



Texas Commission on Environmental Quality

Waste Permits Division Correspondence Cover Sheet

Date: December 1, 2023

Facility Name: Beck Landfill

Permit or Registration No.: 1848A

Nature of Correspondence:

Initial/New

Response/Revision to TCEQ Tracking No.:
27818258 (from subject line of TCEQ letter
regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

Applications	Reports and Notifications
<input type="checkbox"/> New Notice of Intent	<input type="checkbox"/> Alternative Daily Cover Report
<input type="checkbox"/> Notice of Intent Revision	<input type="checkbox"/> Closure Report
<input type="checkbox"/> New Permit (including Subchapter T)	<input type="checkbox"/> Compost Report
<input type="checkbox"/> New Registration (including Subchapter T)	<input type="checkbox"/> Groundwater Alternate Source Demonstration
<input checked="" type="checkbox"/> Major Amendment	<input type="checkbox"/> Groundwater Corrective Action
<input type="checkbox"/> Minor Amendment	<input type="checkbox"/> Groundwater Monitoring Report
<input type="checkbox"/> Limited Scope Major Amendment	<input type="checkbox"/> Groundwater Background Evaluation
<input type="checkbox"/> Notice Modification	<input type="checkbox"/> Landfill Gas Corrective Action
<input type="checkbox"/> Non-Notice Modification	<input type="checkbox"/> Landfill Gas Monitoring
<input type="checkbox"/> Transfer/Name Change Modification	<input type="checkbox"/> Liner Evaluation Report
<input type="checkbox"/> Temporary Authorization	<input type="checkbox"/> Soil Boring Plan
<input type="checkbox"/> Voluntary Revocation	<input type="checkbox"/> Special Waste Request
<input type="checkbox"/> Subchapter T Disturbance Non-Enclosed Structure	<input type="checkbox"/> Other:
<input type="checkbox"/> Other:	

Table 2 - Industrial & Hazardous Waste Correspondence

Applications	Reports and Responses
<input type="checkbox"/> New	<input type="checkbox"/> Annual/Biennial Site Activity Report
<input type="checkbox"/> Renewal	<input type="checkbox"/> CPT Plan/Result
<input type="checkbox"/> Post-Closure Order	<input type="checkbox"/> Closure Certification/Report
<input type="checkbox"/> Major Amendment	<input type="checkbox"/> Construction Certification/Report
<input type="checkbox"/> Minor Amendment	<input type="checkbox"/> CPT Plan/Result
<input type="checkbox"/> CCR Registration	<input type="checkbox"/> Extension Request
<input type="checkbox"/> CCR Registration Major Amendment	<input type="checkbox"/> Groundwater Monitoring Report
<input type="checkbox"/> CCR Registration Minor Amendment	<input type="checkbox"/> Interim Status Change
<input type="checkbox"/> Class 3 Modification	<input type="checkbox"/> Interim Status Closure Plan
<input type="checkbox"/> Class 2 Modification	<input type="checkbox"/> Soil Core Monitoring Report
<input type="checkbox"/> Class 1 ED Modification	<input type="checkbox"/> Treatability Study
<input type="checkbox"/> Class 1 Modification	<input type="checkbox"/> Trial Burn Plan/Result
<input type="checkbox"/> Endorsement	<input type="checkbox"/> Unsaturated Zone Monitoring Report
<input type="checkbox"/> Temporary Authorization	<input type="checkbox"/> Waste Minimization Report
<input type="checkbox"/> Voluntary Revocation	<input type="checkbox"/> Other:
<input type="checkbox"/> 335.6 Notification	
<input type="checkbox"/> Other:	

Municipal Solid Waste Permit Amendment No. 1848A
 Beck Landfill
 Fifth Notice of Technical Deficiency

NOD ID	MRI ID	Application Part	Citation	Location	NOD Description	Response
1	22	General	330.57(g)(3)	Master Table of Contents	In the application master table of contents, correct the entry for Part III, Attachment C2, Appendix C2-3 to indicate appendix is C2-C.	The master table of contents has been updated with this change.
2	89	Part I	330.59(d)(2)	Attachment 6	Provide signed and notarized property owner affidavits with the NOD response. Use the form on page 13 of the Part I application form dated 10/24/23, available at https://www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/00650.pdf .	A signed and notarized property owner affidavit is provided.
3	150	Parts II and III	330.61(j)(3), 330.63(e)(2), and 330.557	Part II, Attachment G, and Part III, Attachment E, Figure E-9	Provide a legible copy of the USGS seismic hazard map on Page G-5 in Part II, and a copy of the same map in place of current Figure E-9 in Part III, Attachment E.	The map on Page G-5 can not be modified to be legible at the page scale, so the same map is provided in place of Figure E-9 in Attachment E.
4	183	Part III	330.61(d) and 330.143(b)(5)	Attachment D1, Figure D1.1	Revise the site layout map to show the landfill grid system, with labels.	A revised copy of Figure D1.1 has been provided which includes the landfill grid.
5	335	Part III	330.63(c)(2)(D)	Attachment C2	Provide a Letter of Map Revision (LOMR) from FEMA.	The LOMR is still under review by FEMA and we will provide the approval as soon as it is available.
6	476	Part III	330.63(e)(2)	Attachment E	Delete "(Cretaceous)" from the last sentence of Section 1.1.	This edit has been made.
7	476	Part III	330.63(e)(2)	Attachment E	Revise the figure, and narrative, inserted in Section 1.2 to show the facility in its correct location in Guadalupe County.	The figure and narrative are revised.

8	487	Part III	330.63(e) (4)	Attachment E, Section 1.4	In the third paragraph of Section 1.4, provide the complete reference to the location in Part III for the information about borings.	The complete reference is provided in Section 1.4.
9	494	Part III	330.63(e) (4)(G)	Attachment E, Appendix E-3, Cross Sections	<ul style="list-style-type: none"> a. Remove the inch-scale markings from the bar scales. b. Replace the data references on the borehole location drawings and cross sections with references to the locations of the data in this amendment application. c. Increase the font size of unit labels, and provide sufficient contrast with surrounding color to assure that the labels will be legible when the drawings are printed in 11x17 format in black and white. 	The requested updates are made.

Applicant Signature Page

Site Operator (Permittee or Registrant Name) or Authorized Signatory

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Grant Norman Title: General Manager

Email Address: gnorman@beckcompanies.com

Signature: *Grant Norman* Date: 12/1/2023

Authorization by Facility Owner for Operator to Submit Application

To be completed by the facility owner if the application is submitted by an operator who is not the facility owner.

I am the owner of the facility that is the subject of this application, and authorize the operator, Grant Norman to submit this application pursuant to 30 TAC 305.43(c).

Name: Ben Davis Title: President

Email Address: bdavis@beckcompanies.com

Signature: *Ben Davis* Date: 12/1/2023

Notary

SUBSCRIBED AND SWORN to before me by the said *BEN DAVIS*

On this *01* day of *DECEMBER*, *2023*

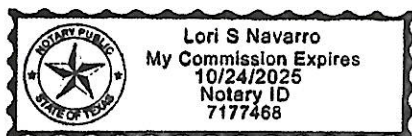
My commission expires on the *10* day of *OCTOBER*, *2025*

Lori S. Navarro

Notary Public in and for

BEXAR COUNTY, TEXAS (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public



Property Owner Affidavit

Property Owner Affidavit for Landfill Facility

I acknowledge in accordance with 30 TAC 330.59(d)(2) that the State of Texas may hold me either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the facility. For a facility where waste will remain after closure, I acknowledge that I have a responsibility to file with the county deed records an affidavit to the public advising that the land will be used for a solid waste facility prior to the time that the facility actually begins operating as a municipal solid waste landfill facility, and to file a final recording upon completion of disposal operations and closure of the landfill units according to 30 TAC 330.19 (relating to Deed Recordation). I further acknowledge that the facility owner or operator and the State of Texas shall have access to the property during the active life and post-closure care period for the purpose of inspection and maintenance.

Name: Ben Davis

Email Address: bdavis@beckcompanies.com

Signature: Ben Davis Date: 12/1/2023

Property Owner Affidavit for Processing Facility

I acknowledge in accordance with 30 TAC 330.59(d)(2) that the State of Texas may hold me either jointly or severally responsible for the operation, maintenance, and closure of the facility. I further acknowledge that the facility owner or operator and the State of Texas shall have access to the property during the active life and post-closure care period for the purpose of inspection and maintenance.

Name: Ben Davis

Email Address: bdavis@beckcompanies.com

Signature: Ben Davis Date: 12/1/2023

Notary

SUBSCRIBED AND SWORN to before me by the said BEN DAVIS

On this 01 day of DECEMBER, 2023

My commission expires on the 10 day of OCTOBER, 2025

Lori S Navarro
Notary Public in and for

BEXAR COUNTY, TEXAS (notary's jurisdiction, including county and state)

Note: Application Must Bear Signature & Seal of Notary Public



CLEAN VERSION

MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT-5TH NOD RESPONSE



NAME OF PROJECT: Beck Landfill

MSW PERMIT APPLICATION NO.: 1848A

OWNER: Nido, LTD (CN603075011)

OPERATOR: Beck Landfill (RN102310968)

CITY, COUNTY: Schertz, Guadalupe County

Major Amendment: December 2023



Prepared by:



Civil & Environmental Consultants, Inc.

PROJECT NUMBER: 150051.05.01

PROJECT CONTACT: Julie Morelli

EMAIL: Julie.Morelli@powereng.com

PHONE: 210-951-6424

Texas Registration Number F-38

1221 S MoPac Expressway

Suite 350,

Austin, Texas 78746

(512) 329-0006



BECK LANDFILL
 GUADALUPE COUNTY, TEXAS
 TCEQ PERMIT APPLICATION NO. MSW 1848A

APPLICATION MASTER TABLE OF CONTENTS

TRANSMITTAL LETTER

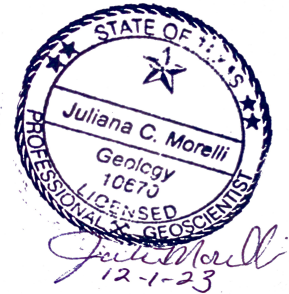
APPLICATION MASTER TABLE OF CONTENTS

APPLICATION CORRESPONDENCE

PART I – SITE AND APPLICATION INFORMATION

TCEQ PART I FORM

- 1 TCEQ CORE DATA FORM
- 2 SUPPLEMENTARY TECHNICAL REPORT
- 3 MAPS
- 4 LAND OWNERSHIP MAP, LANDOWNER LIST AND MAILING LABELS
- 5 FACILITY LEGAL DESCRIPTION, FACILITY METES AND BOUNDS, AND ON-SITE EASEMENT DRAWING
- 6 VERIFICATION OF LEGAL STATUS
- 7 EVIDENCE OF COMPETENCY
- 8 APPOINTMENTS
- 9 APPLICATION FEES



PART II – EXISTING CONDITIONS AND CHARACTER OF THE FACILITY AND SURROUNDING AREA

- 1 TCEQ PART II FORM 20885
- ATTACHMENT A EXISTING CONDITIONS SUMMARY
- ATTACHMENT B WASTE ACCEPTANCE PLAN
- ATTACHMENT C MAPS
- ATTACHMENT D FACILITY IMPACT AND EXISTING CONDITIONS

APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT E	TxDOT COORDINATION
ATTACHMENT F	AIRPORT IMPACTS AND FAA COORDINATION
ATTACHMENT G	GENERAL GEOLOGY AND SOILS STATEMENT
ATTACHMENT H	GROUNDWATER AND SURFACE WATER
ATTACHMENT I	ABANDONED OIL AND WATER WELLS
ATTACHMENT J	FLOODPLAINS AND WETLANDS
ATTACHMENT K	WETLANDS
ATTACHMENT L	ENDANGERED AND THREATENED SPECIES
ATTACHMENT M	TEXAS HISTORICAL COMMISSION REVIEW
ATTACHMENT N	COUNCIL OF GOVERNMENTS AND LOCAL GOVERNMENT REVIEW

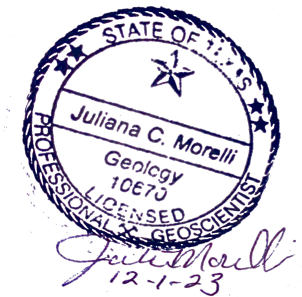
PART III – FACILITY INVESTIGATION AND DESIGN

ATTACHMENT A – SITE DEVELOPMENT PLAN

1 INTRODUCTION
2 GENERAL FACILITY DESIGN
3 FACILITY SURFACE WATER DRAINAGE DESIGN
4 WASTE MANAGEMENT UNIT DESIGN
5 GEOLOGY REPORT
6 GROUNDWATER SAMPLING AND ANALYSIS PLAN
7 LANDFILL GAS MANAGEMENT PLAN
8 CLOSURE PLAN
9 POSTCLOSURE PLAN
10 COST ESTIMATES FOR CLOSURE AND POSTCLOSURE CARE
APPENDIX A1 – ORIGINAL PERMIT APPROVAL LETTER

ATTACHMENT B – GENERAL FACILITY DESIGN

1 FACILITY ACCESS
2 WASTE MOVEMENT



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

- 3 STORAGE AND PROCESSING UNITS
- 4 SANITATION
- 5 WATER POLLUTION CONTROL
- 6 ENDANGERED SPECIES PROTECTION
- 7 BENCHMARK
- APPENDIX B1 – WASTE MOVEMENT DIAGRAM

ATTACHMENT C – FACILITY SURFACE WATER DRAINAGE REPORT

NARRATIVE

ATTACHMENT C1 – DRAINAGE ANALYSIS AND DESIGN

APPENDIX C1-A

Drainage Maps and Existing/Post-development Comparison

APPENDIX C1-B

Existing Condition Hydrologic Calculations

APPENDIX C1-C

Post-development Hydrologic Calculations

APPENDIX C1-D

Perimeter Drainage System Design

APPENDIX C1-E

Final Cover Drainage Structure Design

APPENDIX C1-F

Intermediate Cover Erosion and Sedimentation Control Plan

APPENDIX C1-G

Intermediate Cover Erosion Control Structure Design

ATTACHMENT C2 – FLOOD CONTROL ANALYSIS

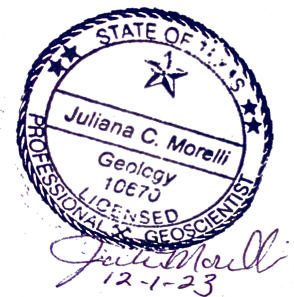
APPENDIX C2-A

LOMR Application

APPENDIX C2-B

No-Rise Certification for Proposed Stormwater Pond

APPENDIX C2-C FEMA CORRESPONDENCE



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT C3 – DRAINAGE SYSTEM PLANS AND DETAILS

ATTACHMENT D – WASTE MANAGEMENT UNIT DESIGN

1 WASTE MANAGEMENT UNIT DESIGN

2 STORAGE AND TRANSFER UNITS

3 LANDFILL UNIT

ATTACHMENT D1 – SITE LAYOUT PLAN

ATTACHMENT D2 – CROSS-SECTIONS

ATTACHMENT D3 – CONSTRUCTION DESIGN DETAILS

ATTACHMENT D4 – SITE LIFE

ATTACHMENT D5 – GEOTECHNICAL DESIGN

1 GEOTECHNICAL TESTING

2 SUBSURFACE MATERIALS

3 EARTHWORK

4 CONSTRUCTION BELOW THE GROUNDWATER TABLE

5 SETTLEMENT AND HEAVE ANALYSIS

6 SLOPE STABILITY ANALYSES

7 LINER CONSTRUCTION

8 COVER CONSTRUCTION

APPENDIX D5-A – SETTLEMENT ANALYSIS

APPENDIX D5-B – SLOPE STABILITY ANALYSES

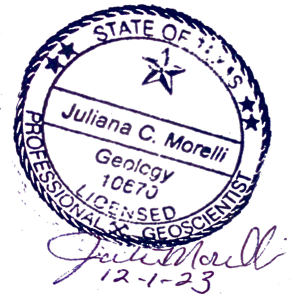
APPENDIX D5-C – PREVIOUS GEOTECHNICAL REPORTS

GEOTECHNICAL INVESTIGATION (ATTACHMENT 11) PREPARED BY SNOWDEN ,
INC. (1985)

GEOTECHNICAL DATA REPORT PREPARED BY TERRACON CONSULTANTS, INC.
(2020)

ATTACHMENT D6 – CONTAMINATED WATER MANAGEMENT PLAN

1 INTRODUCTION



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

3 CONTAMINATED WATER MANAGEMENT

APPENDIX D6-A – RUNON/RUNOFF BERM DESIGN

ATTACHMENT D7 – LINER QUALITY CONTROL PLAN

1 INTRODUCTION

2 LINER SYSTEM

3 EARTHWORK

4 COMPACTED SOIL LINER

8 DOCUMENTATION

ATTACHMENT D8 – FINAL COVER QUALITY CONTROL PLAN

1 INTRODUCTION

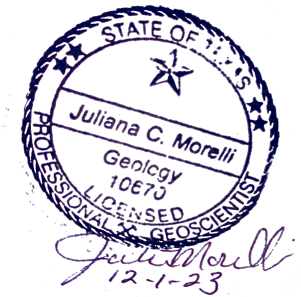
2 FINAL COVER SYSTEM

3 INTERMEDIATE COVER AND GRADING

4 INFILTRATION LAYER

5 EROSION LAYER

6 DOCUMENTATION



ATTACHMENT E – GEOLOGY REPORT

1.0 GEOLOGY REPORT (§330.63(e))

1.1 REGIONAL GEOLOGY (§330.63(e)(1))

1.2 LOCAL GEOLOGICAL PROCESSES (§330.63(e)(2))

1.3 REGIONAL AQUIFERS (§330.63(e)(3))

1.4 SUBSURFACE CONDITIONS (§330.63(e)(4))

1.5 GEOTECHNICAL DATA (§330.63(e)(5))

1.6 OVERVIEW OF ENCOUNTERED GROUNDWATER (330.63(e)(5)(C))

1.7 RECORDS OF GROUNDWATER LEVEL MEASUREMENTS IN WELLS (330.63(e)(5)(D))

1.8 RECORDS OF GROUNDWATER MONITORING DATA (330.63(e)(5)(E))

1.9 IDENTIFICATION OF UPPERMOST AQUIFER (330.63(e)(5)(F))

1.10 GROUNDWATER CERTIFICATION PROCESS FOR ARID EXEMPTION (§330.63(e)(6))



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

APPENDIX E-1 Letter to TCEQ from January 27, 1999

APPENDIX E-2 SNOWDEN, 1989 ATTACHMENT 3C-WATER WELLS

APPENDIX E-3 CROSS-SECTIONS

ATTACHMENT F – GROUNDWATER CHARACTERIZATION REPORT

GROUNDWATER MONITORING SYSTEM DESIGN CERTIFICATION

APPENDIX F1 – MONITOR WELL INSTALLATION INFORMATION

APPENDIX F2 – HISTORIC GROUNDWATER DATA

APPENDIX F3 – GROUNDWATER SAMPLING AND ANALYSIS PLAN

ATTACHMENT G – LANDFILL GAS MANAGEMENT PLAN

1 INTRODUCTION

2 LANDFILL GAS MANAGEMENT PLAN

3 LANDFILL GAS MONITORING PROCEDURES

4 LANDFILL GAS MONITORING EXCEEDANCE RECORD KEEPING AND REPORTING

APPENDIX G-A-Gas Probe Installation Report

APPENDIX G-B-Typical Gas Monitoring Data Form

ATTACHMENT H – CLOSURE PLAN

1 INTRODUCTION

2 FINAL COVER SYSTEM

3 CLOSURE PROCEDURES

4 CLOSURE SCHEDULE

5 CLOSURE COST ESTIMATE

ATTACHMENT I – POSTCLOSURE PLAN

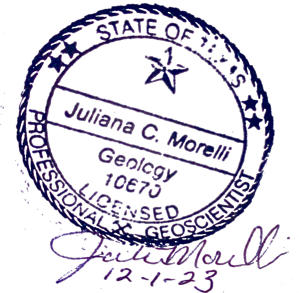
1 INTRODUCTION

2 POSTCLOSURE CARE ACTIVITIES

3 PERSON RESPONSIBLE FOR CONDUCTING POSTCLOSURE CARE ACTIVITIES

4 POSTCLOSURE LAND USE

5 POST-CLOSURE CARE COST ESTIMATE



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT J – COST ESTIMATES FOR CLOSURE AND POSTCLOSURE CARE

- 1 INTRODUCTION
- 2 CLOSURE COST ESTIMATE
- 3 POSTCLOSURE CARE COST ESTIMATE
- 4 COST ESTIMATE ADJUSTMENTS
- 5 FINANCIAL ASSURANCE

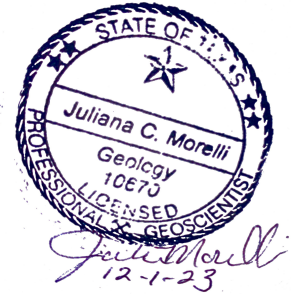
APPENDIX J1 – CLOSURE COST ESTIMATE CALCULATIONS

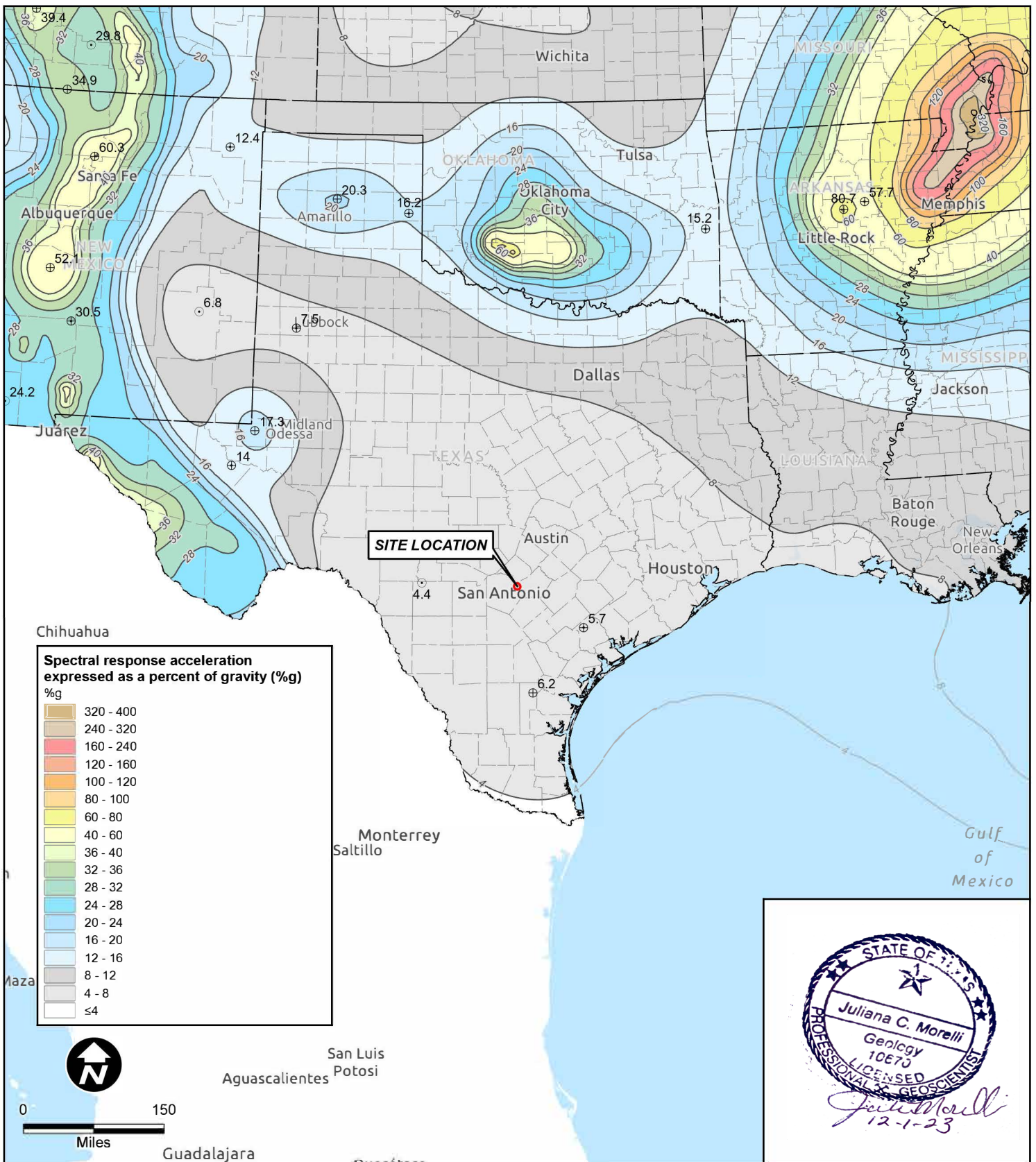
APPENDIX J2 – POSTCLOSURE CARE COST ESTIMATE CALCULATIONS

APPENDIX J3 – EVIDENCE OF FINANCIAL ASSURANCE

PART IV – SITE OPERATING PLAN

- 1 INTRODUCTION
- 2 RECORDKEEPING REQUIREMENTS
- 3 PERSONNEL AND TRAINING
- 4 EQUIPMENT
- 5 DETECTION AND PREVENTION OF DISPOSAL OF PROHIBITED WASTES
- 6 SITE SAFETY
- 7 FIRE PROTECTION PLAN
- 8 OPERATIONAL PROCEDURES
- 9 SEQUENCE OF DEVELOPMENT
- 10 RECYCLING ACTIVITIES





- 3 Mile Radius
- Contours of spectral response acceleration expressed as a percent of gravity (%g)
- Offshore
- Onshore

- Point values of spectral response acceleration expressed as a percent of gravity (%g)**
- Local Minimum
 - Local Maximum
 - Saddle point



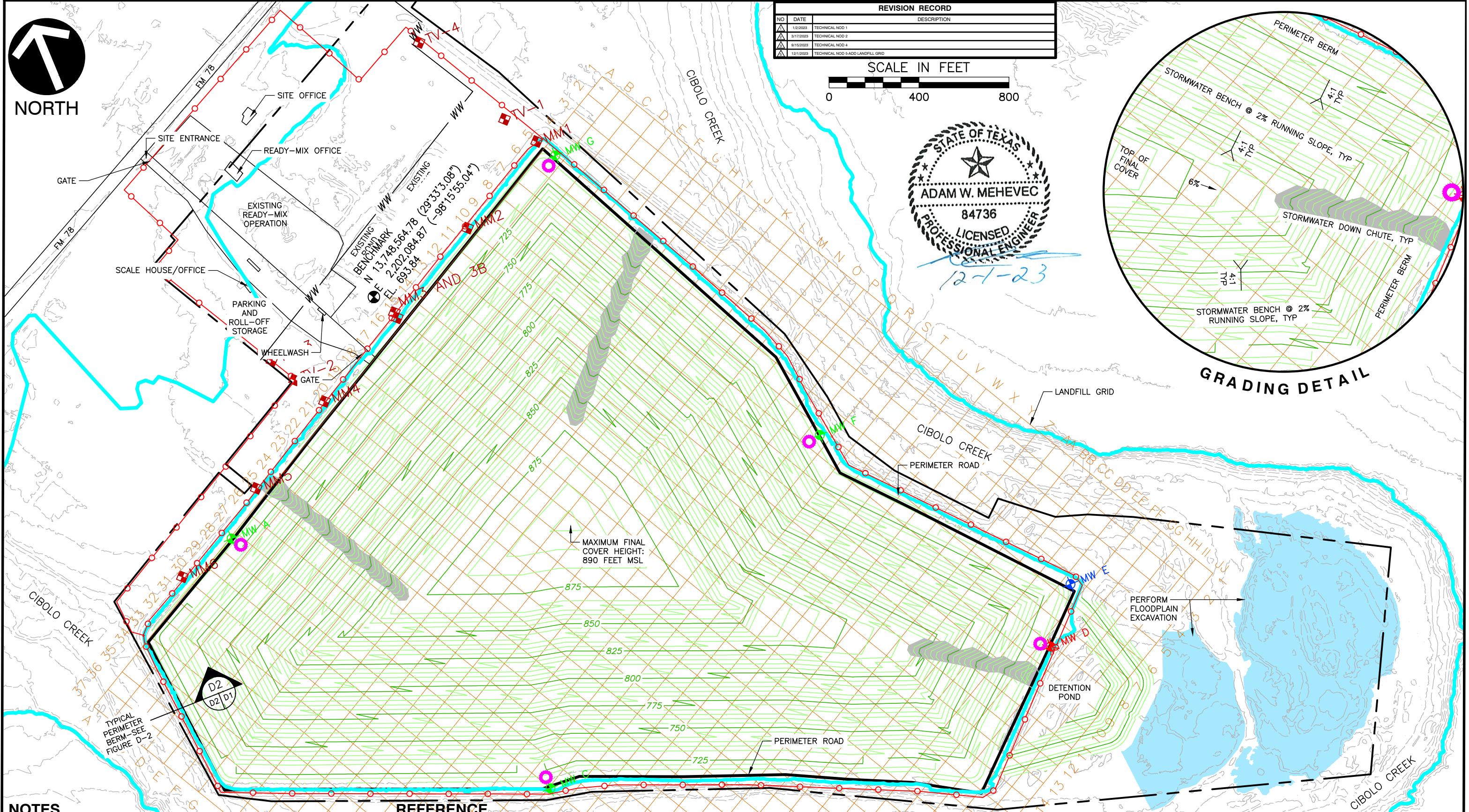
**NIDO, LTD
 BECK LANDFILL
 FIGURE E-9
 SEISMIC IMPACT ZONE MAP -
 REGIONAL SCALE
 SCHERTZ, GUADALUPE
 COUNTY, TEXAS**

Map Sources: U.S. Geological Survey
 Seismic-Hazard Maps for the
 Conterminous United States, 2014



Date: 12/1/2023
 Rev. 0

P:\310-000\311-653\CADD\DWG\SW01\311653-BECK LANDFILL SITE LAYOUT PLAN D1-1.dwg[D1-1] LS:(11/29/2023 - amehevec) - LP: 11/29/2023 1:51 PM



REVISION RECORD		
NO	DATE	DESCRIPTION
1	1/2/2023	TECHNICAL NOD 1
2	3/17/2023	TECHNICAL NOD 2
3	9/15/2023	TECHNICAL NOD 4
4	12/1/2023	TECHNICAL NOD 5-ADD LANDFILL GRID



- NOTES**
- ALL AREAS WITHIN THE LANDFILL FOOTPRINT THAT DO NOT HAVE FINAL COVER MAY BE USED FOR SOIL STOCKPILES, BRUSH STORAGE AND GRINDING, OR VEHICLE PARKING AND MAINTENANCE.
 - ALL MONITOR WELLS AND GAS PROBES HAVE BEEN PREVIOUSLY INSTALLED. MONITOR WELL D IS BEING RELOCATED AND WILL BECOME MONITOR WELL E.
 - INTERIOR ACCESS AND PERIMETER ROADS SHALL BE SURFACED WITH CRUSHED STONE, GRAVEL, RECYCLED CONCRETE, OR EQUIVALENT ALL-WEATHER SURFACE.
 - SITE PERIMETER FENCING OR NATURAL BARRIERS WILL BE USED ALONG THE ENTIRE PERMIT BOUNDARY.
 - SOLID WASTE STORAGE AND PROCESSING AREAS WILL BE PLACED OUTSIDE OF THE 100-YEAR FLOODPLAIN OR WILL BE PROTECTED WITH A LEVEE THAT EXTENDS A MINIMUM OF ONE FOOT ABOVE THE FLOODPLAIN ELEVATION.
 - THERE ARE NO NATURAL WINDBREAKS, SUCH AS GREENBELTS, OR SCREENING PROPOSED FOR THE FACILITY.

REFERENCE
 TOPOGRAPHIC INFORMATION FROM AERIAL SURVEY BY FIRMATEK: (SEPTEMBER 15, 2021) AUGMENTED WITH A PORTION OF THE EXISTING GROUND SURFACE PREPARED BY CEC.

LEGEND

	EXISTING MONITOR WELL		LANDFILL PERMIT BOUNDARY
	EXISTING GAS PROBE		LANDFILL FOOTPRINT BOUNDARY
	EXISTING PIEZOMETER		100 YEAR FLOODPLAIN BASED ON LOMR APPLICATION
	MONITOR WELL TO BE REMOVED		LANDFILL CONTOURS ARE TOP OF FINAL COVER.
	PROPOSED MONITOR WELL		FENCE (BARBED-WIRE OR CHAIN LINK)

CEC
Civil & Environmental Consultants, Inc.
 3711 South MoPac Expressway · Building 1, Suite 550 · Austin, TX 78746
 Ph: 512.439.0400 · Fax: 512.329.0096
 www.cecinc.com Texas Registered Engineering Firm F-38

BECK COMPANIES

**NIDO, LTD
 BECK LANDFILL
 BEXAR COUNTY, TEXAS**

SITE LAYOUT PLAN

DRAWN BY: MFV	CHECKED BY: AWM	APPROVED BY: AWM	FIGURE NO.: D1.1
DATE: 08/2022	DWG SCALE: 1" = 400'	PROJECT NO: 311-653	

1.0 GEOLOGY REPORT (§330.63(E))

This portion of the application applies to owners or operators of MSW landfills, compost units, and if otherwise requested by the executive director. The geology report has been prepared and signed by a qualified groundwater scientist. The previously prepared permit documents relating to Geology, Aquifers, Groundwater, etc. are included as Appendices to this Report for continuity with prior permitting actions, as noted below.

- *Appendix E-1 Letter to TCEQ from January 27, 1999*
- *Appendix E-2 – Snowden, 1989, Attachment 3C – Water Wells*
- *Appendix E-3 – Cross Sections*

1.1 Regional Geology (§330.63(e)(1))

The regional geology described herein includes from the ground surface to the base of the lowermost aquifer capable of providing usable groundwater within Guadalupe County, Texas. Those regional formations and structural features of significance to the Beck Landfill site are discussed below. **Figure E-1** shows the surface geology of the subject area of Guadalupe County and adjoining counties and mapped fault lines of the Balcones Fault Zone. The Balcones Fault Zone has been inactive for nearly 15 million years and is considered a very low risk for earthquake hazard by the Federal Emergency Management Agency (FEMA).

Figure E-2 is a generalized stratigraphic column of the region that indicates the geologic age, range of thickness, formation lithology and water supply usage. Quaternary, Tertiary and Cretaceous System formations outcrop within the region of review. These formations are mainly comprised of sand, sandstone, gravel, clay, mudstone, shale, and marl. The stratigraphic sequence of formations that outcrop in the review region from the land surface to the base of the lowermost aquifer capable of providing usable groundwater is shown on the generalized stratigraphic column on **Figure E-2**.

As indicated on the stratigraphic column, the youngest formation that outcrops in the area is the Holocene Series alluvium consisting of clay, silt, sand, and gravel deposited in the floodplain along major stream channels in the southern portion of the subject region. The Holocene Series alluvium is documented to be as much as 25 feet in thickness. The Holocene alluvium lies unconformably over the older Pleistocene Series Leona Formation, and Tertiary and Cretaceous series formations where Leona Formation beds have been eroded away.

Two Pleistocene Series formations outcrop within the mapped region. From youngest to oldest these are the fluviatile terrace deposits and Leona Formation. The fluviatile terrace deposits in the region of review are comprised of sand, silt, clay, and some gravel that were laid down as point bars, oxbows and abandoned channel fill. These fluviatile terrace deposits generally occupy a position above the Holocene floodplains of entrenched streams and may obtain a thickness of up to 30 feet based on a review of State Water Well Reports for wells drilled in Guadalupe County. The Pleistocene Series terrace unconformably overlie the older Pleistocene Series Leona Formation, where not eroded away, or Tertiary and Cretaceous system formations where the Leona was removed by erosion.

conditions, areas susceptible to mass movement, and karst terrains. The Beck Landfill was excavated through alluvial materials (sand and gravel) to the undivided Navarro Group and Marlbrook Marl, which consist of clay and shale material (impermeable). Evidence of active detrimental on-site geologic activity has not been documented within the landfill area. No on-site or local human-made features or events were observed to have created unstable conditions.

The Balcones Fault Zone is a system of normal faults that traverses the review region from the northeast to the southwest. This fault zone is associated with the Paleozoic-age Ouachita Fold Belt, a remnant of an ancient highly eroded mountain range which is buried beneath the Balcones Fault Zone. Movement along the Balcones faults took place mainly during the Miocene Epoch. Data contained within the USGS Quaternary Fault and Fold Database indicates that no Holocene displacement of faults within the Balcones Fault Zone has occurred. The Beck Landfill (shown with a star) is not located within the Balcones Fault Zone as shown in the image below.

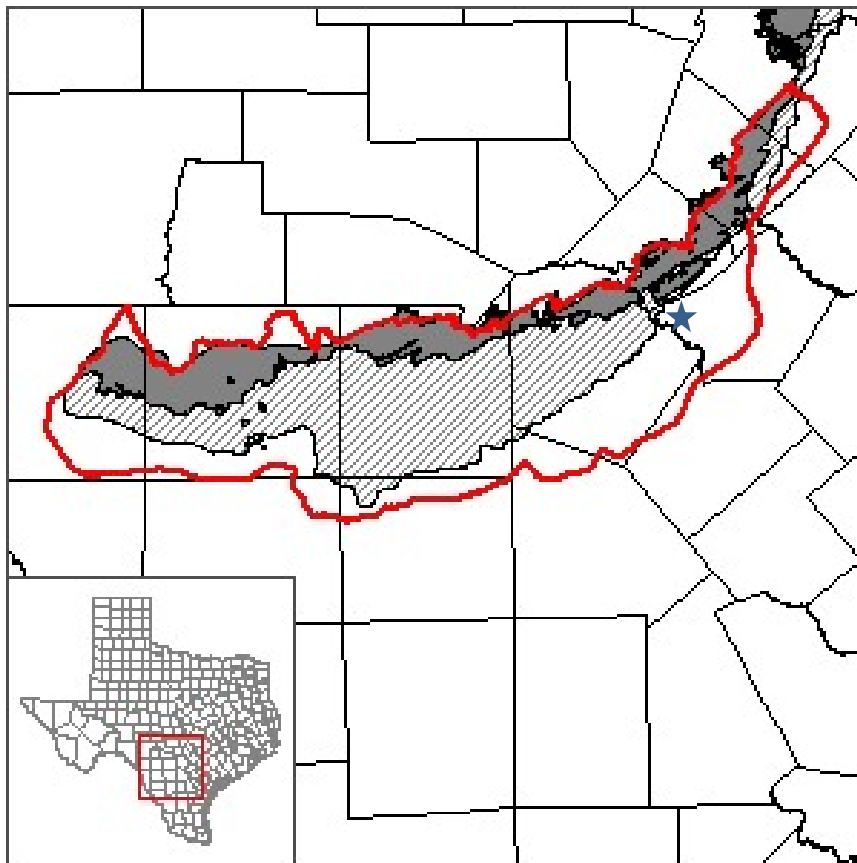


FIGURE ABOVE DEPICTS THE BALCONES FAULT ZONE AND THE LOCATION OF THE BECK LANDFILL (STAR) LOCATED TO THE SOUTH.

The Ouachita Fold Belt caused regional tilting and uplifting of Paleozoic rocks that underlie the review region. Pre-Cretaceous erosion of the uplifted Paleozoic rocks created a southeast dipping regional erosional surface or unconformity upon which Cretaceous System sediments were deposited. This regional unconformity and extensive faulting are the most significant structural features affecting the Cretaceous System and Paleocene Series formations within the review region. The Ouachita Fold Belt

A total of fifty-four (54) borings were advanced. Each of the proposed boring locations is indicated on the original boring plan, but only those designated by grid numbers were actually drilled. A continuous flight auger system, either of a solid or hollow stem type, was employed in the advancement of the borings. An updated cross-sectional analysis of this boring plan and boring lot set is provided as **Part III, Attachment 3, Appendix E-3** of this Report. The locations and elevations are approximated based on best available information today. A Table is provided for references.

Representative samples of the subsurface sediments were obtained from selected borings. Undisturbed or Shelby tube samples were recovered to represent much of the clay-shale penetration as recorded on the accompanying logs. Auger samples were generally recovered to represent the stream deposited stratum. All samples were immediately sealed to preserve in-situ states and moisture conditions as near as possible.

The analysis of the soil samples was performed in a soils laboratory. Testing generally conformed to an appropriate A.S.T.M specification as per the soil property being determined. The values of permeability, each expressed as centimeters per second, were derived by a constant head method utilizing flexible wall permeameters. The recompacted samples were also tested by the same method. Permeability was determined for selected clay samples from six (6) widely spaced borings. The samples were chosen as to be representative of the entirety of the clay formation underlying the proposed site and/or to confirm the impermeable nature of the natural clay. Atterberg Limits were determined from un-tested portions of the permeability samples, in order to formulate a basis of comparison, with the plasticity indexes, as determined from other sampled borings. A comparison of this nature should support the suitability of the particular natural clay, as relevant to the proposed site usage. Sieve and Hydrometer analysis were not performed, as the majority of the laboratory investigation was concentrated on materials predominantly of clay minerals. Such clay materials would generally pass the #200 sieve.

The conclusions of the laboratory testing are given on the tables included in **Part III, Attachment D-5, Appendix D5-C**. The findings of the exploratory borings as depicted by the boring logs, along with the other aspects of the field accumulated datum, allowed an analysis of the subsurface conditions existing at the proposed site.

A supplemental geotechnical investigation was conducted by Terracon in the southeast portion of the landfill in September 2020 to revisit the findings of the original investigation. The investigation was conducted in accordance with 30 TAC §330.63(e)(4) and §330.63(e)(5). A total of eight borings were advanced in the approximately 12-acre area, consistent with the guidance of 6-10 borings in 30 TAC §330.63(e)(4)(B) for a study area of 10-20 acres. A boring plan detailing the proposed investigation was submitted by POWER Engineers, Inc. to the TCEQ Municipal Solid Waste Permits section on August 17, 2020. No changes to the proposed number and depth of the borings were requested due to site conditions in the proposed boring plan. No geophysical methods, such as electrical resistivity, were proposed for use as part of this study to reduce the number of required borings. The TCEQ received the boring plan for review on August 31, 2020, and issued an approval letter dated September 3, 2020. A copy of the approved boring plan and TCEQ approval letter are included with this submittal as **Part III, Attachment D5, Appendix D5-C**.

The Terracon Geotechnical Data Report indicates that borings were advanced with a truck-mounted drill rig utilizing continuous flight augers. Samples were obtained by Terracon continuously in the upper 10 ft. of each soil boring and at intervals of 5 ft. thereafter. A thin-wall tube or split-barrel tube was utilized. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed soil sample. In the split-barrel

BECK LANDFILL

BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations

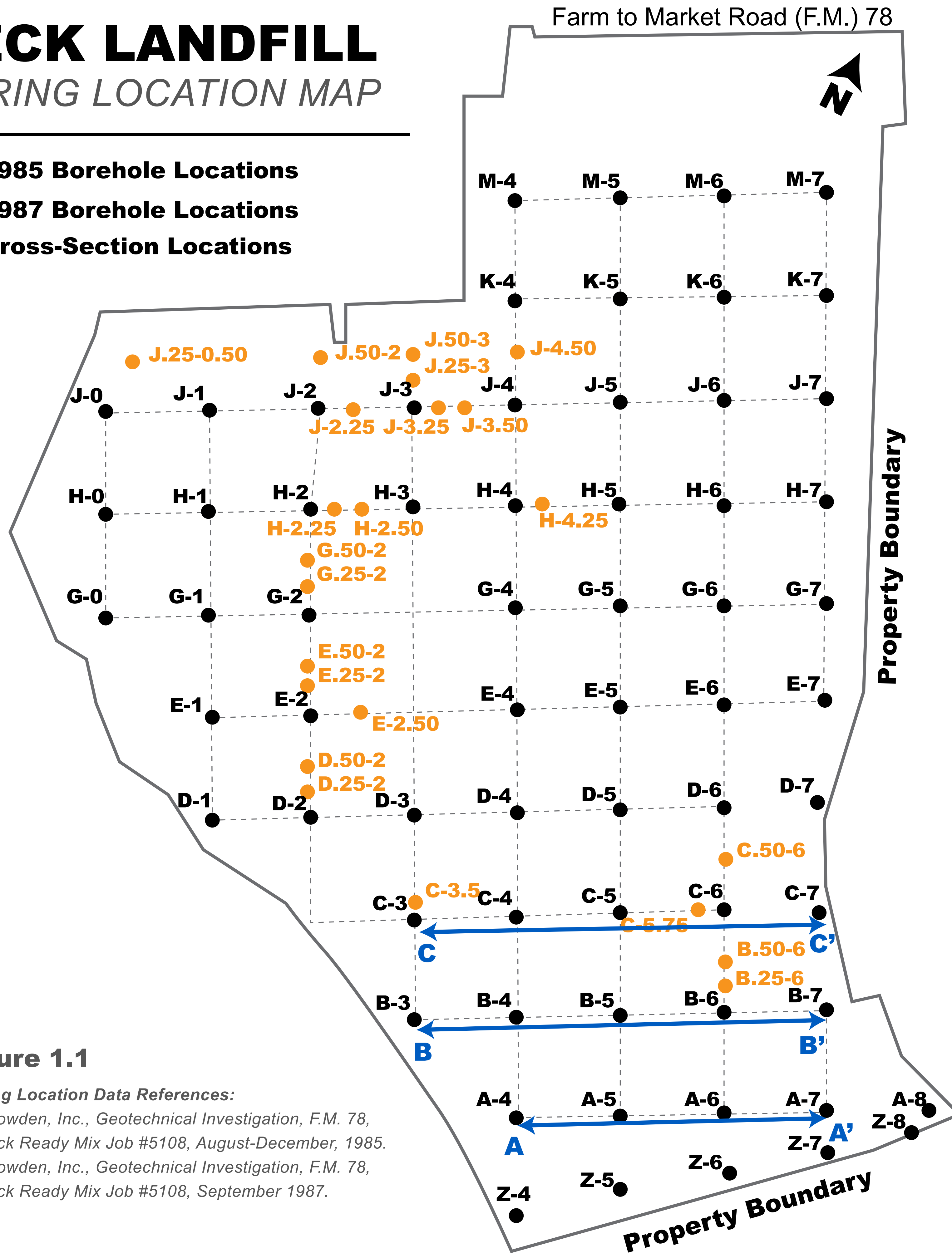


Figure 1.1

Boring Location Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

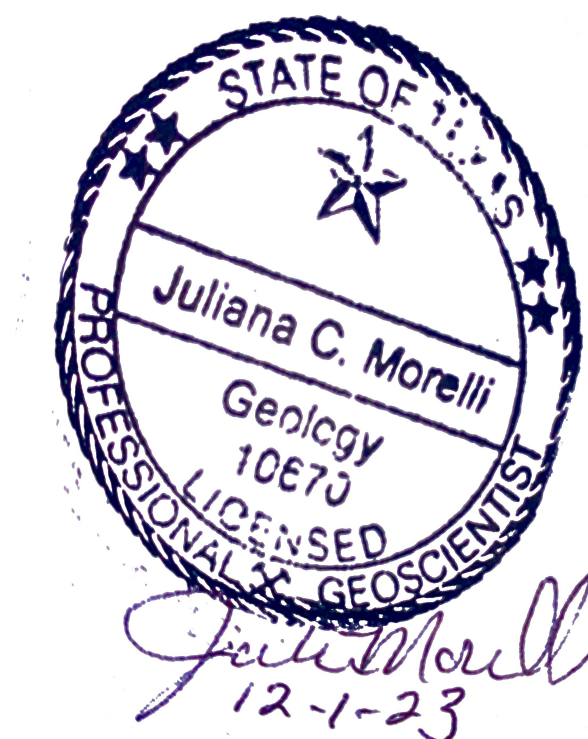
BORING DATA

Figure 1.2

Boring ID	Latitude (N)	Longitude (W)	Collar Elevation (ft.)	Total Depth (ft.)	TD Elevation (ft.)	Depth to Water (ft.)	Static Water Elevation (ft.)	Lithology (Youngest to Oldest)
A-4	29.5429°	-98.2614°	679.2	20.0	659.20	19.0	660.2	Silty Clay, Clayey Gravel, Stiff Clay
A-5	29.5434°	-98.2604°	689.8	20.0	669.80	Dry	-----	Clayey Gravel, Stiff Clay, Clay Shale
A-6	29.5439°	-98.2593°	684.6	20.0	664.60	6.0	678.6	Fill, Silty Clay, Clayey Gravel, Stiff Clay, Shale
A-7	29.5444°	-98.2583°	682.4	20.0	662.40	1.5	680.9	Clayey -Silty Gravel, Clayey Shale
B-3	29.5433°	-98.2630°	687.3	20.0	667.3	7.0	380.36	Silty Clay, Stiff Clay, Clayey Shale
B-4	29.5439°	-98.2620°	684.4	20.0	664.4	8.0	676.4	Silty Clay, Silty-Clayey Gravel, Stiff Clay, Clayey Shale
B-5	29.5448°	-98.2609°	682.4	20.0	662.4	7.0	675.4	Silty Clay, Sandy-Clayey Gravel, Stiff Clay, Clayey Shale
B-6	29.5449°	-98.2599°	687.6	25.0	662.6	11.7	675.9	Clayey Gravel, Stiff Clay, Clayey Shale
B-7	29.5454°	-98.2589°	676.8	20.0	656.8	1.5	675.3	Sandy Gravel, Clayey Shale
C-3	29.5443°	-98.25636°	697.8	25.0	672.8	22.0	675.8	Fill, Silty Clay, Silty Gravel, Stiff Clay
C-4	29.5448°	-98.2626°	685.3	20.0	665.3	9.0	676.3	Fill, Clayey Gravel, Stiff Clay, Clayey Shale
C-5	29.5453°	-98.2615°	681.5	20.0	661.5	Dry	-----	Sandy Gravel, Stiff Clay, Clayey Shale
C-6	29.5458°	-98.2605°	690.5	25.0	665.60	15.5	675.1	Fill, Clayey Gravel, Stiff Clay, Clayey Shale
C-7	29.5462°	-98.2595°	687.0	20.0	667.0	Dry	-----	Silty Sand, Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale

Boring Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



BECK LANDFILL
Bore Hole Location & Data
Schertz, TX

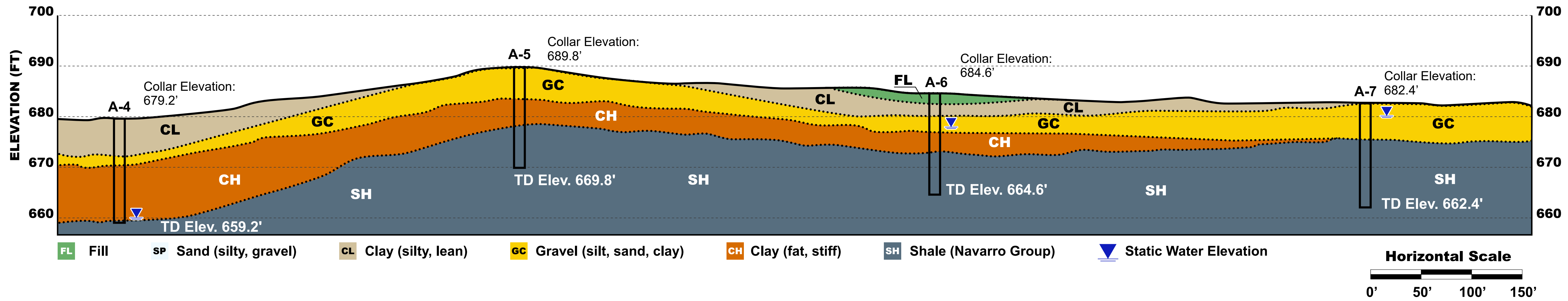
Appendix E-3

Page: 01

Revision Date: 11/28/2023

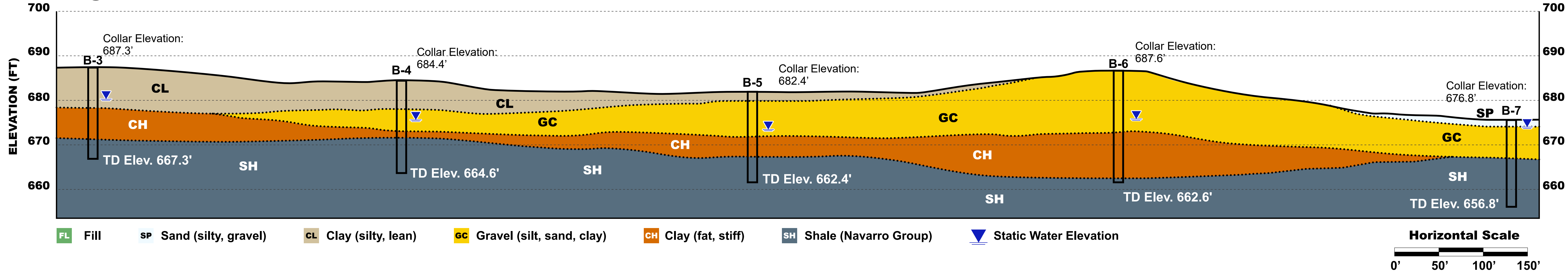
A Figure 2.1

A'



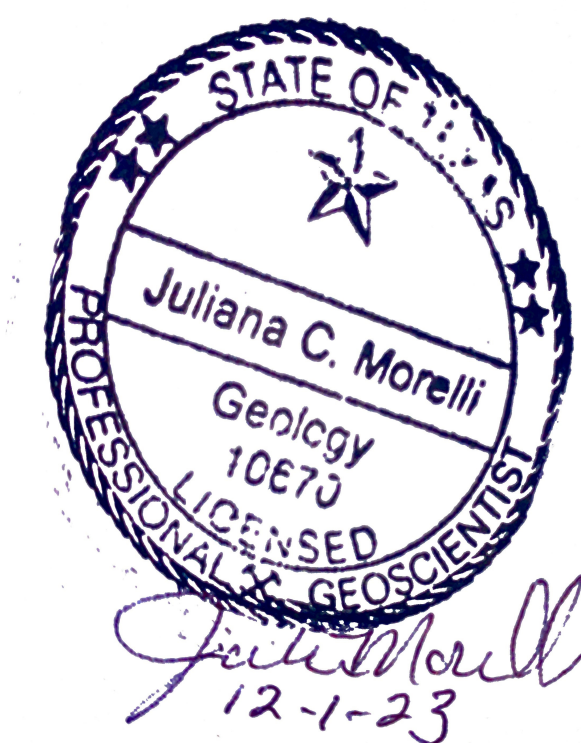
B Figure 2.2

B'



Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



BECK LANDFILL
 Lithologic Cross Sections
 Schertz, TX

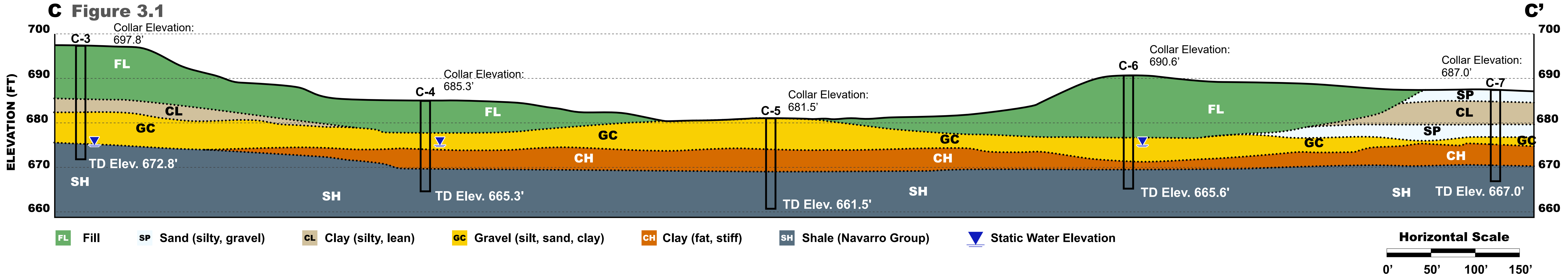


Appendix E-3

Page: **02**

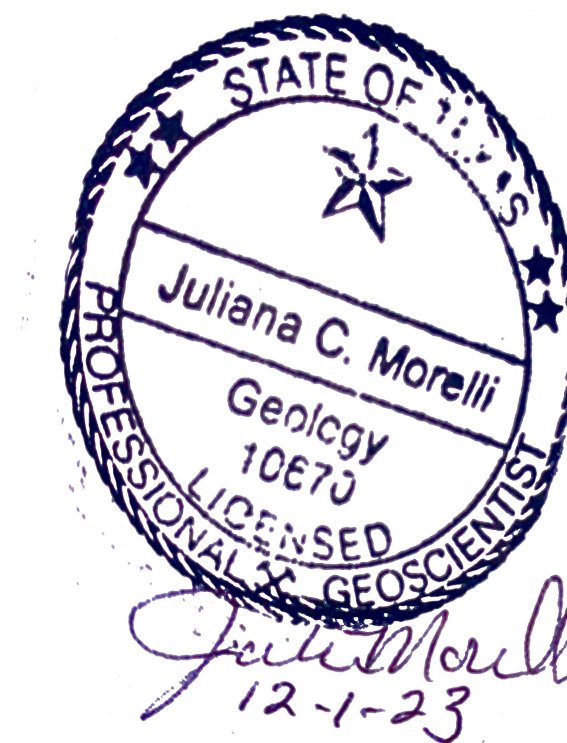
Revision Date: **11/28/2023**

C Figure 3.1



Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



BECK LANDFILL
Lithologic Cross Sections
Schertz, TX



Appendix E-3

Page: **03**

Revision Date: **11/28/2023**

BECK LANDFILL

BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations

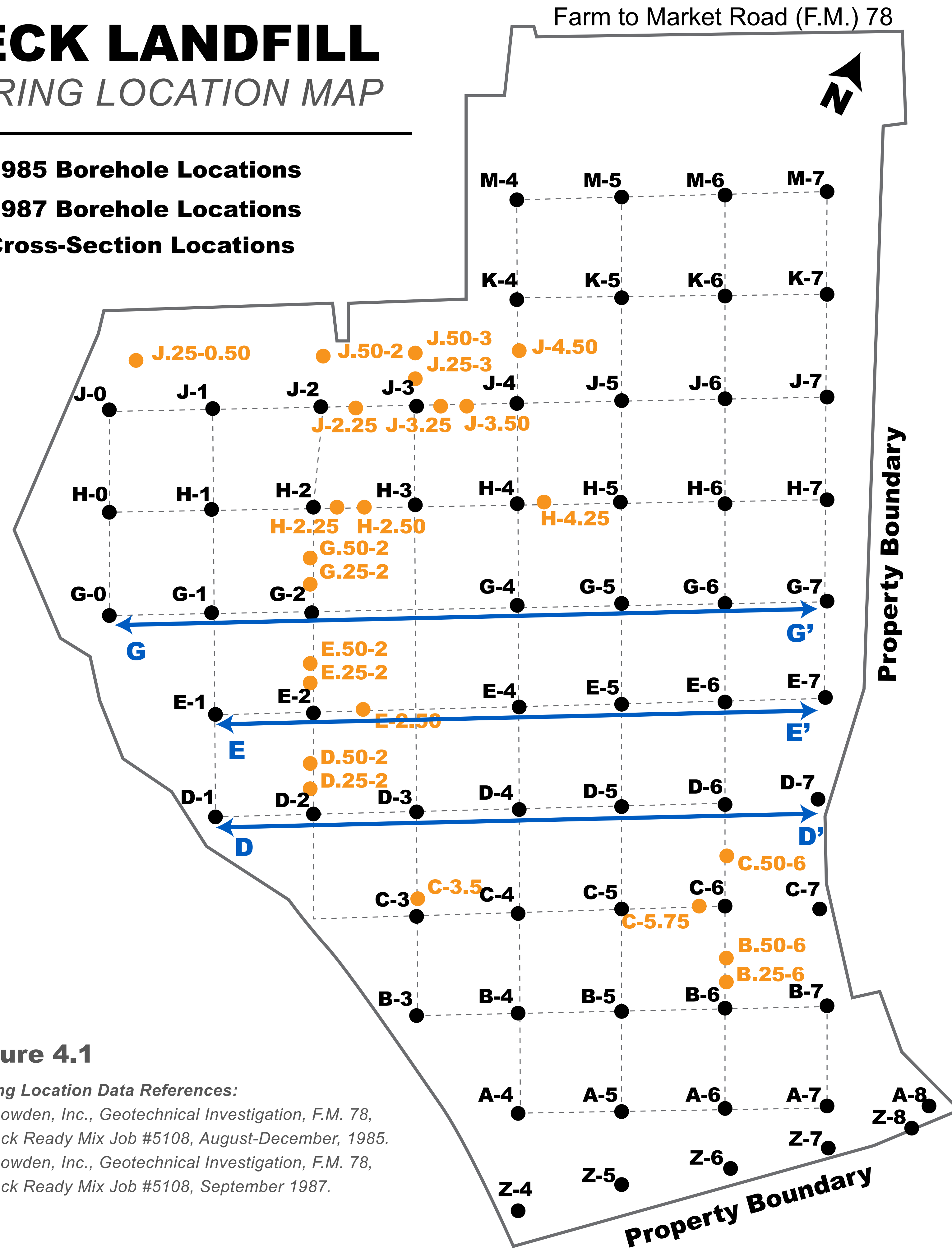


Figure 4.1

Boring Location Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

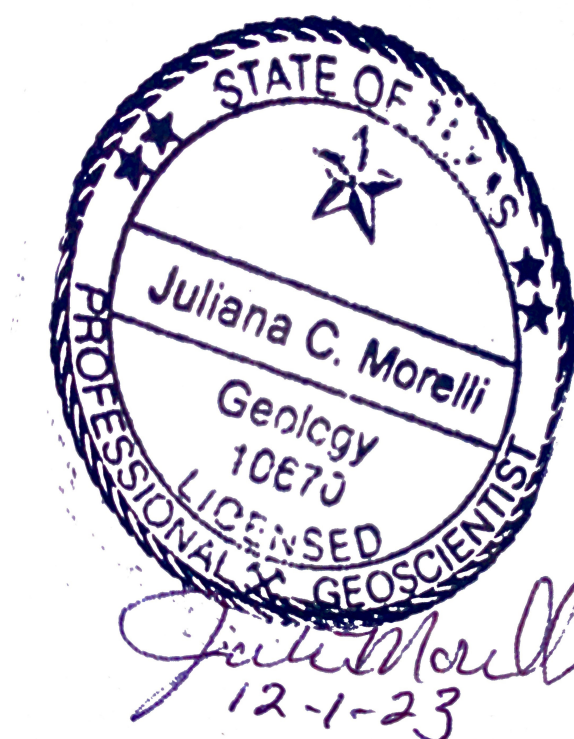
BORING DATA

Figure 4.2

Boring ID	Latitude (N)	Longitude (W)	Collar Elevation (ft.)	Total Depth (ft.)	TD Elevation (ft.)	Depth to Water (ft.)	Static Water Elevation (ft.)	Lithology (Youngest to Oldest)
D-1	29.5442°	-98.2663°	692.4	25.0	667.4	11.5	680.9	Silty Clay, Silty Gravel, Stiff Clay, Clayey Shale
D-2	29.5447°	-98.2652°	696.4	30.0	666.4	16.0	680.4	Clayey Gravel, Stiff Clay, Clay Shale
D-3	29.5453°	-98.2642°	692.3	20.0	672.3	12.9	679.4	Silty Clay, Silty Gravel, Stiff Clay
D-4	29.5458°	-98.2632°	704.1	35.0	669.1	28.1	676.0	Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale
D-5	29.5463°	-98.2641°	703.3	35.0	668.3	27.0	676.3	Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale
D-6	29.5468°	-98.2611°	699.8	35.0	664.0	24.0	675.8	Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale
D-7	29.5473°	-98.2601°	695.0	15.0	680.0	Dry	-----	Silty Clay, Sandy-Clayey Gravel, Stiff Clay, Clayey Shale
E-1	29.5451°	-98.2673°	714.0	15.0	699.0	Dry	-----	Sandy Clay, Silty Gravel, Clayey Shale
E-2	29.5457°	-98.2658	702.6	30.0	672.6	22.0	680.6	Fill, Sandy Gravel, Stiff Clay, Clayey Shale
E-2.5	29.5459°	-98.2657°	734.0	15.0	719.0	Dry	-----	Fill, Sandy Gravel
E-4	29.5448°	-98.2626°	693.3	25.0	668.3	16.0	677.3	Fill, Stiff Clay, Clayey Shale
E-5	29.5453°	-98.2615°	703.3	35.0	668.3	27.0	-676.3	Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay
E-6	29.5458°	-98.2605°	700.1	35.0	665.1	25.6	674.5	Silty Clay, Silty Gravel, Stiff Clay
E-7	29.5462°	-98.2595°	675.9	20.0	655.9	2.0	673.9	Sandy Gravel, Stiff Clay, Clayey Shale
G-0	29.5456°	-98.2685°	693.7	20.0	673.7	13.0	680.7	Sandy Clay, Sandy Gravel, Stiff Clay, Clayey Shale
G-1	29.5461°	-98.2675°	702.0	35.0	667.0	22.0	680.0	Silty Clay, Silty-Clayey Gravel, Silty Sand, Clayey Shale
G-2	29.5467°	-98.2664°	697.0	25.0	672.0	Dry	-----	Fill, Silty Gravel, Stiff Clay
G-4	29.55477°	-98.2643°	679.4	25.0	654.4	10.0	669.4	Silty-Clayey Gravel, Clayey Shale
G-5	29.5482°	-98.2634°	700.7	35.0	665.7	25.0	675.7	Silty Clay, Silty Sand, Clayey Shale
G-6	29.5487°	-98.2622°	692.7	30.0	662.2	17.0	675.7	Silty Clay, Clayey Gravel, Silty Sand, Stiff Clay, Clayey Shale
G-7	29.5492°	-98.2612°	677.3	20.0	657.3	3.0	674.3	Silty Sand, Clayey Gravel, Stiff Clay, Clayey Shale

Boring Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



BECK LANDFILL

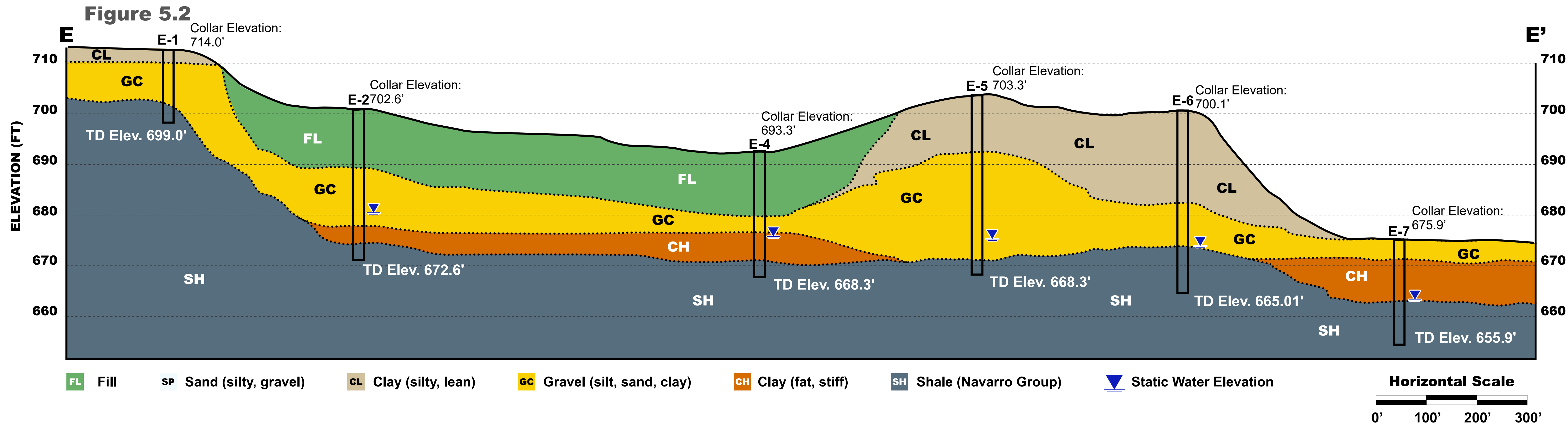
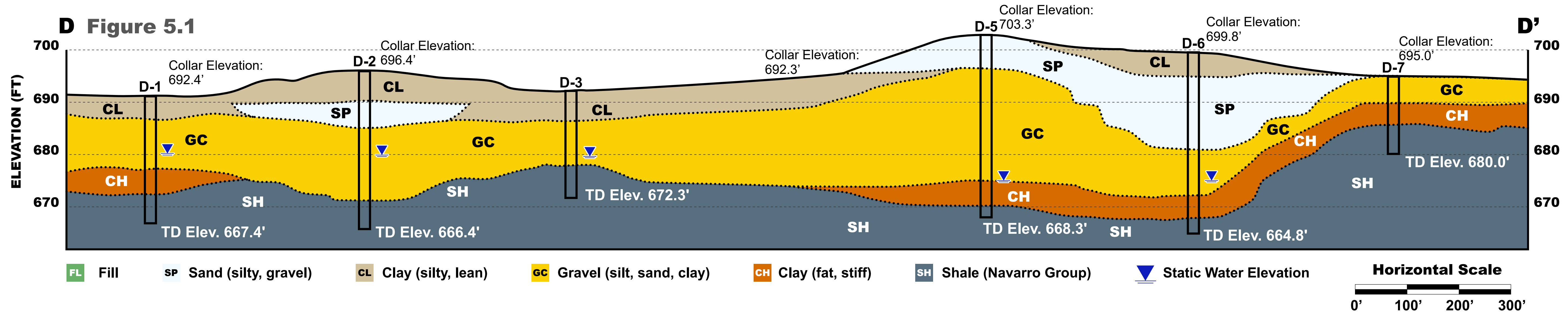
Bore Hole Location & Data
Schertz, TX



Appendix E-3

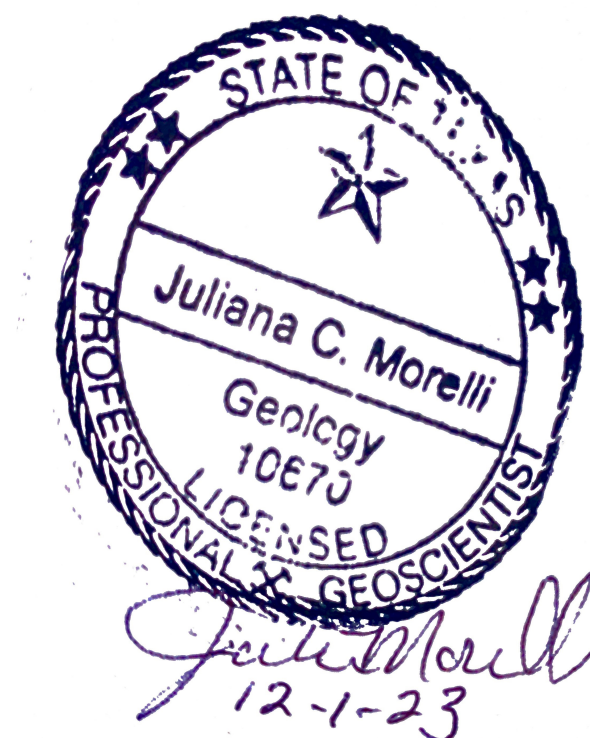
Page: 04

Revision Date: 11/28/2023

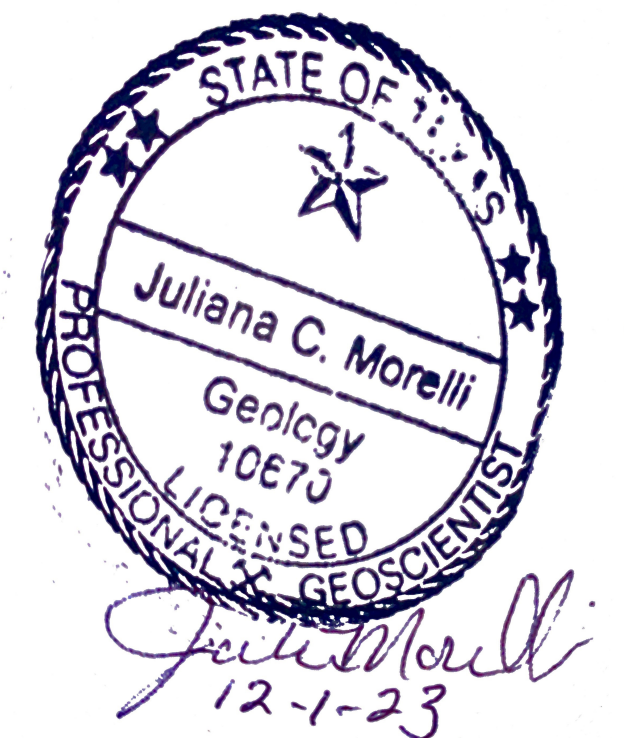
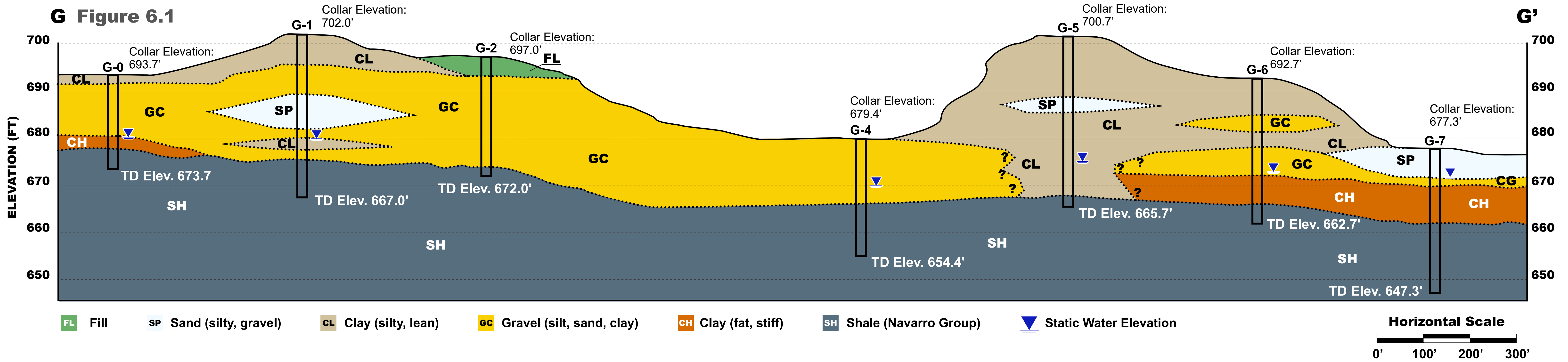


Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



BECK LANDFILL Lithologic Cross Sections Schertz, TX	
	Appendix E-3
	Page: 05
	Revision Date: 11/28/2023



BECK LANDFILL <i>Lithologic Cross Sections Schertz, TX</i>	
	Appendix E-3
	Page: 06
	Revision Date: 11/28/2023

Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

BECK LANDFILL

BORING LOCATION MAP

- 1985 Borehole Locations
- 1987 Borehole Locations
- ↔ Cross-Section Locations

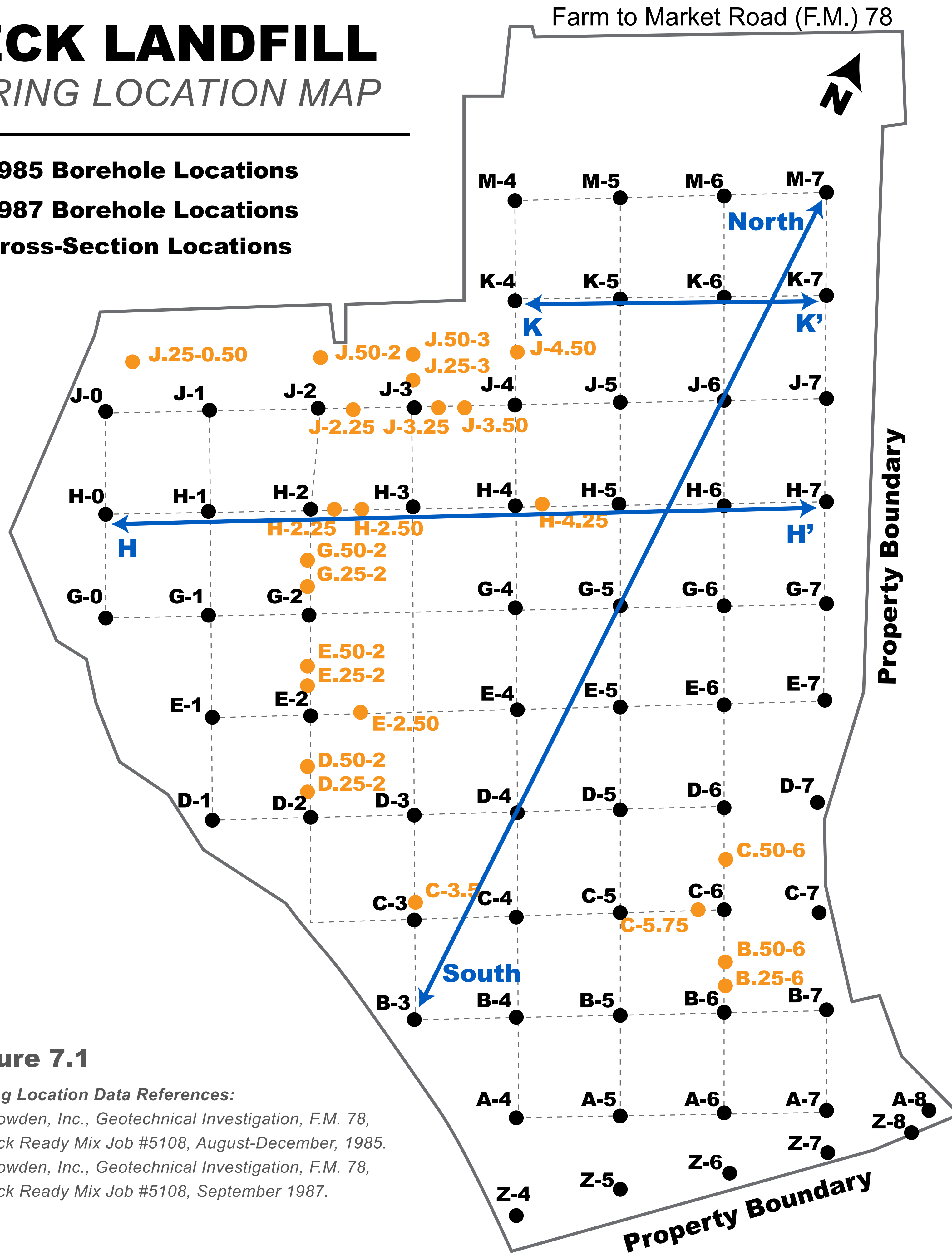


Figure 7.1

Boring Location Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

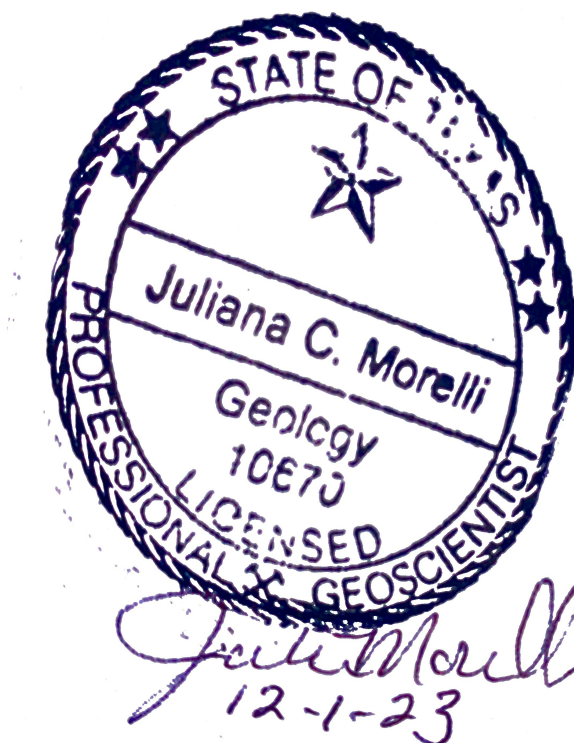
BORING DATA

Figure 7.2

Boring ID	Latitude (N)	Longitude (W)	Collar Elevation (ft.)	Total Depth (ft.)	TD Elevation (ft.)	Depth to Water (ft.)	Static Water Elevation (ft.)	Lithology (Youngest to Oldest)
H-0	29.5466°	-98.2691°	691.0	20.0	671.0	8.3	682.7	Silty Clay, Silty Gravel, Stiff Clay, Clayey Shale
H-1	29.5471°	-98.2680°	706.0	30.0	676.0	Dry	-----	Clayey Gravel, Stiff Clay, Clay Shale
H-2	29.5453°	-98.2642°	705.9	30.0	675.9	Dry	-----	Silty Clay, Silty Gravel, Stiff Clay
H-3	29.5458°	-98.2632°	703.1	30.0	673.1	23.0	680.1	Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale
H-4	29.5463°	-98.2641°	704.9	35.0	669.9	25.9	679.0	Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale
H-5	29.5468°	-98.2611°	700.0	35.0	665.0	25.5	674.5	Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay, Clayey Shale
H-6	29.5473°	-98.2601°	698.0	35.0	663.0	21.0	677.0	Silty Clay, Sandy-Clayey Gravel, Stiff Clay, Clayey Shale
H-7	29.5451°	-98.2673°	679.2	20.0	659.2	7.0	672.2	Sandy Clay, Silty Gravel, Clayey Shale
K-4	29.5457°	-98.2658	695.3	30.0	665.3	13.0	682.3	Fill, Sandy Gravel, Stiff Clay, Clayey Shale
K-5	29.5459°	-98.2657°	692.4	30.0	662.4	19.0	673.4	Fill, Sandy Gravel
K-6	29.5448°	-98.2626°	690.2	30.0	660.2	16.0	674.2	Fill, Stiff Clay, Clayey Shale
K-7	29.5453°	-98.2615°	687.5	30.0	657.5	17.0	670.5	Silty Clay, Silty Sand, Sandy Gravel, Stiff Clay
B-3	29.5433°	98.2630°	687.3	20.0	667.3	7.0	380.4	Silty Clay, Stiff Clay, Clayey Shale
D-4	29.5458°	-98.2632°	704.1	35.0	669.1	28.14	676.0	Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale
G-5	29.5482°	-98.2634°	700.7	35.0	665.7	25.0	675.7	Silty Clay, Clayey Gravel, Silty Sand, Stiff Clay, Clayey Shale
J-6	29.5506°	-98.2634°	693.3	30.0	663.3	20.0	673.3	Silty Clay, Sandy Gravel, Clayey Shale
M-7	29.5530°	-98.2635°	685.7	30.0	655.7	16.0	669.7	Silty Clay, Sandy Gravel, Stiff Clay, Clayey Shale

Boring Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.



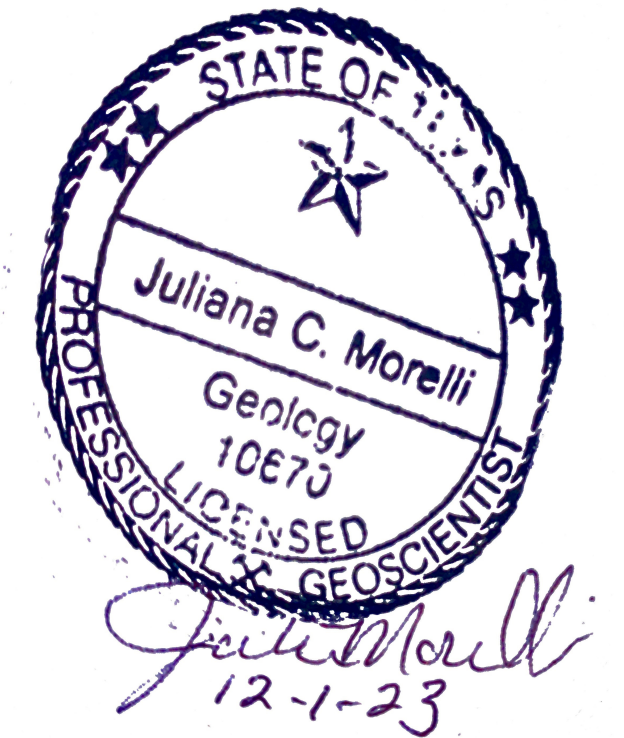
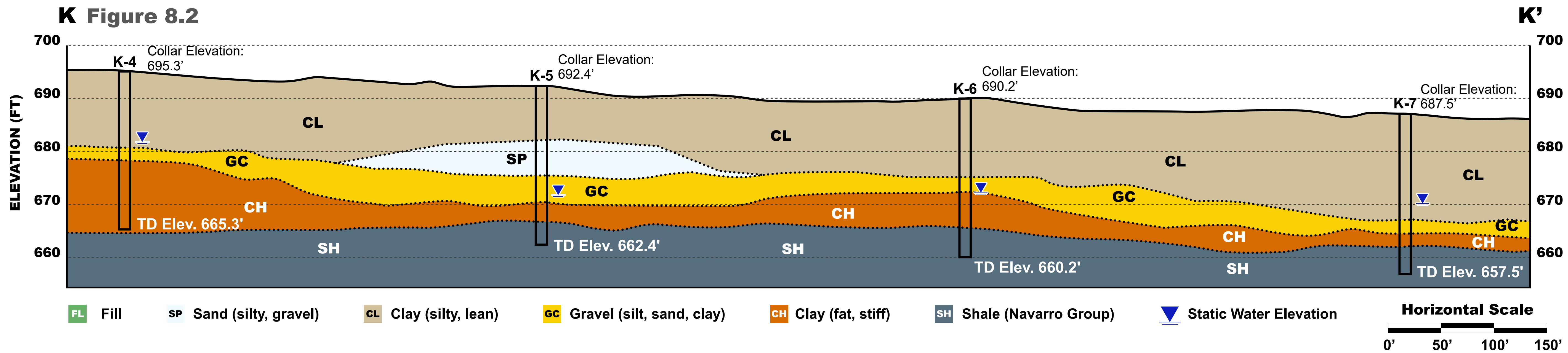
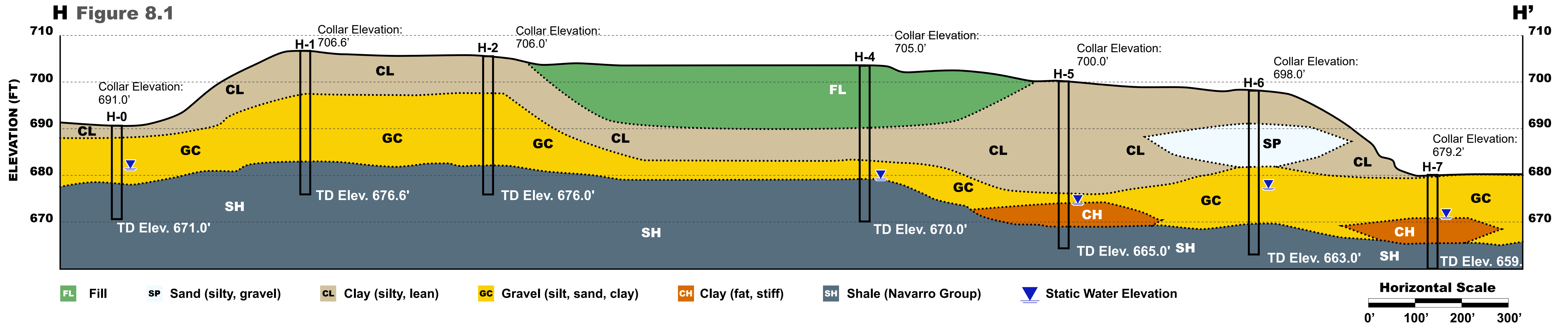
BECK LANDFILL

Bore Hole Location & Data
Schertz, TX

Appendix E-3

Page: 07

Revision Date: 11/28/2023

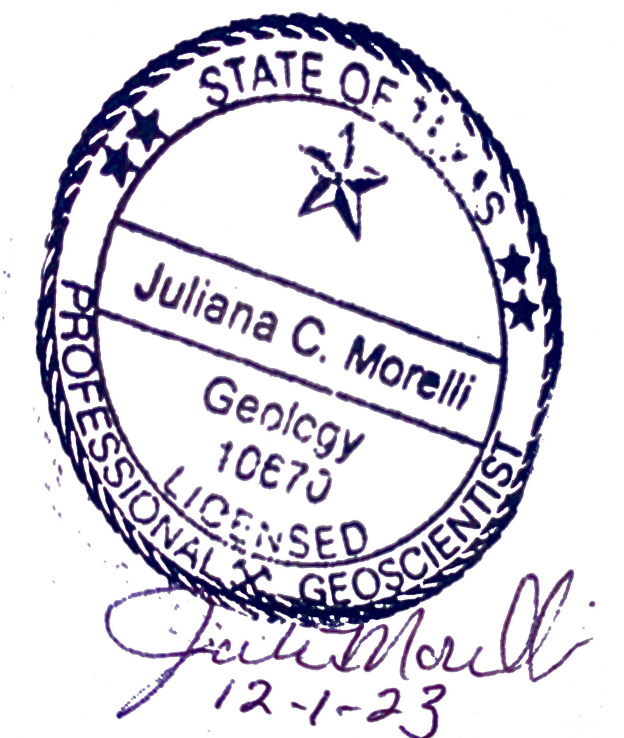
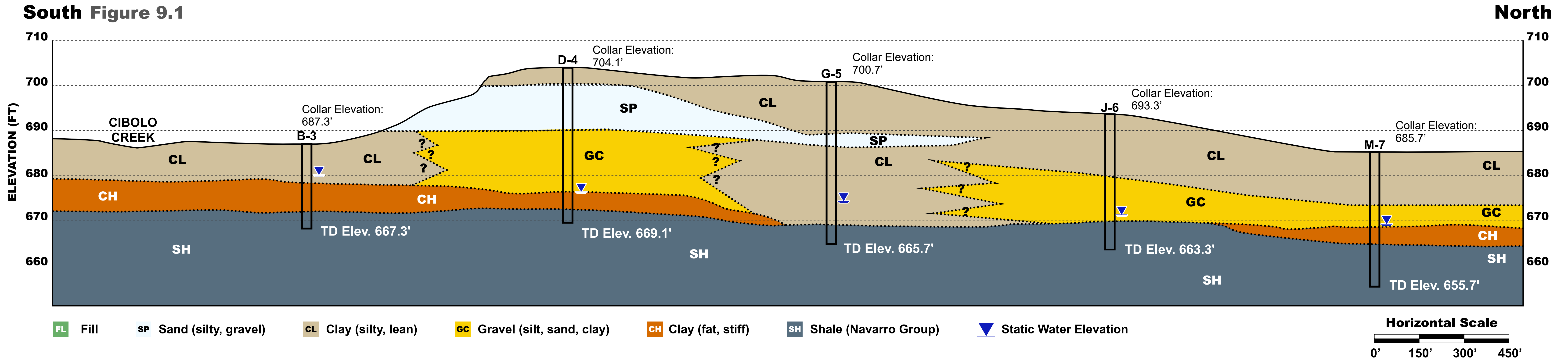


BECK LANDFILL Lithologic Cross Sections Schertz, TX	
	Appendix E-3
	Page: 08
	Revision Date: 11/28/2023

Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

South Figure 9.1



<p>BECK LANDFILL Lithologic Cross Sections Schertz, TX</p>	
	<p>Appendix E-3</p>
	<p>Page: 09</p>
	<p>Revision Date: 11/28/2023</p>

Geotechnical Data References:

1. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, August-December, 1985.
2. Snowden, Inc., Geotechnical Investigation, F.M. 78, Beck Ready Mix Job #5108, September 1987.

BECK LANDFILL

BORING LOCATION MAP



Figure 10.1





Boring Log References:

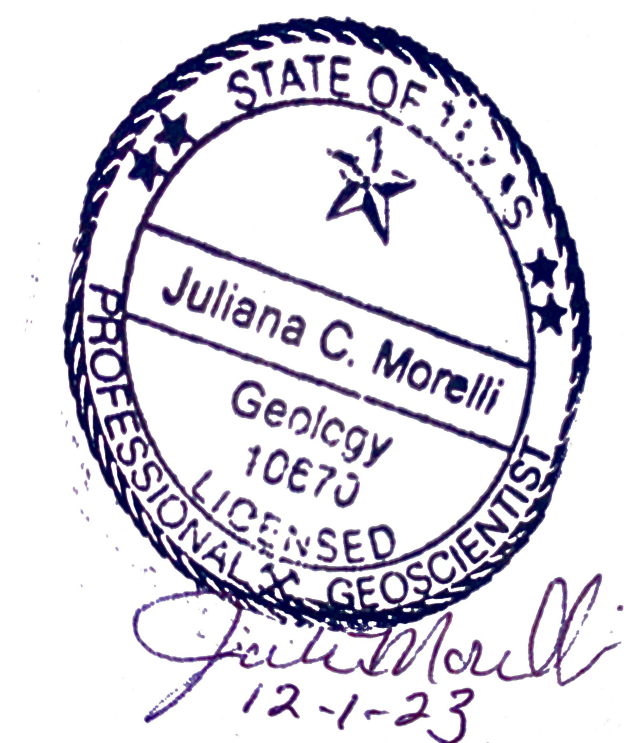
1. Terracon, Inc., Geotechnical Geotechnical Data Report, Beck Landfill - Southeast Section, 550 FM 78 Schertz, Texas, October 20, 2020.

BORING DATA


Figure 10.2

Boring ID	Latitude (N)	Longitude (W)	Collar Elevation (ft.)	Total Depth (ft.)	TD Elevation (ft.)	Depth to Water (ft.)	Lithology (Youngest to Oldest)
FB-1	29.5437°	-98.2628°	708.0	45.0	663.0	No Water	Fill, Clayey Gravel, Lean Clay, Clay-Shale
FB-2	29.5431°	-98.2615°	710.0	45.0	665.0	No Water	Fill, Fat Clay, Clay-Shale
FB-3	29.5425°	-98.2602°	703.0	50.0	653.0	38.0	Fill, Lean Clay, Clayey Gravel, Fat Clay, Clay-Shale
FB-4	29.5453°	-98.261°	693.0	35.0	658.0	No Water	Clay-Shale
FB-5	29.5446°	-98.26°	656.0	35.0	621.0	No Water	Clay Shale
FB-6	29.5443°	-98.2597°	685.0	35.0	650.0	No Water	Clay-Shale
FB-7	29.5437°	-98.2613°	682.0	50.0	632.0	12.0	Fill, Clay-Shale
FB-8	29.5441°	-98.2608°	686.0	50.0	636.0	No Water	Fat Clay, Clay-Shale

-  Bore Hole Location
-  Cross Section A-A'
-  Cross Section B-B'
-  Cross Section C-C'



BECK LANDFILL
2020 Bore Hole Locations & Data
Schertz, TX

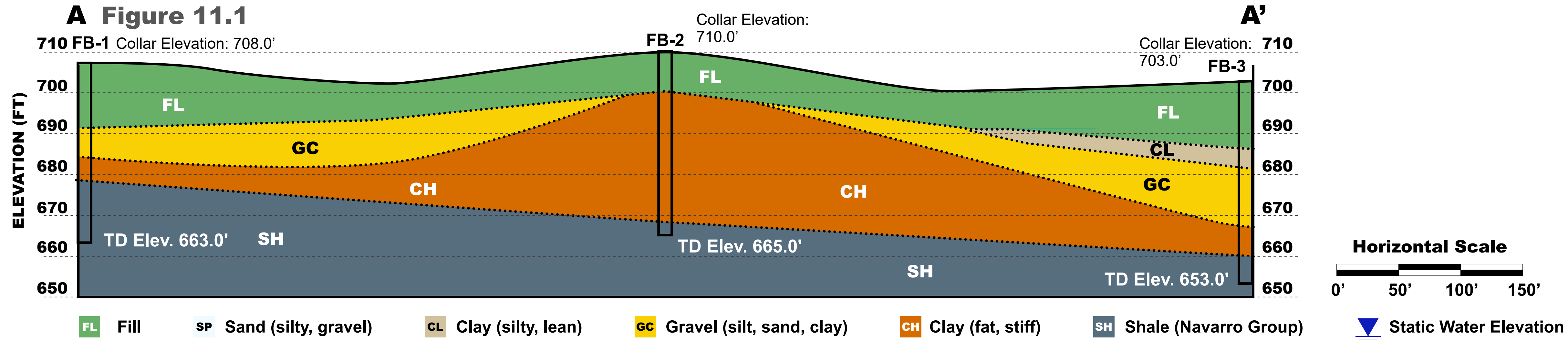


Appendix E-3

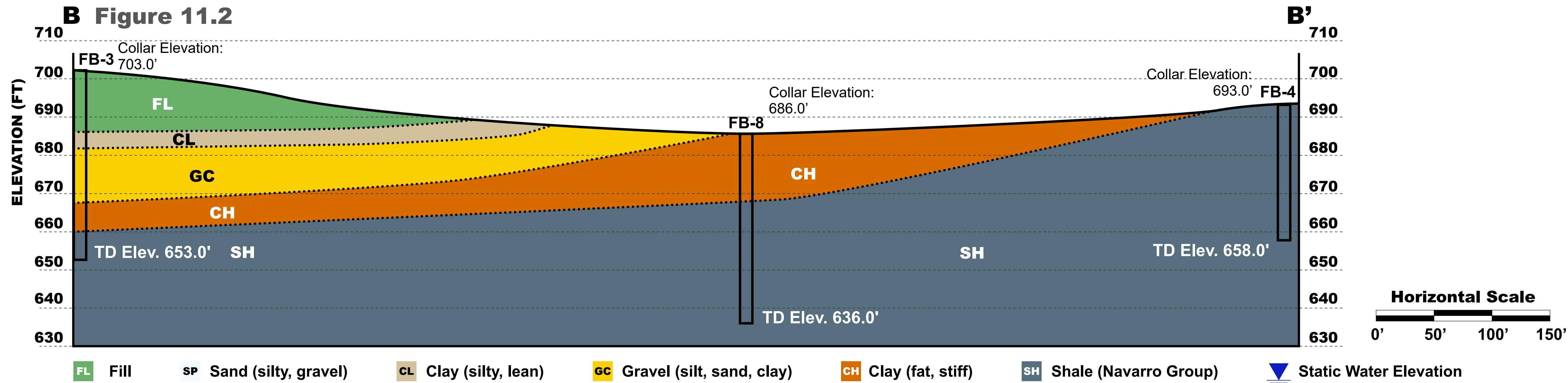
Page: 10

Revision Date: 11/28/2023

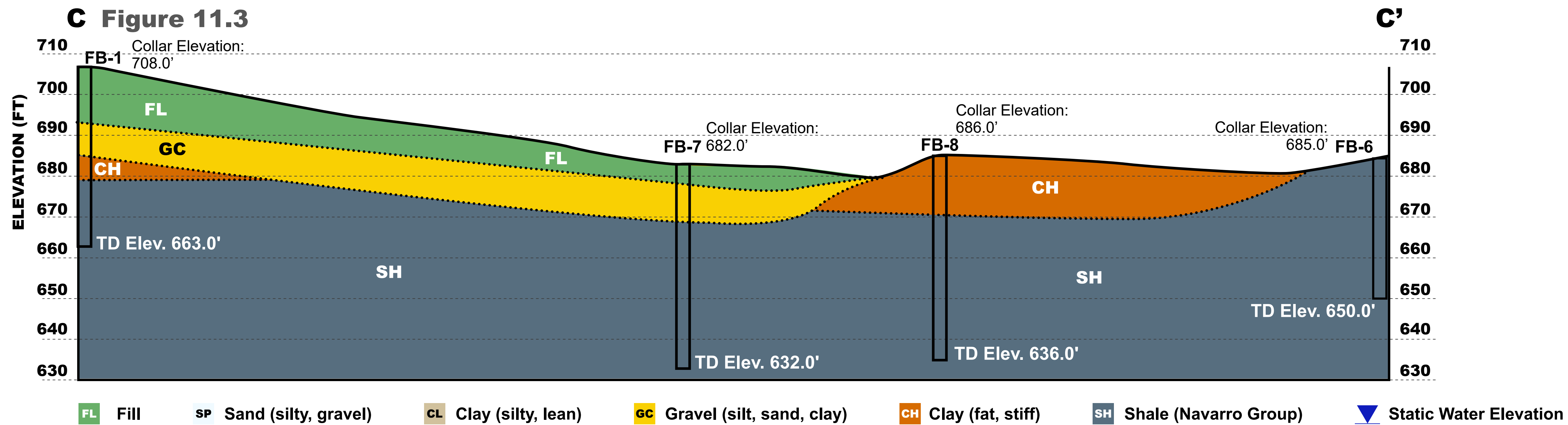
A Figure 11.1



B Figure 11.2

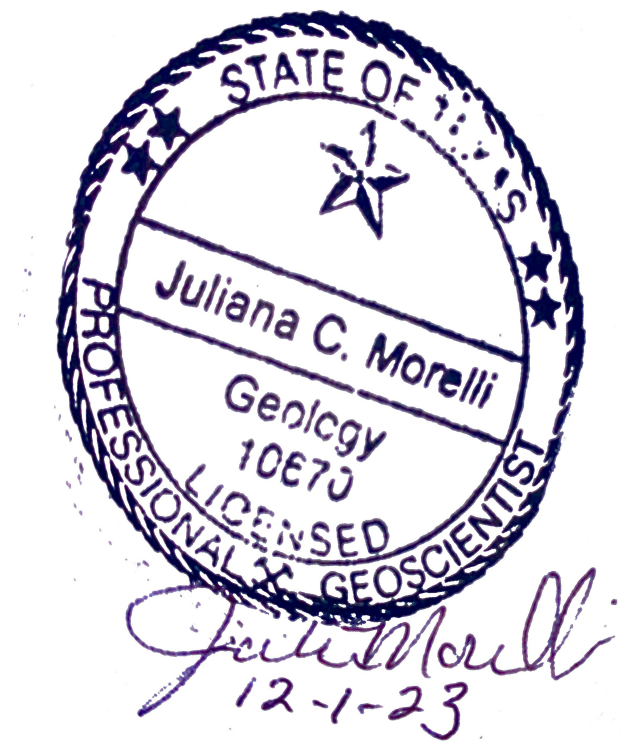


C Figure 11.3



Boring Log References:

1. Terracon, Inc., Geotechnical Geotechnical Data Report, Beck Landfill - Southeast Section, 550 FM 78 Schertz, Texas, October 20, 2020.



BECK LANDFILL
2020 Lithologic Cross Sections
Schertz, TX



Appendix E-3

Page: 11

Revision Date: 11/28/2023

FENCE DIAGRAM

View Looking Northeast

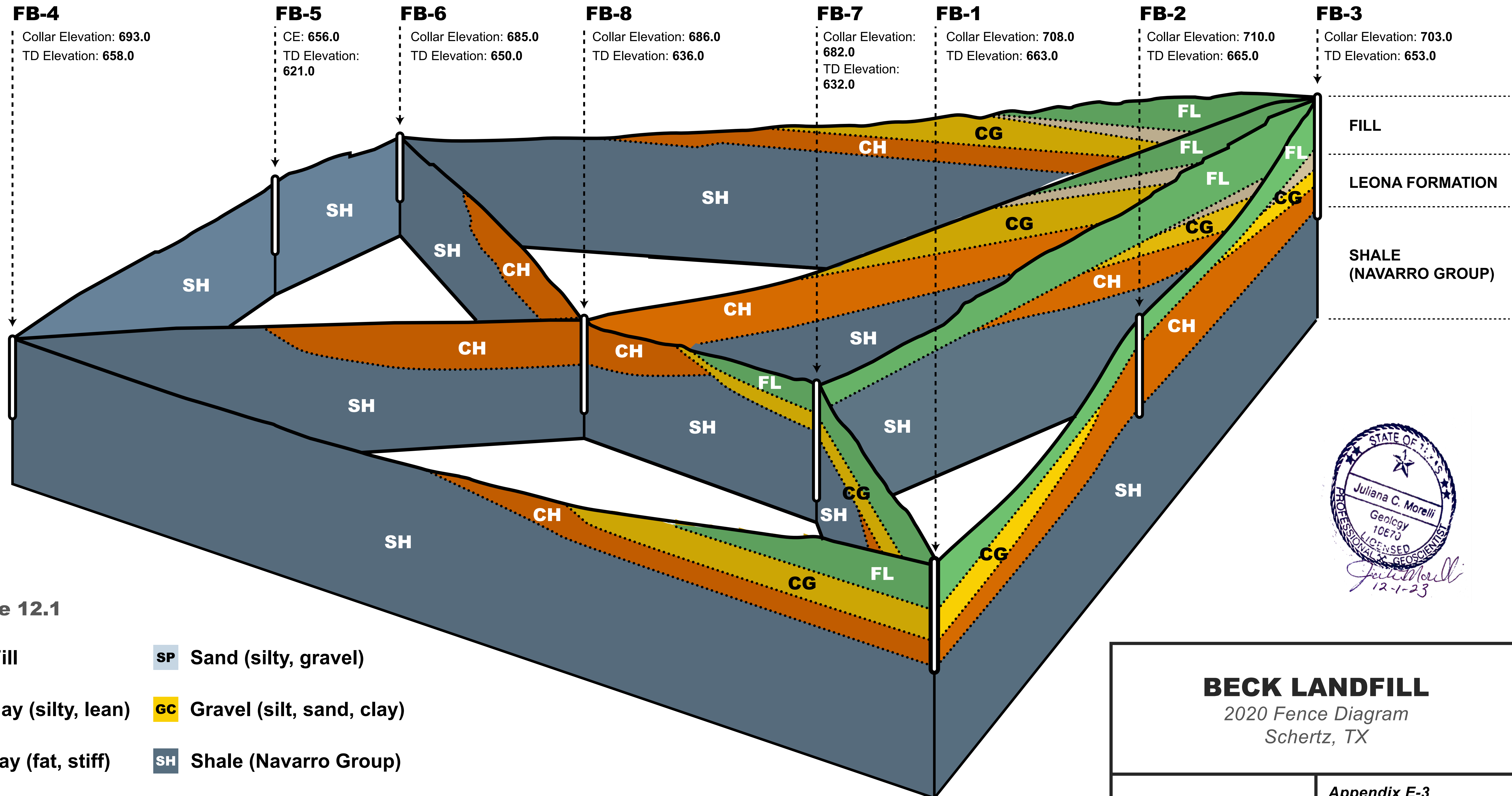
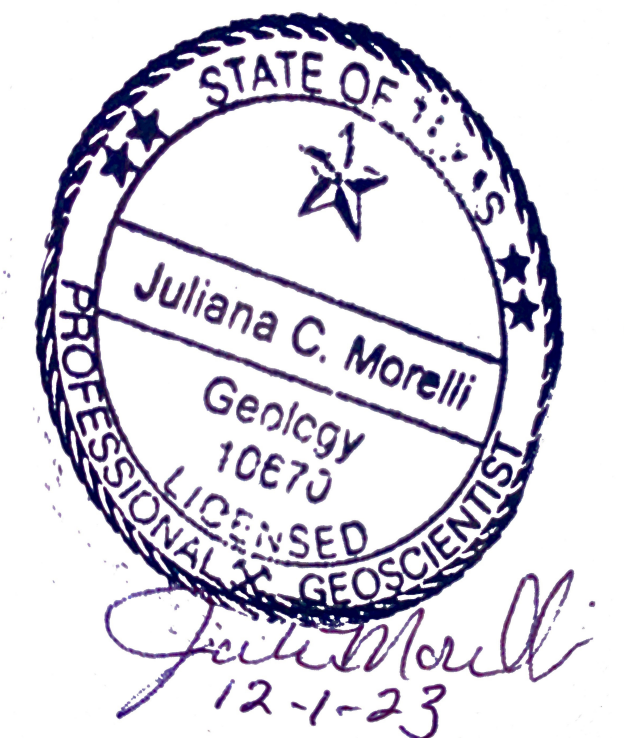


Figure 12.1

- FL Fill
- CG Gravel (silt, sand, clay)
- CH Clay (fat, stiff)
- SP Sand (silty, gravel)
- CL Clay (silty, lean)
- SH Shale (Navarro Group)

Boring Log References:

1. Terracon, Inc., Geotechnical Geotechnical Data Report, Beck Landfill - Southeast Section, 550 FM 78 Schertz, Texas, October 20, 2020.



BECK LANDFILL
2020 Fence Diagram
Schertz, TX



Appendix E-3

Page: 12

Revision Date: 11/28/2023

STRIKETHROUGH VERSION



BECK LANDFILL
 GUADALUPE COUNTY, TEXAS
 TCEQ PERMIT APPLICATION NO. MSW 1848A

APPLICATION MASTER TABLE OF CONTENTS

TRANSMITTAL LETTER

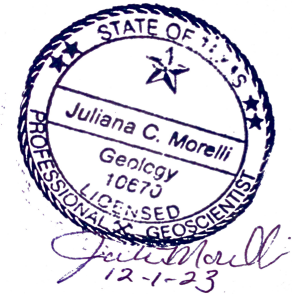
APPLICATION MASTER TABLE OF CONTENTS

APPLICATION CORRESPONDENCE

PART I – SITE AND APPLICATION INFORMATION

TCEQ PART I FORM

- 1 TCEQ CORE DATA FORM
- 2 SUPPLEMENTARY TECHNICAL REPORT
- 3 MAPS
- 4 LAND OWNERSHIP MAP, LANDOWNER LIST AND MAILING LABELS
- 5 FACILITY LEGAL DESCRIPTION, FACILITY METES AND BOUNDS, AND ON-SITE EASEMENT DRAWING
- 6 VERIFICATION OF LEGAL STATUS
- 7 EVIDENCE OF COMPETENCY
- 8 APPOINTMENTS
- 9 APPLICATION FEES



PART II – EXISTING CONDITIONS AND CHARACTER OF THE FACILITY AND SURROUNDING AREA

- 1 TCEQ PART II FORM 20885
- ATTACHMENT A EXISTING CONDITIONS SUMMARY
- ATTACHMENT B WASTE ACCEPTANCE PLAN
- ATTACHMENT C MAPS
- ATTACHMENT D FACILITY IMPACT AND EXISTING CONDITIONS



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT E	TxDOT COORDINATION
ATTACHMENT F	AIRPORT IMPACTS AND FAA COORDINATION
ATTACHMENT G	GENERAL GEOLOGY AND SOILS STATEMENT
ATTACHMENT H	GROUNDWATER AND SURFACE WATER
ATTACHMENT I	ABANDONED OIL AND WATER WELLS
ATTACHMENT J	FLOODPLAINS AND WETLANDS
ATTACHMENT K	WETLANDS
ATTACHMENT L	ENDANGERED AND THREATENED SPECIES
ATTACHMENT M	TEXAS HISTORICAL COMMISSION REVIEW
ATTACHMENT N	COUNCIL OF GOVERNMENTS AND LOCAL GOVERNMENT REVIEW

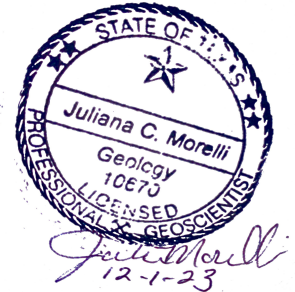
PART III – FACILITY INVESTIGATION AND DESIGN

ATTACHMENT A – SITE DEVELOPMENT PLAN

- 1 INTRODUCTION
 - 2 GENERAL FACILITY DESIGN
 - 3 FACILITY SURFACE WATER DRAINAGE DESIGN
 - 4 WASTE MANAGEMENT UNIT DESIGN
 - 5 GEOLOGY REPORT
 - 6 GROUNDWATER SAMPLING AND ANALYSIS PLAN
 - 7 LANDFILL GAS MANAGEMENT PLAN
 - 8 CLOSURE PLAN
 - 9 POSTCLOSURE PLAN
 - 10 COST ESTIMATES FOR CLOSURE AND POSTCLOSURE CARE
- APPENDIX A1 – ORIGINAL PERMIT APPROVAL LETTER

ATTACHMENT B – GENERAL FACILITY DESIGN

- 1 FACILITY ACCESS
- 2 WASTE MOVEMENT



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

- 3 STORAGE AND PROCESSING UNITS
- 4 SANITATION
- 5 WATER POLLUTION CONTROL
- 6 ENDANGERED SPECIES PROTECTION
- 7 BENCHMARK
- APPENDIX B1 – WASTE MOVEMENT DIAGRAM

ATTACHMENT C – FACILITY SURFACE WATER DRAINAGE REPORT

NARRATIVE

ATTACHMENT C1 – DRAINAGE ANALYSIS AND DESIGN

APPENDIX C1-A

Drainage Maps and Existing/Post-development Comparison

APPENDIX C1-B

Existing Condition Hydrologic Calculations

APPENDIX C1-C

Post-development Hydrologic Calculations

APPENDIX C1-D

Perimeter Drainage System Design

APPENDIX C1-E

Final Cover Drainage Structure Design

APPENDIX C1-F

Intermediate Cover Erosion and Sedimentation Control Plan

APPENDIX C1-G

Intermediate Cover Erosion Control Structure Design

ATTACHMENT C2 – FLOOD CONTROL ANALYSIS

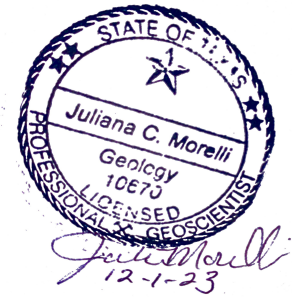
APPENDIX C2-A

LOMR Application

APPENDIX C2-B

No-Rise Certification for Proposed Stormwater Pond

APPENDIX C2-C3 FEMA CORRESPONDENCE



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT C3 – DRAINAGE SYSTEM PLANS AND DETAILS

ATTACHMENT D – WASTE MANAGEMENT UNIT DESIGN

1 WASTE MANAGEMENT UNIT DESIGN

2 STORAGE AND TRANSFER UNITS

3 LANDFILL UNIT

ATTACHMENT D1 – SITE LAYOUT PLAN

ATTACHMENT D2 – CROSS-SECTIONS

ATTACHMENT D3 – CONSTRUCTION DESIGN DETAILS

ATTACHMENT D4 – SITE LIFE

ATTACHMENT D5 – GEOTECHNICAL DESIGN

1 GEOTECHNICAL TESTING

2 SUBSURFACE MATERIALS

3 EARTHWORK

4 CONSTRUCTION BELOW THE GROUNDWATER TABLE

5 SETTLEMENT AND HEAVE ANALYSIS

6 SLOPE STABILITY ANALYSES

7 LINER CONSTRUCTION

8 COVER CONSTRUCTION

APPENDIX D5-A – SETTLEMENT ANALYSIS

APPENDIX D5-B – SLOPE STABILITY ANALYSES

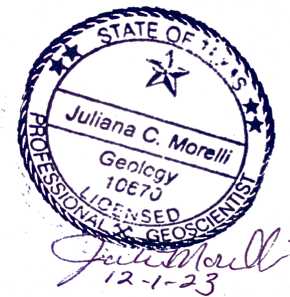
APPENDIX D5-C – PREVIOUS GEOTECHNICAL REPORTS

GEOTECHNICAL INVESTIGATION (ATTACHMENT 11) PREPARED BY SNOWDEN ,
INC. (1985)

GEOTECHNICAL DATA REPORT PREPARED BY TERRACON CONSULTANTS, INC.
(2020)

ATTACHMENT D6 – CONTAMINATED WATER MANAGEMENT PLAN

1 INTRODUCTION



APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

3 CONTAMINATED WATER MANAGEMENT

APPENDIX D6-A – RUNON/RUNOFF BERM DESIGN

ATTACHMENT D7 – LINER QUALITY CONTROL PLAN

1 INTRODUCTION

2 LINER SYSTEM

3 EARTHWORK

4 COMPACTED SOIL LINER

8 DOCUMENTATION

ATTACHMENT D8 – FINAL COVER QUALITY CONTROL PLAN

1 INTRODUCTION

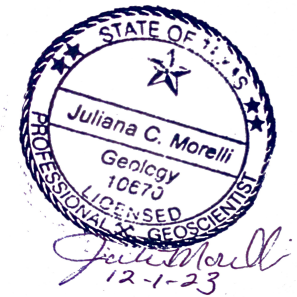
2 FINAL COVER SYSTEM

3 INTERMEDIATE COVER AND GRADING

4 INFILTRATION LAYER

5 EROSION LAYER

6 DOCUMENTATION



ATTACHMENT E – GEOLOGY REPORT

1.0 GEOLOGY REPORT (§330.63(e))

1.1 REGIONAL GEOLOGY (§330.63(e)(1))

1.2 LOCAL GEOLOGICAL PROCESSES (§330.63(e)(2))

1.3 REGIONAL AQUIFERS (§330.63(e)(3))

1.4 SUBSURFACE CONDITIONS (§330.63(e)(4))

1.5 GEOTECHNICAL DATA (§330.63(e)(5))

1.6 OVERVIEW OF ENCOUNTERED GROUNDWATER (330.63(e)(5)(C))

1.7 RECORDS OF GROUNDWATER LEVEL MEASUREMENTS IN WELLS (330.63(e)(5)(D))

1.8 RECORDS OF GROUNDWATER MONITORING DATA (330.63(e)(5)(E))

1.9 IDENTIFICATION OF UPPERMOST AQUIFER (330.63(e)(5)(F))

1.10 GROUNDWATER CERTIFICATION PROCESS FOR ARID EXEMPTION (§330.63(e)(6))

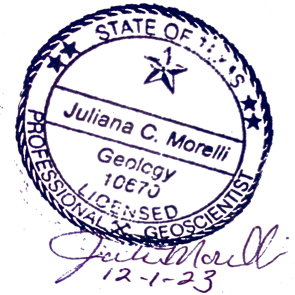


APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

- APPENDIX E-1 Letter to TCEQ from January 27, 1999
- APPENDIX E-2 SNOWDEN, 1989 ATTACHMENT 3C-WATER WELLS
- APPENDIX E-3 CROSS-SECTIONS

ATTACHMENT F – GROUNDWATER CHARACTERIZATION REPORT

- GROUNDWATER MONITORING SYSTEM DESIGN CERTIFICATION
- APPENDIX F1 – MONITOR WELL INSTALLATION INFORMATION
- APPENDIX F2 – HISTORIC GROUNDWATER DATA
- APPENDIX F3 – GROUNDWATER SAMPLING AND ANALYSIS PLAN



ATTACHMENT G – LANDFILL GAS MANAGEMENT PLAN

- 1 INTRODUCTION
- 2 LANDFILL GAS MANAGEMENT PLAN
- 3 LANDFILL GAS MONITORING PROCEDURES
- 4 LANDFILL GAS MONITORING EXCEEDANCE RECORD KEEPING AND REPORTING
- APPENDIX G-A-Gas Probe Installation Report
- APPENDIX G-B-Typical Gas Monitoring Data Form

ATTACHMENT H – CLOSURE PLAN

- 1 INTRODUCTION
- 2 FINAL COVER SYSTEM
- 3 CLOSURE PROCEDURES
- 4 CLOSURE SCHEDULE
- 5 CLOSURE COST ESTIMATE



ATTACHMENT I – POSTCLOSURE PLAN

- 1 INTRODUCTION
- 2 POSTCLOSURE CARE ACTIVITIES
- 3 PERSON RESPONSIBLE FOR CONDUCTING POSTCLOSURE CARE ACTIVITIES
- 4 POSTCLOSURE LAND USE
- 5 POST-CLOSURE CARE COST ESTIMATE

APPLICATION MASTER TABLE OF CONTENTS (CONTINUED)

ATTACHMENT J – COST ESTIMATES FOR CLOSURE AND POSTCLOSURE CARE

1 INTRODUCTION

2 CLOSURE COST ESTIMATE

3 POSTCLOSURE CARE COST ESTIMATE

4 COST ESTIMATE ADJUSTMENTS

5 FINANCIAL ASSURANCE

APPENDIX J1 – CLOSURE COST ESTIMATE CALCULATIONS

APPENDIX J2 – POSTCLOSURE CARE COST ESTIMATE CALCULATIONS

APPENDIX J3 – EVIDENCE OF FINANCIAL ASSURANCE

PART IV – SITE OPERATING PLAN

1 INTRODUCTION

2 RECORDKEEPING REQUIREMENTS

3 PERSONNEL AND TRAINING

4 EQUIPMENT

5 DETECTION AND PREVENTION OF DISPOSAL OF PROHIBITED WASTES

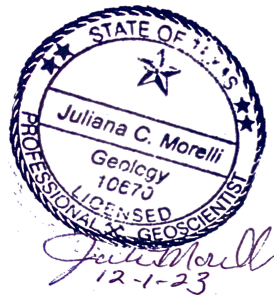
6 SITE SAFETY

7 FIRE PROTECTION PLAN

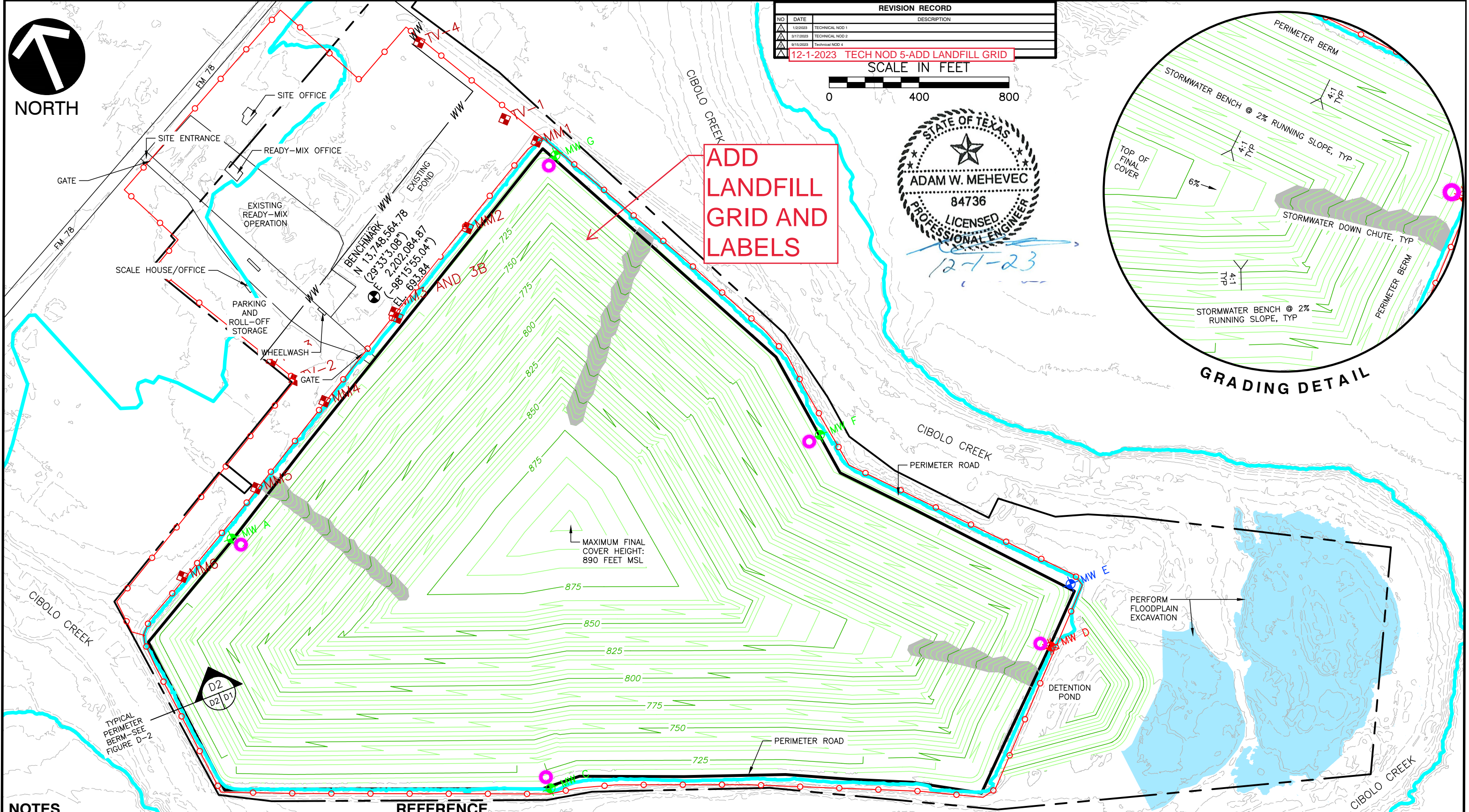
8 OPERATIONAL PROCEDURES

9 SEQUENCE OF DEVELOPMENT

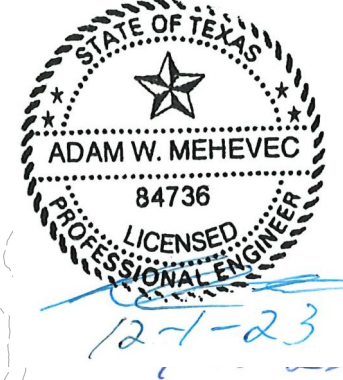
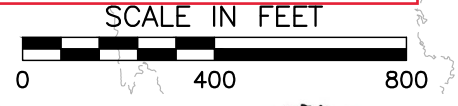
10 RECYCLING ACTIVITIES



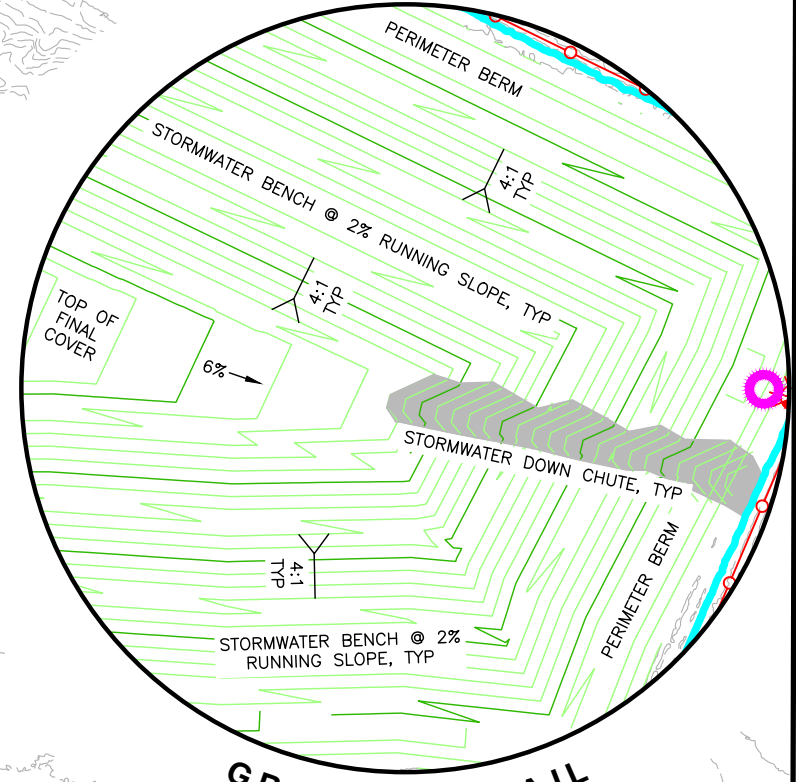
P:\310-000\311-653\CADD\DWG\SW01\311653-BECK LANDFILL SITE LAYOUT PLAN D1-1.dwg(D1-1) LS:(9/6/2023 - amehevec) - LP: 9/6/2023 4:39 PM



REVISION RECORD		
NO	DATE	DESCRIPTION
1	1/20/2023	TECHNICAL NOD 1
2	3/17/2023	TECHNICAL NOD 2
3	8/15/2023	TECHNICAL NOD 4
4	12-1-2023	TECH NOD 5-ADD LANDFILL GRID



ADD LANDFILL GRID AND LABELS



- NOTES**
- ALL AREAS WITHIN THE LANDFILL FOOTPRINT THAT DO NOT HAVE FINAL COVER MAY BE USED FOR SOIL STOCKPILES, BRUSH STORAGE AND GRINDING, OR VEHICLE PARKING AND MAINTENANCE.
 - ALL MONITOR WELLS AND GAS PROBES HAVE BEEN PREVIOUSLY INSTALLED. MONITOR WELL D IS BEING RELOCATED AND WILL BECOME MONITOR WELL E.
 - INTERIOR ACCESS AND PERIMETER ROADS SHALL BE SURFACED WITH CRUSHED STONE, GRAVEL, RECYCLED CONCRETE, OR EQUIVALENT ALL-WEATHER SURFACE.
 - SITE PERIMETER FENCING OR NATURAL BARRIERS WILL BE USED ALONG THE ENTIRE PERMIT BOUNDARY.
 - SOLID WASTE STORAGE AND PROCESSING AREAS WILL BE PLACED OUTSIDE OF THE 100-YEAR FLOODPLAIN OR WILL BE PROTECTED WITH A LEVEE THAT EXTENDS A MINIMUM OF ONE FOOT ABOVE THE FLOODPLAIN ELEVATION.
 - THERE ARE NO NATURAL WINDBREAKS, SUCH AS GREENBELTS, OR SCREENING PROPOSED FOR THE FACILITY.

REFERENCE

TOPOGRAPHIC INFORMATION FROM AERIAL SURVEY BY FIRMATEK: (SEPTEMBER 15, 2021) AUGMENTED WITH A PORTION OF THE EXISTING GROUND SURFACE PREPARED BY CEC.

LEGEND	
	EXISTING MONITOR WELL
	EXISTING GAS PROBE
	EXISTING PIEZOMETER
	MONITOR WELL TO BE REMOVED
	PROPOSED MONITOR WELL
	LANDFILL PERMIT BOUNDARY
	LANDFILL FOOTPRINT BOUNDARY
	100 YEAR FLOODPLAIN BASED ON LOMR APPLICATION
	LANDFILL CONTOURS ARE TOP OF FINAL COVER.
	FENCE (BARBED-WIRE OR CHAIN LINK)

CEC
Civil & Environmental Consultants, Inc.
3711 South MoPac Expressway · Building 1, Suite 550 · Austin, TX 78746
Ph: 512.439.0400 · Fax: 512.329.0096
www.cecinc.com Texas Registered Engineering Firm F-38

BECK COMPANIES

**NIDO, LTD
BECK LANDFILL
BEXAR COUNTY, TEXAS**

SITE LAYOUT PLAN

DRAWN BY: MFV	CHECKED BY: AWM	APPROVED BY: AWM	FIGURE NO.: D1.1
DATE: 08/2022	DWG SCALE: 1" = 40'	PROJECT NO: 311-653	

1.0 GEOLOGY REPORT (§330.63(E))

This portion of the application applies to owners or operators of MSW landfills, compost units, and if otherwise requested by the executive director. The geology report has been prepared and signed by a qualified groundwater scientist. The previously prepared permit documents relating to Geology, Aquifers, Groundwater, etc. are included as Appendices to this Report for continuity with prior permitting actions, as noted below.

- *Appendix E-1 Letter to TCEQ from January 27, 1999*
- *Appendix E-2 – Snowden, 1989, Attachment 3C – Water Wells*
- *Appendix E-3 – Cross Sections*

1.1 Regional Geology (§330.63(e)(1))

The regional geology described herein includes from the ground surface to the base of the lowermost aquifer capable of providing usable groundwater within Guadalupe County, Texas. Those regional formations and structural features of significance to the Beck Landfill site are discussed below. **Figure E-1** shows the surface geology of the subject area of Guadalupe County and adjoining counties and mapped fault lines of the Balcones Fault Zone. The Balcones Fault Zone has been inactive for nearly 15 million years (~~Cretaceous~~) and is considered a very low risk for earthquake hazard by the Federal Emergency Management Agency (FEMA).

Figure E-2 is a generalized stratigraphic column of the region that indicates the geologic age, range of thickness, formation lithology and water supply usage. Quaternary, Tertiary and Cretaceous System formations outcrop within the region of review. These formations are mainly comprised of sand, sandstone, gravel, clay, mudstone, shale, and marl. The stratigraphic sequence of formations that outcrop in the review region from the land surface to the base of the lowermost aquifer capable of providing usable groundwater is shown on the generalized stratigraphic column on **Figure E-2**.

As indicated on the stratigraphic column, the youngest formation that outcrops in the area is the Holocene Series alluvium consisting of clay, silt, sand, and gravel deposited in the floodplain along major stream channels in the southern portion of the subject region. The Holocene Series alluvium is documented to be as much as 25 feet in thickness. The Holocene alluvium lies unconformably over the older Pleistocene Series Leona Formation, and Tertiary and Cretaceous series formations where Leona Formation beds have been eroded away.

Two Pleistocene Series formations outcrop within the mapped region. From youngest to oldest these are the fluviatile terrace deposits and Leona Formation. The fluviatile terrace deposits in the region of review are comprised of sand, silt, clay, and some gravel that were laid down as point bars, oxbows and abandoned channel fill. These fluviatile terrace deposits generally occupy a position above the Holocene floodplains of entrenched streams and may obtain a thickness of up to 30 feet based on a review of State Water Well Reports for wells drilled in Guadalupe County. The Pleistocene Series terrace unconformably overlie the older Pleistocene Series Leona Formation, where not eroded away, or Tertiary and Cretaceous system formations where the Leona was removed by erosion.

conditions, areas susceptible to mass movement, and karst terrains. The Beck Landfill was excavated through alluvial materials (sand and gravel) to the undivided Navarro Group and Marlbrook Marl, which consist of clay and shale material (impermeable). Evidence of active detrimental on-site geologic activity has not been documented within the landfill area. No on-site or local human-made features or events were observed to have created unstable conditions.

The Balcones Fault Zone is a system of normal faults that traverses the review region from the northeast to the southwest. This fault zone is associated with the Paleozoic-age Ouachita Fold Belt, a remnant of an ancient highly eroded mountain range which is buried beneath the Balcones Fault Zone. Movement along the Balcones faults took place mainly during the Miocene Epoch. Data contained within the USGS Quaternary Fault and Fold Database indicates that no Holocene displacement of faults within the Balcones Fault Zone has occurred. The Beck Landfill (shown with a star) is not located within the Balcones Fault Zone as shown in the image below.

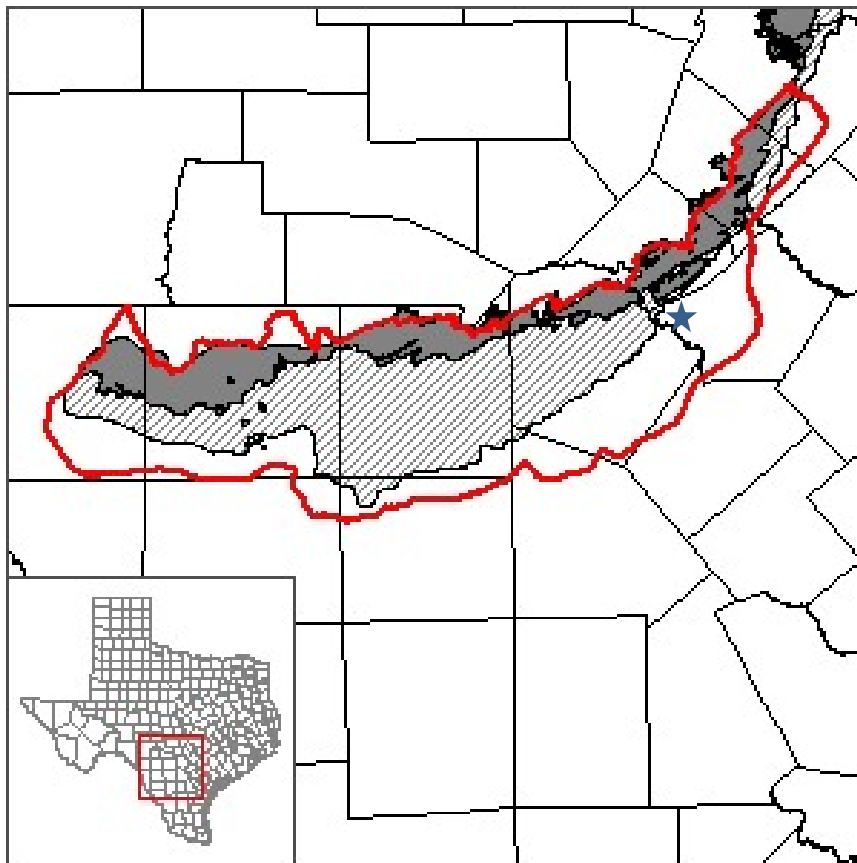


FIGURE ABOVE DEPICTS THE BALCONES FAULT ZONE AND THE LOCATION OF THE BECK LANDFILL (STAR) LOCATED TO THE NORTHSOUTH.

The Ouachita Fold Belt caused regional tilting and uplifting of Paleozoic rocks that underlie the review region. Pre-Cretaceous erosion of the uplifted Paleozoic rocks created a southeast dipping regional erosional surface or unconformity upon which Cretaceous System sediments were deposited. This regional unconformity and extensive faulting are the most significant structural features affecting the Cretaceous System and Paleocene Series formations within the review region. The Ouachita Fold Belt

A total of fifty-four (54) borings were advanced. Each of the proposed boring locations is indicated on the original boring plan, but only those designated by grid numbers were actually drilled. A continuous flight auger system, either of a solid or hollow stem type, was employed in the advancement of the borings. An updated cross-sectional analysis of this boring plan and boring lot set is provided as **Part III, Attachment 3, Appendix E-3** of this Report. The locations and elevations are approximated based on best available information today. A Table is provided for references.

Representative samples of the subsurface sediments were obtained from selected borings. Undisturbed or Shelby tube samples were recovered to represent much of the clay-shale penetration as recorded on the accompanying logs. Auger samples were generally recovered to represent the stream deposited stratum. All samples were immediately sealed to preserve in-situ states and moisture conditions as near as possible.

The analysis of the soil samples was performed in a soils laboratory. Testing generally conformed to an appropriate A.S.T.M specification as per the soil property being determined. The values of permeability, each expressed as centimeters per second, were derived by a constant head method utilizing flexible wall permeameters. The recompacted samples were also tested by the same method. Permeability was determined for selected clay samples from six (6) widely spaced borings. The samples were chosen as to be representative of the entirety of the clay formation underlying the proposed site and/or to confirm the impermeable nature of the natural clay. Atterberg Limits were determined from un-tested portions of the permeability samples, in order to formulate a basis of comparison, with the plasticity indexes, as determined from other sampled borings. A comparison of this nature should support the suitability of the particular natural clay, as relevant to the proposed site usage. Sieve and Hydrometer analysis were not performed, as the majority of the laboratory investigation was concentrated on materials predominantly of clay minerals. Such clay materials would generally pass the #200 sieve.

The conclusions of the laboratory testing are given on the tables included in **Part III, Attachment D-5, Appendix D5-C**. The findings of the exploratory borings as depicted by the boring logs, along with the other aspects of the field accumulated datum, allowed an analysis of the subsurface conditions existing at the proposed site.

A supplemental geotechnical investigation was conducted by Terracon in the southeast portion of the landfill in September 2020 to revisit the findings of the original investigation. The investigation was conducted in accordance with 30 TAC §330.63(e)(4) and §330.63(e)(5). A total of eight borings were advanced in the approximately 12-acre area, consistent with the guidance of 6-10 borings in 30 TAC §330.63(e)(4)(B) for a study area of 10-20 acres. A boring plan detailing the proposed investigation was submitted by POWER Engineers, Inc. to the TCEQ Municipal Solid Waste Permits section on August 17, 2020. No changes to the proposed number and depth of the borings were requested due to site conditions in the proposed boring plan. No geophysical methods, such as electrical resistivity, were proposed for use as part of this study to reduce the number of required borings. The TCEQ received the boring plan for review on August 31, 2020, and issued an approval letter dated September 3, 2020. A copy of the approved boring plan and TCEQ approval letter are included with this submittal as **Part III, Attachment D5, Appendix D5-C**.

The Terracon Geotechnical Data Report indicates that borings were advanced with a truck-mounted drill rig utilizing continuous flight augers. Samples were obtained by Terracon continuously in the upper 10 ft. of each soil boring and at intervals of 5 ft. thereafter. A thin-wall tube or split-barrel tube was utilized. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed soil sample. In the split-barrel