PART III
ATTACHMENT III-E
APPENDIX III-E.3

GEOTECHNICAL DATA REPORT

For

PESCADITO ENVIRONMENTAL RESOURCE CENTER
TYPE I MUNICIPAL SOLID WASTE MANAGEMENT FACILITY
LAREDO, WEBB COUNTY, TEXAS
MSW PERMIT NO. 2374

Prepared for

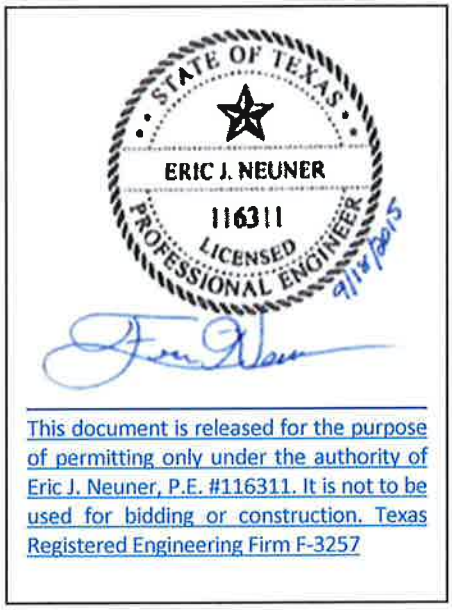
CB&I ENVIRONMENTAL AND INFRASTRUCTURE, INC.
12005 Ford Road, Suite 600
Dallas, Texas 75234

On behalf of

RANCHO VIEJO WASTE MANAGEMENT, LLC
1116 Calle del Norte
Laredo, Texas 78041

Prepared by

RABA KISTNER CONSULTANTS, INC.
12821 West Golden Lane
San Antonio, Texas 78249



PROJECT NO. ASF13-140-00

Initial Submittal February 25, 2015~~February 25, 2015~~

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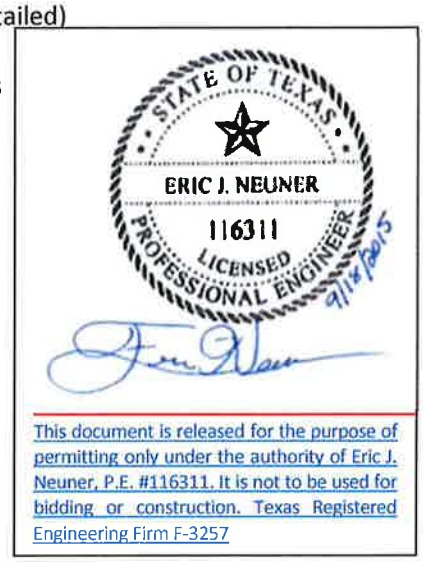

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3.3 PERMEABILITY TESTS

Permeability (hydraulic conductivity) tests were conducted in accordance with ASTM Standard Test Method D5084, Method C or falling head procedures using de-aired tap water. Permeability tests were assigned to ~~relatively~~ intact undisturbed samples obtained at test pits TP-1 and TP-2. Permeability tests were conducted on samples collected from each stratum (I through IV) identified in the SIR. Samples from Strata I through IV were tested on their horizontal axis as they represent the sidewall of the proposed landfill excavation. Additionally, a sample of Stratum IV was tested along the vertical axis to represent the bottom of the proposed landfill excavation. A summary of the permeability test results are presented in tabular form on ***Figure B-1*** in ***Appendix B*** of this report. In addition, a detailed summary and graphical presentation of each hydraulic conductivity test is provided as ***Figures B-2 through B-19*** in ***Appendix B*** of this report. Note that the majority of permeability tests were performed for horizontal flow paths; the sample trimmed for a vertical flow path is indicated with "-V" as the sample number suffix on ***Figures B-16 and B-17***.

4.0 STRATIGRAPHY AND SOIL PROPERTIES

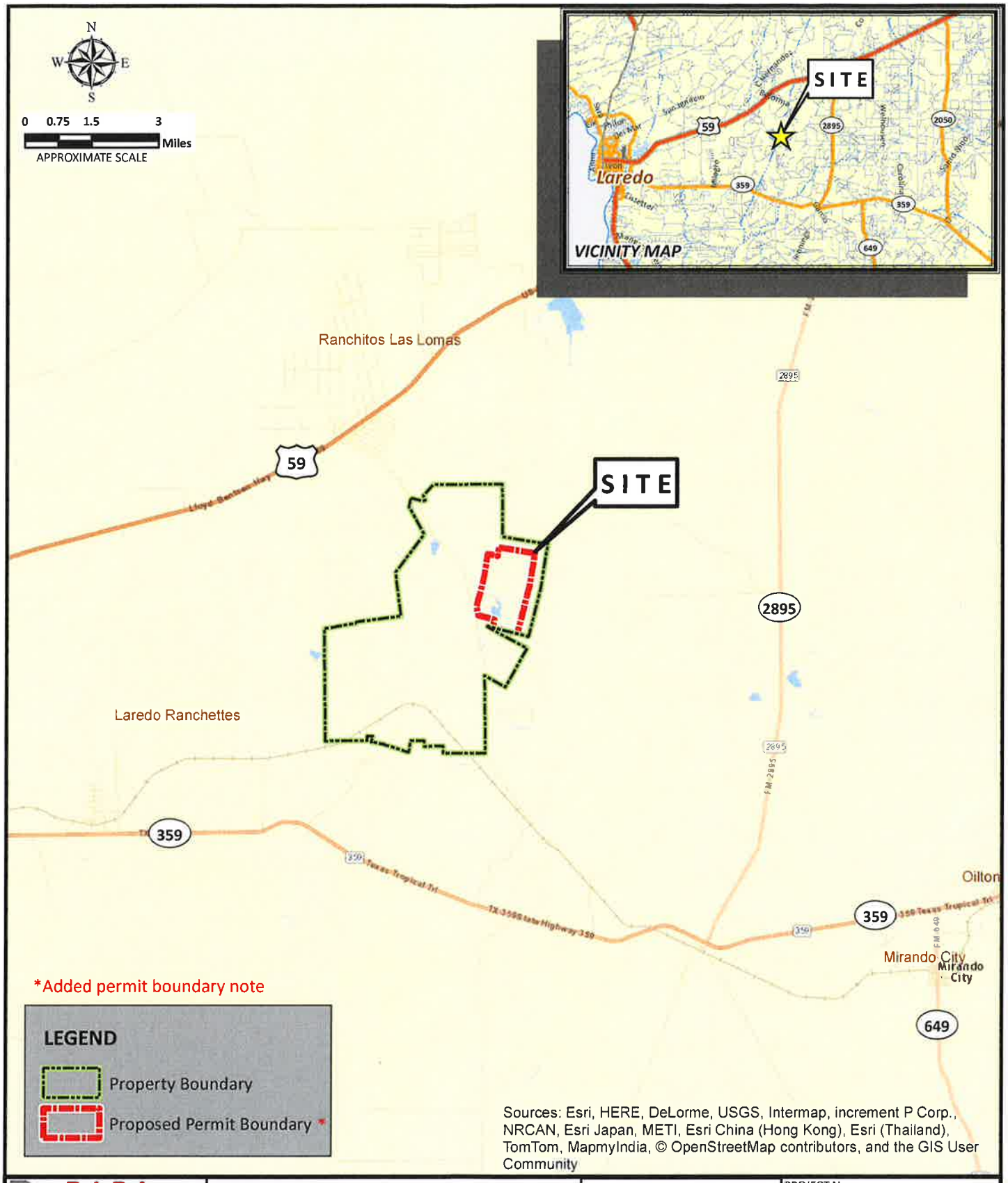
The following sections address the generalized stratigraphy observed in the borings and test pit excavations performed for this study, potential uses of materials that may be excavated during construction, and typical properties of those materials. The majority of laboratory test results are presented in graphical and numerical form on the borings logs presented in ***Appendix C*** of the SIR.

4.1 GENERALIZED STRATIGRAPHY

The subsurface conditions encountered at the boring locations are shown on the boring logs presented in ***Appendix B*** of the SIR. The boring logs should be consulted for boring specific (detailed) stratigraphic information. These boring logs represent our interpretation of the subsurface conditions based on the field logs, visual examination of field samples by our personnel, and laboratory test results of selected field samples. Each stratum has been designated by grouping soils that possess similar physical and engineering characteristics. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

Generalized soil profiles corresponding to geologic (stratigraphic) fence diagrams included as ***Figures 4 through 13*** of the SIR present the soil type, layer thickness, and depth to water are also presented on ***Figures C-1 through C-10*** in ***Appendix C*** of this report. An index map is provided as ***Figure 3 – Fence Diagram Index Map***. These profiles depict that the majority of soils observed in the borings were cohesive in nature and the granular inclusions were sporadic and discontinuous across the site.

As presented on the referenced figures, the stratigraphic units have been designated at the site based upon review and interpretation of boring logs and geologic sections, in addition to consideration of down hole geophysical logging data, and test pit information and photographs. In general, the soils observed within the borings and test pits performed for this study are predominately cohesive in nature. Fat clays (CH) and lean clays (CL) are predominant and were observed in about 95.5% of the samples obtained during drilling operations. Test pit observations were similar. The remaining 4.5% of samples included about 2.5% cemented soils and about 2% "granular" soils. The cemented soils included thin layers of siltstones, claystones, and clay shales. Thick layers of sandstones were observed in the relatively deep



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SITE LOCATION MAP

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WEBB COUNTY, TEXAS
MSW PERMIT NO. 2374

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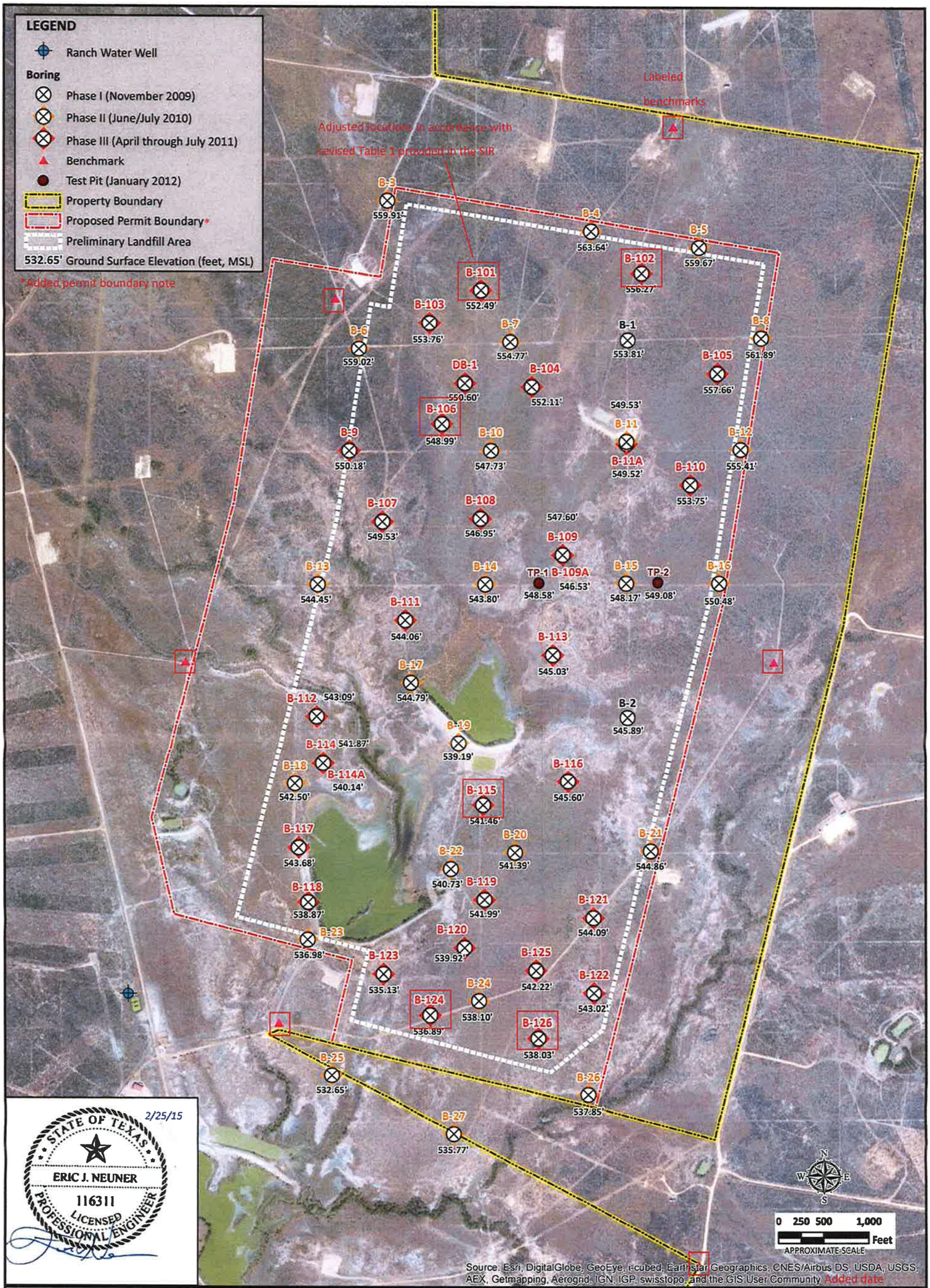
FIGURE 1

NOTE: This Drawing is Provided for Illustration Only, May Not be to Scale and is Not Suitable for Design or Construction Purposes



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Added benchmark source note

BORING/TEST PIT LOCATION MAP

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FIGURE 2

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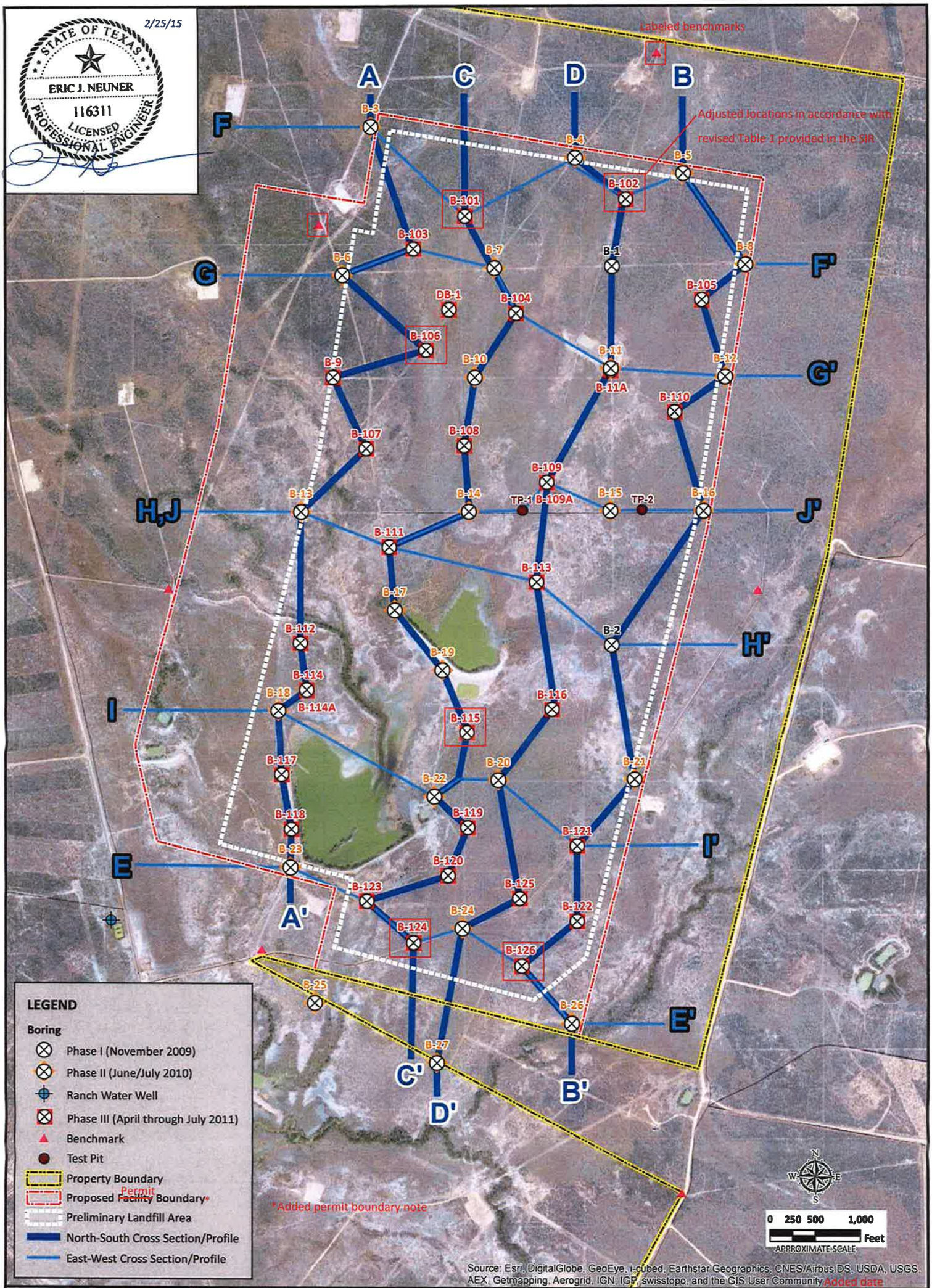

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Added benchmark source note

FENCE DIAGRAM INDEX MAP

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FIGURE 3

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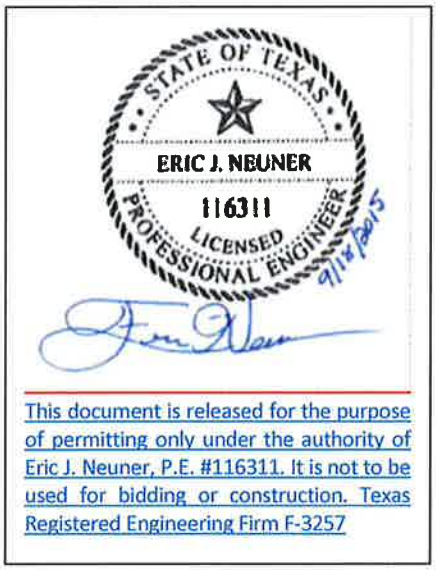
~~ATTACHMENTS~~

APPENDIX A

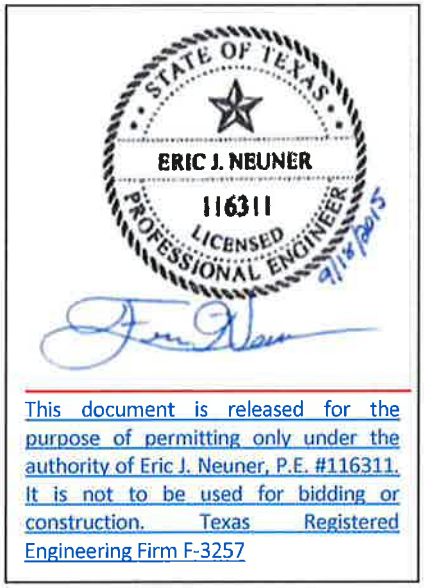
RESULTS OF SOIL SAMPLE ANALYSES



Pages 1 through 78

APPENDIX B

SUMMARY OF RESULTS AND HYDRAULIC CONDUCTIVITY TEST RESULTS



Figures B-1 through B-19

APPENDIX C

GENERALIZED SUBSURFACE FENCE DIAGRAMS
MEASURED SOIL PROPERTIES (BY STRATUM)

North

South

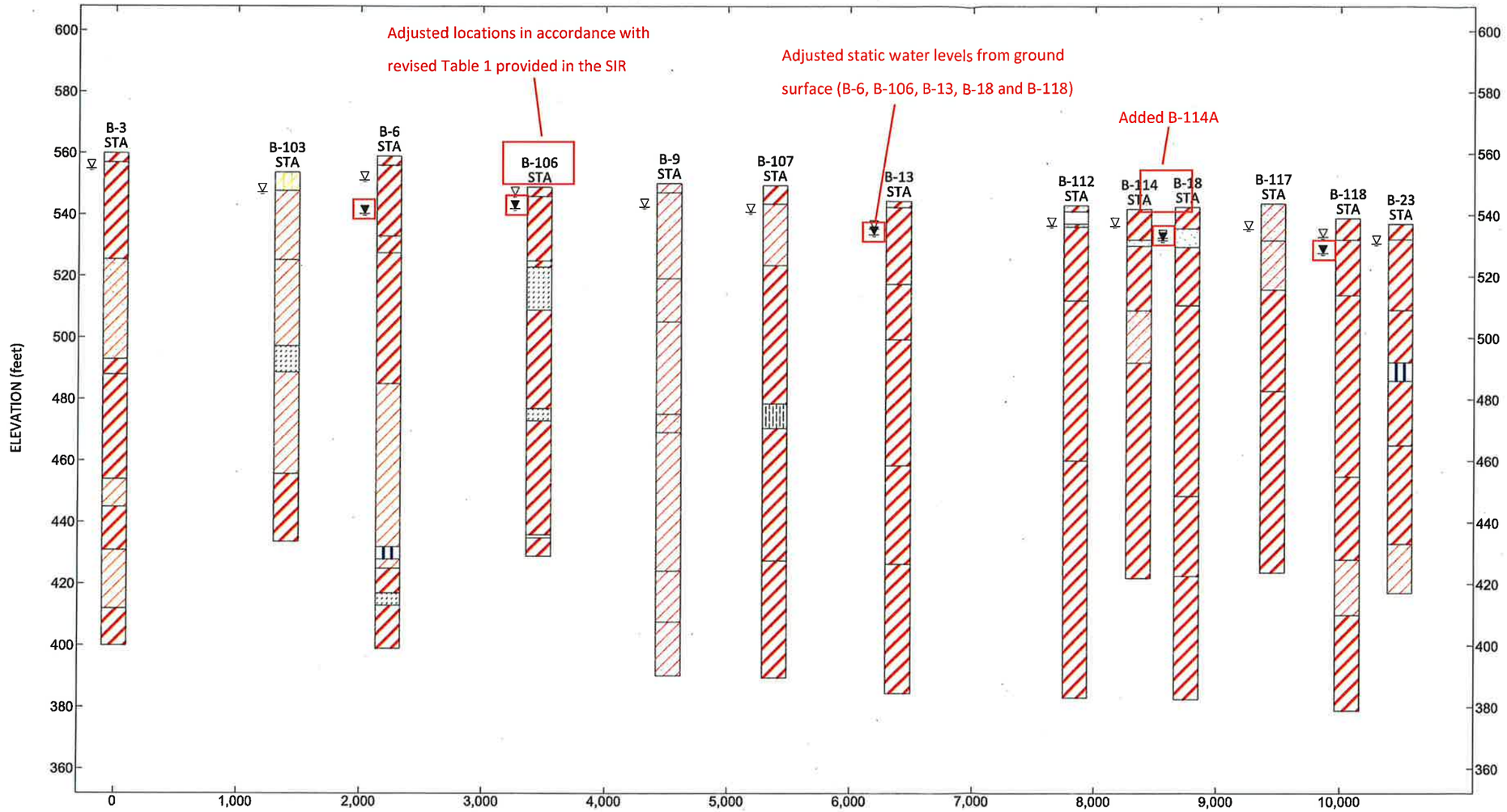
A-A

A-A'

Adjusted locations in accordance with revised Table 1 provided in the SIR

Adjusted static water levels from ground surface (B-6, B-106, B-13, B-18 and B-118)

Added B-114A



Lithology Graphics

- FAT CLAY (CH)
- SANDY LEAN CLAY (CL)
- LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- SILT (ML)
- SANDSTONE
- POORLY GRADED SAND (SP)
- SANDY SILTY CLAY (CL-ML)
- SILTSTONE

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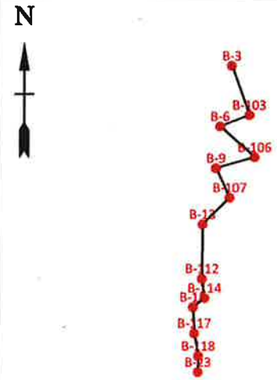
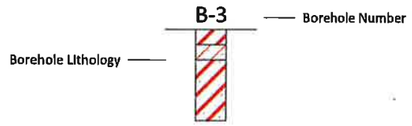


Site Map Scale 1 inch equals 4,035 feet

Legend:



Water Level Reading at time of drilling.

Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

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Generalized Subsurface Fence Diagram Along A-A

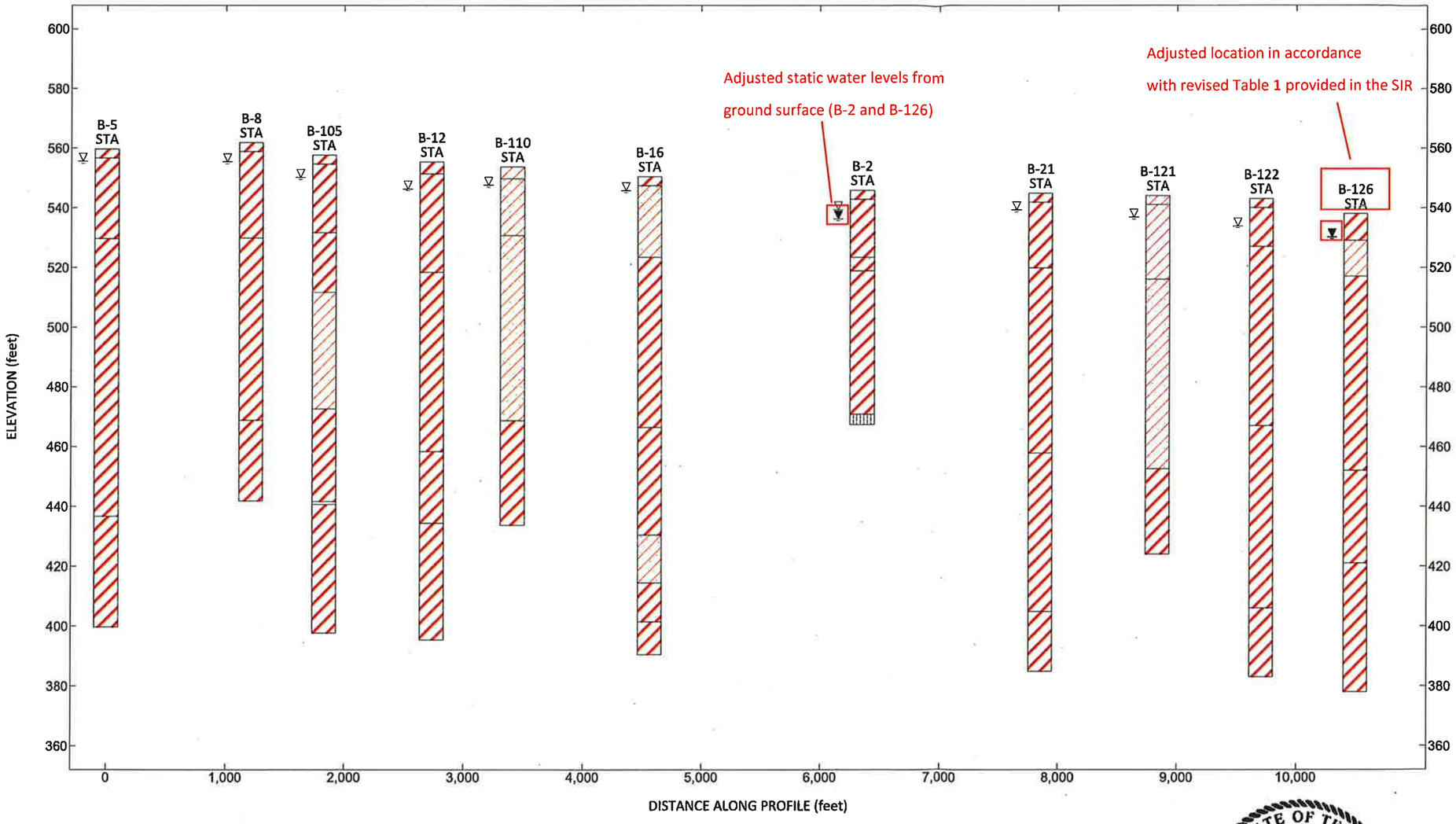
JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-1

◀ North

South ▶

B-B

B-B'



Lithology Graphics

- FAT CLAY (CH)
- SANDY FAT CLAY (CH)
- SILTSTONE
- SANDY LEAN CLAY (CL)
- LEAN CLAY (CL)

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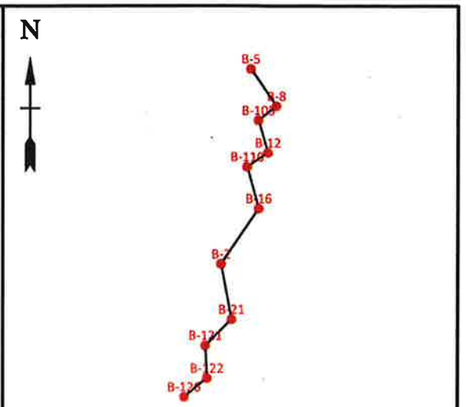

Site Map Scale 1 inch equals 4,035 feet

Legend:

- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along B-B

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-2

◄ North

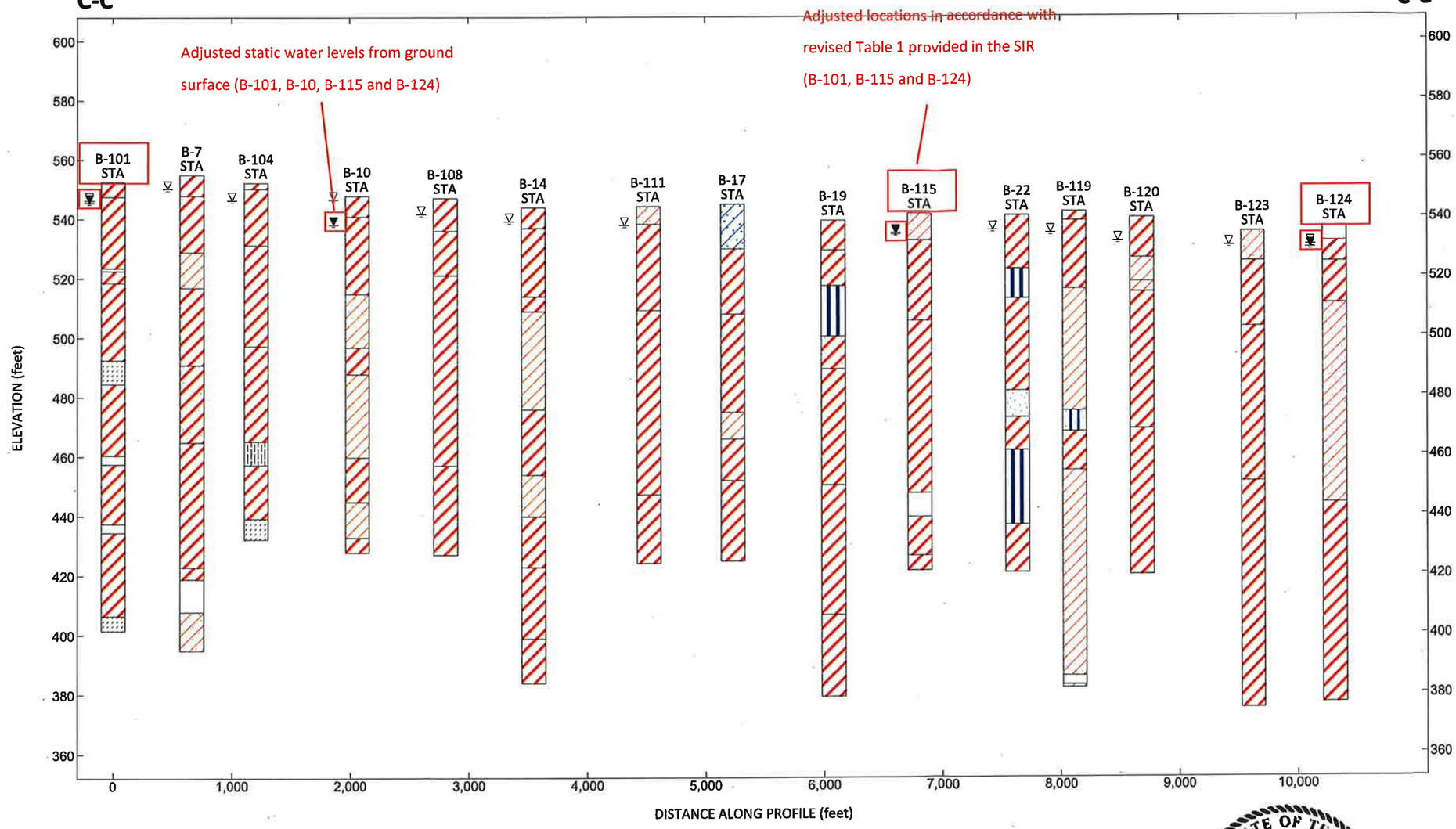
South ►

C-C

C-C'

Adjusted static water levels from ground surface (B-101, B-10, B-115 and B-124)

~~Adjusted locations in accordance with~~ revised Table 1 provided in the SIR (B-101, B-115 and B-124)



Lithology Graphics

- FAT CLAY (CH)
- LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- SANDY LEAN CLAY (CL)
- CLAYEY SAND
- ELASTIC SILT
- POORLY GRADED SAND (SP)
- SANDSTONE
- SILTSTONE
- SANDY SILT (ML)

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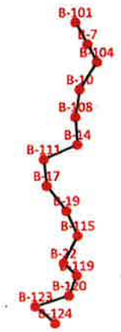
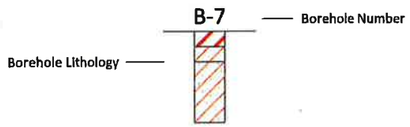


Site Map Scale 1 inch equals 4,035 feet

Legend:



- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along C-C

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-3

◀ North

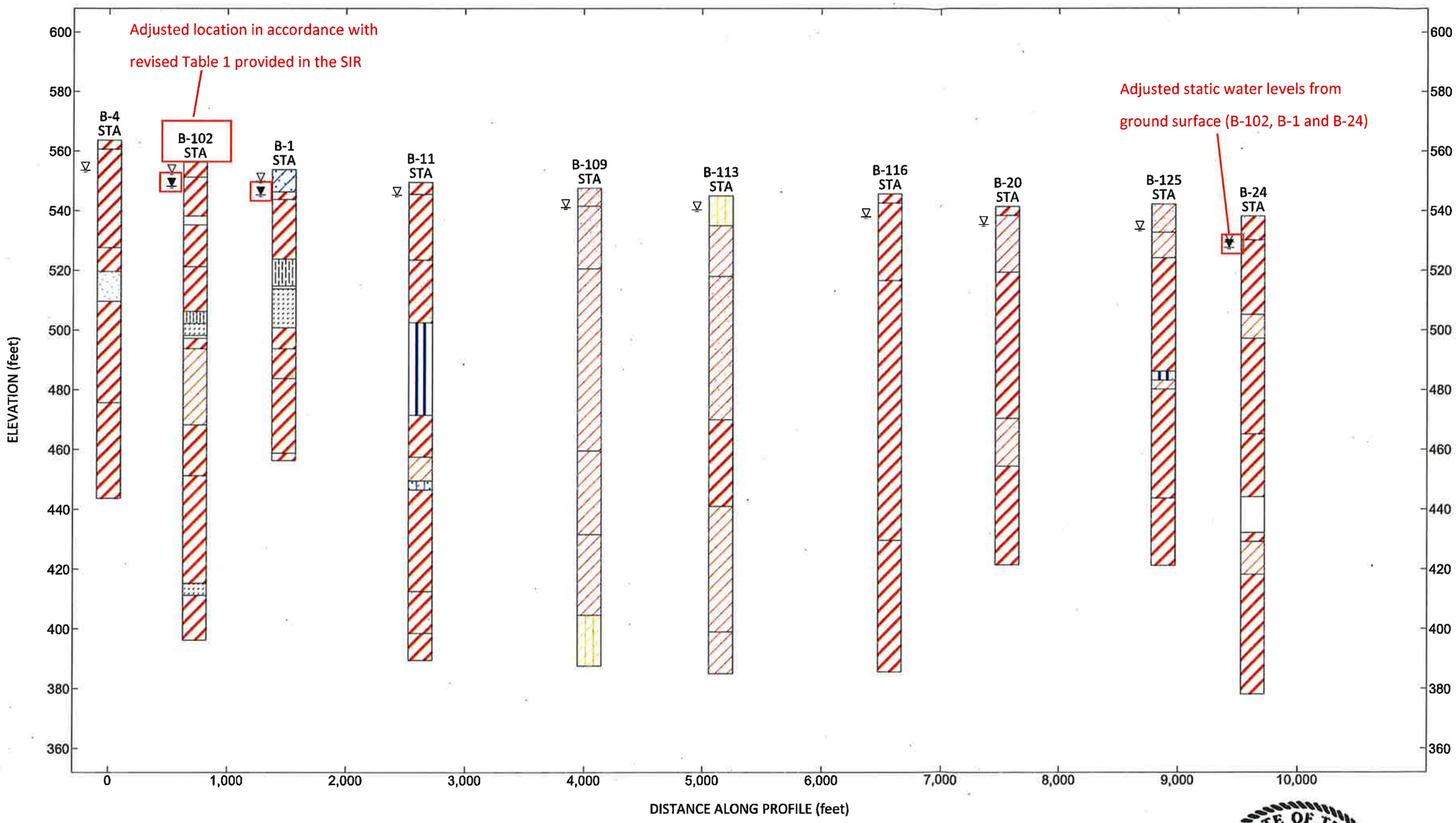
South ▶

D-D

D-D'

Adjusted location in accordance with revised Table 1 provided in the SIR

Adjusted static water levels from ground surface (B-102, B-1 and B-24)



Lithology Graphics

- CLAYEY SAND
- FAT CLAY (CH)
- SILTSTONE
- CLAYSHALE
- SANDSTONE
- SANDY FAT CLAY (CH)
- POORLY GRADED SAND (SP)
- SILT (ML)
- LEAN CLAY (CL)
- SILTY SAND (SM)
- SANDY LEAN CLAY (CL)
- SANDY SILTY CLAY (CL-ML)
- SANDY SILT (ML)

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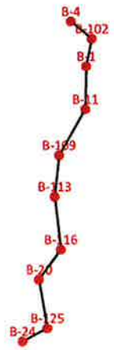

Site Map Scale 1 inch equals 4,035 feet

Legend:

- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along D-D

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-4

◄ Northwest

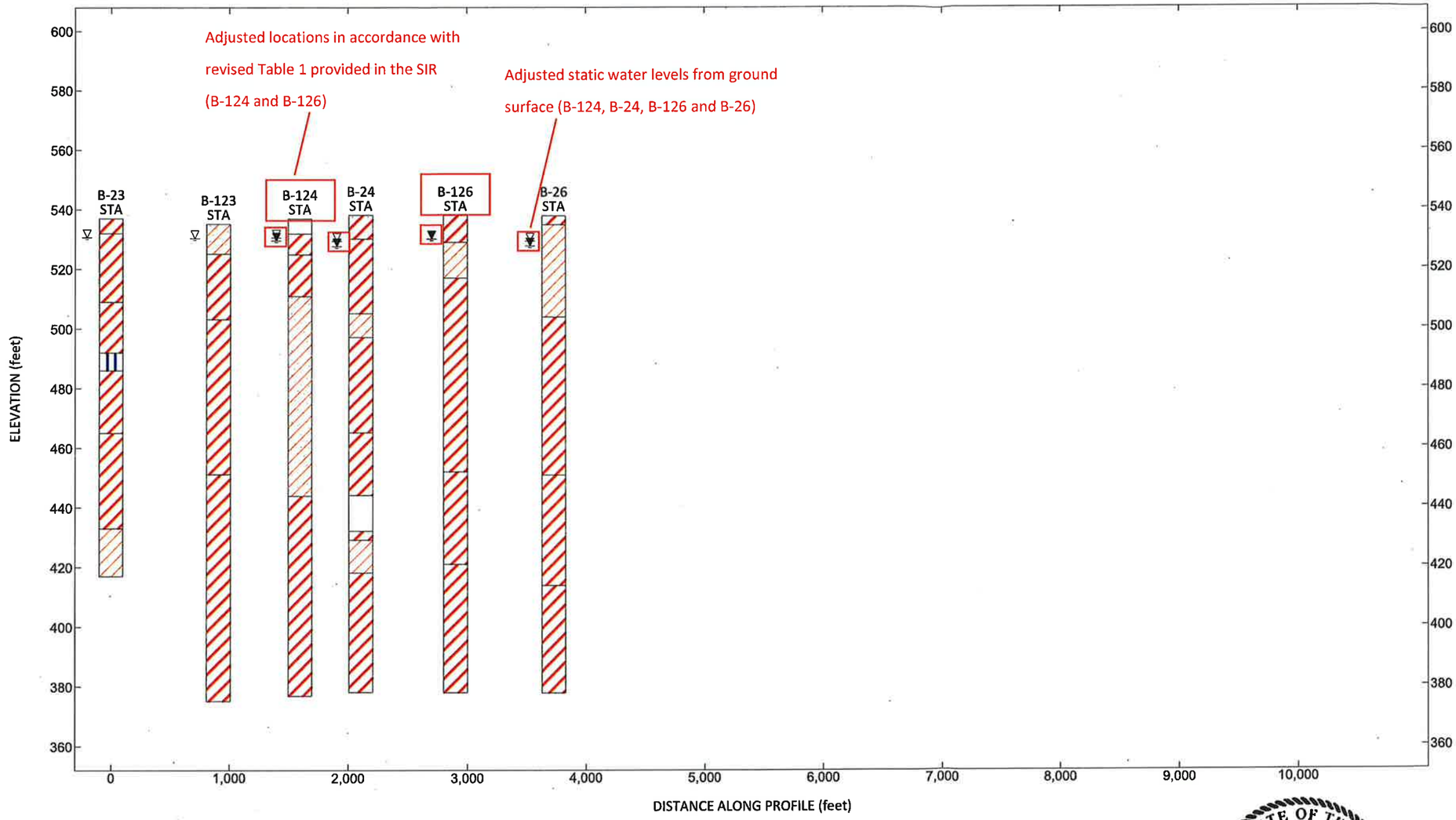
Southeast ►

E-E

E-E'

Adjusted locations in accordance with revised Table 1 provided in the SIR (B-124 and B-126)

Adjusted static water levels from ground surface (B-124, B-24, B-126 and B-26)



Lithology Graphics

- FAT CLAY (CH)
- SILT (ML)
- LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- SANDY LEAN CLAY (CL)

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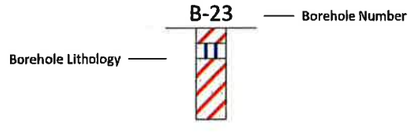
Site Map Scale 1 inch equals 4,035 feet

Legend:



Water Level Reading at time of drilling.

Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along E-E

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-5

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◀ Northwest

Southeast ▶

F-F

F-F'

Adjusted locations in accordance with revised Table 1 provided in the SIR (B-101 and B-102)

Adjusted static water levels from ground surface (B-101 and B-102)

B-3 STA

B-101 STA

B-4 STA

B-102 STA

B-5 STA

B-8 STA

ELEVATION (feet)

600
580
560
540
520
500
480
460
440
420
400
380
360

0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
9,000
10,000

DISTANCE ALONG PROFILE (feet)

Lithology Graphics

- FAT CLAY (CH)
- SANDY LEAN CLAY (CL)
- LEAN CLAY (CL)
- POORLY GRADED SAND (SP)
- SANDSTONE
- SILTSTONE

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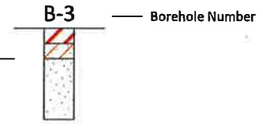
Site Map Scale 1 inch equals 4,035 feet

Legend:



Water Level Reading at time of drilling.

Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along F-F

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-6

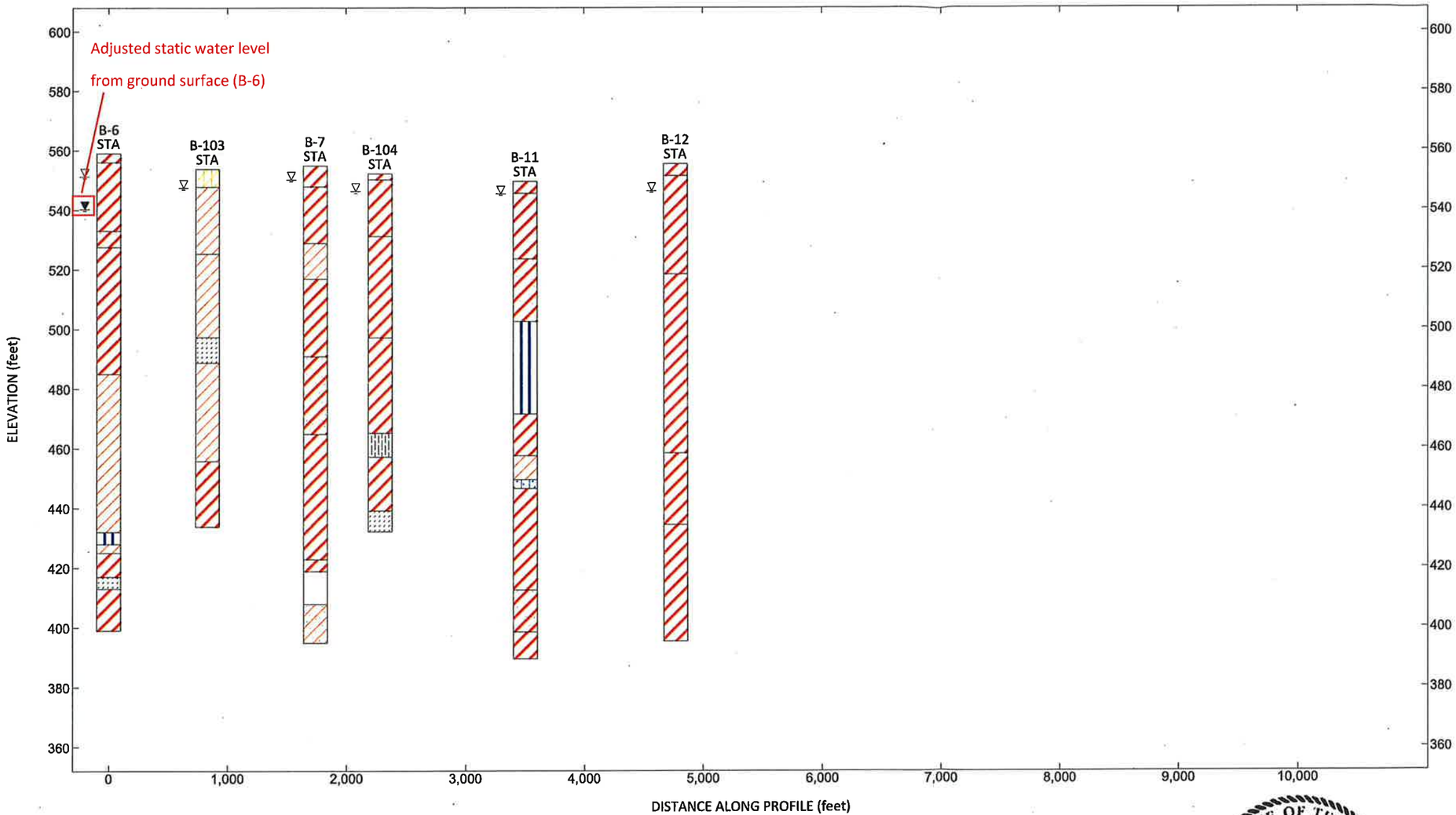
ENVIRO - VER ASF13-140-00 NOVEMBER 2014.GPJ RKCI.GDT 10/29/14

◄ Northwest

Southeast ►

G-G

G-G'



Lithology Graphics

- FAT CLAY (CH)
- SANDY FAT CLAY (CH)
- LEAN CLAY (CL)
- SILT (ML)
- SANDSTONE
- SANDY LEAN CLAY (CL)
- SILTY SAND (SM)
- SANDY SILTY CLAY (CL-ML)
- SILTSTONE

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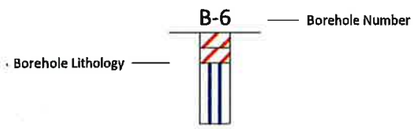
Site Map Scale 1 inch equals 4,035 feet

Legend:



- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along G-G

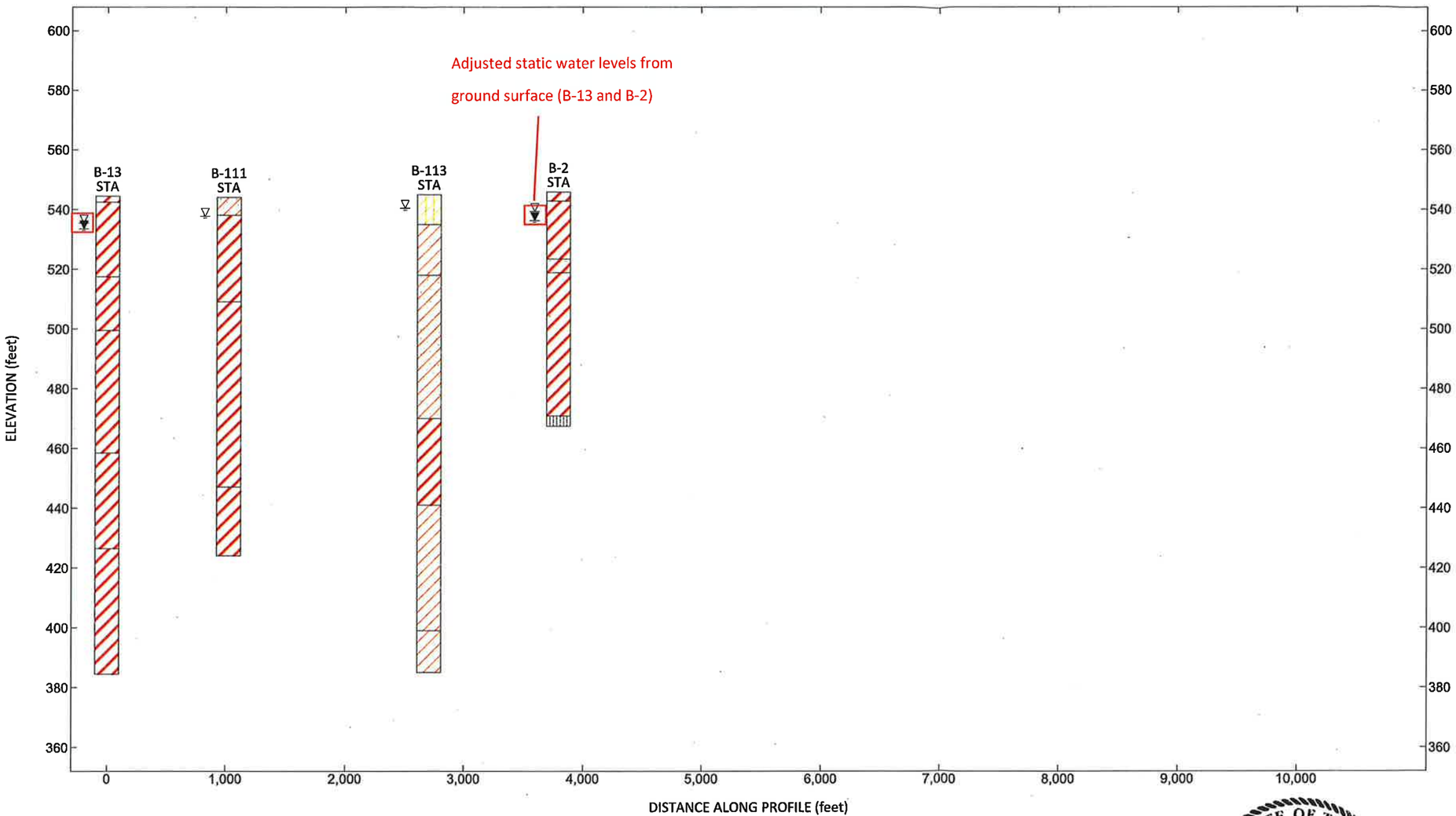
JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-7

◄ Northwest

Southeast ►

H-H

H-H'



Lithology Graphics

- FAT CLAY (CH)
- SANDY FAT CLAY (CH)
- SILTSTONE
- SANDY LEAN CLAY (CL)
- SANDY SILTY CLAY (CL-ML)
- LEAN CLAY (CL)

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116311
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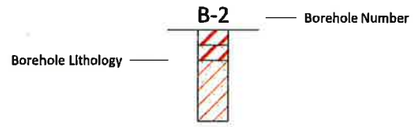
PROFESSIONAL ENGINEER
2/25/2015

N

Site Map Scale 1 inch equals 4,035 feet

Legend:



- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

RABA KISTNER

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Management Facility - Rancho Viejo Waste Management, LLC
Webb County, Texas - MSW Permit No. 2374

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Generalized Subsurface Fence Diagram Along H-H

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-8

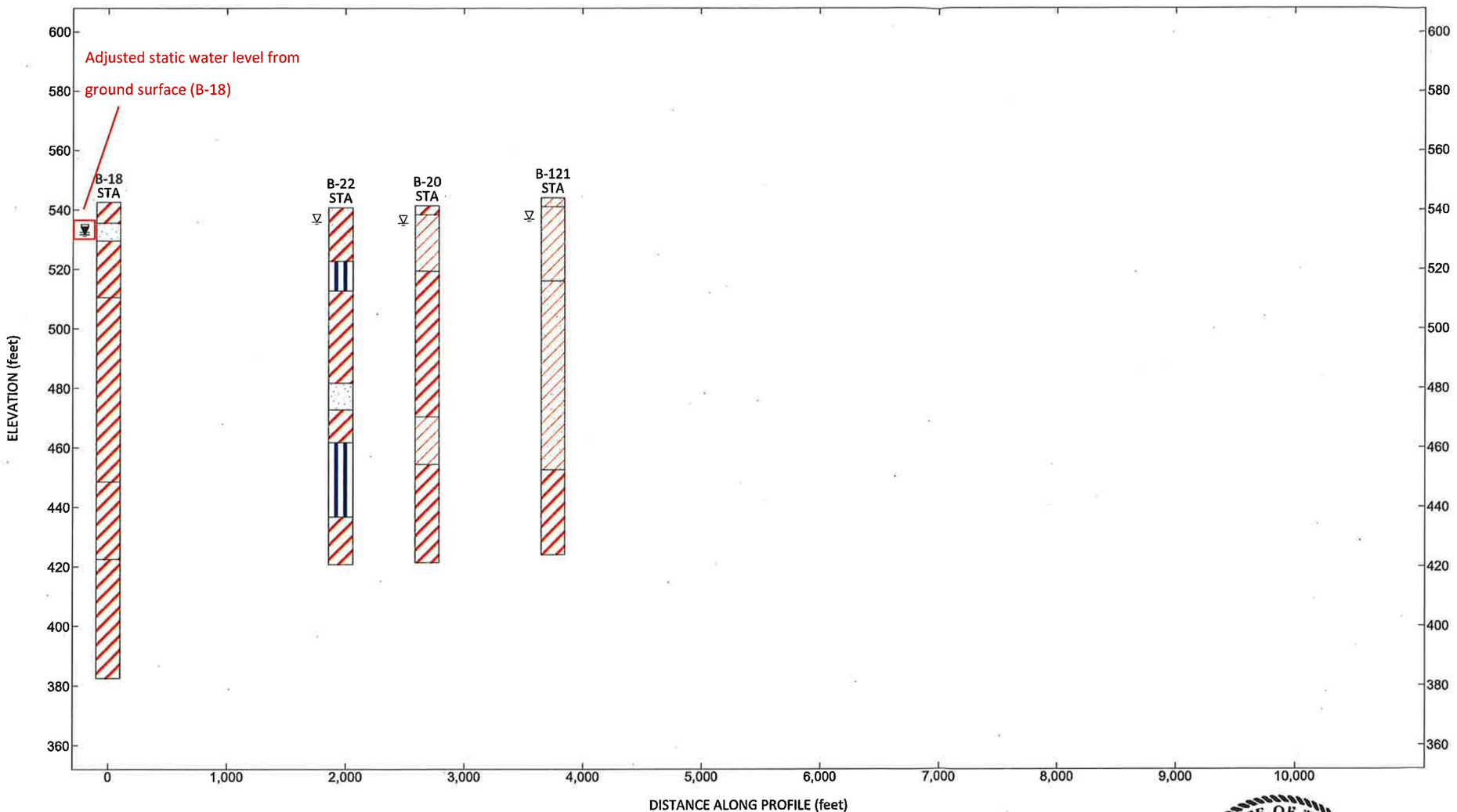
ENVIRO - VER ASF13-140-00 NOVEMBER 2014.GPJ RKCI.GDT 10/29/14

◄ Northwest

Southeast ►

I-I

I-I'



Lithology Graphics

- FAT CLAY (CH)
- POORLY GRADED SAND (SP)
- LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- ELASTIC SILT
- SANDY LEAN CLAY (CL)

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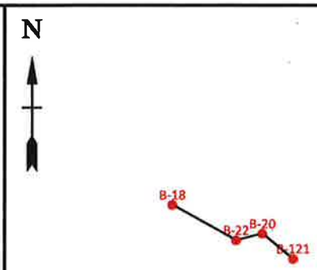
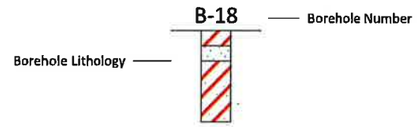


Site Map Scale 1 inch equals 4,035 feet

Legend:



- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

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Generalized Subsurface Fence Diagram Along I-I

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-9

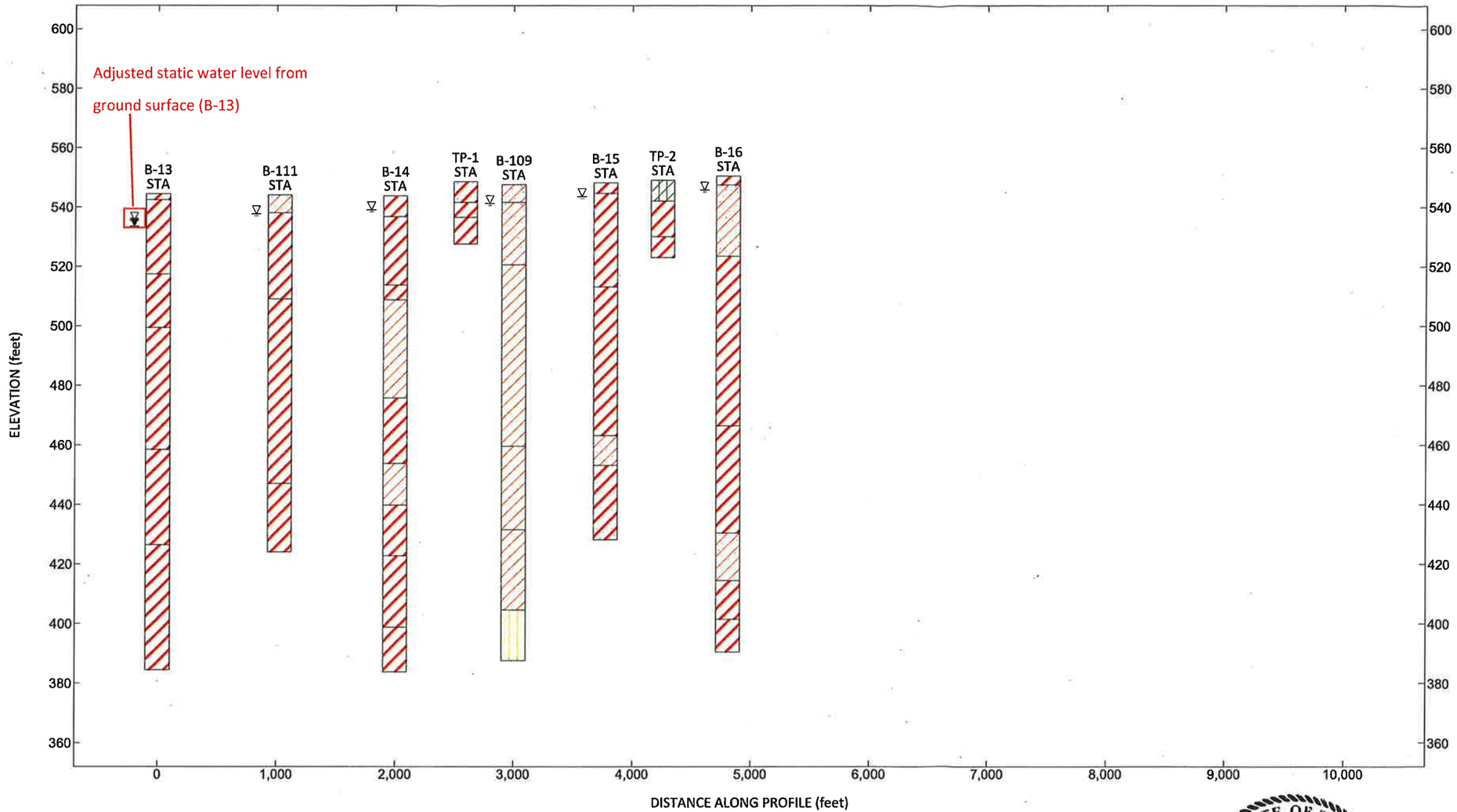
ENVIRO - VER... ASF13-140-00 NOVEMBER 2014.GPJ RKCI.GDT 10/29/14

◄ Northwest

Southeast ►

J-J

J-J'



Lithology Graphics

- FAT CLAY (CH)
- LEAN CLAY (CL)
- SANDY LEAN CLAY (CL)
- SANDY FAT CLAY (CH)
- SANDY SILTY CLAY (CL-ML)
- SILTY CLAY (CL-ML)

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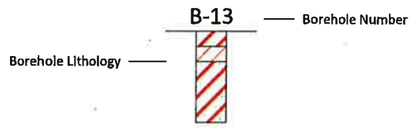
Site Map Scale 1 inch equals 4,035 feet

Legend:



- Water Level Reading at time of drilling.
- Water Level Reading after 24 hrs.

Horizontal Scale: 1 inch = 1000 feet
Vertical Scale: 1 inch = 40 feet

0 1000

Horizontal Scale (ft)

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Generalized Subsurface Fence Diagram Along J-J

JOB NUMBER	FIGURE NUMBER
ASF13-140-00	FIGURE C-10

ENVIRO - VER ASF13-140-00 PESCADITO JANUARY 2015.GPJ RKCI.GDT 1/21/15