

Appendix C
Methane Monitoring Equipment Specifications



FOUR CHANNEL WALL MOUNT CONTROLLER

Gas Detection For Life

Beacon™ 410A Model



Features

- Simultaneously control up to 4 gas monitoring channels
- OLED display of all 4 channels
- LEL / O₂ / CO₂ / toxic direct connect sensors
- Accepts any 4-20 mA transmitter, 2 or 3 wire
- Up to 3 programmable alarm levels per channel
- Up to 3 configurable alarm relays per channel
- 4-20 mA analog & Modbus digital output standard
- 115 / 220 VAC or 24 VDC operation
- Audible alarm with silence feature
- RFI / EMI Resistant
- Alarm reset switch
- Built in trouble alarm with relay
- Weather and corrosion resistant NEMA 4X enclosure

Applications

- Petrochemical plants
- Refineries
- Water & wastewater treatment plants
- Pulp & paper mills
- Gas, telephone, & electric utilities
- Parking garages
- Manufacturing facilities
- Steel

The Beacon 410A is a highly configurable, microprocessor-based, flexible and easy to use 4 channel gas monitoring controller. It simultaneously displays the gas type, readings, and status for four channels of gas detection. It can monitor any combination of direct connect sensors (LEL, O₂, CO₂, and toxic gas sensors), as well as any 4-20mA transmitter.

Each channel has up to three fully configurable alarm points. A built-in silenceable audible alarm alerts you to alarm conditions. Each channel also has two dedicated fully configurable relays and there is a bank of common relays as well. The common relays can optionally be configured as additional relays allowing up to 3 alarm relays per channel. Each channel provides a 4-20mA output signal. A digital Modbus interface for remote logging of data via a Modbus network is standard. A Min-Max feature retains high & low peak readings for review at any time.

Optional Strobe Light

A fully configurable, high visibility strobe is available as an option. The unit can be powered from 115/220 VAC, or an external 24 VDC source. A trickle charging battery backup feature with battery assembly is also available as an option.

All features and functions of the Beacon 410A are controlled by easy to use menus on the OLED display. All features including form-C relay contacts of the Beacon 410A are built into the unit so you never need to purchase or maintain any "add-on" cards or components.



RKI Instruments, Inc. • 33248 Central Ave. Union City, CA 94587 • Phone (510) 441-5656 • (800) 754-5165 • Fax (510) 441-5650

World Leader In Gas Detection & Sensor Technology
www.rkiinstruments.com

Physical

Dimensions	Height: 12.5" (31.8 cm) x Width: 11" (27.9 cm) x Depth: 6.4" (13.6 cm)
Enclosure	NEMA 4X Fiberglass / polyester with lexan window for indoor and outdoor locations
Conduit Connection	3/4" NPT conduit hubs, 4 provided, for sensor, power, & relay wiring
Wiring Termination	Screw Type terminal block, 14 gauge max
Power	115 VAC, 220 VAC, or 24 VDC nominal. Battery backup option available
Optional Accessories	Strobe light, and Battery Backup Assembly
Controls	Display PCB Control Switches: <ul style="list-style-type: none"> • UP/YES push button switch • ESCAPE push button switch • External reset switch • DOWN/NO push button switch • ENTER push button switch • On/Off toggle switch

Environmental

Operating Temperature	-4°F to 122°F (-20°C to 50°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)
Enclosure Rating	NEMA-4X enclosure, chemical and weather resistant. Suitable for indoor and outdoor installations

Inputs

Direct Wired Sensors	LEL, Oxygen, Carbon Dioxide, and toxic gas sensors. Remote amp not required for less than 500 feet
4-20 mA	Accepts any 4-20 mA transmitter (24 VDC, 2 or 3 wire). A wide variety of RKI/Riken sensors are available with 4-20 mA signals. Wiring distances up to 8,000 feet
Sampling Methods	Diffusion and sample draw heads available

Outputs

Relays	Two flexible, programmable Form-C (C, NO, NC) relays per channel, plus five common relays (Fail, Alarm-1, Alarm-2, Alarm-3, Alarm-Any). Common relays may optionally be assigned to function as additional channel alarm relays, providing for up to three alarm relays per channel. 10A contact rating, 250V.
4-20 mA	Signal output, 4-20 mA (maximum load impedance 500 ohms), per channel
RS-485	Modbus format RS-485 serial output of all channel data, including gas reading and alarm status.
Display	Four line OLED display
Audible	Built-in audible alarm, 94 dB, mounted on enclosure Coded output: pulsing = gas alarm, steady = fail
Visual	1. Alarm LED's (on Display PCB) <ul style="list-style-type: none"> • Alarm 1 = yellow • Alarm 2 = orange • Alarm 3 = red • Fail = yellow 2. Green Pilot LED to indicate AC power connected (on Display PCB) 3. An optional 24 VDC NEMA 4X strobe mounted to top of case.

Approvals

Approvals	CSA Certified to CSA C22.2 No. 61010-1-12 and UL61010-1
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Warranty

One year materials and workmanship



Authorized Distributor:

- Toll Free: (800) 754-5165 • Phone: (510) 441-5656
- Fax: (510) 441-5650 • www.rkiinstruments.com



Appendix D
Landfill Safety Requirements

LANDFILL HEALTH AND SAFETY

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section describes the landfill site conditions, potential for hazards, and general requirements for health and safety of personnel involved in the execution of the Work.
- B. This section describes the general requirements for trench safety systems, and requires the Contractor to include trench safety within the Health and Safety Plan required by the Contractor.
- C. General requirements for furnishing services of a Safety Monitor.
- D. This section requires that the Contractor submit a Health and Safety Plan prior to the commencement of Work.

1.2 RELATED SECTIONS

- A. General Information, Conditions, and Requirements
- B. Technical Specifications

1.3 SUBMITTALS

- A. Contractor shall prepare a Health and Safety Plan (Plan) addressing worker safety during construction including grading, excavation, trenching, and backfill; and ~~relocation of waste~~ (if required). Contractor shall submit a copy of the Plan to the Owner and Engineer. However, the Owner or Engineer will not be responsible for the adequacy of the Plan in providing worker protection, or execution of the measures set forth in the Plan. This Plan will also include trench safety, as specified herein.

1.4 DESCRIPTION OF WORK

- A. This section supplements the requirements specified in the General Information, Conditions, and Requirements. If the requirements of this Section and General Information, Conditions, and Requirements conflict, the Contractor shall adhere to the more stringent requirement as determined by the Owner and Engineer.
- B. The provisions of this Section are supplementary to other provisions specified elsewhere in the Contract Documents.
- C. The Contractor should be familiar with the Safety Guidelines as prepared by the Solid Waste Association of North America (SWANA) National Landfill Gas Committee. Copies may be obtained by writing to SWANA, 8750 Georgia Avenue, Suite 140, Silver Spring, Maryland 20910, telephone number (800) 467-9262. Neither Owner nor Engineer make representation regarding the adequacy or completeness of these guidelines in addressing the issues associated with working in or near waste or landfills.
- D. Nothing in this Section shall preclude the Contractor from complying with the more stringent requirements of the applicable Federal, State, County, or Owner rules and regulations.

1.5 HAZARDOUS SITE CONDITIONS

- A. The Contractor is advised that the construction of this project is being performed in and near buried wastes and refuse. As these buried materials decompose anaerobically, they will generate landfill gas (LFG), which normally consists of carbon dioxide (CO₂), methane (CH₄), and occasionally hydrogen sulfide (H₂S) and other gases, depending on the composition of the buried materials. These gases usually vent to the atmosphere through the cover soil, but may migrate laterally to adjacent areas depending on site and weather conditions.
- B. The landfill is a municipal solid waste landfill. Care shall be taken in protecting workers from exposure to hazards, and executing the work using procedures that provide worker protection.

1.6 POTENTIAL FOR HAZARDS

- A. The following landfill and LFG related information is included to assist the Contractor in developing his Health and Safety Plan and is not intended to encompass all steps that may be necessary to protect the workers or to comply with applicable regulations.
 - 1. Landfill gases usually vent to the atmosphere through the cover soils, but may migrate laterally to adjacent areas depending on site and weather conditions.
 - 2. Landfill gases have the potential to create hazardous conditions if not controlled or recognized. Some of the hazards are:
 - a. Fires may start spontaneously from exposed and/or decomposing refuse.
 - b. Fires and explosions may occur from the presence of methane gas. Methane is explosive in approximate concentrations of 5 to 15 percent by volume in air.
 - c. Landfill gases may cause an oxygen deficiency in underground trenches, vaults, conduits, and structures.
 - d. Hydrogen sulfide, a highly toxic and flammable gas, or other toxic gas may be present.
 - e. Possible caving of trenches and excavations when working over or in refuse fills.
 - 3. Landfill materials (solids and liquids) have the potential to contain pathogens, fungus, viruses, infectious materials; sharp, puncturing, and cutting objects; and other hazards. Dust control during waste excavation is important to controlling dust-borne transmission of harmful elements. Preventing dermal contact with waste by workers, including preventing walking over or in exposed waste, also will reduce the risks of worker exposure. Dust control and worker exposure during excavation shall be addressed in the Health and Safety Plan.

1.7 SAFETY PROGRAM AND PRECAUTIONS

- A. Supplemental to the Contractor's regular safety program, the Contractor shall develop and institute procedures to inform all workers and site visitors of the potential for the presence of methane and other landfill gases emanating from the natural decomposition of refuse buried at or near the job site and the importance of safety precautions to ensure the safety of workers and the public. The Contractor shall also instruct all workers and maintain strict control of construction activities to protect and maintain the integrity of the Work features as they are installed.

- B. In addition to conforming to the safety rules and regulations of governmental authorities having jurisdiction, the Contractor shall take the following precautionary measures:
- I. Periodically during construction, the workspace should be monitored for concentrations of methane and hydrogen sulfide. Workers shall not be permitted to enter a workspace where there is an oxygen deficiency or a combustible mixture of gases without appropriate protection. Positive fan-forced ventilation to dilute gas mixtures and avoid oxygen deficiency should be provided when work is necessary in any confined workspace.
 2. Smoking shall be prohibited at all times on the landfill property.
 3. In the event toxic gases are present at concentrations hazardous to the workers and the general public, the Contractor shall immediately evacuate all persons from the area until the area is determined safe by the Safety Monitor.
 4. Soil shall be stockpiled adjacent to workspace in areas of exposed refuse for firefighting purposes.
 5. The use of explosives or firearms shall not be permitted on the site.
 6. If refuse is exposed during construction activities, it shall be covered as soon as possible after exposure with at least a 6-inch layer of soil. In no event shall the refuse remain exposed overnight, unless otherwise approved by the Owner/Engineer.
 7. If refuse is excavated during construction activities, it shall be disposed of at the working face of the active landfill, as directed by the Owner. Refuse shall be disposed each day.
 8. Care shall be taken not to track waste outside of the Work area on construction equipment.
 9. No welding shall be permitted in trenches, enclosed areas, or over refuse unless performed in areas of the site tested and approved by the Safety Monitor.
 - I 0. Combustion engine-powered construction equipment shall be equipped with vertical exhaust and spark arrestors.
 11. Electric motors and controls utilized in excavation areas and in below ground workspaces shall be explosion-proof.
 12. Workers shall not be allowed to work alone at any time in an excavation. Work parties of at least three workers shall be mandatory with one worker outside of the hazard area and another worker within hailing distance to assist in an emergency.
 13. Inhalation of landfill gases shall be avoided. Such gases or oxygen-deficient air may cause nausea and dizziness, which could lead to accidents. Work upwind of the excavation where possible, unless the excavation is constantly monitored and declared safe by the Safety Monitor.
 14. Workers shall avoid contact with exposed refuse, condensate, or leachate.
 15. Fire extinguishers with a rating of at least A, B, and C shall be available at all times on the site.
 16. Startup and shutdown of equipment shall be avoided in areas of exposed refuse.
 17. Personnel, when in an open excavation or in the presence of landfill gas, shall be fully clothed with non-sparking cloth, wear shoes with non-metallic soles, and wear a hard hat and safety goggles or


glasses. The excavation shall be monitored continuously in a manner satisfactory to the Safety Monitor for the presence of methane, hydrogen sulfide, and oxygen for the duration that personnel are in an excavation. Workers should immediately vacate an excavation if methane, hydrogen sulfide, or oxygen deficiency is detected therein, and shall not be permitted to re-enter the excavation unless satisfactory precautionary measures for a safe work environment are implemented.

18. Assembly of construction work shall be performed outside of trenches or excavations. Prefabricated items shall be lowered into excavations. Only final connections may be made within trenches with the necessary precautions stated.

1.8 SAFETY MONITOR

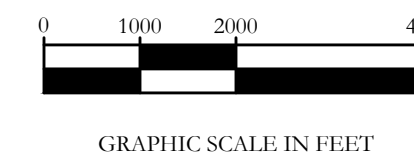
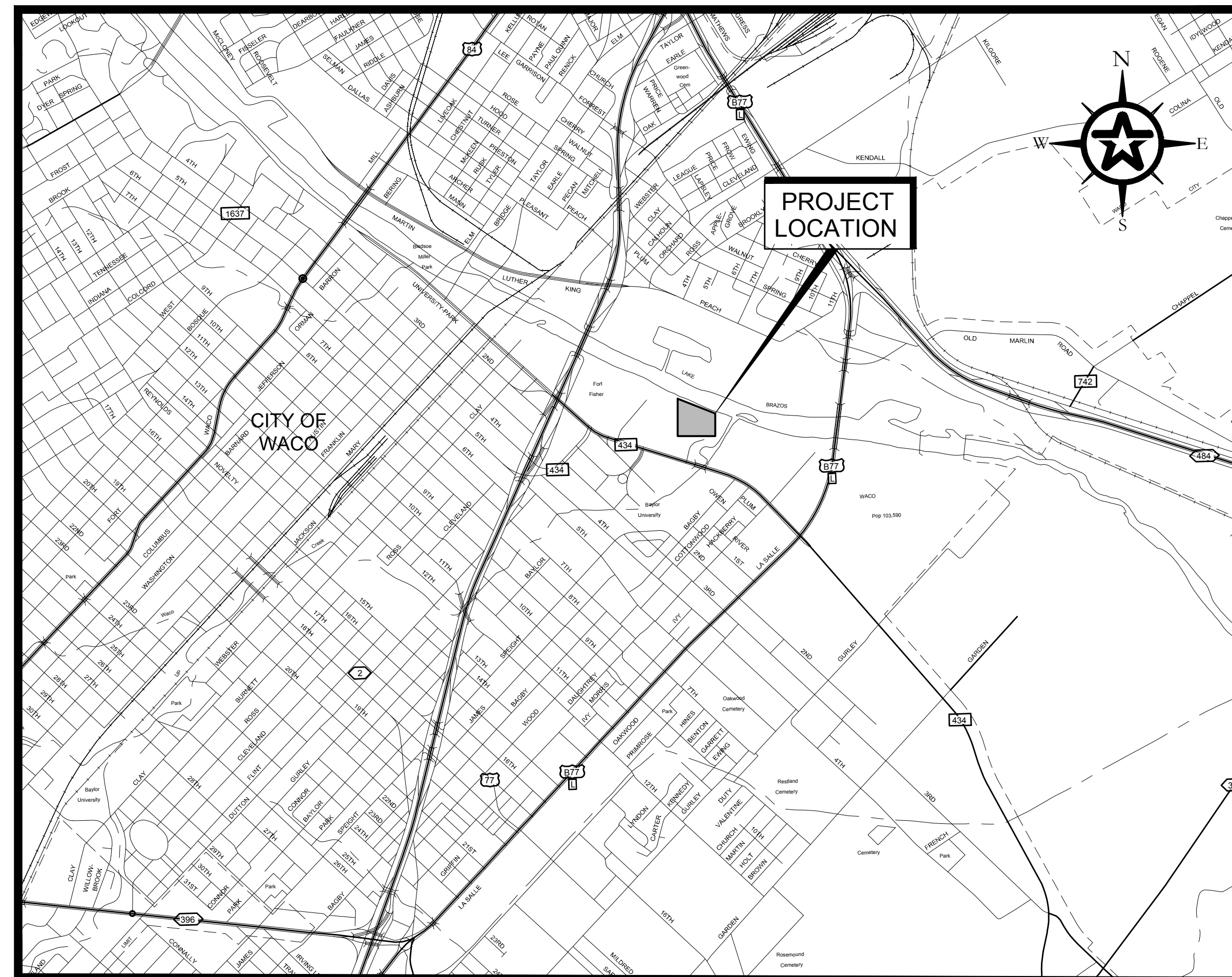
- A. The Contractor shall designate a person who will be designated as the Safety Monitor. The Safety Monitor shall be thoroughly trained in rescue procedures, trench safety (if trenching greater in depth than 3 feet is included in Work), and in the use of safety equipment and gas detectors, as deemed appropriate for the Work. The Safety Monitor shall be present at all times during working hours whenever open trenches or excavations are greater than 3 feet in depth, when the Contractor is working on or near exposed refuse, or when LFG is likely to be present.
- B. The Safety Monitor shall have appropriate instruments (detector[s]) to test for oxygen deficiency and for the presence of methane gas and hydrogen sulfide gas, as deemed necessary within the Health and Safety Plan. A personal gas monitor (such as Lumidor Safety Products PGMI3, GasTech GX-82, Gastec Model 1641, or similar unit[s]) should be available for this purpose. The Safety Monitor should periodically calibrate his instruments and regularly test the excavation areas and other workspace for safe working conditions and ensure that appropriate safety equipment is available at the site.
- C. The Safety Monitor shall have the delegated authority to order workers on the project site to comply with the safety requirements. Failure to observe his order shall be cause for removal of the worker from the project.

END OF SECTION



Appendix E
Notice of Coordination Letters

DRAWINGS
for
BAYLOR UNIVERSITY
FUDGE FOOTBALL OPERATIONS CENTER
WACO, TEXAS

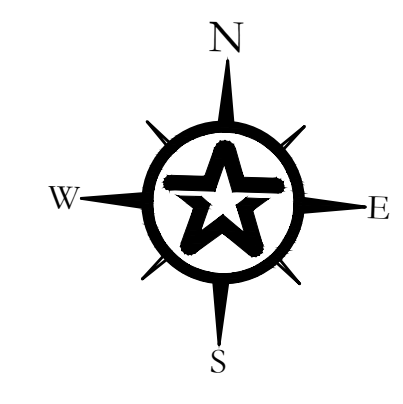
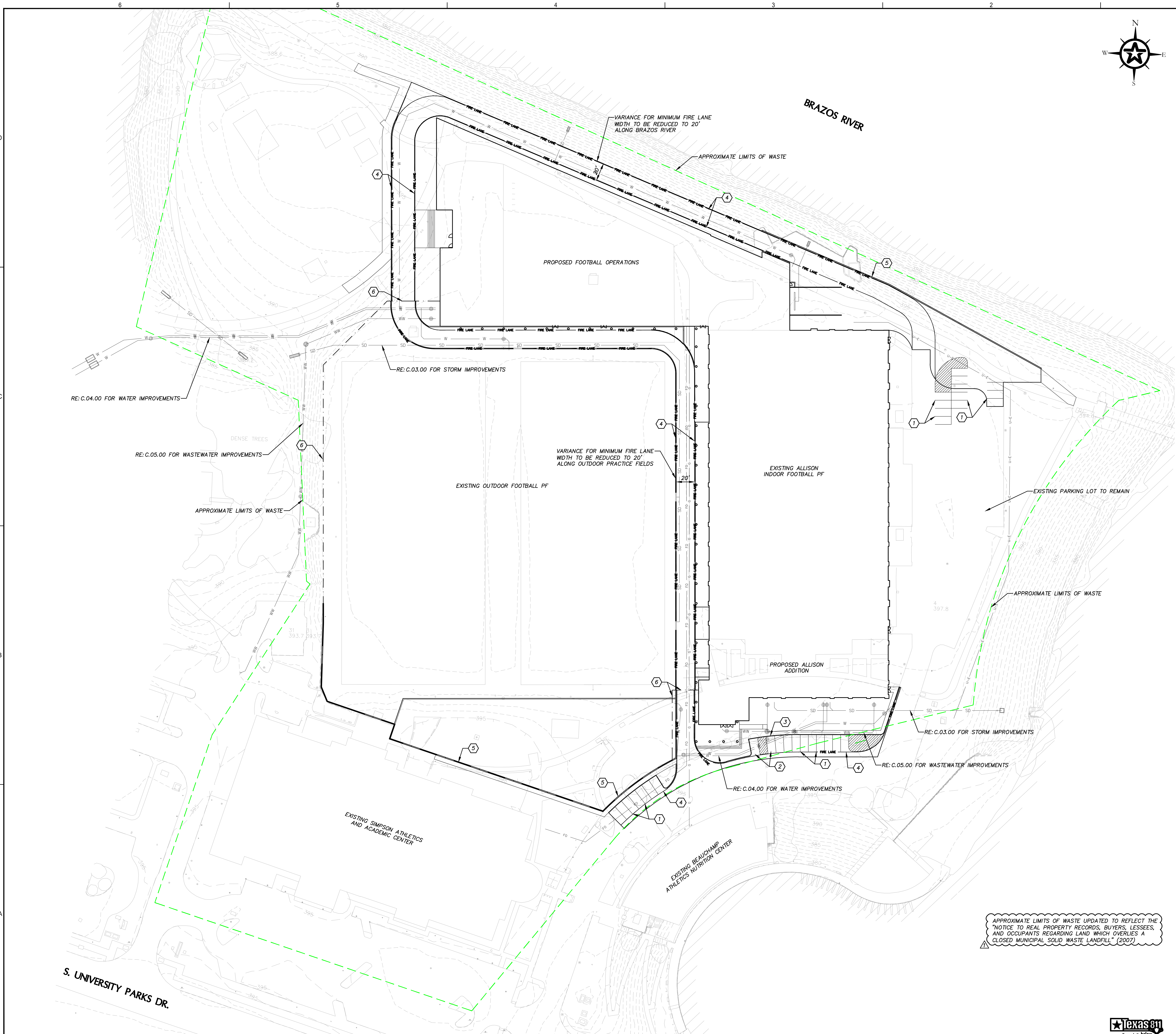


INDEX OF DRAWINGS

CS	COVER SHEET
CIVIL	
C.01.00	CIVIL SITE PLAN
C.01.01	DIMENSION CONTROL PLAN
C.01.02	PAVING PLAN
C.02.00	GRADING PLAN
C.02.01	CROSS SECTIONS
C.03.00	OVERALL DRAINAGE PLAN
C.03.01	STORM DRAIN PROFILES
C.04.00	OVERALL WATER PLAN
C.05.00	OVERALL WASTEWATER PLAN
C.05.01	WASTEWATER PLAN & PROFILE
DETAILS	
C.06.00	ENVIRONMENTAL DETAILS
C.06.01	DRAINAGE DETAILS
C.06.02	DRAINAGE DETAILS
C.06.03	UTILITY DETAILS

**FOR AGENCY REVIEW
PURPOSES ONLY**

ANSI E1 30"X42" Approved: Designer: JAC Checked: JAC Project Management Initials: JPB



- GENERAL NOTES:**
1. FIRE LANE IS 26' WIDE (MIN.) WITH 28' INSIDE RADI (MIN.) UNLESS NOTED OTHERWISE.
 2. ALL PARKING SPACES ARE 9' X 18.5'.

- KEY NOTES**
- 1 4" PARKING LOT STRIPING (WHITE)
 - 2 ACCESSIBLE PARKING STRIPING & SIGN
 - 3 VAN ACCESSIBLE PARKING SIGN
 - 4 FIRE LANE STRIPING
 - 5 RETAINING WALL
 - 6 FENCE/GATE



FUDGE FOOTBALL OPERATIONS CENTER at BAYLOR UNIVERSITY
 1504 S UNIVERSITY PARKS DRIVE
 WACO, TX 76798



CLIENT
 BAYLOR UNIVERSITY
 ONE BEAR PLACE
 WACO, TX 76798
 HTTP://baylor.edu

AECOM TECHNICAL SERVICES, INC
 ARCHITECTURE

JENSEN HUGHES
 CODE COMPLIANCE / LIFE SAFETY

WALKER PARTNERS
 CIVIL / SITE UTILITIES

OJB LANDSCAPE ARCHITECTURE
 LANDSCAPE / SITE DESIGN

AECOM TECHNICAL SERVICES, INC
 STRUCTURAL

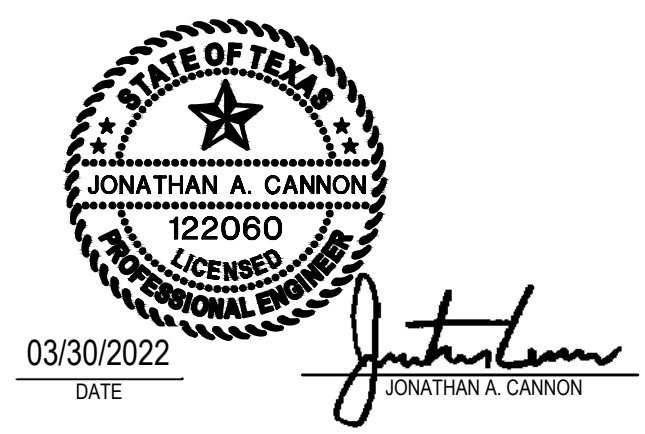
CAMPSE CONSULTING AND INSPECTIONS, LLC
 VERTICAL TRANSPORTATION

IDIBRI a SALAS O'BRIEN COMPANY
 AV / TELECOM / IT / SECURITY / ACOUSTIC ISOLATION

AECOM TECHNICAL SERVICES, INC
 MECHANICAL / ELECTRICAL / PLUMBING / FIRE PROTECTION

DOWNSTREAM
 SIGNAGE / GRAPHICS / BRANDING

REGISTRATION

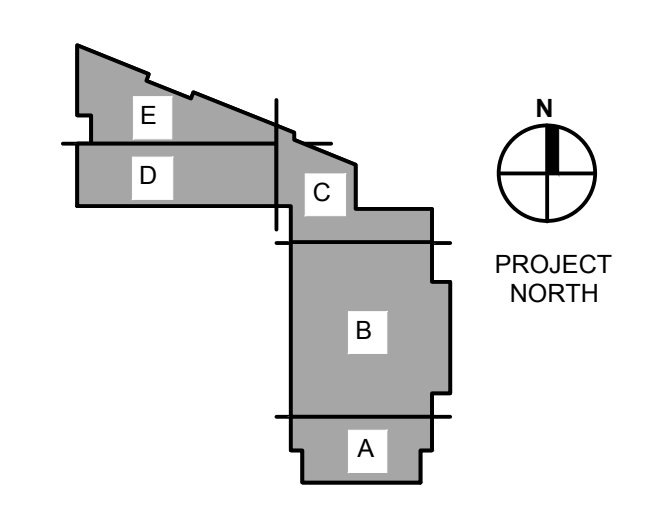


REGISTRATION

These Schematic Design drawings represent the current status of the design process and have been issued for Consultants coordination, Owner review and approval, and for updating estimates of probable construction cost. They do not illustrate the complete and total design or scope of work required for construction of the project and is not, under any circumstances, intended to be used by the CMaR or other Contractor, or any other person for construction, for preparation of shop drawings or other submittals or for bidding or awarding subcontracts.

CONSTRUCTION DOCUMENTS

KEY PLAN



ISSUE/REVISION

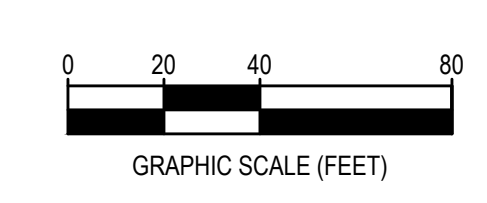
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PROJECT NUMBER 60668614 **DATE** 03/04/22

SHEET TITLE CIVIL SITE PLAN

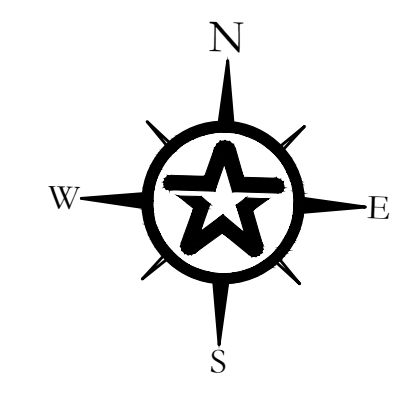
SHEET NUMBER C.01.00

APPROXIMATE LIMITS OF WASTE UPDATED TO REFLECT THE "NOTICE TO REAL PROPERTY RECORDS, BUYERS, LESSEES, AND OCCUPANTS REGARDING LAND WHICH OVERLIES A CLOSED MUNICIPAL SOLID WASTE LANDFILL" (2007)



NOT FOR CONSTRUCTION - FOR AGENCY REVIEW PURPOSES ONLY

ANSI E1 30'x42' Approved: Designer: JAC Checked: D Project Management Initials: JPB C B A



GENERAL NOTES:
 1. ALL DIMENSIONS ARE TO THE BACK OF CURB UNLESS NOTED OTHERWISE.



FUDGE FOOTBALL OPERATIONS CENTER at BAYLOR UNIVERSITY
 1504 S UNIVERSITY PARKS DRIVE
 WACO, TX 76798



CLIENT
 BAYLOR UNIVERSITY
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 LANDSCAPE / SITE DESIGN

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 STRUCTURAL

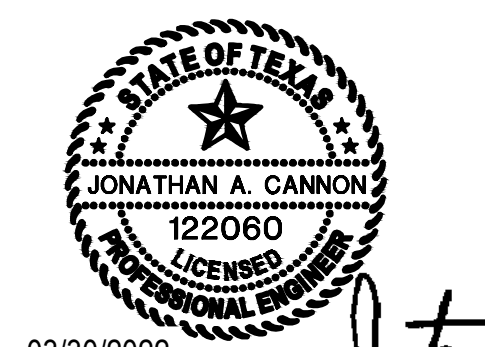
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 VERTICAL TRANSPORTATION

IDIBRI
a SALAS O'BRIEN COMPANY
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REGISTRATION



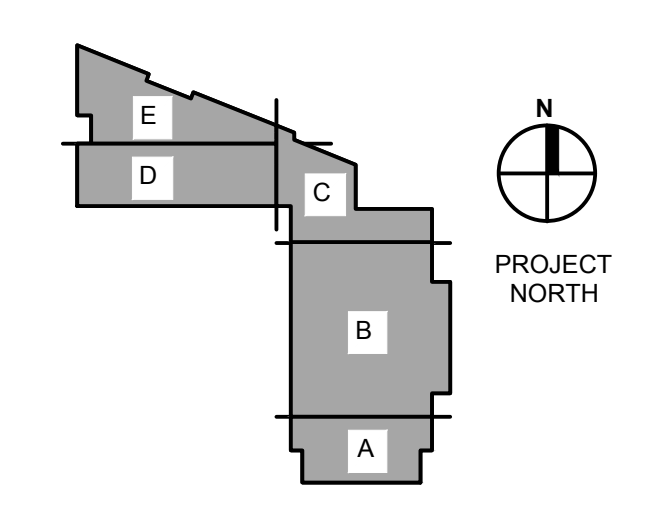
03/30/2022
 DATE
 Jonathan A. Cannon

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CONSTRUCTION DOCUMENTS

KEY PLAN



ISSUE/REVISION

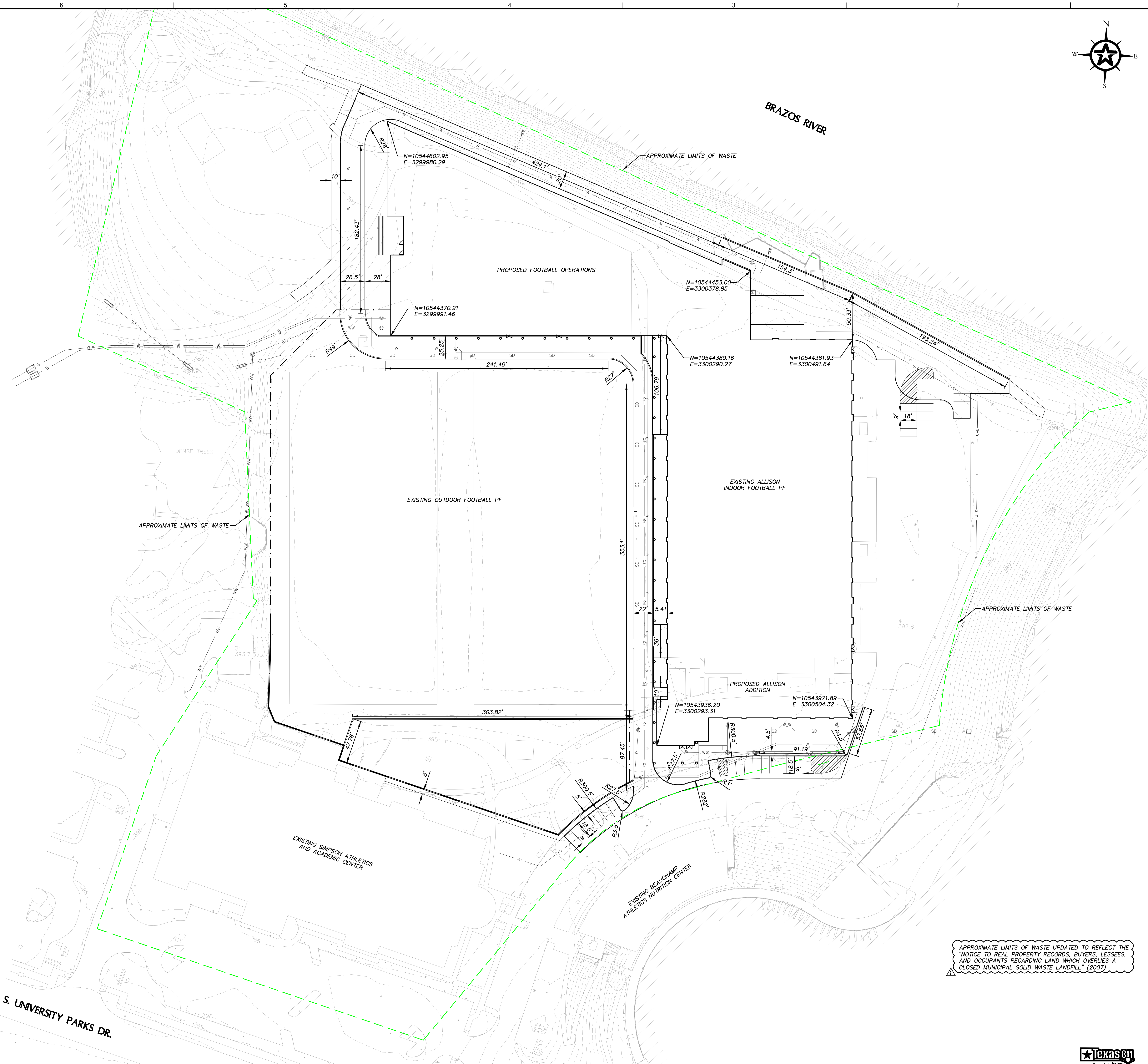
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PROJECT NUMBER 60668614 **DATE** 03/04/22

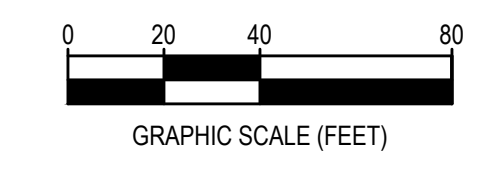
SHEET TITLE DIMENSION CONTROL PLAN

SHEET NUMBER C.01.01

NOT FOR CONSTRUCTION - FOR AGENCY REVIEW PURPOSES ONLY



APPROXIMATE LIMITS OF WASTE UPDATED TO REFLECT THE "NOTICE TO REAL PROPERTY RECORDS, BUYERS, LESSEES, AND OCCUPANTS REGARDING LAND WHICH OVERLIES A CLOSED MUNICIPAL SOLID WASTE LANDFILL" (2007)



Appendix F
Authorization to Disturb Final Cover

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Bobby Janecka, *Commissioner*
Toby Baker, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 19, 2022

Mr. J.D. Dethrow
Director of Construction Services
Baylor University
One Bear Place #97111
Waco, Texas 76798

Subject: Baylor Fudge Football Operations Center -McClennan County
Municipal Solid Waste (MSW) - Authorization No. 67028
Authorization to Disturb the Final Cover Over a Closed MSW Landfill - Issued
Tracking No. 27424128; CN600128334/RN111002176

Dear Mr. Dethrow:

We have reviewed your request dated February 21, 2022 and the revision dated March 31, 2022 for an authorization to disturb the final cover of a closed municipal solid waste (MSW) landfill. The request is to perform grading and install underground piping, pavement, and landscaping on property within the boundary of a non-permitted MSW landfill located at 1504 South University Parks Drive, Waco in McClennan County. The authorization request was prepared, sealed, and signed by Mr. Jeffrey Arrington, P.E. with SCS Engineers.

Authorization to proceed with the proposed activities is hereby granted as allowed by Title 30 Texas Administrative Code (30 TAC), §330.954(e) and in accordance with the submitted plans. The proposed project is authorized under existing Authorization No. 67028. Please reference this number in all future correspondence regarding this project. Any future activities, as well as any deviations from the approved plans, which will disturb the cover over the closed landfill, must be submitted for prior approval. In addition, other authorizations, including construction permits, floodplain modifications, and air permits may need to be obtained.

The construction activities must comply with all applicable provisions of 30 TAC §330.955(d) through (h) concerning the protection of the final cover and the proper disposal of the excavated materials. Any waste removed must be evaluated and disposed of at an authorized disposal facility. Any exposed waste left in place must be properly covered with at least two feet of compacted clay-rich soil. Water coming in contact with MSW is considered contaminated and must be collected and disposed of at an authorized facility. A report documenting the work performed is requested to be submitted at the completion of the project.

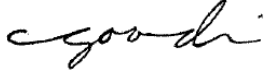
Mr. J.D. Dethrow

Page 2

April 19, 2022

If you have questions concerning this letter, please contact Mr. Robert Pedersen, P.E. by phone at (512) 239-2580, by email to robert.pedersen@tceq.texas.gov, or in writing at the address on our letterhead (please include mail code MC 124 on the first line).

Sincerely,

A handwritten signature in cursive script that reads "cgoodin".

Chance Goodin, Manager
Municipal Solid Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality

CG/tw

cc: Mr. Patrick J. Carley, Baylor University, Waco
Mr. Jeffery Arrington, P.E., SCS Engineers, Bedford

February 22, 2022
Proposal Number 16219108.00

Mr. Chance Goodin
Section Manager
Municipal Solid Waste Permits Section MC-124
Texas Commission on Environmental Quality
12100 Park 35 Circle, Building F
Austin, Texas 78753

Subject: Authorization Request to Disturb Final Cover
Closed Marina Landfill in Waco, TX. (Sub T Enclosed Permit No. 62021)
Site Improvements for New Football Operations Center
McLennan County, Texas

Dear Mr. Goodin:

Attached are the following documents in support of a request for TCEQ's authorization under §330.960 of Subchapter T, related to disturbing the final cover over a closed Landfill. The documents include:

- Form 20787 Authorization to Disturb Final Cover Over Closed MSW Landfill
- Authorization Request Narrative and Work Plan
- Drawings and Geotechnical Report for the Project

Should you have any comments or questions after reviewing this request, please call Jeff Arrington at (817) 358-6111.

Sincerely,



Jeff Arrington, P.E.
Project Manager
SCS ENGINEERS
TBPE Registration No. F-3407

Attachments

cc: Mr. J.D. Dethrow, Baylor University

Facility Name: Fudge Football Operations Center

Applicant Name: Baylor University

SubT Authorization #:

Initial Submittal Date: 2/21/2022

Revision Date: Original



Texas Commission on Environmental Quality
Authorization to Disturb Final Cover Over Closed Municipal
Solid Waste Landfill for Non-Enclosed Structure

If you are proposing a new enclosed structure or have an existing enclosed structure, please use Form TCEQ-20785, Application for Development Permit for Proposed Enclosed Structure Over Closed Municipal Solid Waste Landfill, or Form TCEQ-20786, Registration for Existing Enclosed Structure Over Closed Municipal Solid Waste Landfill.

1. Application Type

- New Authorization Revisions of Existing Authorization
 Soil Boring Tests Authorization

If existing authorization, Authorization Number: _____

2. Reason for Submittal

- Initial Submittal Notice of Deficiency (NOD) Response

3. Enrollment in Other TCEQ Programs

Indicate if the site is enrolled in the Voluntary Cleanup Program or other Remediation Program.

- Yes No

If Yes, indicate the program: _____

4. Project description

Provide a brief description of the proposed project for which the authorization to disturb the final cover of the closed landfill is being requested.

Construction of utilities, paving and site work to support the new football operations building.

5. MSW Landfill Determination N/A

If the landfill was discovered during construction, the construction activities shall be ceased pending authorization approval. Persons listed in 30 TAC 330.953(d) shall be notified within 30 days from landfill discovery, and the property shall be recorded in the real property records of the county where the property is located in accordance with 30 TAC §330.962(a).

Provide evidence that the engineer who determined the existence of the closed MSW landfill has notified the following persons of that determination in accordance with 30 TAC §330.953(d).

- (1) Each owner and lessee
- (2) Executive Director
- (3) Local Government Officials
- (4) Regional Council of Governments

6. Landfill's Permitting Status

What is the permitting status of the landfill?

- Active MSW Permit
- Landfill in Post-Closure Care
- Revoked MSW Permit
- Un-permitted Landfill

If the landfill is in post-closure care and/or subject to an active MSW Permit, this application for final cover disturbance for non-enclosed structures over a closed MSW landfill shall be accompanied by a Permit Modification application prepared in accordance with 30 TAC §305.70.

If the landfill has completed the post-closure care period, but the MSW permit has not been revoked (site affected by an active MSW Permit), a Voluntary Revocation request of the MSW Permit shall be submitted in accordance with 30 TAC §330.465 prior to the submittal of this application for final cover disturbance for non-enclosed structures over a closed MSW landfill (see Instructions).

7. General Project Information

Facility Name: Baylor University- Fudge Football Operations Center
SubT Authorization No. (if available):
Regulated Entity Reference No. (if issued)*: RN
Physical or Street Address (if available): **1504 S. University Parks Drive**
City: **Waco** County: **McLennan** State: **Texas** Zip Code: **76706**
(Area code) Telephone Number: **254-710-8400**

*If this number has not been issued for the facility, complete a TCEQ Core Data Form (TCEQ-10400) and submit it with this application.

8. Contact Information

Applicant (Lessee/Project Owner) Name: Baylor University

Customer Reference No. (if issued)*: CN **600128334**

Mailing Address: **One Bear Place #97111**

City: **Waco** County: **McLennan** State: **Texas** Zip Code: **76798**

(Area Code) Telephone Number: **254-710-8368**

Email Address: **JD_Dethrow@baylor.edu**

*If the Applicant does not have this number, complete a TCEQ Core Data Form (TCEQ-10400) and submit it with this application. List the Applicant as the Customer.

Property Owner Name*: Same as Applicant

Mailing Address:

City: County: State: Zip Code:

(Area Code) Telephone Number:

Email Address:

*If the Property Owner is the same as Applicant type "Same as Applicant".

Consultant Name (if applicable): SCS Engineers

Texas Board of Professional Engineers Firm Registration Number: **F-3407**

Mailing Address: **1901 Central Dr. Suite 550**

City: **Bedford** County: **Tarrant** State: **Texas** Zip Code: **76021**

(Area Code) Telephone Number: **817-358-6111**

E-Mail Address: **jarrington@scsengineers.com**

9. Confidential Documents

Does the application contain confidential documents?

Yes No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

10. Deed Recordation

Verify that the property owner filed a written notice for record in the real property records in the county where the land is located in accordance with 30 TAC §330.962 stating: (a) the former use of the land; (b) the legal description of the tract of land that contains the closed MSW landfill; (c) notice that restrictions on the development or lease of the land exist in the Texas Health and Safety Code and in MSW rules; and (d) the name of the owner.

11. Notice of Lease Restrictions on the Property

Is the property leased?

Yes No

If "Yes", verify that the property owner provided written notice to all prospective lessees of the property in accordance with 30 TAC §330.964 concerning:

(a) what is required to bring the property into compliance with 30 TAC Chapter 330, Subchapter T?

(b) the prohibitions or requirements for future disturbance of the final cover?

A certified copy of the notice is included in the application.

Professional Engineer's Certification of No Potential Threat to Public Health or the Environment.

The applicant's engineer for this project shall complete one of the following certifications:

"I, certify that the proposed disturbance of the final cover is necessary to reduce a potential threat to public health or the environment. Further, I certify that the proposed disturbance of the final cover will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

Engineer's Seal, Signature, Date, and Firm Name and Registration Number:

Or:

"I, Jeff Arrington, P.E. #61895, certify that the proposed disturbance of the final cover will not increase or create a potential threat to public health or the environment. Further, I certify that the proposed disturbance of the final cover will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations."

02/16/2022

Engineer's Seal, Signature, Date, and Firm Name and Registration Number:



Facility Name: Fudge Football Operations Center
Non-enclosed Structures Authorization #:

Initial Submittal Date: 2/21/2022
Revision Date:

Signature Page

I, Patrick J. Carley, Associate Vice President for Facilities and Operations at Baylor University, (Applicant/Property Owner or Project Owner) (Title)

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.

Signature: [Handwritten Signature]

Date: 18 Feb '22

SUBSCRIBED AND SWORN to before me by the said Patrick J. Carley

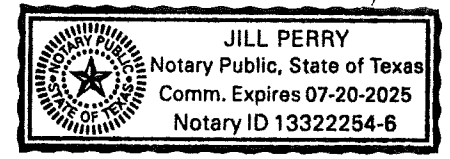
On this 18th day of February, 2022

My commission expires on the 20th day of July, 2025

Jill Perry
Notary Public in and for

McLennan County, Texas

(Note: Application Must Bear Signature & Seal of Notary Public)



TO BE COMPLETED BY THE PROPERTY OWNER IF THE PROPERTY OWNER IS NOT SIGNING ABOVE

I, _____, the owner of the property identified as _____ (*Insert property address*), hereby authorize _____ (*Insert Project Owner Name*) to _____ (*Insert brief description of project such as "install soil borings and test pits"*), and to apply for any necessary authorizations in order to conduct this project. I understand that, as property owner, I am responsible for maintaining the integrity of the final cover over the closed MSW landfill.

Printed or Typed Name of Property Owner

Signature

SUBSCRIBED AND SWORN to before me by the said _____

On this _____ day of _____, _____

My commission expires on the _____ day of _____, _____

Notary Public in and for

_____ County, Texas

(Note: Application Must Bear Signature & Seal of Notary Public)

New Authorization to Disturb Final Cover/ Soil Boring Tests

Required Attachments

Attachment No.

A. Narrative

Existing Conditions Summary	1
Proposed Project Description	1
Description of Construction/Investigation Process	1
Procedures for Management of Methane, Water, and Excavated Waste During Construction	1

B. Maps and Plans

General Location Map	1
Site Layout Plan	1
Proposed Project Design Plans and Engineering Drawings	1
Construction Details	1

C. Copies of Legal Documents

- Property Legal Description (if available)
- Notice of Landfill Determination (if applicable)
- Notice to Real Property Records

Additional Attachments as Applicable - Select all those apply and add as necessary

- TCEQ Core Data Form(s)
- Confidential Documents
- Notice of Lease Restrictions
- Other maps, plans and engineering drawings
- Soil Tests Boring Logs
- Methane/ Water Monitoring Report
- Waste Disposal Manifests

Facility Name: Fudge Football Operations Center
Non-enclosed Structures Authorization #:

Initial Submittal Date: 2/21/2022
Revision Date:

Revisions of an Existing Authorization

Required Attachments

Attachment No.

Marked (Redline/Strikeout) Pages

Unmarked Revised Pages

A. Narrative

Description of Proposed Revisions

Description of Construction Process (if revised)

Procedures for Management of Methane, Water,
and Excavated Waste During Construction (if revised)

B. Maps and Plans

General Location Map

Site Layout Plan

Proposed Project Design Plans and Engineering Drawings (if revised)

Construction Details

Additional Attachments as Applicable - Select all those apply and add as necessary

Any other revised parts of the application

Subchapter T Authorization Request (30 TAC §330.960)

Baylor Fudge Football Operations
Center
Closed Landfill Site

Waco, Texas

SCS ENGINEERS

16215154.00 | February 2022

1901 Central Dr., Suite 550
Bedford, TX 76021
817-571-2288

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Appendices

- A Geotechnical Report
- B Construction Plans and Location Map
- C Landfill Safety Requirements

1 INTRODUCTION AND BACKGROUND

The closed municipal solid waste (MSW) landfill located on University Drive is part of the Simpson Athletic and Academic Center. This facility was built in 2007 after being approved under Subchapter T by TCEQ. Baylor University (University) is in the process of developing plans for the addition of a new football operations center. The Subchapter T submissions will be in two separate submittals. The first submittal will be in the form of an authorization to disturb final cover over the closed landfill and will include site work associated with the proposed football operations center. The second submittal will be a landfill development permit application that includes the enclosed structure that will serve as the proposed operations center building.

The proposed site work includes installation of water lines, wastewater lines, storm drainage, and new paved parking and access road. Plans that depict the proposed site improvements are included as part of this authorization request.

This authorization request is submitted consistent with the provisions of 30 TAC §330.960 to disturb final cover over a closed municipal solid waste landfill for non-enclosed structures.

This request is formatted as follows:

- Variance request presented in Section 1.1;
- Certification statements required by 30 TAC Subchapter T are provided in Section 2.0;
- An existing conditions summary is provided in Section 3.0;
- A description of the proposed construction for the project is provided in Section 4.0;
- Procedures for handling contaminated water and methane are discussed in Section 5.0.

The individual section headings also indicate the regulatory citations within 30 TAC §330.960 that are addressed within the contents of each section. The appendices contain drawings and supplemental information that describe the recent site investigations to obtain information on subsurface conditions to be used in the design of the proposed facilities. The appendices also contain landfill safety procedures that are to be used in developing site specific safety plans.

As stated above, a separate request for approval to construct an enclosed structure and utilities will be submitted to the TCEQ at a later date. At this time, the authorization request includes the following features:

- Site grading and fill placement for golf course features
- Concrete pavement and walkways
- Water lines to serve new building
- Sanitary sewer line
- Storm drainage system
- Turf establishment in unpaved areas

1.1 VARIANCE REQUEST FOR WATER, SANITARY SEWER, AND STORM DRAINAGE PIPING REQUIREMENTS

On behalf of the University, SCS Engineers is requesting that TCEQ grant a variance from the requirements of §330.961(g) that requires conduits carrying liquids over closed landfill waste cells to be double-contained. This subsection addresses the variance request for the water wastewater and storm drainage piping. As described in the previous subsection, the proposed development consists of site improvements including utilities that will serve the new operations building that will be constructed after obtaining approval from TCEQ. This variance request is intended to address the use of trench liners in lieu of double-contained piping.

In support of this variance request we are including the following:

- Plans for the water, sanitary sewer and storm drain system – Appendix B
- Narrative description of the proposed system – Section 1.2

This variance request is being made to facilitate the design and operation of the utilities at this closed landfill in Waco. The reasons for this variance include:

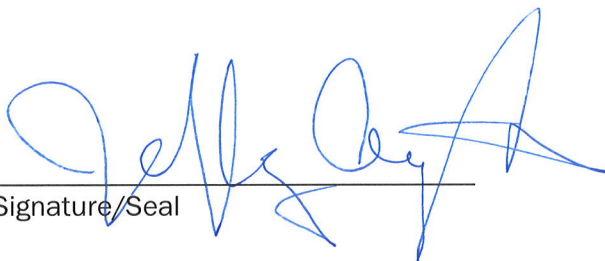
- To provide a cost-effective alternative to the double-contained piping (pipe in pipe) requirement for conduits carrying fluids over closed landfills. The use of double-contained wall piping for utility lines adds cost and complicates the maintenance and repairs for the system that includes valve boxes, manholes, fire hydrants and other features that make the use of double-contained piping systems not feasible.
- To avoid implementation of a cost prohibitive design standard that may result in significant additional cost to the University, City of Waco and its citizens. Similar trench liner systems have been approved at closed landfills for the Baylor Golf Practice facility and also at closed landfill sites in Dallas and Mesquite, Texas.

The proposed alternative to double-contained piping for water, wastewater and storm drain lines involves the use of 40-mil HDPE trench liners that will be installed in the pipe trenches for the utility lines. The water and wastewater lines will include leak detection manholes at the beginning and end of the proposed new lines. The trench liners will be connected to the leak detection manholes to complete the system of leak containment. The storm drain trench liners will terminate at the outfall locations to allow for stormwater to discharge outside of the limits of waste. Sensors will be installed in the leak detection manholes that provide an alarm for liquid levels to indicate potential leak in the lines.

2 ENGINEER'S CERTIFICATION (30 TAC §330.960(1))

Certification of no Potential Threat to Public Health or the Environment:

I, Jeff Arrington, P.E. #61895 certify that the proposed development will not increase or create a potential threat to public health or the environment. Further, I certify that the proposed development will not damage the integrity or function of any component of the Closed Municipal Solid Waste Landfill Unit, including, but not limited to, the final cover, containment systems, monitoring system, or liners. This certification includes all documentation of all studies and data on which I relied in making these determinations.


Signature/Seal

02-21-2022
Date



3 EXISTING CONDITIONS SUMMARY (30 TAC §330.960(2))

3.1 LAND USE

The current land use for the closed landfill is open grassed turf that is currently part of the football practice facility. The property is owned by the University and is located adjacent to the indoor and outdoor practice fields and the existing parking lot for the Simpson Athletic Complex. Surrounding land use includes the Baylor Law School and Mayborn Museum. Baylor Marina and other athletic facilities are located along this corridor of the Brazos River to the east of this property. The Brazos River is located along the northern limits of the project site. The proposed construction is not located within the 100-year floodplain of the river.

3.2 SITE INVESTIGATION

A site investigation was performed on this property in 2021 by Langerman Foster that included soil borings and laboratory testing. The purpose of the investigation was to obtain information on the subsurface conditions for use in the design of the proposed structure and new features. A copy of the investigation report is included in the appendix to this authorization request.

3.3 CONDITION OF FINAL COVER

In general, the landfill cover consists of clay and clayey sand with some gravel. The landfill has established vegetative cover over unpaved areas. The field investigation did not establish a definitive cap thickness as the waste fill material is mixed with soil in small quantities throughout the fill layer. Any areas of the cap that are disturbed during construction will be restored to the minimum of two feet of clay rich soil. The deficient areas will be corrected to the required 2-foot minimum thickness as part of the grading efforts described in Section 4. Appropriate construction quality control will be implemented and documented to assure completion consistent with TCEQ rules. Existing cover soils are generally fat clay or clay-rich soils that provide adequate protection for the closed landfill. The proposed construction will include maintaining the required cover thickness and enhancing the vegetative cover and drainage as part of the site improvements.

3.3.1 Cover Thickness

Based on geotechnical reports, the final cover generally consists of clay and sandy clay soils generally 1 to 3 feet thick with a vegetative layer that is a few inches thick. Boring logs of the final cover in the area of the proposed construction are included in the geotechnical investigations contained in Appendix A.

3.4 WASTE CHARACTERIZATION

The closed landfill site was used for disposal of municipal solid waste and potentially construction/demolition debris from historic storms in the 1950's. No records are available on fill depths throughout the property, but based on the geotechnical investigation, waste fill depths are in the range of 13 to 22 feet. The age of the waste is approximately 40 to 60 years old, based on a review of historic photographs and data in the closed landfill inventory. Waste materials may have included both putrescible and non-putrescible wastes, although detailed data on waste characterization is not available. The recent geotechnical investigation identified waste materials as fragments of glass, brick, wood and plastic.

The waste limits of the landfill are shown on the site plan drawings C1.00 and C1.01, provided in Appendix B. The waste limits were established based on field investigations and observations from site visits. Most of the site was previously used as landfill.

3.5 GAS PRODUCTION POTENTIAL

Based on the age of the waste and current readings of methane near the top of the waste layer, landfill gas production is expected to be at or near zero. Proposed improvements will add some impervious layers including concrete and building foundations which will have little or no effect on methane gas production at this site.

3.6 POTENTIAL ENVIRONMENTAL IMPACTS

The construction activities that will impact the final cover of the closed landfill consist of installation of utilities and new pavement and with minor grading over the final cover within the construction area to maintain proper drainage. The football operations center site work construction will include trenching excavation to install the proposed water, wastewater, and storm drainage system as well as new concrete pavement and minor grading to maintain proper surface drainage. No enclosed structures or foundations are proposed with this authorization request. The grading associated with the site work will be limited in nature and only as required to achieve proper drainage for the subsequent building construction. All landfill cover areas outside of paved surfaces will be required to establish grass cover. The proposed site improvements will add impervious surfaces over the closed landfill in some areas and maintain the established grass cover and positive drainage that currently exists at the site. A minimum of 2 foot of clean soil cover will be re-established in all areas that will be impacted by grade changes and new pavement. Any utilities that are installed below the landfill cover will maintain a minimum of 2 feet of clay soil separation from the waste to the pipe embedment material. The proposed construction will not adversely impact the cover of the landfill since any soil removed will be replaced with soil that has similar characteristics. The construction of the proposed improvements will not endanger the health, safety, or welfare of the public.

4 PROJECT DESCRIPTION (30 TAC §330.960(3) AND (4))

This section addresses the requirements of 30 TAC §330.960(3) and (4) which requires a description of the construction/investigation process including, but not limited to, work schedule and safety issues during construction. Section 5 will provide more detail regarding environmental management during construction.

This section describes the construction of the proposed site improvements to be located over the closed landfill property in Waco, Texas. The proposed construction activities associated with this authorization request consist of site grading, paving and drainage and installation of water and sanitary sewer lines to support the future construction of the new football operations building. The next phase of construction will include the new operations building that will be part of a development permit submittal for this project.

The proposed construction for this authorization request includes site work consisting of new water, and wastewater lines to serve the new football operations building. New concrete pavement and a drainage system to handle stormwater runoff will be constructed adjacent to the proposed building site. Limited site grading to establish finished grades needed to accommodate the planned finished floor elevations for the building structure. After completion of the site improvements the building construction will proceed. A separate permit application under Subchapter T will be submitted to obtain approval for the construction of the new football operations building. This request for authorization to disturb final cover includes all of the proposed construction activities described in the plans included in Appendix B. The following proposed improvements are included in this request:

- Stripping vegetative cover and removal of some concrete walkways
- Grading and placement of clay soil and topsoil over the landfill cover
- Construction of the new sanitary sewer line
- Construction of the storm drainage system consisting of pipe, inlets and other structures
- Construction of the a new water line including valves and fittings
- Construction of new pavement for building access and parking
- Site grading to establish proper drainage and installation of turf outside of paved areas.

Engineering plans detailing the proposed construction are included in Appendix B of this authorization request. These plans provide information on the proposed grading, drainage and utility construction for the planned football operations center. The following list provides general content descriptions of the applicable plan sheets for this request:

Baylor University Fudge Football Operations Center - Civil Plans

CS, C01.00 – C01.02 Drawing Index and Site Plans, Paving Plans;

The general location of the project and a list of all the construction drawings included in the plan set are provided on the cover sheet. The project location is shown on this sheet in the map inset. Survey control, proposed concrete pavement and limits of waste are included on C01-C01.02

C02.00 – C03.01: Drainage Plan and Profiles, Grading Plan and Sections

These drawings outline the storm drainage and site grading for the project. The drainage plan provides general layout of the proposed subsurface drainage system as well as surface drainage features. The proposed drainage system includes new concrete pavement with curb and gutter along with inlets and storm drain lines 12” to 24” in diameter. The storm drain lines outfall in the adjacent river and inlet to the river. Site grading plan and section provides information on the existing and proposed grades for the new features. The grading will involve some excavation that may expose or remove waste materials. The sections indicate that a minimum of two feet of clean clay soil material will be maintained or replaced from the proposed finished grade to the waste layer as shown.

C04.00- C05.01: Water and Wastewater Plans

A new 6-inch water line is proposed to be constructed outside the new operations building that will connect to an existing 8-inch water line west of the football practice fields. The alignment is shown on the water plan sheet. A new 6-inch wastewater line will be constructed to serve the new building and will tie into an existing wastewater line west of the building as shown.

C06.00 – C06.03: Details

These drawings provide details for the construction of the water distribution system and storm drain system as well as trench details and notes to the contractor. Details are provided for the utility trenches. All new water, wastewater, and storm drain lines will be constructed with 40-mil trench liners as shown on the details. Leak detection manholes will be installed along the new water and wastewater lines in accordance with the detail on sheet C06.00.

Construction Safety Issues

The contractor and all subcontractors will be required to follow safety procedures outlined in this document and the specifications, and will be expected to be prepared to encounter waste and adhere to provisions of this plan. The contractor will be required to address, at a minimum, the following safety issues:

- **Landfill gas safety issues** – Workers will follow the safety procedures that are contained in the Site Safety Plan (SSP) required for construction and procedures contained in this document. Construction of this project will be performed in and near buried wastes. As these buried materials decompose, they will generate landfill gas, which normally consists of carbon dioxide, methane, and occasionally hydrogen sulfide, as well as other trace gases, depending on the composition of the buried materials. These gases usually vent to the atmosphere through the cover soil, but may also migrate laterally to adjacent areas depending on site and weather conditions. Landfill gases may cause an oxygen deficiency in underground trenches, vaults, conduits, and structures. The contractor and or the University will conduct air monitoring in excavation areas and other locations of construction activity where landfill gas is likely to accumulate. Monitoring equipment shall be calibrated to detect small amounts of methane and be recalibrated periodically in accordance with manufacturers’ recommendations and the SSP. Monitoring of air for methane gas (and other gases, as determined by the SSP) shall be performed during working hours whenever open trenches, excavations, or waste handling/disposal is taking place, when the contractor is working on or near exposed refuse, or when landfill gas is likely to be present.
- In addition, the SSP to be developed for the project by the selected contractor will address construction workers safety. Also, the selected contractor will be advised of the possibility of

landfill gas and to take the necessary precautions associated with construction activities at this site. To monitor concentrations of methane, an on-site representative of the contractor will be required to continuously wear a personal gas monitor which will detect concentrations of methane and emit an audible alarm when methane concentration reaches 20 percent of the lower explosive limit. If this were to happen, the representative will immediately advise all personnel to vacate the area of concern and not return until methane concentrations have returned to acceptable levels. While such conditions that would allow methane to accumulate to levels of concern are not anticipated, the representative will, nonetheless, monitor the excavation process on a routine basis to provide suitable oversight of methane concentrations.

- The University will designate a Professional Engineer to oversee the methane monitoring program during construction. Consistent with the SSP, the responsible individual will determine the appropriate levels of monitoring for the proposed construction activities.
- **Potential fire control and management** – Fires and explosions may occur from the presence of methane gas. Methane is explosive in approximate concentrations of 5 to 15 percent by volume in air and will be present in landfill gas at the site. Soil shall be stockpiled adjacent to work space in areas of exposed refuse for firefighting purposes and water will be available all times on-site for potential fire suppression. Fire extinguishers with a rating of at least A, B, and C will be available at all times on the site. Welding, smoking, and startup and shutdown of equipment will not be permitted in areas of exposed refuse and smoking will not be allowed at any time within the construction area. The local fire department will be notified prior to the commencement of construction and its contact information will be kept available by all supervising project personnel, one of which will be on-site during all working hours.
- **Procedures for working with municipal solid waste** – Landfill materials (solids and liquids) have the potential to contain pathogens, fungus, viruses, infectious materials, sharp, puncturing, and cutting objects, and other hazards. Dust control during waste excavation is important with respect to controlling dust-borne transmission of harmful elements. Preventing dermal contact with waste by workers, including unnecessary walking over, or in, exposed waste, will also reduce the risks of worker exposure. Dust control and worker exposure during excavation will be addressed in the contractor's health and safety plan, as will be required by the bid documents for this project.

The project construction is scheduled to begin in June of 2022 and is expected to be completed by the end of 2023.

5 DESCRIPTION OF EXCAVATED MATERIAL DISPOSAL AND MANAGEMENT OF WATER AND METHANE MONITORING (30 TAC§330.960 (5))

This section discusses how the contractor will handle any waste or contaminated water encountered during the construction of proposed improvements. This section also describes procedures for disposal of excavated waste materials that may be encountered during construction. In accordance with 30 TAC §330.960(5), this section also contains a description of procedures for water and/or methane monitoring and excavated material disposal during construction, if applicable.

5.1 DISPOSAL OF WASTE MATERIALS

The construction activities associated with the proposed site work and utility construction may result in the generation of solid waste material from proposed site grading or trench excavation. Although some of the work associated with the project will take place outside the landfill limits, most of the construction activity takes place within the limits of the closed landfill.

If solid waste is encountered during these or any other construction activities, the waste will be separated from other clean excavated material and removed from the site for disposal. If the waste needs to be stored on-site for more than 24 hours, it will be covered with an impermeable synthetic material to prevent contact with rainfall. All excavated material that contains solid waste will be removed from the site and disposed of at a permitted facility authorized to receive municipal solid waste.

If excavation activities result in exposed waste, the area will be covered with clean soil or other materials as soon as practical but no later than the end of the day it has been exposed. If an area of exposed waste will remain exposed for an extended period, the contractor will provide adequate cover consisting of a minimum of 6 inches of soil or an impermeable membrane material to prevent rainfall from contacting the waste. Diversion berms will be installed around the exposed area to prevent stormwater flows from contacting the waste.

If waste is exposed during excavation activities for any of the proposed improvements including but not limited to:

- Trenching for water, wastewater, and storm drain lines
- Site Grading
- Paving Construction
- Construction of manholes, valve boxes and inlets

then, a minimum of a 2-foot thick clay rich soil layer will be placed and compacted over the exposed area except as noted under section 4 regarding irrigation and drainage piping. In areas where grading reduces cap thickness to less than 2 feet, the cap will be restored to a minimum of 2 feet.

5.2 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

This section discusses environmental considerations inherent in the proposed construction activities that will be performed over a closed landfill.

5.2.1 Drainage Control and Leachate/Contaminated Water

Stormwater runoff control measures will be used to minimize contaminated water generation. Temporary diversion berms will be used upslope of all excavations where waste will be exposed to minimize the amount of surface water coming into contact with waste materials. In addition, temporary containment berms will be constructed around areas of exposed waste to collect surface water. The diversion berms and containment berms will be appropriately installed in areas where waste material will be exposed due to excavation or other construction activities. At no time will contaminated water be allowed to discharge to surface waters.

In view of the management procedures described above, especially the covering of waste and precautions implemented in advance of inclement weather, the generation of leachate or contaminated water is expected to be minimal. However, if leachate or contaminated water is generated, the water will be collected and disposed of in accordance with standards set forth herein and in accordance with City and State requirements for disposal of such water. The following are methods (or a combination) that will be used to handle any leachate or contaminated water encountered or generated during construction:

- On-site storage and disposal in the sanitary sewer – will require analysis of the leachate or contaminated water to compare with the acceptable limits at the local wastewater treatment plant, as approved by the City of Waco, regarding discharge limits.
- On-site storage and disposal off-site via vacuum truck transport – will require a vacuum truck to transport the leachate/contaminated water to an approved wastewater treatment facility. This option will likely only be utilized if discharging into the sewer system, proves not to be feasible.
- In areas where waste is excavated, all waste will be properly transported to an approved MSW landfill. No waste will be left exposed overnight.

5.2.2 Erosion and Sediment Control During Construction

The contractor will be required to comply with TCEQ's general stormwater permit for construction activities of the Texas Pollutant Discharge Elimination System (TPDES) prior to beginning work. As part of the coverage under TPDES, the contractor will file a Notice of Intent (NOI), prepare a Storm Water Pollution Prevention Plan (SWPPP), and install appropriate erosion control devices in accordance with the SWPPP, which must be in place prior to filing of the NOI.

The provisions of the SWPPP will include measures to control sediment discharge during construction including, but not be limited to the use of earthen berms, hay bales, and silt fencing down-gradient of slopes which may experience erosion (including material stockpiles). Erosion damage from rainfall events will be repaired by the contractor after such events. All erosion control measures will also be inspected and maintained throughout the redevelopment process.

As discussed in Section 5.2.1, drainage control measures will be put in place to minimize the amount of contaminated water generated during the project and to collect any leachate from the excavation process. Such berms will also be maintained as necessary to meet SWPPP requirements and to control erosion.

The contractor will pay special attention to erosion on soil cover over waste materials. Any cover damage to the existing landfill, or in areas where cover must be maintained over solid waste materials

that are part of construction, will be repaired immediately and steps taken to prevent a recurrence of that type of damage.

5.2.3 Landfill Gas and Methane Monitoring During Construction

Due to the age and composition of the waste, landfill gas may be encountered during construction. Therefore, the contractor will develop a SSP that addresses construction worker safety. Also, the selected contractor will be advised of the possibility of landfill gas and to take the necessary precautions if any deeper excavations occur for any reason over the landfill portion of this site. Due to the proposed trench excavations within the landfill cap and the extent of work over the landfill and the presence of methane in several of the soil borings, landfill gas monitoring will be conducted during construction. The construction site area as well as all trench excavations will be monitored at least once daily for the presence of methane gas using a GEM 2000 or similar instrument capable of measuring methane concentrations in air to 1 percent or less by volume. In the event that methane concentrations of 20 percent LEL or greater are detected in the air within an area that workers are present, appropriate action will be taken to safeguard workers and reduce the concentration of methane gas in the air, otherwise work will be suspended. Additional procedures related to landfill gas safety are included in Section 4. Detailed health and safety specifications to be used on this project are contained within Appendix C for this project.

Appendix A

Site Investigation

- Geotechnical Investigation – February 2020