100' R/W)

LEGEND

- AUGER BORING LOCATION
- STANDARD PENETRATION TEST (SPT) BORING LOCATION

3/18/2025

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SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

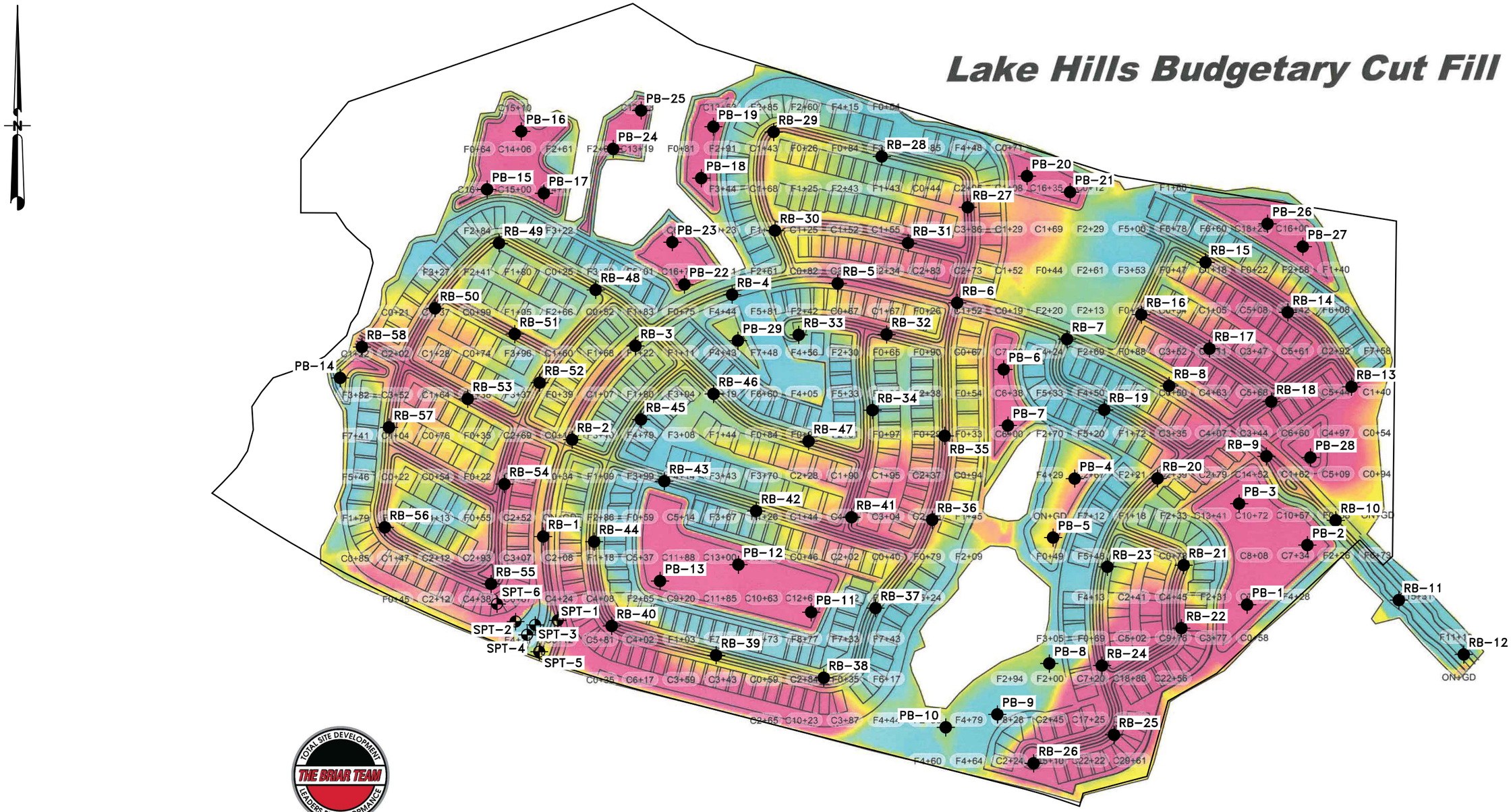
PROPOSED LAKE HILLS

COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.01
APPROVED :	DATE :	FIGURE:
DJY	8/26/2024	1B

Lake Hills Budgetary Cut Fill



TOTAL SITE DEVELOPMENT — THE BRIAR TEAM — LEADERS BY PERFORMANCE

LEGEND

- AUGER BORING LOCATION
- STANDARD PENETRATION TEST (SPT) BORING LOCATION

LOCATION PLAN - CUT FILL

0 100 200 400

Scale in Feet

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.01
APPROVED :	DATE :	FIGURE:
DJY	3/18/2025	1C

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LOC PLAN - CUT FILL

LOCATION PLAN - QUAD

0 75 150 300

Scale in Feet

N

LAKE HARRIS

25' WETLAND BUFFER (MIN.)

50' SHORELINE PROTECTION ZONE

ACCESS/MAINTENANCE/CONS & SIGNAGE EASEMENT

POND B8 4.30 AC.

POND B9 1.39 AC.

POND B10 1.22 AC.

POND B13 1.09 AC.

POND B11 1.27 AC.

POND B7 1.14 AC.

POND B6 5.32 AC.

POND B5 2.08 AC.

POND B4 1.86 AC.

POND B1 4.55 AC.

POND B12 0.68 AC.

POND B14 0.42 AC.

POND B15 0.40 AC.

POND B16 0.28 AC.

POND B17 0.40 AC.

POND B18 0.28 AC.

POND B19 0.28 AC.

POND B20 0.28 AC.

POND B21 0.28 AC.

POND B22 0.28 AC.

POND B23 0.28 AC.

POND B24 0.28 AC.

POND B25 0.28 AC.

POND B26 0.28 AC.

POND B27 0.28 AC.

POND B28 0.28 AC.

CONCRETE FLUME

GUARDRAIL

MASONRY WALL

230' LEFT TURN LANE

180' RIGHT TURN LANE

COUNTY ROAD 48 (80' ROW)

WALL TO COMMERCIAL TO BE DETERMINED. WALL IS EXPECTED TO BE 10-15+ FT TALL

BLDG. BACK AND

LEGEND

- AUGER BORING LOCATION
- STANDARD PENETRATION TEST (SPT) BORING LOCATION

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS

COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.01
APPROVED :	DATE :	FIGURE:
DJY	8/26/2024	1D

3/18/2025

YOVAISH ENGINEERING SERVICES, LLC.

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

LOCATION PLAN - SCS

0 75 150 300

Scale in Feet

N

LAKE HARRIS

25' WETLAND BUFFER (MIN.)

50' SHORELINE PROTECTION ZONE

ACCESS/MAINTENANCE/CONS & SIGNAGE EASEMENT

POND B8 4.30 AC.

POND B9 1.39 AC.

POND B10 1.22 AC.

POND B11 1.27 AC.

POND B12

POND B13 1.86 AC.

POND B7 1.41 AC.

POND B6 5.32 AC.

POND B5 0.68 AC.

POND B4 1.86 AC.

POND B3 2.00 AC.

POND B2 4.55 AC.

POND B1

POND B

CONCRETE FLUME

GUARDRAIL

MASONRY WALL

230' LEFT TURN LANE

180' RIGHT TURN LANE

COUNTY ROAD 48 (100' R/W)

WALL TO COMMERCIAL TO BE DETERMINED. WALL IS EXPECTED TO BE 10-15+ FT TALL

LEGEND

- AUGER BORING LOCATION
- STANDARD PENETRATION TEST (SPT) BORING LOCATION

YOVAISH ENGINEERING SERVICES, LLC.

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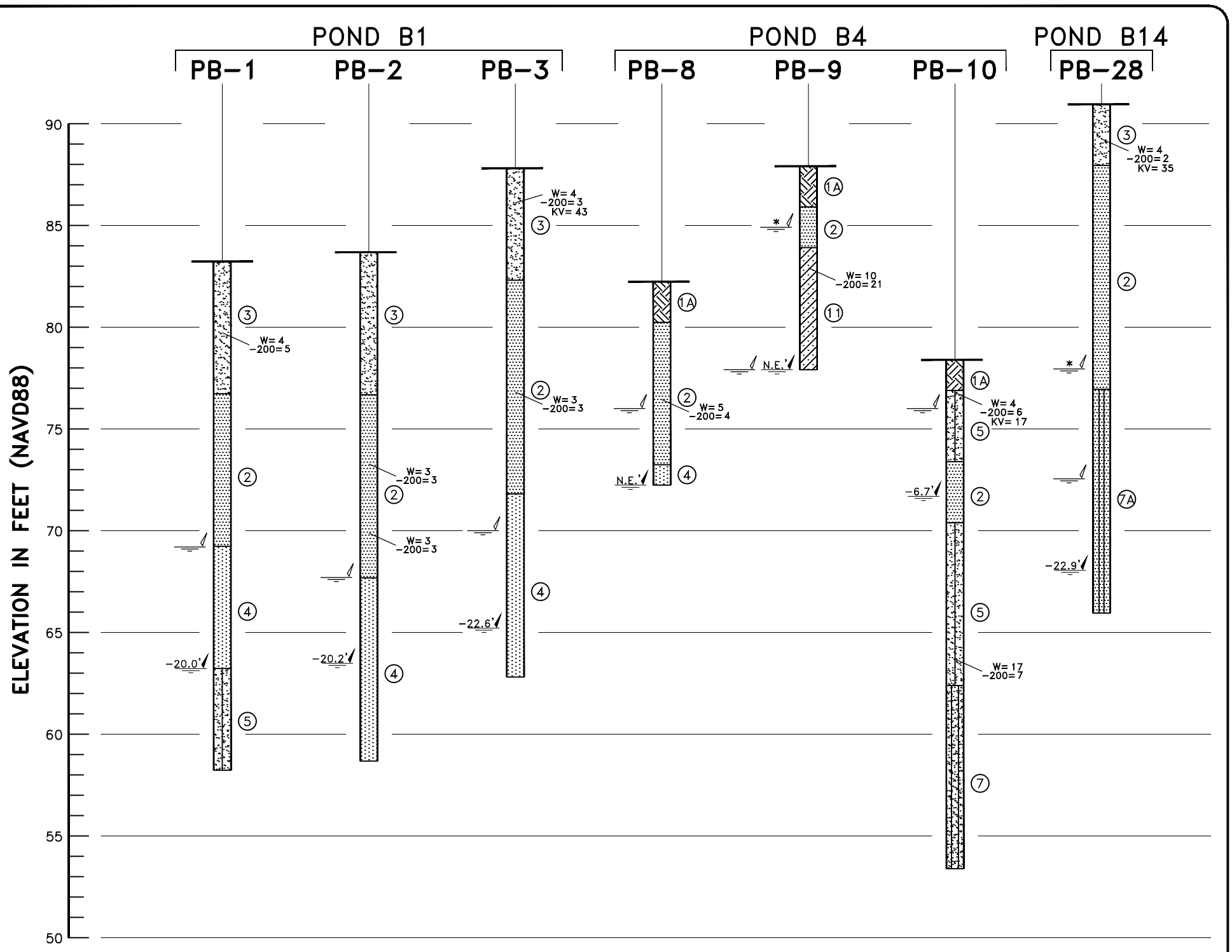
SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.01
APPROVED :	DATE :	FIGURE:
DJY	3/18/2025	1E

LOC PLAN - SCS



SOIL PROFILES

LEGEND

- ⑴A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- ⑴B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- ⑴C DARK REDDISH BROWN PEAT (PT)
- ⑴D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ② ORANGISH BROWN FINE SAND (SP)
- ③ BROWN TO STRONG BROWN FINE SAND (SP)
- ④ LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- ⑤ GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- ⑥ DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- ⑦ GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑦A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑧ REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- ⑨ LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- ⑨A VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ⑩ ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- ⑪ ORANGE BROWN CLAYEY FINE SAND (SC)
- ⑫ GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- ⑬ GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

* ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

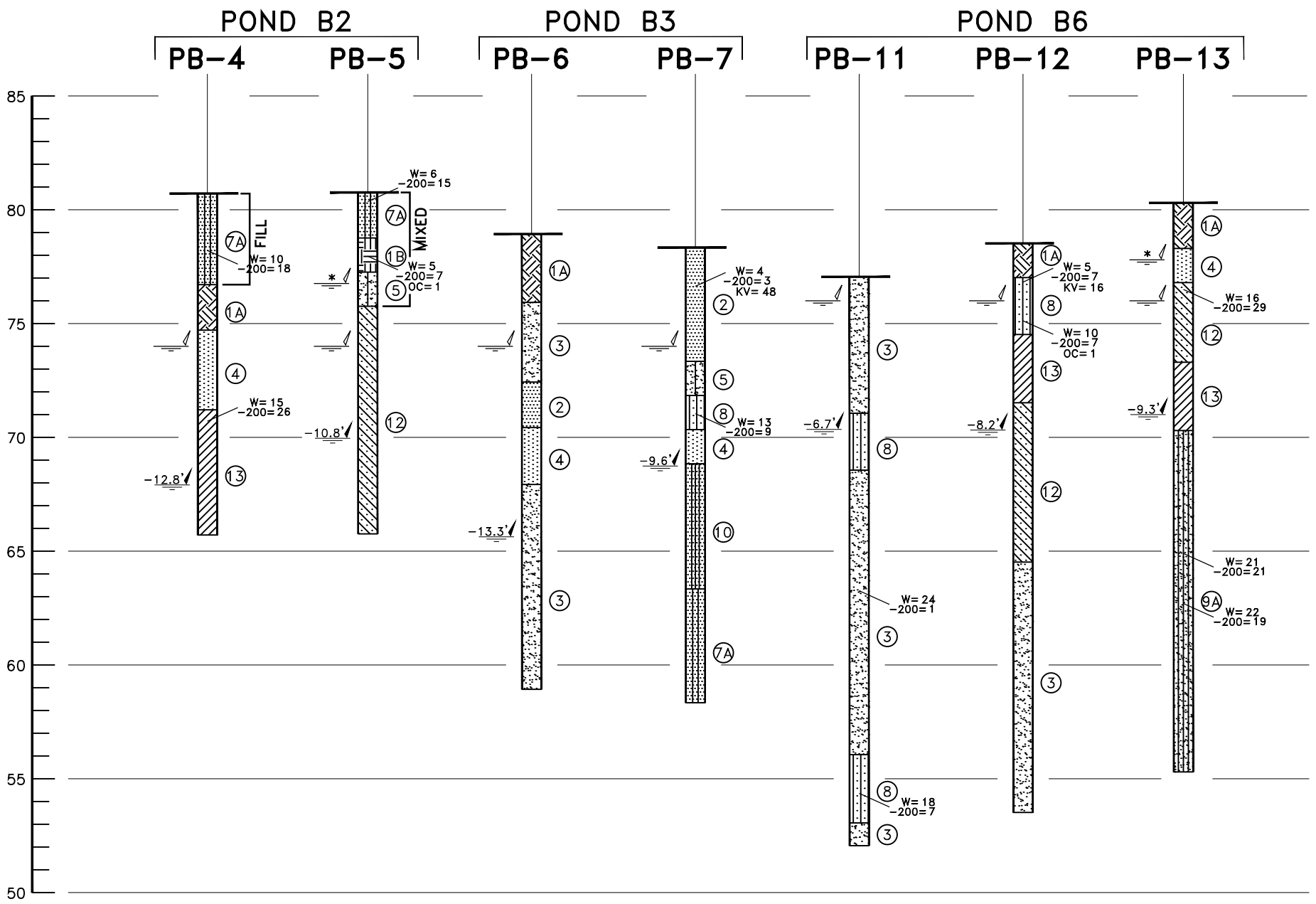
PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	FIGURE:
DJY	8/16/2024	2

SOIL PROFILES

YOVAISH ENGINEERING SERVICES, LLC.
Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing



SOIL PROFILES

LEGEND

- 1A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- 1B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- 1C DARK REDDISH BROWN PEAT (PT)
- 1D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 2 ORANGISH BROWN FINE SAND (SP)
- 3 BROWN TO STRONG BROWN FINE SAND (SP)
- 4 LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- 5 GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 6 DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 7 GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 7A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 8 REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 9 LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- 9A VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 10 ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 11 ORANGE BROWN CLAYEY FINE SAND (SC)
- 12 GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- 13 GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E. DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

* ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W NATURAL MOISTURE CONTENT IN PERCENT

-200 PERCENT FINES PASSING U.S. NO. 200 SIEVE

OC ORGANIC CONTENT IN PERCENT DRY WEIGHT

KV COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SOIL PROFILES

YOVAISH ENGINEERING SERVICES, LLC.

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

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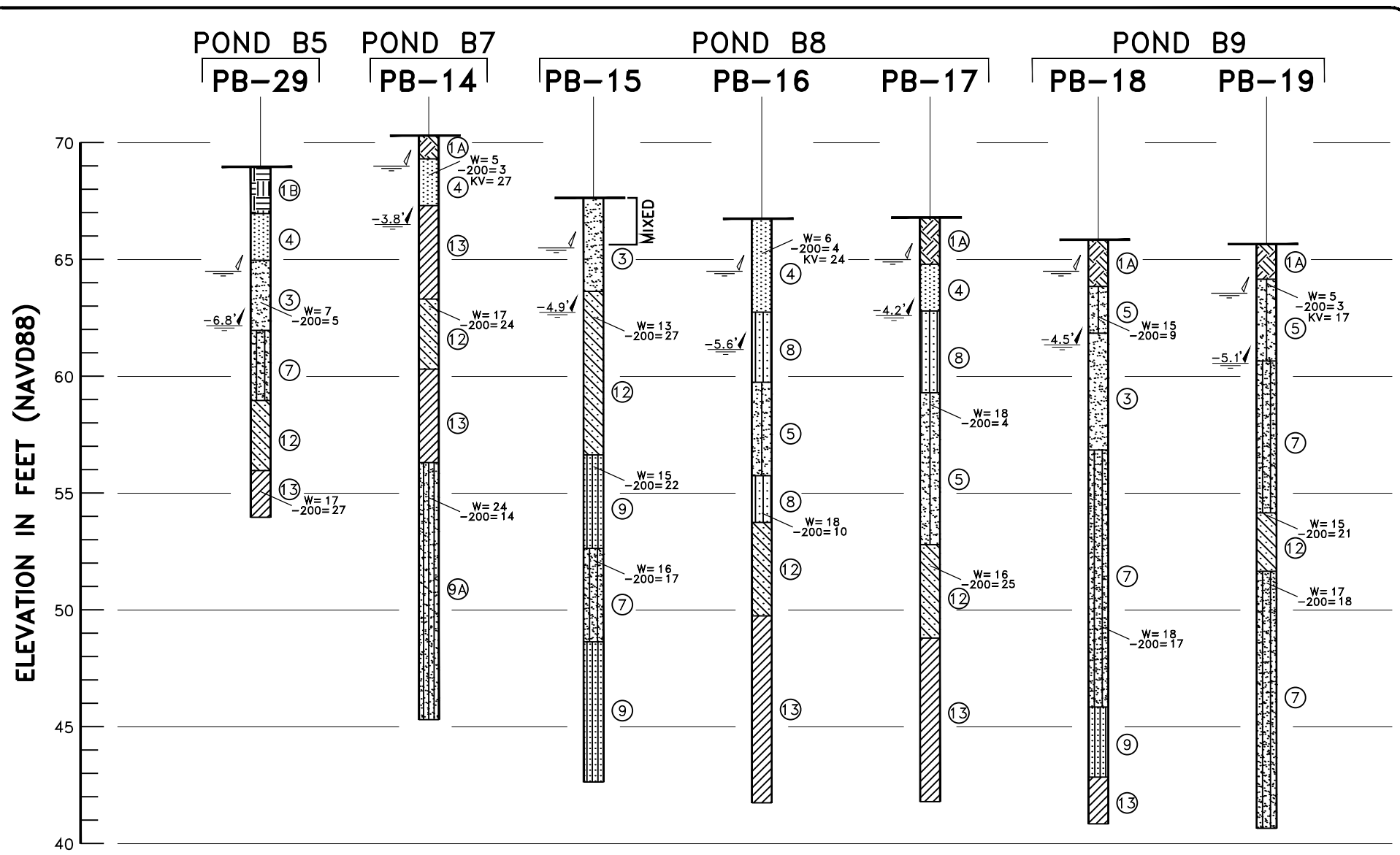
APPROVED :	DATE :	FIGURE:
DJY	8/16/2024	3



SOIL PROFILES

LEGEND

- 1A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- 1B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- 1C DARK REDDISH BROWN PEAT (PT)
- 1D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 2 ORANGISH BROWN FINE SAND (SP)
- 3 BROWN TO STRONG BROWN FINE SAND (SP)
- 4 LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- 5 GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 6 DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 7 GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 7A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 8 REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 9 LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- 9A VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 10 ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 11 ORANGE BROWN CLAYEY FINE SAND (SC)
- 12 GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- 13 GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

-*' ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

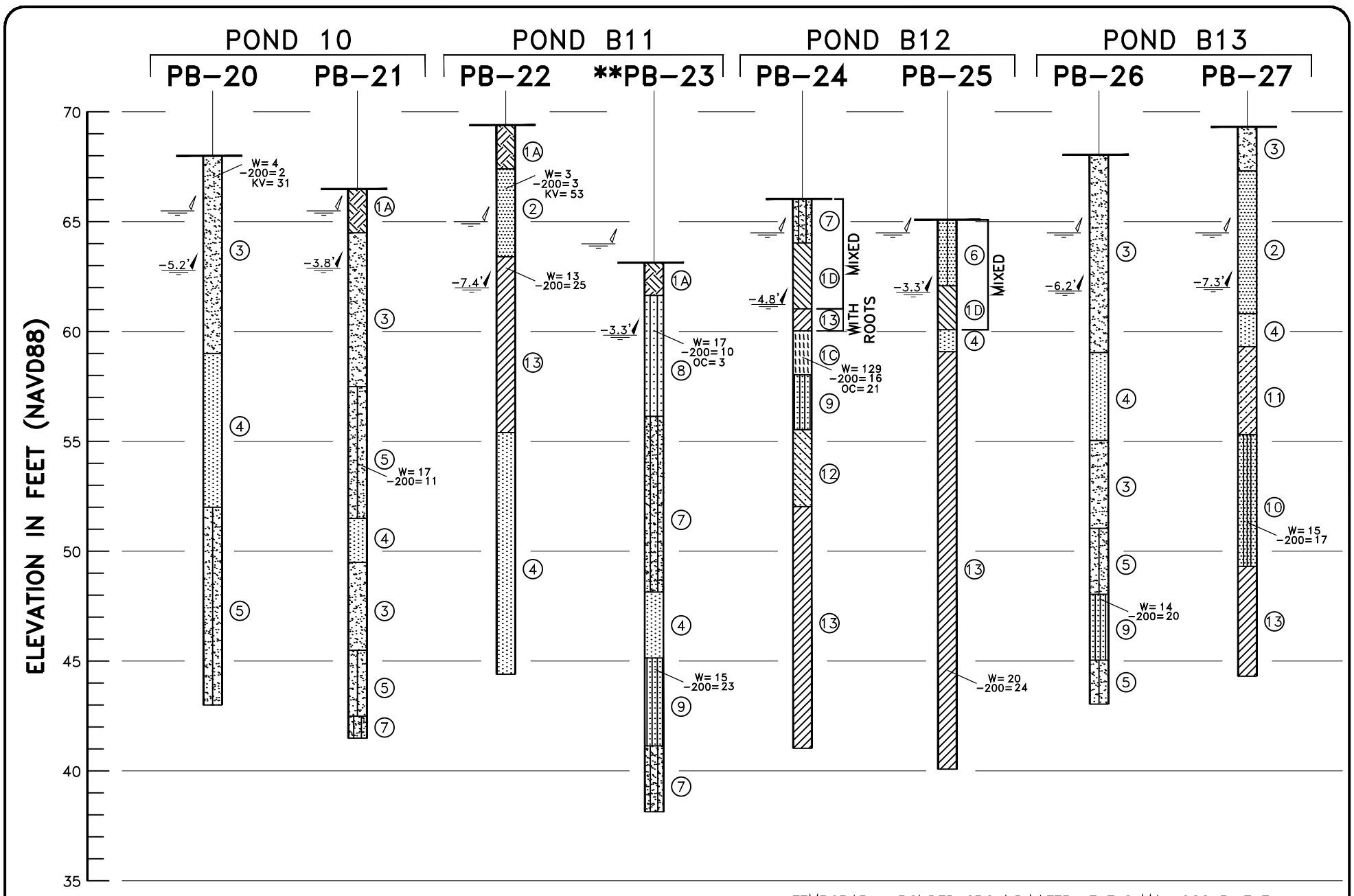
SOIL PROFILES

YOVAISH ENGINEERING SERVICES, LLC.
Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	FIGURE:
DJY	8/16/2024	4



** NOTE: TEMPORARILY PONDED GROUNDWATER LEVELS MAY OCCUR. THE HEIGHT TO WHICH THE GROUNDWATER LEVELS CAN RISE SHOULD BE DETERMINED BY STORMWATER ROUTING ANALYSES, TO BE PERFORMED BY THE PROJECT CIVIL ENGINEER.

SOIL PROFILES

LEGEND

- 1A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- 1B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP–SM)
- 1C DARK REDDISH BROWN PEAT (PT)
- 1D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM–SC)
- 2 ORANGISH BROWN FINE SAND (SP)
- 3 BROWN TO STRONG BROWN FINE SAND (SP)
- 4 LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- 5 GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
- 6 DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP–SM)
- 7 GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
- 7A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
- 8 REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP–SM)(SM)
- 9 LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM–SC)
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DJY	8/16/2024	5

SOIL PROFILES

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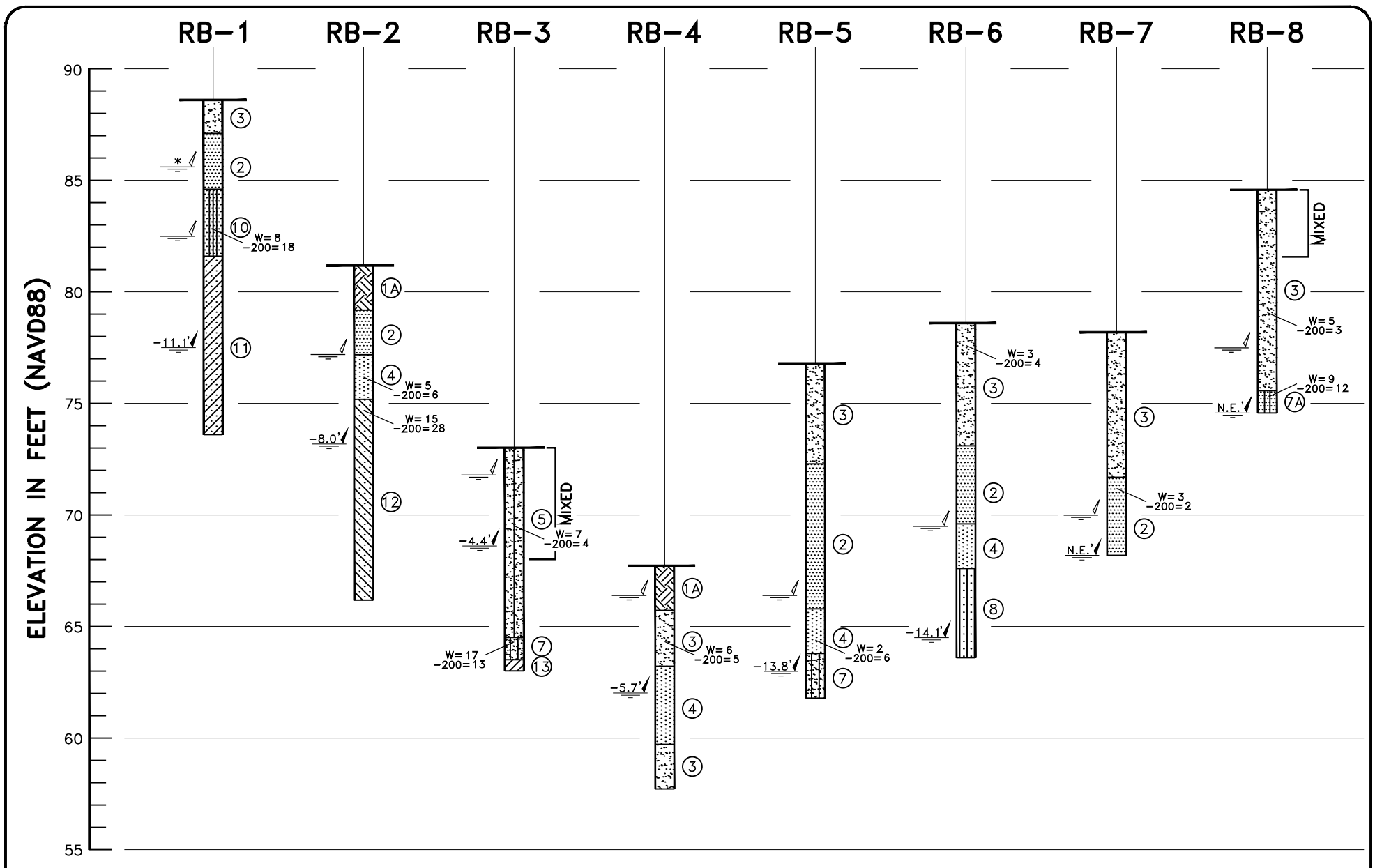

SOIL PROFILES

LEGEND

- (1A) GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- (1B) MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- (1C) DARK REDDISH BROWN PEAT (PT)
- (1D) DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (2) ORANGISH BROWN FINE SAND (SP)
- (3) BROWN TO STRONG BROWN FINE SAND (SP)
- (4) LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- (5) GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (6) DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (7) GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (7A) ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (8) REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (9) LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- (9A) VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
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SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19

TOWN OF HOWEY IN THE HILLS, FLORIDA

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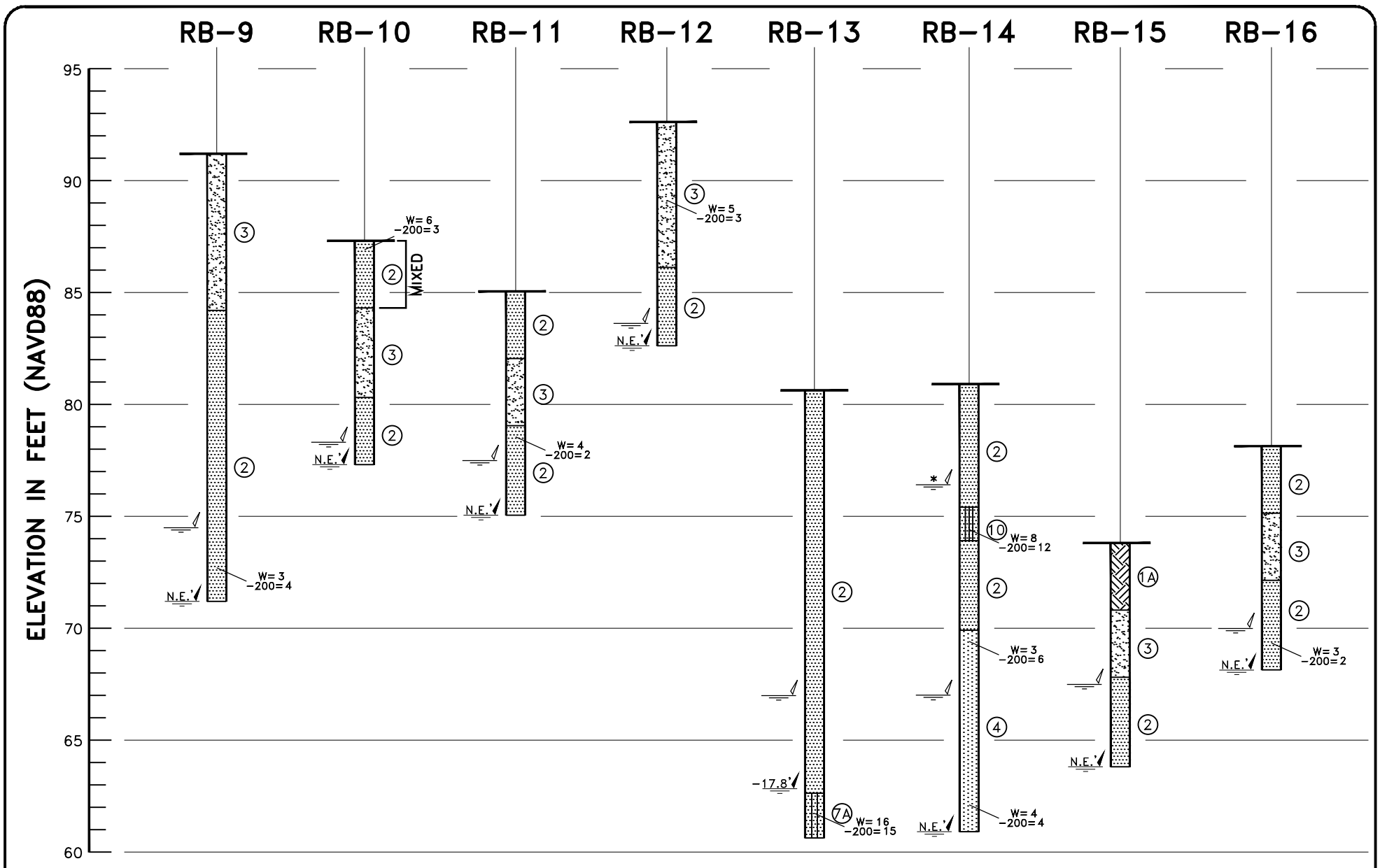

SOIL PROFILES

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- (7) GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
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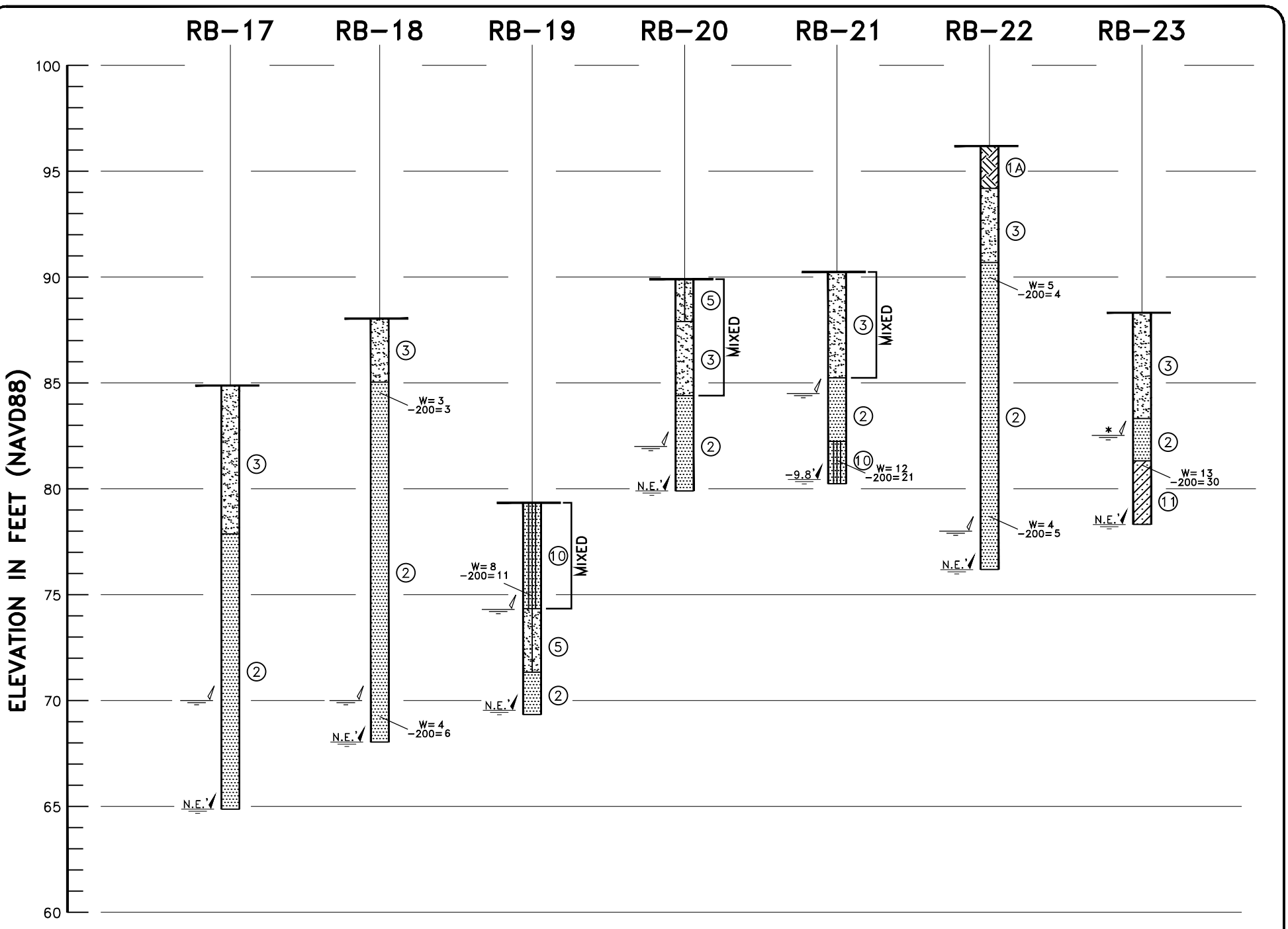

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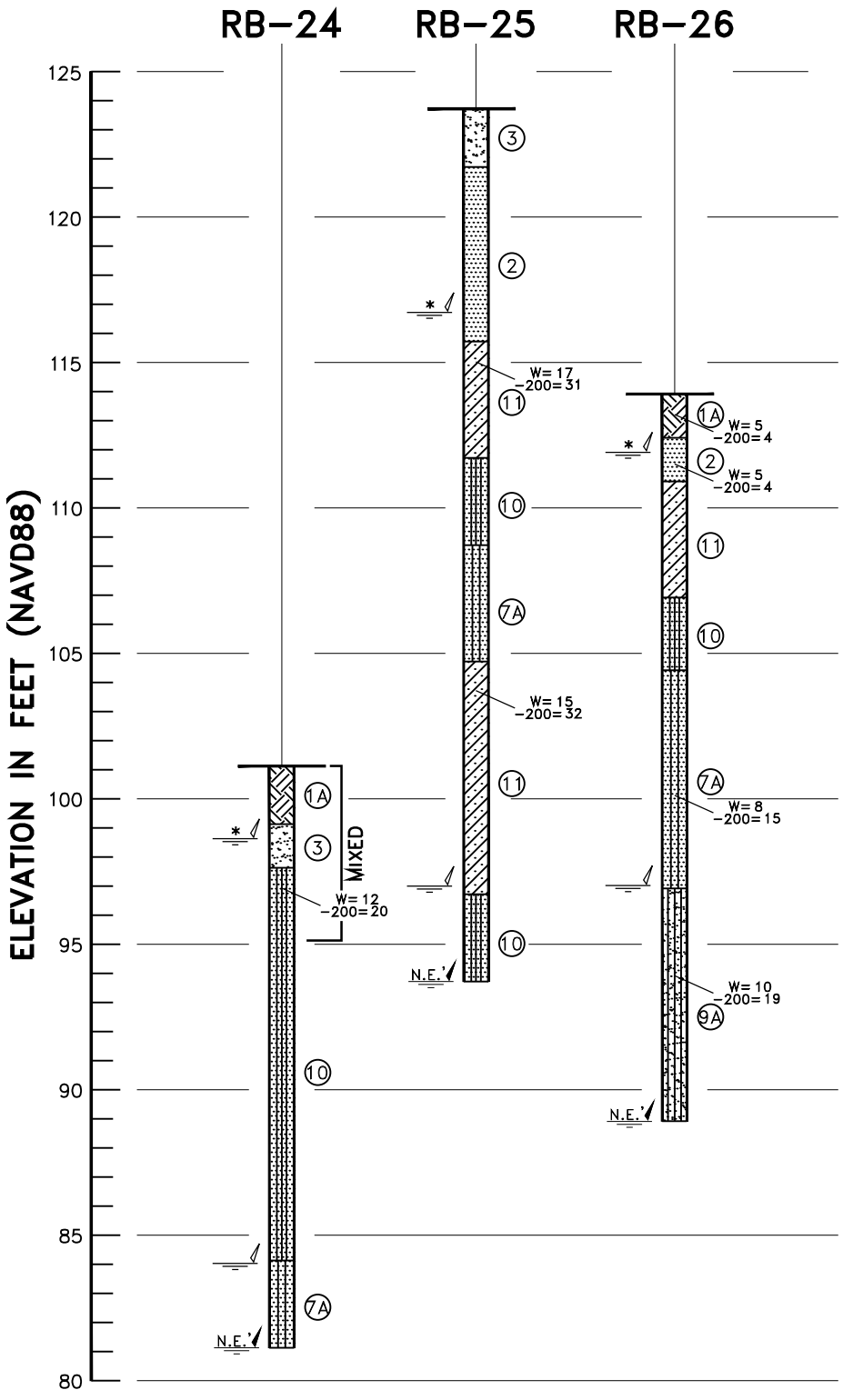

SOIL PROFILES

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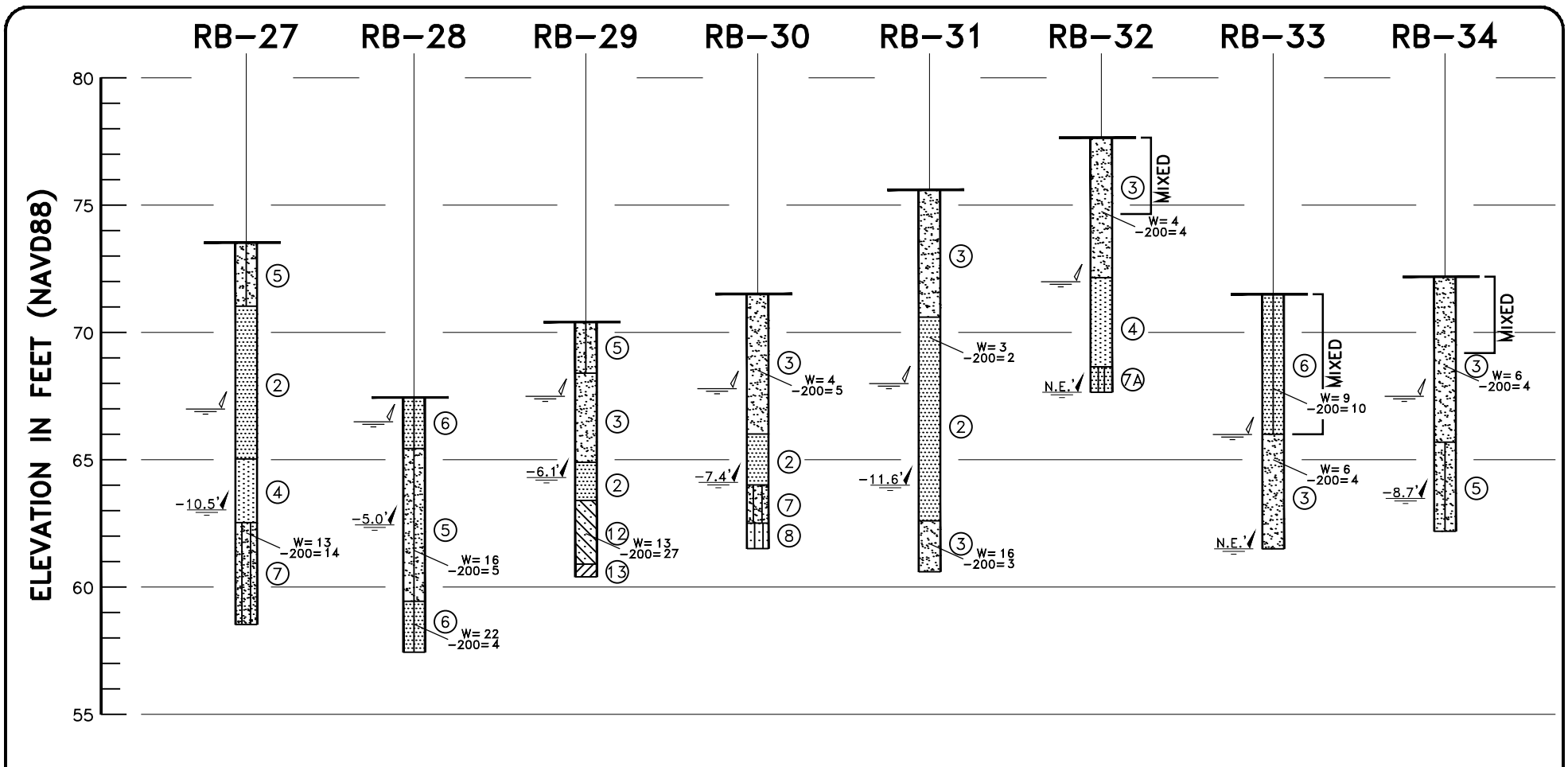

SOIL PROFILES

LEGEND

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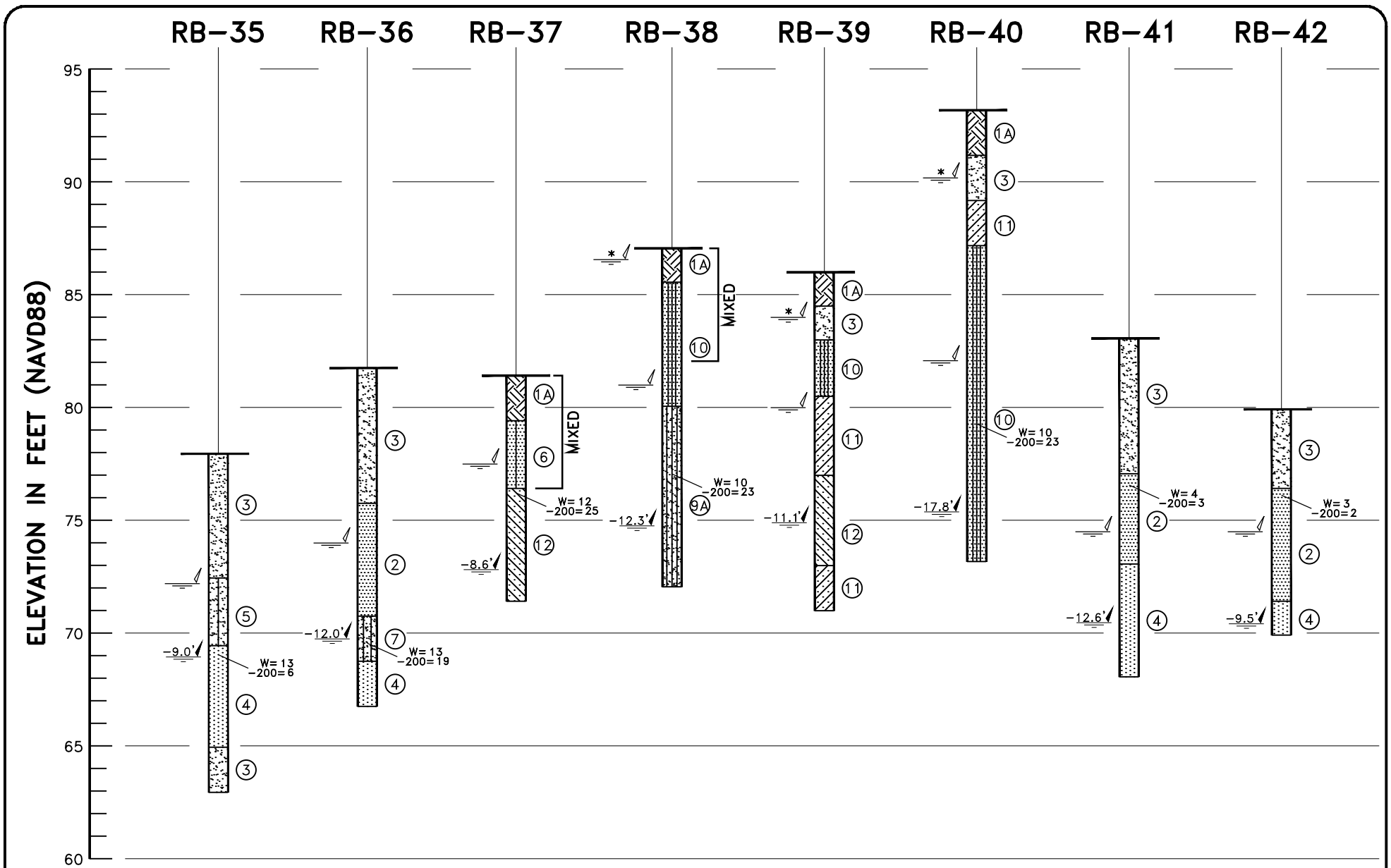

SOIL PROFILES

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- 11 ORANGE BROWN CLAYEY FINE SAND (SC)
- 12 GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- 13 GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

* ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SOIL PROFILES

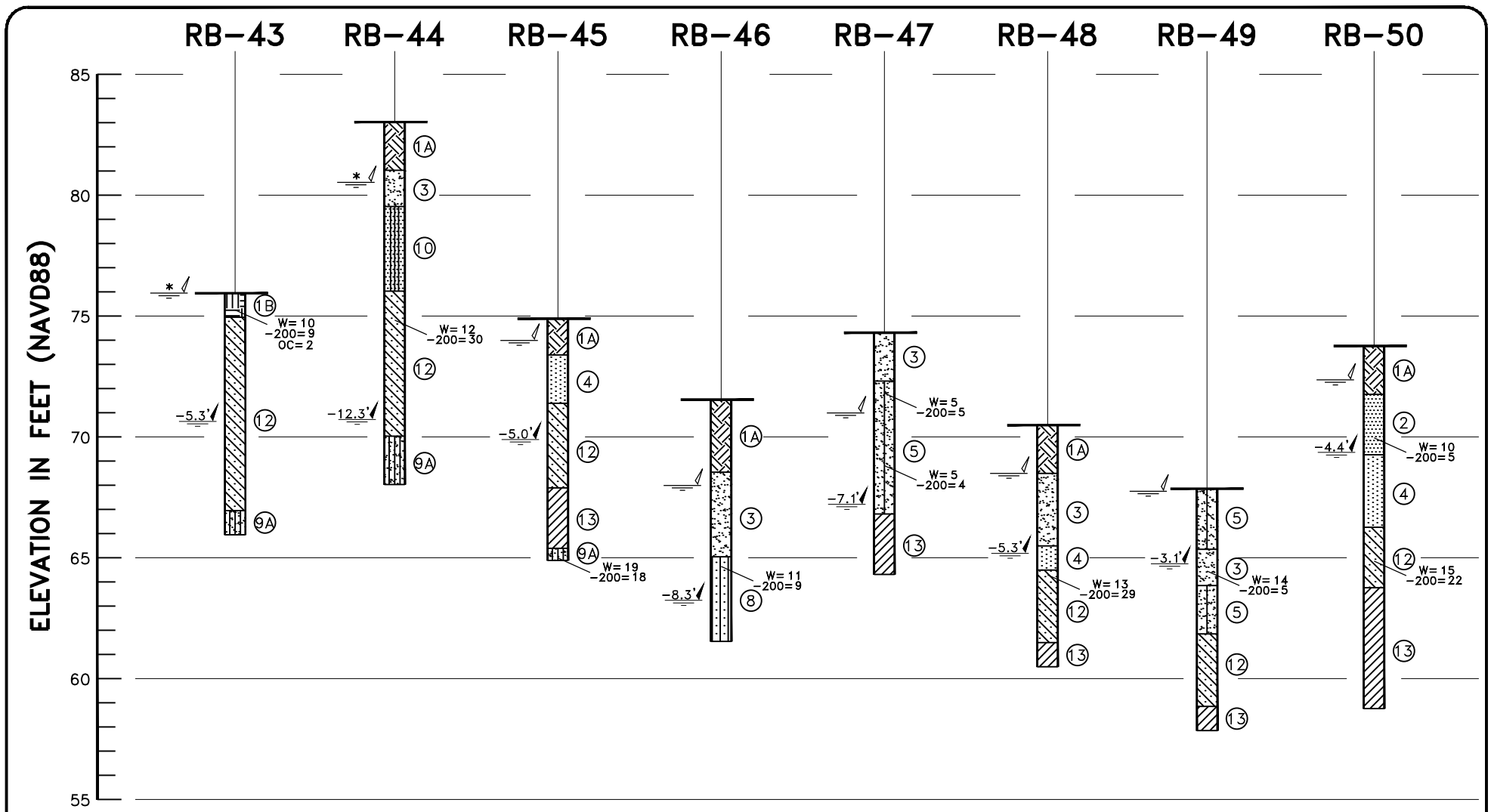
YOVAISH ENGINEERING SERVICES, LLC.

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
RNR	NOTED	24-E2180.02
APPROVED :	DATE :	FIGURE:
DJY	8/16/2024	11



SOIL PROFILES

LEGEND

- 1A GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- 1B MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- 1C DARK REDDISH BROWN PEAT (PT)
- 1D DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 2 ORANGISH BROWN FINE SAND (SP)
- 3 BROWN TO STRONG BROWN FINE SAND (SP)
- 4 LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- 5 GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 6 DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- 7 GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 7A ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 8 REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- 9 LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- 9A VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 10 ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- 11 ORANGE BROWN CLAYEY FINE SAND (SC)
- 12 GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- 13 GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

* ESTIMATED TEMPORARY PERCHED GROUNDWATER LEVEL

W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SOIL PROFILES

YOVAISH ENGINEERING SERVICES, LLC.
Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
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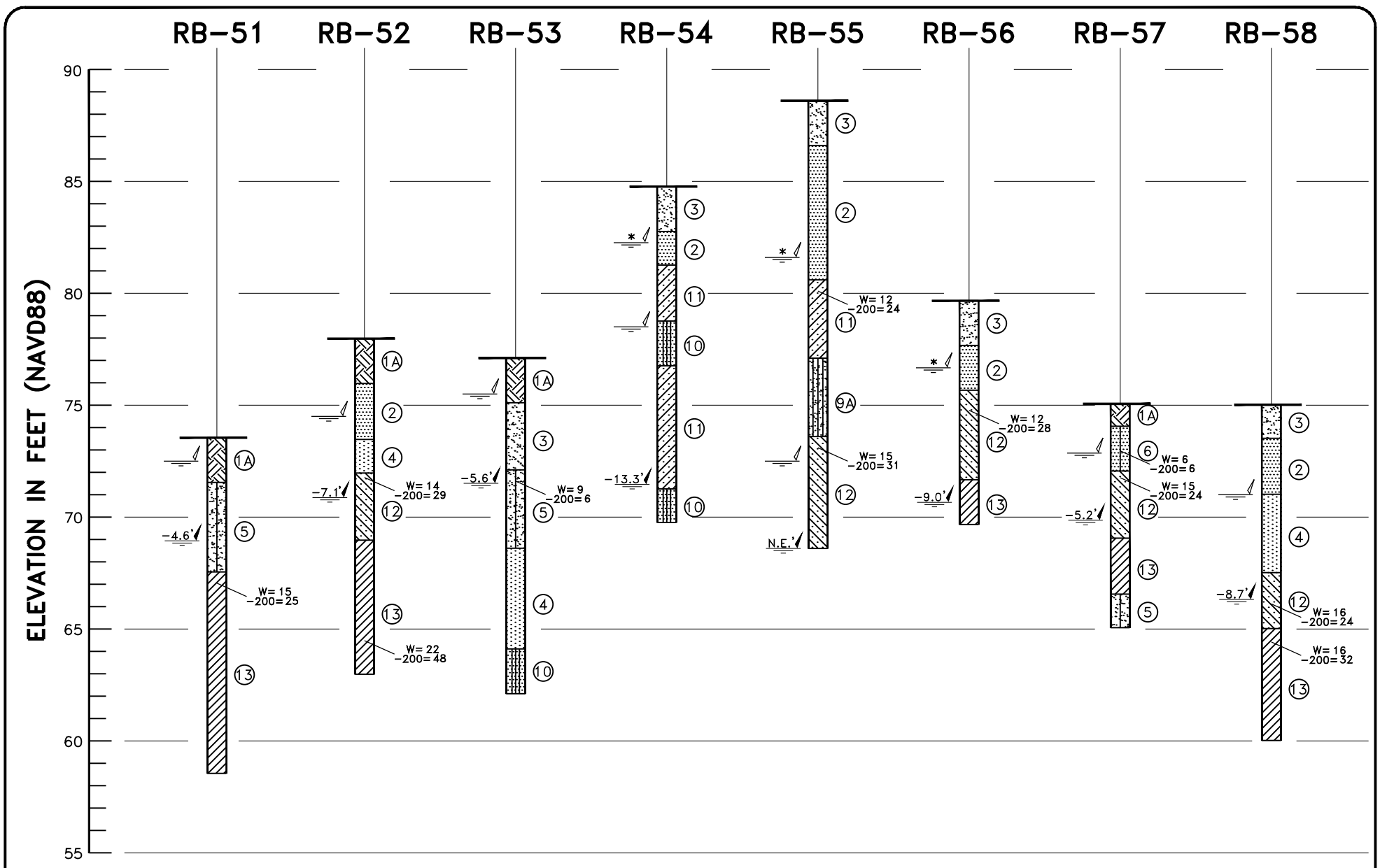
DJY	8/16/2024	12



SOIL PROFILES

LEGEND

- (1A) GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- (1B) MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- (1C) DARK REDDISH BROWN PEAT (PT)
- (1D) DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (2) ORANGISH BROWN FINE SAND (SP)
- (3) BROWN TO STRONG BROWN FINE SAND (SP)
- (4) LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- (5) GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (6) DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (7) GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (7A) ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (8) REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (9) LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- (9A) VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (10) ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (11) ORANGE BROWN CLAYEY FINE SAND (SC)
- (12) GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- (13) GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)

(SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL

-4.2' DEPTH TO GROUNDWATER LEVEL (MEASURED 7/2024)

N.E.' DEPTH TO GROUNDWATER LEVEL NOT ENCOUNTERED

PRELIMINARY ESTIMATED SEASONAL HIGH GROUNDWATER LEVEL

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W	NATURAL MOISTURE CONTENT IN PERCENT
-200	PERCENT FINES PASSING U.S. NO. 200 SIEVE
OC	ORGANIC CONTENT IN PERCENT DRY WEIGHT
KV	COEFFICIENT OF VERTICAL PERMEABILITY (FEET PER DAY)

SOIL PROFILES

YOVAISH ENGINEERING SERVICES, LLC.

Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
COUNTY RD 48 & STATE RD 19
TOWN OF HOWEY IN THE HILLS, FLORIDA

DRAWN :	SCALE :	JOB NO. :
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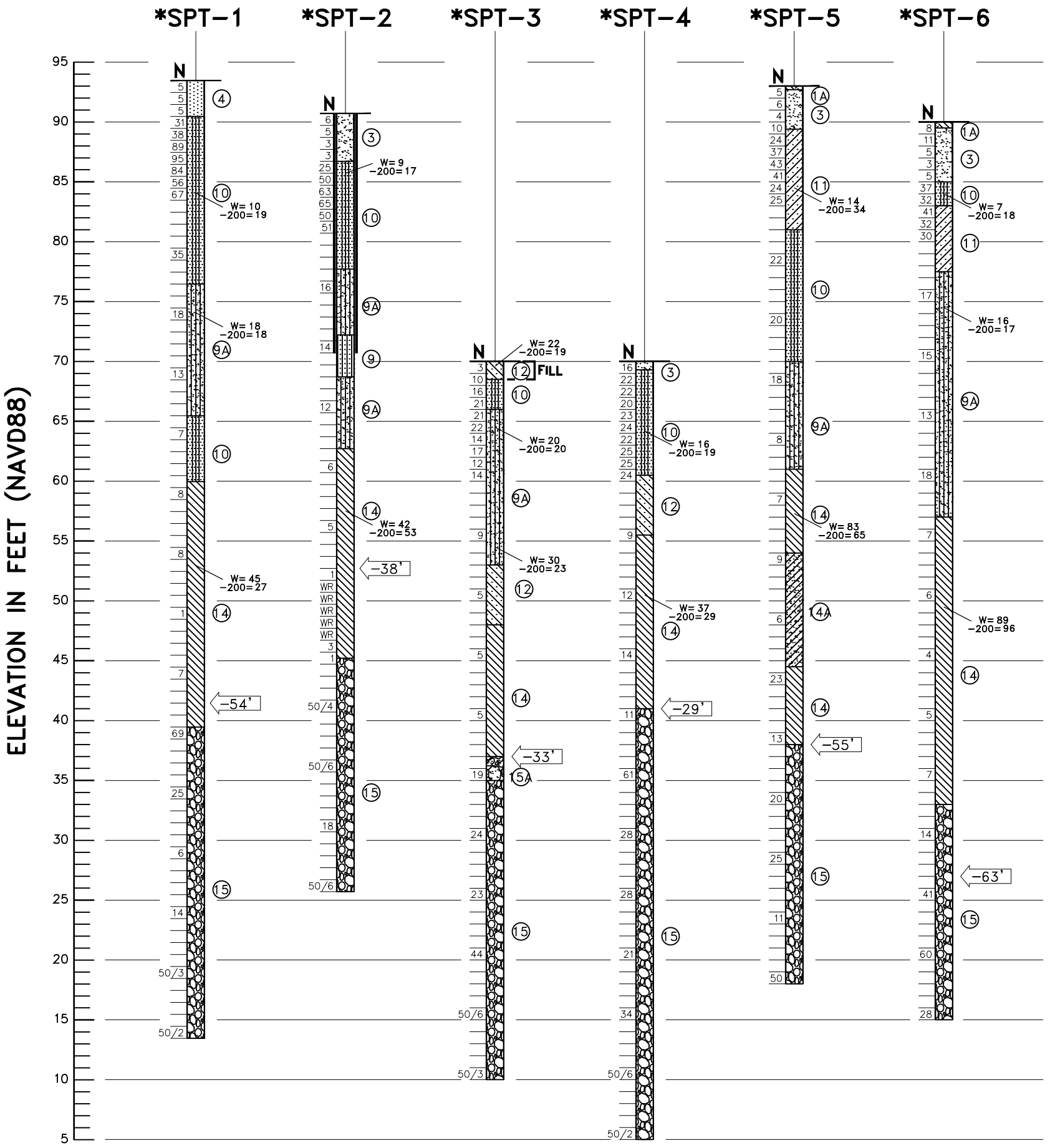
DJY	8/16/2024	13



SOIL PROFILES

LEGEND

- (1A) GRAY BROWN FINE SAND WITH OCCASIONAL SMALL ROOTS, TILLED TOPSOIL (SP)
- (1B) MEDIUM GRAY TO DARK GRAY SLIGHTLY SILTY FINE SAND WITH OCCASIONAL SMALL ROOTS (SP-SM)
- (1C) DARK REDDISH BROWN PEAT (PT)
- (1D) DARK GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (2) ORANGISH BROWN FINE SAND (SP)
- (3) BROWN TO STRONG BROWN FINE SAND (SP)
- (4) LIGHT GRAY TO LIGHT GRAYISH BROWN FINE SAND (SP)
- (5) GRAY TO GRAYISH BROWN SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (6) DARK GRAY TO DARK GRAY BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND (SP)(SP-SM)
- (7) GRAYISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (7A) ORANGISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (8) REDDISH BROWN TO DARK REDDISH BROWN SLIGHTLY SILTY TO SILTY FINE SAND (SP-SM)(SM)
- (9) LIGHT GRAYISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND WITH OCCASIONAL PINK MOTTLING (SM)(SM-SC)
- (9A) VERY LIGHT GRAY SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (10) ORANGISH BROWN SILTY TO SLIGHTLY CLAYEY FINE SAND (SM)(SM-SC)
- (11) ORANGE BROWN CLAYEY FINE SAND (SC)
- (12) GRAY TO GRAYISH BROWN SLIGHTLY CLAYEY TO CLAYEY FINE SAND WITH OCCASIONAL ORANGE AND/OR YELLOW MOTTLING (SC)
- (13) GRAY TO VERY LIGHT BLUE GRAY CLAYEY FINE SAND TO SANDY CLAY (SC)(CL)
- (14) LIGHT GREENISH GRAY CLAYEY FINE SAND TO SANDY CLAY WITH TRACES OF PHOSPHATES (SC)(CH)
- (14A) ORANGISH YELLOW CLAYEY FINE SAND WTO SANDY CLAY WITH TRACES OF PHOSPHATES (SC)(CL)
- (15) PALE YELLOWISH BROWN LIMESTONE (LS)
- (15A) ORANGISH YELLOW WEATHERED LIMESTONE (LS)
- (SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL
- N STANDARD PENETRATION RESISTANCE VALUE IN BLOWS PER FOOT
- WR SAMPLER ADVANCED UNDER WEIGHT OF ROD
- 50/4" NUMBER OF BLOWS NECESSARY TO PENETRATE/INCHES
- L L -20.0' DEPTH TO WHICH CASING WAS INSTALLED
- W NATURAL MOISTURE CONTENT IN PERCENT
- -200 PERCENT FINES PASSING U.S. NO. 200 SIEVE
- <-38' DEPTH OF CIRCULATION LOSS OF DRILLING FLUIDS

SOIL PROFILES (SPT)

YOVAISH ENGINEERING SERVICES, LLC.
Consulting Engineers in the Earth Sciences, Geotechnology, Hydrogeology and Construction Materials Testing

SUBSOIL & GROUNDWATER LEVEL INVESTIGATION

PROPOSED LAKE HILLS
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DJY	8/27/2024	14