SUBSURFACE SOIL INVESTIGATION
PEACEFUL RIDGE SUBDIVISION
COLORADO SPRINGS, COLORADO

Prepared For:
Fountain Valley Investments
3 Widefield Boulevard
Colorado Springs CO 80911

Respectfully submitted,

SOIL TESTING AND ENGINEERING INC

Reviewed By:

Larry W. Chisman, Principal

Francis Magnussen, P.E.

LWC/mss

STE Report No. 051124

December 9, 2005

TABLE OF CONTENTS

INTRODUCTION

This report presents our preliminary findings from our initial subsurface soil investigation, STE Report No. 041145 and results from STE Job No. 051124 for the Peaceful Ridge Subdivision. The results from the initial investigation have been combined for this report.

A copy of the subdivision report for Cottonwood Meadows, by CTL Thompson, Inc. was also reviewed. The report is entitled "Preliminary Geotechnical Investigation, Unnamed 49-Acre Parcel, Marksheffel Road and Fontaine Boulevard, Fountain, Colorado". The report was dated November 7, 1995 and the Job No. is CS-5821.

Moisture sensitive soils are present across this site. Both expansive soils and soils prone to settlement were encountered. The following report was utilized to address the soils susceptible to settlement type movements, "Proceedings of the Conference on Geologic Hazards and Engineering Practices in Western Colorado, October 29 and 30, 1998",by Colorado Geological Survey, Department of Natural Resources, Denver, Colorado, 1998.

This report is intended to better define soil conditions across the site and provide general recommendations for development planning, site development and construction. Due to the erratic soil conditions a lot by lot investigation is recommended for each residence.

The report addresses soil conditions only and does not address any environmental concerns.

GENERAL SITE CONDITIONS

LOCATION: The site adjoins the northern boundary of Cottonwood Meadows Subdivision, Filing 3. It is located to the north and west of the intersection of Fontaine Boulevard and Marksheffel Road, southeast of metropolitan Colorado Springs, Colorado. The approximate location of the site has been indicated on the enclosed Site Location Map (FIG 1).

SITE DESCRIPTION: This parcel of land is located on a sloping hillside that generally slopes mildly to the east and southeast. The highest point is located in the northwest corner.

A slight ridge in the central portion directs runoff to the northeast and southeast. The ridge runs from the western boundary towards the east.

Two erosion control berms are located in the eastern portion of the site. In addition, a small berm is located near the south central portion of the site. Two small detention ponds are present. The largest is near the center of the western most berm. There is some evidence a detention area was in place at the south end of the south central berm. The berms appear to be placed to slow surface run-off. The detention areas may have been used to collect water for livestock.

A small pond is present at the northeast corner of the site. This pond appears to be a retention pond. A block structure to the north of the pond may be a pump station. It appears this pond was once associated with the discharge from the pump station.

The site generally drains to a culvert that carries collected surface water to the east beneath Marksheffel Road and discharges onto agricultural land to the east.

A drainage feature to the north of the property directs collected surface water toward the northeast corner of the site.

The site is bounded to the north and west by vacant pastureland. Cottonwood Meadows, Filing 3 is adjacent to the southern boundary. Marksheffel Road is present along the eastern boundary.

The eastern boundary of the site parallels Marksheffel Road. Based on the preliminary plans provided, a 75 foot wide easement for Marksheffel Road is designated for expansion of the roadway.

The site is generally covered with native grasses, weeds, yuccas etc. Small piles of debris are located across the site. The debris generally consists of wood, tree branches, steel pipe, plastic etc.

PROJECT DESCRIPTION: Based on preliminary information provided, the land will be developed as a residential subdivision containing 288 homes. Due to the erratic soil conditions, lot by lot investigations are recommended.

It is assumed, the residential structures will be similar to homes constructed in the surrounding area. The structures generally consist of one to two story wood framed structures utilizing a combination of basement, crawlspace and slab-on-grade type construction. Loads are anticipated to range from light to moderate.

GENERAL SUBSURFACE CONDITIONS

SOIL TYPES:

Generally two soil types were identified over the bedrock. Based on laboratory test results the two upper soils are similar in make up. However, portions of Soil Type 1 are susceptible to weight and moisture intrusion, resulting in the potential settlement of the soil. Other portions exhibit expansive characteristics when water and weight are applied to a confined sample.

Based on information obtained from the previously referenced Geologic Hazard Conference, the samples tested for consolidation are in the low range for collapse with a 1000 pound load. However, continued consolidation occurs when additional weight is added. Reference (Figure No. 19) for consolidation results.

A sample of Soil Type 1 in Boring No. 15 at 4 feet expanded approximately 3.2% when water was added to the sample with a 1000 pound load.

Swell test results on remolded samples of Soil Type 1 indicate swell potentials range from moderate to high. Reference (Figures 12 - 16).

Soil Type 2 generally classifies a highly expansive soil. However, a sample from Boring No. 12 at 9 feet indicates a 1% consolidation with loads ranging from 1000 to 3000 pounds. Information from the above referenced conference indicates 0-1% consolidation should not adversely affect the proposed development.

During the overlot grading process testing will be required to identify collapsible (metastable) type soils. Where collapsible soils are present, it is recommended they be penetrated and recompacted. Based upon our findings the majority of the metastable soils are located in the upper two to five feet of the soil profile.

The grading plans were not available at the time of this report. It is assumed cuts will be completed in the western upper portion of the site and fill will be placed in the lower eastern portion of the site.

As discussed above, the metastable soils in the upper soil profile in the areas to receive fill are to be removed and replaced prior to adding overlot fill. If cut areas do not penetrate the metastable soil, it is to be removed and recompacted.

Assuming the metastable soils are removed and replaced, Soil Types 1 and 2 are expansive in both a compacted state, as well as its insitu conditions. Lot by lot testing will be required to determine the soil conditions and appropriate excavation preparation and foundation system.

The depth to highly weathered to weathered claystone bedrock ranged from approximately two feet below the present ground surface in Test Boring Nos. 6, 7 and 8 to 30 feet below the present ground surface in Test Boring No. 13. Based on information available to date, the depth to bedrock increases to the

east. The deeper depths to bedrock may be related to old drainage channels or paleo channels located in the bedrock.

The expansive potential of the claystone is generally high. Generally accepted foundation systems would include an overexcavation/replacement scheme or a deep pier foundation system. A deep pier foundation should include an overexcavation/replacement scheme if slabs will be utilized. Crawlspace type construction with voids between the piers is another alternative to address the expansive nature of the bedrock.

Both the upper clays and highly weathered to formational claystone classified as a low plastic clay (CL). Additional soil description, along with a graphical representation of the soils, can be seen on the enclosed Test Boring Logs (Figs. 4-11).

MANMADE FILL: Small piles of debris were present across the site. The debris generally consists of wood, tree limbs, steel pipe, plastic etc.

Fill associated with erosion control channels, detention and retention ponds are present in approximately the eastern 1/2 of the site.

The majority of the surface features suggest very little disturbance. The deepest fills may be present in the lower portion of the site adjacent to Marksheffel Road.

The fill in the berms and around the ponds can be evaluated during the stripping process. However, the material is anticipated to be consistent with Soil Type 1 and 2. If approved, it can be utilized during the overlot grading process.

GROUNDWATER: Water was not apparent during the initial drilling program. Several days subsequent to the drilling program the borings were measured for water. At that time water was present in Test Boring No. 1 at 23.5 feet below the present ground surface. Water was not present in Test Boring Nos. 2-7 to depths indicated on the Test Boring Logs.

During the drilling program for borings 8 through 15, water was not encountered. However, soils with a high moisture content were encountered in Test Borings 10 and 14. Several days subsequent to the drilling program the borings were measured for water. At that time water was present in Test Boring 10 at 16.67 feet and Test Boring 14 at 17.33 feet below the present ground surface.

In the report by CTL Thompson, their borings were measured to determine water elevations 70 days subsequent to the drilling program. At that time water was encountered in five of the nine borings. They indicated the water was

confined to the bedrock. However, this is a long period of time. It is not known if the holes were covered or left open to the weather. The locations of borings were not discussed. They may have been located in areas that surface water was directed toward the holes.
Lenses of iron-stained material were encountered in the bedrock during our drilling program. This suggests water has flown through the material in the past. However, moisture content of the majority of samples collected was low.

The berms and ponds will tend to perch water during periods of heavy precipitation. Collected water can seep through the subsurface soils on the downhill sides of these features. The increase in moisture content of the soils in the upper soil profile may be affected. Areas of soft saturated material may be encountered, if development commences subsequent to heavy precipitation events.

It is assumed the higher portions will be cut and lower portions filled. Irrigation of residential lots and precipitation in the area will tend to raise the groundwater across the site. Based on information available, the depth to groundwater should not significantly affect residential structures located in the upper six to seven feet of the soil profile. If groundwater is apparent during the development phase, it will need to be addressed at that time.

CONCLUSIONS AND RECOMMENDATIONS

INTRODUCTION: The discussion in this section is based upon the review of the report for the subdivision to the south; conditions encountered in this investigation, and/or anticipated building characteristics previously described. Additional subsurface investigation and/or laboratory testing will be required to address the foundation system selected on each lot.

DEVELOPMENT PLANNING: As discussed, the soils across this subdivision are erratic and range from metastable soils in portions of the upper soil profile to moderate to highly expansive soils. The metastable soils can be addressed at the time of development reducing potential for settlement type movement during the construction phase.

Due to the expansion potential of the on-site soil, either an overexcavation/replacement scheme or deep foundation system would be acceptable to address the expansive nature of the soil. If a deep foundation system is utilized, either crawlspace type construction will be required or an overexcavation/replacement scheme utilizing non-expansive granular material beneath the entire building footprint can be used for slab-on-grade construction. All overexcavations are to extend a minimum three feet beyond outside bottom edge of foundation components.

During the development phase of the subdivision, the soils in the upper soil profile susceptible to settlement type movements must be removed, moisture

conditioned and replaced as structural fill. Due to the makeup of all soils on this site, moisture conditioning may be difficult. Disking equipment will be required to thoroughly mix the soils and achieve consistent moisture content. Again, the removal and replacement of the metastable soils will tend to allay the potential for settlement type movements. However, the expansion potential will increase when properly compacted.

As discussed, the soils in this subdivision are erratic and range from settlement prone (metastable) to expansive. Some of the concerns can be addressed during the development phase to reduce potential problems during the home construction process.

As discussed above, portions of Soil Type 1 are collapsible in the native state and expansive in a recompacted state. Soil Type 2 and the bedrock material are also considered moderately-to-highly expansive.

A generally accepted mitigation technique for moderately to highly expansive soil is an overexcavation/replacement scheme. This would include the removal of a minimum of three feet of the expansive material and replacing it with a non-expansive granular fill. All foundation walls retaining in excess of four feet of backfill are to be backfilled with non-expansive granular material. The overexcavation/replacement scheme has been utilized for expansive soils in

this region for many years with considerable success, provided proper drainage and grading are maintained over the life of the structure.

A deep pier foundation system would consist of concrete piers embedded in the bedrock, supporting a concrete grade beam foundation system. Where floor slabs are to be utilized an overexcavation/replacement scheme would be utilized in conjunction with a deep pier foundation system. Crawlspace type construction utilizing structural floors would not require an overexcavation/replacement scheme.

OFF-SITE DRAINAGE: The drainage from the property to the north is to be considered during the planning for this project. A southeasterly flowing drainage feature will direct collected surface water toward the northeast portion of this project. The surface water from this drainage will need to be addressed during the development phase.

The surface water should not be allowed to stand or pond to the north of this project. Ponding water would tend to infiltrate the subsurface soils beneath the northeastern portion of the site affecting the underlying soils. The collected surface water is to be channeled to a discharge point away from this site.

UTILITY TRENCHES: Based on information available to date, groundwater should not effect utility installation. However, the subsurface investigation was somewhat limited.

Additional information concerning groundwater may become apparent during the development phase.

All trenches will require sufficient shoring and bracing to provide safe working conditions. The contractor is responsible for providing the proper shoring and bracing to ensure adequate safety.

If water is present in the utility trenches, some type of dewatering will be required. The contractor is responsible for selecting and utilizing an appropriate dewatering system. Development of streets and utility trenches beneath streets should consist of typical construction techniques. An underdrain system constructed during the placement of utilities is recommended to provide an outlet for perimeter drain discharges from each residence. If groundwater is encountered, portions of the underdrain system can be constructed to collect the water entering the trench.

If soft, unstable materials are present in the bottom of the utility trenches, the soils must be stabilized prior to placing utilities. Stabilization of these areas will depend on the amount of instability. Stabilization material can range from 1½-inch-minus clean gravel, to possibly 3- to 8-inch granitic shotrock, depending on the amount of instability.

Vertical cuts in soft, saturated and unstable material will tend to collapse or flow. All utility trenches must be properly braced or sloped in accordance with

local, state, federal, or OSHA guidelines or regulations. The contractor is responsible for providing proper shoring and/or sloping to ensure adequate safety.

Where trenches penetrate existing water levels, dewatering will be required to install the utility components.

FOUNDATION TYPES: Both shallow and deep foundation systems can be utilized across the site. Deep foundation systems can be utilized to address the expansive nature of both the upper expansive clays and expansive bedrock. Deep foundation systems would consist of a drilled pier foundation system embedded into the bedrock. The depth to the bedrock and groundwater may complicate the use of typical concrete piers. An alternative to concrete piers would be helical anchors. Deep foundation systems would include the use of structural floor (crawlspace-type) construction or overexcavation/ replacement schemes beneath the entire building footprint, if slab-on-grade is utilized. Due to economics, slabs are typically utilized in the garage portion of the structure utilizing crawlspace type construction. For deep foundation systems, site-specific drilling for each lot will be required to determine depth to bedrock and groundwater, and determine soil parameters for the deep foundation system.

Shallow foundations in conjunction with an overexcavation/replacement scheme would be an appropriate alternative for soils across the site where

moderately-to-highly-expansive materials exist. Additional testing at each site will be required to determine the expansion potential of the soils.

Where an overexcavation/replacement scheme is warranted, it is recommended a minimum three feet of the expansive material be removed from beneath the building footprint and replacement with a granular, non-expansive structural fill. The zone of overexcavation is to extend a minimum three feet beyond the building footprint.

OVERLOT AND STRUCTURAL FILL:

During the development phase of this project, the onsite material will be utilized in the cut and fill operations. Due to the silt/clay makeup of the material, it may be difficult to moisture condition the material. Watering both the cut and fill areas may help moisture condition the material. Surfactants may be required to aid in the moisture conditioning of the silty/clay. Blending of soils will be required to achieve a uniform moisture content prior to compaction efforts. Disc type equipment is generally used for this process.

All fill placed across the site during the development phase is to be compacted in lifts not to exceed 6 inches after compaction, while maintaining a minimum of 95% of its maximum Proctor dry density, ASTM D-698. The soil is to be placed at a minimum 2% to 4% over its Proctor optimum moisture content. The overlot fill is to be appropriately tested by the geotechnical engineering firm to ensure it is properly placed.

As discussed earlier, portions of the upper soils are both weight- and moisture-sensitive and will consolidate with the addition of loads. Where metastable soil is present, an overexcavation/replacement scheme is recommended during the development phase to allay the potential for future settlement subsequent to the completion of the overlot grading process and construction.

DESIGN PARAMETERS: Due to the expansive nature of on-site soil, an overexcavation/replacement scheme is an accepted option for homes across this site. Assuming a minimum footing width of 16 inches, a shallow foundation system utilized in conjunction with an overexcavation/replacement scheme may be proportioned on the basis of maximum allowable bearing capacities ranging from 1500 psf to 2600 psf. The final bearing capacity will be determined on a lot-by-lot basis at the time of the open excavation observation. Excavation foundations are to be provided with a minimum of 30 inches of cover for frost protection. Foundation walls should be designed to span a minimum of 12 feet under the design loads to provide for foundation rigidity and account for anomalies in the soil profile.

The on-site native soils and structural fill can be taken to have the following equivalent hydrostatic fluid pressures:

Soil Type	Equivalent Fluid Pressure		
	Active (pcf)	Passive (pcf)	At Rest (pcf)
Select granular fill	38	291	56
1, 2 & 3	65	153	79

The above values assume level backfill conditions and may require modifications for the effects of surcharge loads, sloping backfill, etc. The design parameters provided must be verified by observation of the foundation excavation.

Owing to the highly expansive soils, a drilled pier, deep foundation configuration can be used. The piers must extend to a depth greater than the expected depth of seasonal moisture fluctuation. Stemwalls and/or grade beams that span between piers should be continuously voided with a recommended minimum void height of three inches.

As indicated on the attached Test Boring Logs, the soil profile across this site is erratic. A lot specific drilling program is required to determine soil parameters for each pier foundation system.

A drilled pier, deep foundation configuration in conjunction with crawlspace type construction can be utilized. A deep pier foundation system in conjunction with an overexcavation/replacement scheme is an alternative for foundations across this site if slab-on-grade is utilized.

Excavation cuts should be held as shallow within the soil profile as possible.

Typically, the garage portion of a structure will consist of slab-on-grade type construction with crawlspace type construction. A minimum of three feet of granular backfill must exist between the bottom of the slab and the expansive clays. The backfill soil should be compacted in lifts not to exceed six inches after compaction to a minimum of 90% of its maximum Proctor dry density, ASTM D-698. The soil should be placed at approximately ±2 % of its Proctor optimum moisture content.

The presence of groundwater and loose soils above the bedrock may complicate the installation of drilled piers, requiring casing and/or dewatering techniques during the pier drilling and placement of concrete. Concrete may not be poured into piers where more than two inches of standing water exists. In the event, that water in excess of two inches is present, the concrete must be tremmied to the bottom of the pier to allow the concrete to displace the water as it is added to the pier. Due to anticipated pier depths all piers are to be tremmied to the bottom of each pier. The reinforcing cage must be of sufficient diameter to allow the tremmy to extend to the bottom of the pier excavation. In addition, the concrete must be poured immediately after drilling.

The piers must be provided with a minimum penetration into the formational bedrock horizon of 6 feet. The minimum length of any pier is to be 18 feet. Again, lot specific drilling will be required to determine appropriate pier lengths.

Based on preliminary information to date, piers penetrating 6 feet into the dense bedrock horizon may be proportioned on the basis of a maximum allowable end bearing pressure of 15,000 psf, along with an allowable side friction value in the bedrock of 2000 psf.

Since the bedrock materials are expansive, a minimum dead load end bearing pressure of 2400 psf is recommended, along with a minimum side friction value in the bedrock of 700 psf.

Only that portion of the pier within the bedrock should be utilized in determining the pier capacity. The lower portion of the pier equal to the diameter of the member should be ignored in determining total capacity.

In the event the minimum dead load requirements cannot be met, then the length of the pier within the bedrock horizon can be increased beyond the six-foot minimum. Increasing the length within the bedrock would produce additional side shear that would tend to resist uplift forces. For this calculation, a skin friction of 1000 psf should be utilized.

THE CONTRACTOR MUST MOBILIZE EQUIPMENT CAPABLE OF SATISFYING THE PENETRATION REQUIREMENTS SHOWN ON THE FOUNDATION DESIGN.

Cut and fill elevations for the subdivision were not available at the time of writing this report. Based on information available piers may range from 18 feet below bottom of foundation components to in excess of 50 feet below the bottom of foundation components.

Walls retaining in excess of four feet of backfill should be backfilled with granular, non-expansive materials approved by the geotechnical engineer. However, the clay may be used in the upper 18 inches of landscaped areas to create a relatively impermeable cap.

FLOOR SLABS: Since expansive soil is present on this site, movement of floor slabs-on-grade is probable. The magnitude of this movement is unpredictable. Concentrating slab loads cannot control the movement. The only positive solution, in our opinion, would be to utilize structural floors with an air space between the expansive soils and floor system. Economic constraints may prevent the use of structural floors. Therefore, if floor slabs-on-grade are utilized in conjunction with an overexcavation/replacement scheme, the following recommendations are made:

- Slabs must be separated from all structural and non-structural portions of the building in such a manner that they do not transmit floor slab movement to the roof or overlying floor.

- Stairways and doorways must be designed to accommodate slab movement. Sheetrock and pre-hung doors must not rest on stairway stringers or the slab.

- Columns, pipes, plumbing and utilities penetrating the slab must be isolated from the slab to provide for slab movement.

- Water lines and gas lines connected to water heaters and/or furnaces resting on the slab must be constructed with flexibility to allow for slab movement. Heater ducts must be provided with collapsible connections between the furnace and ductwork.

- Backfill placed below floor slabs should be granular material and is to be compacted to a minimum of 90% of its maximum modified Proctor dry density, ASTM D-698.

The above recommendations are considered prudent and should be followed in order to mitigate the effects of floor slab movement. They do not, however, guarantee that movement will not occur in the event that the subsoils increase in moisture content.

CONCRETE TYPE: All concrete in contact with the soil should be made using a Type II cement for sulfate resistance. Calcium chloride must not be added to a Type II cement.

Foundation forms should remain in place for an appropriate length of time in accordance with ACI (American Concrete Institute) recommendations in the ACI Manual of Standard Practice, Part 2.

In accordance with the Uniform Building Code and good construction practices, concrete must not be placed on frozen ground.

SURFACE DRAINAGE AND GRADING:

The ground surface within 10 feet of the building must be sloped away from the building with a minimum gradient of 5%. This is equivalent to six inches of fall across this 10-foot zone. Two-percent slope would be appropriate in concrete covered areas. Where this is not possible, a well-defined swale should be constructed to intercept the surface water and carry it quickly and safely around and away from the building. Plastic should not be utilized beneath decorative rock or bark, etc. A breathable filter fabric should be utilized in lieu of plastic membranes.

Decorative edging, sidewalks and other flatwork should be planned and constructed so that they do not restrict rapid surface flows away from the foundation region.

Roof downspouts should be extended across all backfill zones and discharged into an area of positive drainage away from the structure.

No sod, grass, shrubs, flowers, trees or other vegetation requiring water should be placed within five feet of the foundation or within any backfill zone. Sprinklers must not discharge water within five feet of the foundation or within any backfill zone. Increasing the moisture content within the soil profile can result in unacceptable performance of the foundation components.

In addition, control of drainage and grading is a critical factor in the future performance of the proposed structures. Cut and fill operations should utilize the natural contours of the site as much as possible.

SUBSURFACE DRAINAGE:

A subsurface perimeter drain will be required around the entire foundation system. The foundation designer is to provide the drain system details and/or drain design.

OPEN EXCAVATION OBSERVATIONS:

As previously discussed, each excavation will require additional investigation. Lot specific drilling is required to provide soil parameters for a deep pier foundation system. Reference attached "General Site Work Pier Installation and Helical Anchors Installation".

If a shallow foundation system is utilized in conjunction with an overexcavation/replacement scheme, the site will require several site visits to verify swell pressures, and ensure overexcavation requirements are achieved.

In addition, the geotechnical engineer is to complete appropriate density testing of the structural fill to ensure the compacted fill satisfies specifications.

The foundation excavation for each structure is to be observed prior to setting forms or pouring concrete in order to verify that adequate bearing materials are present and that no unsuitable materials exist.

Each builder should retain the services of a qualified geotechnical engineer in order to perform a geotechnical investigation of each lot. At a minimum, the geotechnical evaluation should consist of a visual observation of the foundation excavation. The builder's geotechnical engineer may deem additional test borings and/or backhoe pits are necessary.

CLOSING:

Our investigation consisted of random sampling of a heterogeneous material. As a result, subsurface soil conditions encountered during development and construction phases may differ somewhat from the conditions described in this report.

Construction and design personnel should be made familiar with the contents herein. Prior to any site work, a meeting is to be held to familiarize all involved with the overlot grading specifications, existing site conditions and proposed cut and fill operations. If discrepancies are noted during development and/or construction process, Soil Testing and Engineering Inc. should be notified so that problems may be avoided.

This report has been prepared in accordance with generally accepted engineering standards of care for the time and region. No other guarantees or warranties are either expressed or implied.

We trust this report provides you with the information you require. Should questions arise or further information is needed, please contact Soil Testing and Engineering Inc. at your convenience.

Soil Testing and Engineering Inc. appreciates the opportunity to provide you with the engineering services you require. We look forward to working with you in the future.

OVERLOT GRADING

This portion of the report is intended to provide specifications to establish the procedures for preparing areas to be filled, including stripping, grubbing, stabilization of soft soils, and placing and compacting fill soils to the lines and grades shown on the grading plans.

- A meeting is to be held on site prior to any stripping, grubbing or fill placement. Representatives from the owner, general contractor, earth moving contractor and STE are to be present at the meeting to familiarize all parties with the proposed project.

- The owner will establish the project boundaries. Responsibilities of all cut and fill elevations necessary for proper location and execution of the work is the responsibility of the owner. They will retain qualified personnel to establish vertical and horizontal control for the grading work and to determine the final rough grade of the fill.

- In accordance with generally accepted construction practices, the contractor will be solely and completely responsible for conditions on the job site including safety of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to conduct construction review of the contractor's performance and does not include review of the adequacy of the contractor's safety measures on or near the construction site.

- Soil Testing and Engineering Inc. shall be retained by the owner to observe and test the earthwork in accordance with specifications provided. Adequate observations and testing will be provided to meet construction specifications. It shall be the responsibility of the contractor and owner to assist personnel of Soil Testing and Engineering Inc. to keep apprised of work schedules, changes in conditions or design and new information and data as it becomes available so that we may evaluate any changes. In the event that any unusual conditions not covered by these specifications are encountered during the grading operation, Soil Testing and Engineering Inc shall be contacted for further recommendations.

- If, in the opinion of the representative of Soil Testing and Engineering Inc., substandard conditions are encountered, such as questionable or unsuitable soil conditions, unacceptable moisture content, inadequate compaction or adverse weather, etc., the representative may stop construction until the conditions are remedied, corrected or may recommend rejection of this work. The presence of the representative from Soil Testing and Engineering Inc. shall not relieve the contractor from its duty to place all fill material to the specified degree of compaction, and to complete all work in accordance with specifications.

- All soils used for fill must be approved by a representative of Soil Testing and Engineering Inc.

- When the slope of the natural ground receiving fill exceeds 20% (5' horizontal to 1' vertical), the original ground shall be stepped or benched. Benches shall be cut to a firm, competent soil condition. The lower bench shall be at least 10 feet wide or 1½ times the compaction equipment width, whichever is greater. The bottom toe shall be sloped back into the hillside a

gradient not less than 2%. All benches shall be at least 6 feet wide. All horizontal portions of each bench shall be compacted prior to receiving fill.

- All natural ground to receive fill must be properly scarified, watered and compacted prior to placing fill.

- Soil Testing and Engineering Inc. shall take an adequate number of density tests to determine if the fill satisfies project specifications. Density test results and daily notes will be provided periodically during the development process. Any failing tests or areas which do not satisfy project specifications will be reworked and retested to the satisfaction of the representative of Soil Testing and Engineering Inc.

- In areas where water is within 4 feet of the proposed fill, static compaction equipment shall be utilized. Vibrating sheepsfoot or smooth drum rollers are not to be used in areas above water until a minimum of 6 feet of compacted material is in place.

- The contractor is solely responsible for the design, maintenance and operation of any required dewatering system. The contractor shall perform such independent investigation as he deems necessary to satisfy himself as to the subsurface groundwater conditions and unstable soil conditions to be encountered throughout the construction.

- No fill shall be placed, spread or rolled while it is frozen, thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until a representative of Soil Testing and Engineering Inc. indicates that the moisture content and density of the previously placed fill are as specified. Fill surfaces may be scarified and recompacted after rainfall if necessary, to obtain proper moisture density relation.

GENERAL SITE WORK

This section of the report is intended to provide recommendations and to establish general procedures for the excavation for the proposed structure.

- The owner or contractor will establish the project boundaries including all cut and fill elevations. Execution of the work is the responsibility of the owner. He will retain qualified personnel to establish horizontal and vertical control for the excavation and will determine the final elevations for the structural fill.

- In accordance with generally accepted construction practices, the contractor will be solely responsible for conditions on the job site including supervision of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to complete additional investigations as required, observe the open excavation and provide final soil parameters for the proposed foundation design and does not include review of the adequacy of the contractor's safety measures in or near the construction site.

- Soil Testing and Engineering Inc. shall be retained by the owner to observe and test any structural fill in accordance with the specifications provided. Adequate observations and testing will be provided to meet construction specifications.

- All soils used for structural fill must be approved by a representative of Soil Testing and Engineering Inc.

- Where structural fill is required, Soil Testing and Engineering Inc. shall take an adequate number of density tests to determine if the structural fill satisfies project specifications. Density test results will be provided subsequent to any fill placement. Any failing tests or areas which do not satisfy project specifications will be reworked and retested to the satisfaction of the representative of Soil Testing and Engineering Inc.

- Utility trenches must be properly shored or sloped in accordance with local, state, federal or OSHA guidelines or regulations. The contractor is responsible for providing proper shoring and/or sloping to provide adequate safety.

GENERAL SITE WORK
FOR PIER INSTALLATION

This portion of the report is intended to provide recommendations and to establish general procedures for the pier installation.

- The owner will establish the project boundaries including the pier locations, all cut and fill elevations, etc. Execution of the work is the responsibility of the owner. He will retain qualified personnel to establish vertical and horizontal control of the pier installation and will determine the final elevations for each pier and all structural fill.

- In accordance with generally accepted construction practices, the contractor will be solely and completely responsible for conditions on the job site including supervision of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to observe the installation of the piers and conduct construction review of the contractor's performance and does not include review of the adequacy of the contractor's safety measure on or near the construction site.

- Soil Testing and Engineering Inc. shall be retained by the owner to drill each lot to determine soil parameters for the foundation design, observe the installation of the piers on this site and to observe and test the structural fill in accordance with the specifications provided. Adequate observations and testing is to be provided to meet construction specifications.

- All soils used for fill must be approved by the representative of Soil Testing and Engineering Inc.

- Soil Testing and Engineering Inc. is to observe and report on the pier installation process. The report will include total pier length, depth to bedrock, bedrock penetration, and if casing was required during the installation process.

- The bottom of all piers must be thoroughly cleaned and dewatered if necessary prior to the placement of concrete. If dewatering is not possible, concrete must be tremmied below any standing water. Concrete is to be placed immediately after completion of the drilling operation.

- A free fall of concrete in excess of five feet should be prohibited unless the pier diameter is large enough to insure that the concrete will not contact the side walls of the boring during placement.

- To insure that all voids in the sidewalls of the pier are filled and that segregation does not occur, etc., concrete with an adequate slump should be used.

- Mushrooming or flaring of the tops of the piers should not be allowed.

- It may also be necessary to relocate piers from their location as designed. The engineer will be contacted prior to relocating any piers.

- A pier-drilling contractor with considerable experience on similar sites should be retained for this project.

GENERAL SITE WORK
FOR HELICAL ANCHOR INSTALLATION

This portion of the report is intended to provide recommendations and to establish general procedures for the pier installation.

- The owner will establish the project boundaries including the pier locations, all cut and fill elevations, etc. Execution of the work is the responsibility of the owner. He will retain qualified personnel to establish vertical and horizontal control of the pier installation and will determine the final elevations for each pier and all structural fill.

- In accordance with generally accepted construction practices, the contractor will be solely and completely responsible for conditions on the job site including supervision of all personnel and property during the performance of the work. This requirement will apply continuously and not be limited to normal working hours.

- The responsibility of the soil engineer, if hired to do so, is to drill each lot to determine soil parameters for the foundation design, observe the installation of the helical anchors and conduct construction review of the contractor's performance and does not include review of the adequacy of the contractor's safety measure on or near the construction site.

- The appropriate new construction cap shall be used.

- Appropriate pier selection will be by the contractor and will consider load plus safety factor and the installation torque versus capacity equation as per the manufacturer's recommendations.

- Steel Helical Piers as specified shall be manufactured by a facility whose quality control systems comply with ISO (International Organizational of Standard) 9001 requirements. Certificates of Registration denoting ISO Standards Numbers shall be presented upon request to the owner or their representative.

FIELD EXPLORATION PROGRAM

1. The second phase of the drilling program was completed to better define subsurface conditions across the site. The field investigation on this site consisted of drilling 15 test borings as shown on the enclosed Test Boring Location Diagram (FIG 2). Test borings were advanced by means of a power-driven, continuous auger drill to depths ranging from 20 feet to 35 feet below the present ground surface.

2. Samples were obtained using the Standard Penetration Test, ASTM D-1586, utilizing a two-inch, split spoon and California sampler.

3. Bulk sampling methods were also utilized.

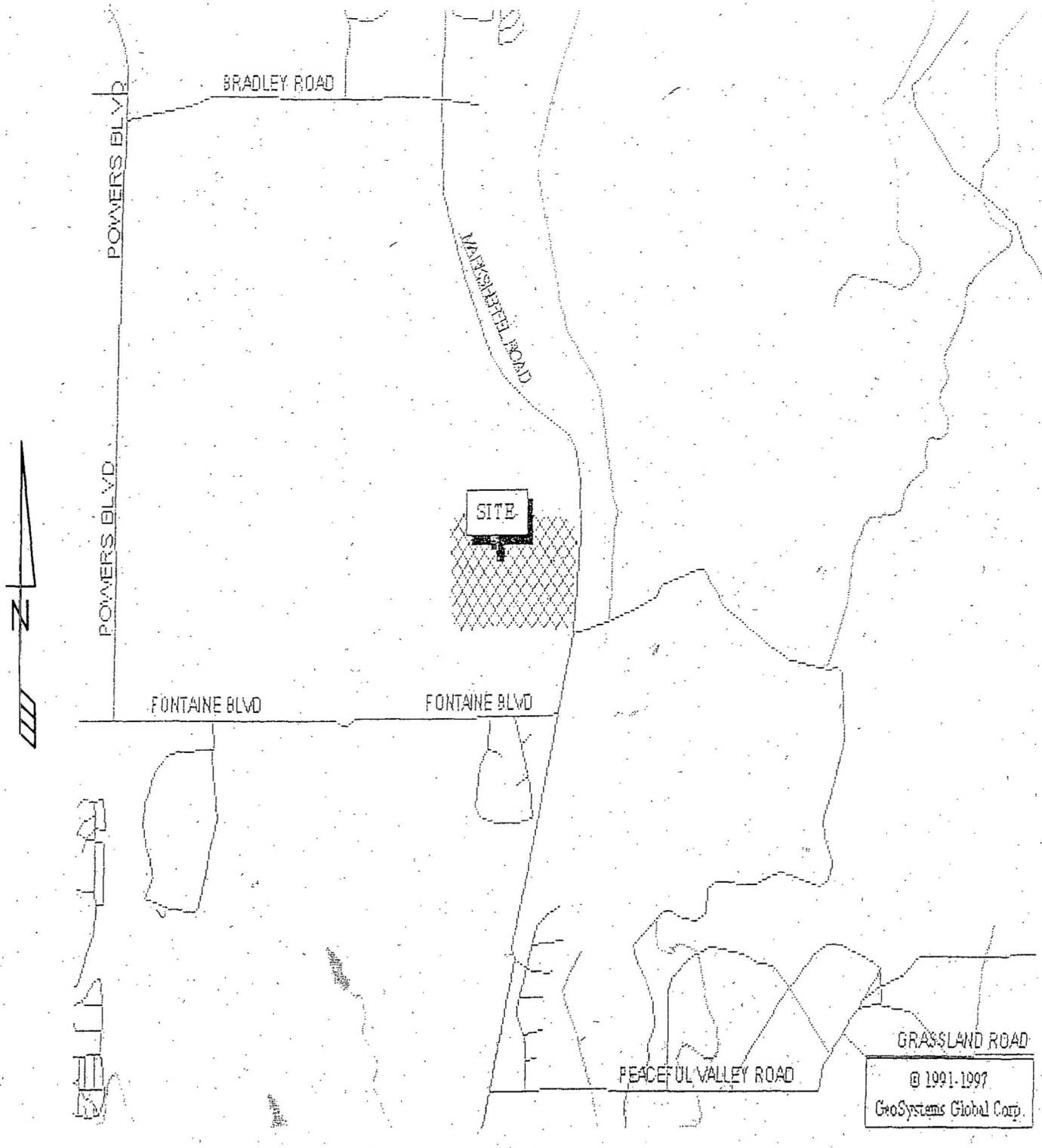
LABORATORY TESTING PROGRAM

1. Moisture content, ASTM D-2216 was obtained in the laboratory for all recovered samples.

2. A grain size analysis, ASTM D-2487, and determination of the Atterberg Limits, ASTM D- 4318, were performed on a number of samples in order to classify the soil in accordance with the Unified Soils Classification System. Utilizing this method, all Soil Types classified as low plasticity clay (CL).

3. Swell tests were performed in order to determine the expansive characteristics of remolded samples of all soil types.

4. Swell-consolidation tests were performed on several relatively undisturbed samples. (Figures 17-19).



SITE LOCATION PLAN

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
1

STE TEST BORES

A PORTION OF THE SE1/4, SECTION 15
T15S, R65W OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO

LAND DESCRIPTION

A tract of land located in the Southeast One-quarter (SE1/4) of Section 15, T15S, R65W of the 6TH P.M., County of El Paso, State of Colorado, being more particularly described as follows:

Beginning at the Center One-quarter (C1/4) corner of said Section 15; Thence N89°52'46"E along the East/West centerline of said Section 15, a distance of 2003.07 feet to a point on the Westerly Right-of-Way line of Marksheffel Road; Thence along said Westerly Right-of-Way line, the following two (2) courses:

1.) S04°35'40"W, a distance of 605.38 feet;
2.) Thence along the arc of a curve to the right, having a central angle of 07°35'47", a radius of 5699.75 feet, an arc length of 755.69 feet

to the Northeast corner of Cottonwood Meadows Filing No.3 as recorded under Reception No. 202218593 in the records of Clerk and Recorders Office of said County; Thence S89°52'03"W along the North line of said Cottonwood Meadows, a distance of 1846.25 feet to a point on the North/South centerline of said Section 15; Thence N00°05'29"E along said North/South Centerline, a distance of 1349.86 feet to the Point of Beginning.

Said tract contains 60.144 acres more or less.

OWNER/APPLICANT:
Fountain Valley Investments
3 Widefield Drive
Colorado Springs, CO 80911

SURVEYOR:
PINNACLE LAND SURVEYING CO., INC.
925 W. Cucharras Street
Colorado Springs, CO 80905
(719) 634-0751

JOB NO. 041145 & 051124 FIG. NO. 2

PINNACLE LAND SURVEYING COMPANY, INC.
925 W. CUCHARRAS ST., C.S., CO 634-0751

PEACEFUL RIDGE

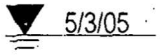
STE TEST BORES
DRAWN BY: EERB
JOB NO.: 040074.00
CHECKED BY: JWT
DWG: 040074.00WORK.DWG
DATE: 11/08/05
SHEET 1 OF 1

15 STANDARD PENETRATION TEST -- ASTM C-1586. PRODUCED BY DRIVING A STANDARD 2" O.D. SPLIT SPOON SAMPLER INTO THE SOIL BY DROPPING A 140 lb HAMMER ONTO THE SPOON. THE NUMBER INDICATES THE NUMBER OF HAMMER DROPS REQUIRED TO DRIVE THE SPOON 12" INTO THE SOIL PROFILE.

15 STANDARD PENETRATION TEST -- ASTM C-1586. PRODUCED BY DRIVING A CALIFORNIA 2" O.D. SPLIT SPOON SAMPLER INTO THE SOIL BY DROPPING A 140 lb HAMMER 30" ONTO THE SPOON. THE NUMBER INDICATES THE NUMBER OF HAMMER DROPS REQUIRED TO DRIVE THE SPOON 12" INTO THE SOIL PROFILE.

1 SOIL TYPE NUMBER DESIGNATION IN REPORT

12.6 MOISTURE CONTENT OF SAMPLE



5/3/05 WATER LEVEL AND DATE MEASURED

SYMBOLS AND NOTES

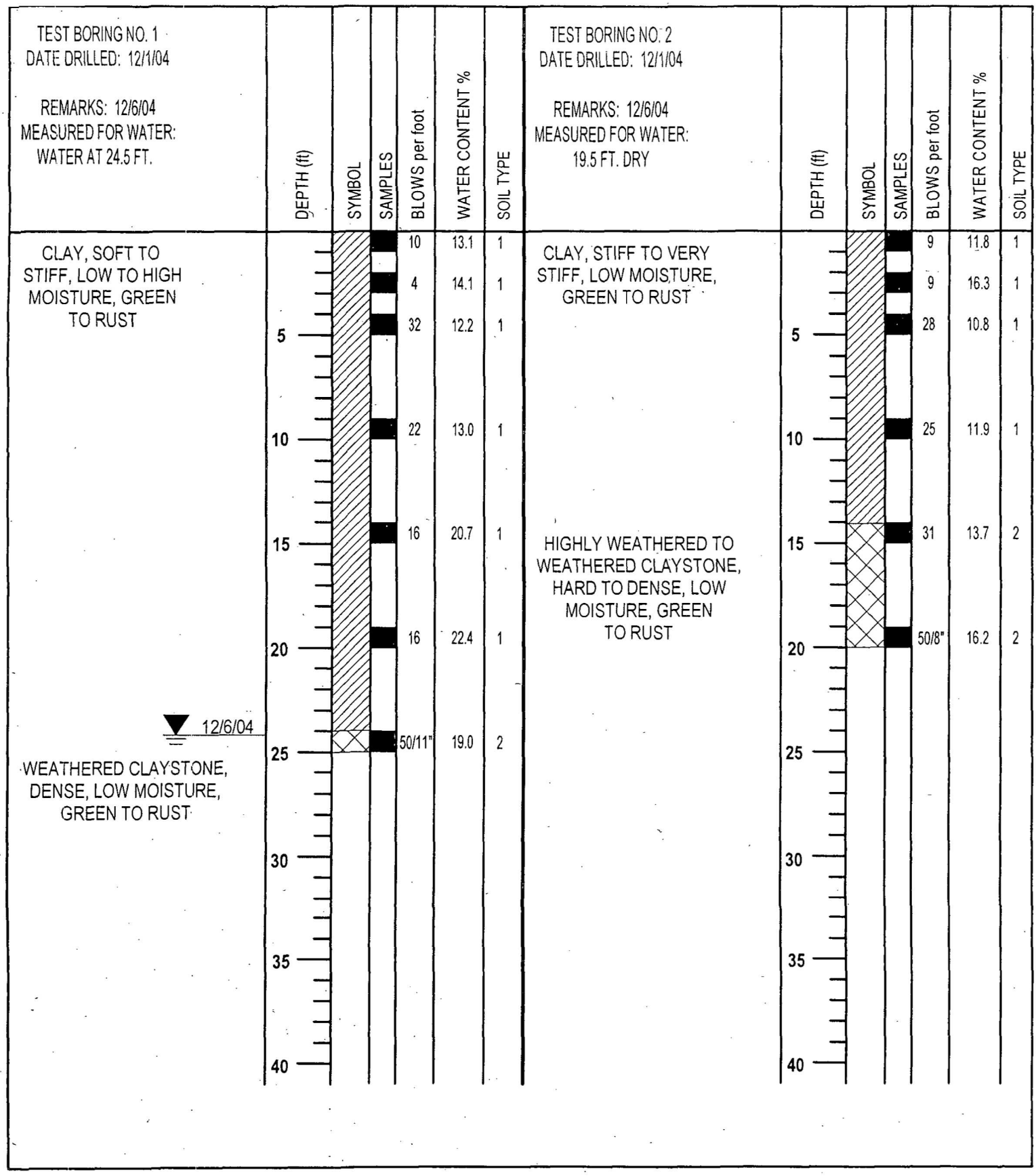
DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 3



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

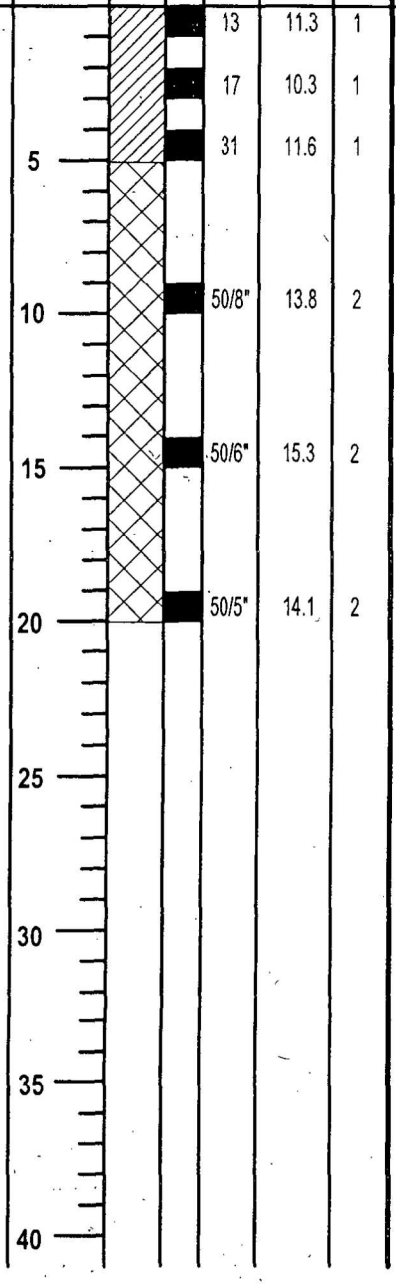
FIG No.
4

TEST BORING NO. 3
DATE DRILLED: 12/1/04

REMARKS: 12/6/04
MEASURED FOR WATER:
19.25 FT. DRY

CLAY, STIFF TO HARD, LOW MOISTURE, GREEN

WEATHERED TO FORMATIONAL CLAYSTONE, DENSE, LOW MOISTURE, BROWN TO GREEN TO RUST

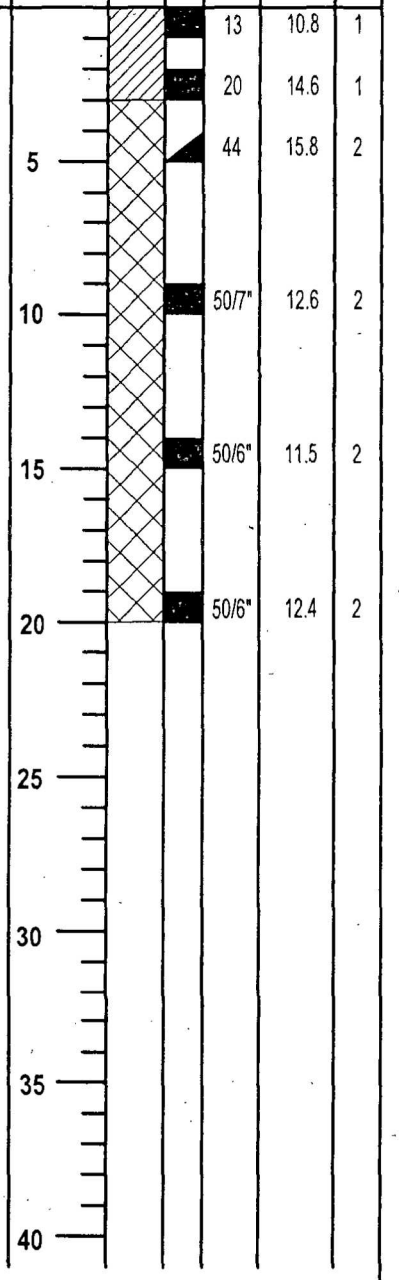


TEST BORING NO. 4
DATE DRILLED: 12/1/04

REMARKS: 12/6/04
MEASURED FOR WATER:
18.5 FT. DRY

CLAY, STIFF TO HARD, LOW MOISTURE, GREEN

HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE-GRAY



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

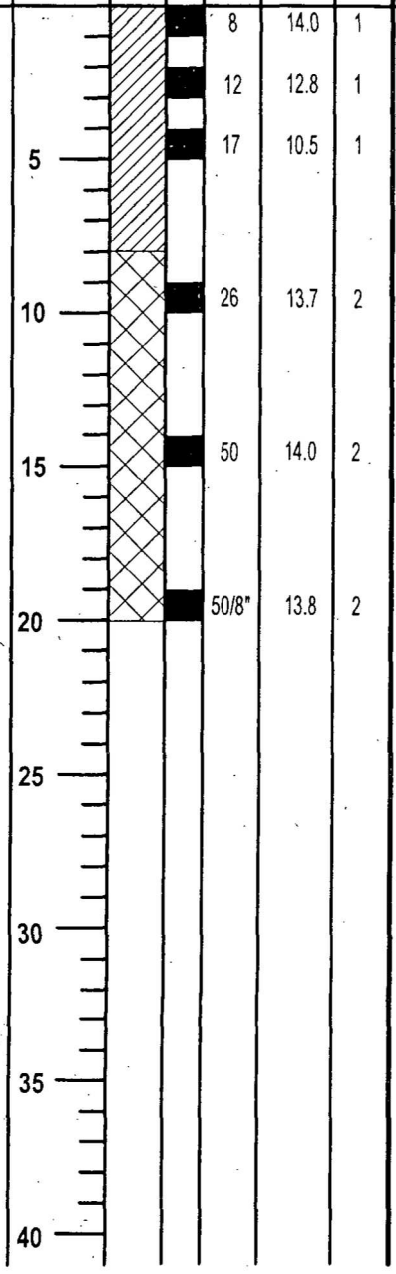
FIG No.
5

TEST BORING NO. 5
DATE DRILLED: 12/1/04

REMARKS: 12/6/04
MEASURED FOR WATER:
19 FT. DRY

CLAY, STIFF TO VERY STIFF, LOW MOISTURE, GREEN

HIGHLY WEATHERED TO WEATHERED CLAYSTONE, VERY STIFF TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE-GRAY

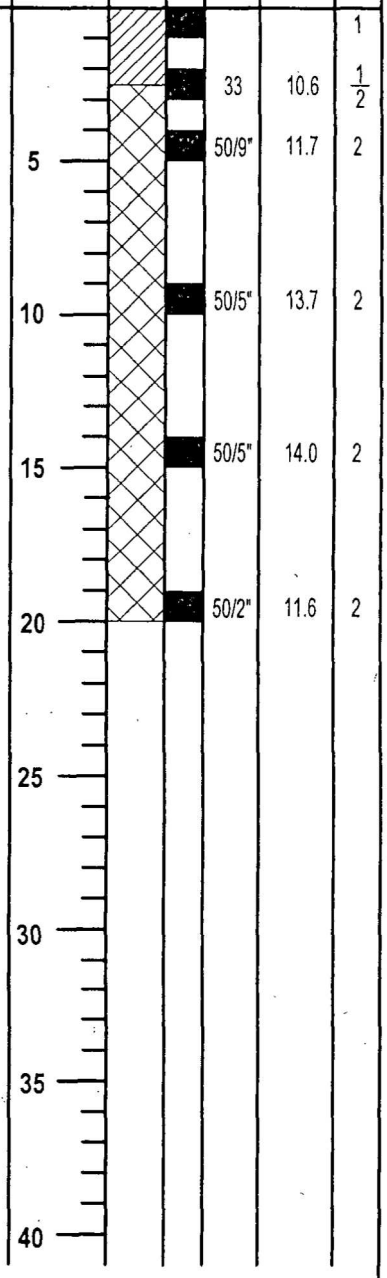


TEST BORING NO. 6
DATE DRILLED: 12/1/04

REMARKS: 12/6/04
MEASURED FOR WATER:
19.5 FT. DRY

CLAY, STIFF, LOW MOISTURE, GREEN

HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE, HARD TO DENSE, LOW MOISTURE, BROWN TO GREEN TO RUST TO BLUE-GRAY



TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
6

TEST BORING NO. 7
DATE DRILLED: 12/1/04

REMARKS: 12/6/04
MEASURED FOR WATER:
19.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			37	9.0	2
5			50/8"	11.0	2
10			50/6"	12.6	2
15			50/5"	16.6	2
20			50/4"	10.6	2
25					
30					
35					
40					

CLAY, STIFF, LOW MOISTURE, GREEN

HIGHLY WEATHERED TO FORMATIONAL CLAYSTONE, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST TO BLUE-GRAY

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
7

TEST BORING NO. 8
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 18 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
					1
			50	8.8	3
5			50/10"	8.7	3
10			50/6"	12.5	3
15			50/5"	5.8	3
20			50/7"	15.7	3
25					
30					
35					
40					

CLAY, STIFF, LOW MOISTURE, BROWN TO LIGHT BROWN

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 9
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 18.67 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			21	8.0	2
5			18	13.0	2
10			50	8.4	2
15			48	12.7	3
20			50/5"	13.2	3
25					
30					
35					
40					

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN TO BROWN

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
8

TEST BORING NO. 10
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED FOR WATER:
WATER AT 16.67 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			34	8.8	2
			28	12.8	2
			23	16.8	2
			11	23.6	2
			12	27.0	2
			12	24.1	2
			50/11"	17.6	3
			50/4"	15.9	3

CLAY, SANDY, HARD TO STIFF, LOW TO HIGH MOISTURE, LIGHT BROWN TO BROWN TO RUST

11/28/05

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 11
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 18.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
			48	9.1	2/3
			50/8"	9.8	3
			50/5"	10.1	3
			50/5"	13.9	3
			50/7"	15.3	3

CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN TO BROWN

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
9

TEST BORING NO. 12
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 17.5 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			27	8.5	1	CLAY, SANDY, VERY STIFF TO HARD, LOW MOISTURE, LIGHT BROWN
5			32	7.5	1	
			45	12.5	2	CLAY, SANDY, HARD, LOW MOISTURE, GREEN TO RUST
10						
			34	10.3	2	
15						
			50/8"	14.6	3	WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
20						
25						
30						
35						
40						

TEST BORING NO. 13
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 33.75 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE	
			24	6.1	1	CLAY, SANDY, VERY STIFF, LOW MOISTURE, LIGHT BROWN
5			25	6.1	1	
			30	8.4	2	CLAY, SANDY, VERY STIFF TO HARD, LOW MOISTURE, BROWN TO GREEN TO RUST
10						
			27	9.3	2	
15						
			49	11.7	2	
20						
			36	12.1	2	
25						
			43	13.3	2/3	
30						WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST
			50/5"	15.1	3	
35						
40						

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE
SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
10

TEST BORING NO. 14
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED FOR WATER:
WATER AT 17.33 FT.

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0					
			43	8.1	2
			49	13.8	2
5					
			50/11"	14.1	2
10					
			23	19.7	2
15					
			24	19.1	2
20					
			50/11"	16.9	3
25					
			50/5"	14.2	3
30					
35					
40					

CLAY, SANDY, HARD TO VERY STIFF, LOW TO HIGH MOISTURE, BROWN TO GREEN TO RUST

▼ 11/28/05

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING NO. 15
DATE DRILLED: 11/16/05

REMARKS: 11/28/05
MEASURED
FOR WATER: 18.33 FT. DRY

DEPTH (ft)	SYMBOL	SAMPLES	BLOWS per foot	WATER CONTENT %	SOIL TYPE
0					
			23	9.2	1
			34	13.6	1/2
5					
			35	12.1	2
10					
			50/6"	11.5	3
15					
			50/6"	10.0	3
20					
25					
30					
35					
40					

CLAY, SANDY, HARD, LOW MOISTURE, LIGHT BROWN

CLAY, SANDY, HARD, LOW MOISTURE, GREEN TO RUST

WEATHERED CLAYSTONE, SANDY, HARD TO DENSE, LOW MOISTURE, GREEN TO RUST

TEST BORING LOGS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

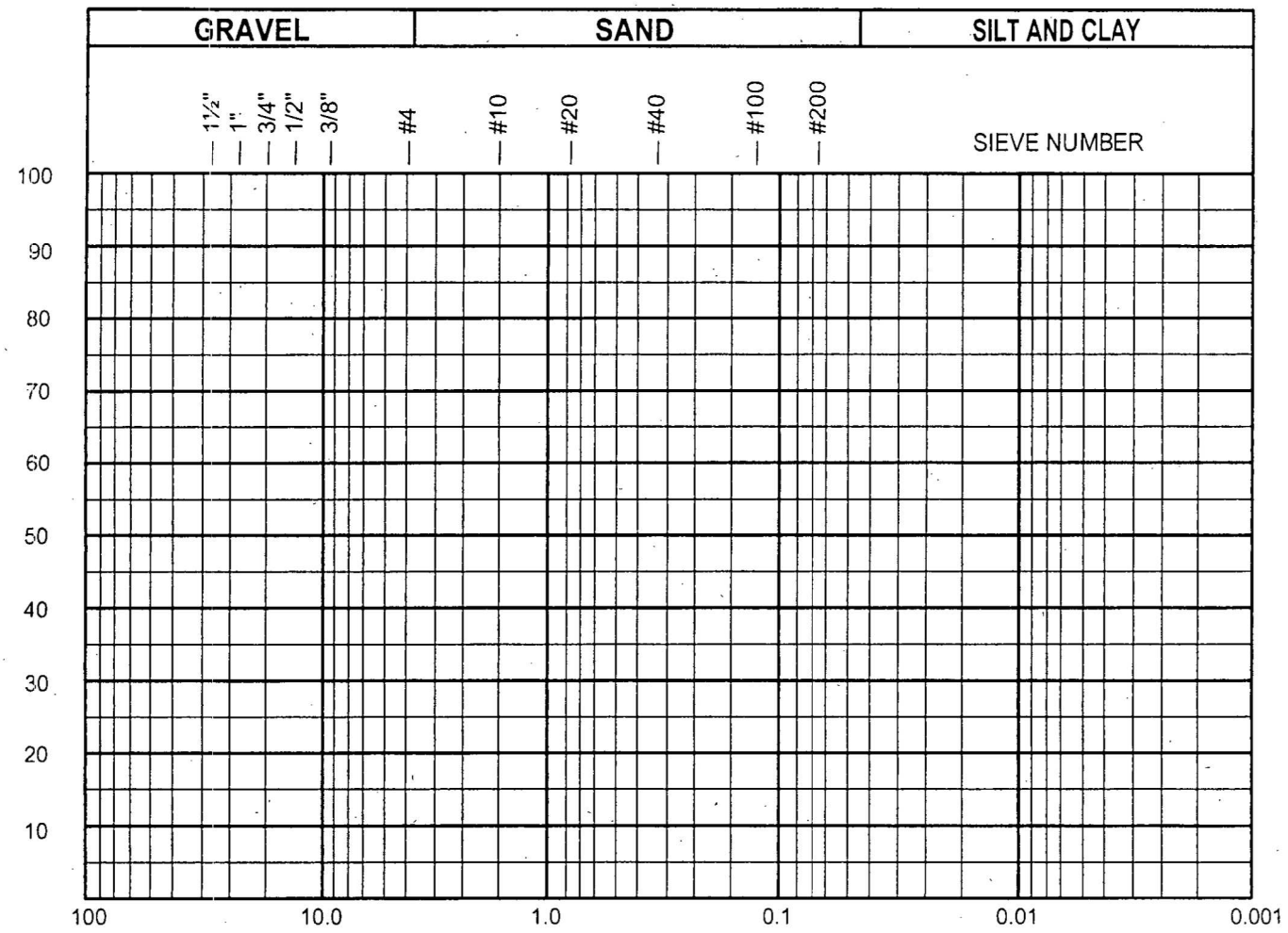
STE

SOIL TESTING & ENGINEERING INC.

JOB No.
041145 & 051124

FIG No.
11

CLIENT: FOUNTAIN VALLEY INVESTMENTS	SOIL TYPE NO: 1
PROJECT: PEACEFUL RIDGE	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
# 4	
# 10	
# 20	
# 40	
# 100	
# 200	87.6

SWELL

13.0	% MOISTURE AT START
21.7	% MOISTURE AT FINISH
8.3	% MOISTURE INCREASE
0.98	% VOLUME CHANGE
105.8	pcf INITIAL DRY DENSITY
2186	psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT: 48
PLASTIC LIMIT: 19
P. I.: 29

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

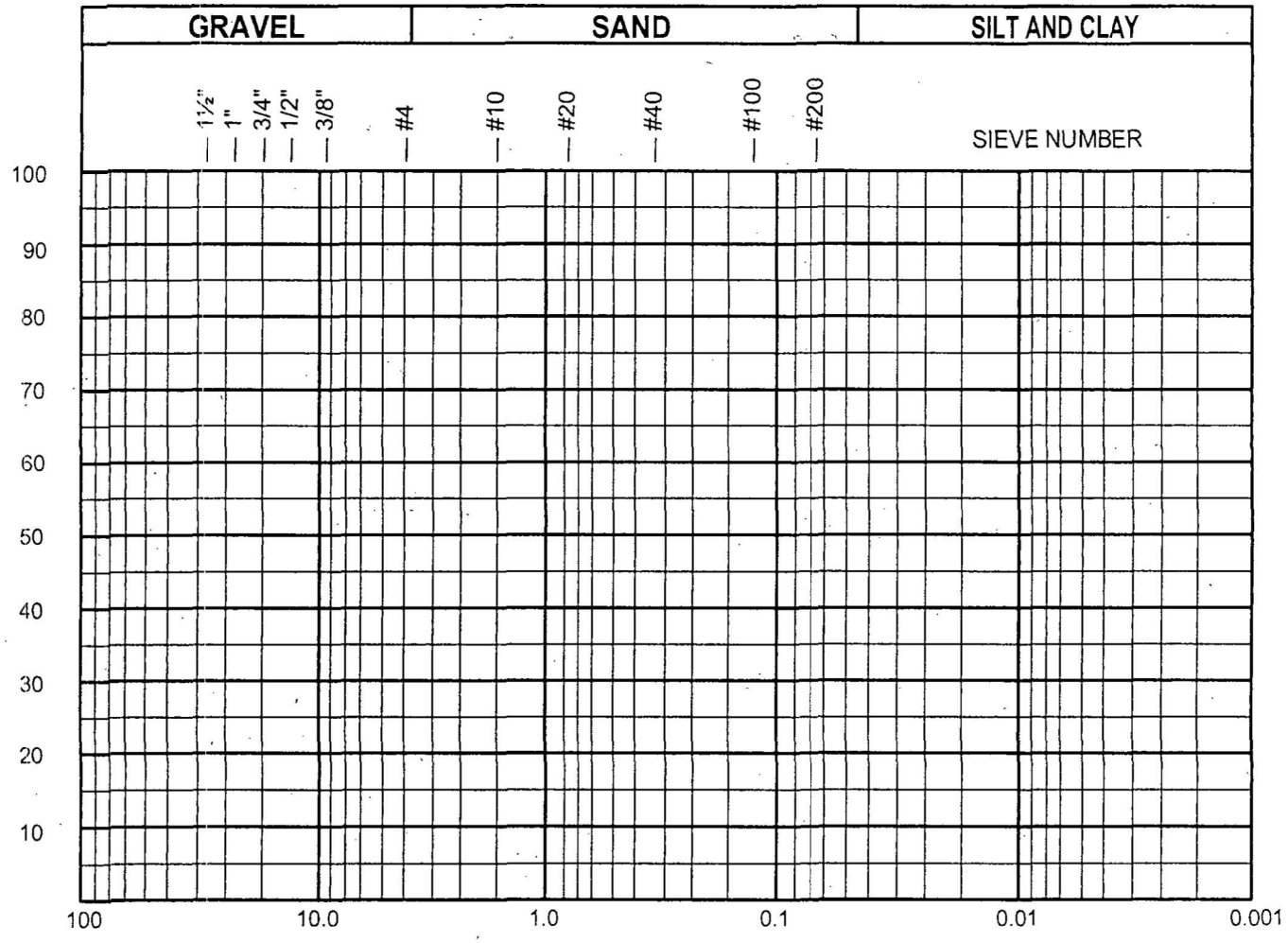
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 12

CLIENT: FOUNTAIN VALLEY INVESTMENTS	SOIL TYPE NO: 2
PROJECT: PEACEFUL RIDGE	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
# 4	
# 10	
# 20	
# 40	
# 100	
# 200	91.8

SWELL

14.2	% MOISTURE AT START
24.1	% MOISTURE AT FINISH
9.9	% MOISTURE INCREASE
1.01	% VOLUME CHANGE
109.4	pcf INITIAL DRY DENSITY
2252	psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT: 43
PLASTIC LIMIT: 21
P. I.: 22

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

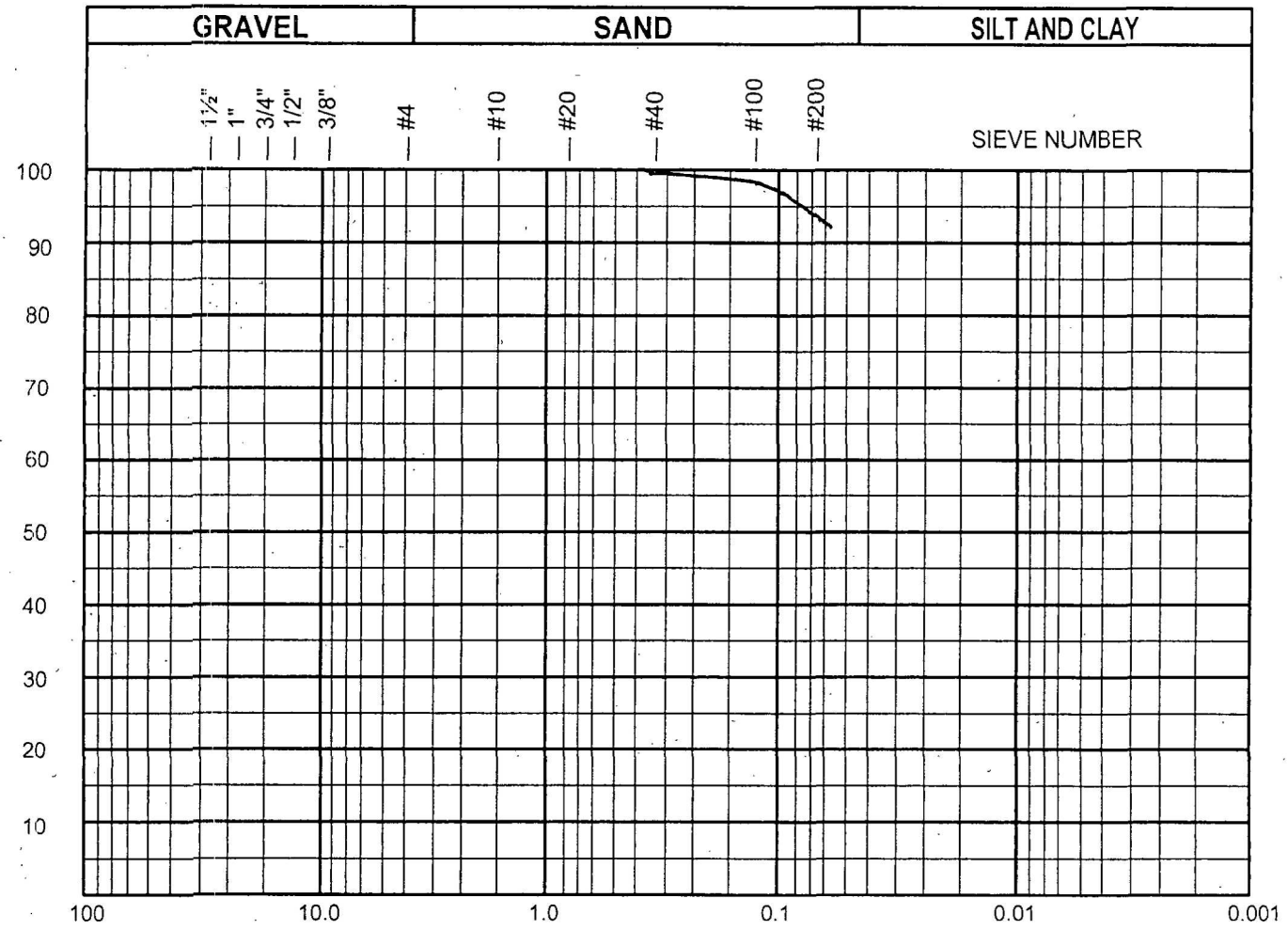
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 13

CLIENT: FOUNTAIN VALLEY INVESTMENTS	SOIL TYPE NO: 1
PROJECT: PEACEFUL RIDGE	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
# 4	
# 10	100.0
# 20	99.9
# 40	99.4
# 100	97.9
# 200	83.5

SWELL (MIX)

11.3	% MOISTURE AT START
20.3	% MOISTURE AT FINISH
9.0	% MOISTURE INCREASE
0.38	% VOLUME CHANGE
105.1	pcf INITIAL DRY DENSITY
1079	psf SWELL

ATTERBERG LIMITS

LIQUID LIMIT: 32
PLASTIC LIMIT: 16
P. I.: 16

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

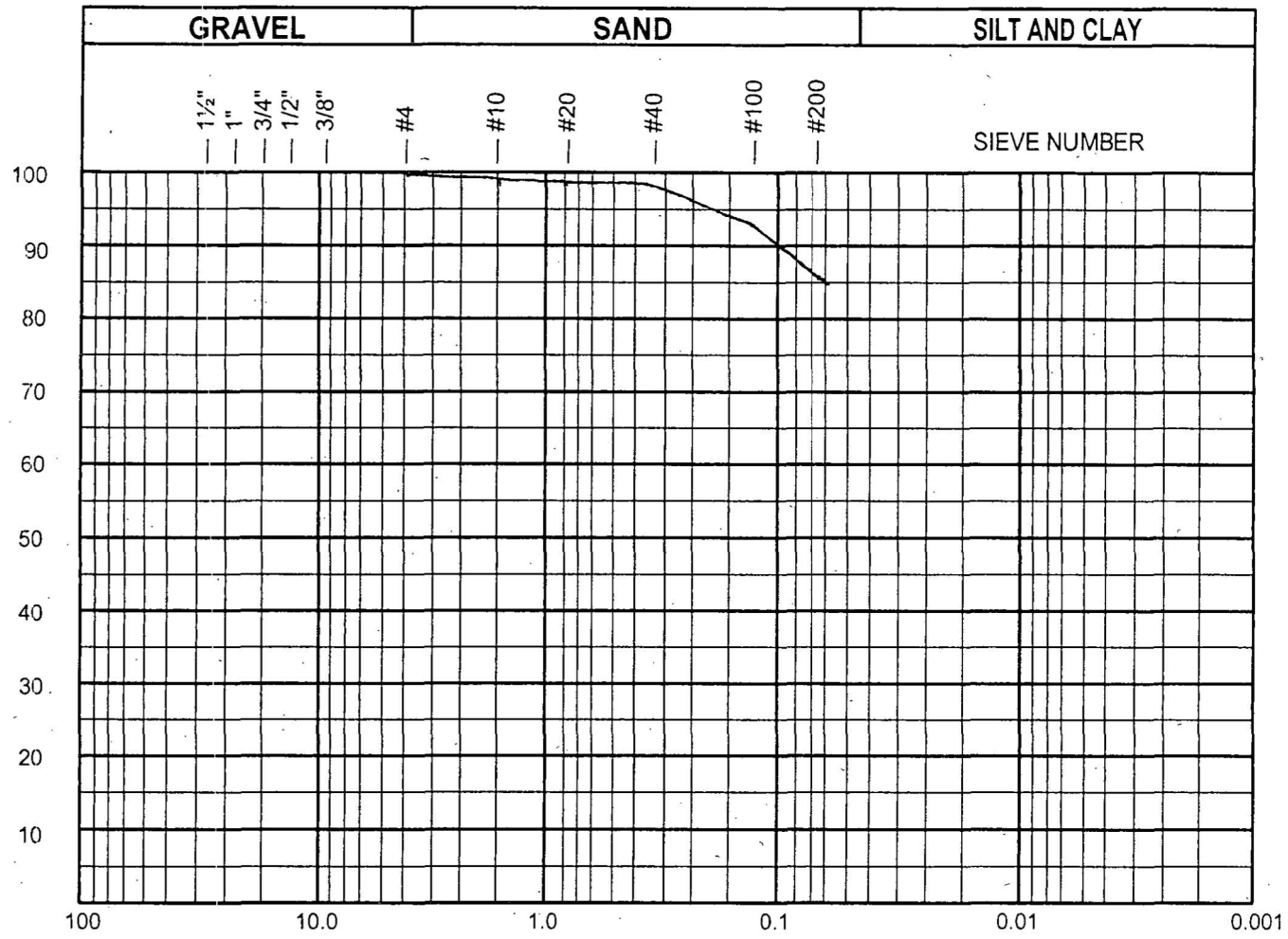
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 14

CLIENT: FOUNTAIN VALLEY INVESTMENTS	SOIL TYPE NO: 2
PROJECT: PEACEFUL RIDGE	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	100.0
# 4	99.2
# 10	98.9
# 20	98.7
# 40	98.5
# 100	97.0
# 200	85.9

ATTERBERG LIMITS

LIQUID LIMIT: 34
PLASTIC LIMIT: 15
P. I.: 19

SWELL (MIX)		BORING 9 @ 9' SWELL
13.5	% MOISTURE AT START	12.2
20.7	% MOISTURE AT FINISH	20.4
7.2	% MOISTURE INCREASE	8.2
0.90	% VOLUME CHANGE	0.84
106.6	pcf INITIAL DRY DENSITY	109.4
2007	psf SWELL	2386

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

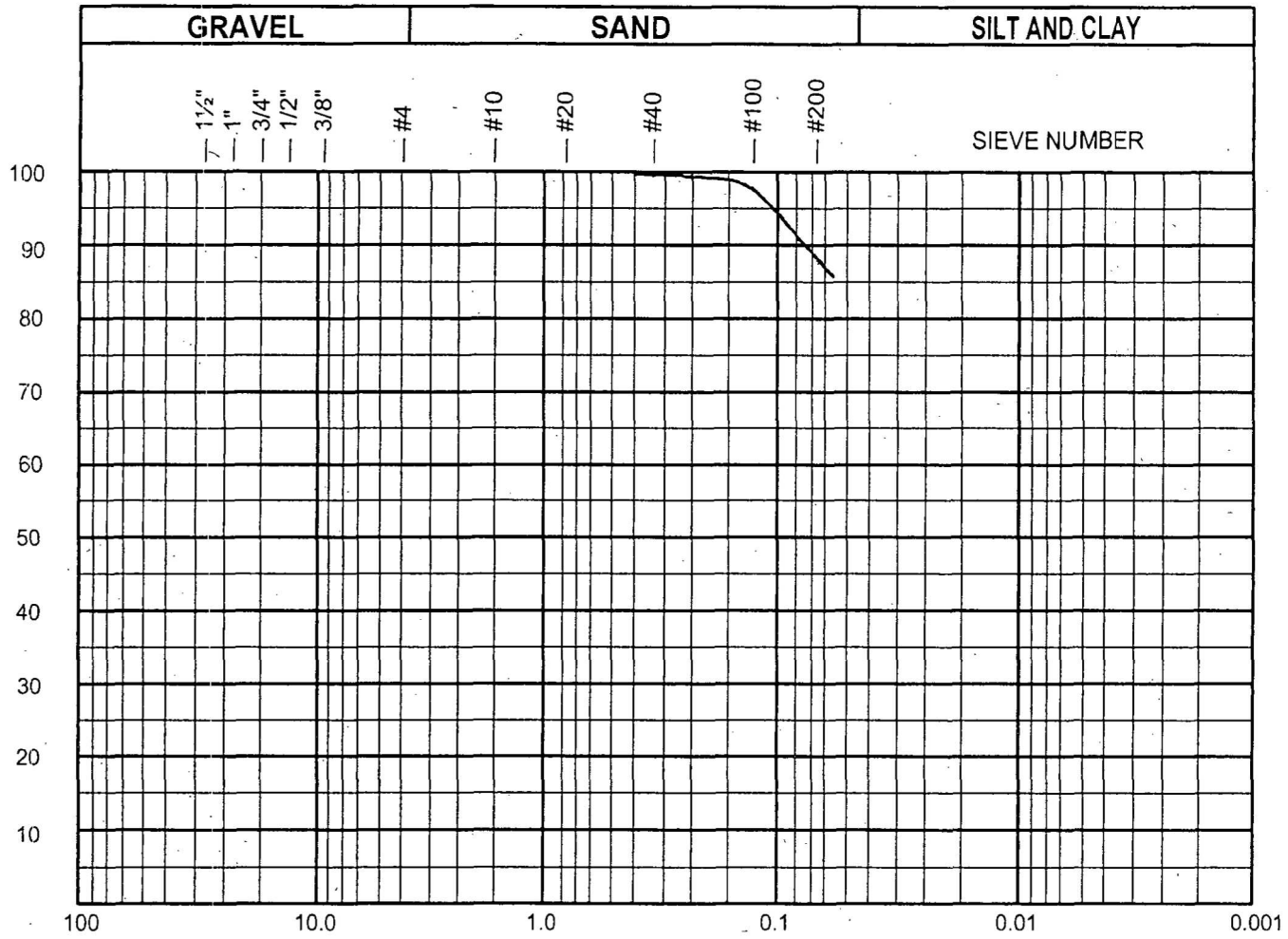
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 15

CLIENT: FOUNTAIN VALLEY INVESTMENTS	SOIL TYPE NO: 3
PROJECT: PEACEFUL RIDGE	UNIFIED CLASSIFICATION: CL



SIEVE SIZE	% PASSING
1½"	
1"	
3/4"	
1/2"	
3/8"	
# 4	100.0
# 10	99.8
# 20	99.5
# 40	99.3
# 100	97.7
# 200	87.6

ATTERBERG LIMITS

LIQUID LIMIT: 41
PLASTIC LIMIT: 17
P. I.: 24

SWELL (MIX)		BORING 10 @ 34' SWELL
15.9	% MOISTURE AT START	12.6
20.719.9	% MOISTURE AT FINISH	20.4
4.0	% MOISTURE INCREASE	7.8
0.71	% VOLUME CHANGE	0.92
108.6	pcf INITIAL DRY DENSITY	108.2
2016	psf SWELL	2052

LABORATORY TEST RESULTS

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

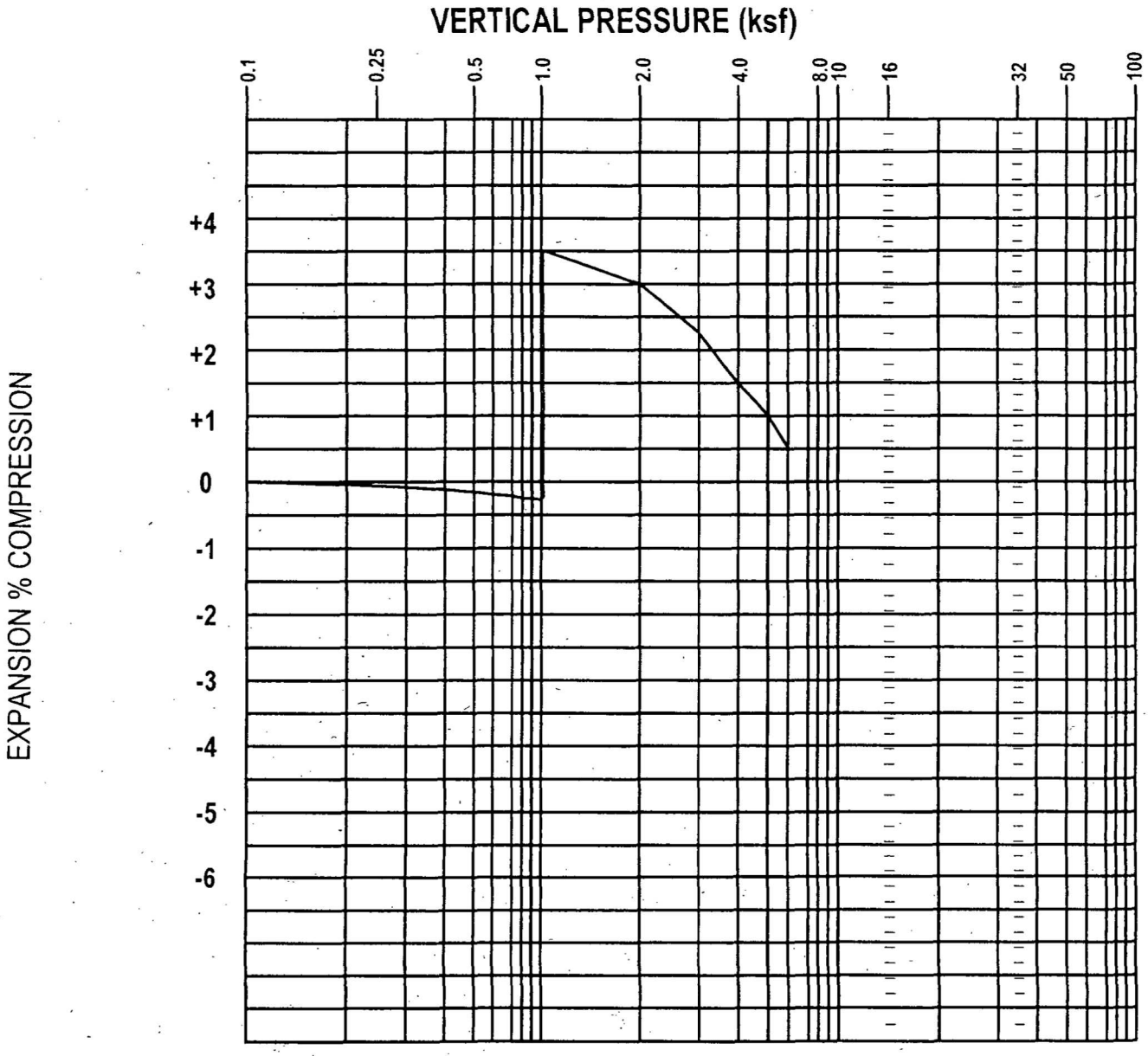
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 16

CLIENT: FOUNTAIN VALLEY INVESTMENTS		JOB NO: 041145 & 051124
PROJECT: PEACEFUL RIDGE		DATE: 12/5/05
BORING NO: 15	DEPTH: 4 FEET SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

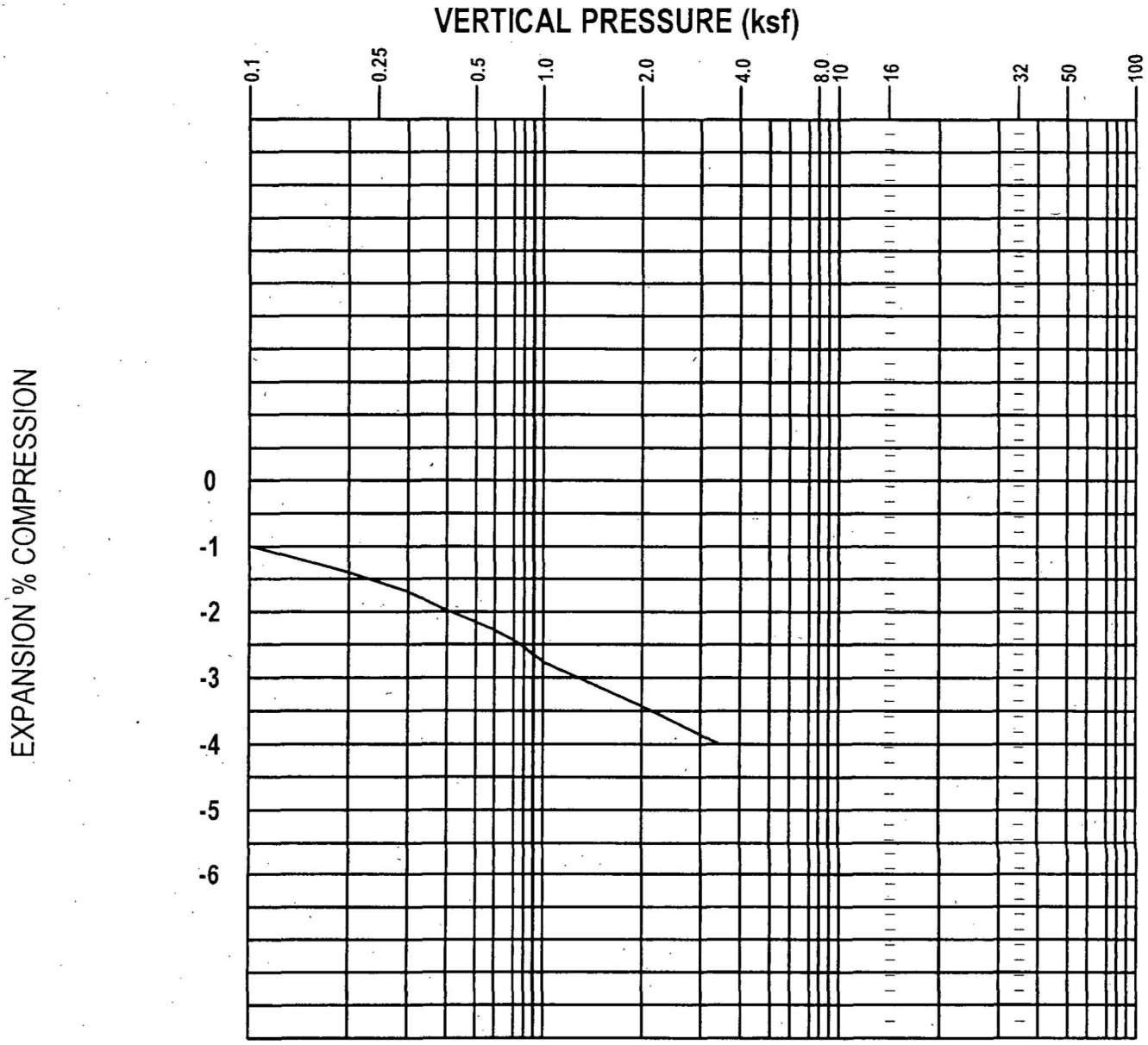
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 17

CLIENT: FOUNTAIN VALLEY INVESTMENTS		JOB NO: 041145 & 051124
PROJECT: PEACEFUL RIDGE		DATE: 11/21/05
BORING NO: 12	DEPTH: 9 FEET SOIL TYPE: 2	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

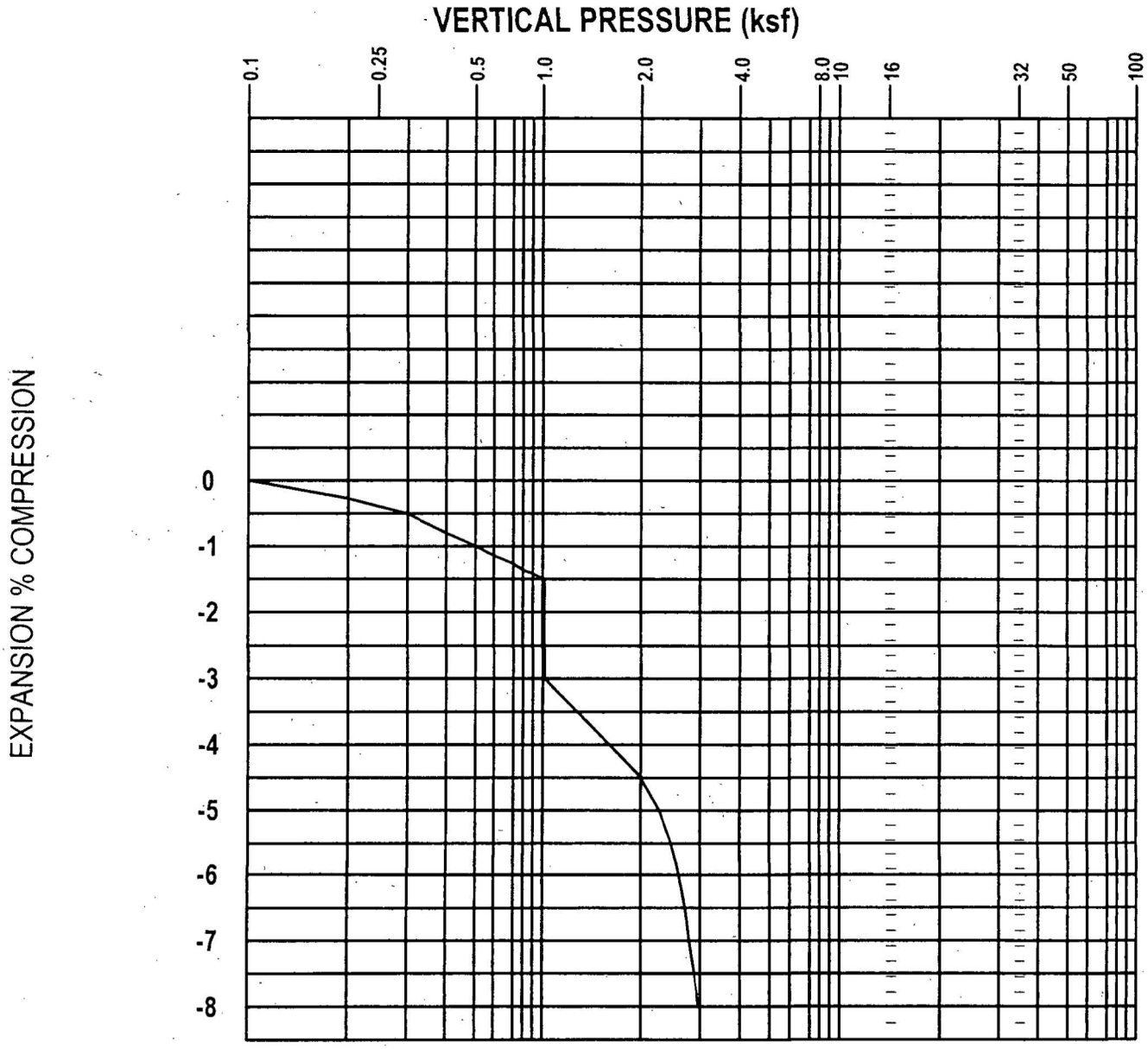
STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 18

CLIENT: FOUNTAIN VALLEY INVESTMENTS		JOB NO: 041145 & 051124
PROJECT: PEACEFUL RIDGE		DATE: 11/21/05
BORING NO: 13	DEPTH: 2 FEET SOIL TYPE: 1	TEST BY: JF



SWELL-CONSOLIDATION TEST

DRAWN	DATE	CHECKED	DATE
MSS		LWC	

STE

SOIL TESTING & ENGINEERING INC.

JOB No. 041145 & 051124

FIG No. 19

STE SOIL TESTING & ENGINEERING INC.

February 3, 2006

VERSION: #2
DATE: 3/9/06

Fountain Valley Investments
3 Widefield Boulevard
Colorado Springs, CO 80911

RE: 60 Acre Parcel, Peaceful Ridge @ Fountain Valley
STE JOB: 060201

Gentlemen:

This letter is in response to the review comments from Mr. Michael Garrott, of the El Paso County Development Services, dated January 6, 2006, pertaining to Peaceful Ridge @ Fountain Valley.

Comment #4 in the above referenced letter, requests a map showing the soil types encountered during the subsurface investigation for this parcel. The requested map is attached with this letter.

Comment #4 also states that STE's report does not "mention any geologic, soil or water hazards".

At this time we would point out that these items and the recommended mitigations are discussed on pages 4, 5, and 6 of our report. As part of the technical review per Senate Bill 35 (1972), Ms. TC Wait, with the Colorado Geological Survey (CGS) made a site visit on January 4, 2006 and reviewed our subsurface investigation. In her comments provided for this site, Ms. Wait recommends the mitigations provided in our report are appropriate and should be followed.

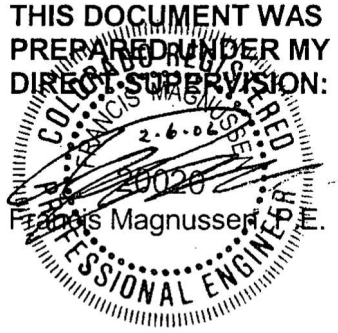
We trust this provides you with the information you requested. If you have any questions, please contact our office at your convenience.

Respectfully submitted,

SOIL TESTING AND ENGINEERING INC.

Jim Frohbieter, Professional Geologist

THIS DOCUMENT WAS PREPARED UNDER MY DIRECT SUPERVISION:

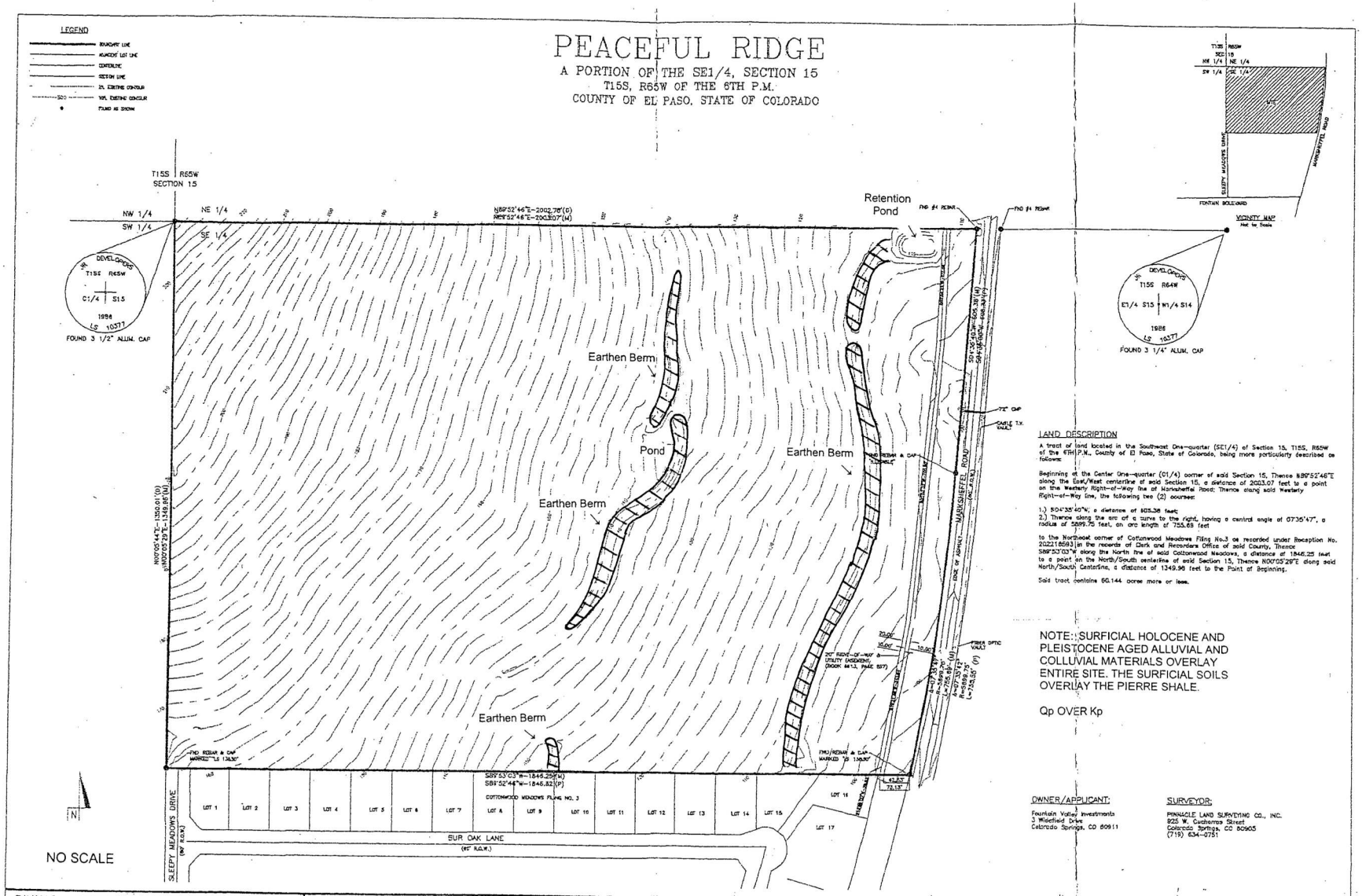


Francis Magnussen, P.E.

LWC/mss
cfront\data\indiv\2006\060201

PEACEFUL RIDGE

A PORTION OF THE SE1/4, SECTION 15
T15S, R65W OF THE 6TH P.M.
COUNTY OF EL PASO, STATE OF COLORADO



LAND DESCRIPTION

A tract of land located in the Southwest One-quarter (SE1/4) of Section 15, T15S, R65W of the 6TH P.M., County of El Paso, State of Colorado, being more particularly described as follows:

Beginning at the Center One-quarter (C1/4) corner of said Section 15, Thence N89°52'46"E along the East/West centerline of said Section 15, a distance of 2003.07 feet to a point on the Westerly Right-of-Way line of Marksheffel Road; Thence along said Westerly Right-of-Way line, the following two (2) courses:

1.) S04°35'40"W, a distance of 605.38 feet;
2.) Thence along the arc of a curve to the right, having a central angle of 07°35'47", a radius of 5599.75 feet, an arc length of 755.69 feet

to the Northeast corner of Cottonwood Meadows Filing No.3 as recorded under Reception No. 202218593 in the records of Clerk and Recorders Office of said County, Thence S89°53'03"W along the North line of said Cottonwood Meadows, a distance of 1846.25 feet to a point on the North/South centerline of said Section 15, Thence N00°05'29"E along said North/South Centerline, a distance of 1349.96 feet to the Point of Beginning.

Said tract contains 60.144 acres more or less.

NOTE:: SURFICIAL HOLOCENE AND PLEISTOCENE AGED ALLUVIAL AND COLLUVIAL MATERIALS OVERLAY ENTIRE SITE. THE SURFICIAL SOILS OVERLIAY THE PIERRE SHALE.

Qp OVER Kp

OWNER/APPLICANT:
Fountain Valley Investments
3 Widefield Drive
Colorado Springs, CO 80911

SURVEYOR:
PINNACLE LAND SURVEYING CO., INC.
925 W. Cucharras Street
Colorado Springs, CO 80905
(719) 634-0751

PINNACLE LAND SURVEYING COMPANY, INC.
925 W. CUCHARRAS ST., C.S., CO 634-0751

PEACEFUL RIDGE
DRAWN BY: LWW | CHECKED BY: JWT | DATE: 12/12/04
JOB NO.: 04007400 | DWG: 04007400_SITE.DWG | SHEET 1 OF 1