WILLIAMSON TRANSFER STATION
TCEQ Permit No. MSW-2398

Response to Technical Notice of Deficiency

Permit Application

VOLUME 1 OF 1

Prepared for:

Lealco, Inc.
7118 US Hwy 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Registration No. F-3407
12651 Briar Forest, Suite 205
Houston, Texas 77077

January 2018
File No. 16216121.00
January 2, 2018

Mr. Michael S. Sofijczuk
MC-124
Municipal Solid Waste Permits Section
Waste Permits Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Subject: Williamson Transfer Station – Williamson County
Municipal Solid Waste (MSW) – Permit No. 2398
Permit Application – Second Technical Notice of Deficiency
Tracking Nos. 21862836, 21925726, and 22102476; CN601096944/ RN109898239

Dear Mr. Sofijczuk:

On behalf of Lealco, Inc. (Lealco), SCS Engineers (SCS) is pleased to submit these written responses to the TCEQ’s Second Technical Notice of Deficiency (NOD) letter dated December 6, 2017 for the above referenced Permit Application. Each item listed by the TCEQ is copied below and is followed by Lealco’s written response. Accompanying this letter are revised application pages and any updated maps, drawings and figures. An original and three (3) copies of this letter and the accompanying revisions are provided per your request.

**TCEQ Comment No. 1**

Part I/II Section 1.1 and Part III Section 1.1 of the application state that there is currently no physical address for the facility property and that the mailing address for the facility “will be obtained upon permit approval.” However, the facility appears to have a mailing address, as stated in the Part I Form. Please revise the statement in Parts I/II and III to state that the physical address will be obtained upon permit approval.

**Response No. 1**

The Part I Form provides the current Facility Contact Information, including the appropriate mailing address for the Site Operator (Permittee), in Section 17. Because the site is currently undeveloped, there is no independent physical address for the facility at the present time. Therefore, Part I/II Section 1.1 and Part III Section 1.1 have been revised to state the “physical address for the facility will be obtained upon permit approval”. The mailing address for the Site Operator (Permittee) as indicated on the Part I Form is the currently operative mailing address for all correspondence.

**TCEQ Comment No. 2**

Part I/II Section 3.2.1, Part III Section 2.1.1 and Part IV Section 12.2 clarify that site entrance and exit roads are one lane roads and accommodate one lane traffic. However, two separate one lane roads do not meet the requirement of section 30 TAC §330.223(b) which states that the facility access road must be at least two lanes. Please revise the application in accordance with 30 TAC §330.223(b).

**Response No. 2**

Part I/II section 3.2.1, Part III section 2.1.1 and Part IV section 12.2 were revised to state the facility will be served by a two-lane, 22-ft wide, paved access road within the northern easement area and widening to approximately 30 feet within the Lealco property, as shown on revised Figure I/II-14 and Figure III-1.1. The access road has been designed for the expected traffic flow and will provide safe onsite access for
TCEQ Comment No. 3
Please revise Part I/II Section 3.2.2 Traffic Volumes to provide data on the volume of vehicular traffic, including CR 130, CR 100, and Chandler Road, within one mile of the proposed facility in accordance with 30 TAC 330.61(i)(2).

Response No. 3
Part I/II Section 3.2.2 and Figure I/II-10 were revised to provide data on the volume of vehicular traffic within one mile of the proposed facility, including CR 130, CR 100 and Chandler Road, in accordance with 30 TAC 330.61(i)(2).

TCEQ Comment No. 4
The proposed maximum volume of waste to be stored at the facility overnight is 1,000 tons, including waste on the tipping floor and in loaded transfer vehicles. Please revise Part IV Section 21.0 to provide relevant volumetric data demonstrating that storage area provides sufficient capacity for 1,000 tons of waste in accordance with 30 TAC §330.241.

Response No. 4
In accordance with 30 TAC §330.241(a), Part IV Section 21.0 was revised to include a calculation indicating the facility tipping floor can accommodate the maximum projected overnight waste volume.

TCEQ Comment No. 5
The response to the first technical NOD clarified that the description of special waste analysis described in Part IV Appendix 1 Section 2.0 applies to a landfill and not the transfer station. Please revise the section to describe the procedure for special waste acceptance at the proposed facility.

Response No. 5
The transfer station will not independently employ a “special waste analyst” as clarified in Part IV Appendix 1 Section 2.0. However, transfer station personnel will be coordinating with the receiving landfill’s special waste analyst prior to the delivery of special waste to the transfer station. Appropriate transfer station personnel will be trained to receive and process special waste at the transfer station as stated in Section 3.0 of the WAP.

TCEQ Comment No. 6
Please include the response letter from the Texas Department of Transportation for traffic and location restrictions in accordance with 30 TAC §330.61(i)(4) when it is received.

Response No. 6
A response letter dated November 10, 2017 from the Texas Department of Transportation (TxDOT) to TCEQ was provided indicating no impact to TxDOT roadways, and other correspondence are included in Appendix I/II-A.3.
The following items are included with this technical NOD response:

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part I Form</td>
<td>New Permit/Registration and Amendment Applications for an MSW Facility</td>
<td>Revised form revision date and signature.</td>
</tr>
<tr>
<td>Binder Cover Pages and Spines</td>
<td>Volume I of I</td>
<td>Revised date.</td>
</tr>
<tr>
<td>Part I and II</td>
<td>General Information</td>
<td>Revised Cover Sheet, Table of Contents, text page I/II-1, I/II-13 through I/II-17. Revised Figures I/II-7, I/II-10 and I/II-14.</td>
</tr>
<tr>
<td>Part I and II</td>
<td>Permit Related Correspondence</td>
<td>Added correspondence to Appendix I/II-A.3.</td>
</tr>
<tr>
<td>Part III</td>
<td>Site Development Plan</td>
<td>Revised Cover Sheet, Table of Contents and text page III-1, III-3 and III-9.</td>
</tr>
<tr>
<td>Part III, Attachment 1</td>
<td>General Facility Design Plan</td>
<td>Revised Cover Sheet, Table of Contents and Figure III-1.1, III-1.3, and III-1.6.</td>
</tr>
<tr>
<td>Part III, Attachment 1, Appendix A</td>
<td>Surface Water Drainage Plan</td>
<td>Revised and replace entire appendices.</td>
</tr>
<tr>
<td>Part IV</td>
<td>Site Operating Plan</td>
<td>Revised Cover Sheet, Table of Contents, and text pages IV-23, IV-30, and IV-32.</td>
</tr>
<tr>
<td>Part IV, Appendix IV-1</td>
<td>Waste Acceptance Plan</td>
<td>Revised Cover Sheet, Table of Contents, and text pages IV-1.3 and IV-1.4.</td>
</tr>
</tbody>
</table>

As required by 30 TAC §330.57(i)(1) of TCEQ rules, a complete copy of this response is accessible at the following web site: [http://www.scsengineers.com/State](http://www.scsengineers.com/State).

We trust that this submittal is complete and will lead towards technical approval of this permit application. If you have any questions or comments concerning this submittal, please contact me at (281) 293-8494.

Sincerely,

[Signature]

Jeffrey K. Reed, P.E.
Vice President
SCS ENGINEERS

Enclosures

cc: Chris Ruane – Lealco
    Brett O’Connor - WCN
PERMIT APPLICATION
RESPONSE TO NOTICE OF DEFICIENCY

ATTACHMENT NO. 1

PART 1 FORM
Facility Name: Williamson Transfer Station  
Permittee/Registrant Name: Lealco, Inc.  
MSW Authorization #:2398  
Initial Submittal Date: 8/8/2017  
Revision Date: 1/2/2018  

Texas Commission on Environmental Quality  
Part I Form  
New Permit/Registration and Amendment Applications for an MSW Facility  

1. Reason for Submittal  
- Initial Submittal  
- Notice of Deficiency (NOD) Response  

2. Authorization Type  
- Permit  
- Registration  

3. Application Type  
- New  
- Major Amendment  
- Major Amendment (Limited Scope)  

4. Application Fees  
- Pay by Check  
- Online Payment  
If paid online, e-Pay Confirmation Number: 582EA000267336  

5. Application URL  
Is the application submitted for Type I Arid Exempt (AE) and/or Type IV AE facility?  
- Yes  
- No  
If the answer is “No”, provide the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted.  
http://www.scsengineers.com/state/williamson-transfer-station/  

6. Application Publishing  
Party Responsible for Publishing Notice:  
- Applicant  
- Agent in Service  
- Consultant
7. Alternative Language Notice

Is an alternative language notice required for this application? (For determination refer to Alternative Language Checklist on the Public Notice Verification Form TCEQ-20244-Waste)

☑ Yes ☐ No

8. Public Place Location of Application

Name of the Public Place: Hutto Public Library
Physical Address: 205 West Street
City: Hutto County: Williamson State: Texas Zip Code: 78634
(Area code) Telephone Number: (512) 759-4008

9. Consolidated Permit Processing

Is this submittal part of a consolidated permit processing request, in accordance with 30 TAC Chapter 33?

☐ Yes ☑ No ☐ Not Applicable

If “Yes”, state the other TCEQ program authorizations requested:

10. 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.”

11. Permits and/or Construction Approvals

<table>
<thead>
<tr>
<th>Select all that apply</th>
<th>Received</th>
<th>Pending</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Waste Management Program under the Texas Solid Waste Disposal Act</td>
<td>☑</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Underground Injection Control Program under the Texas Injection Well Act</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>National Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under Texas Water Code, Chapter 26</td>
<td>☐</td>
<td>☑</td>
<td>☐</td>
</tr>
<tr>
<td>Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA). Nonattainment Program under the FCAA</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
<tr>
<td>National Emission Standards for Hazardous Air Pollutants Preconstruction Approval under the FCAA</td>
<td>☐</td>
<td>☐</td>
<td>☑</td>
</tr>
</tbody>
</table>
12. General Facility Information

Facility Name: **Williamson Transfer Station**

MSW Authorization No. (if available): **2398**

Regulated Entity Reference No. (if issued)*: **RN 109898239**

Physical or Street Address (if available): **N/A**

City: **Hutto**  County: **Williamson**  State: **Texas**  Zip Code: **78634**

(Area Code) Telephone Number: **N/A**

Latitude (Degrees, Minutes Seconds): **30° 35' 51.21"**

Longitude (Degrees, Minutes Seconds): **97° 33' 36.17"**

Benchmark Elevation (above mean sea level): **724 ft.**

Provide a description of the location of the facility with respect to known or easily identifiable landmarks: **Approximately 0.8 miles northwest of the intersection of CR130 and Chandler Road.**

Detail access routes from the nearest United States or state highway to the facility: **Traveling from Chandler Road, go north on CR130 for approximately 0.8 miles. Entrance is on the west side of CR130.**

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

13. Facility Type(s)

- □ Type I
- □ Type I AE
- □ Type IV
- □ Type IV AE
- □ Type V
- □ Type VI
14. **Activities Conducted at the Facility**

- [x] Storage  
- [x] Processing  
- [ ] Disposal

15. **Facility Waste Management Unit(s)**

- [ ] Landfill Unit(s)  
- [ ] Class 1 Landfill Unit(s)  
- [ ] Process Tank(s)  
- [ ] Storage Tank(s)  
- [x] Tipping Floor  
- [ ] Storage Area  
- [ ] Container(s)  
- [ ] Roll-off Boxes  
- [ ] Surface Impoundment  
- [ ] Incinerator(s)  
- [ ] Autoclave(s)  
- [ ] Refrigeration Unit(s)  
- [ ] Mobile Processing Unit(s)  
- [ ] Type VI Demonstration Unit  
- [ ] Compost Pile(s) and/or Vessel(s)  
- [ ] Other (Specify)  
- [ ] Other (Specify)  
- [ ] Other (Specify)

16. **Description of the Revisions to the Facility**

Skip this box, if "New" is selected under "Application Type".

Provide a brief description of all revisions to the permit conditions and supporting documents referenced by the permit. Also, provide an explanation of why the amendment is requested.

**Applicant is requesting authorization to transfer municipal solid waste which includes wastes resulting from or incidental to municipal, community, commercial, institutional, and recreational activities; construction or demolition waste; special waste that does not interfere with site operations; and other wastes such as Class 2 and Class 3 industrial waste. A complete listing of acceptable and prohibited wastes is contained in the application which can be viewed online at:**


17. **Facility Contact Information**

- **Site Operator (Permittee/Registrant) Name:** Lealco, Inc. (Chris Ruane – Region Engineering Manager)
- **Mailing Address:** 7118 US Hwy 59 South
- **City:** Goodrich  
  **County:** Polk  
  **State:** Texas  
  **Zip Code:** 77335
- **Telephone Number:** (832) 442-2204
- **Email Address:** chrisr@wasteconnections.com
- **TX Secretary of State (SOS) Filing Number:** 110228000

*If the Site Operator (Permittee/Registrant) does not have this number, complete a TCEQ Core Data Form (TCEQ-10400) and submit it with this application. List the Site Operator (Permittee/Registrant) as the Customer.*
Operator Name: Same as “Site Operator”
Customer Reference No. (if issued)*:
Mailing Address:
City: County: State: Zip Code:
(Area Code) Telephone Number:
Email Address:
TX SOS Filing Number:

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

Consultant Name (if applicable): SCS Engineers (Jeffrey K. Reed – Vice President)
Texas Board of Professional Engineers Firm Registration Number: F-3407
Mailing Address: 12651 Briar Forest Dr., Suite 205
City: Houston County: Harris State: Texas Zip Code: 77077
(Area Code) Telephone Number: (281) 293-8494
E-Mail Address: jeffreed@scsengineers.com

Agent in Service Name (required only for out-of-state):
Mailing Address:
City: County: State: Zip Code:
(Area Code) Telephone Number:
E-Mail Address:

18. Facility Supervisor’s License
Select the Type of License that the Solid Waste Facility Supervisor, as defined in 30 TAC Chapter 30, Occupational Licenses and Registrations, will obtain prior to commencing facility operations.

☒ Class A ☐ Class B

19. Ownership Status of the Facility
☒ Corporation ☐ Limited Partnership ☐ Federal Government
☐ Individual ☐ City Government ☐ Other Government
☐ Sole Proprietorship ☐ County Government ☐ Military
☐ General Partnership ☐ State Government ☐ Other (Specify):
Does the Site Operator (Permittee/Registrant) own all the facility units and all the facility property?
☑ Yes      ☐ No

If "No", provide the information requested below for any additional ownership.

**Owner Name:**
Street or P.O. Box:
City: County: State: Zip Code:
(Area Code) Telephone Number:
Email Address (optional):

---

## 20. Other Governmental Entities Information

**Texas Department of Transportation District:** Austin District
District Engineer’s Name: **Terry McCoy, P.E.**
Street Address or P.O. Box: **P.O. Drawer 15426**
City: **Austin** County: **Travis** State: **Texas** Zip Code: **78761**
(Area Code) Telephone Number: **(512) 832-7000**
E-Mail Address (optional):

**The Local Governmental Authority Responsible for Road Maintenance (if applicable): Williamson County Road and Bridge Division**
Contact Person’s Name: **J. Terron Evertson, P.E.**
Street Address or P.O. Box: **3151 S. E. Inner Loop, Suite B**
City: **Georgetown** County: **Williamson** State: **Texas** Zip Code: **78626**
(Area Code) Telephone Number: **(512) 943-3330**
E-Mail Address (optional):

**City Mayor Information**
City Mayor’s Name: **Doug Gaul**
Office Address: **401 W. Front Street**
City: **Hutto** County: **Williamson** State: **Texas** Zip Code: **78634**
(Area Code) Telephone Number: **(512) 759-4033**
E-Mail Address (optional):
City Health Authority: Not Applicable

County Judge Information
County Judge’s Name: Judge Dan A. Gattis
Street Address or P.O. Box: 710 S. Main Street, Suite 101
City: Georgetown County: Williamson State: Texas Zip Code: 78626
(Area Code) Telephone Number: (512) 943-1550
E-Mail Address (optional):

County Health Authority: Williamson County and Cities Health District
Contact Person’s Name: John H. Teel
Street Address or P.O. Box: 710 S. Main Street, Suite 101
City: Georgetown County: Williamson State: Texas Zip Code: 78626
(Area Code) Telephone Number: (512) 943-3600
E-Mail Address (optional):

State Representative Information
District Number: District 20
State Representative’s Name: Terry Wilson
District Office Address: P.O. Box 2910
City: Austin County: Travis State: Texas Zip Code: 78768
(Area Code) Telephone Number: (512) 463-0309
E-Mail Address (optional):

State Senator Information
District Number: District 5
State Senator’s Name: Charles Schwertner
District Office Address: 3000 Briarcrest Drive, Suite 202
City: Bryan County: Brazos State: Texas Zip Code: 77802
(Area Code) Telephone Number: (979) 776-0222
E-Mail Address (optional):
Council of Government (COG) Name: Capital Area Council
COG Representative's Name: Betty Voights
COG Representative's Title: Executive Director
Street Address or P.O. Box: 6800 Burleson Road, Bldg 310, Ste 165
City: Austin County: Travis State: Texas Zip Code: 78744
(Area Code) Telephone Number: (512) 916-6000
E-Mail Address (optional):

River Basin Authority Name: Brazos River Authority
Contact Person's Name: Phil Ford
Watershed Sub-Basin Name: Central Basin
Street Address or P.O. Box: P.O. Box 7555
City: Waco County: McLennan State: Texas Zip Code: 76714
(Area Code) Telephone Number: (888) 922-6272
E-Mail Address (optional):

Coastal Management Program
Is the facility within the Coastal Management Program boundary?
☐ Yes  ☒ No

U.S. Army Corps of Engineers
The facility is located in the following District of the U.S. Army Corps of Engineers:
☐ Albuquerque, NM  ☐ Galveston, TX
☒ Ft. Worth, TX  ☐ Tulsa, OK

Local Government Jurisdiction
Within City Limits of: N/A
Within Extraterritorial Jurisdiction of: Hutto, Texas

Is the facility located in an area in which the governing body of the municipality or county has prohibited the storage, processing or disposal of municipal or industrial solid waste?
☒ Yes  ☐ No [County siting ordinance prohibits only disposal]

(If "Yes", provide a copy of the ordinance or order as an attachment):
Signature Page

I, Brett O'Connor,
(Site Operator (Permittee/Registrant)’s Authorized Signatory)          Region Engineer,

(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: [Signature] Date: 1/2/18

TO BE COMPLETED BY THE OPERATOR IF THE APPLICATION IS SIGNED BY AN AUTHORIZED REPRESENTATIVE FOR THE OPERATOR

I, ______________________, hereby designate ______________________
(Print or Type Operator Name) (Print or Type Representative Name)
as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

____________________________
Printed or Typed Name of Operator or Principal Executive Officer

____________________________
Signature

SUBSCRIBED AND SWORN to before me by the said Brett O’Connor
On this 23rd day of January, 2018
My commission expires on the 20th day of May, 2018

Denise Bachmeyer
Notary Public in and for
Montgomery County, Texas
(Note: Application Must Bear Signature & Seal of Notary Public)
Part I Attachments

(See Instructions for P.E. seal requirements.)

Required Attachments

Supplementary Technical Report
Property Legal Description
Property Metes and Bounds Description
Facility Legal Description
  Facility Metes and Bounds Description
  Metes and Bounds Drawings
  On-Site Easements Drawing
Land Ownership Map
Land Ownership List
  Electronic List or Mailing Labels
Texas Department of Transportation (TxDOT) County Map
General Location Map
General Topographic Map
Verification of Legal Status
Property Owner Affidavit
Evidence of Competency

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

- TCEQ Core Data Form(s)
- Signatory Authority Delegation
- Fee Payment Receipt
- Confidential Documents
- Waste Storage, Processing and Disposal Ordinances
- Final Plat Record of Property
- Certificate of Fact (Certificate of Incorporation)
- Assumed Name Certificate

Attachment No.
Part I/II Narrative Documentation
Part I/II Documentation
Part I/II Documentation
Figure I/II-6
Figure I/II-5
Appendix I/II-D
  Part I/II
  Part I/II
  Figure I/II-1
  Figure I/II-4
Application Forms
  Documentation

TCEQ-0650, Part I Application (rev. 11/20/13)
PERMIT APPLICATION
RESPONSE TO NOTICE OF DEFICIENCY

ATTACHMENT NO. 2
REPLACEMENT PAGES

- Part I Form
- Cover Sheet and Spine
- Part I and II Narrative, Figures and Attachments
- Part III – Site Development Plan Narrative
- Part III, Attachment 1 – General Facility Design Plan Figures
- Part III, Attachment 1, Appendix A – Surface Water Drainage Plan
- Part IV – Site Operating Plan Narrative
- Part IV, Appendix IV-1 – Waste Acceptance Plan
TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

VOLUME I OF I

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Registration No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 - September 2017
Revision 2 – October 2017
Revision 3 – January 2018
TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

VOLUME I OF I

Prepared for:

Lealeo, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Registration No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 - September 2017
Revision 2 – October 2017
Revision 3 – January 2018
PARTS I & II

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 - September 2017
Revision 2 – October 2017
Revision 3 – January 2018
TABLE OF CONTENTS

1.0 PROPERTY AND OWNERSHIP SUMMARY ......................................................... 1
  1.1 Facility Location and History ................................................................. 1
  1.2 Property Description and Ownership Information ...................................... 1
  1.3 Adjacent Land Ownership and Mineral Interest Ownership ......................... 1
  1.4 Easements ............................................................................................... 2
  1.5 Legal Authority ....................................................................................... 2
  1.6 Evidence of Competency .......................................................................... 2
  1.7 Appointments .......................................................................................... 2
  1.8 Application Fees ..................................................................................... 2
  1.9 Application Posting Information ............................................................... 3
  1.10 Required Permits/Authorizations ............................................................. 3

2.0 FACILITY FEATURES AND WASTE ACCEPTANCE PLAN ............................. 5
  2.1 Proposed Permit ....................................................................................... 5
    TBPE Reg. # E-3407

  2.2 Sources and Characteristics of Waste ....................................................... 5
    2.2.1 Waste Types and Generation Areas ................................................... 5
    2.2.2 Projected Waste Acceptance Rate ...................................................... 8
    2.2.3 Population Equivalent .................................................................... 8
    2.2.4 Waste Storage and Disposal ............................................................ 8

  2.3 Regional Solid Waste Management ......................................................... 9

  2.4 Local Solid Waste Management ............................................................... 9

3.0 EXISTING CONDITIONS SUMMARY ......................................................... 10
### 3.1 Impact on Surrounding Area

- 3.1.1 Zoning ........................................... 10
- 3.1.2 Character of Surrounding Land Use .......... 10
- 3.1.3 Population and Community Growth Trends .... 11
- 3.1.4 Growth Trends .................................. 11
- 3.1.5 Proximity to Residences and Other Uses ....... 11
  - 3.1.5.1 Structures and Inhabitable Buildings Within 500 Feet of the Site .... 13
- 3.1.6 Oil/Gas and Water Wells ...................... 13
- 3.1.7 Prevailing Wind Direction .................... 13

### 3.2 Transportation Analysis .................................................. 13

- 3.2.1 Site Access .................................... 13
- 3.2.2 Traffic Volumes .................................. 14
- 3.2.3 Facility Generated Traffic Volumes .......... 15
- 3.2.4 Airport Locations ............................. 15
- 3.2.5 TxDOT Correspondence ....................... 15

### 3.3 General Geology and Soils Statement ................. 15

- 3.3.1 Physiography and Topography ............... 16
- 3.3.2 Geologic Setting ................................ 16
- 3.3.3 On-Site Soils .................................. 16

### 3.4 Ground and Surface Water Statement ................ 16

- 3.4.1 Groundwater Conditions ..................... 16
- 3.4.2 Surface Water Features ....................... 16
- 3.4.3 Texas Pollutant Discharge Elimination System 17

### 3.5 Floodplains and Wetlands Statement ................... 17

- 3.5.1 Floodplains .................................... 17
- 3.5.2 Wetlands ....................................... 17

### 3.6 Protection of Endangered or Threatened Species .... 17
3.7 Site-Specific Conditions Requiring Special Design Considerations

4.0 SUPPLEMENTARY TECHNICAL REPORT

TABLES

I/II-1.1 Access Easements
I/II-1.2 Required Permits/Authorizations
I/II-2.1 Waste Acceptance Rate Projection
I/II-3.1 Land Use Within a One-Mile Radius
I/II-3.2 Census and TAC Estimated Population Projection for Williamson County, 2015-2025
I/II-3.3 Existing and Future Traffic Volumes For Roadways Within Three Miles of the Facility
I/II-3.4 Existing and Future Traffic Volumes For County Roads Within One Mile of the Facility

APPLICATION FORMS

Part I Application Form
TCEQ Core Data Form

DOCUMENTATION

Legal Description
Legal Authority
Evidence of Competency
Appointment
Property Owner Affidavit

FIGURES

I/II-1 General Location Map
I/II-2 Site Location Map
I/II-3 Aerial Photograph
I/II-4 General Topographic Map
I/II-5 Land and Mineral Interest Ownership Map
I/II-6 Drainage, Pipeline and Utility Easement Location Map
I/II-7 Site Layout Plan
I/II-8 Land Use Map
I/II-9 Structures Location Map
I/II-10 Transportation Map
I/II-11 Geologic Map
I/II-12 Edwards Aquifer Recharge Zone Map
I/II-13 Soils Map
I/II-14 Site Entrance Layout Plan
I/II-15 Floodplain Map

APPENDICES

I/II-A Permit Related Correspondence
FOR PERMIT PURPOSES ONLY

I/II-A.1 CAPCOG Correspondence
I/II-A.2 Archaeological/Historical Quality Review Correspondence
I/II-A.3 TXDOT and Other Transportation Related Correspondence

I/II-B Location Restriction Summary
I/II-B.1 Wetlands Determination
I/II-B.2 Endangered or Threatened Species Assessment

I/II-C Well Location Summary
I/II-C.1 Water Well Location Map and Well Identification
I/II-C.2 Oil/Gas Well Location Map and Well Identification

I/II-D Land Ownership List
1.0 PROPERTY AND OWNERSHIP SUMMARY

The property ownership information for the Williamson Transfer Station is summarized in the following sections.

1.1 Facility Location and History

The Williamson Transfer Station will be located in an unincorporated area of Williamson County, Texas off County Road (CR) 130 near the intersection of CR 100 and FM 1660. The site is located within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility will be located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660. The site location is shown on Figures I/II-1 and I/II-2 in Parts I/II of this Permit application. Additionally, an aerial photograph showing the site and access roads is included as Part I/II, Figure I/II-3, and a general topographic map is included as Part I/II, Figure I/II-4.

The transfer station property is undeveloped and has not previously been used for solid waste operations.

The site is owned by Lealco, Inc. (Lealco). There is currently no physical address for the transfer station facility property.

The physical address for the transfer station will be obtained upon Permit approval.

The approximate coordinates of the transfer station property are N 30° 35' 51.21” latitude and W 97° 33’ 36.17” longitude.

1.2 Property Description and Ownership Information

The property that comprises the Williamson Transfer Station is depicted on the Permit Boundary Map, provided in the Legal Description portion of the Documentation section following this text. Also included is a metes and bounds description of the property. The recording information for the property is included on both the boundary map and the metes and bounds description and is summarized below.

The 20.448-acre Permit boundary comprises part of the following 50.914 acres (called 50.2 acres) tract in the John Dykes Survey, Abstract 186, Williamson County, Texas:

- Doris Fuchs, Gladys Townsend, and Ruby Cottle tract (recorded in Williamson County Clerk’s Instrument No. 2000082671).

Ownership information is provided in the Documentation section of Part I/II and in the Part I (TCEQ-0650) form. A Property Owner Affidavit provided on behalf of Lealco, Inc. is included in the Documentation section of Part I/II.

1.3 Adjacent Land Ownership and Mineral Interest Ownership

The Williamson County Appraisal District Tax Rolls and Tax Maps were reviewed in July 2017 to determine adjacent landowners, mineral interest owners, and others potentially affected by the Williamson Transfer Station. The landowner list contains the name and mailing address of each owner within ¼-mile radius of the facility. The Appraisal District records did not indicate any mineral interest ownership under the facility. Reference numbers are used to correlate the ownership shown on the land ownership list with the appropriate tract of land as shown on Figure I/II-5, Land and Mineral Interest
facility property or in the surrounding area that would be affected by the proposed Williamson Transfer Station. A copy of the THC correspondence is included in Part I/II, Appendix I/II-A.2.

**Miscellaneous Uses**

Other miscellaneous land uses within a one-mile radius of the facility include a law enforcement practice firing range approximately 1,700 feet southeast of the facility boundary and the Williamson County Recycling and Disposal Facility. These additional land uses are shown on the Land Use Map, provided as Figure I/II-8.

**3.1.5.1 Structures and Inhabitable Buildings Within 500 Feet of the Site**

In accordance with §330.61(c)(3), the structures and inhabitable buildings within a 500-foot radius of the proposed facility have been identified on Part I/II, Figure I/II-9. There are no structures and inhabitable buildings within 500 feet of the facility boundary.

**3.1.6 Oil/Gas and Water Wells**

The locations of water and oil/gas wells within one mile of the Permit boundary of the facility were determined based on a water and oil and gas well database search performed by The Banks Group. The well database search is included in Appendix I/II-C, Well Location Summary. No known water wells or oil/gas wells were identified within a 500-foot radius of the facility.

**3.1.7 Prevailing Wind Direction**

A wind rose is included on Figure I/II-1 to illustrate the prevailing wind direction. The nearest available wind rose for Austin, Texas for the years 1984 to 1992 indicates that the prevailing wind is from the south. The winds are calm 5.69% of the time. The wind rose data was obtained from the TCEQ.

**3.2 Transportation Analysis**

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility; data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

**3.2.1 Site Access**

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site access road will be a 22 to 30-foot wide, two-lane, paved driveway to accommodate two-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Access Road Layout) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site exit will be controlled by a stop sign. A 25-foot
access easement allows traffic to reach the Lealco owned property from CR 130. The access road will widen to approximately 30 feet within the site boundaries. Traffic flow directions are provided on Figure I/II-14.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance/exit.

Coordination with TxDOT and Williamson County is included in Appendix I/II-A.3.

3.2.2 Traffic Volumes

All traffic will access the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100, CR 131 and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.3. Table I/II-3.4 includes traffic count data for County roads within one mile of the facility based on 2011 data.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes</th>
<th>2035 Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,550</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.
3. Source: TxDOT
Table I/II-3.4 Existing and Future Traffic Volumes For County Roads Within One Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2011 Volumes&lt;sup&gt;1,2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 100</td>
<td>B/W CR107 and Chandler</td>
<td>590</td>
</tr>
<tr>
<td>CR 107</td>
<td>West of CR100 Intersection</td>
<td>634</td>
</tr>
<tr>
<td>Chandler Road</td>
<td>Just West of TX 130</td>
<td>4,696</td>
</tr>
<tr>
<td></td>
<td>Just East of TX 130</td>
<td>2,846</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>1,394</td>
</tr>
<tr>
<td>CR 130</td>
<td>Near Facility Entrance</td>
<td>485</td>
</tr>
<tr>
<td>CR 131</td>
<td>East of CR130 Intersection</td>
<td>178</td>
</tr>
</tbody>
</table>

1. Traffic volumes are in units of vehicles per day.
2. Source: Williamson County

3.2.3 Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Tables I/II-3.3 and I/II-3.4 shows that the volume of the traffic generated by the facility compared to the existing and projected volumes on the access roads intended for use by the facility within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

3.2.4 Airport Locations

There are no public-use airports within six miles of the site as indicated on Part I/II, Figure I/II-1. The nearest runway of a public-use airport is the Taylor Municipal Airport, located approximately 7 miles southeast of the facility. A small private airstrip is located approximately 1.5 miles northwest of the facility boundary. In accordance with 30 TAC 330.61(i)(5), an airport impact evaluation is required only for landfill units and landfill mining operations, and thus not required for transfer stations.

3.2.5 TxDOT Correspondence

In accordance with 30 TAC §330.61(i)(4), TxDOT was contacted for any traffic or location restrictions which may apply to the facility. A copy of all correspondence with TxDOT is included in Parts I/II, Appendix I/II-A.3.

3.3 General Geology and Soils Statement

In accordance with 30 TAC §330.61(j), a general discussion of the geology and soils at the Williamson Transfer Station is included in the following sections.
3.3.1  Physiography and Topography

The site is located in Williamson County, Texas. The topography of the area surrounding the Williamson Transfer Station is dominated by gently sloping valleys trending from a topographic high northwest of the facility. The site is located in the physiographic region known as the Grand Prairie. Rolling to gently rolling hills is the typical topographic expression in the area. The majority of the project site is currently being managed to produce row crops. Based on a review of readily available aerials photographs, it appears the entire project site has been historically used for row crop production. Part I/II, Figure I/II-4 shows the general site topography based on United States Geological Survey (USGS) maps, dated 2013.

The natural surface drainage in the site area drains to Mustang Creek that traverses the southern portion of the property from west to east. The approximate existing ground elevation of the facility ranges from 725 to 686 ft-msl from the northwest to the southeast. The northern approximately 47 acres of the site are located on a sideslope facing south-southeast, and drains toward Mustang Creek at an approximate 2 percent slope. The remaining approximately 4 acres of the site are located on a sideslope facing north, and drains toward Mustang Creek at an approximate 3 percent slope.

3.3.2  Geologic Setting

Based on available data, the property is located at the western edge of Pleistocene-age fluvialtil gravel/sands terrace deposits and the eastern edge of the outcropping of the Cretaceous-age Austin Chalk. The uppermost geologic unit in the vicinity of the site include the Ozan Formation (Cretaceous age) and the Austin Chalk. The Ozan Formation primarily consists of clays and claystone while the Austin Chalk consists of chalk, limestone, and claystone. A geologic map is included as Figure I/II-11.

3.3.3  On-Site Soils

The facility property is composed mainly of four soil types, according to the Natural Resource Conservation Service’s Soil Geographic Database for Williamson County (TX201, September 21, 2016): Austin silty clay, Houston black clay, Branson clay, and Tinn clay. The majority of the facility property consists of Austin silty clay and the Houston black clay. A Soils Map is included as Figure I/II-13.

3.4  Ground and Surface Water Statement

In accordance with 30 TAC §330.61(k), a general discussion of the groundwater and surface water conditions at the proposed Williamson Transfer Station is included in the following sections.

3.4.1  Groundwater Conditions

As shown on Part I/II, Figure I/II-12, the facility is not located in the Edwards Aquifer Recharge Zone.

3.4.2  Surface Water Features

The site generally slopes from the northwest to the southeast to Mustang Creek, which traverses the southern portion of the property. Based on the topography of the site, most storm water impacting the site will originate on-site, however storm water run-on from offsite north and west will occur north of Mustang Creek. For the small portion of property south of Mustang Creek, stormwater run-on may occur from off-site property to the south.
3.4.3 Texas Pollutant Discharge Elimination System

Since the facility will perform vehicle or equipment maintenance activities, vehicle or equipment rehabilitation, mechanical repairs, fueling, lubrication, or cleaning within the Permit boundary of the facility, prior to operation, the facility will obtain a Texas Pollutant Discharge Elimination System (TPDES) multi-sector general permit, as required by 402 of the Clean Water Act. The facility will also obtain a stormwater permit prior to construction of the facility.

3.5 Floodplains and Wetlands Statement

3.5.1 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) that includes the site area (Williamson County, Texas and Incorporated Areas: Map No. 48491C0510E, Revised September 26, 2008) was reviewed and is included as Figure I/II-15. The transfer station facility and access road will not be constructed within the 100-year floodplain or the floodway.

3.5.2 Wetlands

Hydrex Environmental, Inc. (HEI) performed a wetlands study for the Williamson Transfer Station property. The purpose of the study was to determine the approximate sizes and locations of wetlands and other areas that could potentially be classified as “Jurisdictional Waters of the United States” and to identify wetlands on the facility according to the Texas Water Code (TWC) §11.502. HEI identified no jurisdictional waters of the U.S. or wetlands within the facility Permit boundary.

A copy of HEI’s study report and correspondence with the USACE are included in Appendix I/II-B.1.

3.6 Protection of Endangered or Threatened Species

HEI performed a threatened and endangered species assessment for the Williamson Transfer Station property. The objective of the assessment was to evaluate the potential for the existence of species and/or their habitat that are considered protected under the Endangered Species Act of 1973 and subsequent amendments and listings in accordance with the requirements of 30 TAC §330.61(n). HEI concluded that there will be “no effect” on listed Threatened and Endangered Species from the transfer station facility.

The United States Fish and Wildlife Service (USFWS) was contacted in accordance with 30 TAC 330.61(n)(2). A request for verification of threatened and endangered species assessment was submitted to the Texas Parks and Wildlife Department (TPWD) by HEI. Supporting documentation provided by TPWD and a copy of the threatened and endangered species assessment conducted by HEI and coordination with the USFWS is included in Part II, Appendix I/II-B.2.

In accordance with the TPWD letter dated September 25, 2017 included in Part I.II, Appendix I.II-B.2, the recommendations offered by TPWD will be implemented.

3.7 Site-Specific Conditions Requiring Special Design Considerations

In accordance with 30 TAC §330.61(a), the requirements of 30 TAC §330.61(h) through (o) have been evaluated and discussed in the above Sections 3.1 through 3.6 of the existing conditions summary. There are no special design considerations or possible mitigation of conditions required at the facility.
November 10, 2017

Mr. Matthew Udenenwu  
Texas Commission on Environmental Quality  
Municipal Solid Waste Permits Section, Waste Permits Division  
P.O. Box 13087  
Austin, Texas 78711-3087

RE: Proposed Williamson Transfer Station – Williamson County  
Municipal Solid Waste – Permit Application No. 2398  
Permit Application – Application Summary for Agency Review  
Tacking Nos. 21862836 and 21925726; CN601096944/RN109898239

Dear Mr. Udenenwu:

The Texas Department of Transportation (TxDOT) Austin District would like to thank you for the opportunity to review the permit application for the above-referenced municipal solid waste transfer station facility submitted by Lealco, Inc.

As the proposed site location is not adjacent to a state facility, we do not have any current concerns. The closest facility would be Farm to Market (FM) 1660 but we do not believe the proposed site would have any impact to FM 1660.

Should you have any questions, concerns or would like to discuss this matter further, please feel free to contact Shirley Nichols, Austin District Environmental Supervisor, at (512) 832-7168 or by email at Shirley.Nichols@txdot.gov.

Sincerely,

Terry G. McCoy, P.E.  
Austin District Engineer

cc: Bobby A. Ramthun, Georgetown Area Engineer, Austin District, TxDOT  
Shirley Nichols, Environmental Supervisor, Austin District, TxDOT
Got it, will run it by my supervisor.

Mark

From: Reed, Jeff [mailto:JeffReed@scsengineers.com]  
Sent: Monday, December 18, 2017 12:12 PM  
To: Mark Olsen  
Subject: Proposed Williamson Transfer Station

Hi Mark – It was good talking to you today. Although I am waiting to hear back from TCEQ regarding the response letter TxDOT submitted directly to TCEQ with no objection, I wanted to be sure you have a copy of the applicants letter for your records in the event TCEQ requires a response to this letter as well. Please confirm receipt of the attached.

Thanks, Jeff

Jeffrey K. Reed, P.E.*  
Vice President/Houston Office Manager  
National Partner – Landfill Practice  
[SCS ENGINEERS]  
12651 Briar Forest Drive, Suite 205  
Houston, Texas  77077  
Direct: 817-358-6159  
O: 281-293-8494 X6159  
C: 281-635-0062  
jeffreed@scsengineers.com  
www.scsengineers.com

*Licensed Professional Engineer in the US states of:  
AL, FL, LA, MN, MS, NC, NM, OK, SC and TX
December 27, 2017

Mr. J. Terron Evertson, P.E.
County Engineer
3151 S. E. Inner Loop, Suite B
Georgetown, Texas 78626

Re: Notification of Proposed Type V MSW Facility Permit Application
Williamson Transfer Station
Hutto, Williamson County, Texas

Dear Mr. Evertson:

In follow up to our letter to you dated August 8, 2017, Lealco, Inc. (Lealco) has submitted a Permit Application to the Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permits Division for a proposed Type V MSW Facility. The proposed 20.448-acre Type V (MSW transfer station) facility site is located within an unincorporated area of Williamson County, Texas and within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility property is located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660 in Williamson County, Texas. The approximate coordinates of the transfer station property are N 30° 35’ 51.21” latitude and W 97° 33’ 36.17” longitude.

The proposed transfer station will be located off of CR 130 and will have a waste intake, at its peak, of approximately 2,500 tons/day. Projected facility generated traffic volumes were calculated through 2035 based on projected incoming waste rates and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. Public access to and from the facility will be provided by one entrance/exit driveway located off CR 130, as shown on the attached revised Figure I/II-14.

Under Title 30 of the Texas Administrative Code (30 TAC), Section 330.61(i)(4), the applicant is required to “submit documentation of coordination of all designs of proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with site entrances with the agency exercising maintenance responsibility of the public roadway involved.” Therefore, on behalf of Lealco, we are submitting documentation that there no proposed public roadway improvements associated with the site entrance/exit driveway.

To support our conclusion that no public roadway improvements are necessary, we have attached a copy of the General Location Map, Transportation Map, Site Entrance Layout, and the traffic study excerpt from the Permit Application. In addition, for your convenience, we have attached our August 8, 2017 letter and attachments for reference.
If further information or documentation is required by your department, please give one of us a call at (281) 293-8494.

Sincerely,

Ryan Derong, P.E.
Senior Project Engineer

Jeffrey K. Reed, P.E.
Vice President

cc: Chris Ruane, Lealco, Inc.
    Brett O'Connor, Lealco, Inc.

Attachments:

Traffic Study Excerpt from Williamson Transfer Station Permit Application
Figure I/II-1, General Location Map
Figure I/II-10, Transportation Map
Figure I/II-14, Site Entrance and Exit Layout
August 8, 2017 letter and attachments
Traffic Study Excerpt from Williamson Transfer Station Permit Application

Transportation Analysis

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility; data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

Site Access

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site entrance road will be at least a 22-foot wide paved driveway to accommodate two-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance Layout) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site exit will be controlled by a stop sign. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. Traffic flow directions are provided on Figure I/II-14.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east. Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance/exit.

Traffic Volumes

All traffic will access the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100, CR 131 and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.3. Table I/II-3.4 includes traffic count data for County roads within one mile of the facility based on 2011 data.
Table I/II-3.3 Existing and Future Traffic Volumes For TxDOT Roadways Within Three Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes&lt;sup&gt;1,2&lt;/sup&gt;</th>
<th>2035 Volumes&lt;sup&gt;2,3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,550</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.
3. Source: TxDOT

Table I/II-3.4 Existing Traffic Volumes For County Roads Within One Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2011 Volumes&lt;sup&gt;1,2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 100</td>
<td>B/W CR107 and Chandler</td>
<td>590</td>
</tr>
<tr>
<td>CR 107</td>
<td>West of CR100 Intersection</td>
<td>634</td>
</tr>
<tr>
<td>Chandler Road</td>
<td>Just West of TX 130</td>
<td>4,696</td>
</tr>
<tr>
<td></td>
<td>Just East of TX 130</td>
<td>2,846</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>1,394</td>
</tr>
<tr>
<td>CR 130</td>
<td>Near Facility Entrance</td>
<td>485</td>
</tr>
<tr>
<td>CR 131</td>
<td>East of CR130 Intersection</td>
<td>178</td>
</tr>
</tbody>
</table>

1. Traffic volumes are in units of vehicles per day.
2. Source: Williamson County

Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Tables I/II-3.3 and I/II-3.4 shows that the volume of the traffic generated by the facility compared to the existing and projected volumes on the access roads intended for use by the facility within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

END OF TRAFFIC STUDY EXCERPT
August 8, 2017

Mr. J. Terron Evertson, P.E.
County Engineer
3151 S. E. Inner Loop, Suite B
Georgetown, Texas 78626

Re: Notification of Proposed Type V MSW Facility Permit Application
Williamson Transfer Station
Hutto, Williamson County, Texas

Dear Mr. Evertson:

Lealco, Inc. (Lealco) is planning to submit a Permit Application to the Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permits Division for a proposed Type V MSW Facility. The proposed 20.448-acre Type V (MSW transfer station) facility site is located within an unincorporated area of Williamson County, Texas and within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility property is located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660 in Williamson County, Texas. The approximate coordinates of the transfer station property are N 30° 35’ 51.21” latitude and W 97° 33’ 36.17” longitude.

The proposed transfer station will be located off of CR 130 and will have a waste intake, at its peak, of approximately 2,500 tons/day. Projected facility generated traffic volumes were calculated through 2035 based on projected incoming waste rates and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. Public access to and egress from the facility will be provided by entrance and exit driveways located off CR 130, as shown on the attached Figure I/II-14.

Under Title 30 of the Texas Administrative Code (30 TAC), Section 330.61(i)(4), the applicant is required to “submit documentation of coordination of all designs of proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with site entrances with the agency exercising maintenance responsibility of the public roadway involved.” Therefore, on behalf of Lealco, we are submitting documentation that there no proposed public roadway improvements associated with the site entrance and exit driveways.

To support our conclusion that no public roadway improvements are necessary, we have attached a copy of the General Location Map, Transportation Map, Site Entrance and Exit Layout, and the traffic study excerpt from the Permit Application.
If further information or documentation is required by your department to aid in your review, please give one of us a call at (281) 293-8494.

Sincerely,

Ryan Derong, P.E.
Senior Project Engineer
SCS ENGINEERS

Jeffrey K. Reed, P.E.
Vice President
SCS ENGINEERS

cc: Chris Ruane, Lealco, Inc.

Attachments:

Traffic Study Excerpt from Williamson Transfer Station Permit Application
Figure I/II-1, General Location Map
Figure I/II-10, Transportation Map
Figure I/II-14, Site Entrance and Exit Layout
Traffic Study Excerpt from Williamson Transfer Station Permit Application

Transportation Analysis

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility; data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

Site Access

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site entrance will be at least a 15-foot wide paved driveway. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance Plan) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The driveway exit will be controlled by a stop sign and will be at least a 12-foot wide paved driveway. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. A 15-foot access easement allows traffic to leave the Lealco owned property into CR130.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance or exit.

Traffic Volumes

All traffic accesses the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100 and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.4.
Table I/II-3.4 Existing and Future Traffic Volumes For TxDOT Roadways Within Three Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes$^{1,2}$</th>
<th>2035 Volumes$^{2,3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,550</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.

Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Table I/II-3.4 shows that the volume of the traffic generated by the facility represents a relatively small percentage of the existing and projected volumes on the access roads within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

END OF TRAFFIC STUDY EXCERPT

NOTE: 1. TAYLOR MUNICIPAL AIRPORT IS THE CLOSEST AIRPORT TO THE FACILITY, AND IS OUTSIDE OF THE 1 MILE RADIUS OF THE PERMIT BOUNDARY.
2. THERE ARE NO ARCHAEOLOGICAL, HISTORICAL, SITES, OR SITES WITH EXCEPTIONAL AESTHETIC QUALITIES ADJACENT TO THE FACILITY.
3. FOR A LARGER SCALE MAP OF THE 1 MILE RADIUS AREA, SEE FIGURE 1912.

LEGEND:
- Airport
- Cemetery
- Campground
- Park or Protected Land
- School
- Military Installation
- Prison
- Incorporated City
- Airport Runway
- Unincorporated Community
PERMIT BOUNDARY

CR-130

CHANDLER RD

1 MILE RADIUS

NOTES:
1. TRAFFIC COUNT NUMBERS REPRESENT THE AVERAGE DAILY TRAFFIC (ADT) IN 2015.
2. FOR CURRENT AND FUTURE TRAFFIC VOLUMES, SEE PART II, SECTION B.2.
3. ALL ROADS WITHIN 1 MILE OF THE FACILITY THAT WILL BE NORMALLY USED BY THE OWNER OR OPERATOR FOR ENTERING OR LEAVING THE FACILITY, INCLUDING CR-130, CR-150, CHANDLER ROAD, AND FM 1466, ARE ASPHALT PAVED ALL-WEATHER ROADS.
NOTES:

1. PERIMETER FENCING ALONG THE PERMIT BOUNDARY WILL BE BARBED WIRE OR A CHAIN LINK FENCE TO PROVIDE SECURITY. A GATE WILL BE PROVIDED AT THE ENTRANCE AND EXIT TO THE PERMIT BOUNDARY. THERE ARE NO PROPOSED GREENBELTS OR NATURAL WINDREAMS AT THE FACILITY.

2. PAVED ENTRANCE ROAD WILL CONSIST OF EITHER:
   • ASPHALT PAVEMENT - MINIMUM 7" THICK ASPHALT SURFACE. 12" THICK ASPHALT BASE. 6" THICK SUBGRADE COMPACTED TO 95% MODIFIED PROCTOR OR 88% STANDARD PROCTOR.
   • CONCRETE PAVEMENT - 3" THICK REINFORCED CONCRETE. 6" THICK AGGREGATE BASE. 4" THICK SURFACE COMPACTED TO 85% MODIFIED PROCTOR OR 98% STANDARD PROCTOR.
   • ALTERNATE ASPHALT, CONCRETE OR OTHER ROAD BUILDING MATERIAL AT THE FACILITY'S DISCRETION.

3. TOPOGRAPHIC FEATURES AND PERMIT BOUNDARY GROUND SURVEY CONDUCTED BY MARTIN SURVEY, DATE DECEMBER 23, 2016.

4. SCALE(S), PARKING AREA AND GATEHOUSE SIZE AND LOCATIONS ARE APPROXIMATE. SEPTIC FIELD LOCATION MAY VARY AND IS OPTIONAL. If TANK OR DIRECT SANTIARY SENSOR LINE IS USED, GUARDIAN LENGTH AND LOCATION MAY VARY.

5. TANK IS OPTIONAL. IF MAXIMUM BUILT DIRECTLY TO GATEHOUSE.

6. CH02 LOCATION APPROXIMATELY FROM GOOGLE EARTH.

INTENDED FOR PERMIT PURPOSES ONLY
PART III

SITE DEVELOPMENT PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 7735

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
# PART III

SITE DEVELOPMENT PLAN
TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Site Location and History</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>Land Use and Zoning</td>
<td>1</td>
</tr>
<tr>
<td>2.0</td>
<td>GENERAL FACILITY DESIGN</td>
<td>3</td>
</tr>
<tr>
<td>2.1</td>
<td>Facility Access</td>
<td>3</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Adequacy of Access Roads and Highways</td>
<td>3</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Fences and Access Control</td>
<td>3</td>
</tr>
<tr>
<td>2.2</td>
<td>Waste Movement</td>
<td>4</td>
</tr>
<tr>
<td>2.2.1</td>
<td>Waste Flow Diagram</td>
<td>4</td>
</tr>
<tr>
<td>2.2.2</td>
<td>Waste Process Schematic View</td>
<td>4</td>
</tr>
<tr>
<td>2.2.3</td>
<td>Ventilation and Odor Control</td>
<td>4</td>
</tr>
<tr>
<td>2.2.4</td>
<td>Generalized Construction Details</td>
<td>5</td>
</tr>
<tr>
<td>2.2.5</td>
<td>Noise Pollution Control and Visual Screening</td>
<td>5</td>
</tr>
<tr>
<td>2.3</td>
<td>Sanitation and Water Pollution Control</td>
<td>5</td>
</tr>
<tr>
<td>2.3.1</td>
<td>Surface Water and Groundwater Protection</td>
<td>6</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Floor Wash Down</td>
<td>6</td>
</tr>
<tr>
<td>2.4</td>
<td>Protection of Endangered Species</td>
<td>7</td>
</tr>
<tr>
<td>3.0</td>
<td>SURFACE WATER DRAINAGE REPORT</td>
<td>8</td>
</tr>
<tr>
<td>3.1</td>
<td>Drainage Design</td>
<td>8</td>
</tr>
<tr>
<td>3.2</td>
<td>Floodplain Considerations</td>
<td>8</td>
</tr>
<tr>
<td>4.0</td>
<td>WASTE MANAGEMENT UNIT DESIGN</td>
<td>9</td>
</tr>
<tr>
<td>4.1</td>
<td>Waste Operations</td>
<td>9</td>
</tr>
<tr>
<td>4.2</td>
<td>Spill Prevention and Control</td>
<td>9</td>
</tr>
<tr>
<td>4.3</td>
<td>Waste Storage Period</td>
<td>9</td>
</tr>
<tr>
<td>5.0</td>
<td>CLOSURE PLAN</td>
<td>11</td>
</tr>
<tr>
<td>6.0</td>
<td>COST ESTIMATE FOR CLOSURE</td>
<td>12</td>
</tr>
</tbody>
</table>
ATTACHMENTS
1  General Facility Design Plan
2  Closure Plan
3  Closure Cost Estimate

SCS Engineers
TBPE Reg. # F-3407

STATE OF TEXAS
JEFFREY K. REED
80103

1/2/18

SCS ENGINEERS

III-ii  Rev 3 – Jan 2018
1.0 INTRODUCTION

In accordance with 30 TAC §330.63(a), the following sections include the applicable portions of Part III of a Permit application that summarize the land use and zoning and the adequacy of access roads and highways surrounding the proposed facility. Part III also provides information on the general design of the facility to safeguard the health, welfare, and physical property of the people and the environment.

1.1 Site Location and History

The Williamson Transfer Station will be located in an unincorporated area of Williamson County, Texas off County Road (CR) 130 near the intersection of CR 100 and FM 1660. Its 20.448 acre Permit Boundary is located within a larger tract measuring 50.914 acres (called 50.2 acres) that is owned by the applicant, with the transfer station structure located near the center of the overall property. The site is located within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility will be located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660. The site location is shown on Figures I/II-1 and I/II-2 in Parts I/II of this Permit application. Additionally, an aerial photograph showing the site and access roads is included as Part I/II, Figure I/II-3, and a general topographic map is included as Part I/II, Figure I/II-4.

At its peak, the new facility will have a waste intake capacity projected at approximately 2,500 tons/day. The transfer station location has not previously been used for solid waste operations.

The site is owned by Lealco, Inc. (Lealco). There is currently no physical address for the transfer station facility property.

The physical address for the transfer station will be obtained upon permit approval.

The approximate coordinates of the transfer station property are N 30° 35’ 51.21” latitude and W 97° 33’ 36.17” longitude.

1.2 Land Use and Zoning

Existing uses of the site and the surrounding area are shown on Figure I/II-8, Land Use Map. The map was prepared based on a field reconnaissance study (SCS, December 2016) and a review of recent aerial photographs (GoogleEarth™ and landfill aerial photography) of the surrounding area. Within one mile of the site, the land is primarily used for agricultural purposes. Portions of the land within a one-mile radius are developed with a variety of agricultural, commercial, industrial, residential, and institutional uses. Agricultural land represents the largest percentage of land use within a one-mile radius of the site. The Williamson County Recycling and Disposal Facility represents the second largest portion of land use within a one-mile radius of the site. One subdivision/home community, scattered homes and the Williamson County Recycling and Disposal Facility are located within a one-mile radius of the site. The breakdown of overall land use within the one-mile radius is shown on Table III-1.1. For a more detailed summary of the existing conditions of the facility and surrounding area, see Part I/II, Section 3.0.

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (in acres)</th>
<th>Percentage of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>1,622.0</td>
<td>63.2%</td>
</tr>
<tr>
<td>Commercial</td>
<td>38.9</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
2.0 GENERAL FACILITY DESIGN

In accordance with 30 TAC §330.63(b), the general facility design is discussed in the following sections.

2.1 Facility Access

2.1.1 Adequacy of Access Roads and Highways

In accordance with 30 TAC §330.61(i), a transportation analysis was performed for the Williamson Transfer Station.

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs in a north/south direction to the east of the site. CR 130 consists of two 12-foot asphalt paved lanes. The owner or operator will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

The site access road will be a 22 to 30-foot wide, two-lane, paved driveway to accommodate two-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Access Road Layout) will have approximately 2400 feet of stacking room before they reach the gatehouse. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site exit will be controlled by a stop sign. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. The access road will widen to approximately 30 feet within the site boundaries. Traffic flow directions are provided on Figure I/II-14.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance/exit.

2.1.2 Fences and Access Control

Public access to the transfer station will be controlled by means of a perimeter fence which encompasses the entire Permit boundary. Access to the transfer station is limited to the gated site entrance located off of CR130 that will serve the transfer station.

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the site is minimized by controlling access to the transfer station site with the perimeter fence and locking gate at the entrance and exit. The perimeter fence will consist of a 6-foot-high chain-link fence, and/or a barbed wire fence (at least three-strand) or a mesh wire. Part III, Attachment 1, Figure III-1.1 shows the location of the fencing and the gates.

During operating hours, the site personnel will continuously monitor the site entrance gate to prevent any unauthorized entry to facility. Entry to the active portion of the transfer station is restricted to designated
4.0 WASTE MANAGEMENT UNIT DESIGN

In accordance with §330.63(d), the general design and waste operations and storage are summarized in the following sections.

4.1 Waste Operations

The Williamson Transfer Station is designed for efficient waste processing. All solid waste capable of creating public health hazards or nuisances will be stored on the partially-enclosed building tipping floor only and processed or transferred promptly and will not be allowed to result in nuisances or public health hazards.

General operations will be conducted in a manner that allows for the prompt and efficient unloading of waste. The waste will be discharged from the collection vehicles onto the facility processing floor (tipping floor). Waste will be loaded into an open-top transfer trailer, covered and transferred to an authorized disposal facility.

As shown on Part III, Attachment 1, Figures III-1.3, the collection trucks will enter the site and will weigh-in at the gate house. The trucks will proceed to the tipping floor. The trucks will deposit the waste onto the tipping floor for processing and then proceed to exit the building. The trucks will proceed to the exit road and then leave the site. After the waste has been processed, the waste will be loaded into transfer trucks waiting on the tipping floor. After the transfer trucks are full, they will be tarped and proceed to the exit. Empty transfer trucks that are awaiting loading will queue up on the paved area leading to the building.

4.2 Spill Prevention and Control

The storage and processing areas of the facility are designed to control and contain spills and contaminated water from leaving the facility. Since the tipping floor is covered by a roof and enclosed on two sides, the “worst case spill or release” will occur when the entire tipping floor is being washed down. Based on manufacturer’s data, a standard pressurized nozzle that provides a maximum flow rate of 10 gallons per minute may be used to wash down the tipping floor and will generate approximately 600 gallons of washwater per hour. Based on manufacturer’s data that one person could washdown approximately 8,400 square feet of floor surface per hour with this nozzle and based on the size of the floor area, it will take approximately 4.5 hours for one person to wash down the entire tipping floor area (37,500 square feet), generating approximately 3,500 gallons of washwater. The generated contaminated water will be collected and discharged into a 10,000 gallon holding tank. The tank is of sufficient size to hold nearly three washdown events. After three washdown events, or when the remaining capacity of the holding tank is less than 1,000 gallons, a TCEQ-registered vacuum truck will remove the wastewater from the holding tank and take it to a permitted wastewater plant or a registered/permit liquid processing/transfer/disposal facility. The tank is dual-walled with a leak detection system between the tank walls. In the event the tank leak detection system monitors a leak, the tank will be replaced. The tank detail is shown on Part III, Attachment 1, Figure III-1.7. There are no unenclosed containment areas at the facility; therefore, the rainfall design requirements in §330.63(d)(1)(B) do not apply.

4.3 Waste Storage Period

The projected peak amount of solid waste to be received daily and annually for the facility is approximately 2,500 tons per day and 780,000 tons per year, respectively. The maximum volume of waste that will be stored overnight (defined as sunset to sunrise) at the transfer station at any given time is
PART III – ATTACHMENT 1

GENERAL FACILITY DESIGN PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
PART III – ATTACHMENT 1

GENERAL FACILITY DESIGN PLAN
TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

FIGURES

Figure III-1.1 Site Layout Plan
Figure III-1.2 Waste Movement Flow Chart
Figure III-1.3 Waste Process Schematic View
Figure III-1.4 Transfer Station Partially-Enclosed Building Layout
Figure III-1.5 Transfer Station Partially-Enclosed Building Elevations
Figure III-1.6 Contaminated Water Management Plan
Figure III-1.7 General Construction Details I
Figure III-1.8 General Construction Details II

APPENDICES

Appendix A – Surface Water Drainage Plan
PART III - ATTACHMENT 1 – APPENDIX A

SURFACE WATER DRAINAGE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Hwy 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – January 2018
PART III - ATTACHMENT 1 – APPENDIX A

SURFACE WATER DRAINAGE PLAN
TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION ................................................................................................................. 1
2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS ................................................................. 2

APPENDICES
Appendix III-1-A-i DRAINAGE CALCULATIONS

FIGURES
Figure III-1-A.1 OFF-SITE DRAINAGE AREA MAP
Figure III-1-A.2 ON-SITE DRAINAGE PLAN
Figure III-1-A.3 DRAINAGE DETAILS

SCS Engineers
TBPE Reg. # F-3407
1.0 INTRODUCTION

This Surface Water Drainage Plan was prepared as a part of this Type V permit application for the Williamson Transfer Station. The surface water drainage design presented in this attachment was prepared consistent with 30 TAC §330.63(c) and §330.303. The facility is not a landfill or compost unit; therefore, a surface water drainage report to satisfy the requirements of 30 TAC, Subchapter G, and 30 TAC §330.63(c)(1) and §330.63(c)(2) is not required.

Drawings provided in this attachment depict the proposed facility layout and drainage plans for the proposed Williamson Transfer Station. The total area of the Williamson Transfer Station facility is 20.448 acres. The Williamson Transfer Station located on undeveloped farm land consisting of cultivated slopes with greater than 20 percent residue cover.

The Williamson Transfer Station facility will be constructed, maintained, and operated to manage stormwater run-on and runoff during the peak discharge of a 25-year rainfall event and prevents the discharge of waste and feedstock material, including, but not limited to, in-process and/or processed materials.

Surface water drainage in and around the facility is controlled to minimize surface water running onto, into, and off the treatment area. The Williamson Transfer Station, entrance road, gatehouse and scales will be constructed on elevated fill material. Water falling outside the elevated fill material will be directed around the waste facility, away from the waste facility, or to on-site culverts. The Williamson Transfer Station will be a roofed building. All waste handling procedures will be conducted within the roofed building. Rain water that falls onto the transfer station building, entrance road, gatehouse and scales will be graded to flow off the site. All stormwater that flows off the Williamson Transfer Station facility is not contaminated water.

The hydrologic and hydraulic analysis methods used for calculating the rainfall intensity and peak flow rates are described in the following sections of this attachment.

The proposed facility and boundary of the Williamson Transfer Station is presented on Figures III-1-A.2, On-Site Drainage Plan.

The Williamson Transfer Station facility is located outside of the FEMA 100 year flood. This is shown in Part I/II, Figure I/II-15, Floodplain Map. Therefore, an additional floodplain analysis was not performed for this permit application.
2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

The rational method was utilized to compute the peak 25 year flowrates for the design of all on-site channels and culverts as all these items had maximum drainage areas of less than 200 acres. The peak flowrates were calculated using the TxDOT criteria, TxDOT Hydraulic Design Manual July 2016.

The rational method equation is expressed as:

\[ Q = C \cdot I \cdot A \]

where:

- \( Q \) = Flowrate in cubic feet per second (cfs),
- \( C \) = Run-off coefficient,
- \( I \) = Rainfall intensity in inches per hour, and
- \( A \) = Drainage area in acres.

The run-off coefficients (C) from the TxDOT criteria were selected based on the type of drainage area as follows:

- Relatively flat land, 0-5%; normal soil infiltration; clean cultivation; normal surface storage = 0.32
- Lawns, heavy soil, flat 2% = 0.15
- Streets, asphaltic = 0.95

The rainfall intensity (I) from the TxDOT criteria is computed using the following equation:

\[ I = \frac{b}{(t_c + d)^e} \]

where, for Williamson County:

<table>
<thead>
<tr>
<th>25-Year Storm Event</th>
<th>100-Year Storm Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>( b ) = 110.07</td>
<td>( b ) = 155.59</td>
</tr>
<tr>
<td>( d ) = 15.07</td>
<td>( d ) = 17.40</td>
</tr>
<tr>
<td>( e ) = 0.8183</td>
<td>( e ) = 0.8232</td>
</tr>
</tbody>
</table>

The time of concentration \((t_c)\), in minutes, was computed by determining the time required for run-off to flow from the most hydraulically remote point in the watershed to the study point and was estimated using TxDOT Hydraulic Design Manual, August 2016, equations for sheet flow and shallow concentrated flow and by estimating hydraulic characteristics of open channel flow. A minimum time of concentration of 10 minutes was utilized.

The Time of Concentration is computed using the following formula:

\[ T_c = T_c(\text{overland}) + T_c(\text{shallow channel}) + T_c(\text{channel}) \]

where:
\( T_c = \text{Time of Concentration, minutes;} \)

\( T_c(\text{sheet flow}) = \text{Time of Concentration for Sheet Flow, minutes;} \)

\[ T_c(\text{sheet flow}) = \frac{0.007(N_{ol}L_{sh})^{0.8}}{(P_2)^{0.5}S_{sh}^{0.4}} \]

Where:

- \( N_{ol} \) = overland flow roughness coefficient; cultivated soils, residue cover greater than 20%, 0.17; grass, short prairie, 0.15; or smooth surfaces (concrete, asphalt, gravel, or bare soil), 0.011.
- \( L_{sh} \) = sheet flow length, feet, 100 feet maximum.
- \( P_2 \) = 2-year, 24-hour rainfall depth, inches, provided in TxDOT 5-1301-01-1; 3.41 inches.
- \( S_{sh} \) = sheet flow slope, feet/foot.

\( T_c(\text{shallow channel}) = \text{Time of Concentration for Shallow Channel Flow, minutes;} \)

\[ T_c(\text{shallow channel}) = \frac{L_{sc}}{3600KS_{sc}^{0.5}} \]

Where:

- \( L_{sc} \) = shallow concentrated flow length, feet.
- \( K \) = 16.13 for unpaved surfaces, 20.32 for paved surfaces.
- \( S_{sc} \) = shallow concentrated flow slope, feet/foot.

\( T_c(\text{channel}) = \text{Time of Concentration for Channel Flow, minutes} \)

\[ T_c(\text{channel}) = (L/V) \times 60 \text{ sec./min} \]

Where:

- \( L \) = length of channel, feet; and
- \( V \) = estimated flow velocity of channel using Manning’s equation, feet per second.

One culvert has been incorporated into the transfer station facility design. The culvert has been designed with the Pipe Culvert function of the HYDROCALC Hydraulics, Version 1.2a, computer program. The HYDROCALC program analyzes culverts using the methods and equations described in the Federal Highway Administration report “Hydraulic Design of Highway Culverts” (FHWA, 1985).

Culvert 1 is located under the Entrance Road at Discharge Study Point 4. The culverts all have a concrete headwall at the inlet and outlet. Culvert 1 has been designed with non-erosive discharge velocities of less than 5 feet per second. The culvert has been designed with a 1.0 percent flowline slope. Culvert 1 has three 18” diameter corrugated metal pipes.

A Manning’s Roughness Coefficient of 0.024 was utilized for normal depth computations for an unpaved corrugated metal pipe.

The location of the culvert is shown on Figures III-1-A.1 and III-1-A.2. Details and typical cross sections of the culvert are shown on Figure III-1-A.3. Culvert calculations are included in Appendix III-1-A-i.
Perimeter channels have been designed to convey on and off-site flows from the west from Discharge Study Point 2 to Discharge Study point 7 to Discharge Study Point 1. The perimeter channels have been designed with the Normal Depth, Trapezoidal Channel function of the HYDROCALC Hydraulics, Version 1.2a, computer program. The perimeter channels have 3 horizontal to 1 vertical side slopes, “V” (0.1 foot) bottom width, 1.0 percent channel slopes, and a Manning’s Roughness Coefficient of 0.027 was utilized for grass lined channels. The perimeter channel from Discharge Study Point 2 to Discharge Study point 7 is shown on Figure III-1-A.2. Discharge Study point 7 discharges into an existing channel that flows to and leaves the site at Discharge Study Point 1. Calculations of the channels are included in Appendix III-1-A-i.

The HYDROCALC program computes the normal depth of a trapezoidal channel using an iterative approach to arrive at a value which satisfies Manning’s Equation. Manning’s Equation is expressed as follows:

\[ Q = \left(\frac{1.486}{n}\right) A R^{(2/3)} \sqrt{S} \]

where:

\[ Q = \text{Flowrate in channel, cubic feet per second;} \]
\[ n = \text{Manning’s Roughness Coefficient;} \]
\[ A = \text{Area of flow, square feet;} \]
\[ R = \text{Hydraulic radius, feet} = A/P \text{ (Area of flow / Wetted Perimeter);} \text{ and} \]
\[ S = \text{Slope of energy grade line (feet / foot)} \]

Manning’s Roughness Coefficient of 0.027 was utilized for normal depth computations for a grass lined earthen channel.
APPENDIX III-1-A-i
DRAINAGE CALCULATIONS
### 25-Year Post-Development Rational Method Calculations

#### WILLIAMSON TRANSFER STATION
WILLIAMSON COUNTY, TEXAS
PROJECT NO.: 16216121.00

Coeficient:
2-yr, 24-hr storm depth = 3.41 in, source Ref. B

<table>
<thead>
<tr>
<th>Subbasin</th>
<th>Area (acres)</th>
<th>Flow Type</th>
<th>Length (ft)</th>
<th>Slope (ft/ft)</th>
<th>Surface Condition</th>
<th>Manning's n</th>
<th>Runoff Velocity</th>
<th>Travel Time (min)</th>
<th>Discharge (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21.1</td>
<td>SF</td>
<td>100</td>
<td>0.0160</td>
<td>C</td>
<td>0.170</td>
<td>0.15</td>
<td>11.5</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>300</td>
<td>0.0170</td>
<td>U</td>
<td>...</td>
<td>2.10</td>
<td>2.4</td>
<td>5.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>1500</td>
<td>0.0130</td>
<td>GL</td>
<td>0.030</td>
<td>2.00</td>
<td>12.5</td>
<td>41.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 26.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9.0</td>
<td>SF</td>
<td>100</td>
<td>0.0160</td>
<td>C</td>
<td>0.170</td>
<td>0.15</td>
<td>11.5</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>300</td>
<td>0.0170</td>
<td>U</td>
<td>...</td>
<td>2.10</td>
<td>2.4</td>
<td>5.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>800</td>
<td>0.0160</td>
<td>GL</td>
<td>0.030</td>
<td>2.00</td>
<td>8.7</td>
<td>17.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 20.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.1</td>
<td>SF</td>
<td>100</td>
<td>0.0100</td>
<td>C</td>
<td>0.170</td>
<td>0.12</td>
<td>12.8</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>300</td>
<td>0.0110</td>
<td>U</td>
<td>...</td>
<td>1.69</td>
<td>3.0</td>
<td>6.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>250</td>
<td>0.0110</td>
<td>GL</td>
<td>0.030</td>
<td>2.00</td>
<td>2.1</td>
<td>12.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 18.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4.1</td>
<td>SF</td>
<td>15</td>
<td>0.0200</td>
<td>A</td>
<td>0.011</td>
<td>0.97</td>
<td>0.3</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>200</td>
<td>0.0000</td>
<td>U</td>
<td>...</td>
<td>1.44</td>
<td>2.3</td>
<td>7.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>0</td>
<td>0.0000</td>
<td>GL</td>
<td>0.000</td>
<td>3.33</td>
<td>0.0</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 10.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5.2</td>
<td>SF</td>
<td>130</td>
<td>0.0200</td>
<td>A</td>
<td>0.011</td>
<td>1.50</td>
<td>1.4</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>150</td>
<td>0.0100</td>
<td>P</td>
<td>...</td>
<td>2.03</td>
<td>1.2</td>
<td>7.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>80</td>
<td>0.0070</td>
<td>GL</td>
<td>0.030</td>
<td>2.00</td>
<td>0.7</td>
<td>27.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 10.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>4.5</td>
<td>SF</td>
<td>100</td>
<td>0.0100</td>
<td>C</td>
<td>0.060</td>
<td>0.28</td>
<td>6.0</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>220</td>
<td>0.0100</td>
<td>U</td>
<td>...</td>
<td>1.61</td>
<td>2.8</td>
<td>7.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>0</td>
<td>0.0000</td>
<td>GL</td>
<td>0.030</td>
<td>2.30</td>
<td>0.0</td>
<td>11.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 10.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>13.6</td>
<td>SF</td>
<td>100</td>
<td>0.0140</td>
<td>C</td>
<td>0.170</td>
<td>0.15</td>
<td>12.5</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCF</td>
<td>300</td>
<td>0.0170</td>
<td>U</td>
<td>...</td>
<td>2.10</td>
<td>2.4</td>
<td>5.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CF</td>
<td>1500</td>
<td>0.0130</td>
<td>GL</td>
<td>0.030</td>
<td>2.00</td>
<td>12.5</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Time of Concentration: 5 = 26.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Surface Conditions: A = sheet flow smooth surface, paved; C = sheet flow cultivated, residue cover >20%; E = sheet flow short grass, praylity; U = shallow concentrated flow, unpaved; GL = shallow concentrated flow, paved; R = channel flow, gross lined; TL = channel flow, Area/Line.
2) Rational method coefficients taken from Ref. A for a = Unintereupted areas Black or loessial soil, 0-3% slopes and >5% slopes.
3) Times of concentration less than 10 minutes were taken as t = 10.0 min - see TAC 320.55(b)(5)(A).

References:
### PIPE CULVERT ANALYSIS

**COMPUTATION OF CULVERT PERFORMANCE CURVE**

**Culvert 1**

December 12, 2017

**25 Year Peak**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culvert Diameter (ft)</td>
<td>1.5</td>
</tr>
<tr>
<td>FHWA Chart Number</td>
<td>2</td>
</tr>
<tr>
<td>FHWA Scale Number (Type of Culvert Entrance)</td>
<td>1</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.024</td>
</tr>
<tr>
<td>Entrance Loss Coefficient of Culvert Opening</td>
<td>0.5</td>
</tr>
<tr>
<td>Culvert Length (ft)</td>
<td>22.0</td>
</tr>
<tr>
<td>Invert Elevation at Downstream end of Culvert (ft)</td>
<td>700.0</td>
</tr>
<tr>
<td>Invert Elevation at Upstream end of Culvert (ft)</td>
<td>700.2</td>
</tr>
<tr>
<td>Culvert Slope (ft/ft)</td>
<td>0.0091</td>
</tr>
</tbody>
</table>

| Starting Flow Rate (cfs)                                     | 4.0    |
| Incremental Flow Rate (cfs)                                  | 0.0    |
| Ending Flow Rate (cfs)                                       | 4.0    |

| Starting Tailwater Depth (ft)                                 | 0.6    |
| Incremental Tailwater Depth (ft)                             | 0.0    |
| Ending Tailwater Depth (ft)                                  | 0.6    |

### COMPUTATION RESULTS

<table>
<thead>
<tr>
<th>Flow Rate (cfs)</th>
<th>Tailwater Depth (ft)</th>
<th>Headwater Depth (ft)</th>
<th>Inlet Control (ft)</th>
<th>Outlet Control (ft)</th>
<th>Normal Depth (ft)</th>
<th>Critical Depth (ft)</th>
<th>Depth at Outlet (ft)</th>
<th>Outlet Velocity (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>0.6</td>
<td>1.1</td>
<td>1.21</td>
<td>0.96</td>
<td>0.77</td>
<td>0.77</td>
<td>4.41</td>
<td></td>
</tr>
</tbody>
</table>

**HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright(c) 1996-2010**

Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069

Email: software@dodson-hydro.com, All Rights Reserved.

**Use 3-18” CMP**
### Trapezoidal Channel Analysis

**Normal Depth Computation**

**Culvert 1 - Discharge Section**

August 1, 2017

**25 Year Peak**

#### Program Input Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>12.0</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.027</td>
</tr>
<tr>
<td>Channel Left Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Right Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Bottom Width (ft)</td>
<td>4.5</td>
</tr>
</tbody>
</table>

#### Computation Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>0.59</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>3.23</td>
</tr>
<tr>
<td>Froude Number</td>
<td>0.84</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.16</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>0.75</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>3.71</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>8.05</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright(c) 1996-2010

Dedson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069

Email: software@dodson-hydro.com, All Rights Reserved.
TRAPEZOIDAL CHANNEL ANALYSIS
NORMAL DEPTH COMPUTATION

Perimeter Channel to Discharge Point 7
August 1, 2017
25 Year Peak

PROGRAM INPUT DATA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>30.0</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.027</td>
</tr>
<tr>
<td>Channel Left Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Right Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Bottom Width (ft)</td>
<td>0.1</td>
</tr>
</tbody>
</table>

COMPUTATION RESULTS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>1.49</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>4.4</td>
</tr>
<tr>
<td>Froude Number</td>
<td>0.892</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.3</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>1.79</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>6.82</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>9.05</td>
</tr>
</tbody>
</table>

HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright(c) 1996-2010
Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
Email: software@dodson-hydro.com, All Rights Reserved.

- Use 1.8 deep, grass lined, "V" channel with maximum 3H:1V side slopes.
**Trapezoidal Channel Analysis**

**Normal Depth Computation**

Perimeter Channel to Discharge Point 1

August 1, 2017

25-Year Peak

---

**Program Input Data**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>41.0</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.027</td>
</tr>
<tr>
<td>Channel Left Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Right Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Bottom Width (ft)</td>
<td>0.1</td>
</tr>
</tbody>
</table>

---

**Computation Results**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>1.68</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>4.76</td>
</tr>
<tr>
<td>Froude Number</td>
<td>0.912</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.35</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>2.03</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>8.61</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>10.17</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright (c) 1996-2010
Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
Email: software@dodson-hydro.com, All Rights Reserved.

---

0.32'

1.68'

Use 2' deep, grass lined, "V" channel with maximum 3H:1V side slopes.

---

III-1-A-1-5
## Rainfall Intensity-Duration-Frequency Coefficients for Texas

(atlas of depth-duration frequency of precipitation annual maxima for Texas)


<table>
<thead>
<tr>
<th>Interval (min)</th>
<th>Duration (yr)</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8322</td>
<td>100-Year</td>
<td>1%</td>
</tr>
<tr>
<td>0.8248</td>
<td>50-Year</td>
<td>2%</td>
</tr>
<tr>
<td>0.8163</td>
<td>25-Year</td>
<td>4%</td>
</tr>
<tr>
<td>0.8078</td>
<td>10-Year</td>
<td>10%</td>
</tr>
<tr>
<td>0.8003</td>
<td>5-Year</td>
<td>20%</td>
</tr>
<tr>
<td>0.7928</td>
<td>2-Year</td>
<td>50%</td>
</tr>
</tbody>
</table>

### Labeled Units

2. Select English or SI units

3. Enter units of conc.
<table>
<thead>
<tr>
<th>Intensity (in/hr)</th>
<th>3.36</th>
<th>4.43</th>
<th>5.18</th>
<th>7.17</th>
<th>8.09</th>
</tr>
</thead>
<tbody>
<tr>
<td>d (min)</td>
<td>13.40</td>
<td>12.63</td>
<td>13.26</td>
<td>15.07</td>
<td>16.48</td>
</tr>
<tr>
<td>b (in.)</td>
<td>75.08</td>
<td>88.06</td>
<td>110.07</td>
<td>136.34</td>
<td>155.59</td>
</tr>
<tr>
<td>e</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
<td>0.8238</td>
<td>0.8332</td>
</tr>
<tr>
<td>100-Year Coefficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>1%</td>
<td>2%</td>
<td>4%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>6.92</td>
<td>12.40</td>
<td>13.69</td>
<td>15.00</td>
<td>16.20</td>
<td>17.40</td>
</tr>
<tr>
<td>4.98</td>
<td>12.40</td>
<td>13.69</td>
<td>15.00</td>
<td>16.20</td>
<td>17.40</td>
</tr>
<tr>
<td>3.22</td>
<td>12.40</td>
<td>13.69</td>
<td>15.00</td>
<td>16.20</td>
<td>17.40</td>
</tr>
</tbody>
</table>

Select units:
1. Select English or SI units
2. Select a county
3. Enter a time of conc.

Spreadsheet Release Date: August 21, 2015; data table released by Asghar July 14, 2016

Atlas of Depth-Duration-Frequency of Precipitation Annual Maxima for Texas
Rainfall Intensity-Duration-Frequency Coefficients for Texas

English
Williamson
<table>
<thead>
<tr>
<th>Intensity (in/hr)</th>
<th>Coefficient (2-year)</th>
<th>Coefficient (5-year)</th>
<th>Coefficient (10-year)</th>
<th>Coefficient (25-year)</th>
<th>Coefficient (50-year)</th>
<th>Coefficient (100-year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.82</td>
<td>13.40</td>
<td>6.09</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>3.73</td>
<td>12.63</td>
<td>7.50</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>4.37</td>
<td>13.26</td>
<td>8.80</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>5.23</td>
<td>15.07</td>
<td>11.00</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>6.13</td>
<td>13.64</td>
<td>15.07</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>6.94</td>
<td>17.40</td>
<td>16.48</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
<tr>
<td>7.64</td>
<td>15.07</td>
<td>18.44</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
</tr>
</tbody>
</table>

\[ t_{ch} = 0.0078(5, 280 - 500)^{0.770}(0.0095)^{-0.385} \]

from which \( t_{ch} \) is about 32 minutes. Because the overland flow \( t_{ov} \) is used for this watershed, the subtraction of the overland flow length from the overall main-channel length (watershed divide to outlet) is necessary and reflected in the calculation. Adding the overland flow and channel flow components gives a watershed of about 57 minutes. Finally, as a quick check, the analyst can evaluate the \( t_c \) by using an ad hoc method representing \( t_c \) in hours, as the square root of drainage area, in square miles. For the example, the square root of the drainage area yields a \( t_c \) estimate of about 0.71 hours or about 42 minutes, which is reasonably close to 57 minutes. However, 57 minutes is preferable. This example is shown in Figure 4-7.

\[ \]

**Figure 4-7. Example application of Kerby-Kirpich method**

**Natural Resources Conservation Service (NRCS) Method for Estimating \( t_c \)**

The **NRCS** method for estimating \( t_c \) is applicable for small watersheds, in which the majority of flow is overland flow such that timing of the peak flow is not significantly affected by the contribution flow routed through underground storm drain systems. With the NRCS method:

\[ t_c = t_{sh} + t_{sc} + t_{ch} \]

*Equation 4-16.*

Where:

- \( t_{sh} \) = sheet flow travel time
- \( t_{sc} \) = shallow concentrated flow travel time
- \( t_{ch} \) = channel flow travel time

NRCS 1986 provides the following descriptions of these flow components:

Sheet flow is flow over plane surfaces, usually occurring in the headwater of streams. With sheet flow, the friction value is an effective roughness coefficient that includes the effect of raindrop impact; drag over the plane surface; obstacles such as litter, crop ridges, and rocks; and erosion and transportation of sediment.
Sheet flow usually becomes shallow concentrated flow after around 100 feet.

Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, or where blue lines (indicating streams) appear on USGS quadrangle sheets.

For open channel flow, consider the uniform flow velocity based on bank-full flow conditions. That is, the main channel is flowing full without flow in the overbanks. This assumption avoids the significant iteration associated with rainfall intensity or discharges (because rainfall intensity and discharge are dependent on time of concentration).

For conduit flow, in a proposed storm drain system, compute the velocity at uniform depth based on the computed discharge at the upstream. Otherwise, if the conduit is in existence, determine full capacity flow in the conduit, and determine the velocity at capacity flow. You may need to compare this velocity later with the velocity calculated during conduit analysis. If there is a significant difference and the conduit is a relatively large component of the total travel path, recompute the time of concentration using the latter velocity estimate.

If it is determined that a low slope condition or a transitional slope condition exists, the user should consider using an adjusted slope in calculating the time of concentration. See Time of Concentration.

**Sheet Flow Time Calculation**

Sheet flow travel time is computed as:

\[
t_{sh} = \frac{0.007(n_{ol}L_{sh})^{0.8}}{(P_2)^{0.5}S_{sh}^{0.4}}
\]

*Equation 4-17.*

Where:

- \( t_{sh} \) = sheet flow travel time (hr.)
- \( n_{ol} \) = overland flow roughness coefficient (provided in Table 4-6)
- \( L_{sh} \) = sheet flow length (ft) (100 ft. maximum)
- \( P_2 \) = 2-year, 24-h rainfall depth (in.) (provided in the TxDOT 5-1301-01-1)
$S_{sh} = \text{sheet flow slope (ft/ft)}$

Table 4-6: Overland Flow Roughness Coefficients for Use in NRCS Method in Calculating Sheet Flow Travel Time (Not Manning's Roughness Coefficient) (NRCS 1986)

<table>
<thead>
<tr>
<th>Surface description</th>
<th>$n_{ol}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth surfaces (concrete, asphalt, gravel, or bare soil)</td>
<td>0.011</td>
</tr>
<tr>
<td>Fallow (no residue)</td>
<td>0.05</td>
</tr>
<tr>
<td>Cultivated soils:</td>
<td></td>
</tr>
<tr>
<td>Residue cover $\leq 20%$</td>
<td>0.06</td>
</tr>
<tr>
<td>Residue cover $&gt; 20%$</td>
<td>0.17</td>
</tr>
<tr>
<td>Grass:</td>
<td></td>
</tr>
<tr>
<td>Short grass prairie</td>
<td>0.15</td>
</tr>
<tr>
<td>Dense grasses</td>
<td>0.24</td>
</tr>
<tr>
<td>Bermuda</td>
<td>0.41</td>
</tr>
<tr>
<td>Range (natural):</td>
<td>0.13</td>
</tr>
<tr>
<td>Woods:</td>
<td></td>
</tr>
<tr>
<td>Light underbrush</td>
<td>0.40</td>
</tr>
<tr>
<td>Dense underbrush</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Shallow Concentrated Flow

Shallow concentrated flow travel time is computed as:

$$t_{sc} = \frac{L_{sc}}{3600K\sqrt[0.5]{S_{sc}}}$$

*Equation 4-18.*

Where:

- $t_{sc} = \text{shallow concentrated flow time (hr.)}$
- $L_{sc} = \text{shallow concentrated flow length (ft)}$
- $K = 16.13$ for unpaved surface, $20.32$ for paved surface
- $S_{sc} = \text{shallow concentrated flow slope (ft/ft)}$

Channel Flow

Channel flow travel time is computed by dividing the channel distance by the flow rate obtained from Manning's equation. This can be written as:

$$t_{ch} = \frac{L_{ch}}{(3600 \left( \frac{1.49}{n} R^{0.5} S_{ch}^{1.5} \right))}$$

*Equation 4-19.*
Where:

\[ t_{ch} = \text{channel flow time (hr.)} \]
\[ L_{ch} = \text{channel flow length (ft)} \]
\[ S_{ch} = \text{channel flow slope (ft/ft)} \]
\[ n = \text{Manning's roughness coefficient} \]
\[ R = \text{channel hydraulic radius (ft), and is equal to} P_w, \text{where: } P_w = \text{cross sectional area (ft}^2) \]

and \( P_w = \text{wetted perimeter (ft), consider the uniform flow velocity based on bank-full flow conditions. That is, the main channel is flowing full without flow in the overbanks. This assumption avoids the significant iteration associated with other methods that employ rainfall intensity or discharges (because rainfall intensity and discharge are dependent on time of concentration).}

**Manning’s Roughness Coefficient Values**

Manning’s roughness coefficients are used to calculate flows using Manning’s equation. Values from American Society of Civil Engineers (ASCE) 1992, FHWA 2001, and Chow 1959 are reproduced in Table 4-7, Table 4-8, and Table 4-9.

**Table 4-7: Manning’s Roughness Coefficients for Open Channels**

<table>
<thead>
<tr>
<th>Type of channel</th>
<th>Manning’s a</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Natural streams</td>
<td></td>
</tr>
<tr>
<td>1. Minor streams (top width at flood stage &lt; 100 ft)</td>
<td></td>
</tr>
<tr>
<td>a. Clean, straight, full, no riffles or deep pools</td>
<td>0.025-0.033</td>
</tr>
<tr>
<td>b. Same as a, but more stones and weeds</td>
<td>0.030-0.040</td>
</tr>
<tr>
<td>c. Clean, winding, some pools and shoals</td>
<td>0.033-0.045</td>
</tr>
<tr>
<td>d. Same as c, but some weeds and stones</td>
<td>0.035-0.050</td>
</tr>
<tr>
<td>e. Same as d, lower stages, more ineffective</td>
<td>0.040-0.055</td>
</tr>
<tr>
<td>f. Same as d, more stones</td>
<td>0.045-0.060</td>
</tr>
<tr>
<td>g. Sluggish reaches, weedy, deep pools</td>
<td>0.050-0.080</td>
</tr>
<tr>
<td>h. Very weedy, heavy stand of timber and underbrush</td>
<td>0.075-0.150</td>
</tr>
<tr>
<td>i. Mountain streams with gravel and cobbles, few boulders on bottom</td>
<td>0.030-0.050</td>
</tr>
<tr>
<td>j. Mountain streams with cobbles and large boulders on bottom</td>
<td>0.040-0.070</td>
</tr>
<tr>
<td>2. Floodplains</td>
<td></td>
</tr>
<tr>
<td>a. Pasture, no brush, short grass</td>
<td>0.025-0.035</td>
</tr>
<tr>
<td>b. Pasture, no brush, high grass</td>
<td>0.030-0.050</td>
</tr>
</tbody>
</table>
### Table 4-7: Manning's Roughness Coefficients for Open Channels

<table>
<thead>
<tr>
<th>Type of channel</th>
<th>Manning's n</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. Cultivated areas, no crop</td>
<td>0.020-0.040</td>
</tr>
<tr>
<td>d. Cultivated areas, mature row crops</td>
<td>0.025-0.045</td>
</tr>
<tr>
<td>e. Cultivated areas, mature field crops</td>
<td>0.030-0.050</td>
</tr>
<tr>
<td>f. Scattered brush, heavy weeds</td>
<td>0.035-0.070</td>
</tr>
<tr>
<td>g. Light brush and trees in winter</td>
<td>0.035-0.060</td>
</tr>
<tr>
<td>h. Light brush and trees in summer</td>
<td>0.040-0.080</td>
</tr>
<tr>
<td>i. Medium to dense brush in winter</td>
<td>0.045-0.110</td>
</tr>
<tr>
<td>j. Medium to dense brush in summer</td>
<td>0.070-0.160</td>
</tr>
<tr>
<td>k. Trees, dense willows summer, straight</td>
<td>0.110-0.200</td>
</tr>
<tr>
<td>l. Trees, cleared land with tree stumps, no sprouts</td>
<td>0.030-0.050</td>
</tr>
<tr>
<td>m. Trees, cleared land with tree stumps, with sprouts</td>
<td>0.050-0.080</td>
</tr>
<tr>
<td>n. Trees, heavy stand of timber, few down trees, flood stage below branches</td>
<td>0.080-0.120</td>
</tr>
<tr>
<td>o. Trees, heavy stand of timber, few down trees, flood stage reaching branches</td>
<td>0.100-0.160</td>
</tr>
<tr>
<td>3. Major streams (top width at flood stage &gt; 100 ft)</td>
<td></td>
</tr>
<tr>
<td>a. Regular section with no boulders or brush</td>
<td>0.025-0.060</td>
</tr>
<tr>
<td>b. Irregular rough section</td>
<td>0.035-0.100</td>
</tr>
<tr>
<td>B. Excavated or dredged channels</td>
<td></td>
</tr>
<tr>
<td>1. Earth, straight and uniform</td>
<td></td>
</tr>
<tr>
<td>a. Clean, recently completed</td>
<td>0.016-0.020</td>
</tr>
<tr>
<td>b. Clean, after weathering</td>
<td>0.018-0.025</td>
</tr>
<tr>
<td>c. Gravel, uniform section, clean</td>
<td>0.022-0.030</td>
</tr>
<tr>
<td>d. With short grass, few weeds</td>
<td>0.022-0.033</td>
</tr>
<tr>
<td>2. Earth, winding and sluggish</td>
<td></td>
</tr>
<tr>
<td>a. No vegetation</td>
<td>0.023-0.030</td>
</tr>
<tr>
<td>b. Grass, some weeds</td>
<td>0.025-0.033</td>
</tr>
<tr>
<td>c. Deep weeds or aquatic plants in deep channels</td>
<td>0.030-0.040</td>
</tr>
<tr>
<td>d. Earth bottom and rubble sides</td>
<td>0.028-0.035</td>
</tr>
<tr>
<td>e. Stony bottom and weedy banks</td>
<td>0.025-0.040</td>
</tr>
<tr>
<td>f. Cobble bottom and clean sides</td>
<td>0.030-0.050</td>
</tr>
</tbody>
</table>
### Table 4-7: Manning's Roughness Coefficients for Open Channels

<table>
<thead>
<tr>
<th>Type of channel</th>
<th>Manning's n</th>
</tr>
</thead>
<tbody>
<tr>
<td>g. Winding, sluggish, stony bottom, weedy banks</td>
<td>0.025-0.040</td>
</tr>
<tr>
<td>h. Dense weeds as high as flow depth</td>
<td>0.050-0.120</td>
</tr>
<tr>
<td>3. Dragline-excavated or dredged</td>
<td></td>
</tr>
<tr>
<td>a. No vegetation</td>
<td>0.025-0.033</td>
</tr>
<tr>
<td>b. Light brush on banks</td>
<td>0.035-0.060</td>
</tr>
<tr>
<td>4. Rock cuts</td>
<td></td>
</tr>
<tr>
<td>a. Smooth and uniform</td>
<td>0.025-0.040</td>
</tr>
<tr>
<td>b. Jagged and irregular</td>
<td>0.035-0.050</td>
</tr>
<tr>
<td>5. Unmaintained channels</td>
<td></td>
</tr>
<tr>
<td>a. Dense weeds, high as flow depth</td>
<td>0.050-0.120</td>
</tr>
<tr>
<td>b. Clean bottom, brush on sides</td>
<td>0.040-0.080</td>
</tr>
<tr>
<td>c. Clean bottom, brush on sides, highest stage</td>
<td>0.045-0.110</td>
</tr>
<tr>
<td>d. Dense brush, high stage</td>
<td>0.080-0.140</td>
</tr>
<tr>
<td>C. Lined channels</td>
<td></td>
</tr>
<tr>
<td>1. Asphalt</td>
<td>0.013-0.016</td>
</tr>
<tr>
<td>2. Brick (in cement mortar)</td>
<td>0.012-0.018</td>
</tr>
<tr>
<td>3. Concrete</td>
<td></td>
</tr>
<tr>
<td>a. Trowel finish</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>b. Float finish</td>
<td>0.013-0.016</td>
</tr>
<tr>
<td>c. Unfinished</td>
<td>0.014-0.020</td>
</tr>
<tr>
<td>d. Gunite, regular</td>
<td>0.016-0.023</td>
</tr>
<tr>
<td>e. Gunite, wavy</td>
<td>0.018-0.025</td>
</tr>
<tr>
<td>4. Riprap (n-value depends on rock size)</td>
<td>0.020-0.035</td>
</tr>
<tr>
<td>5. Vegetal lining</td>
<td>0.030-0.500</td>
</tr>
</tbody>
</table>

### Table 4-8: Manning's Coefficients for Streets and Gutters

<table>
<thead>
<tr>
<th>Type of gutter or pavement</th>
<th>Manning's n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete gutter, troweled finish</td>
<td>0.012</td>
</tr>
<tr>
<td>Asphalt pavement: smooth texture</td>
<td>0.013</td>
</tr>
<tr>
<td>Asphalt pavement: rough texture</td>
<td>0.016</td>
</tr>
</tbody>
</table>
### Table 4-3: Manning's Coefficients for Streets and Gutters

<table>
<thead>
<tr>
<th>Type of gutter or pavement</th>
<th>Manning's n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete gutter with asphalt pavement: smooth texture</td>
<td>0.013</td>
</tr>
<tr>
<td>Concrete gutter with asphalt pavement: rough texture</td>
<td>0.015</td>
</tr>
<tr>
<td>Concrete pavement: float finish</td>
<td>0.014</td>
</tr>
<tr>
<td>Concrete pavement: broom finish</td>
<td>0.016</td>
</tr>
</tbody>
</table>

Table 4-3 note: For gutters with small slope or where sediment may accumulate, increase n values by 0.02 (USDOT, FHWA 2001).

### Table 4-9: Manning's Roughness Coefficients for Closed Conduits (ASCE 1982, FHWA 2001)

<table>
<thead>
<tr>
<th>Material</th>
<th>Manning's n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos-cement pipe</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Brick</td>
<td>0.013-0.017</td>
</tr>
<tr>
<td>Cast iron pipe</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Cement-lined &amp; seal coated</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Concrete (monolithic)</td>
<td>0.012-0.014</td>
</tr>
<tr>
<td>Smooth forms</td>
<td>0.015-0.017</td>
</tr>
<tr>
<td>Rough forms</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Concrete pipe</td>
<td>0.012-0.015</td>
</tr>
<tr>
<td>Box (smooth)</td>
<td>0.022-0.026</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (2-1/2 in. x 1/2 in. corrugations)</td>
<td>0.022-0.025</td>
</tr>
<tr>
<td>Plain</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Paved invert</td>
<td>0.018-0.022</td>
</tr>
<tr>
<td>Spun asphalt lined</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Plastic pipe (smooth)</td>
<td>0.011-0.015</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (2-2/3 in. by 1/2 in. annular)</td>
<td>0.022-0.027</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (2-2/3 in. by 1/2 in. helical)</td>
<td>0.011-0.023</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (6 in. by 1 in. helical)</td>
<td>0.022-0.025</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (5 in. by 1 in. helical)</td>
<td>0.025-0.026</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (3 in. by 1 in. helical)</td>
<td>0.027-0.028</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (6 in. by 2 in. structural plate)</td>
<td>0.033-0.035</td>
</tr>
<tr>
<td>Corrugated-metal pipe -- (9 in. by 2-1/2 in. structural plate)</td>
<td>0.033-0.037</td>
</tr>
<tr>
<td>Corrugated polyethylene</td>
<td>0.010-0.013</td>
</tr>
<tr>
<td>Smooth</td>
<td>0.009-0.015</td>
</tr>
<tr>
<td>Corrugated</td>
<td>0.018-0.025</td>
</tr>
<tr>
<td>Spiral rib metal pipe (smooth)</td>
<td>0.012-0.013</td>
</tr>
<tr>
<td>Type of drainage area</td>
<td>Runoff coefficient</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>Business:</strong></td>
<td></td>
</tr>
<tr>
<td>Downtown areas</td>
<td>0.70-0.95</td>
</tr>
<tr>
<td>Neighborhood areas</td>
<td>0.30-0.70</td>
</tr>
<tr>
<td><strong>Residential:</strong></td>
<td></td>
</tr>
<tr>
<td>Single-family areas</td>
<td>0.30-0.50</td>
</tr>
<tr>
<td>Multi-units, detached</td>
<td>0.40-0.60</td>
</tr>
<tr>
<td>Multi-units, attached</td>
<td>0.60-0.75</td>
</tr>
<tr>
<td>Suburban</td>
<td>0.35-0.40</td>
</tr>
<tr>
<td>Apartment dwelling areas</td>
<td>0.30-0.70</td>
</tr>
<tr>
<td><strong>Industrial:</strong></td>
<td></td>
</tr>
<tr>
<td>Light areas</td>
<td>0.30-0.80</td>
</tr>
<tr>
<td>Heavy areas</td>
<td>0.60-0.90</td>
</tr>
<tr>
<td>Parks, cemeteries</td>
<td>0.10-0.25</td>
</tr>
<tr>
<td>Playgrounds</td>
<td>0.30-0.40</td>
</tr>
<tr>
<td>Railroad yards</td>
<td>0.30-0.40</td>
</tr>
<tr>
<td><strong>Unimproved areas:</strong></td>
<td></td>
</tr>
<tr>
<td>Sand or sandy loam soil, 0-3%</td>
<td>0.15-0.20</td>
</tr>
<tr>
<td>Sand or sandy loam soil, 3-5%</td>
<td>0.20-0.25</td>
</tr>
<tr>
<td>Black or loessial soil, 0-3%</td>
<td>0.18-0.25</td>
</tr>
<tr>
<td>Black or loessial soil, 3-5%</td>
<td>0.25-0.30</td>
</tr>
<tr>
<td>Black or loessial soil, &gt;5%</td>
<td>0.70-0.80</td>
</tr>
<tr>
<td>Deep sand area</td>
<td>0.05-0.15</td>
</tr>
<tr>
<td>Steep grassed slopes</td>
<td>0.70</td>
</tr>
<tr>
<td><strong>Lawns:</strong></td>
<td></td>
</tr>
<tr>
<td>Sandy soil, flat 2%</td>
<td>0.05-0.10</td>
</tr>
<tr>
<td>Sandy soil, average 2-7%</td>
<td>0.10-0.15</td>
</tr>
<tr>
<td>Sandy soil, steep 7%</td>
<td>0.15-0.20</td>
</tr>
<tr>
<td>Heavy soil, flat 2%</td>
<td>0.13-0.17</td>
</tr>
<tr>
<td>Heavy soil, average 2-7%</td>
<td>0.18-0.22</td>
</tr>
</tbody>
</table>
Table 4-10: Runoff Coefficients for Urban Watersheds

<table>
<thead>
<tr>
<th>Type of drainage area</th>
<th>Runoff coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy soil, steep 7%</td>
<td>0.25-0.35</td>
</tr>
<tr>
<td>Streets:</td>
<td></td>
</tr>
<tr>
<td>Asphaltic</td>
<td>0.85-0.95</td>
</tr>
<tr>
<td>Concrete</td>
<td>0.90-0.95</td>
</tr>
<tr>
<td>Brick</td>
<td>0.70-0.85</td>
</tr>
<tr>
<td>Drives and walks</td>
<td>0.75-0.95</td>
</tr>
<tr>
<td>Roofs</td>
<td>0.75-0.95</td>
</tr>
</tbody>
</table>

**Rural and Mixed-Use Watershed**

Table 4-11 shows an alternate, systematic approach for developing the runoff coefficient. This table applies to rural watersheds only, addressing the watershed as a series of aspects. For each of four aspects, the designer makes a systematic assignment of a runoff coefficient “component.” Using Equation 4-22, the four assigned components are added to form an overall runoff coefficient for the specific watershed segment.

The runoff coefficient for rural watersheds is given by:

\[ C = C_r + C_i + C_v + C_s \]

*Equation 4-22.*

**Where:**

- \( C \): runoff coefficient for rural watershed
- \( C_r \): component of coefficient accounting for watershed relief
- \( C_i \): component of coefficient accounting for soil infiltration
- \( C_v \): component of coefficient accounting for vegetal cover
- \( C_s \): component of coefficient accounting for surface type

The designer selects the most appropriate values for \( C_r, C_i, C_v, \) and \( C_s \) from Table 4-11.
### Table 4-11: Runoff Coefficients for Rural Watersheds

<table>
<thead>
<tr>
<th>Watershed characteristic</th>
<th>Extreme</th>
<th>High</th>
<th>Normal</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relief - $C_r$</td>
<td>0.28-0.35</td>
<td>0.20-0.28</td>
<td>0.14-0.20</td>
<td>0.08-0.14</td>
</tr>
<tr>
<td></td>
<td>Steep, rugged terrain with average slopes above 30%</td>
<td>Hilly, with average slopes of 10-30%</td>
<td>Rolling, with average slopes of 5-10%</td>
<td>Relatively flat land, with average slopes of 0-5%</td>
</tr>
<tr>
<td>Soil infiltration - $C_i$</td>
<td>0.12-0.16</td>
<td>0.08-0.12</td>
<td>0.06-0.08</td>
<td>0.04-0.06</td>
</tr>
<tr>
<td></td>
<td>No effective soil cover; either rock or thin soil mantle of negligible infiltration capacity</td>
<td>Slow to take up water, clay or shallow loam soils of low infiltration capacity or poorly drained</td>
<td>Normal; well drained light or medium textured soils, sandy loams</td>
<td>Deep sand or other soil that takes up water readily; very light, well-drained soils</td>
</tr>
<tr>
<td>Vegetal cover - $C_v$</td>
<td>0.12-0.16</td>
<td>0.08-0.12</td>
<td>0.06-0.08</td>
<td>0.04-0.06</td>
</tr>
<tr>
<td></td>
<td>No effective plant cover, bare or very sparse cover</td>
<td>Poor to fair; clean cultivation, crops or poor natural cover, less than 20% of drainage area has good cover</td>
<td>Fair to good; about 50% of area in good grassland or woodland, not more than 50% of area in cultivated crops</td>
<td>Good to excellent; about 90% of drainage area in good grassland, woodland, or equivalent cover</td>
</tr>
<tr>
<td>Surface Storage - $C_s$</td>
<td>0.10-0.12</td>
<td>0.08-0.10</td>
<td>0.06-0.08</td>
<td>0.04-0.06</td>
</tr>
<tr>
<td></td>
<td>Negligible; surface depressions few and shallow, drainageways steep and small, no marshes</td>
<td>Well-defined system of small drainageways, no ponds or marshes</td>
<td>Normal; considerable surface depression, e.g., storage lakes and ponds and marshes</td>
<td>Much surface storage, drainage system not sharply defined; large floodplain storage, large number of ponds or marshes</td>
</tr>
</tbody>
</table>

Table 4-11 note: The total runoff coefficient based on the 4 runoff components is $C = C_r + C_i + C_v + C_s$

While this approach was developed for application to rural watersheds, it can be used as a check against mixed-use runoff coefficients computed using other methods. In so doing, the designer would use judgment, primarily in specifying $C_s$, to account for partially developed conditions within the watershed.

**Mixed Land Use**

For areas with a mixture of land uses, a composite runoff coefficient should be used. The composite runoff coefficient is weighted based on the area of each respective land use and can be calculated as:

$$C_{\text{cultivated}} = 0.09 + 0.07 + 0.10 + 0.06 = 0.32$$
\[ C_w = \frac{\sum_{j=1}^{n} C_j A_j}{\sum_{j=1}^{n} A_j} \]

*Equation 4-23.*

**Where:**
- \( C_w \) = weighted runoff coefficient
- \( C_j \) = runoff coefficient for area \( j \)
- \( A_j \) = area for land cover \( j \) (ft\(^2\))
- \( n \) = number of distinct land uses
EXPLANATION

— 2 — Line of equal precipitation depth,
in inches—variable contour interval.


Figure 11. Depth of precipitation for 2-year storm for 1-day duration in Texas.
FIGURES
PART IV – SITE OPERATING PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
PART IV – SITE OPERATING PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION ................................................................................................................. 1
  1.1 General Facility Design ................................................................................................. 1
  1.2 General Facility Operation ............................................................................................ 1
  1.3 General Facility Personnel ........................................................................................... 1
    1.3.1 Transfer Station Manager ...................................................................................... 1
    1.3.2 Equipment Operators .............................................................................................. 2
    1.3.3 Gate Attendants ..................................................................................................... 2
    1.3.4 Laborers ................................................................................................................ 3
  1.4 General Facility Equipment ........................................................................................... 3
    1.4.1 Equipment for Emergencies ................................................................................... 4

2.0 WASTE ACCEPTANCE AND ANALYSIS ........................................................................... 5
  2.1 Waste Sources and Characteristics ............................................................................. 5
  2.2 Measures for Controlling Prohibited Wastes ................................................................. 7
    2.2.1 Managing of Prohibited Wastes ............................................................................. 9
    2.2.2 Load Inspection Procedure .................................................................................... 9
  2.3 Waste Acceptance Rate ................................................................................................. 9
  2.4 Waste Storage and Processing Time ............................................................................ 10
  2.5 Waste Disposal ............................................................................................................ 10
  2.6 Waste and Effluent Testing .......................................................................................... 10

3.0 FACILITY - GENERATED WASTES .................................................................................. 11

4.0 CONTAMINATED WATER MANAGEMENT ..................................................................... 12

5.0 STORAGE REQUIREMENTS ............................................................................................. 13

6.0 APPROVED CONTAINERS ............................................................................................... 14

7.0 CITIZEN’S COLLECTION STATION ................................................................................ 15

8.0 REQUIREMENTS FOR STATIONARY COMPACTORS .................................................. 16

9.0 PRE-OPERATION NOTICE ............................................................................................. 17

10.0 RECORD-KEEPING AND REPORTING REQUIREMENTS ............................................ 18

11.0 FIRE PROTECTION PLAN ............................................................................................... 20
  11.1 Fire Protection Training ............................................................................................... 21

12.0 ACCESS CONTROL ......................................................................................................... 22
  12.1 Site Security ................................................................................................................ 22
  12.2 Traffic Control .............................................................................................................. 23

13.0 UNLOADING WASTE ..................................................................................................... 24

14.0 SPILL PREVENTION AND CONTROL .......................................................................... 25
15.0 OPERATING HOURS ................................................................. 26
16.0 FACILITY SIGN ...................................................................... 27
17.0 CONTROL OF WINDBLOWN MATERIAL AND LITTER ............ 28
18.0 MATERIALS ALONG ROUTE TO THE FACILITY ...................... 29
19.0 FACILITY ACCESS ROADS ..................................................... 30
20.0 NOISE POLLUTION AND VISUAL SCREENING ....................... 31
21.0 OVERLOADING AND BREAKDOWN ......................................... 32
22.0 SANITATION ........................................................................ 33
23.0 VENTILATION AND AIR POLLUTION CONTROL ..................... 34
24.0 HEALTH AND SAFETY .......................................................... 36
24.1 Emergency Preparedness ....................................................... 36
  24.1.1 General Measures ......................................................... 36
  24.1.2 Measures for the Unloading and Receiving Area ................. 36
24.2 Emergency and Contingency Procedures ................................. 37
  24.2.1 Accidents .................................................................... 37
   24.2.1.1 General Procedures ................................................. 37
   24.2.1.2 Vehicular Accidents ............................................... 37
   24.2.1.3 Personal Accidents ................................................. 38
  24.2.2 Releases .................................................................... 38
   24.2.2.1 Sudden Releases .................................................... 38
   24.2.2.2 Non-Sudden Releases ............................................. 38
25.0 EMPLOYEE SANITATION FACILITIES .................................. 39
26.0 DISEASE VECTOR CONTROL .............................................. 40
27.0 DISPOSAL OF LARGE ITEMS .............................................. 41
28.0 SALVAGING AND SCAVENGING ....... ................................. 42
29.0 HANDLING OF INDUSTRIAL WASTES .................................. 43
30.0 FACILITY INSPECTION AND MAINTENANCE ....................... 44

TABLES
Table IV-1 Summary of Personnel
Table IV-2 Site Operational Equipment
Table IV-3 Summary of Waste Types
Table IV-4 Operating Record
Table IV-5 Schedule and Notification Requirements for Access Breach
Table IV-6 Facility Inspection and Maintenance List

APPENDICES
Appendix IV-1 Waste Acceptance Plan
12.2 Traffic Control

Access to the transfer station is limited to the site entrance located off of County Road 130. Vehicular traffic to and from the transfer station will utilize this single access road which will have two lanes and accommodate two-way traffic. The site access road will be at least a 22-foot wide paved driveway within the northern easement area and will widen to approximately 30-foot within the site boundary to accommodate traffic entering and exiting the facility. The site exit onto County Road 130 will be controlled by a stop sign. The site entrance/exit location and traffic flow directions are provided on Figure I/II-14. The site entrance/exit road, as well as the internal access roadways are designed for the projected facility traffic and will provide the appropriate turning radii for the waste vehicles to prevent a disruption in traffic flow at the facility. Mud and dust will be controlled in accordance with Section 19.0 of this SOP. The gate attendant or other designated employee restricts site access to designated authorized vehicles and directs these vehicles appropriately. All visitor and employee parking and equipment storage will be located in an area outside of the transfer station traffic flow.

Signs located at the entrance of the transfer station direct solid waste transportation vehicles to the appropriate unloading/loading areas. Site personnel provide traffic directions as necessary to facilitate safe movement of vehicles. The site roads are designed with adequate width and turning radii to safely maneuver the waste collection and waste hauling vehicles within the transfer station property.
19.0  FACILITY ACCESS ROADS

The scale house area and entrance/exit road to/from the transfer station facility are designed to be accessible in all weather conditions. The entrance/exit road and all internal facility roadways are surfaced with asphalt, concrete, gravel, crushed rock, or a similar material. The surface condition of these roads will be maintained and repaired regularly to minimize potholes or low spots that may impound water. The surfacing of all site roadways will minimize the tracking of mud and trash onto public roads. Any tracked mud and associated debris which may be brought into the facility roadways will be cleaned by washing down, sweeping, or scraping, as necessary, to minimize tracking those materials onto the public roadways. Litter and any other debris will be picked up at least daily and taken to the transfer station for disposal as discussed in Section 18.0 of this plan.

Fugitive dust emissions are minimized by the surfacing of all site roadways and regular cleaning procedures.
21.0 OVERLOADING AND BREAKDOWN

The design capacity of the Williamson Transfer Station is approximately 2,500 tons per day and shall not be exceeded during operation. The facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harboring of other vectors. If such accumulations occur, additional solid waste shall not be received until the adverse conditions are abated. The maximum volume of waste that will be stored at the transfer station at any given time is 1,000 tons or less, which includes waste in loaded transfer vehicles waiting to haul waste off-site. Waste storage or holding will occur on the tipping floor. At an uncompacted density of 0.3 tons/cy, 1000 tons of waste would occupy approximately half of the 37,500 sf tipping floor to an approximate depth of 5 feet. The tipping floor has more than sufficient space to hold overnight waste. No storage of waste materials will occur off the tipping floor, other than loaded transfer vehicles waiting to haul waste off-site.

If a significant work stoppage should occur at the facility due to a mechanical breakdown or other causes, the facility will accordingly restrict the receipt of solid waste. Under such circumstances, incoming solid waste shall be diverted to an approved backup processing or disposal facility. If the work stoppage is anticipated to last longer than 24 hours or long enough to create objectionable odors, insect breeding, or harboring of vectors, steps shall be taken to remove the accumulated solid waste from the site to an approved backup processing or disposal facility.

In the event the facility is inoperable for periods longer than 24 hours, the alternative waste processing procedure will be to temporarily close the transfer station and actively support customers in the diversion of their solid waste to an alternate transfer station or permitted landfill facility.
PART IV – SITE OPERATING PLAN
APPENDIX IV-1
WASTE ACCEPTANCE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – January 2018
PART IV – SITE OPERATING PLAN
APPENDIX IV-1
WASTE ACCEPTANCE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION .................................................................................................................. 1
2.0 WASTE ACCEPTANCE ....................................................................................................... 3
3.0 OPERATING PROCEDURES .............................................................................................. 4

TABLES
Table IV-1 Special Waste Processing Procedures Summary

Part IV SOP-Appendix IV-1 IV-1-i Rev 2 - Jan 2018
2.0 WASTE ACCEPTANCE

Special wastes, other than the incidental special wastes contained in the waste loads listed above, that are received at the transfer station must be preapproved by the landfill that will receive the waste in accordance with the receiving landfill's special waste screening and acceptance procedures. Such special waste evaluation and approval will take place prior to delivery of the waste to the transfer station. Typically, the special waste analyst for the landfill will utilize information provided by the generator (e.g., waste-specific chemical and characteristic information or process knowledge information) to determine the acceptability of a waste for disposal at the landfill. The landfill's special waste analyst will be responsible for maintaining and utilizing current regulatory guidelines and constituent limits for evaluation of wastes. The landfill's special waste analyst will also be responsible for knowing and applying future changes to regulatory guidelines, review and acceptance procedures. This information will be provided to the appropriately trained transfer station personnel prior to waste acceptance at the transfer station.

Special waste review procedures will include:

1. The Special Waste Profile (SWP) must be completely filled out and legible including addresses, contact names, phone numbers and signatures.
2. The information must include sufficient information to provide the analyst a clear understanding of the waste’s type, origin, shipping method rate of delivery and total amount. If the description is insufficient, additional information will be requested of the generator.
3. The physical characteristics of the waste must include information on the chemical and physical properties of the waste sufficient to allow the analyst to identify the waste and correlate the properties to the appropriate TCEQ and Federal regulations. It is important that this, and all portions of the profile, be completely filled out. By signing the profile the generator certifies the information is accurate.
4. Site specific evaluation. The landfill’s analyst will confirm that each special waste is acceptable in accordance with local, TCEQ and federal regulations as well the transfer station and receiving landfill.
5. The landfill’s analyst may request additional information from the generator including additional analytical, process description, and (M)SDS.
When a special waste arrives at the site, transfer station personnel may randomly select samples to visually compare the material presented for acceptance to the approved SWP to confirm that the physical characteristics (color, odor, appearance) of the material matches what is described on the profile. In the event the physical characteristic of the waste differs from the profile, the load will be detained and appropriate personnel called to investigate/evaluate the matter. The generator will be notified. Additional process and chemical analysis may be requested. If the discrepancies cannot be resolved the load will be rejected.

3.0 OPERATING PROCEDURES

The transfer station personnel will exercise appropriate care and safeguards when processing special wastes. Only onsite personnel who have received special waste training will be utilized for processing special wastes. Specific handling/disposal procedures are detailed in Table IV-1A for the special wastes that will be processed at the facility.

Transfer trucks containing special waste will provide the required documentation to the receiving landfill concerning the special waste contained within the transfer trailer. The landfill will be responsible to ensure the transferred special waste is disposed of in accordance with the landfill’s permit.
PERMIT APPLICATION
RESPONSE TO NOTICE OF DEFICIENCY

ATTACHMENT NO. 3

REDLINE / STRIKEOUT PAGES

- Part I Form
- Cover Sheet and Spine
- Part I and II Narrative, Figures and Attachments
- Part III – Site Development Plan Narrative
- Part III, Attachment 1 – General Facility Design Plan Figures
- Part III, Attachment 1, Appendix A – Surface Water Drainage Plan
- Part IV – Site Operating Plan Narrative
- Part IV, Appendix IV-1 – Waste Acceptance Plan
TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

VOLUME I OF I

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Registration No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 - September 2017
Revision 2 – October 2017
Revision 3 – January 2018
PARTS I & II
TYPE V TRANSFER STATION PERMIT APPLICATION
FOR
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:
Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
# TABLE OF CONTENTS

1.0 PROPERTY AND OWNERSHIP SUMMARY ................................................................. 1
   1.1 Facility Location and History ........................................................................... 1
   1.2 Property Description and Ownership Information ......................................... 1
   1.3 Adjacent Land Ownership and Mineral Interest Ownership ........................... 1
   1.4 Easements ...................................................................................................... 2
   1.5 Legal Authority .............................................................................................. 2
   1.6 Evidence of Competency ............................................................................... 2
   1.7 Appointments ................................................................................................ 2
   1.8 Application Fees ............................................................................................ 2
   1.9 Application Posting Information ................................................................. 3
   1.10 Required Permits/Authorizations ............................................................... 3

2.0 FACILITY FEATURES AND WASTE ACCEPTANCE PLAN .................................. 5
   2.1 Proposed Permit ............................................................................................ 5
   2.2 Sources and Characteristics of Waste .......................................................... 5
      2.2.1 Waste Types and Generation Areas ...................................................... 5
      2.2.2 Projected Waste Acceptance Rate ......................................................... 8
      2.2.3 Population Equivalent .......................................................................... 8
      2.2.4 Waste Storage and Disposal ................................................................. 8
   2.3 Regional Solid Waste Management ................................................................ 9
   2.4 Local Solid Waste Management .................................................................... 9

3.0 EXISTING CONDITIONS SUMMARY .................................................................... 10
3.1 Impact on Surrounding Area
3.1.1 Zoning
3.1.2 Character of Surrounding Land Use
3.1.3 Population and Community Growth Trends
3.1.4 Growth Trends
3.1.5 Proximity to Residences and Other Uses
3.1.5.1 Structures and Inhabitable Buildings Within 500 Feet of the Site
3.1.6 Oil/Gas and Water Wells
3.1.7 Prevailing Wind Direction

3.2 Transportation Analysis
3.2.1 Site Access
3.2.2 Traffic Volumes
3.2.3 Facility Generated Traffic Volumes
3.2.4 Airport Locations
3.2.5 TxDOT Correspondence

3.3 General Geology and Soils Statement
3.3.1 Physiography and Topography
3.3.2 Geologic Setting
3.3.3 On-Site Soils

3.4 Ground and Surface Water Statement
3.4.1 Groundwater Conditions
3.4.2 Surface Water Features
3.4.3 Texas Pollutant Discharge Elimination System

3.5 Floodplains and Wetlands Statement
3.5.1 Floodplains
3.5.2 Wetlands

3.6 Protection of Endangered or Threatened Species
3.7 Site-Specific Conditions Requiring Special Design Considerations ........................................... 17

4.0 SUPPLEMENTARY TECHNICAL REPORT ......................................................................................... 19

1.0 PROPERTY AND OWNERSHIP SUMMARY ................................................................................. 1

   1.1 Facility Location and History ................................................................................................. 1

   1.2 Property Description and Ownership Information ................................................................ 1

   1.3 Adjacent Land Ownership and Mineral Interest Ownership .................................................. 1

   1.4 Easements ............................................................................................................................ 3

   1.5 Legal Authority ..................................................................................................................... 3

   1.6 Evidence of Competency ...................................................................................................... 3

   1.7 Appointments ....................................................................................................................... 2

   1.8 Application Fees .................................................................................................................. 3

   1.9 Application Posting Information .......................................................................................... 3

   1.10 Required Permits/Authorizations ....................................................................................... 3

2.0 FACILITY FEATURES AND WASTE ACCEPTANCE PLAN ....................................................... 5

   2.1 Proposed Registration .......................................................................................................... 5

   2.2 Sources and Characteristics of Waste ..................................................................................... 5

       2.2.1 Waste Types and Generation Areas ............................................................................... 5

       2.2.2 Projected Waste Acceptance Rate ................................................................................. 8

       2.2.3 Population Equivalent .................................................................................................. 8

       2.2.4 Waste Storage and Disposal ....................................................................................... 8

   2.3 Regional Solid Waste Management ....................................................................................... 9

   2.4 Local Solid Waste Management ........................................................................................... 9

3.0 EXISTING CONDITIONS SUMMARY ......................................................................................... 10

   3.1 Impact on Surrounding Area ................................................................................................ 10

       3.1.1 Zoning .......................................................................................................................... 10

       3.1.2 Character of Surrounding Land Use ............................................................................. 10
3.1.3 Population and Community Growth Trends...........................................11
3.1.4 Growth Trends..................................................................................11
3.1.5 Proximity to Residences and Other Uses...........................................11
  3.1.5.1 Structures and Inhabitable Buildings Within 500 Feet of the Site...13
3.1.6 Oil, Gas and Water Wells....................................................................13
3.1.7 Prevailing Wind Direction.................................................................13

3.2 Transportation Analysis.........................................................................13
  3.2.1 Site Access.......................................................................................13
  3.2.2 Traffic Volumes................................................................................14
  3.2.3 Facility Generated Traffic Volumes..................................................14
  3.2.4 Airport Locations.............................................................................15
  3.2.5 TxDOT Correspondence....................................................................15

3.3 General Geology and Soils Statement....................................................15
  3.3.1 Physiography and Topography........................................................15
  3.3.2 Geologic Setting...............................................................................16
  3.3.3 On-Site Soils...................................................................................16

3.4 Ground and Surface Water Statement....................................................16
  3.4.1 Groundwater Conditions.................................................................16
  3.4.2 Surface Water Features....................................................................16
  3.4.3 Texas Pollutant Discharge Elimination System.................................16

3.5 Floodplains and Wetlands Statement......................................................16
  3.5.1 Floodplains.......................................................................................16
  3.5.2 Wetlands..........................................................................................16

3.6 Protection of Endangered or Threatened Species.....................................17

3.7 Site-Specific Conditions Requiring Special Design Considerations.........17

4.0 SUPPLEMENTARY TECHNICAL REPORT..........................................18
TABLES

I/II-1.1 Access Easements
I/II-1.2 Required Permits/Authorizations
I/II-2.1 Waste Acceptance Rate Projection
I/II-3.1 Land Use Within a One-Mile Radius
I/II-3.2 Census and TAC Estimated Population Projection for Williamson County, 2015-2025
I/II-3.3 Existing and Future Traffic Volumes For Roadways Within Three Miles of the Facility
I/II-3.4 Existing and Future Traffic Volumes For County Roads Within One Mile of the Facility

APPLICATION FORMS

Part I Application Form
TCEQ Core Data Form

DOCUMENTATION

Legal Description
Legal Authority
Evidence of Competency
Appointment
Property Owner Affidavit

FIGURES

I/II-1 General Location Map
I/II-2 Site Location Map
I/II-3 Aerial Photograph
I/II-4 General Topographic Map
I/II-5 Land and Mineral Interest Ownership Map
I/II-6 Drainage, Pipeline and Utility Easement Location Map
I/II-7 Site Layout Plan
I/II-8 Land Use Map
I/II-9 Structures Location Map
I/II-10 Transportation Map
I/II-11 Geologic Map
I/II-12 Edwards Aquifer Recharge Zone Map
I/II-13 Soils Map
I/II-14 Site Entrance and Exit Layout Plan
I/II-15 Floodplain Map

APPENDICES

I/II-A Permit Related Correspondence
I/II-A.1 CAPCOG Correspondence
I/II-A.2 Archaeological/Historical Quality Review Correspondence
I/II-A.3 TXDOT and Other Transportation Related Correspondence

I/II-B Location Restriction Summary
FOR PERMIT PURPOSES ONLY

1.0 PROPERTY AND OWNERSHIP SUMMARY

The property ownership information for the Williamson Transfer Station is summarized in the following sections.

1.1 Facility Location and History

The Williamson Transfer Station will be located in an unincorporated area of Williamson County, Texas off County Road (CR) 130 near the intersection of CR 100 and FM 1660. The site is located within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility will be located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660. The site location is shown on Figures I/II-1 and I/II-2 in Parts I/II of this Permit application. Additionally, an aerial photograph showing the site and access roads is included as Part I/II, Figure I/II-3, and a general topographic map is included as Part I/II, Figure I/II-4.

The transfer station property is undeveloped and has not previously been used for solid waste operations.

The site is owned by Lealco, Inc. (Lealco). There is currently no physical address for the transfer station facility property.

The mailing address for the transfer station will be obtained upon Permit approval.

The approximate coordinates of the transfer station property are N 30° 35' 51.21" latitude and W 97° 33' 36.17" longitude.

1.2 Property Description and Ownership Information

The property that comprises the Williamson Transfer Station is depicted on the Permit Boundary Map, provided in the Legal Description portion of the Documentation section following this text. Also included is a metes and bounds description of the property. The recording information for the property is included on both the boundary map and the metes and bounds description and is summarized below.

The 20.448-acre Permit boundary comprises part of the following 50.914 acres (called 50.2 acres) tract in the John Dykes Survey, Abstract 186, Williamson County, Texas:

- Doris Fuchs, Gladys Townsend, and Ruby Cottle tract (recorded in Williamson County Clerk’s Instrument No. 2000082671).

Ownership information is provided in the Documentation section of Part I/II and in the Part I (TCEQ-0650) form. A Property Owner Affidavit provided on behalf of Lealco, Inc. is included in the Documentation section of Part I/II.

1.3 Adjacent Land Ownership and Mineral Interest Ownership

The Williamson County Appraisal District Tax Rolls and Tax Maps were reviewed in July 2017 to determine adjacent landowners, mineral interest owners, and others potentially affected by the Williamson Transfer Station. The landowner list contains the name and mailing address of each owner within ½-mile radius of the facility. The Appraisal District records did not indicate any mineral interest ownership under the facility. Reference numbers are used to correlate the ownership shown on the land ownership list with the appropriate tract of land as shown on Figure I/II-5, Land and Mineral Interest.
facility property or in the surrounding area that would be affected by the proposed Williamson Transfer Station. A copy of the THC correspondence is included in Part I/II, Appendix I/II-A.2.

Miscellaneous Uses

Other miscellaneous land uses within a one-mile radius of the facility include a law enforcement practice firing range approximately 1,700 feet southeast of the facility boundary and the Williamson County Recycling and Disposal Facility. These additional land uses are shown on the Land Use Map, provided as Figure I/II-8.

3.1.5.1 Structures and Inhabitable Buildings Within 500 Feet of the Site

In accordance with §330.61(c)(3), the structures and inhabitable buildings within a 500-foot radius of the proposed facility have been identified on Part I/II, Figure I/II-9. There are no structures and inhabitable buildings within 500 feet of the facility boundary.

3.1.6 Oil/Gas and Water Wells

The locations of water and oil/gas wells within one mile of the Permit boundary of the facility were determined based on a water and oil and gas well database search performed by The Banks Group. The well database search is included in Appendix I/II-C, Well Location Summary. No known water wells or oil/gas wells were identified within a 500-foot radius of the facility.

3.1.7 Prevailing Wind Direction

A wind rose is included on Figure I/II-1 to illustrate the prevailing wind direction. The nearest available wind rose for Austin, Texas for the years 1984 to 1992 indicates that the prevailing wind is from the south. The winds are calm 5.69% of the time. The wind rose data was obtained from the TCEQ.

3.2 Transportation Analysis

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility, data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

3.2.1 Site Access

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site entrance access road will be at least a 15-foot two-lane, paved driveway to accommodate one two-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance and Exit Access Road Layout) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site
exit road will be controlled by a stop sign and will be at least a 12-foot wide paved driveway to accommodate one way traffic exiting the facility. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. The access road will widen to approximately 30 feet within the site boundaries. A 15-foot access easement allows traffic to leave the Lealco owned property into CR 130. Traffic flow directions are provided on Figure I/II-14.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance or exit.

Coordination with TxDOT and Williamson County is included in Appendix I/II-A.3.

3.2.2 Traffic Volumes

All traffic will access the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100, CR 131, and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.4. Table I/II-3.4 includes traffic count data for County roads within one mile of the facility based on 2011 data.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes (^{1,2})</th>
<th>2035 Volumes (^{1,3})</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,350</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.
3. Source: TxDOT
Table I/II-3.4 Existing and Future Traffic Volumes for County Roads Within One Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2011 Volumes¹,²</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 100</td>
<td>B/W CR107 and Chandler</td>
<td>590</td>
</tr>
<tr>
<td>CR 107</td>
<td>West of CR100 Intersection</td>
<td>634</td>
</tr>
<tr>
<td>Chandler Road</td>
<td>Just West of TX 130</td>
<td>4,696</td>
</tr>
<tr>
<td></td>
<td>Just East of TX 130</td>
<td>2,846</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>1,394</td>
</tr>
<tr>
<td>CR 130</td>
<td>Near Facility Entrance</td>
<td>485</td>
</tr>
<tr>
<td>CR 131</td>
<td>East of CR 130 Intersection</td>
<td>178</td>
</tr>
</tbody>
</table>

1. Traffic volumes are in units of vehicles per day.
2. Source: Williamson County

3.2.3 Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Tables I/II-3.3 and I/II-3.4 shows that the volume of the traffic generated by the facility represents a relatively small percentage compared to the existing and projected volumes on the access roads intended for use by the facility within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

3.2.4 Airport Locations

There are no public-use airports within six miles of the site as indicated on Part I/II, Figure I/II-1. The nearest runway of a public-use airport is the Taylor Municipal Airport, located approximately 7 miles southeast of the facility. A small private airstrip is located approximately 1.5 miles northwest of the facility boundary. In accordance with 30 TAC 330.61(i)(5), an airport impact evaluation is required only for landfill units and landfill mining operations, and thus not required for transfer stations.

3.2.5 TxDOT Correspondence

In accordance with 30 TAC §330.61(g)(4), TxDOT was contacted for any traffic or location restrictions which may apply to the facility. A copy of all correspondence with TxDOT is included in Parts I/II, Appendix I/II-A.3.

3.3 General Geology and Soils Statement

In accordance with 30 TAC §330.61(i), a general discussion of the geology and soils at the Williamson Transfer Station is included in the following sections.
November 10, 2017

Mr. Matthew Udenenwu
Texas Commission on Environmental Quality
Municipal Solid Waste Permits Section, Waste Permits Division
P.O. Box 13087
Austin, Texas 78711-3087

RE: Proposed Williamson Transfer Station – Williamson County
Municipal Solid Waste – Permit Application No. 2398
Permit Application – Application Summary for Agency Review
Tacking Nos. 21862836 and 21925726; CN601096944/RN109898239

Dear Mr. Udenenwu:

The Texas Department of Transportation (TxDOT) Austin District would like to thank you for the opportunity to review the permit application for the above-referenced municipal solid waste transfer station facility submitted by Lealco, Inc.

As the proposed site location is not adjacent to a state facility, we do not have any current concerns. The closest facility would be Farm to Market (FM) 1660 but we do not believe the proposed site would have any impact to FM 1660.

Should you have any questions, concerns or would like to discuss this matter further, please feel free to contact Shirley Nichols, Austin District Environmental Supervisor, at (512) 832-7168 or by email at Shirley.Nichols@txdot.gov.

Sincerely,

T. Mc Coy, P.E.
Austin District Engineer

cc: Bobby A. Ramthun, Georgetown Area Engineer, Austin District, TxDOT
    Shirley Nichols, Environmental Supervisor, Austin District, TxDOT
Got it, will run it by my supervisor.

Mark

From: Reed, Jeff [mailto:JeffReed@scsengineers.com]
Sent: Monday, December 18, 2017 12:12 PM
To: Mark Olsen
Subject: Proposed Williamson Transfer Station

Hi Mark – It was good talking to you today. Although I am waiting to hear back from TCEQ regarding the response letter TxDOT submitted directly to TCEQ with no objection, I wanted to be sure you have a copy of the applicants letter for your records in the event TCEQ requires a response to this letter as well. Please confirm receipt of the attached.

Thanks, Jeff

Jeffrey K. Reed, P.E.*
Vice President/Houston Office Manager
National Partner – Landfill Practice

SCS ENGINEERS
12651 Briar Forest Drive, Suite 205
Houston, Texas 77077
Direct: 817-358-6159
O: 281-293-8494 X6159
C: 281-635-0062
jeffreed@scsengineers.com
www.scsengineers.com

*Licensed Professional Engineer in the US states of:
AL, FL, LA, MN, MS, NC, NM, OK, SC and TX
December 27, 2017

Mr. J. Terron Evertson, P.E.
County Engineer
3151 S. E. Inner Loop, Suite B
Georgetown, Texas 78626

Re: Notification of Proposed Type V MSW Facility Permit Application
Williamson Transfer Station
Hutto, Williamson County, Texas

Dear Mr. Evertson:

In follow up to our letter to you dated August 8, 2017, Lealco, Inc. (Lealco) has submitted a Permit Application to the Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permits Division for a proposed Type V MSW Facility. The proposed 20.448-acre Type V (MSW transfer station) facility site is located within an unincorporated area of Williamson County, Texas and within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility property is located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660 in Williamson County, Texas. The approximate coordinates of the transfer station property are N 30° 35' 51.21" latitude and W 97° 33' 36.17" longitude.

The proposed transfer station will be located off of CR 130 and will have a waste intake, at its peak, of approximately 2,500 tons/day. Projected facility generated traffic volumes were calculated through 2035 based on projected incoming waste rates and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. Public access to and from the facility will be provided by one entrance/exit driveway located off CR 130, as shown on the attached revised Figure I/II-14.

Under Title 30 of the Texas Administrative Code (30 TAC), Section 330.61(i)(4), the applicant is required to “submit documentation of coordination of all designs of proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with site entrances with the agency exercising maintenance responsibility of the public roadway involved.” Therefore, on behalf of Lealco, we are submitting documentation that there no proposed public roadway improvements associated with the site entrance/exit driveway.

To support our conclusion that no public roadway improvements are necessary, we have attached a copy of the General Location Map, Transportation Map, Site Entrance Layout, and the traffic study excerpt from the Permit Application. In addition, for your convenience, we have attached our August 8, 2017 letter and attachments for reference.
If further information or documentation is required by your department, please give one of us a call at (281) 293-8494.

Sincerely,

Ryan Derong, P.E.
Senior Project Engineer

Jeffrey K. Reed, P.E.
Vice President

cc: Chris Ruane, Lealco, Inc.
    Brett O'Connor, Lealco, Inc.

Attachments:

Traffic Study Excerpt from Williamson Transfer Station Permit Application
Figure I/II-1, General Location Map
Figure I/II-10, Transportation Map
Figure I/II-14, Site Entrance and Exit Layout
August 8, 2017 letter and attachments
Transportation Analysis

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility; data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

Site Access

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site entrance road will be at least a 22-foot wide paved driveway to accommodate two-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance Layout) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site exit will be controlled by a stop sign. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. Traffic flow directions are provided on Figure I/II-14.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east. Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance/exit.

Traffic Volumes

All traffic will access the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100, CR 131 and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.3. Table I/II-3.4 includes traffic count data for County roads within one mile of the facility based on 2011 data.
Table I/II-3.3 Existing and Future Traffic Volumes For TxDOT Roadways Within Three Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes$^{1,2}$</th>
<th>2035 Volumes$^{2,3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,550</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.
3. Source: TxDOT

Table I/II-3.4 Existing Traffic Volumes For County Roads Within One Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2011 Volumes$^{1,2}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 100</td>
<td>B/W CR107 and Chandler</td>
<td>590</td>
</tr>
<tr>
<td>CR 107</td>
<td>West of CR100 Intersection</td>
<td>634</td>
</tr>
<tr>
<td>Chandler Road</td>
<td>Just West of TX 130</td>
<td>4,696</td>
</tr>
<tr>
<td></td>
<td>Just East of TX 130</td>
<td>2,846</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>1,394</td>
</tr>
<tr>
<td>CR 130</td>
<td>Near Facility Entrance</td>
<td>485</td>
</tr>
<tr>
<td>CR 131</td>
<td>East of CR130 Intersection</td>
<td>178</td>
</tr>
</tbody>
</table>

1. Traffic volumes are in units of vehicles per day.
2. Source: Williamson County

Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Tables I/II-3.3 and I/II-3.4 shows that the volume of the traffic generated by the facility compared to the existing and projected volumes on the access roads intended for use by the facility within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

END OF TRAFFIC STUDY EXCERPT
August 8, 2017

Mr. J. Terron Everson, P.E.
County Engineer
3151 S. E. Inner Loop, Suite B
Georgetown, Texas 78626

Re: Notification of Proposed Type V MSW Facility Permit Application
Williamson Transfer Station
Hutto, Williamson County, Texas

Dear Mr. Everson:

Lealco, Inc. (Lealco) is planning to submit a Permit Application to the Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permits Division for a proposed Type V MSW Facility. The proposed 20.448-acre Type V (MSW transfer station) facility site is located within an unincorporated area of Williamson County, Texas and within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility property is located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660 in Williamson County, Texas. The approximate coordinates of the transfer station property are N 30° 35’ 51.21” latitude and W 97° 33’ 36.17” longitude.

The proposed transfer station will be located off of CR 130 and will have a waste intake, at its peak, of approximately 2,500 tons/day. Projected facility generated traffic volumes were calculated through 2035 based on projected incoming waste rates and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. Public access to and egress from the facility will be provided by entrance and exit driveways located off CR 130, as shown on the attached Figure I/II-14.

Under Title 30 of the Texas Administrative Code (30 TAC), Section 330.61(i)(4), the applicant is required to “submit documentation of coordination of all designs of proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with site entrances with the agency exercising maintenance responsibility of the public roadway involved.” Therefore, on behalf of Lealco, we are submitting documentation that there no proposed public roadway improvements associated with the site entrance and exit driveways.

To support our conclusion that no public roadway improvements are necessary, we have attached a copy of the General Location Map, Transportation Map, Site Entrance and Exit Layout, and the traffic study excerpt from the Permit Application.
If further information or documentation is required by your department to aid in your review, please give one of us a call at (281) 293-8494.

Sincerely,

Ryan Derong, P.E.
Senior Project Engineer
SCS ENGINEERS

Jeffrey K. Reed, P.E.
Vice President
SCS ENGINEERS

cc: Chris Ruane, Lealco, Inc.

Attachments:

Traffic Study Excerpt from Williamson Transfer Station Permit Application
Figure I/II-1, General Location Map
Figure I/II-10, Transportation Map
Figure I/II-14, Site Entrance and Exit Layout
TRAFFIC STUDY EXCERPT FROM WILLIAMSON TRANSFER STATION PERMIT APPLICATION

Transportation Analysis

The transportation analysis includes data on the availability and adequacy of roads that the owner or operator will use to access the facility; data on the volume of vehicular traffic on access roads within one mile of the facility, both existing and expected, during the expected life of the facility; projected volume of traffic expected to be generated by the facility on the access roads within one mile of the facility; documentation of coordination of all designs associated with site entrance and exit with the agency exercising maintenance responsibility of the public roadway involved; and documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions.

Site Access

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs north/south east of the site. CR 130 consists of two 12-foot asphalt paved lanes. Lealco will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance. The site entrance will be at least a 15-foot wide paved driveway. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance Plan) will have approximately 2400 feet of stacking room before they reach the entry building. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The driveway exit will be controlled by a stop sign and will be at least a 12-foot wide paved driveway. A 25-foot access easement allows traffic to reach the Lealco owned property from CR 130. A 15-foot access easement allows traffic to leave the Lealco owned property into CR130.

Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance or exit.

Traffic Volumes

All traffic accesses the facility via the entrance off of CR 130. Within one mile of the facility, Chandler Road, CR 100 and FM 1660 will be used for vehicles to access CR 130 to the facility. The 2015 TxDOT daily traffic volumes in the vicinity of the facility were obtained which represent the average two-way traffic passing a specific location in a 24-hour period. Future traffic is projected through the year 2035 based on TxDOT data. The actual site operating life for the transfer station may vary due to various future factors. The existing traffic volumes for roadways within three miles of the facility are shown on Figure I/II-10 and in the Table I/II-3.4.
Table I/II-3.4 Existing and Future Traffic Volumes For TxDOT Roadways Within Three Mile of the Facility

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Segment</th>
<th>2015 Volumes$^{1,2}$</th>
<th>2035 Volumes$^{2,3}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX 130</td>
<td>North of SH 29 at FM 971</td>
<td>18,276</td>
<td>36,550</td>
</tr>
<tr>
<td></td>
<td>South of US 79 and FM 685</td>
<td>32,577</td>
<td>45,610</td>
</tr>
<tr>
<td>FM 1660</td>
<td>Near SH 29 Intersection</td>
<td>1,603</td>
<td>3,210</td>
</tr>
<tr>
<td></td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near US 79 Intersection</td>
<td>4,629</td>
<td>9,260</td>
</tr>
<tr>
<td>SH 29</td>
<td>Near CR 118 Intersection</td>
<td>1,752</td>
<td>3,510</td>
</tr>
<tr>
<td></td>
<td>Near FM 1660 Intersection</td>
<td>3,646</td>
<td>7,290</td>
</tr>
<tr>
<td>US 79</td>
<td>Near FM 1660 Intersection</td>
<td>19,426</td>
<td>38,850</td>
</tr>
<tr>
<td></td>
<td>Near TX 130 Intersection</td>
<td>25,396</td>
<td>50,790</td>
</tr>
</tbody>
</table>

1. Source: 2015 Austin District Traffic Map, Sheet 4, TxDOT
2. Traffic volumes are in units of vehicles per day.

Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the facility is expected to be approximately 300 vehicles per day. These would consist of short-haul and long-haul garbage trucks, citizen vehicles, and employee vehicles.

Comparison of the traffic to be generated at the facility with the traffic data on Table I/II-3.4 shows that the volume of the traffic generated by the facility represents a relatively small percentage of the existing and projected volumes on the access roads within one mile of the facility. Based on the findings of this traffic study, there are no existing or future restrictions on the main access roadways within one mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic as well as the other vehicles in the area.

END OF TRAFFIC STUDY EXCERPT
PART III

SITE DEVELOPMENT PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
# TABLE OF CONTENTS

1.0 INTRODUCTION.................................................................................................................. 1

1.1 Site Location and History ............................................................................................ 1

1.2 Land Use and Zoning ................................................................................................. 1

2.0 GENERAL FACILITY DESIGN .................................................................................. 3

2.1 Facility Access ............................................................................................................ 3

2.1.1 Adequacy of Access Roads and Highways ......................................................... 3

2.1.2 Fences and Access Control ................................................................................. 3

2.2 Waste Movement ....................................................................................................... 4

2.2.1 Waste Flow Diagram .......................................................................................... 4

2.2.2 Waste Process Schematic View ......................................................................... 4

2.2.3 Ventilation and Odor Control ............................................................................. 4

2.2.4 Generalized Construction Details ...................................................................... 5

2.2.5 Noise Pollution Control and Visual Screening ............................................... 5

2.3 Sanitation and Water Pollution Control .................................................................. 65

2.3.1 Surface Water and Groundwater Protection .................................................... 6

2.3.2 Floor Wash Down ............................................................................................... 76

2.4 Protection of Endangered Species ......................................................................... 7

3.0 SURFACE WATER DRAINAGE REPORT ................................................................. 8

3.1 Drainage Design ....................................................................................................... 8

3.2 Floodplain Considerations ....................................................................................... 8

4.0 WASTE MANAGEMENT UNIT DESIGN ................................................................ 9

4.1 Waste Operations ..................................................................................................... 9

4.2 Spill Prevention and Control .................................................................................... 9

4.3 Waste Storage Period ............................................................................................... 9

5.0 CLOSURE PLAN ...................................................................................................... 11

6.0 COST ESTIMATE FOR CLOSURE .......................................................................... 12
ATTACHMENTS

1  General Facility Design Plan
2  Closure Plan
3  Closure Cost Estimate
1.0 INTRODUCTION

In accordance with 30 TAC §330.63(a), the following sections include the applicable portions of Part III of a Permit application that summarize the land use and zoning and the adequacy of access roads and highways surrounding the proposed facility. Part III also provides information on the general design of the facility to safeguard the health, welfare, and physical property of the people and the environment.

1.1 Site Location and History

The Williamson Transfer Station will be located in an unincorporated area of Williamson County, Texas off County Road (CR) 130 near the intersection of CR 100 and FM 1660. Its 20.448 acre Permit Boundary is located within a larger tract measuring 50.914 acres (called 50.2 acres) that is owned by the applicant, with the transfer station structure located near the center of the overall property. The site is located within the extraterritorial jurisdiction of the City of Hutto. The transfer station facility will be located approximately 1.3 miles northwest of the intersection of CR 100 and FM 1660. The site location is shown on Figures I/II-1 and I/II-2 in Parts I/II of this Permit application. Additionally, an aerial photograph showing the site and access roads is included as Part I/II, Figure I/II-3, and a general topographic map is included as Part I/II, Figure I/II-4.

At its peak, the new facility will have a waste intake capacity projected at approximately 2,500 tons/day. The transfer station location has not previously been used for solid waste operations.

The site is owned by Lealco, Inc. (Lealco). There is currently no physical address for the transfer station facility property.

The mailing physical address for the transfer station will be obtained upon permit approval.

The approximate coordinates of the transfer station property are N 30° 35’ 51.21” latitude and W 97° 33’ 36.17” longitude.

1.2 Land Use and Zoning

Existing uses of the site and the surrounding area are shown on Figure I/II-8, Land Use Map. The map was prepared based on a field reconnaissance study (SCS, December 2016) and a review of recent aerial photographs (GoogleEarth™ and landfill aerial photography) of the surrounding area. Within one mile of the site, the land is primarily used for agricultural purposes. Portions of the land within a one-mile radius are developed with a variety of agricultural, commercial, industrial, residential, and institutional uses. Agricultural land represents the largest percentage of land use within a one-mile radius of the site. The Williamson County Recycling and Disposal Facility represents the second largest portion of land use within a one-mile radius of the site. One subdivision/home community, scattered homes and the Williamson County Recycling and Disposal Facility are located within a one-mile radius of the site. The breakdown of overall land use within the one-mile radius is shown on Table III-1.1. For a more detailed summary of the existing conditions of the facility and surrounding area, see Part I/II, Section 3.0.

Table III-1.1 Land Use Within a One-Mile Radius

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Area (in acres)</th>
<th>Percentage of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>1,622.0</td>
<td>63.2%</td>
</tr>
<tr>
<td>Commercial</td>
<td>38.9</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
2.0 GENERAL FACILITY DESIGN

In accordance with 30 TAC §330.63(b), the general facility design is discussed in the following sections.

2.1 Facility Access

2.1.1 Adequacy of Access Roads and Highways

In accordance with 30 TAC §330.61(i), a transportation analysis was performed for the Williamson Transfer Station.

Public access to the facility will be provided by one entrance located on the west side of County Road (CR) 130 which runs in a north/south direction to the east of the site. CR 130 consists of two 12-foot asphalt paved lanes. The owner or operator will obtain required permits from appropriate governmental agencies prior to construction of a new driveway entrance and exit. Vehicular traffic to the facility will generally access the facility using CR 130 using CR 100 or Chandler Road to the west and south, CR 131 to the north or FM 1660 to the east. These roads will be accessed via TX-130 from the west, US Hwy 79 to the south, State Hwy 29 to the north or FM 1660 from the east.

The site access entrance road will be at least a 522 to 30-foot wide, two-lane, paved driveway to accommodate one-way traffic entering and exiting the facility. The driveway will intersect CR 130 at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on CR 130. Vehicles that turn into the proposed site entrance driveway at CR 130 (see Part I/II, Figure I/II-14 – Site Entrance and Exit Access Road Layout) will have approximately 2400 feet of stacking room before they reach the gatehouse. This will prevent any traffic congestion on CR 130 due to vehicles waiting to access the facility. The site exit road will be controlled by a stop sign, and will be at least a 12-foot wide paved driveway to accommodate one-way traffic exiting the facility. A 25-foot access easement allows traffic to reach the Lealeco owned property from CR 130. The access road will widen to approximately 30 feet within the site boundaries. A 15-foot access easement allows traffic to leave the Lealeco owned property into CR130. Traffic flow directions are provided on Figure I/II-14.

Based on the information above, the roadways that provide access to the facility are adequate in capacity and structure to continue to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT and Williamson County, there are no proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with the site entrance or exit.

2.1.2 Fences and Access Control

Public access to the transfer station will be controlled by means of a perimeter fence which encompasses the entire Permit boundary. Access to the transfer station is limited to the gated site entrance located off of CR130 that will serve the transfer station.

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the site is minimized by controlling access to the transfer station site with the perimeter fence and locking gate at the entrance and exit. The perimeter fence will consist of a 6-foot-high chain-link fence, and/or a barbed wire fence (at least three-strand) or a mesh wire. Part III, Attachment 1, Figure III-1.1 shows the location of the fencing and the gates.
4.0 WASTE MANAGEMENT UNIT DESIGN

In accordance with §330.63(d), the general design and waste operations and storage are summarized in the following sections.

4.1 Waste Operations

The Williamson Transfer Station is designed for efficient waste processing. All solid waste capable of creating public health hazards or nuisances will be stored on the partially-enclosed building tipping floor only and processed or transferred promptly and will not be allowed to result in nuisances or public health hazards.

General operations will be conducted in a manner that allows for the prompt and efficient unloading of waste. The waste will be discharged from the collection vehicles onto the facility processing floor (tipping floor). Waste will be loaded into an open-top transfer trailer, covered and transferred to an authorized disposal facility.

As shown on Part III, Attachment 1, Figures III-1.3, the collection trucks will enter the site and will weigh-in at the gate house. The trucks will proceed to the tipping floor. The trucks will deposit the waste onto the tipping floor for processing and then proceed to exit the building. The trucks will proceed to the exit road and then leave the site. After the waste has been processed, the waste will be loaded into transfer trucks waiting on the tipping floor. After the transfer trucks are full, they will be tarped and proceed to the exit. Empty transfer trucks that are awaiting loading will queue up on the paved area leading to the building.

4.2 Spill Prevention and Control

The storage and processing areas of the facility are designed to control and contain spills and contaminated water from leaving the facility. Since the tipping floor is covered by a roof and enclosed on two sides, the “worst case spill or release” will occur when the entire tipping floor is being washed down. Based on manufacturer’s data, a standard pressurized nozzle that provides a maximum flow rate of 10 gallons per minute may be used to wash down the tipping floor and will generate approximately 600 gallons of washwater per hour. Based on manufacturer’s data that one person could wash down approximately 8,400 square feet of floor surface per hour with this nozzle and based on the size of the floor area, it will take approximately 4.5 hours for one person to wash down the entire tipping floor area (37,500 square feet), generating approximately 3,500 gallons of washwater. The generated contaminated water will be collected and discharged into a 10,000 gallon holding tank. The tank is of sufficient size to hold nearly three washdown events. After three washdown events, or when the remaining capacity of the holding tank is less than 1,000 gallons, a TCEQ-registered vacuum truck will remove the wastewater from the holding tank and take it to a permitted wastewater plant or a registered/permitted liquid processing/transfer/disposal facility. The tank is dual-walled with a leak detection system between the tank walls. In the event the tank leak detection system monitors a leak, the tank will be replaced. The tank detail is shown on Part III, Attachment 1, Figure III-1.7. There are no unenclosed containment areas at the facility; therefore, the rainfall design requirements in §330.63(d)(1)(B) do not apply.

4.3 Waste Storage Period

The projected peak amount of solid waste to be received daily and annually for the facility is approximately 2,500 tons per day and 942,590,780.000 tons per year, respectively. The maximum volume of waste that will be stored overnight (defined as sunset to sunrise) at the transfer station at any given
PART III – ATTACHMENT 1

GENERAL FACILITY DESIGN PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealgo, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018

III-1
PART III – ATTACHMENT 1

GENERAL FACILITY DESIGN PLAN
TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

FIGURES

Figure III-1.1 Site Layout Plan
Figure III-1.2 Waste Movement Flow Chart
Figure III-1.3 Waste Process Schematic View
Figure III-1.4 Transfer Station Partially-Enclosed Building Layout
Figure III-1.5 Transfer Station Partially-Enclosed Building Elevations
Figure III-1.6 Contaminated Water Management Plan
Figure III-1.7 General Construction Details I
Figure III-1.8 General Construction Details II

APPENDICES

Appendix A – Surface Water Drainage Plan
1. Perimeter fencing along the permit boundary will be barred wire or a chain link fence to provide security. A gate will be provided at the entrance to the facility. There are no proposed greenbelts or natural windbreaks at the facility.

2. Paved driveway road will consist of either:
   - "KINDLING" PAVEMENT — Minimum 2" thick asphalt surface, 6" thick subgrade compacted to 95% modified proctor or 95% standard proctor
   - CONCRETE PAVEMENT — 6" thick reinforced concrete, 6" thick aggregate base, 6" thick subgrade compacted to 95% modified proctor or 95% standard proctor
   - ALTERNATE ASPHALT, CONCRETE OR OTHER ROAD BUILDING MATERIAL AT THE FACILITY'S DISCRETION

3. Topographic features and permit boundary ground survey conducted by Martin Survey, date December 20, 2010.

4. Scaleless parking area and gatehouse size and locations are approximate. Septic field location may vary and is optional if tank or direct sanitary sewer line is used. Guardrail length and location may vary.

5. Tank is optional if waterline brought directly to gatehouse.

6. CH130 Location approximated from Google Earth.

Intended for permit purposes only.
PART III - ATTACHMENT 1 – APPENDIX A

SURFACE WATER DRAINAGE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Hwy 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – January 2018

III-1-A
PART III - ATTACHMENT 1 – APPENDIX A

SURFACE WATER DRAINAGE PLAN
TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION ........................................................................................................................................... 1
2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS ............................................................................................... 2

APPENDICES
Appendix III-1-A-i DRAINAGE CALCULATIONS

FIGURES
Figure III-1-A.1 OFF-SITE DRAINAGE AREA MAP
Figure III-1-A.2 ON-SITE DRAINAGE PLAN
Figure III-1-A.3 DRAINAGE DETAILS
1.0 INTRODUCTION

This Surface Water Drainage Plan was prepared as a part of this Type V permit application for the Williamson Transfer Station. The surface water drainage design presented in this attachment was prepared consistent with 30 TAC §330.63(c) and §330.303. The facility is not a landfill or compost unit; therefore, a surface water drainage report to satisfy the requirements of 30 TAC, Subchapter G, and 30 TAC §330.63(c)(1) and §330.63(c)(2) is not required.

Drawings provided in this attachment depict the proposed facility layout and drainage plans for the proposed Williamson Transfer Station. The total area of the Williamson Transfer Station facility is 20.448 acres. The Williamson Transfer Station located on undeveloped farm land consisting of cultivated slopes with greater than 20 percent residue cover.

The Williamson Transfer Station facility will be constructed, maintained, and operated to manage stormwater run-on and runoff during the peak discharge of a 25-year rainfall event and prevents the discharge of waste and feedstock material, including, but not limited to, in-process and/or processed materials.

Surface water drainage in and around the facility is controlled to minimize surface water running onto, into, and off the treatment area. The Williamson Transfer Station, entrance road, gatehouse and scales will be constructed on elevated fill material. Water falling outside the elevated fill material will be directed around the waste facility, away from the waste facility, or to on-site culverts. The Williamson Transfer Station will be a roofed building. All waste handling procedures will be conducted within the roofed building. Rain water that falls onto the transfer station building, entrance road, gatehouse and scales will be graded to flow off the site. All stormwater that flows off the Williamson Transfer Station facility is not contaminated water.

The hydrologic and hydraulic analysis methods used for calculating the rainfall intensity and peak flow rates are described in the following sections of this attachment.

The proposed facility and boundary of the Williamson Transfer Station is presented on Figures III-1-A.2, On-Site Drainage Plan.

The Williamson Transfer Station facility is located outside of the FEMA 100 year flood. This is shown in Part I/II, Figure I/II-15, Floodplain Map. Therefore, an additional floodplain analysis was not performed for this permit application.
2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

The rational method was utilized to compute the peak 25 year flowrates for the design of all on-site channels and culverts as all these items had maximum drainage areas of less than 200 acres. The peak flowrates were calculated using the TxDOT criteria, TxDOT Hydraulic Design Manual July 2016.

The rational method equation is expressed as:

\[ Q = C \cdot I \cdot A \]

where:

- \( Q \) = Flowrate in cubic feet per second (cfs),
- \( C \) = Run-off coefficient,
- \( I \) = Rainfall intensity in inches per hour, and
- \( A \) = Drainage area in acres.

The run-off coefficients \( C \) from the TxDOT criteria were selected based on the type of drainage area as follows:

- Relatively flat land, 0-5%; normal soil infiltration; clean cultivation; normal surface storage = 0.32
- Lawns, heavy soil, flat 2% = 0.15
- Streets, asphaltic = 0.95.

The rainfall intensity \( I \) from the TxDOT criteria is computed using the following equation:

\[ I = b / (t_c + d)^e \]

where, for Williamson County:

<table>
<thead>
<tr>
<th>25-Year Storm Event</th>
<th>100-Year Storm Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>( b = 110.07 )</td>
<td>( b = 155.59 )</td>
</tr>
<tr>
<td>( d = 15.07 )</td>
<td>( d = 17.40 )</td>
</tr>
<tr>
<td>( e = 0.8183 )</td>
<td>( e = 0.8232 )</td>
</tr>
</tbody>
</table>

The time of concentration \( t_c \), in minutes, was computed by determining the time required for run-off to flow from the most hydraulically remote point in the watershed to the study point and was estimated using TxDOT Hydraulic Design Manual, August 2016, equations for sheet flow and shallow concentrated flow and by estimating hydraulic characteristics of open channel flow. A minimum time of concentration of 10 minutes was utilized.

The Time of Concentration is computed using the following formula:

\[ T_c = T_c(\text{overland}) + T_c(\text{shallow channel}) + T_c(\text{channel}) \]

where:
\[ T_c = \text{Time of Concentration, minutes;} \]

\[ T_c(\text{sheet flow}) = \text{Time of Concentration for Sheet Flow, minutes;} \]

\[ T_c(\text{sheet flow}) = \frac{[0.007(N_{ol}L_{sh})^{0.8}]}{[(P_2)^{0.5}S_{sh}^{0.4}]}, \text{ where:} \]

\[ N_{ol} = \text{overland flow roughness coefficient; cultivated soils, residue cover greater than 20%, 0.17; grass, short prairie, 0.15; or smooth surfaces (concrete, asphalt, gravel, or bare soil), 0.011.} \]

\[ L_{sh} = \text{sheet flow length, feet, 100 feet maximum.} \]

\[ P_2 = 2\text{-year, 24-hour rainfall depth, inches, provided in TxDOT 5-1301-01-1; 3.41 inches.} \]

\[ S_{sh} = \text{sheet flow slope, feet/foot.} \]

\[ T_c(\text{shallow channel}) = \text{Time of Concentration for Shallow Channel Flow, minutes;} \]

\[ T_c(\text{shallow channel}) = \frac{L_{sc}}{3600KS_{sc}^{0.5}}, \text{ where:} \]

\[ L_{sc} = \text{shallow concentrated flow length, feet.} \]

\[ K = 16.13 \text{ for unpaved surfaces, 20.32 for paved surfaces.} \]

\[ S_{sc} = \text{shallow concentrated flow slope, feet/foot.} \]

\[ T_c(\text{channel}) = \text{Time of Concentration for Channel Flow, minutes} \]

\[ T_c(\text{channel}) = (L/V) \times 60 \text{ sec./min', where:} \]

\[ L = \text{length of channel, feet; and} \]

\[ V = \text{estimated flow velocity of channel using Manning's equation, feet per second.} \]

Three-One culverts have been incorporated into the transfer station facility design. The culverts have been designed with the Pipe Culvert function of the HYDROCALC Hydraulics, Version 1.2a, computer program. The HYDROCALC program analyzes culverts using the methods and equations described in the Federal Highway Administration report “Hydraulic Design of Highway Culverts” (FHWA, 1985).

Culvert 1 is located under the Exit Road at Discharge Study Point 2. Culvert 2 is located under the Exit Road at Discharge Study Point 3. Culvert 3 is located under the Entrance Road at Discharge Study Point 4. The culverts all have a concrete headwall at the inlet and outlet. Culvert 3 has a 3-foot long and 10-foot wide stone riprap pad at the outlet. Culverts 1 and 2 have been designed with non-erosive discharge velocities of less than 5 feet per second. All The culverts have been designed with a 1.0 percent flowline slope. Culverts 1 and 2 have a 24” diameter and has three Culvert 3 has an 18” diameter corrugated metal pipes. All culverts were designed with corrugated metal pipes.

A Manning’s Roughness Coefficient of 0.024 was utilized for normal depth computations for an unpaved corrugated metal pipe.
The locations of the culverts are shown on Figures III-1-A.1 and III-1-A.2. Details and typical cross sections of the culverts are shown on Figure III-1-A.3. Calculations of the culverts are included in Appendix III-1-A-1.

Revet riprap protection has been provided at the outlets of Culvert 3. Rip-rap will be composed of a well-graded mixture of stone, sized such that fifty percent of the pieces by weight shall be larger than the calculated size, \( d_{50} \). The diameter of the largest stone \( (d_{100}) \) will be 1.5 times \( d_{50} \) and the thickness of the pad will be twice \( d_{50} \).

Perimeter channels have been designed to convey on and off-site flows from the west from Discharge Study Point 52 to Discharge Study point 97 to Discharge Study Point 1. The perimeter channels have been designed with the Normal Depth, Trapezoidal Channel function of the HYDROCALC Hydraulics, Version 1.2a, computer program. The perimeter channels have 3 horizontal to 1 vertical side slopes, “V” (0.1 foot) bottom width, 1.0 percent channel slopes, and a Manning’s Roughness Coefficient of 0.027 was utilized for grass lined channels. The perimeter channel from Discharge Study Point 52 to Discharge Study point 97 Plan is shown on Figure III-1-A.2; and Discharge Study point 7 discharges into an existing channel that flows to and leaves the site at Discharge Study Point 1. sheets with channel locations and stationing is included in Figure ATT2-2. Calculations of the culverts–channels are included in Appendix III-1-A-1.

The HYDROCALC program computes the normal depth of a trapezoidal channel using an iterative approach to arrive at a value which satisfies Manning’s Equation. Manning’s Equation is expressed as follows:

\[
Q = (1.486/n) AR^{(2/3)} \sqrt{S}
\]

where:

- \( Q \) = Flowrate in channel, cubic feet per second;
- \( n \) = Manning’s Roughness Coefficient;
- \( A \) = Area of flow, square feet;
- \( R \) = Hydraulic radius, feet = A/P (Area of flow / Wetted Perimeter); and
- \( S \) = Slope of energy grade line (feet/foot).

Manning’s Roughness Coefficient of 0.027 was utilized for normal depth computations for a grass lined earthen channel.
APPENDIX III-1-A-i
DRAINAGE CALCULATIONS
### 25-Year Post-Development Rational Method Calculations

**WILLIAMSON TRANSFER STATION**  
**WILLIAMSON COUNTY, TEXAS**  
**PROJECT NO.: 182101200**  
**Constants:**  
- 2-yr, 24-hr storm depth = $3.41$ in, source Ref. 9

#### Discharge Data Sheet

<table>
<thead>
<tr>
<th>Subbasin</th>
<th>ID</th>
<th>Discharge</th>
<th>Study Pole</th>
<th>Flow Type</th>
<th>Length (ft)</th>
<th>Shape</th>
<th>Surface Condition</th>
<th>Measuring n</th>
<th>Runoff Velocity (ft/s)</th>
<th>Travel Time (min)</th>
<th>Wetted Area (sq ft)</th>
<th>Intensity (in/hr)</th>
<th>Discharge (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2, 3, OS-1</td>
<td>21.1</td>
<td>SF</td>
<td>100</td>
<td>C</td>
<td>0.0160</td>
<td>0.090</td>
<td>0.170</td>
<td>11.5</td>
<td>0.37</td>
<td>6.19</td>
<td>41.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCP</td>
<td>100</td>
<td>U</td>
<td>0.0170</td>
<td>0.010</td>
<td>0.090</td>
<td>11.5</td>
<td>0.37</td>
<td>6.19</td>
<td>41.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0180</td>
<td>0.030</td>
<td>0.090</td>
<td>11.5</td>
<td>0.37</td>
<td>6.19</td>
<td>41.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCF</td>
<td>1700</td>
<td>U</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCF</td>
<td>100</td>
<td>U</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCF</td>
<td>1700</td>
<td>U</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCF</td>
<td>100</td>
<td>U</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SCF</td>
<td>1700</td>
<td>U</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CF</td>
<td>100</td>
<td>GL</td>
<td>0.0100</td>
<td>0.000</td>
<td>0.030</td>
<td>10.0</td>
<td>0.32</td>
<td>5.13</td>
<td>31.7</td>
</tr>
</tbody>
</table>

1. Surface Condition: A = Sheet flow on smooth surfaces, paralel; C = Sheet flow (calculated), moderate cover >20%; S = sheet flow short grass, pasture; U = shallow concentrated flow, improved; P = shallow concentrated flow, pasture; GL = Channel flow, grass-lined; and T = Channel flow, AstroTurf lined.  
2. Rational method coefficients taken from Ref. A for "Integrated areas" (flat or level rail >3%) and >5% slopes.  
3. Time of concentration less than 10 min were taken as $t_c = 10.0$ min. - see TAC 330.05(a)(3)(E).  

References:  
## PIPE CULVERT ANALYSIS
### COMPUTATION OF CULVERT PERFORMANCE CURVE

#### Culvert 1
July 31, 2017
25 Year Peak

**PROGRAM INPUT DATA**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culvert Diameter (ft)</td>
<td>2.0</td>
</tr>
<tr>
<td>FHWA Chart Number</td>
<td>2</td>
</tr>
<tr>
<td>FHWA Scale Number (Type of Culvert Entrance)</td>
<td>1</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.024</td>
</tr>
<tr>
<td>Entrance Loss Coefficient of Culvert Opening</td>
<td>0.5</td>
</tr>
<tr>
<td>Culvert Length (ft)</td>
<td>13.0</td>
</tr>
<tr>
<td>Invert Elevation at Downstream end of Culvert (ft)</td>
<td>694.87</td>
</tr>
<tr>
<td>Invert Elevation at Upstream end of Culvert (ft)</td>
<td>635.0</td>
</tr>
<tr>
<td>Culvert Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Starting Flow Rate (cfs)</td>
<td>6.94</td>
</tr>
<tr>
<td>Incremental Flow Rate (cfs)</td>
<td>3.0</td>
</tr>
<tr>
<td>Ending Flow Rate (cfs)</td>
<td>6.94</td>
</tr>
<tr>
<td>Starting Tailwater Depth (ft)</td>
<td>0.5</td>
</tr>
<tr>
<td>Incremental Tailwater Depth (ft)</td>
<td>1.0</td>
</tr>
<tr>
<td>Ending Tailwater Depth (ft)</td>
<td>0.5</td>
</tr>
</tbody>
</table>

**COMPUTATION RESULTS**

<table>
<thead>
<tr>
<th>Flow Rate (cfs)</th>
<th>Tailwater Depth (ft)</th>
<th>Headwater Control (ft)</th>
<th>Normal Depth (ft)</th>
<th>Critical Depth (ft)</th>
<th>Depth at Outlet (ft)</th>
<th>Outlet Velocity (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.94</td>
<td>0.5</td>
<td>1.32</td>
<td>1.45</td>
<td>0.08</td>
<td>0.93</td>
<td>0.93</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 3.0.1, Copyright (c) 1996-2010
Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
Email: software@dodson-hydro.com, All Rights Reserved.

**Use 10 - 24" CMP**
## Trapezoidal Channel Analysis

**Normal Depth Computation**

**Culvert 1 Discharge Section**

July 31, 2017

**25 Year Peak**

### Program Input Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>69.4</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.027</td>
</tr>
<tr>
<td>Channel Left Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Right Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Bottom Width (ft)</td>
<td>38.0</td>
</tr>
</tbody>
</table>

### Computation Results

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>0.51</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>3.43</td>
</tr>
<tr>
<td>Froude Number</td>
<td>0.86</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.18</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>0.69</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>20.25</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>41.07</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright (c) 1996-2010

Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069

Email: software@dodson-hydro.com, All Rights Reserved.
### Culvert Diameter
- (ft)...

### FHWA Chart Number
- Type of Curve...

### Entrance Location of Culvert Opening
- Entrance Location...

### Exit Location at Downstream End of Culvert
- Exit Location...

### Invert Elevation at Upstream End of Culvert
- Invert Elevation...

### Culvert Slope
- (ft/ft)...

### Program Input Data

<table>
<thead>
<tr>
<th>Flow Rate (CF)</th>
<th>Headwater Depth (ft)</th>
<th>Inlet Depth (ft)</th>
<th>Outlet Depth (ft)</th>
<th>Critical Depth (ft)</th>
<th>Normal Depth (ft)</th>
<th>Critical Valve Vel. (F)</th>
<th>Headwater Valve Vel. (F)</th>
<th>Outlet Valve Vel. (F)</th>
<th>Flow (CF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.34</td>
<td>0.5</td>
<td>1.25</td>
<td>1.38</td>
<td>0.89</td>
<td>0.89</td>
<td>4.68</td>
<td>3.66</td>
<td>2.03</td>
<td>695.0</td>
</tr>
<tr>
<td>6.0</td>
<td>1.07</td>
<td>1.006</td>
<td>1.006</td>
<td>0.90</td>
<td>0.90</td>
<td>4.68</td>
<td>3.66</td>
<td>2.03</td>
<td>695.0</td>
</tr>
</tbody>
</table>

**Use 5-24" CMP**
### TRAPEZOIDAL CHANNEL ANALYSIS

#### NORMAL DEPTH COMPUTATION

**Colvert 2 Discharge Section**

**25 Year Peak**

August 1, 2017

---

**PROGRAM INPUT DATA**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Rate (cfs)</td>
<td>31.7</td>
</tr>
<tr>
<td>Channel Bottom Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Manning's Roughness Coefficient (n-value)</td>
<td>0.027</td>
</tr>
<tr>
<td>Channel Left Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Right Side Slope (horizontal/vertical)</td>
<td>3.0</td>
</tr>
<tr>
<td>Channel Bottom Width (ft)</td>
<td>18.0</td>
</tr>
</tbody>
</table>

---

**COMPUTATION RESULTS**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Depth (ft)</td>
<td>0.5</td>
</tr>
<tr>
<td>Flow Velocity (fps)</td>
<td>3.28</td>
</tr>
<tr>
<td>Froude Number</td>
<td>0.851</td>
</tr>
<tr>
<td>Velocity Head (ft)</td>
<td>0.17</td>
</tr>
<tr>
<td>Energy Head (ft)</td>
<td>0.66</td>
</tr>
<tr>
<td>Cross-Sectional Area of Flow (sq ft)</td>
<td>9.67</td>
</tr>
<tr>
<td>Top Width of Flow (ft)</td>
<td>20.98</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 2.0.1, Copyright(c) 1996-2010

Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069

Email: software@dodson-hydro.com, All Rights Reserved.
# PIPE CULVERT ANALYSIS

## COMPUTATION OF CULVERT PERFORMANCE CURVE

### Culvert 3

**August 1, 2017**

**25 Year Peak**

### PROGRAM INPUT DATA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culvert Diameter (ft)</td>
<td>1.5</td>
</tr>
<tr>
<td>FHWA Chart Number</td>
<td>2</td>
</tr>
<tr>
<td>FHWA Scale Number (Type of Culvert Entrance)</td>
<td>1</td>
</tr>
<tr>
<td>Manning’s Roughness Coefficient (n-value)</td>
<td>0.024</td>
</tr>
<tr>
<td>Entrance Loss Coefficient of Culvert Opening</td>
<td>0.5</td>
</tr>
<tr>
<td>Culvert Length (ft)</td>
<td>15.0</td>
</tr>
<tr>
<td>Invert Elevation at Downstream end of Culvert (ft)</td>
<td>710.0</td>
</tr>
<tr>
<td>Invert Elevation at Upstream end of Culvert (ft)</td>
<td>719.15</td>
</tr>
<tr>
<td>Culvert Slope (ft/ft)</td>
<td>0.01</td>
</tr>
<tr>
<td>Starting Flow Rate (cfs)</td>
<td>6.0</td>
</tr>
<tr>
<td>Incremental Flow Rate (cfs)</td>
<td>0.0</td>
</tr>
<tr>
<td>Ending Flow Rate (cfs)</td>
<td>6.0</td>
</tr>
<tr>
<td>Starting Tailwater Depth (ft)</td>
<td>0.6</td>
</tr>
<tr>
<td>Incremental Tailwater Depth (ft)</td>
<td>0.0</td>
</tr>
<tr>
<td>Ending Tailwater Depth (ft)</td>
<td>0.6</td>
</tr>
</tbody>
</table>

### COMPUTATION RESULTS

<table>
<thead>
<tr>
<th>Flow Rate (cfs)</th>
<th>Tailwater Depth (ft)</th>
<th>Headwater Inlet Control</th>
<th>Outlet Control</th>
<th>Normal Depth (ft)</th>
<th>Critical Depth (ft)</th>
<th>Depth at Outlet (ft)</th>
<th>Velocity (fps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0</td>
<td>0.6</td>
<td>1.43</td>
<td>1.55</td>
<td>1.35</td>
<td>0.95</td>
<td>0.95</td>
<td>5.11</td>
</tr>
</tbody>
</table>

---

HYDROCALC Hydraulics for Windows, Version 2.0 1, Copyright (c) 1996-2010
Dodson & Associates, Inc., 5629 FM 1960 West, Suite 314, Houston, TX 77069
Email: software@dodson-hydro.com, All Rights Reserved.

---

Sheet Feasibility

Use 2 - 18” cmp.

III-1-A-i-c
## Rainfall Intensity-Duration-Frequency Coefficients for Texas

"Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas"

1. **Select English or SI Units**
   - English

2. **Select or Enter a County**
   - Williamson

3. **Enter a Time of Conc.**
   - Select Units
   - Intensity (in./hr): 27.3 min

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>50% (2-year)</th>
<th>20% (5-year)</th>
<th>10% (10-year)</th>
<th>4% (25-year)</th>
<th>2% (50-year)</th>
<th>1% (100-year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>e</td>
<td>0.8344</td>
<td>0.8201</td>
<td>0.8163</td>
<td>0.8183</td>
<td>0.8258</td>
<td>0.8232</td>
</tr>
<tr>
<td>b (in.)</td>
<td>60.95</td>
<td>75.08</td>
<td>88.06</td>
<td>110.07</td>
<td>136.34</td>
<td>155.59</td>
</tr>
<tr>
<td>d (min)</td>
<td>13.40</td>
<td>12.63</td>
<td>13.26</td>
<td>15.07</td>
<td>16.48</td>
<td>17.40</td>
</tr>
<tr>
<td>Intensity (in./hr)</td>
<td>2.77</td>
<td>3.65</td>
<td>4.29</td>
<td>5.13</td>
<td>6.02</td>
<td>6.81</td>
</tr>
</tbody>
</table>

(Spreadsheet Release Date: August 31, 2015; data table reshuffle by Asquith July 14, 2016)
FIGURES
PART IV – SITE OPERATING PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – October 2017
Revision 3 – January 2018
PART IV – SITE OPERATING PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION........................................................................................................... 1
1.1 General Facility Design ......................................................................................... 1
1.2 General Facility Operation .................................................................................... 1
1.3 General Facility Personnel .................................................................................... 1
  1.3.1 Transfer Station Manager .............................................................................. 1
  1.3.2 Equipment Operators .................................................................................... 2
  1.3.3 Gate Attendants ............................................................................................ 2
  1.3.4 Laborers ........................................................................................................ 3
1.4 General Facility Equipment .................................................................................. 3
  1.4.1 Equipment for Emergencies ......................................................................... 4
2.0 WASTE ACCEPTANCE AND ANALYSIS.............................................................. 5
  2.1 Waste Sources and Characteristics ................................................................... 5
  2.2 Measures for Controlling Prohibited Wastes ..................................................... 7
    2.2.1 Managing of Prohibited Wastes ................................................................. 9
    2.2.2 Load Inspection Procedure ...................................................................... 9
2.3 Waste Acceptance Rate ....................................................................................... 9
2.4 Waste Storage and Processing Time ..................................................................... 10
2.5 Waste Disposal .................................................................................................... 10
2.6 Waste and Effluent Testing .................................................................................. 10
3.0 FACILITY - GENERATED WASTES ....................................................................... 11
4.0 CONTAMINATED WATER MANAGEMENT ........................................................ 12
5.0 STORAGE REQUIREMENTS .................................................................................. 13
6.0 APPROVED CONTAINERS .................................................................................. 14
7.0 CITIZEN’S COLLECTION STATION .................................................................... 15
8.0 REQUIREMENTS FOR STATIONARY COMPACTORS ....................................... 16
9.0 PRE-OPERATION NOTICE .................................................................................. 17
10.0 RECORD-KEEPING AND REPORTING REQUIREMENTS ................................... 18
11.0 FIRE PROTECTION PLAN .................................................................................... 20
  11.1 Fire Protection Training .................................................................................... 21
12.0 ACCESS CONTROL .............................................................................................. 22
  12.1 Site Security ...................................................................................................... 22
  12.2 Traffic Control ................................................................................................ 23
13.0 UNLOADING WASTE .......................................................................................... 24
14.0 SPILL PREVENTION AND CONTROL ................................................................. 25
15.0 OPERATING HOURS ............................................................. 26
16.0 FACILITY SIGN .............................................................. 27
17.0 CONTROL OF WINDBLOWN MATERIAL AND LITTER .......... 28
18.0 MATERIALS ALONG ROUTE TO THE FACILITY ................. 29
19.0 FACILITY ACCESS ROADS .................................................. 30
20.0 NOISE POLLUTION AND VISUAL SCREENING ................... 31
21.0 OVERLOADING AND BREAKDOWN .................................... 32
22.0 SANITATION ................................................................... 33
23.0 VENTILATION AND AIR POLLUTION CONTROL ................. 34
24.0 HEALTH AND SAFETY ....................................................... 36
    24.1 Emergency Preparedness .............................................. 36
    24.1.1 General Measures .................................................. 36
    24.1.2 Measures for the Unloading and Receiving Area ............. 36
    24.2 Emergency and Contingency Procedures ......................... 37
    24.2.1 Accidents .......................................................... 37
        24.2.1.1 General Procedures ...................................... 37
        24.2.1.2 Vehicular Accidents ..................................... 37
        24.2.1.3 Personal Accidents ....................................... 38
    24.2.2 Releases .......................................................... 38
        24.2.2.1 Sudden Releases ........................................... 38
        24.2.2.2 Non-Sudden Releases .................................... 38
25.0 EMPLOYEE SANITATION FACILITIES ................................. 39
26.0 DISEASE VECTOR CONTROL ............................................ 40
27.0 DISPOSAL OF LARGE ITEMS ............................................ 41
28.0 SALVAGING AND SCAVENGING ........................................ 42
29.0 HANDLING OF INDUSTRIAL WASTES ................................. 43
30.0 FACILITY INSPECTION AND MAINTENANCE ....................... 44

TABLES
Table IV-1  Summary of Personnel
Table IV-2  Site Operational Equipment
Table IV-3  Summary of Waste Types
Table IV-4  Operating Record
Table IV-5  Schedule and Notification Requirements for Access Breach
Table IV-6  Facility Inspection and Maintenance List

APPENDICES
Appendix IV-1  Waste Acceptance Plan
12.2 Traffic Control

Access to the transfer station is limited to the site entrance located off of County Road 130. Only one site entrance may be used at any time. Vehicular traffic to and from the transfer station will utilize this single access road which the site uses this entrance. The entrance and exit roads will have two lanes and accommodate one two-way traffic. The site entrance access road will be at least a 1502-foot wide paved driveway within the northern easement area and will widen to approximately 30-foot within the site boundary to accommodate one two-way traffic entering and exiting the facility. The site exit onto County Road 130 road will be controlled by a stop sign and will be at least a 12-foot wide paved driveway to accommodate one way traffic exiting the facility. The site entrance/exit locations and traffic flow directions are provided on Figure I/II-14. The site entrance/exit road, as well as the internal access roadways are designed for the projected facility traffic and will provide the appropriate turning radii for the waste vehicles to prevent a disruption in traffic flow at the facility. Mud and dust will be controlled in accordance with Section 19.0 of this SOP. The gate attendant or other designated employee restricts site access to designated authorized vehicles and directs these vehicles appropriately. All visitor and employee parking and equipment storage will be located in an area outside of the transfer station traffic flow.

Signs located at the entrance of the transfer station direct solid waste transportation vehicles to the appropriate unloading/loading areas. Site personnel provide traffic directions as necessary to facilitate safe movement of vehicles. The site roads are designed with adequate width and turning radii to safely maneuver the waste collection and waste hauling vehicles within the transfer station property. A do not enter sign will be posted at the site exit to prevent unauthorized entrance of vehicles at the exit location.
19.0 FACILITY ACCESS ROADS

The scale house area and entrance/exit roads to/from the transfer station facility are designed to be accessible in all weather conditions. The entrance/exit roads and all internal facility roadways are surfaced with asphalt, concrete, gravel, crushed rock, or a similar material. The surface condition of these roads will be maintained and repaired regularly to minimize potholes or low spots that may impound water. The surfacing of all site roadways will minimize the tracking of mud and trash onto public roads. Any tracked mud and associated debris which may be brought into the facility roadways will be cleaned by washing down, sweeping, or scraping, as necessary, to minimize tracking those materials onto the public roadways. Litter and any other debris will be picked up at least daily and taken to the transfer station for disposal as discussed in Section 18.0 of this plan.

Fugitive dust emissions are minimized by the surfacing of all site roadways and regular cleaning procedures.
21.0 OVERLOADING AND BREAKDOWN

The design capacity of the Williamson Transfer Station is approximately 2,500 tons per day and shall not be exceeded during operation. The facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harboring of other vectors. If such accumulations occur, additional solid waste shall not be received until the adverse conditions are abated. The maximum volume of waste that will be stored at the transfer station at any given time is 1,000 tons or less, which includes waste in loaded transfer vehicles waiting to haul waste off-site. Waste storage or holding will occur on the tipping floor. At an uncompacted density of 0.3 tons/cy, 1000 tons of waste would occupy approximately half of the 37,500 sf tipping floor to an approximate depth of 5 feet. The tipping floor has more than sufficient space to hold overnight waste. No storage of waste materials will occur off the tipping floor, other than loaded transfer vehicles waiting to haul waste off-site.

If a significant work stoppage should occur at the facility due to a mechanical breakdown or other causes, the facility will accordingly restrict the receipt of solid waste. Under such circumstances, incoming solid waste shall be diverted to an approved backup processing or disposal facility. If the work stoppage is anticipated to last longer than 24 hours or long enough to create objectionable odors, insect breeding, or harboring of vectors, steps shall be taken to remove the accumulated solid waste from the site to an approved backup processing or disposal facility.

In the event the facility is inoperable for periods longer than 24 hours, the alternative waste processing procedure will be to temporarily close the transfer station and actively support customers in the diversion of their solid waste to an alternate transfer station or permitted landfill facility.
PART IV – SITE OPERATING PLAN
APPENDIX IV-1
WASTE ACCEPTANCE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION

FOR

WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

Prepared for:

Lealco, Inc.
7118 US Highway 59 South
Goodrich, TX 77335

Prepared by:

SCS ENGINEERS
Texas Board of Professional Engineers Permit No. F-3407
12651 Briar Forest Dr., Suite 205
Houston, TX 77077
(281) 293-8494

August 2017
Revision 1 – September 2017
Revision 2 – January 2018
PART IV – SITE OPERATING PLAN
APPENDIX IV-1
WASTE ACCEPTANCE PLAN

TYPE V TRANSFER STATION PERMIT APPLICATION
WILLIAMSON TRANSFER STATION
TCEQ PERMIT NO. MSW-2398
WILLIAMSON COUNTY, TEXAS

TABLE OF CONTENTS

1.0 INTRODUCTION .................................................................................................................. 1
2.0 WASTE ACCEPTANCE ......................................................................................................... 3
3.0 OPERATING PROCEDURES ............................................................................................... 4

TABLES
Table IV-1 Special Waste Processing Procedures Summary
2.0 WASTE ACCEPTANCE

Special wastes, other than the incidental special wastes contained in the waste loads listed above, that are received at the transfer station must be preapproved by the landfill that will receive the waste in accordance with the receiving landfill’s special waste screening and acceptance procedures. Such special waste evaluation and approval will take place prior to delivery of the waste to the transfer station. Typically, the special waste analyst for the landfill will utilize information provided by the generator (e.g., waste-specific chemical and characteristic information or process knowledge information) to determine the acceptability of a waste for disposal at the landfill. The landfill’s special waste analyst will be responsible for maintaining and utilizing current regulatory guidelines and constituent limits for evaluation of wastes. The landfill’s special waste analyst will also be responsible for knowing and applying future changes to regulatory guidelines, review and acceptance procedures. This information will be provided to the appropriately trained transfer station personnel prior to waste acceptance at the transfer station.

Special waste review procedures will include:

1. The Special Waste Profile (SWP) must be completely filled out and legible including addresses, contact names, phone numbers and signatures.

2. The information must include sufficient information to provide the analyst a clear understanding of the waste’s type, origin, shipping method, rate of delivery and total amount. If the description is insufficient, additional information will be requested of the generator.

3. The physical characteristics of the waste must include information on the chemical and physical properties of the waste sufficient to allow the analyst to identify the waste and correlate the properties to the appropriate TCEQ and Federal regulations. It is important that this, and all portions of the profile, be completely filled out. By signing the profile the generator certifies the information is accurate.

4. The generator will provide analytical data to the transfer station showing the results of the analytical testing used to comply with §330.202(e)(2).

5.4 Site specific evaluation. The landfill’s analyst will confirm that each special waste is acceptable in accordance with local, TCEQ and federal regulations as well as the transfer station and receiving landfill.

6.5 The landfill’s analyst may request additional information from the generator including additional analytical, process description, and (M)SDS.
When a special waste arrives at the site, transfer station personnel may randomly select samples to visually compare the material presented for acceptance to the approved SWP to confirm that the physical characteristics (color, odor, appearance) of the material matches what is described on the profile. In the event the physical characteristic of the waste differs from the profile, the load will be detained and appropriate personnel called to investigate/evaluate the matter. The generator will be notified. Additional process and chemical analysis may be requested. If the discrepancies cannot be resolved the load will be rejected.

3.0 OPERATING PROCEDURES

The transfer station personnel will exercise appropriate care and safeguards when processing special wastes. Only onsite personnel who have received special waste training will be utilized for processing special wastes. Specific handling/disposal procedures are detailed in Table IV-1A for the special wastes that will be processed at the facility.

Transfer trucks containing special waste will provide the required documentation to the receiving landfill concerning the special waste contained within the transfer trailer. The landfill will be responsible to ensure the transferred special waste is disposed of in accordance with the landfill’s permit.