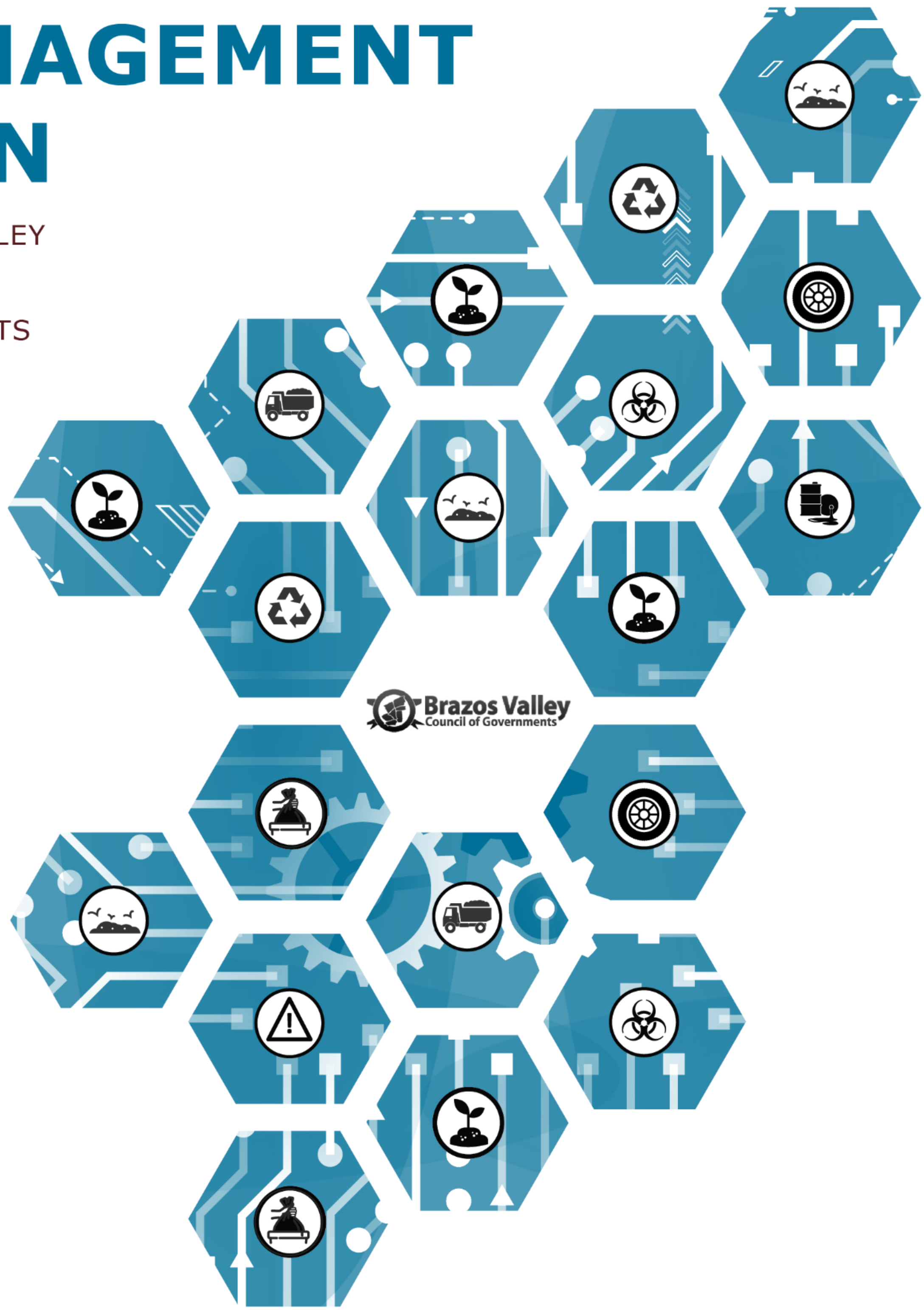
2022 - 2042

REGIONAL SOLID WASTE MANAGEMENT PLAN

BRAZOS VALLEY
COUNCIL OF
GOVERNMENTS



Volume I
Volume II
Attachments Volume II

RESOLUTION
APPROVING THE UPDATED
REGIONAL SOLID WASTE MANAGEMENT PLAN

WHEREAS, the Brazos Valley Council of Governments, a regional planning commission organized under provisions of Chapter 570, Acts, 59th Legislature, Regular Session 1965 (codified as Article 1011m, V.T.C.S.), is given area wide planning responsibility for Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington counties; and

WHEREAS, according to the Texas Health and Safety Code (THSC) §363.062; each of the state's 24 Councils of Governments is required to develop a regional solid waste management plan;

WHEREAS, the Texas Commission on Environmental Quality (TCEQ) provides regional funding for Brazos Valley Council of Governments to maintain a regional coordination and planning role;

WHEREAS, a condition of receiving state solid waste grant funds under the Regional Solid Waste Grants, each COG must update its regional solid waste management plan since it is a 20-year document that is due to expire in 2022,

WHEREAS, the Solid Waste Advisory Committee (SWAC) of the Brazos Valley Council of Governments has recommended approval of the updated Regional Solid Waste Management Plan prepared by Texas State University, which also includes the BVCOG Regional Closed Landfill Inventory.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE BRAZOS VALLEY COUNCIL OF GOVERNMENTS:

1. The updated Regional Solid Waste Management Plan be approved; and

2. That this Resolution is effective upon its adoption.

PASSED AND APPROVED THIS 8th day of December, 2021.

Honorable Kavon Novack
Chair of the Board

ATTEST:

Honorable Mayor Molly Hedrick
Board Secretary

This report was prepared by
Texas State Institute for Government Innovation

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Special thanks to the Brazos Valley Council of Governments (BVCOG) for the opportunity to work on this project. We would specifically like to thank Candilyn McLean with BVCOG and the members of the Solid Waste Advisory Committee for their guidance and feedback in the development of this Plan.

Delivered on
November 1, 2021

TEXAS STATE
INSTITUTE FOR
GOVERNMENT INNOVATION

To support reducing waste,
we have produced this document to be best viewed electronically.
We have also included links to print critical parts of the plan.

PLEASE NOTE PRINTING FEATURES ONLY WORK IN ADOBE ACROBAT, NOT IN WEB BROWSERS

Volume I

The approved summary of the 2022 – 2042 Regional Solid Waste Management Plan

GO TO VOLUME I

PRINT VOLUME I

Volume II

The approved plan details of the 2022 – 2042 Regional Solid Waste Management Plan

GO TO VOLUME II

PRINT VOLUME II

Plan-at-a-Glance

The 2022 – 2042 Regional Solid Waste Management Plan-at-a-Glance for quick reference

GO TO PLAN-AT-A-GLANCE

PRINT PLAN-AT-A-GLANCE

Plan Conformance Review

The Plan Conformance Review to help evaluate proposed municipal solid waste facility applications

GO TO CONFORMANCE REVIEW

PRINT CONFORMANCE REVIEW

Contents

Regional Solid Waste Management Plan Volume I

Regional Organization Information

Table 1. Organization Information

Name of Council of Government	Brazos Valley Council of Governments
Mailing Address	P.O. Drawer 4128 Bryan, Texas 77805
Website	https://www.bvcog.org/
Phone Number	979-595-2800
Email Address	info@bvcog.org

Section I. Geographic Scope

Table I.I. Geographic Scope

Names of Member Counties in the Entire Planning Region	Brazos, Burleson, Grimes, Leon, Madison, Robertson, Washington

Section II. Plan Content

II.A. Regional Goals and Objectives

Table II.A. Regional Goals and Objectives

Goal #1	Maximize Beneficial Resource Use	**Objective 1.A.** Improve access to diversion opportunities **Objective 1.B.** Improve community participation **Objective 1.C.** Provide education
Goal #2	Responsibly Manage Problematic Waste	**Objective 2.A.** Improve access to problematic waste collection **Objective 2.B.** Provide education **Objective 2.C.** Collect data
Goal #3	Maximize Proper Disposal	**Objective 3.A.** Improve access to solid waste drop-off opportunities **Objective 3.B.** Improve community participation **Objective 3.C.** Provide education **Objective 3.D.** Collect data **Objective 3.E.** Increase illegal dumping prevention efforts **Objective 3.F.** Increase illegal dumping enforcement
Goal #4	Lead Regional Planning	**Objective 4.A.** Collaborate **Objective 4.B.** Optimize funding decisions **Objective 4.C.** Oversee facility planning **Objective 4.D.** Review and update solid waste management plans **Objective 4.E.** Make continuous improvements **Objective 4.F.** Collect data **Objective 4.G.** Plan for disaster waste

II.B. Efforts to Minimize, Reuse, and Recycle Waste

Table II.B. Waste Minimization, Reuse, and Recycling

Subject	Description
Current Efforts to Minimize Municipal Solid Waste and to Reuse or Recycle Waste	While there is always room for improvement, recycling efforts are widespread and most residents in the region have access to some recycling opportunities, mostly through drop off centers. Reuse opportunities exist in the region but are not typically handled by cities and counties. These opportunities, such as Goodwill, Salvation Army, and online social networks are also typically not communicated on city and county websites in the region. General source reduction and waste minimization efforts are much less common throughout the region. For more information, see Volume II, Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste.

Recycling Rate Goal for the Region	Because no established regional recycling rate exists, we estimated one based on the statewide recycling rate. Having adjusted the statewide rate to the region, we found the current BVCOG recycling rate to be 21.9%. Based on this current rate, the recycling rate goal is set for a regional average of 40% by 2042—the end of this plan. Achieving a 40% recycling rate over the course of this 20-year plan amounts to an average increase of about 1% each year. It is based on other waste management plans in Texas. The City of San Antonio plan is to increase recycling 4% every year to reach their goal of 60% by the end of 2025. The City of New Braunfels plan is to increase their annual recycling rate by 1.6% to reach their goal of 38% by 2030. Because the regional recycling rate goal is the average rate for the region, the 1% yearly growth rate accounts for both city and rural areas, and their varied recycling capabilities. Cities and rural communities are not expected to reach the same recycling level, but together they should strive to average 40% by 2042. To make measuring and reaching the recycling rate goal attainable, for the purposes of this plan, any material diverted from the landfill may be included in the recycling rate. The region will need to be able to measure their recycling rate in order to assess their progress towards reaching the regional goal. Developing a process to measure the region's diversion activities will be critical to the success of this goal. Collecting data on waste diversion helps improve diversion efforts. Data driven decision making is crucial to achieving not just the recycling goal, but to improve outcomes for many of the goals listed in this plan. For more information about the region's recycling rate, see Residential Waste Generation in Volume II, Attachment III.A. Demographic Information on page A15.

Recommendations for Encouraging and Achieving a Greater Degree of Waste Minimization and Waste Reuse or Recycling	These recommendations are about improving leadership and project implementation and are broad management best practices rather than specific ideas. The recommendations are collaboration, communication, education, information tracking, and leadership. For more information about these recommendations, see Volume II, Attachment III.G. Recommendations for Encouraging and Achieving a Greater Degree of Source Reduction and Waste Minimization, and Reuse or Recycling of Waste. There are also more specific ideas in Volume II, Section III.F. Identification of Additional Opportunities for Source Reduction and Waste Minimization, and Reuse or Recycling of Waste.
Existing or Proposed Community Programs for the Collection of Household Hazardous Waste	There are no permanent household hazardous waste drop-off facilities in the region, though there are regular collection events. This plan includes a goal to Responsibly Manage Problematic Wastes, which is closely related to household hazardous waste collection.
Composting Programs for Yard Waste	The recommended composting programs for yard waste and related organic wastes may include: ☒ (I) creation and use of community composting centers; ☒ (II) adoption of the "Don't Bag It" program for lawn clippings developed by the Texas Agricultural Extension Service; and ☒ (III) development and promotion of education programs on home composting, community composting, and the separation of yard waste for use as mulch.
Public Education/Outreach	This plan includes a goal to Maximize Beneficial Resource Use, which includes a “Provide education” objective. This objective contains two action steps, one to increase broad public awareness, and the second to educate targeted audiences.

II.C. Commitment Regarding the Management of MSW Facilities

By checking the boxes below, the Council of Government makes a commitment to the following, regarding the management of MSW facilities:

☒ (i) encouraging cooperative efforts between local governments in the siting of landfills for the disposal of solid waste;

☒ (ii) assessing the need for new waste disposal capacity;

☒ (iii) considering the need to transport waste between municipalities, from a municipality to an area in the jurisdiction of a county, or between counties, particularly if a technically suitable site for a landfill does not exist in a particular area;

☒ (iv) allowing a local government to justify the need for a landfill in its jurisdiction to dispose of the solid waste generated in the jurisdiction of another local government that does not have a technically suitable site for a landfill in its jurisdiction;

☒ (v) completing and maintaining an inventory of MSW landfill units in accordance with Texas Health and Safety Code, §363.0635. One copy of the inventory shall be provided to the commission and to the chief planning official of each municipality and county in which a unit is located; and

☒ (vi) developing a guidance document to review MSW registration and permit applications to determine conformance with the goals and objectives outlined in *Volume II: Regional Solid Waste Management Plan Implementation Guidelines* as referenced in 30 TAC §330.643.

Section III. Required Approvals

Table III.I. Required Approvals

Solid Waste Advisory Committee	November 18, 2021
Public Meeting Dates	October 21, 2021 and November 18, 2021
Executive Committee	December 8, 2021

Regional Solid Waste Management Implementation Plan Volume II

Regional Organization Information

Table 1. Organization Information

Name of Council of Government	Brazos Valley Council of Governments
Mailing Address	P.O. Drawer 4128 Bryan, Texas 77805
Website	https://www.bvcog.org/
Phone Number	979-595-2800
Email Address	info@bvcog.org

Section I. Geographic Scope

Note: For more information, see Volume II, Section I. Geographic Scope.

Table I.I. Geographic Scope

I.A. Names of Member Counties in the Entire Planning Region	Brazos, Burleson, Grimes, Leon, Madison, Robertson, Washington
I.B. Geographic Planning Units Used in the Regional Implementation Plan	☒ Small geographic areas such as census tracts or city boundaries for the most detailed data collection and manipulation; ☐ Planning areas to be used for the assessment of concerns and the evaluation of alternatives. These planning areas shall be aggregations of small geographic areas; ☒ County boundaries for the summarization and presentation of key information; or ☒ The entire planning region

Section II. Planning Periods

Table II.I. Planning Periods

II.A.1. Current and Historical Information	*2018 – 2021* All data source years are clearly marked when used throughout this plan. The most recent year was preferred except when comparative analysis required using similar years.
II.A.2. Short-range Planning Period	*2022 – 2027* There are 12 action steps in the short-range planning period that cover 7 objectives and span all four goals, including maximizing beneficial resource use, responsibly managing problematic wastes, maximizing proper disposal, and leading regional planning.
II.A.3. Intermediate Planning Period	*2028 – 2032* There are 9 action steps in the intermediate planning period that cover 7 objectives and span all four goals.
II.A.4. Long-range Planning Period	*2033 - 2042* There is 1 action step in the long-range planning period that covers 1 objective and 1 goal (maximizing proper disposal). This was done purposefully to acknowledge the long-range planning period is subject to significant change and must have flexibility. Still, there are also 26 action steps, covering 14 objectives, that occur in all planning periods: short-range, intermediate, and long-range.
☒ **Check box if additional details provided in *Attachment II.A*.**	

Section III. Plan Content

III.A. Demographic Information

Note: Volume II, Attachment III. Demographic Information is not called for in the original Volume II form but is nonetheless included. It is similarly noted at the beginning of the relevant section of the attachments that this information is included.

Table III.A.I. Residential Waste Generation

Year	Growth Rate per Year	Current Population / Population Projection	Landfill Disposal (Tons)	Disposal Rate (lbs./Person/Day)	Recycling (Tons)	Recycling Rate (lbs./ Person/ Day)	Residential Waste Generation (Tons)
Current (2019)	N/A	355,486	412,544	6.36	115,681	1.78	528,225
2022	4.0%	369,812	429,169	6.36	120,343	1.78	549,513
2027	6.5%	393,845	457,060	6.36	128,164	1.78	585,224
2032	6.5%	419,249	486,541	6.36	136,431	1.78	622,972
2037	6.0%	444,372	515,697	6.36	144,606	1.78	660,303
2042	5.5%	468,755	543,993	6.36	152,541	1.78	696,535

Table III.A.II. Commercial Waste Generation

<table>
<tr><th>Year</th><th>Description of significant commercial activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Commercial Waste Generation</th></tr>
<tr><td>2022</td><td>Top 10 Commercial Employment Sectors represent about 90% of the commercial workforce.
<table>
<tr><th>Rank</th><th>Sector</th><th>Percent of Workforce</th></tr>
<tr><td>1</td><td>Educational Services</td><td>28%</td></tr>
<tr><td>2</td><td>Accommodation and Food Services</td><td>14%</td></tr>
<tr><td>3</td><td>Health Care and Social Assistance</td><td>11%</td></tr>
<tr><td>4</td><td>Management of Companies and Enterprises</td><td>10%</td></tr>
<tr><td>5</td><td>Retail Trade (store)</td><td>6%</td></tr>
<tr><td>6</td><td>Construction</td><td>5%</td></tr>
<tr><td>7</td><td>Professional, Scientific, and Technical Services</td><td>5%</td></tr>
<tr><td>8</td><td>Other Services</td><td>4%</td></tr>
<tr><td>9</td><td>Administrative and Support and Waste Management and Remediation Services</td><td>4%</td></tr>
<tr><td>10</td><td>Retail Trade (nonstore)</td><td>3%</td></tr>
</table></td><td>
<table>
<tr><td>Growth Rate per Year</td><td>N/A</td></tr>
<tr><td>Current Population</td><td>135,820</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>436,483</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>17.61</td></tr>
<tr><td>Recycling (Tons)</td><td>128,580</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>5.19</td></tr>
<tr><td>Commercial Waste Generation (Tons)</td><td>565,062</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant commercial activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Commercial Waste Generation</th></tr>
<tr><td>2027</td><td>The number of people employed in commercial activities is projected to grow by 11%. The order of the top 5 sectors by employment is not projected to change.

The Educational Services sector will remain the most employed sector, with approximately 38,800 employees, an increase of 9% from 2022.

The Accommodation and Food Services sector will remain the second most employed sector, with approximately 23,600 employees, an increase of 36% from 2022.

The Healthcare and Social Assistance sector will remain the third most employed sector, with approximately 17,600 employees, an increase of 22% from 2022.</td><td><table>
<tr><td>Growth Rate per Year</td><td>11.0%</td></tr>
<tr><td>Population Projection</td><td>150,718</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>484,360</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>17.61</td></tr>
<tr><td>Recycling (Tons)</td><td>142,683</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>5.19</td></tr>
<tr><td>Commercial Waste Generation (Tons)</td><td>627,044</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant commercial activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Commercial Waste Generation</th></tr>
<tr><td>2032</td><td> The region’s economy is expected to advance by 2032. Expansion across many industries will result in an increase to total commercial employment. The largest increase in commercial growth during this planning period occurs in the Services industries. This sector includes companies providing services to individuals, businesses, or government entities. Examples of commercial activities in this sector include medical services, business services (excluding finance, insurance, and real estate), hotels, and amusements. Government sector jobs are expected to grow at a lesser pace than in the previous planning period. </td><td><table>
<tr><td>Growth Rate per Year</td><td>9.2%</td></tr>
<tr><td>Population Projection</td><td>164,588</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>528,936</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>17.61</td></tr>
<tr><td>Recycling (Tons)</td><td>155,814</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>5.19</td></tr>
<tr><td>Commercial Waste Generation (Tons)</td><td>684,750</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant commercial activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Commercial Waste Generation</th></tr>
<tr><td>2037</td><td>It is estimated that the rate of highest growth will occur in the Services and Health Care sectors. Examples of commercial activities in this sector include medical services, business services (excluding finance, insurance, and real estate), hotels, and amusements.

Finance, Insurance, & Real Estate are projected to grow around 6% from 2032 to 2037.

Government related jobs are expected to grow at a lesser pace than other industries, around 3.6% from 2032 to 2037.</td><td><table>
<tr><td>Growth Rate per Year</td><td>7.1%</td></tr>
<tr><td>Population Projection</td><td>176,285</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>566,525</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>17.61</td></tr>
<tr><td>Recycling (Tons)</td><td>166,888</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>5.19</td></tr>
<tr><td>Commercial Waste Generation (Tons)</td><td>733,413</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant commercial activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Commercial Waste Generation</th></tr>
<tr><td>2042</td><td>The full population in the region is expected to grow 5.5%, an indicator of economic growth.

Job gains through this planning period will be concentrated in the Services industries.

Construction, government, and trade sectors are expected to grow at a lesser pace than the previous planning period.</td><td><table>
<tr><td>Growth Rate per Year</td><td>3.5%</td></tr>
<tr><td>Population Projection</td><td>182,511</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>586,532</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>17.61</td></tr>
<tr><td>Recycling (Tons)</td><td>172,781</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>5.19</td></tr>
<tr><td>Commercial Waste Generation (Tons)</td><td>759,313</td></tr>
</table></td></tr>
</table>

Table III.A.III. Industrial Waste Generation

<table>
<tr><th>Year</th><th>Description of significant industrial waste activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Industrial Waste Generation</th></tr>
<tr><td>2022</td><td>The top 5 Industrial Employment Sectors represent 100% of the industrial workforce.
<table><tr><th>Rank</th><th>Sector</th><th>Percent of Workforce</th></tr><tr><td>1</td><td>Agriculture, Forestry, Fishing and Hunting</td><td>82%</td></tr><tr><td>2</td><td>Mining, Quarrying, and Oil and Gas Extraction</td><td>17%</td></tr><tr><td>3</td><td>Manufacturing (food, beverage, tobacco, leather, apparel, textile)</td><td>6%</td></tr><tr><td>4</td><td>Manufacturing (metal, machinery, computer, electrical, transportation, misc.)</td><td>4%</td></tr><tr><td>5</td><td>Manufacturing (wood, paper, printing, plastic, chemical, nonmetallic, petroleum, coal)</td><td>2%</td></tr></table></td><td><table><tr><td>Growth Rate per Year</td><td>N/A</td></tr><tr><td>Population Projection</td><td>43,657</td></tr><tr><td>Landfill Disposal (Tons)</td><td>422,443</td></tr><tr><td>Disposal Rate (lbs./Person/Day)</td><td>53.02</td></tr><tr><td>Recycling (Tons)</td><td>124,444</td></tr><tr><td>Recycling Rate (lbs./Person/Day)</td><td>15.62</td></tr><tr><td>Industrial Waste Generation (Tons)</td><td>546,887</td></tr></table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant industrial waste activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Industrial Waste Generation</th></tr>
<tr><td>2027</td><td>The number of people employed in industrial activities is projected to grow by 5%.

The Agriculture, Forestry, Fishing and Hunting industry will remain the most employed sector, with approximately 37,100 employees, an increase of 6% from 2022.

The Mining, Quarrying, and Oil and Gas Extraction sector will remain the second most employed sector, with approximately 3,100 employees, an increase of 21% from 2022.

The Manufacturing of food, beverages, and other non-durable goods will remain the third most employed sector, with approximately 2,600 employees, an increase of 4% from 2022.</td><td><table>
<tr><td>Growth Rate per Year</td><td>4.7%</td></tr>
<tr><td>Population Projection</td><td>45,703</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>442,241</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>53.02</td></tr>
<tr><td>Recycling (Tons)</td><td>130,276</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>15.62</td></tr>
<tr><td>Industrial Waste Generation (Tons)</td><td>572,517</td></tr>
</table></td></tr>
<tr><td>2032</td><td>The region’s economy is expected to advance by 2032. Expansion across several industries will result in an increase to total industrial employment.

The largest increase in industrial growth during this planning period occurs in the Mining, Quarrying, and Oil and Gas Extraction industry. Specifically, employment in this industry is projected to grow by about 20% bringing the number of employed to 3,100 people.

Employment in the Agriculture, Forestry, Fishing and Hunting industry is expected to remain unchanged.</td><td><table>
<tr><td>Growth Rate per Year</td><td>2.5%</td></tr>
<tr><td>Population Projection</td><td>46,837</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>453,215</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>53.02</td></tr>
<tr><td>Recycling (Tons)</td><td>133,509</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>15.62</td></tr>
<tr><td>Industrial Waste Generation (Tons)</td><td>586,723</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Year</th><th>Description of significant industrial waste activities affecting waste generation and disposal in the area.</th><th>Expected increase or decrease to Industrial Waste Generation</th></tr>
<tr><td>2037</td><td>The highest estimated growth in this time period is in the Mining and Manufacturing industries. Examples of industrial activities in these sectors include quarrying, oil and gas extractions, and the manufacturing of durable and nondurable goods.

Employment in the Agriculture, Forestry, Fishing and Hunting industry is expected to shrink.</td><td><table>
<tr><td>Growth Rate per Year</td><td>0.3%</td></tr>
<tr><td>Population Projection</td><td>46,975</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>454,546</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>53.02</td></tr>
<tr><td>Recycling (Tons)</td><td>133,901</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>15.62</td></tr>
<tr><td>Industrial Waste Generation (Tons)</td><td>588,446</td></tr>
</table></td></tr>
<tr><td>2042</td><td>The full population in the region is expected to grow 5.5%, an indicator of economic growth.

However, employment in Agriculture, Forestry, Fishing and Hunting is expected to decrease, leading to a slight decrease in overall regional employment.

Job gains through this planning period will be concentrated in the Mining and Manufacturing industries.</td><td><table>
<tr><td>Growth Rate per Year</td><td>-0.1%</td></tr>
<tr><td>Population Projection</td><td>46,917</td></tr>
<tr><td>Landfill Disposal (Tons)</td><td>453,989</td></tr>
<tr><td>Disposal Rate (lbs./Person/Day)</td><td>53.02</td></tr>
<tr><td>Recycling (Tons)</td><td>133,737</td></tr>
<tr><td>Recycling Rate (lbs./Person/Day)</td><td>15.62</td></tr>
<tr><td>Industrial Waste Generation (Tons)</td><td>587,726</td></tr>
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III.B. Estimates of Current and Future Solid Waste Amounts by Type

Table III.B.1. Current and Future Solid Waste Amounts by Type

Waste Type	Number of Landfills Accepting Waste Type	Percent of Total Tons Disposed	Current Year (tons) (2019)	5-year Projection (tons) (2027)	10-year Projection (tons) (2032)	15-year Projection (tons) (2037)	20-year Projection (tons) (2042)
Municipal	1	84%	346,066	383,303	408,217	432,711	456,510
Brush	1	3%	11,300	12,516	13,329	14,129	14,906
Construction or Demolition	1	8%	34,875	38,628	41,139	43,607	46,005
Litter	-0-	-0-	0	-0-	-0-	-0-	-0-
Class 1 Non-hazardous	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Classes 2 and 3 Non-hazardous	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Incinerator Ash	1	0%	2	2	2	2	2
Treated Medical Waste	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Municipal Hazardous Waste from CESQGs	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Regulated Asbestos-containing Material (RACM)	-0-	-0-	-0-	-0-	-0-	-0-	-0-

Waste Type	**Number of Landfills Accepting Waste Type**	**Percent of Total Tons Disposed**	**Current Year (tons) (2019)**	**5-year Projection (tons) (2027)**	**10-year Projection (tons) (2032)**	**15-year Projection (tons) (2037)**	**20-year Projection (tons) (2042)**
Non-RACM	1	0%	48	54	57	61	64
Dead Animals	1	0%	415	460	490	519	548
Sludge	1	4%	14,874	16,475	17,546	18,598	19,621
Grease Trap Waste	1	0%	830	919	979	1,038	1,095
Septage	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Contaminated soil	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Tires (split, quartered, shredded)	1	0%	329	365	388	412	434
Pesticides	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Used Oil Filter	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Other (identify other types reported as *Attachment III.B.*)	1	1%	3,804	4,213	4,487	4,756	5,018
Total		100%	412,544	456,935	486,634	515,833	544,203
☒ **Check box if additional details provided in *Attachment III.B.***							

III.C. Description of Current and Planned Solid Waste Management Activities

Table III.C.I. Current Solid Waste Management Activities in the Region

Activity	Description
Generation	Provided here are summary statistics of the waste generation occurring at residential, commercial, and industrial locations in the region. Please see Volume II, Attachment III.C Description of Current and Planned Solid Waste Management Activities for a comprehensive description of the generation activities in the region. The solid waste generation rates for the region: Residential: 12.23 lbs./household/day Commercial: 39.00 lbs./employee/day Industrial: 8.93 lbs./employee/day The percentage each category comprised of total waste generated in the region: 73% by commercial enterprises, 22% by residences, and 5% by industrial enterprises. *Waste generated in single-family homes:* 21% Food, 18% Paper (composite paper, cardboard, newspaper, etc.), 13% Other Organic (manures, textiles, carpet, composite organics), 12% Inerts and Other (wood waste, rock, soil, fines, etc.), 10% Plastics, 7% Brush (branches, stumps, prunings, trimmings), 5% Mixed Residue (kitty litter, cosmetics, etc.), 5% Yard Waste (leaves, grass), 3% Special Waste (bulky items, medical waste, ash, etc.). The remaining 5% is comprised of Metals, Glass, Electronics, and Household Hazardous Waste (paint, batteries, etc.). *Waste generated in multi-family homes:* 25% Food, 24% Paper, 16% Other, 11% Plastics, 6% Inerts and Other, 4% Special Waste, 4% Metals. The remaining 12% is comprised of Mixed Residue (3%), Glass (3%), Yard Waste (3%), Electronics (2%), and Household Hazardous Waste (<1%). *The waste products generated by commercial entities in the region as a percentage of total **weight** in 2018:*

Activity	Description
	73% Construction and Demolition waste, 11% Paper, 10% Organics (food, leaves, grass, etc.), 3% Plastics, 2% Metals, and the remaining 2% is comprised of Brush, Glass, Hazardous, Textiles, Electronics, Bulk, Household Hazardous Waste and Other. *The waste products generated by commercial entities in the region as a percentage of total* ***volume*** *in 2018:* 41% Construction & Demolition waste, 32% Paper, 10% Plastics, 10% Organics, 2% Metals, 1% Brush, and the remaining 3% is comprised of Textiles, Bulk, Electronics, Glass, Household Hazardous Waste, and Other. *The waste products generated by industrial entities in the region as a percentage of total weight in 2018:* 38% Organics, 19% Paper, 17% Brush, 8% Construction and Demolition waste, 7% Metals, 5% Plastics, and the remaining 6% is comprised of Glass, Hazardous (leachate, aqueous waste, benzene, etc.), Textiles, Bulk, Electronics, Household Hazardous Waste, and Other. We cannot display a breakdown of industrial waste by volume as we did for commercial waste because much of the Hazardous waste is liquid, and the conversions were not available.
Source Separation	Residents in the most populous city in the region (College Station) are expected to separate their waste into at least 5 waste streams. Further from College Station, there are expected to be fewer and less convenient recycling opportunities. As this happens, it is likely more items that could have been diverted from the landfill will end up in the trash.

<table>
<tr><th>Activity</th><th>Description</th></tr>
<tr><td>Collection</td><td>
Collection within the COG consisted of both curbside and drop-off facilities.
More than 50% of residents have city-provided access to curbside collection for trash, brush, and yard waste. The remaining percent do not necessarily lack access but likely live outside a municipality and may have to coordinate service privately or could have no access at all.
<table>
<tr><th>Waste type</th><th>Percent of residents with city-provided access to curbside collection</th></tr>
<tr><td>Trash</td><td>69%</td></tr>
<tr><td>Brush</td><td>58%</td></tr>
<tr><td>Yard Waste</td><td>55%</td></tr>
<tr><td>Recycling</td><td>45%</td></tr>
<tr><td>Bulk</td><td>41%</td></tr>
<tr><td>Organics</td><td>0%</td></tr>
</table>
There were 38 active permitted facilities that accepted a variety of waste types via drop-off. An additional 10 active permitted facilities did not publicly indicate if they accepted materials via drop-off.
</td></tr>
<tr><td>Handling</td><td>
All haulers that collected waste and all facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste performed waste handling. Data are not available to characterize the total amounts of waste that were handled or the actual capacity of waste handling for those facilities or haulers.
In 2021, there were 50 active permits for solid waste facilities and 14 haulers expected to handle waste in the region.
</td></tr>
</table>

Activity	Description
Storage	All facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste are considered storage facilities. Data are not available to characterize the total amounts of waste that were stored, the length of storage, or total storage capacity for those facilities. In 2021, there were 50 facilities expected to store waste in the region.
Transportation	There were 14 haulers in the region, 2 transfer stations, 1 low volume transfer station, 29 citizens collection stations, and 5 tire transporters in the region. Additionally, the EPA estimates residents should be no more than 34 miles round-trip from a disposal facility. Otherwise, an intermediate facility should be available. Therefore, we evaluated the distance between where waste is generated and where it is disposed. About 65% of the region's population is within 17 miles of a landfill. Of the remaining 35%, less than 1% is not within 17 miles of a transfer station or other drop-off location.
Processing	Processing includes Transportation, Treatment, and Resource Recovery. In total, 50 facilities were engaged in one or more facets of waste processing.
Treatment	The region had 1 tire processor, 2 liquid waste treatment facilities, 2 compost facilities, 1 transfer station that treated waste, and 1 landfill that treated waste. 19,255 tons of solid waste were treated, and 10,030 tons of liquid waste were treated. Data related to the number of tires these processors treated was unavailable.

Activity	Description
Resource Recovery	There were 11 facilities that recovered resources in the region. Only 4 of these facilities were permitted. Therefore, data related to the resources recovered in the region were unavailable. There may be other facilities that also participate in resource recovery, but data related to this were also unreliable. An example of this may be a citizens collection station that accepts source separated material. But, as was mentioned, data about recycling tonnage is not available for the vast majority of facilities.
Disposal of Solid Waste	There was 1 landfill in the region. A total of 411,784 tons were disposed of in the region in 2019.

Table III.C.II. Planned Solid Waste Management Activities in the Region

Activity	Description
Generation	The percent of total waste by each group (residential, commercial, industrial) is not expected to change significantly, but the amount of total waste generated is expected to increase.
Source Separation	There are no known planned changes at this time.
Collection	There are no known planned changes at this time.
Handling	There are no known planned changes at this time.
Storage	There are no known planned changes at this time.
Transportation	There are no known planned changes at this time.
Processing	There are no known planned changes at this time.
Treatment	There are no known planned changes at this time.
Resource Recovery	There are no known planned changes at this time.
Disposal of Solid Waste	There is one planned solid waste disposal facility. It is the Brazos Valley Disposal Facility, a Type IV landfill, which has not been constructed. According to TCEQ, the landfill was originally permitted May 23, 2013. The site is currently inactive and as a permitted facility may begin operation or construction in the future. Construction and operation of the Brazos Valley Disposal

Activity	Description
	Facility is anticipated to begin in the Fall of 2022.[1] It will be located in College Station Extraterritorial Jurisdiction.
☒ **Check box if additional information of solid waste management activities is provided as *Attachment III.C.***	

III.D. Description and Assessment of the Adequacy of Existing Solid Waste Management Facilities & Practices, and Household Hazardous Waste Programs

Note: Volume II, Attachment III.D. Description and Assessment of the Adequacy of Existing Solid Waste Management Facilities & Practices, and Household Hazardous Waste Programs is not called for in the original Volume II form but is nonetheless included. It is similarly noted at the beginning of the relevant section of the attachments that this information is included.

Table III.D.I. Adequacy of Existing Facilities and Practices

Program	Facility Adequacy	Practices Adequacy
Resource Recovery	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***
Storage	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***
Transportation	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***

[1] The Eagle. (2022, January 31). The Eagle. https://newzgroup.com/TXLegals/2022/93111-2022-01-31_1001.pdf

Program	Facility Adequacy	Practices Adequacy
Treatment	☒ Yes ☐ No, description of facility inadequacy provided in **Attachment III. D.**	☒ Yes ☐ No, description of practice inadequacy provided in **Attachment III. D.**
Disposal	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***
Household Hazardous Waste Collection	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***
Household Hazardous Waste Disposal	☒ Yes ☐ No, description of facility inadequacy provided in ***Attachment III. D.***	☒ Yes ☐ No, description of practice inadequacy provided in ***Attachment III. D.***

III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste

☒ Assessment of current source reduction and minimization efforts, including activities to reduce sludge, and efforts to reuse or recycle waste is provided as ***Attachment III.E.***

III.F. Identification of Additional Opportunities for Source Reduction and Waste Minimization, and Reuse or Recycling of Waste

Table III.F.I Additional Opportunities for Source Reduction and Waste Minimization, Reuse and Recycling of Waste

Category of Activity (Source Reduction and Waste Minimization, Reuse or Recycling of Waste)	Opportunity Name	Brief Description
Recycle	Cardboard Recycling	Encourage cities and counties to offer free cardboard recycling at workplaces (McAllen Public Works)
Recycle	Clothing/textiles recycling	Educate residents about where to take their textiles to be recycled *or* consider creating recycling opportunities for textiles (Science Direct, Recycling in Textiles)
Recycle	Electronics Challenge	Encourage businesses to join the Environment Protection Agency (EPA) Sustainable Materials Management (SMM) Electronics Challenge to increase accountability and increase electronics recycled (EPA Electronics Challenge)
Recycle	Glass recycling	Consider implementing dumpsters specifically for glass recycling to cut down on contamination in curbside glass collection and to allow communities without glass collection to recycle (Fairfax County, Virginia)
Reuse	Donate materials	Encourage businesses and offices to donate products or usable materials to local charities or non-profits (EPA Best Practices)
Reuse	Landfill reuse centers	Establish centers for drop-off and check-out of hazardous materials (San Marcos HHW)

Category of Activity (Source Reduction and Waste Minimization, Reuse or Recycling of Waste)	Opportunity Name	Brief Description
Reuse	Paint reuse	Start a paint reuse program (Guidance Manual for Paint Reuse Programs)
Reuse	Reuse in hospitals	Encourage hospitals to replace disposable items with reusable items where possible, such as waterproof mattresses, cloth diapers, or reusable containers for sharps (WasteCare Corporation)
Reuse	Reuse office materials	Encourage businesses and offices to reuse materials such as boxes, shipment packaging, office furniture (EPA Best Practices)
Reuse	Shingles in pavement	Consider using recycled shingles in pavement (Roofs to Roads)
Reuse/Recycle	Construction & Demolition (C&D) recycling	Update policy to incentivize recycling of C&D materials and on-site reuse/recycling (EPA Best Practices)
Reuse/Recycle	Encourage C&D recycling through refundable deposits	Consider charging a deposit on permitted C&D projects, it will be refunded if the permittee demonstrates a preset level of materials were recovered (EPA Best Practices)
Source Reduction and Waste Minimization	Black soldier flies	Promote cultivation of black soldier fly larvae to upcycle food waste (Texas A&M AgriLife Research)
Source Reduction and Waste Minimization	Business, government, school paper reduction	Encourage businesses, governments, and schools to adopt paper-reduction policies, such as printing double-sided and printing only when absolutely necessary (CalRecycle Waste Reduction)

Category of Activity (Source Reduction and Waste Minimization, Reuse or Recycling of Waste)	Opportunity Name	Brief Description
Source Reduction and Waste Minimization	City wide recycling ordinance	Create a city-wide recycling ordinance for businesses and multifamily to offer recycling (EPA Best Practices)
Source Reduction and Waste Minimization	Community composting	Encourage establishment or expansion of community compost centers (Institute for Local Self-Reliance)
Source Reduction and Waste Minimization	Compost agricultural waste	Encourage agricultural waste generators to compost, which could reduce the demand for chemical fertilizers (Western Packaging Agricultural Waste)
Source Reduction and Waste Minimization	Compost education	Develop programs or promote existing programs that educate residents and businesses about composting (EPA Composting at Home)
Source Reduction and Waste Minimization	Don't Bag It	Promote the Don't Bag It program in order to reduce the amount of yard waste being landfilled (Aggie Horticulture)
Source Reduction and Waste Minimization	Food Recovery Challenge	Encourage the restaurant industry and other interested organizations to join the EPA Food Recovery Challenge (EPA Food Recovery Challenge)
Source Reduction and Waste Minimization	Food waste in hospitals	Encourage hospitals to reduce their food waste by donating unused food, composting, or reevaluating their services and menus so that less food is uneaten (Healthcare Financial Management Association)

Category of Activity (Source Reduction and Waste Minimization, Reuse or Recycling of Waste)	**Opportunity Name**	**Brief Description**
Source Reduction and Waste Minimization	Food waste in prison system	Encourage prison systems and other correctional facilities to compost their food waste with in-vessel systems (Green Mountain Technologies)
Source Reduction and Waste Minimization	Give food waste to farmers	Encourage partnerships between food generating business and industry and the agricultural industry so that food scraps can feed livestock. This reduces waste disposal costs for the business and reduces animal feed costs for the farmer (Leftovers for Livestock)
Source Reduction and Waste Minimization	Reduce food waste in schools	Encourage schools to create share tables during lunch times so that unopened/untouched foods can be donated or provide an extra serving to other students (USDA Share Tables)
Source Reduction and Waste Minimization	Reduce toxicity	Encourage business and industry to reduce the amount and toxicity of their waste by joining the EPA's Toxic Release Inventory Program (EPA Pollution Prevention)
Source Reduction and Waste Minimization	Restaurant waste minimization	Encourage restaurants to adopt waste minimization polices, such as only provide condiments and plasticware when requested (EPA Best Practices)
Source Reduction and Waste Minimization	Sludge composting	Encourage WWTPs to compost sludge instead of sending it the landfill (EPA Best Practices)
Source Reduction and Waste Minimization	Styrofoam densification	Promote use of Styrofoam densifiers to reduce the volume of discarded Styrofoam (WasteCare Corporation)

Category of Activity (Source Reduction and Waste Minimization, Reuse or Recycling of Waste)	Opportunity Name	Brief Description
Source Reduction and Waste Minimization	Vermicomposting food scraps	Promote vermicomposting, specifically in multifamily complexes (EPA Composting)
Source Reduction and Waste Minimization	Waste tracking	Encourage businesses to track their waste generation for easier management (EPA Managing and Reducing Wastes)
Source Reduction and Waste Minimization	WasteWise	Encourage businesses, governments, and nonprofits to join EPA's WasteWise for the opportunity to receive recognition for achievements in good waste practices, free educational materials, and more (EPA WasteWise)
☒ **Check box if additional information of opportunities and source reduction and waste minimization, reuse and recycling of waste is provided in *Attachment III. F.***		

III.G. Recommendations for Encouraging and Achieving a Greater Degree of Source Reduction and Waste Minimization, and Reuse or Recycling of Waste

Table III.G.I. Recommendations for Greater Source Reduction and Waste Minimization, and Reuse or Recycling of Waste

#1 **Collaboration**

Collaborating between jurisdictions, private entities, and other regional institutions such as schools will foster a better sense of community and encourage broad participation while also reducing the need for one entity to do everything by themselves. For example, collaboration can mean partnering with entities with common interests to share costs. This is a way to stretch limited funding and expand community buy-in.

#2	**Communication** Communication goes together with many of these recommendations but is worth recommending separately. Communication must be exceptional between groups and within groups. For example, local managers should have excellent communication with other local managers as well as the with the local residents and businesses. This communication needs to be consistent and at the appropriate level of detail for the intended audience. Without communication, the other recommendations will be harder to achieve. In some cases, to facilitate communication, this may require setting up new lines of communication between and within groups.
#3	**Education** Naturally, educating residents and businesses is critical to successful solid waste management. In addition, continuing education of solid waste managers in the region is critical to ensure that public education is effective as solid waste management best practices change and are refined. This education should be extended to include decision-makers in the region as well to ensure a well-educated array of policy makers, policy implementers, and public participants.
#4	**Information tracking** Throughout the development of this plan, many data gaps prevented more narrow, focused assessments of solid waste management aspects. Leveraging existing data and identifying new data collection opportunities are critical to understanding how policy impacts implementation, and where new initiatives should be focused to maximize source reduction and waste minimization. Without tracking mechanisms, it is very difficult to understand how effective management in the region is.
#5	**Leadership** Without leadership, many of the other recommendations in this section will not be successful. Similarly, without the other four recommendations in this section, leadership will be challenging. It is recommended the region take an active leadership role in managing solid waste at the regional level. Most solid waste management is currently done at the local level—as it needs to be. Still, there is significant opportunity to regionalize understanding of solid waste capabilities and understanding the relationship with other regions' solid waste management planning. Leading collaboration, communication, education, and information tracking makes sense at the regional level and will lead to success at the local level.
☒ **Check box if additional details are provided in *Attachment III.G.***	

III.H. Identification of Public and Private Management Agencies and Responsibilities

☒ A list of public and private solid waste management agencies and their responsibilities that affect and impact solid waste management in the planning region is provided as ***Attachment III.H***.

III.I. Identification of Solid Waste Management Concerns and Establishment of Priorities for Addressing Those Concerns

Table III.I.I Solid Waste Management Concerns and Priorities

Solid Waste Management Concern	Priorities to Address the Concern
Solid waste literacy	Improve community participation, provide education
Illegal dumping	Collect data, improve access, improve community participation, increase illegal dumping enforcement, increase illegal dumping prevention, provide education
Problematic wastes (including HHW)	Collect data, improve access, provide education
Source reduction and recycling	Improve access, improve community participation, provide education
Local solid waste plans	Collaborate, collect data, lead
☒ **Check box if additional details are provided in *Attachment III.I***	

III.J. Planning Areas and Agencies with Common Solid Waste Management Concerns that Could be Addressed Through Joint Action

Table III.J.I Planning Areas and Agencies with Common Solid Waste Management Concerns

Solid Waste Management Concern	Names of Planning Areas and Agencies that Could Address the Concern via Joint Action(s)
Solid waste literacy	EPA, TCEQ, Brazos River Authority, BVSWMA, cities, counties, Keep America Beautiful, Keep Texas Beautiful and other non-profits, Lower Colorado River Authority, private sector, Trinity River Authority, waste industry and associations.
Illegal dumping	Brazos River Authority, BVSWMA, Keep America Beautiful, Keep Texas Beautiful and other non-

Solid Waste Management Concern	Names of Planning Areas and Agencies that Could Address the Concern via Joint Action(s)
	profits, Lower Colorado River Authority, Trinity River Authority
Problematic wastes (including HHW)	TCEQ, Brazos River Authority, BVSWMA, cities, counties, Keep America Beautiful, Keep Texas Beautiful, Lower Colorado River Authority, non-profits, private sector, Trinity River Authority, waste industry and associations, Waste Management (At Your Door)
Source reduction and recycling	EPA, TCEQ, Brazos River Authority, BVSWMA, cities, counties, Keep America Beautiful, Keep Texas Beautiful Lower Colorado River Authority, non-profits, private sector, Trinity River Authority, waste industry and associations
Local solid waste plans	Bryan, College Station

Note: This list does not represent an exhaustive list of potential partners, but rather identifies some likely partners. For a more complete list of possible partners, see Volume II, Attachment III.H. Identification or Public and Private Management Agencies and Responsibilities.

III.K. Identification of Incentives and Barriers for Source Reduction and Waste Minimization, and Resource Recovery, Including Identification of Potential Markets

Table III.K.I Incentives and Barriers for Source Reduction and Waste Minimization, and Resource Recovery

Source Reduction and Waste Minimization	
Incentive: Reduced costs	Offering smaller trash bins at a lower cost to residents encourages source reduction and waste minimization.
Incentive: Recognition	Provide businesses with tools to showcase their participation in source reduction and waste minimization best practices.

Source Reduction and Waste Minimization	
Barrier: Difficult to change behavior	It is difficult to change the behavior of those who control product packaging, and to change consumer behavior related to buying products that are designed to minimize waste but may be more expensive or less convenient.
Resource Recovery	
Incentive: Reduce effects of climate change	Recycling and reuse lessen effects of climate change because new materials are not used, according to the EPA.
Incentive: Save money	Buying used products and materials can save money.
Barrier: Cost	The cost to construct and procure recycling infrastructure is significant.
Barrier: Contamination/ lack of education	Recycling contamination can significantly impact the processes at a recycling facility, reducing resource recovery, and the value of recycling commodities. Contamination can also have significant financial implications for cities collecting the recyclable materials that may impact decisions to offer such services.
Potential Markets	
Cardboard	There is consistent demand for cardboard.
Scrap metal	There is consistent high value for scrap metal.
Note: Market evaluation is extremely important. Due to the fluctuations of materials markets, an ongoing analysis of potential markets for recycled materials is recommended.	

III.L. Regional Goals and Objectives, Including Waste Reduction Goals

Note: Volume II, Attachment III.L. Regional Goals and Objectives, Including Waste Reduction Goals related to Regional Goals and Objectives is not called for in the original Volume II form but is nonetheless included. It is also noted at the beginning of the relevant section of the attachments that this information is included.

Table III.L.I Regional Goals and Objectives

Goal #1	**Maximize Beneficial Resource Use**	**Objective 1.A.** Improve access to diversion opportunities **Objective 1.B.** Improve community participation **Objective 1.C.** Provide education
Goal #2	**Responsibly Manage Problematic Waste**	**Objective 2.A.** Improve access to problematic waste collection **Objective 2.B.** Provide education **Objective 2.C.** Collect data
Goal #3	**Maximize Proper Disposal**	**Objective 3.A.** Improve access to solid waste drop-off opportunities **Objective 3.B.** Improve community participation **Objective 3.C.** Provide education **Objective 3.D.** Collect data **Objective 3.E.** Increase illegal dumping prevention efforts **Objective 3.F.** Increase illegal dumping enforcement
Goal #4	**Lead Regional Planning**	**Objective 4.A.** Collaborate **Objective 4.B.** Optimize funding decisions **Objective 4.C.** Oversee facility planning **Objective 4.D.** Review and update solid waste management plans **Objective 4.E.** Make continuous improvements **Objective 4.F.** Collect data **Objective 4.G.** Plan for disaster waste

III.M. Advantages and Disadvantages of Alternative Actions

Are alternative actions being considered in this plan for the regional area?	☐ **Yes.** Provide details in ***Attachment III.M.*** ☒ **No.** No further action required.

III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives

Table III.N.I Plan of Action and Timetable for Achieving Specific Goals and Objectives

Goal/Objective	Plan of Action	Milestone Dates
Waste Reduction	A series of actions have been developed that will increase access to waste reduction opportunities, improve the community's use of those opportunities, and educate the public about the importance of waste reduction.	Short-range, intermediate, and long-range
Composting Programs for Yard Wastes and Related Organic Wastes	Our plan includes exploration of innovative ways to compost food wastes and expand the composting of biosolids.	Intermediate range
Household Hazardous Waste Collection and Disposal Programs	A series of actions have been developed that will increase access to Household Hazardous Waste (HHW) collection and disposal, educate participants and the community about the importance of responsible HHW management, and collect data to continually improve collection and programs.	Short-range, intermediate, and long-range
Public Education Programs	Our plan is to ensure broad public awareness of all solid waste management related best practices using cost-effective communication tools. Additionally, we will educate and engage targeted members of the community who are responsible for specific aspects of solid waste management. Finally, we will acknowledge cities, counties, businesses, and individuals within the region who show exceptional commitment to proper solid waste management.	Short-range, intermediate, and long-range
The Need for New or Expanded Facilities and Practices	More than 20 of this plan's 48 action steps relate to the need for new or expanded practices in the region. In addition, where access can be improved or landfill life is an issue, new facilities may be required in the planning period.	Short-range, intermediate, and long-range

Goal/Objective	Plan of Action	Milestone Dates
☒ **Check box if additional details are provided in *Attachment III.N.***		

III.O. Identification of the Process that Will be Used to Evaluate Whether a Proposed Municipal Solid Waste Facility Application Will be in Conformance with the Regional Plan

☒ The process that will be used to evaluate whether a proposed municipal solid waste facility application will be in conformance with the regional plan is identified in ***Attachment III.O***.

Section IV. Required Approvals

Table IV.I Required Approvals

Solid Waste Advisory Committee	November 18, 2021
Public Meeting Dates	October 21, 2021 and November 18, 2021
Executive Committee	December 8, 2021

☐ Check box if local government and jurisdiction resolutions, and letters of support are included in **Attachment IV.A.**

☒ Public notice, agenda, public comments, and the transcript of the required public meeting are included as **Attachment IV.B**.

Attachments Volume II

Table of Figures

Table of Tables

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Attachment I. Geographic Scope

Note: This attachment is not called for in the original Volume II form but is nonetheless included. It is similarly noted at the beginning of the relevant section of Volume II that this attachment has been included.

Introduction

To properly contextualize this solid waste management plan, TCEQ requires the identification of the geographic scope of the plan and the different geographic planning units used within the plan.

It is critical to establish a geographic scope to understand the unique solid waste issues faced by the region and the approach to addressing those issues.

At times in this plan, different geographic units are used to analyze different aspects of solid waste management in the region based on the available data and the scope of the issue being examined.

The purpose of this attachment is to provide additional context and detail to the decisions made around the geographic planning units used in the plan.

Ultimately, this plan is for the entire planning region. However, to develop this plan, it was common to review county, city, and census tract data. These instances will be clarified in the attachments of the appropriate sections.

The remainder of this attachment will present our methods for determining the use of different geographic data, the most used geographic units, and a discussion of the implications of these decisions.

Methods

Because the plan is region-wide, the preferred geographic units for analysis were the entire region. When data were not available at the regional level, county data were preferred. Additionally, because of the critical role cities play in solid waste management, municipal data were often evaluated. Finally, to understand population at the finest level of detail, census tracts were used occasionally.

At times, city boundaries may extend outside of the region or cities primarily situated in other regions may extend into the region. To associate specific cities with the region, the center of each city was found. Those cities with a geometric center within the region were considered part of the region.

Results

The primary results of our geographic scoping decisions are presented in Volume II, Section I, Table I.I. Geographic Scope.

The most useful representation of the geographic scope is an understanding of where the region is within Texas.

Figure 1. Brazos Valley Council of Governments Planning Region and Counties

Also, critically important are the cities within the region.

Anderson	Bedias	Bremond
Brenham	Bryan	Buffalo
Burton	Caldwell	Calvert

Centerville	College Station	Franklin
Hearne	Iola	Jewett
Kurten	Leona	Madisonville
Marquez	Midway	Navasota
Normangee	Oakwood	Plantersville
Snook	Somerville	Todd Mission
Wixon Valley		

Discussion

Ideally the data informing this regional plan could be aggregated from the smaller geographic units within the region. When data could be summarized in this way, we made our best effort to do so. Coordinating sub-regional geographies and centralizing data collection in a way that supports future regional planning efforts would support sub-regional planning. There is extreme variance in population across the cities within the region, so sub-regional planning informed by regional planning and vice versa would likely lead to the best regional solid waste management.

Conclusion

Ultimately, this plan is for the entire planning region, and it is the most important geographic unit used in the plan, though other smaller geographic units were required to make generalized statements about the region.

Understanding the geographic scope is critical to understanding the unique issues faced by the region and the approach to addressing those issues.

In the future, standardized data collection by sub-regional areas in the region could facilitate more effective regional planning and sub-regional planning.

Attachment II.A. Planning Periods

Introduction

As part of the 20-year planning process, TCEQ requires the establishment of short, intermediate, and long-range planning periods.

The planning periods are defined by Texas Administrative Code. The short-range planning period is one to five years, with specific information, the intermediate planning period is six to ten years, with information in less detail, and the long-range planning period is 11 to 20 years or longer, with information in the least detail.

The planning periods are an important piece of this plan. Ultimately, these create the foundation for setting milestone dates for goals, objectives, and actions.

The purpose of this attachment is to add detail and context to Volume II, Section II, Table II.I. Planning Periods. Specifically, we will explain instances where we used *current* data that was not from 2021.

Although Table II.I. Planning Periods indicates historical information is from the year 2021, it is important to note that data were often not available for 2021 so we used the most recent data available. These instances are clearly noted within this document and are not expected to significantly impact the plan.

The remainder of this attachment will present our methods for determining the use of current data from years other than 2021, a list of those instances, and a discussion of the implications of these decisions.

Methods

To facilitate the preparation of this plan, TCEQ provided landfill and processing facility data. These data are reported annually by solid waste-related facility operators. For this plan, the data available from TCEQ at the outset of the planning process were from 2019. This fact influenced the decisions related to all other data sourcing decisions.

When data were available from multiple years, 2019 was the preferred. When data was not available from 2019, the most recent year of data was selected.

Results

The planning periods are defined in Volume II, Section II, Table II.I.

The results of our data-sourcing decisions related to data available for specific time periods will be presented alphabetically to ease identification of relevant sources.

Table 1. Data Sources for Residential Waste Generation Analysis

Data Source	Data Year
Census Population Data	2019
TCEQ Landfill Data	2019
TCEQ Waste Processor Data	2019
TCEQ Municipal Solid Waste Facilities (NOIs)	2021
TCEQ HHW Contacts	2021
Texas Workforce Commission Employment Data	2018

Discussion

The most important consistency was making sure population data was from the same year as disposal data because of its implications related to Volume II, Section III.A, Table III.A.I. Residential Waste Generation. Similarly important was the relationship between employment data and disposal data, which was not available for 2019 as it relates to Volume II, Section III.A, Tables III.A.II. Commercial Waste Generation and III.A.III Industrial Waste Generation. This limitation will be discussed further in Volume II, Attachment III.A. Demographic Information.

Another consideration in the interpretation of these data is related to the COVID-19 pandemic throughout most of 2020 and ongoing through the development of this plan. Solid waste management was significantly affected by the disruptions of the pandemic. Although the implications of these effects will not be well represented in this plan, it will be critical to watch trends in the short-range planning range to ensure landfills are not significantly impacted by the boom in home renovation projects, year-long spring cleaning, and increased usage of single-use packaging that likely took place. Moreover, the shift away from brick-and-mortar retail towards delivery-based retail will offer many lessons to be learned. Understanding these changes, as they are likely to continue beyond the pandemic, will ensure solid waste management is meeting the waste where it is generated as best as possible.

Conclusion

Although Volume II, Section II, Table II.I. Planning Periods indicates historical information is from the year 2021, it is important to note that data were often not available for 2021. All instances where data is from something other than 2021 are clearly noted within this document.

The planning periods are an important piece of this plan. Ultimately, these create the foundation for setting milestone dates for goals, objectives, and actions.

To mitigate the gaps in available data, regular analyses and updates to projections throughout the entire plan period will help familiarize solid waste managers with the relevant data and could improve the data that is collected to make sure it is relevant to the decisions being made.

Attachment III.A. Demographic Information

Note: This attachment is not called for in the original Volume II form but is nonetheless included. It is similarly noted at the beginning of the relevant section of Volume II that this attachment has been included.

Introduction

As part of the 20-year planning process, TCEQ requires an evaluation of population projections and significant commercial and industrial economic activity.

Understanding expected population growth is critical for solid waste management planning. Furthermore, understanding the rate of growth can provide insight into the rate at which solutions to solid waste management issues must be developed. According to the Environmental Protection Agency (EPA), "Waste generation increases with population expansion and economic development."[2]

The purpose of this attachment is to provide additional details and commentary related to residential, commercial, and industrial demographics required in Volume II, Section III.A, Table III.A.I. Residential Waste Generation.

This attachment will evaluate the expected impact of residential, commercial, and industrial demographics on waste generation over the 20-year planning period in 5-year increments for the region.

Residential waste, as the name implies, is the waste related to households. The residential section of this attachment will evaluate population projections and their expected impact on waste generation.

Commercial waste is the waste related to commercial activities like trade and business.[3] The commercial section of this attachment will evaluate commercial employment projections and their expected impact on waste generation.

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[2] What Is Integrated Solid Waste Management? (No. EPA530-F-02-026). (2002). United States Environmental Protection Agency, Solid Waste and Emergency Response. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1000L3W.txt

[3] 71st Legislature. (1989, September). Health and Safety Code. Title 5. Sanitation and Environmental Quality, Subtitle B. Solid Waste, Chapter 361. Solid Waste Disposal Act, Subchapter A. General Provisions. https://statutes.capitol.texas.gov/Docs/HS/htm/HS.361.htm

Industrial waste is the waste that results from operations of industry: manufacturing, mining, or agriculture.[4] The industrial section of the attachment will evaluate industrial employment projections and their expected impact on waste generation.

This attachment will not consider commercial or industrial waste by sector or waste type, nor the magnitude of each categories' contribution to the region's waste stream. More information about waste generation, including the magnitude of each categories' contribution is available in Volume II, Attachment III.C. Solid Waste Management Activities.

While the subject of this attachment is "waste generation," it is important to recognize this term may not be entirely appropriate. Ultimately, the figures being calculated as waste generation represent something akin to the resources that remain after the consumption of those materials that were originally needed. Notably, the materials that remain beyond those that were needed are not waste until they are wasted. Many possibilities exist that can avoid turning these materials into *waste,* most notably reuse. With that said, this attachment and subsequent attachments, for consistency's sake, will continue to refer to these calculations as waste generation.

Although there are significant limitations to the calculated waste generation figures across all three critical categories (residential, commercial, and industrial), it is undeniable that waste generation in the region is expected to significantly increase based on projected increases across all three populations.

The rest of this attachment will outline the methods we used to make these calculations, present the results of those calculations, provide a discussion of key points, and offer a conclusion. For ease of reading, each section in this attachment will include subheadings that announce whether the information pertains to residential, commercial, or industrial activities.

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[4] 71st Legislature. (1989, September). Health and Safety Code. Title 5. Sanitation and Environmental Quality, Subtitle B. Solid Waste, Chapter 361. Solid Waste Disposal Act, Subchapter A. General Provisions. https://statutes.capitol.texas.gov/Docs/HS/htm/HS.361.htm

The Demographic Information portion of the Volume II form includes three tables of information:

- Table III.A.I. Residential Waste Generation,
- Table III.A.II. Commercial Waste Generation, and
- Table III.A.III. Industrial Waste Generation

Each table will be addressed in separate sub-sections of this attachment (methods, results, discussion).

Methods

While similar, each critical group's (residential, commercial, and industrial) methods will be detailed in a separate section of the methods to clarify any differences.

RESIDENTIAL WASTE GENERATION

Table III.A.I. Residential Waste Generation of Volume II has eight columns. To facilitate understanding, each column will be explained in detail. At the highest level, waste generation equals disposal plus diversion. Disposal data was supplied by TCEQ in the form of landfill disposal by tons. Diversion data was not available. To approximate the amount of waste diversion, we estimated the region's residential recycling rate as detailed in the *Recycling Rate* section below. We are defining the recycling rate the same way that Burns & McDonnell did in their statewide recycling report for the Texas Commission on Environmental Quality (TCEQ).[5] The recycling rate is essentially the rate of materials diverted from the landfill per person per day, excluding source reduction activities, refurbishment or reuse, energy conversion, land reclamation, or on-site use of material at the landfill. Using Recycling as a percent of the waste generated and the tonnage of waste sent to the landfill allowed us to calculate the total residential waste generation.

[5] Burns & McDonnell. (2017, July). Study on the Economic Impacts of Recycling. Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/assistance/P2Recycle/study/TheStudyontheEconomicImpactsofRecycling.pdf

The remainder of this section is laid out to correspond with Volume II, Section III.A, Table III.A.I. Residential Waste Generation.

1. **Year**
   The first row of the year column begins with the *Current Year*. In this case, the current year was based on TCEQ-provided landfill disposal for 2019.[6] To ensure a relevant comparison, population data from the Texas Demographic Center[7] from 2019 was used for the current year. Therefore, for the purposes of this table, the current year was 2019.

   The remaining rows are for projections of future disposal in five-year increments from the plan start year of 2022, i.e., 2022, 2027, 2032, 2037, and 2042.

2. **Growth rate**
   The growth rate for the Current Year was written as N/A. All other growth rates were calculated using the Texas Demographic Center's population projections for a given year and the previous year to find the percent change.

Equation 1. Growth Rate Calculation

$$\frac{Projection\ Year\ Population\ - Previous\ Year\ Population}{Previous\ Year\ Population} = \ Growth\ Rate$$

3. **Current Population/Population Projection**
   Current population and population projections were acquired from the Texas Demographic Center.

4. **Landfill Disposal (Tons)**
   For the current year, landfill disposal data was supplied by TCEQ from 2019. Landfill Disposal (tons) represents the sum of all reported waste disposed in landfills within the region. Any disposal of waste that was generated *inside* the region but was disposed in a landfill *outside* the region is not included in this

[6] MSWlandfills-Monofills_Active_2019(Public Data). (2019). [Dataset]. Texas Commission on Environmental Quality.

[7] 2018 Sex and Race/Ethnicity Total Population. (2009). [Dataset]. Texas Demographic Center. https://demographics.texas.gov/Data/TPEPP/Projections/

calculation. Conversely, any disposal of waste that was generated *outside* the region but was disposed of *inside* the region is included in this calculation due to the nature of the data provided.

For projections, landfill disposal was calculated by applying the calculated growth rate to the landfill disposal from the previous year.

5. **Disposal Rate (pounds per person per day)**
Disposal rate was calculated by using the three-step, TCEQ-provided formula.

Equation 2. Disposal Rate Calculation (Step 1)

$$Landfill\ Disposal\ (Tons) \times 2{,}000\ (Pounds) = Landfill\ Disposal\ (Pounds)$$

Equation 3. Disposal Rate Calculation (Step 2)

$$\frac{Landfill\ Disposal\ (Pounds)}{Population} = Annual\ Pounds\ per\ Person$$

Equation 4. Disposal Rate Calculation (Step 3)

$$\frac{Annual\ Pounds\ per\ Person}{365\ (Days)} = Pounds\ per\ Person\ per\ Day$$

6. **Recycling (Tons)**
We estimated the recycling tonnage because there were no available data reporting the amount of material recycled in the region. As a result, this explanation will include reference to upcoming columns in the table that were required to estimate Recycling (Tons). In short, we began with the waste disposed tonnage, calculated a recycling rate, then estimated a recycling tonnage, which was then added to the waste tonnage to represent total waste disposed. Details regarding these calculations follow.

First, we estimated recycling as a percent of the waste generated. Recycling as a percent of the waste generated is similar to *Recycling Rate*, but, for the purposes of this plan, was only an intermediate variable to estimate recycling tonnage and does not represent recycling rate. We started with the Recycling Rate published in TCEQ's Study on the Economic Impacts of Recycling prepared by Burns & McDonnell[8] as a baseline for the percent of generated waste that is recycled. Because that percentage represents the statewide average, we customized it for the region by applying a weight based on Esri recycling survey data known as their Market Potential Index (MPI).[9] The MPI encodes the market potential for recycling based on a count of adults expected to have recycled products in the last 12 months. This allowed us to adjust the statewide average with the indexed potential of recycling in the region. Using this adjusted percentage based on the TCEQ statewide average gives us an approximation for recycling tonnage in the region. However, it is only an approximation.

We then used that percentage with landfill tonnage to estimate total residential waste generated. Finally, we subtracted the landfill tonnage from the residential waste generation to obtain the recycling tonnage.

Equation 5. Recycling (Tons) Calculation (Step 1)

$$\frac{Landfill\ Disposal\ \ (Tons)}{100\% - Recyling\ Rate\ (\%)} = Residential\ Waste\ Generation\ (Tons)$$

Equation 6. Recycling (Tons) Calculation (Step 2)

$$Residential\ Waste\ Generation\ (Tons) - Landfill\ Disposal\ (Tons) = Recyling\ (Tons)$$

7. **Recycling Rate (pounds per person per day)**
   We estimated the recycling rate of the region because there is not one available.

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8 Burns & McDonnell. (2017, July). Study on the Economic Impacts of Recycling. Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/assistance/P2Recycle/study/TheStudyontheEconomicImpactsofRecycling.pdf

9 2020 USA Recycling Habits. (2020, June). [Dataset]. Esri Demographics. https://demographics5.arcgis.com/arcgis/rest/services/USA_MPI_1_2020/MapServer

To calculate Recycling Rate, we performed the same three steps as we did to calculate *Disposal Rate (pounds per person per day)* but substituted Recycling (Tons) for Landfill Disposal.

Equation 7. Recycling Rate Calculation (Step 1)

$$Recycling\ (Tons) \times 2{,}000\ (Pounds)\ =\ Recycling\ (Pounds)$$

Equation 8. Recycling Rate Calculation (Step 2)

$$\frac{Recycling\ (Pounds)}{Population} =\ Annual\ Pounds\ per\ Person$$

Equation 9. Recycling Rate Calculation (Step 3)

$$\frac{Annual\ Pounds\ per\ Person}{365\ (Days)}\ =\ Pounds\ per\ Person\ per\ Day$$

8. Residential Waste Generation (Tons)
Residential waste generation was calculated by adding *Landfill Disposal* and *Recycling.*

Equation 10. Residential Waste Generation Calculation

$$Landfill\ Disposal\ (Tons) + Recycling\ (Tons) = Residential\ Waste\ Generation\ (Tons)$$

COMMERCIAL WASTE GENERATION

Table III.A.II. Commercial Waste Generation of Volume II has two columns:

- Descriptions of significant commercial activities affecting waste generation and disposal in the area (*Descriptions*) and
- Expected Increase or decrease to Commercial Waste Generation (*Expectations*).

The methods used for each column were different. To facilitate understanding, each column will be explained in detail.

The *Descriptions* column asks for a description of commercial activities affecting waste generation and disposal in the area. Here, the methods section outlines how we obtained employment data for the commercial sector. This was done for each five-year increment as requested in Volume II.

The *Expectations* column asks for the expected increase or decrease to commercial waste generation. Here, we replicated the table that TCEQ created for the Residential Waste Generation section in Volume II, Section III.A, Table III.A.I. Residential Waste Generation but substituted number of employees in commercial sectors for population data.

Descriptions of significant commercial activities affecting waste generation and disposal in the area

We employed the methodology outlined in this section to provide summaries of projected significant commercial and industrial economic changes in the area from the base year to the end of the long-range planning period in 5-year increments, as per the TCEQ instructions for this section. Our method was divided into three steps.

Step 1. The first part of our process was to obtain commercial activity data in the region for the first two planning periods: 2022 and 2027. For years 2022 and 2027, we used Texas Workforce Commission (TWC) employment projections.[10] The TWC dataset provided us the number of people employed in each sector coded by North American Industry Classification System (NAICS) code. NAICS codes classify economic activity into categories. We obtained data from TWC that was in the form of 2-digit NAICS codes. The 2-digit codes are referred to as sectors and represent the highest level of NAICS organization and consequently are the broadest.

The TWC organizes geographic areas by Workforce Development Area (WDA). The Brazos Valley WDA perfectly overlaps with BVCOG.[11] It should be noted that the most recent employment data published by TWC is for 2018 and is projected to 2028. Thus, we used 2018 employment for the year 2022 and 2028 employment data for 2027.

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[10] Texas Workforce Commission. (2018–2028). Brazos Valley Projected Employment for the years 2018 – 2028 [Major level occupations, subsection (3 digit) industries]. Labor Market Information. https://texaslmi.com/LMIbyCategory/Projections

[11] Texas Workforce Commission. (2021, April). Workforce Development Area Profiles (Brazos Valley County). Labor Market Information. https://texaslmi.com/EconomicProfiles/WDAProfiles

Step 2. Next, we collected employment data for the years 2032, 2037, and 2042. TWC had not yet projected employment beyond 2028. So, we turned to The Perryman Group's long-term economic forecasts.[12] The Perryman Group is an economic research firm based in Texas that specializes in long-term economic forecasts. The Perryman Group uses a proprietary forecasting system known as their Texas Econometric Model. According to The Perryman Group, their model is "The result of more than three decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, and Texas economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations."

The Perryman Group model does not classify employment by NAICS code, but instead groups economic sectors into broader categories. Because these broader categories are different than the NAICS codes it prevented cross-comparison to the TWC model. To allow for comparison between the two models, we reclassified the 24 NAICS codes into the 11 economic divisions used by the Perryman Group. This was done in the manner shown in Table 2. Moreover, the Perryman Group does not use WDAs but instead wider geographic areas. For BVCOG, we used the Perryman Group region known as the Central Texas Region. BVCOG sits entirely within the Central Texas Region but also included in the Perryman Group Central Texas Region are all the counties within the Central Texas Council of Governments (Bell County, Coryell County, Hamilton County, Lampasas County, Milam County, Mills County, San Saba County) and the Heart of Texas Council of Governments (Freestone County, Hill County, Limestone County, McLennan County).

Step 3. In the third and final step, we sorted each economic sector by number of people employed, from highest to lowest. This list became the top commercial sectors for 2022 as shown on the corresponding Volume II table. For the years after 2022, we found the percent change between the current year (e.g., 2032) and the previous year (e.g., 2027). This formed the basis for our remarks on how the sectors changed over time.

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[12] Tables for the Central Texas Region (No. 141-146). (2016, June). Perryman Long-Term Economic Forecast. https://www.perrymangroup.com/home/

Expected Increase or Decrease to Commercial Waste Generation

In the instructions for Volume II for this section, TCEQ instructed us to repeat the steps taken in the residential section of this attachment. We therefore recreated Volume II, Section III.A, Table III.A.I. Residential Waste Generation and inserted it into the second column of this section, Table III.A.II. Commercial Waste Generation. We then populated the table with commercial data to match the table to this section. To incorporate the table in the Volume II format, the table was transposed to have a vertical orientation.

Commercial waste generation was treated in the exact same way as residential waste generation with 3 exceptions:

- **Year**
  Unlike the Residential table which begins with the Current year, the first row of the year column begins with 2022.

- **Current Population**
  To make this section specific to commercial waste, the number of employees engaged in commercial activities was substituted for the population of the region. In other words, the population here includes only people employed in commercial enterprises. For years 2022 and 2027, Texas Workforce Commission (TWC) employment numbers were used.[13] TWC only gives employment data for the years 2018 and 2028. We calculated the employment data for 2022 by finding the interpolated value between 2018 and 2028. To do so, we plugged the years and employment numbers for 2018 and 2028 into the formula for linear interpolation.

Equation 11. Significant Commercial Activities Calculation (Step 4)

$$2018\,Employment + \frac{(2022-2018)(2022\,Employment - 2018\,Employment)}{2022-2018} = 2022\,Employment$$

[13] Texas Workforce Commission. (2018–2028). *Lower Rio Grande Region Projected Employment for the years 2018 - 2028* [Major level occupations, subsection (3 digit) industries]. Labor Market Information. https://texaslmi.com/LMIbyCategory/Projections

We used 2028 TWC employment data for the year 2027. Because TWC only projected employment to 2028, for years 2032, 2037, and 2042, Perryman Group employment projections were used.[14]

- **Recycling Rate (pounds per person per day)**
  We estimated the commercial recycling rate of the region because there is not one available. First, we used the 23.6% rate from North Central Texas Council of Government's recycling rate published in their Regional Recycling Rate Update from August 2011.[15] The recycling rate refers to Industrial, Commercial, and Institutional sources (ICI). Because that rate represents NCTCOG's local recycling rate, we then customized that rate for the region by applying a weight based on Esri recycling survey data known as their Market Potential Index (MPI). The MPI encodes the market potential based on a count of adults expected to have recycled products in the last 12 months.

INDUSTRIAL WASTE GENERATION

In the instructions for Volume II for this section, TCEQ instructed us to repeat the steps taken in the residential section of this attachment. We therefore recreated Volume II, Section III.A, Table III.A.I. Residential Waste Generation and inserted it into the second column of this section, Table III.A.III. Industrial Waste Generation. We then populated the table with industrial data to match the table to this section. To incorporate the table in the Volume II format, the table was transposed to have a vertical orientation.

Industrial waste generation was treated in the exact same way as commercial waste generation with one exception. This applies to both the *Descriptions* and *Expectations* sections.

- **Current Population**
  To make this section specific to industrial waste, the number of employees engaged in industrial activities was substituted for the population of the

[14] Tables for the Central Texas Region (No. 141-146). (2016, June). Perryman Long-Term Economic Forecast. https://www.perrymangroup.com/home/

[15] North Central Texas Council of Governments. (2011, August). Regional Recycling Rate Update. https://www.nctcog.org/nctcg/media/Environment-and-Development/Documents/Materials%20Management/NCTCOG_Regional_Recycling_Update_FINAL_1.pdf

region. See Table 2 in the Addendum to this Attachment for the list of TWC sectors that we categorized as Industrial.

Results

The purpose of this Results section is to provide space for additional information that adds relevant details and context to the summary we provided in Volume II.

This section is divided into three subsections, one for each critical group. In each section (residential, commercial, industrial), we present two results not shown in Volume II. First, the adjusted recycling rate as percentage. Second, a graph we made that serves as a visual summary of the information provided in Volume II, Section III.A, Tables III.A.I. Residential Waste Generation, III.A.II. Commercial Waste Generation, and III.A.III. Industrial Waste Generation. The graphs display the relationship among population, recycling, and landfill disposal. For a more complete picture of waste generation in the area, please refer to the Generation sections of Volume II, Attachment III.C. Solid Waste Management Activities.

RESIDENTIAL WASTE GENERATION

The primary results of the residential waste generation analysis are presented in Volume II, Section III.A, Table III.A.I. Residential Waste Generation.

The statewide percentage of waste generated that is recycled is 22.7%.[16] After adjusting the statewide rate for the BVCOG region, recycling as a percent of waste generated is 21.9%.

Adjusted **residential** recycling as a percent of waste generated	21.9%

To facilitate a quick understanding of the relationship between waste generation and disposal, Figure 2 is included. Assuming a perfectly linear relationship between population and waste generation shows that annual waste generation between 2022 and 2042 is expected to increase by about 147 thousand tons.

[16] Study on the Economic Impacts of Recycling - Texas Commission on Environmental Quality - www.tceq.texas.gov

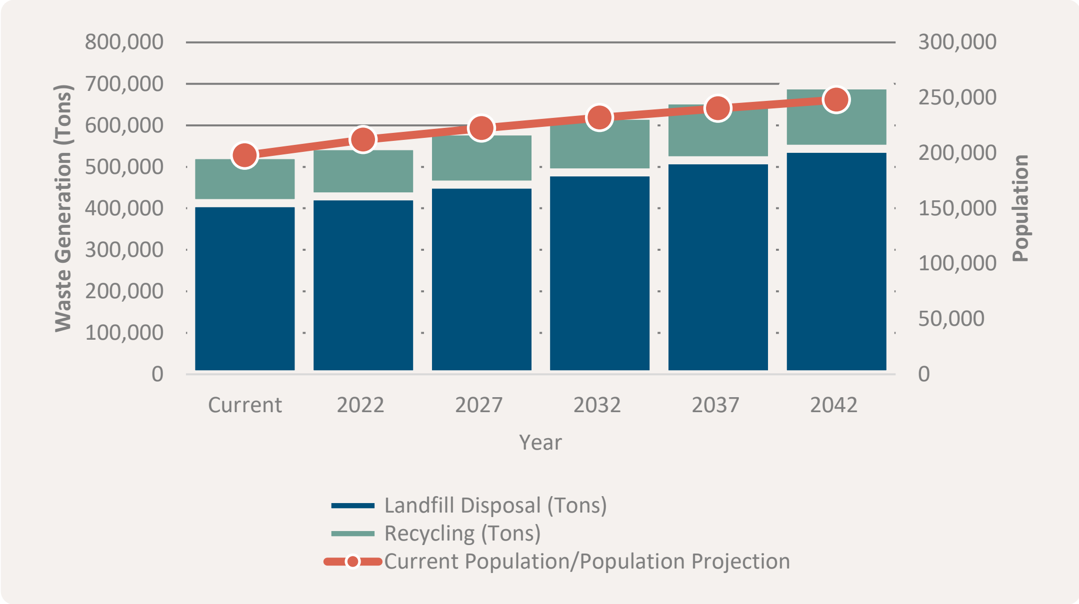

Figure 2. Estimated Current and Future Waste Generation (Landfill Disposal and Recycling) and Population

Recycling Rate Goal

We could not set a recycling rate goal without first understanding the current recycling rate. Because no established regional recycling rate exists, we estimated one based on the statewide recycling rate.

The recycling rate goal is really a measure of the region's success diverting material from the landfill. The established recycling rate for Texas prepared by Burns & McDonnell for the Texas Commission on Environmental Quality (TCEQ) defined the recycling rate as essentially any material that was discarded but not sent to the landfill. It excluded source reduction activities, refurbishment or reuse, energy conversion, land reclamation, or on-site use of material at the landfill. To make measuring and reaching the recycling rate goal attainable, for the purposes of this plan any material diverted from the landfill may be included in the recycling rate.

The most recent analysis of the statewide recycling rate was conducted by Burns & McDonnell in 2015 and was found to be 22.7%.[17] After adjusting the statewide rate to the region, we found the regional recycling rate to be 21.9%. For our complete methods refer to Residential Waste Generation, page A15. Based on this current rate, **the recycling rate goal for the region is to achieve a regional average of 40% by 2042—the end of this plan.**

Achieving a 40% recycling rate over the course of this 20-year plan amounts to an average increase of about 1% each year. In other words, were the region to increase recycling by 1% each year, they will have reached the goal by the end of the plan. The recycling rate goal is ambitious and achievable. It is based on other waste management plans in Texas. The City of San Antonio plan is to increase recycling 4% every year to reach their goal of 60% by the end of 2025.[18] The City of New Braunfels plan is to increase their annual recycling rate by 1.6% to reach their goal of 38% by 2030.[19]

Because the regional recycling rate goal is the *average* rate for the region, the 1% yearly growth rate accounts for both city and rural areas, and their varied recycling capabilities. Cities and rural communities are not expected to reach the same recycling level, but together they should strive to average 40% by 2042.

This brings us to the reality that the region will need to be able to measure their recycling rate in order to assess their progress reaching the regional goal. Developing a process to measure the region's diversion activities is critical to the success of this goal. Collecting data on waste diversion helps improve those diversion efforts. Waste audit data like that collected and analyzed by San

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[17] Burns & McDonnell. (2017, July). Study on the Economic Impacts of Recycling. Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/assistance/P2Recycle/study/TheStudyontheEconomicImpactsofRecycling.pdf

[18] Recycling and Resource Recovery Plan. (2020). City of San Antonio Waste Management Department. https://www.sanantonio.gov/Portals/0/Files/SWMD/AnnualReport/SWMD-RRRP-FY2020-Update.pdf

[19] SCS Engineers. (2019, July). Comprehensive Solid Waste Management Plan. City of New Braunfels Solid Waste and Recycling Division. https://www.nbtexas.org/DocumentCenter/View/15837/New-Braunfels-Solid-Waste-Management-Plan-FINAL-7-8-2019

Antonio in their Recycling and Resource Recovery Plan[20] helped them boost recycling efforts. Data driven decision making is crucial to achieving not just the recycling goal but to improve outcomes for many of the goals listed in this plan.

COMMERCIAL WASTE GENERATION

The primary results of the commercial waste generation analysis are presented in Volume II, Section III.A, Table III.A.II. Commercial Waste Generation.

The statewide percentage of Industrial, Commercial & Institutional (ICI) waste generated that is recycled is 23.6%.[21] After adjusting the statewide rate, the adjusted recycling as a percent of waste generated is 22.8%.

Adjusted **commercial** recycling as a percent of waste generated	22.8%

Assuming a perfectly linear relationship between employment and waste generation shows that annual waste generation between 2022 and 2042 is expected to increase by about 194 thousand tons.

For more information about waste generation related to industrial activities, see the generation sections of Volume II, Attachment III.C. Solid Waste Management Activities.

INDUSTRIAL WASTE GENERATION

The primary results of the commercial waste generation analysis are presented in Table III.A.III. Industrial Waste Generation of the Demographic Information of Volume II.

The statewide percentage of Industrial, Commercial & Institutional (ICI) waste generated that is recycled is 23.6%. After adjusting the statewide rate, the adjusted

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[20] Recycling and Resource Recovery Plan. (2020). City of San Antonio Waste Management Department. https://www.sanantonio.gov/Portals/0/Files/SWMD/AnnualReport/SWMD-RRRP-FY2020-Update.pdf

[21] North Central Texas Council of Governments. (2011, August). Regional Recycling Rate Update. https://www.nctcog.org/nctcg/media/Environment-and-Development/Documents/Materials%20Management/NCTCOG_Regional_Recycling_Update_FINAL_1.pdf

recycling as a percent of waste generated is 22.8%. The industrial recycling rate is the same as the commercial recycling rate because using an ICI rate was the best data available.

Adjusted **industrial** recycling as a percent of waste generated	22.8%

Assuming a perfectly linear relationship between employment and waste generation shows that annual waste generation between 2022 and 2042 is expected to increase by about 41 thousand tons.

For more information about waste generation related to industrial activities, see the generation sections of Volume II, Attachment III.C. Solid Waste Management Activities.

Discussion

The key question TCEQ sought to answer in this section was how the region's waste generation will change due to population growth and economic development. The answer is that waste generation will markedly increase over the 20-year period due to substantial increases to the region's population and economy. It is important to note these projections assume surrounding populations, in areas outside the region, follow similar growth patterns. This is because some of the waste being disposed of in regional landfills is imported from those outside regions. Similarly, some of the region's waste is exported to other regions and these projections assume those landfills will continue to accept increasing amounts of waste.

For each critical group (residential, commercial, and industrial) we used a similar approach to estimate waste generation changes between 2022 and 2042. The variation came from using different sources for recycling rate customized for each group. The method was straightforward and based on TCEQ instructions. We calculated residential waste generation based on population, landfill tonnage, and recycling tonnage. For commercial and industrial, we used employment estimates instead of population estimates. The constraints of this approach are outlined in the next section, along with key takeaway points.

RESIDENTIAL WASTE GENERATION

Residential waste generation will markedly increase over the 20-year period because of substantial increase to the region's population. The population is projected to increase 27% from 2022 to 2042. The amount of waste generated is thus projected to increase by the same amount. Although the recycling rate is similarly held constant, efforts to reduce and divert additional waste from the landfill could, and hopefully will, increase this percentage over time. The rapid growth of the population, and the amount of material landfilled and recycled, is a key feature of the region's waste ecosystem.

Of the three approaches (residential, commercial, and industrial), we believe that the Residential waste data is the most reliable. Although there are several drawbacks to the formulation of the Residential numbers—which will be discussed fully in the next section—it best represents the big picture of the region. We believe this is the case because it is the sole table that uses the full population of the region in its calculations. By using the entire population, along with the entire amount of waste disposed in the region's landfills, the waste numbers are most consistent. To be clear, the Residential model's best use is in gauging the *total* waste generation of the region because it uses total population and the landfill waste from all three critical groups.

For this reason, the graph we developed (Figure 2) for the Residential section is most useful. As shown there, waste generation and disposal increase linearly with waste are projected to grow steadily during the 20-year period.

There is, however, reason for caution when interpreting the results of the Residential section. The main constraint projecting current and future residential waste generation, and thus completing Volume II, Section III.A, Table III.A.I. Residential Waste Generation, was limited amount of available data. As a result, there are several reasons for uncertainty as it relates to the numbers presented in the Table.

First, the data suggests 147 thousand tons more waste will be produced in 2042 than in 2022. That amount is less than the change in landfill disposal tonnage for Commercial (194 thousand tons) but higher than Industrial (41 thousand tons) related waste. But the table does not solely consider residential waste. By using the total tonnage that went to the landfill, this table includes non-residential sources of waste such as commercial and some industrial generation. In fact, each critical groups' calculations represent total regional waste generation rather than the generation attributable to one of the groups. This flaw is the reason for our recommendation that the Residential data is the most credible model and ought to be the critical group consulted in waste management planning. Again, the Residential model ought to be interpreted as the *total* waste generation of the region.

Second, there is margin for error in the recycling rate because it was deduced from a calculation rather than taken from a local waste study. It was a best guess of the local recycling rate, but it was based off a study from a different region and scaled by a marketing coefficient retrofitted for our purpose. Furthermore, we kept the Recycling Rate constant throughout the 20-year period, though in reality the Recycling Rate will not be constant. In fact, the success of efforts to improve the diversion rate could have a significant impact on total disposal.

Third, the landfill tonnage represents only the amount of solid waste disposed of inside the region. Such a number does not consider the material that has been imported from other COGs, states, or Mexico, or exported to other COGs or states (which is not required to be reported).

Fourth, the future Landfill (Tons) and Recycling (Tons) were calculated by using growth rate of the population. By using this approach, the columns are calculated in a way that assumes there is a linear relationship between population growth and waste disposal. This is a prudent assumption but may not necessarily be accurate.

Fifth, the Table as TCEQ has it set up calculates generation as the sum of the waste disposed and recycled. This formulation excludes waste that was generated but disposed of by means other than at the landfill or through recycling. Waste that was otherwise diverted by being reused, buried, burned, or illegally dumped is not included as waste that had been generated. As a result, the Landfill Disposal (Tons) may not capture the true amount of waste generated in the region.

There is no such thing as perfect data, but the calculations provided here represent reasonable estimates for planning purposes.

COMMERCIAL WASTE GENERATION

Commercial waste generation will markedly increase over the 20-year period as a result of substantial increase to the region's commercially employed population. Commercial employment is projected to increase 34% from 2022 to 2042. The amount of waste generated is thus projected to increase by the same.

We used the Texas Workforce Commission (TWC) projections for the first five-year planning period and then Perryman Group projections for the remaining planning periods because TWC employment projections stopped at 2028. We chose to use TWC instead of Perryman Group projections for the first planning period because they came from state agency projections using Bureau of Labor Statistics data.

The largest change in commercial waste generation occurs between years 2022 and 2027. During that 5-year period about 15 thousand additional tons of commercial waste are expected to be generated, about a 11% increase. Commercial waste is forecasted to grow fastest in the beginning of the 20-year plan and grow slower near the end. This can be explained by the relationship between waste generation and the projected growth of commercial employment. TWC is projecting aggressive growth in the region through 2027, leading to higher waste generation early. The Perryman Group's forecasts, especially for the last 10 years of the plan, are projecting slower rates of growth, leading to a slower increase of waste generation. The Perryman Group's relatively more conservative employment outlook may be the result of a bias towards prudence due to the lengthy span of their predictions.

It is our assessment that the commercial waste table is not as reliable a gauge of waste generation than the residential waste table. Still, we believe waste generation as a result of commercial activities in the region will increase. The Commercial table suffers from the same lack of data issues discussed in the Residential waste Discussion section, but with one more drawback. The Commercial table used in its calculations the full amount of tonnage disposed in the landfill, yet only looks at a portion of the population—the commercial population. Basically, we compared apples to oranges. As a result, the disposal rate and recycling rate are inflated relative to what we would expect. In order to make an apples-to-apples comparison, the tons of waste disposed of at the landfill for *only* commercial activities is needed. Or more simply, the necessary data could come from the audit of a sample of the commercial waste stream. The best way to more accurately gauge both the commercial waste generation and recycling rate would be through a targeted study, which can be costly.

INDUSTRIAL WASTE GENERATION

Industrial waste generation will increase over the 20-year period as a result of an increase to the region's industrially employed population. Industrial employment is projected to increase 7% from 2022 to 2042. The amount of waste generated is thus projected to increase by the same amount.

All other relevant discussion can be found in the Commercial section of this Discussion as it applies to industrial waste generation as well.

Conclusion

Population in the region is rising substantially and resulting in higher quantities of waste. Residential, commercial, and industrial waste generation are projected to increase throughout the 20-year period. For each critical group, the fastest growth in waste generation is likely to occur in the first half of the 20-year plan. In the context of this Attachment, we believe the Residential findings give the best picture of overall waste generation in the region.

The region's recycling rate is near average for the State of Texas. Understanding the region's recycling rate helps create targets for future improvement.

Waste generation and waste disposal are the beginning and end of the waste management lifecycle. Analysis of the amount of waste generated and disposed of is critical for assessing waste management solutions.

Addendum | Volume II, Attachment III.A. Demographic Information

Table 2. Perryman Group Employment Category Assignments

NAICS	Type	Texas Workforce Commission Industry	Perryman Group Industry
11	Industrial	Agriculture, Forestry, Fishing and Hunting	Agriculture
21	Industrial	Mining, Quarrying, and Oil and Gas Extraction	Mining
22	Commercial	Utilities	Transportation, Warehousing, Utilities
23	Commercial	Construction	Construction
31	Industrial	Manufacturing (food, beverage, tobacco, leather, apparel, textile)	Non-Durable MFG

NAICS	Type	Texas Workforce Commission Industry	Perryman Group Industry
32	Industrial	Manufacturing (wood, paper, printing, plastic, chemical, nonmetallic, petroleum, coal)	Durable MFG
33	Industrial	Manufacturing (metal, machinery, computer, electrical, transportation, misc.)	Durable MFG
42	Commercial	Wholesale Trade	Trade
44	Commercial	Retail Trade (store)	Trade
45	Commercial	Retail Trade (non-store)	Trade
48	Commercial	Transportation	Transportation, Warehousing, Utilities
49	Commercial	Warehousing	Transportation, Warehousing, Utilities
51	Commercial	Information	Information
52	Commercial	Finance and Insurance	Finance, Insurance, & Real Estate
53	Commercial	Real Estate and Rental and Leasing	Finance, Insurance, & Real Estate
54	Commercial	Professional, Scientific, and Technical Services	Services
55	Commercial	Management of Companies and Enterprises	Services
56	Commercial	Administrative and Support and Waste Management and Remediation Services	Government
61	Commercial	Educational Services	Services
62	Commercial	Health Care and Social Assistance	Services

NAICS	Type	Texas Workforce Commission Industry	Perryman Group Industry
71	Commercial	Arts, Entertainment, and Recreation	Services
72	Commercial	Accommodation and Food Services	Services
81	Commercial	Other Services	Services
92	Commercial	Public Administration	Government

Attachment III.B. Estimates of Current and Future Solid Waste Amounts by Type

Introduction

As part of the 20-year planning process, TCEQ requires reporting of current waste and projections of future waste amounts in five-year increments by type.

Understanding expected amounts of waste by type is important for future landfill and waste processing plans, and understanding where to focus source reduction, reuse, and recycling efforts.

This attachment is related to waste disposal in the region. Waste disposal includes the materials that are landfilled and not otherwise diverted through reuse or recycling. This attachment is not related to waste generation.

Waste categorization is done by landfill operators based on statewide requirements,[22] which include 20 different waste types. Landfill operators provide their data to TCEQ on an annual basis.

The purpose of this attachment is to provide additional details and commentary on Volume II, Section III.B, Table III.B.I. Current and Future Solid Waste Amounts by Type.

Because there is projected population growth in the region, there is also projected growth in the amounts of each waste type. Evaluating the amounts of waste by type is made difficult by the categories. Most of the waste is categorized as *Municipal Solid Waste* and likely includes many types of waste that could be diverted from the landfill. Still, planning for this projected increase in waste is important to maintain landfill capacity.

The rest of this attachment will describe the methods IGI used in Table III.B.1. Current and Future Solid Waste Amounts by Type, show the results of the findings, offer a discussion of those results, and provide a conclusion.

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[22] Office of the Secretary of State. (2006). *Texas Administrative Code*. Texas Secretary of State. https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=T&app=9&p_dir=N&p_rloc=124133&p_tloc=&p_ploc=1&pg=11&p_tac=&ti=30&pt=1&ch=330&rl=671

Methods

The process for calculating waste projections was provided by the TCEQ. Table III.B.1. Current and Future Solid Waste Amounts by Type includes 20 different waste types and requires the number of landfills accepting each type, the percent of total tons disposed for each type, the tons disposed in the current year, and projections for the next 5-, 10-, 15-, and 20-years. The columns in Table III.B.1. Current and Future Solid Waste Amounts by Type will be explained here in greater detail.

1. **Waste type**
   TCEQ listed 20 types of waste (presented in alphabetical order):

   - Brush
   - Class 1 Non-hazardous
   - Classes 2 and 3 Non-hazardous
   - Construction or Demolition
   - Contaminated soil
   - Dead Animals
   - Grease Trap Waste
   - Incinerator Ash
   - Litter
   - Municipal
   - Municipal Hazardous Waste from CESQGs
   - Non-RACM
   - Pesticides
   - Regulated Asbestos-containing Material (RACM)
   - Septage
   - Sludge
   - Tires (split, quartered, shredded)
   - Treated Medical Waste
   - Used Oil Filter
   - Other

   In the TCEQ-provided data, *Other* is a specific category reported by landfills and is explained by note in the data. To ensure comparability between the waste disposal totals in Volume II, Attachment III.A. Demographic Information and the *TCEQ Municipal Solid Waste in Texas: A Year in Review report from 2019*, Grit Trap Waste was also included in this category and will be noted in the results.

2. **Number of landfills accepting waste type**
IGI used 2019 TCEQ-provided landfill disposal data to count the number of landfills that accepted each type of waste. There is only one landfill in the region, so if it reported accepting a waste type, we marked the number of landfills accepting as 'one.' For types of waste that did not have any records of disposal, we marked the number of accepting type as "zero." These zeroes do not necessarily mean that the landfill in the region is not allowed to accept these certain types of waste, only that it did not report it in 2019.

3. **Percent of total tons disposed**
IGI used 2019 TCEQ landfill data as the "Current Year" disposal weight. To find the Current Year disposal, we first found the sum of each waste type disposed in all of the region's landfills. Next, we summed all 20 waste types to find the total tons disposed of in the region (Current Year). We then divided each waste type by the Current Year total and multiplied by 100 to find the percentage for each type. In the tables, percentages are rounded to the nearest whole number.

Equation 12. Percent of Total Tons Disposed Calculation

$$\frac{Waste\ type\ (tons)}{Current\ Year\ (total\ tons\ disposed)} \times 100 = Percent\ of\ total\ tons\ disposed$$

4. **Current year**
The Current Year column contains the sum of recorded disposal for each waste type in all of the region's landfills. IGI used TCEQ-provided data on landfill disposal for this, and because 2019 is the most recent data available, 2019 is used as the current year. This data is limited because landfills in the region may have accepted waste from counties outside of the region's boundaries. It is not possible to identify how many tons came from outside the region. Similarly, waste generated in the region may have been disposed of in a landfill outside of the region with similar limitations on data specificity.

5. **Disposal projections**
The estimated population growth rates per year in Volume II, Section III.A, Table III.A. Demographic Information were used to calculate the projected increase or decrease of waste amounts by multiplying the current year waste

amounts by the growth factor. In the tables, tons are rounded to the nearest whole number.

Equation 13. Disposal Projection Calculation

$$(Landfill\ disposal\ [tons] \times Growth\ rate) + Landfill\ disposal\ [tons] = Disposal\ projection$$

Results

The primary results of the estimates of current and future solid waste amounts by type are presented in Volume II, Section III.B, Table III.B.I. Current and Future Solid Waste Amounts by Type.

Table III.B.1. Current and Future Solid Waste Amounts by Type did not include a column to project the current 2019 data forward to 2022 before completing the 5-, 10-, 15-, and 20-year projections. As a result, the 2022 disposal projections are shown here instead of in the Volume II table to avoid altering the original TCEQ table. For context, Current Year (2019) data was recreated alongside the projection to 2022 in Table 3.

Table 3. Current and 2022 Solid Waste Amounts by Type

Note: Tons disposed are rounded to the nearest whole number. As a result, in this table total tons disposed differs by 1 ton from the actual tons disposed.

Waste Type	Number of Landfills Accepting Waste Type	Percent of Total Tons Disposed	Current Year (2019)	2022 Projection
Municipal	1	84%	346,066	359,909
Brush	1	3%	11,300	11,752
Construction or Demolition	1	8%	34,875	36,270
Litter	-0-	-0-	-0-	-0-
Class 1 Non-hazardous	-0-	-0-	-0-	-0-

Waste Type	Number of Landfills Accepting Waste Type	Percent of Total Tons Disposed	Current Year (2019)	2022 Projection
Classes 2 and 3 Non-hazardous	-0-	-0-	-0-	-0-
Incinerator Ash	1	0%	2	2
Treated Medical Waste	-0-	-0-	-0-	-0-
Municipal Hazardous Waste from CESQGs	-0-	-0-	-0-	-0-
Regulated Asbestos-containing Material (RACM)	-0-	-0-	-0-	-0-
Non-RACM	1	0%	48	50
Dead Animals	1	0%	415	432
Sludge	1	4%	14,874	15,469
Grease Trap Waste	1	0%	830	863
Septage	-0-	-0-	-0-	-0-
Contaminated soil	-0-	-0-	-0-	-0-
Tires (split, quartered, shredded)	1	0%	329	342

Waste Type	Number of Landfills Accepting Waste Type	Percent of Total Tons Disposed	Current Year (2019)	2022 Projection
Pesticides	-0-	-0-	-0-	-0-
Used Oil Filter	-0-	-0-	-0-	-0-
Other[23]	1	1%	3,804	3,956
Total		100%	412,543	429,045

Additionally, to visualize the results presented in Volume II, Section III.B, Table III.B.I. Current and Future Solid Waste Amounts by Type, we developed a graph to quickly see growth in expected wastes by type for the top 10 most reported wastes in the region. These top ten wastes represent more than 99% of the waste reported in the current year.

[23] The Twin Oaks Landfill recorded disposal in the ‘other’ category, which was reported as “food, oil field, special waste.” The Twin Oaks Landfill recorded disposal of Grit Trap waste. We included this in the ‘other’ category. Grit Trap waste makes up roughly 20% of the ‘other’ category.

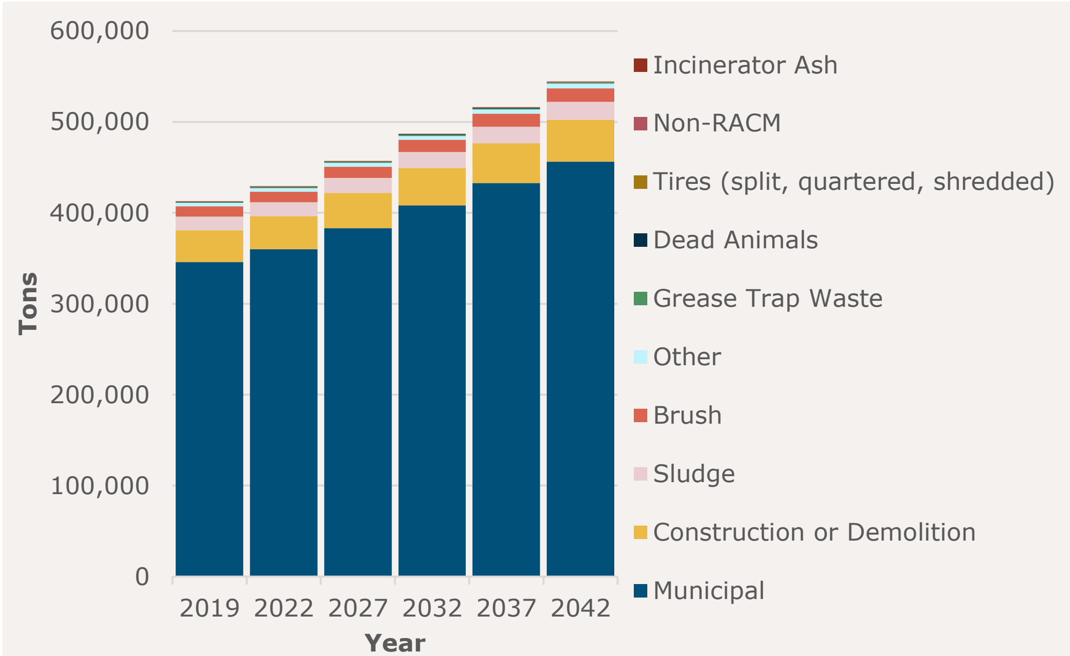

Figure 3. Top Ten Current and Estimated Future Solid Waste Amounts by Type

Discussion

In general, projected waste is expected to increase. Notably, these figures assume no changes to practices that could divert waste from landfills. Operating under this assumption can help for planning to maintain adequate landfill disposal capacity in the region long-term. In other words, future disposal capacity should consider these projections. For more information about disposal, including disposal capacity, see the Disposal sections of Volume II, Attachment III.C. Solid Waste Management Activities.

It is important to recognize the nature of landfill tonnage reports may impact the results of this analysis. If pesticides, for example, were placed in a curbside receptacle in bagged trash and disposed of at a landfill, it very likely would be recorded as *Municipal* rather than *Pesticides*.

Still, one of the most useful features of Volume II, Section III.B, Table III.B.I. Current and Future Solid Waste Amounts by Type is the Percent of Total Tons Disposed. *Municipal* waste and *Construction or Demolition* wastes are projected to be the two largest amounts in the region, representing roughly 92% of total disposal. These waste types are likely candidates for intervention and diversion efforts to extend the lives of landfills in the region. Further, it is likely that *Construction or Demolition* waste represents the largest single waste type recorded by landfills because the *Municipal* category likely represents a wide variety of different waste types. Though, similarly, *Construction or Demolition* is also not a homogenous waste stream.

Unfortunately, the data are not available to further categorize the *Municipal* waste stream. This is likely because it would be prohibitively expensive to consistently audit the largest part of the waste stream that is often bagged trash. However, periodic audits may help better understand this significant part of the waste stream.

Furthermore, because waste may have been exported from the region and imported to the region, these projections assume there will be no changes to the rate of those imports and exports. However, if a landfill in another region is close to the end of its life, it may significantly impact where waste is disposed in the future.

Conclusion

Population is growing in the region, so amounts of waste types are growing also. The region should carefully analyze its landfill capacity and diversion rates to be prepared for the increase in disposal.

Understanding how much of each waste type is expected in the region can help decide where to focus diversion efforts and inform planning for adequate disposal capacity. The region should explore every opportunity to reduce its disposal, especially in its largest streams.

In order to better understand its disposal and how to reduce it, the region should consider periodically collecting and reviewing more specific disposal data to inform planning and decisions.

Attachment III.C. Solid Waste Management Activities

Introduction

As part of the 20-year planning process, TCEQ requires a description of current and planned solid waste management activities in the region.

Understanding these current and already planned activities are critical to setting a foundation for the region's plan and developing a plan that considers what is already happening in the region and builds on these existing resources.

The purpose of this attachment is to provide additional details and commentary on Volume II, Section III.C, Tables III.C.I. Current Solid Waste Management Activities in the Region and III.C.II. Planned Solid Waste Management Activities in the Region.

The accounts of each activity in the waste lifecycle help support prioritization of waste management policies. The approach taken here leverages available data, spatial analysis, and data visualization to map the current activities into a cohesive view of the region's waste management systems. By linking activities from waste generation to disposal, this section provides a better understanding from beginning to end, helping to identify opportunities for material reduction or recovery. However, data limitations significantly impact the analysis and will make it difficult to create specific goals and objectives, such as reducing a specific waste type by a specific amount over the next 20 years. The most useful plan will be considerate of the data limitations and will therefore need to be broader and more general, rather than narrow and specific.

This attachment includes additional information related to Table III.C.I. Current Solid Waste Management Activities in the Region and III.C.II. Planned Solid Waste Management Activities in the Region and has been similarly organized.

The nature of collecting and managing trash and recyclables is complex and often unseen. Per TCEQ Volume II, there are 10 key waste management activities. To facilitate understanding of how each fit into the waste management lifecycle, a brief description of each will be provided.

Solid waste management activities have been organized into 10 distinct actions. To put these activities into a larger context, we developed a diagram (Figure 4).

The term 'Logistics' was added to group related activities but was not an official activity. Similarly, 'Processing' was an official activity that we used to group all processing related activities.

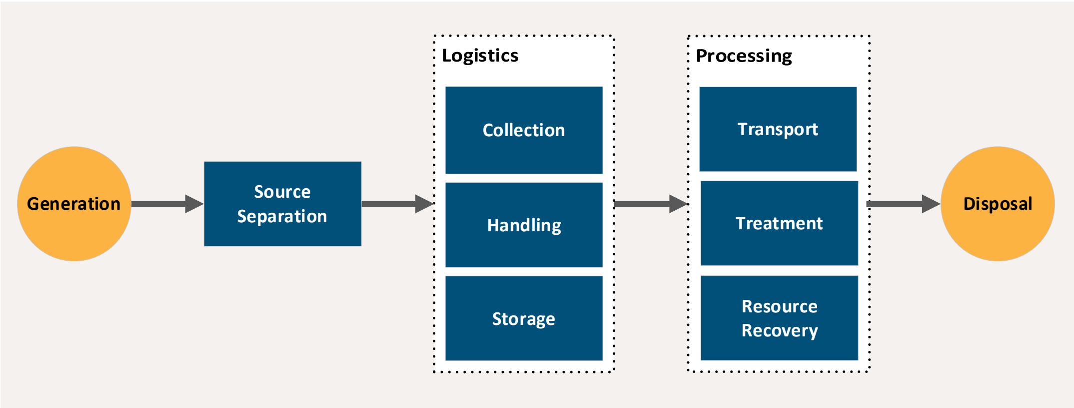

Figure 4. Solid Waste Activities Flowchart

In the *Solid Waste Activities Flowchart*, Generation is the beginning and disposal is the end. The goal is to dispose of less material than is generated and to implement source reduction activities to reduce the amount of material generated.

Generation happens at residences and businesses. So does *source separation*, for example separating trash and recycling. We have grouped the next three activities under the heading logistics, and these are all about getting the waste away from those residences and businesses. Logistics includes curbside *collection*; *handling* (such as drop-off centers or collection events) when curbside collection is not available; and *storage* at those drop-off centers or transfer stations before processing. Processing includes *transportation*, typically via a transfer station; *treatment*, for example reducing hazards associated with medical waste; and *resource recovery*, for example, composting. All that remains is then *disposed* of in landfills. Although these activities appear as separate and discrete tasks, we will show that there are some entities which perform multiple functions.

Each activity will be further described in the following sections.

GENERATION

Solid waste generation is the creation of waste by human activity. It is the beginning of the waste lifecycle. The waste that is generated needs to be managed. Knowledge of a region's solid waste generation is important in the planning and operation of a successful solid waste management system. Waste generation occurs predominantly at residences and businesses. To get a comprehensive picture of waste generation in the region, this section endeavors to describe waste generated by residences, commercial enterprises, and industrial enterprises. Together they make up what we refer to as the three critical waste generators.

Residential waste, as the name implies, is the waste related to households. The residential section of this attachment will describe the types and amounts of waste generated by households.

Commercial waste, as the name implies, is the waste related to commercial activities like trade and business. The commercial section of this attachment will describe the types and amounts of waste generated by businesses.

Industrial waste, as the name implies, is the waste that results from operations of industry: manufacturing, mining, or agriculture. The industrial section of the attachment will describe the types and amounts of waste generated by industry.

Unlike Volume II, Attachment III.A. Demographic Information, this Attachment will consider commercial and industrial waste by sector and waste type, along with the magnitude of each categories' contribution to the region's waste stream. The idea for this section is to add depth to the landfill disposal data discussed in Volume II, Attachments III.A. Demographic Information and III.B. Estimates of Current and Future Solid Waste Amounts by Type that will allow for greater understanding of the region's waste generation.

SOURCE SEPARATION

Source separation is the act of separating materials at the point of generation in preparation for moving the waste away from the home or business where it was generated. Because of the wide variety in source separation activities at commercial and industrial generators and the lack of relevant data, we will focus on source separation for residential waste.

LOGISTICS

Logistics is a category of activities which includes *Collection, Handling,* and *Storage.* This category is not part of the original form but has been included to group similar activities and simplify the solid waste management process at a high level.

Collection is the process by which residents' and businesses' source separated materials are collected either curbside or by drop-off so that the waste can be processed and, if necessary, disposed. For residential customers, this is commonly referred to as curbside collection. Curbside collection is the easiest and most convenient way for residents to dispose of their solid waste. As a result, this section focuses on residential curbside collection. Like the consideration of variance and lack of data related to commercial and industrial entities' source separation, an analysis of collection management for these generators is not included. Additionally, collection can occur at facilities where drop-offs are accepted.

Handling is performed by all haulers that collected waste and all facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste.

Storage facilities include all locations that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste.

PROCESSING

Processing is a category of activities which includes *Transportation, Treatment,* and *Resource Recovery.*

Transportation is the large-scale movement of collected, handled, and stored waste to the material's next location in the management process.

Treatment can include reducing the hazards associated with a specific type of waste.

Resource Recovery includes processing that results in a waste material being diverted from disposal in a landfill, such as recycling or composting.

DISPOSAL OF SOLID WASTE

After solid waste is collected, transported, and treated, it must be disposed of in a landfill if no other option is available. Disposal at landfills is the last step in the region's waste management process. In this section we will present information on the number of landfills in the region, detail the estimated capacity remaining in those landfills, and show the likely composition of the disposed waste in the region.

The remainder of this attachment will describe the methods we used to describe each activity, the results of those methods, and then discuss those results before concluding. Each section (methods, results, etc.) will have a specific subsection related to each solid waste management activity.

Methods

A variety of methods were used to better understand the various current and planned solid waste management activities depending on the availability of data.

GENERATION

Two related but distinct methods were used to evaluate current waste generation and planned waste generation.

Current

While waste *disposal* data is provided by TCEQ, there is no singular source of data for *generation* in Texas. As a result, we used three secondary data sources to analyze waste generation.

- California's Department of Resources Recycling and Recovery (CalRecycle) Estimated Solid Waste Generation Rates[24]
- CalRecycle Residential Disposal Compositions for California Regions[25]
- Environmental Protection Agency (EPA) Commercial Waste National Totals by NAICS and US Satellite Tables for USEEIO[26]

CalRecycle's Estimated Solid Waste Generation Rates were used to compare the amount of waste generation by residential, commercial, and industrial sources. CalRecycle's Residential Disposal Compositions for California Regions were used to identify the types and amounts of waste generated by *residential* sources. The

[24] Estimated Solid Waste Generation Rates. (n.d.). California's Department of Resources Recycling and Recovery (CalRecycle). Retrieved August 5, 2021, from https://www2.calrecycle.ca.gov/WasteCharacterization/General/Rates#:%7E:text=Residential%20Sector%20Generation%20Rates%20%20%20%20Waste,%20Cor%20. . .%20%208%20more%20rows%20

[25] Residential Disposal Compositions for California Regions. (2014). California's Department of Resources Recycling and Recovery (CalRecycle). https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialRates

[26] Commercial Waste National Totals by NAICS and US Satellite Tables for USEEIO. (2020, November 12). [Dataset]. U.S. EPA Office of Research and Development (ORD). https://catalog.data.gov/dataset/commercial-waste-national-totals-by-naics-and-us-satellite-tables-for-useeio

EPA's Commercial Waste National Totals by NAICS and US Satellite Tables for USEEIO (US Environmentally Extended Input Output) were similarly used to identify the types and amounts of waste generated by *commercial and industrial* sources. In other words, we looked at each groups' contribution to total generation in the region, then we looked at the waste that makes up each groups' generation.

In the following sections we will explain the reason we used each approach and provide a stepwise walkthrough of each procedure.

COMPARISON OF RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL WASTE GENERATION

The first approach was used for all three critical generators (residential, commercial, industrial). This method was used to estimate the amount of waste each group is expected to generate. We used CalRecycle generation rates as the data source.

In the following paragraphs we will describe why the generation rates we focus on are categorized into residential, commercial, and industrial categories. Next, we will explain the generation rate of each category (residential, commercial, and industrial). Finally, we will show how much each category contributes to the overall waste that is generated before examining each category individually.

For the purposes of this section and consistency with other portions of this regional plan, we divided waste generation into three categories: residential, commercial, and industrial. Each has a different rate of generation and together these categories make up most, if not all of the waste generated in the region. Commercial and industrial sectors are separated into different categories because this form divides business activity this way, and so the same will be done here for consistency. TCEQ defines industrial waste as waste that results from operations of industry: manufacturing, mining, or agriculture. Unlike industrial waste, commercial waste derives from trade and business. Residential waste is the waste created within households. In the Residential section, we will explore the differences in waste between single-family homes and multi-family homes. Single-family homes have one housing unit and multi-family homes have two or more housing units.

The estimated generation rates we used are based on a 2006 waste audit study provided by California's Department of Resources Recycling and Recovery

(CalRecycle).[27] We chose to use the CalRecycle generation rates instead of the Residential Rate Generation that was calculated in Volume II, Section III.A, Table III.A.I. Residential Waste Generation. The CalRecycle generation rates were established from a reputable source directly inspecting household waste,[28] whereas the Residential Rate from Table III.A.I. Residential Waste Generation was a calculation we made based on municipal landfill and recycling data that combines commercial, industrial, and residential wastes. The CalRecycle generation rates for each category were as follows: residential (12.23 lbs./household/day), commercial (39.00 lbs./employee/day), and industrial (8.93 lbs./employee/day). Also, note that the commercial rate as listed by CalRecycle is 10.53 but excludes construction and demolition (C&D) waste. To get a rate which includes C&D waste, we calculated the percent of C&D in the commercial waste stream based on an EPA table of commercially produced waste and added it into the CalRecycle rate to get 39.00 lbs./employee/day. The last step we took to make the numbers easier to understand was to convert waste rates to total waste. To this effect, the residential waste rate was converted to total residential waste using the number of households in the region based on U.S. Census data. The commercial and industrial waste rates were converted to total wastes using the number of people employed in each sector based on Texas Workforce Commission data.

Converting generation rates to total waste enables us to compare how much each category contributes to the overall waste stream.

RESIDENTIAL WASTE GENERATION

The approach taken here was used to understand the composition of residential waste. We used CalRecycle's Residential Disposal Compositions to get the amount of each waste type found in the residential waste stream.[29] Although just an

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[27] City of Los Angeles. (2006). L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles (Page M.3-2). https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf

[28] City of Los Angeles. (2006). L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles (Page M.3-2). https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf

[29] Residential Disposal Compositions for California Regions. (2014). California's Department of Resources Recycling and Recovery (CalRecycle). https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialRates

estimate, this breakdown was very similar to what we would expect to find in this region.

Specifically, we exported the waste characterization breakdown from CalRecycle's webpage (Residential Disposal Compositions for California Regions). This gave us the percent of each material type found in the average single-family home (Table 15). We then recoded the material types into broader categories so they would be in a format suitable for a pie chart. The only changes to their categorization were in the Other Organics category because of the potential to identify specific types of organic waste that could be potentially composted in the region. This was done in the manner shown in the Addendum to this attachment.

COMMERCIAL AND INDUSTRIAL WASTE GENERATION

We used EPA's USEEIO waste model as the data source combined with employment data to estimate the contribution made by each commercial and industrial sector to the waste stream. This methodology gave us detailed estimates into the amount and type of waste generated by each commercial sector in the region.

We used a three-step process to understand the impact of economic activity on waste generation in the region. We used this process because there is no existing data on the waste generated by the local economy. As a substitute, we developed a system that estimates the waste generated from each economic sector based on the number of employees in that sector. The next few sections will outline how we collected employment data by sector, collected waste generation data by sector, and finally, calculated the types and amount of waste generated by each economic sector.

Step 1. The first part of our process was to obtain solid waste generation data from the EPA. We downloaded the EPA's Commercial Waste National Totals by NAICS and US Satellite Tables for USEEIO. This dataset contained the national average of waste generated by each economic sector. It enumerated the amount and type of waste generated by each North American Industry Classification System (NAICS) code. NAICS codes classify economic activity into categories. Next, we converted the NAICS codes listed on the EPA waste table from six digits to two digits. This was done to broaden the economic categories—we used 24 categories, matching the 2-digit NAICS codes structure used in the Texas Workforce Commission (TWC) dataset. Next, we recategorized the waste types into broader categories that align with the way in which we present waste types in this document. This process can be seen in the Addendum of this Attachment (Table

16). We recoded the wastes from the "CHW_National_Totals_by_NAICS" tab of the USEEIO spreadsheet as Hazardous. CHW is defined as commercial hazardous waste. In other words, the USEEIO model already classified these waste types as hazardous; we took the next step to recode them Hazardous. The model lists the wastes by weight.

In addition to calculating waste generation by weight, we identified conversion factors[30] that allowed us to convert the waste to volume. Understanding volumes is important because landfills fill up by volume, not by weight. Weight can also have an impact on the cost to transport materials and is often how disposal costs are calculated.

The recoded waste types and volume conversions are found in Table 16. We did not convert liquids to volumes because conversion factors were unavailable. We also noted which wastes the model considered hazardous and which were non-hazardous. Next, we categorized each NAICS code by whether it was a commercial or industrial enterprise according to the Texas Health and Safety Code definition, also used by TCEQ, as shown in Table 14. With the prepared data, we divided the total waste generated nationally from each sector by the number of national employees in that sector. This resulted in the national average of waste produced by each employee in each sector. This figure became the multiplier we used to go from the waste generated nationally to the waste generated by the COG.

In summary, we organized the data so they were easier to work with, and then performed the following calculation for each economic sector (i.e., each 2-digit NAICS code) and each waste type (e.g. food, aluminum cans).

Equation 14. Significant Commercial Activities Calculation (Step 1)

$$\frac{National\ Average\ of\ Waste\ Generated\ Per\ Year\ (Tons)}{National\ Number\ of\ Employees}$$
$$= Annual\ Waste\ Generated\ per\ Employee\ (Tons\ per\ Employee\ per\ Year)$$

Step 2. The second part of our process was to project commercial activity in the region for each five-year period beginning in 2022 and ending in 2042. We did this

[30] Cascadia Consulting Group. (2018, May). 2018 Facility-Based Characterization of Solid Waste in California (DRRR-2020-1666). California Department of Resources Recycling and Recovery. https://www2.calrecycle.ca.gov/Publications/Details/1666

by using employment projections grouped by economic sector. For years 2022 and 2027, we used Texas Workforce Commission (TWC) employment projections. The TWC dataset provided us the number of people employed in each sector coded by NAICS code.

The TWC organizes geographic areas by Workforce Development Area (WDA). The BVCOG perfectly overlaps with the Brazos Valley WDA.[31] It should be noted that the most recent employment data published by TWC is for 2018 and it is projected to 2028.

In summary, in the second step of the four-part process we collected TWC data on the number of employees for each NAICS sector for 2022 and 2027.

Step 3. The third and final step was to find the total amount and type of waste generated by each economic sector in the COG. To this end, we multiplied two numbers we derived in the previous sections: the amount of waste generated per employee in each sector (Step 1) and the number of people in the COG employed in that sector (*Step 2*).

This gave us the relationship between commercial and industrial activity in the region and the types and amount of waste generated by those activities. Formally speaking, we performed the following equation for each economic sector (i.e., each NAICS code) and each waste type (e.g., food, aluminum cans).

Equation 15. Significant Commercial Activities Calculation

$$\begin{gathered} \mathit{Annual\ Waste\ Generated\ per\ Employee} \times \mathit{Employees\ in\ COG} \\ = \mathit{Waste\ Generated\ by\ COG} \end{gathered}$$

Planned

Separate methods were similarly used for planned generation for each of the current methods:

- Comparison of residential, commercial, and industrial waste generation,
- Residential waste generation, and
- Commercial and industrial waste generation.

[31] Texas Workforce Commission. (2021, April). Workforce Development Area Profiles (Brazos Valley). Labor Market Information. https://texaslmi.com/EconomicProfiles/WDAProfiles

COMPARISON OF RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL WASTE GENERATION

The method used to create the comparison among residential, commercial, and industrial waste streams was identical to the method used to make the current comparison, except we used projected populations. We used the same generation rates for each critical group, but used 2027 population for short-range projections, 2032 population for intermediate range projections, and 2042 for long-range projections. Multiplying the generation rates by the relevant population segment gave us the total projected waste generation.

We used the population given by the Texas Demographic Center for the projected residential population. We used Texas Workforce Commission (TWC) and Perryman Group employment projections for the commercial and industrial populations. As a reminder, the generation rate for these critical groups is per employee. These were the best available data sources.

RESIDENTIAL WASTE GENERATION

The same method that was used to estimate current residential waste generation was used to project future residential waste generation. We used the same residential generation rate and multiplied it by the projected population in 2027, 2032, and 2042, using the 2018 U.S. Census projections. Because the waste generation rate is based on number of households, we divided the 2027 projected population by the average household size in 2018.

COMMERCIAL AND INDUSTRIAL WASTE GENERATION

Due to the difficulty in ascertaining planned waste generation, we extrapolated waste generation based on population growth and forecasted economic activity. Put simply, we analyzed changes in generation for each waste type. For this section, we converted the current waste being generated to the expected waste generated in the mid- and long-range. To do so, we applied the same methodology as we did for the previous section of this attachment: the Generation section of the Current Solid Waste Management. Please refer to that section for more insight into our methodology.

In this section, we changed the source for employment projections. Because TWC only forecasts employment out to 2028, for this section, we used employment projections from the Perryman Group. This became Step 3 in our methodology. To summarize, we used the same methodology as we did in the Current Generation section but inserted a third step which incorporated economic projections out to 2040.

Step 1. Same as Current Generation

Step 2. Same as Current Generation

Step 3. In the third step we collected employment data for the years 2032, 2037, and 2042. TWC does not project employment beyond 2027, so we turned to The Perryman Group's long-term economic forecasts. The Perryman Group is an economic research firm based in Texas that specializes in long-term economic forecasts. The Perryman Group uses a proprietary forecasting system known as their Texas Econometric Model. According to The Perryman Group, their model is "The result of more than three decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, and Texas economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations."[32]

The Perryman Group model does not classify employment by NAICS code, but instead groups economic sectors into broader categories. Because these broader categories are different than the NAICS codes, it prevented cross-comparison to the USEEIO model. To allow for comparison between the two models, we reclassified the 24 NAICS codes into the 11 economic divisions used by the Perryman Group. This was done in the manner shown in the Addendum to this Attachment, Table 14. Moreover, the Perryman Group does not use Workforce Development Areas but instead uses wider geographic areas. For BVCOG, we used the Perryman Group region known as the Central Texas Region. BVCOG sits entirely within the Central Texas Region but also included in the Perryman Group Central Texas Region are all the counties within the Central Texas Council of Governments (Bell County, Coryell County, Hamilton County, Lampasas County, Milam County, Mills County, San Saba County) and the Heart of Texas Council of Governments (Freestone County, Hill County, Limestone County, McLennan County).

[32] Tables for the Central Texas Region (No. 141-146). (2016, June). Perryman Long-Term Economic Forecast. https://www.perrymangroup.com/home/

In these sections we also cite population projections to get a sense of future waste generation. These projections come from the Texas Demographic Center. In summary, in the second step of the four-part process we collected Perryman Group data on the number of people employed by each economic sector for 2032, 2037, and 2042.

Step 4. Same as *Step 3* in Current Generation.

SOURCE SEPARATION

Two separate methods were used to understand current and planned source separation activities which will be explained in the following sections.

Current

Residential Source Separation. To understand residential source separation in the region, we did an internet survey of the City of College Station's website to learn about its services. For source separation, we only looked at services offered in College Station because they have the largest population in the region, so their services affect the largest amount of people, and the services likely represent the benchmark to which other cities might aspire.

To get an idea of how common residential waste types are separated in College Station, we used the same material types from the CalRecycle study described in the *generation* section of this attachment:

- Food,
- Paper,
- Other Organic,
- Plastics,
- Inerts and Other,
- Special Waste,
- Metals,
- Mixed Residue,
- Glass,
- Yard Waste,
- Electronics, and
- Household Hazardous Waste.

For each material type, we determined the most preferred management method available to the resident and assigned the waste type to a *source separation category*. For example, because curbside yard waste pickup is available to residents of College Station, yard waste was assigned to the brush/yard waste category. This was done for each waste type. For waste types that represented categories made up of multiple types of waste, we used the individual waste type that represented the greatest amount of the group as the waste to be separated. For example, *special waste* included ash (0.1%), treated medical waste (0.7%), bulky items (2.8%), tires (0.0%), and remainder/composite waste (0.0%). In this case, special waste was considered *bulky waste.*

To describe source separation, we counted the number of necessary streams based on the handling method for a typical household to participate in waste management most effectively. Additionally, for each of the separation groups, we summed the percent of the waste stream represented by all of the included material types to understand the practical effects of source separation as it relates to diversion—the ultimate goal of successful solid waste management.

The results of these methods are limited by their specificity. More specific waste types could require additional separation. However, to avoid a false sense of accuracy, these methods were used to give a summary understanding of the best-case scenario in the region.

Commercial and Industrial Source Separation. For residential wastes, there are more regulations and requirements regarding collection services, and many of the services are operated publicly. For commercial and industrial wastes, the majority of the services are privately operated, so source separation details are mostly unknown, though it is assumed there is some level of source separation occurring. As a result, a useful description of commercial and industrial source separation is not included.

Planned

To understand planned changes to source separation, feedback from the Solid Waste Advisory Committee members via regular meetings and a survey were used.

LOGISTICS

Logistics is a category of activities which includes *Collection, Handling,* and *Storage.* This category is not part of the original form but has been included to group similar activities and simplify the solid waste management process at a high level.

Collection

Two separate methods were used to understand current and planned collection activities, which will be explained in the following sections. Additionally, two different types of collection were evaluated: curbside and drop-off.

CURRENT

Separate methods were used to understand current curbside collection and drop-off collection.

Curbside Collection

First, to understand where curbside collection services were offered, we did an internet survey of municipal websites and available online ordinances for each city in the region. For each city, we recorded the availability of curbside collection. This was done for multiple waste streams:

- Bulk,
- Brush,
- Organics,
- Recycling,
- Trash, and
- Yard Waste.

For reference, *Bulk* items are large, hard to handle items such as furniture or appliances, *Brush* is large yard waste like branches and stumps, *Organics* are food scraps and food-soiled paper, *Recycling* is for items in the region that are accepted as recyclable, *Trash* includes any material that is not otherwise diverted from the landfill, and *Yard Waste* are leaves, grass, prunings, and trimmings.

We researched 28 cities in the region based on the cities included in the dataset of Texas Cities from the Texas Department of Transportation (TxDOT).[33] The center of each city boundary was found, and the city was assigned to the COG if its center was within the regional boundary.

Using what was publicly available online, we identified the cities that provided curbside collection service.

[33] TxDOT City Boundaries. (2021). [Dataset]. Texas Department of Transportation. https://gis-txdot.opendata.arcgis.com/datasets/TXDOT::txdot-city-boundaries/about

For each city, if a curbside service was provided, we added the total population of that city to our estimate. Based on the results of the survey, we were able to estimate the number of people in the region that have access to municipally provided (either through City staff or municipal coordination with private haulers) curbside collection. We took that number of people and divided it by the total population of the region. This gave us the *percent* of people that live in cities with city-provided curbside collection. C*ity-provided collection service* includes services provided by either city employees or private firms contracted by the city to perform collection services. For trash collection, because it is mandated by the state that municipalities provide curbside trash collection, it was assumed all municipalities provided service.

The scope of our data collection is limited to cities and towns in the region. This was done because, with few exceptions, collection services are under the charge of cities and towns. Counties or COGs, as administrative units, do not have jurisdiction over collection services. Counties, in limited circumstances, may have some jurisdiction over collection services.

Our internet survey only included residential collection services. Our survey did not include collection at commercial or industrial entities because these services are handled through private contracts.

Most ordinances and websites in our survey did not distinguish between single-family and multi-family homes. Therefore, the numbers we present in the Results section likely overestimate access to curbside collection services as multi-family homes are expected to have fewer curbside services.

Drop-off Collection

To describe current drop-off collection activities, we summed the number of facilities that accepted waste via drop-off. We used TCEQ-provided waste data and validated this data with Solid Waste Advisory Committee members. This data was from 2021. We also performed an internet survey to find additional drop-off centers. We counted each permit as its own facility.

PLANNED

Curbside Collection

To understand planned changes to curbside collection, feedback from Solid Waste Advisory Committee members via regular status meetings and a survey were used.

TCEQ Notice of Intent (NOI) reports were also used to add any planned handling, storage, transportation, treatment, recovery, or landfill facilities.

Drop-off Collection

To understand planned drop-off collection activities, the publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed, as well as any pending permits. We counted each permit as its own facility.

Handling

Two separate methods were used to understand current and planned handling activities which are explained in the following sections.

CURRENT

To describe current handling activities, we summed the number of facilities involved in handling. We used TCEQ-provided waste data and validated this data with Solid Waste Advisory Committee members. This data was from 2021. We counted each permit as its own facility.

PLANNED

To understand planned handling activities, the publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed and any pending permits. We counted each permit as its own facility.

Storage

Two separate methods were used to understand current and planned storage activities which will be explained in the following sections.

CURRENT

To describe current storage activities, we summed the number of facilities involved in waste storage activities. We used TCEQ-provided waste data and validated this data with Solid Waste Advisory Committee members. This data was from 2021. We counted each permit as its own facility.

PLANNED

To understand planned storage activities, the publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed, as well as any pending permits. We counted each permit as its own facility.

PROCESSING

Transportation

Two separate methods were used to understand current and planned transportation activities which will be explained in the following sections.

CURRENT

To describe current transportation activities, we summed the number of facilities involved in waste transportation activities. We used TCEQ-provided waste data and validated this data with Solid Waste Advisory Committee members. This data was from 2021. We counted each permit as its own facility.

Additionally, we evaluated the distance between where waste is generated and where it is disposed. According to the EPA, if a landfill is more than 34 miles away round trip, it makes economic sense to add a transfer station to aid in waste transportation. So, to evaluate transportation distance, 17-mile rings around each landfill were created and the 2019 Census Population within those rings was summed. The population within 17 miles of a landfill was calculated as a percent of total population in the region. Next, the same process was done for transfer stations. Finally, based on our independent research, any collection center that was identified where trash was known to be accepted as a drop-off material had the same process applied. For both transfer stations and other collection centers, the overlap with a previous ring was removed to avoid double-counting block groups.

PLANNED

To understand planned transportation activities, the publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed, as well as any pending permits. We counted each permit as its own facility.

Treatment

Two separate methods were used to understand current and planned processing and treatment activities which will be explained in the following sections.

CURRENT

To understand current processing and treatment activities, we focused on three key factors:

- Where waste processing/treatment occurs,
- What processing/treatment methods are used, and
- The amount of waste processed/treated.

To understand all of these features of waste treatment in the region, we used TCEQ-provided landfill and facility data and validated this data with Solid Waste Advisory Committee members. The treatment amounts were from 2019 and the number of facilities were as of 2021. We counted each permit as its own facility.

PLANNED

To understand planned changes to processing and treatment, feedback from Solid Waste Advisory Committee members via regular meetings and a survey were used. In addition, the publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed, as well as any pending permits. We counted each permit as its own facility.

Resource Recovery

Two separate methods were used to understand current and planned resource recovery activities which will be explained in the following sections.

CURRENT

To describe current resource recovery activities, we summed the number of facilities involved in resource recovery activities. We used TCEQ-provided landfill data and validated this data with Solid Waste Advisory Committee members. This data was from 2019. We counted each permit as its own facility.

PLANNED

The publicly available TCEQ MSW Solid Waste Facilities data from 2021 were used to identify any facilities that were permitted but not yet constructed and any pending permits. We counted each permit as its own facility.

DISPOSAL OF SOLID WASTE

Two separate methods were used to understand current and planned disposal activities, which will be explained in the following sections.

Current

To understand current disposal activities, we focused on three key factors:

- Where waste disposal occurs,
- What waste types are disposed, and
- The expected remaining capacity of those disposal locations in years.

To understand where waste disposal occurs, we used TCEQ-provided landfill data and validated this data with Solid Waste Advisory Committee members. This data was from 2019.

To understand what waste types are disposed, we similarly referred to TCEQ-provided landfill data and summarized individual landfill reports for the region.

Finally, to understand the expected remaining capacity of the landfills, we reviewed the 2019 Municipal Solid Waste in Texas: A Year in Review[34] where remaining years are reported. We also compared these reported remaining years to the reported remaining years in the 2014 Municipal Solid Waste in Texas: A Year in Review.[35]

Planned

To understand planned changes to disposal, feedback from Solid Waste Advisory Committee members via regular meetings and a survey were used.

Results

The results of our analysis from each solid waste activity will be presented in the following sections.

[34] Waste Permits Division. (2020, November). Municipal Solid Waste in Texas: A Year in Review (2019 Data Summary and Analysis). Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/comm_exec/pubs/as/187-20.pdf

[35] Waste Permits Division. (2014, October). Municipal Solid Waste in Texas: A Year in Review (2014 Data Summary and Analysis). Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/comm_exec/pubs/as/187-16.pdf

GENERATION

The results of our efforts to understand current and planned generation are presented here separately.

Current

A summary of the results of our generation analysis are found in Volume II, Section III.C, Table III.C.I. Current Solid Waste Management Activities in the Region. This section is dedicated to enhancing the understanding of generation in the region and provides insight and analysis not found in Volume II.

Before detailing the results of our analysis, we will lay out a structure for this section of the Attachment. We will begin with a region-wide look at generation totals and the contribution made by each critical group. Next, we will zoom in to each critical group in order to understand how they individually generate waste. We begin with the Residential group. Then, we delve into the Commercial group, followed by the Industrial group. In those sections, we show generation by the whole economy before we zoom in again to explore the waste generated by each sector of the economy. This discussion of generation will be confined to the present day. For information regarding future generation, please see the Generation section of Table. III.C.II. Planned Solid Waste Management Activities in the Region regarding planned solid waste management activities.

COMPARISON OF RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL WASTE GENERATION

In the aggregate, according to our methods, the region generated 1.3 million tons of waste in 2018. That is the total combined waste from all three categories—residents, commerce, and industry. Individually, commercial enterprises generated 914 thousand tons, residents generated 276 thousand tons, and industrial enterprises generated 69 thousand tons of solid waste. To be clear, these raw numbers are estimates only. It is also important to note, these numbers are significantly higher than that reported in Volume II, Attachment III.A. Demographic Information. These numbers are provided to offer a sense of the scale of the waste in the region, help compare waste across categories, and give insight into where better reporting data is needed.

With that in mind and having found the total waste produced by each category, we can see in Figure 5 what percentage each category comprises of the total waste generated in the region: 73% by commercial enterprises, 22% by residences, and 6% by industrial enterprises. In other words, 73% of all waste generated in the region in one year is generated by commercial activities, 22% by households, and 5% by industrial activity.

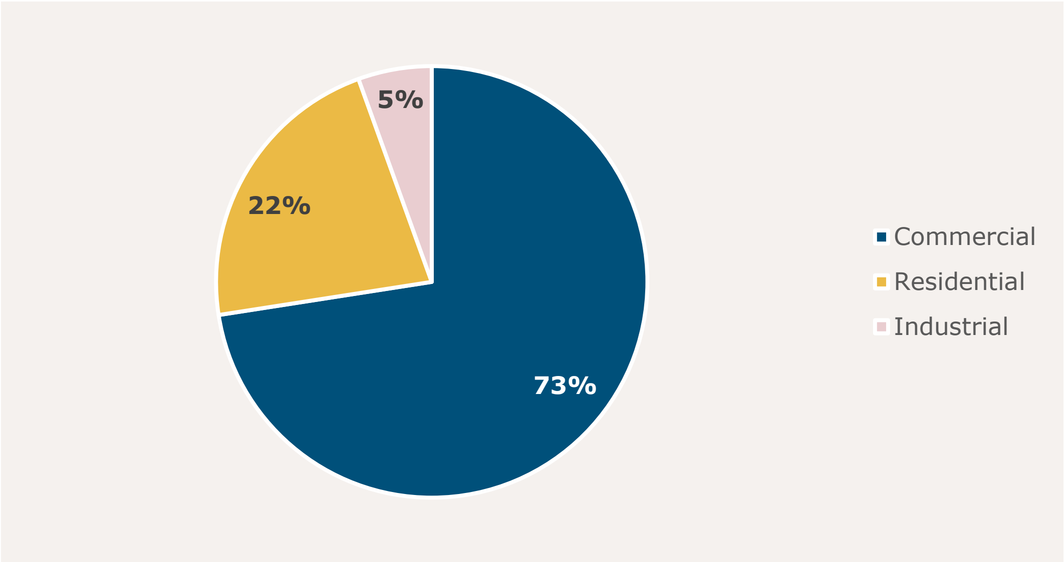

Figure 5. Comparison of Estimated Residential, Commercial, and Industrial Waste Generation

We researched other local solid waste reports to validate our results and to see if they were in line with other cities. Our comparison of waste generation of each critical group aligns with what was reported in Houston in 2019, where 67% of waste disposed was commercial waste and 33% was residential.[36] Although Houston reported disposal numbers, waste generation and disposal do not match exactly because of diversion efforts. Still, it was reassuring to see this similarity. What's more, we calculated the generation makeup using an alternative method—making use of CalRecycle's generation rates—and found the results using that data source to be nearly identical to our process.

[36] Waste Generation Report (City of Houston 20 Year Long Range Draft Plan). (2020, September). City of Houston Solid Waste Management Department. http://www.houstontx.gov/solidwaste/longrange/plan/WasteGenReportv04252019.pdf

Residential Generation

According to the 2018 U.S. Census,[37] in the Brazos Valley region 75% of homes were single-family and 25% were multi-family homes.

In the 2014 California study, the breakdown of the residential waste stream for single-family homes was as follows: 21% Food, 18% Paper (composite paper, cardboard, newspaper, etc.), 13% Other Organic (manures, textiles, carpet, composite organics), 12% Inerts and Other (wood waste, rock, soil, fines, etc.), 10% Plastics, 7% Brush (branches, stumps, prunings, trimmings), 5% Mixed Residue (kitty litter, cosmetics, etc.), 5% Yard Waste (leaves, grass), 3% Special Waste (bulky items, medical waste, ash, etc.). The remaining 5% is comprised of Metals (3%), Glass (2%), Electronics (1%), and Household Hazardous Waste (1%) (paint, batteries, etc.) (Figure 6).

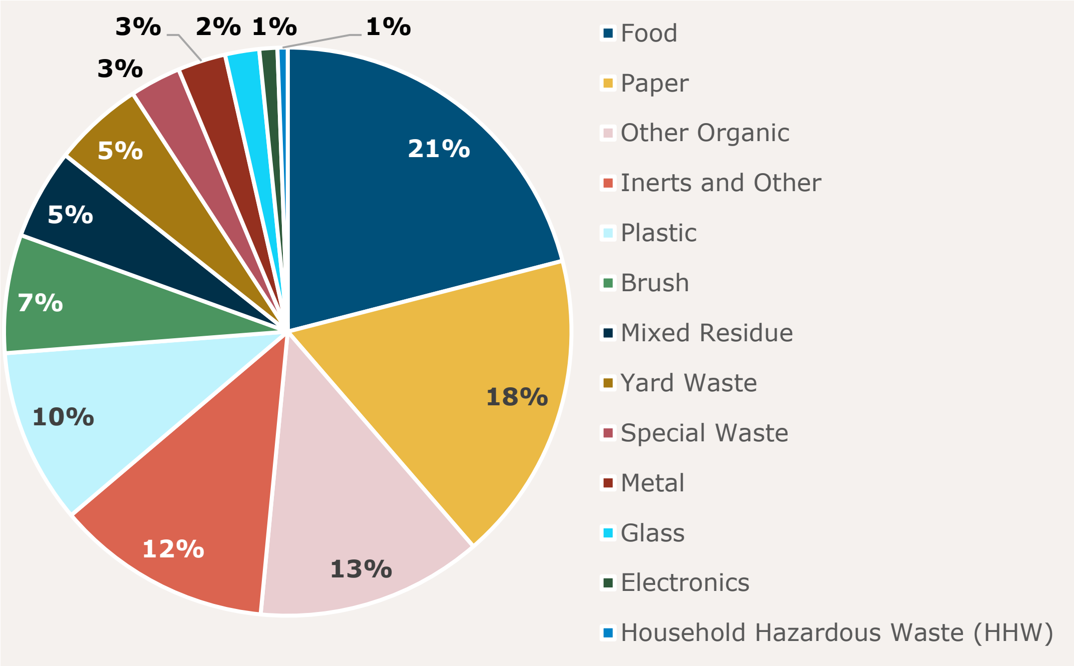

Figure 6. California Department of Resources Recycling and Recovery (CalRecycle) Estimated Single-family Residential Waste Generation by Percent of Waste Type

[37] American Community Survey. (2018). *Selected Housing Characteristics* [2018: ACS 5-Year Estimates Data Profiles]. United States Census Bureau.

In the same study, multi-family homes had a somewhat different waste stream: 25% Food, 24% Paper, 16% Other Organic, 11% Plastics, 6% Inerts and Other, 4% Special Waste, 4% Metals. The remaining 12% is comprised of Mixed Residue (3%), Glass (3%), Yard Waste (3%), Electronics (2%), and Household Hazardous Waste (<1%) (Figure 7).

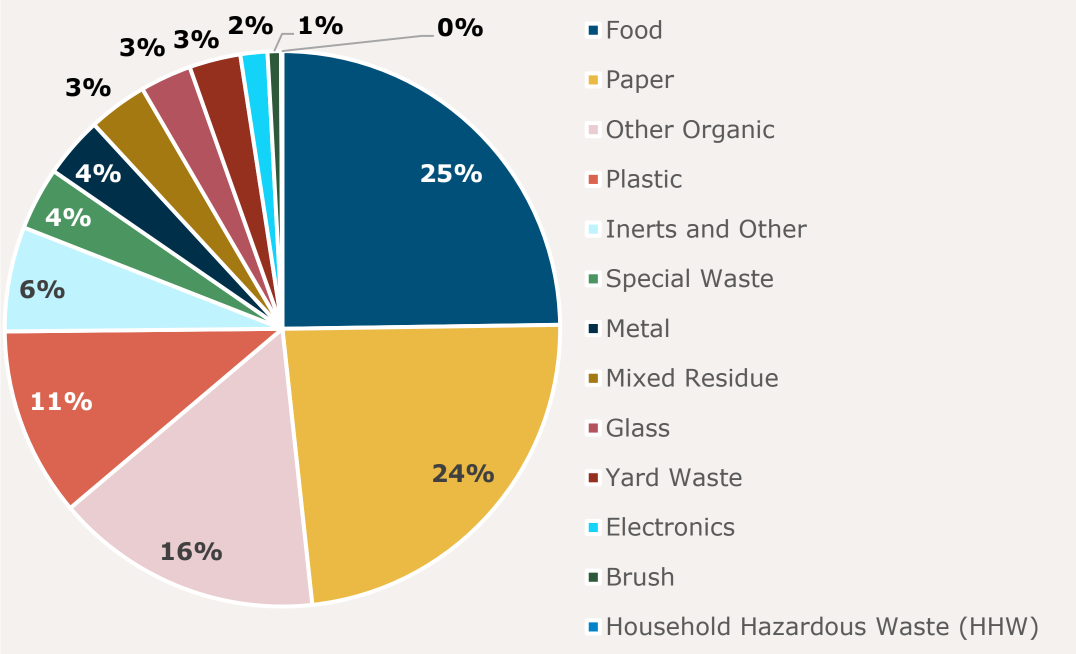

Figure 7. California Department of Resources Recycling and Recovery (CalRecycle) Estimated Single-family Residential Waste Generation by Percent of Waste Type

Commercial Generation

Turning our attention to businesses, to get a sense of employment in the region, we reviewed the top five commercial sectors in the region by employment, according to the latest employment numbers from the Texas Workforce Commission (TWC) in 2018:

1) Educational Services,
2) Accommodation and Food Services,
3) Health Care and Social Assistance,
4) Management of Companies and Enterprises, and
5) Retail Trade (store).

To understand how businesses generate waste, we looked at the waste produced by all commercial sectors, not just the top five. We were able to roughly approximate the types of waste generated by these commercial enterprises to not only understand who is generating waste, but what types of waste they are generating. We calculated this using an EPA table of commercially produced waste. This is the same method we used for Volume II, Section III.A, Tables III.A.II. Commercial Waste Generation and III.A.III. Industrial Waste Generation. The waste products generated by commercial entities in the region as a percentage of total weight in 2018 are as follows: 73% Construction and Demolition waste, 11% Paper, 10% Organics (food, leaves, grass, etc.), 3% Plastics, 2% Metals, and the remaining 2% is comprised of Brush, Glass, Hazardous, Textiles, Electronics, Bulk, Household Hazardous Waste and Other (Figure 8).

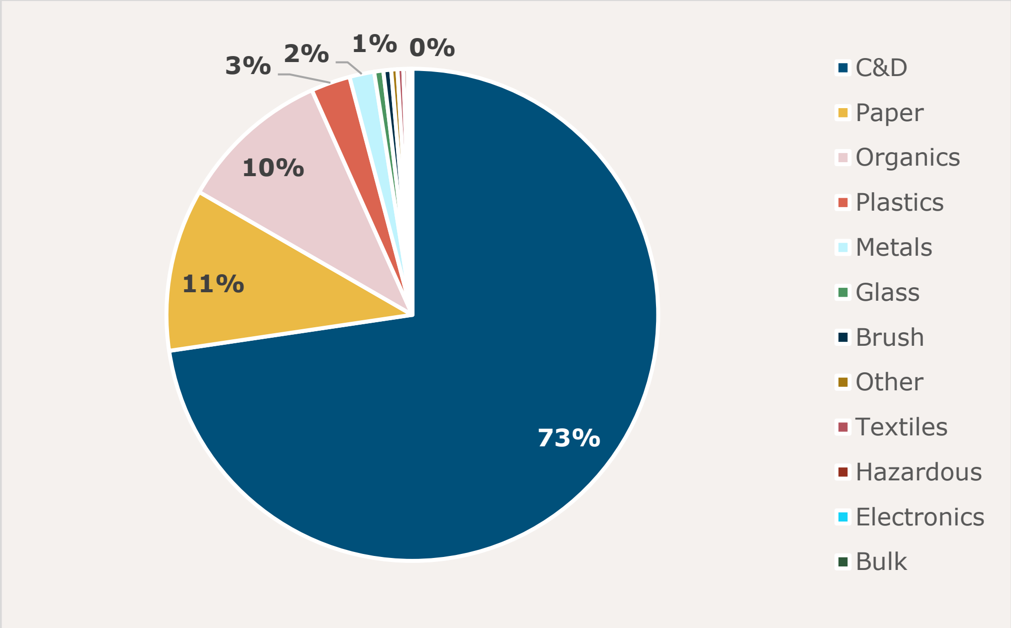

Figure 8. Estimated Commercial Waste Generation by Percent of Waste Type (tons)

Solid waste management typically deals with tonnages (which can affect transport and pricing), but it is also important to understand volume because it affects landfill capacity. We have provided the same breakdown of commercially generated waste products by volume: 41% Construction & Demolition waste, 32% Paper, 10% Plastics, 10% Organics, 2% Metals, 1% Brush, and the remaining 3% is comprised of Textiles, Bulk, Electronics, Glass, Household Hazardous Waste, and Other (Figure 9).

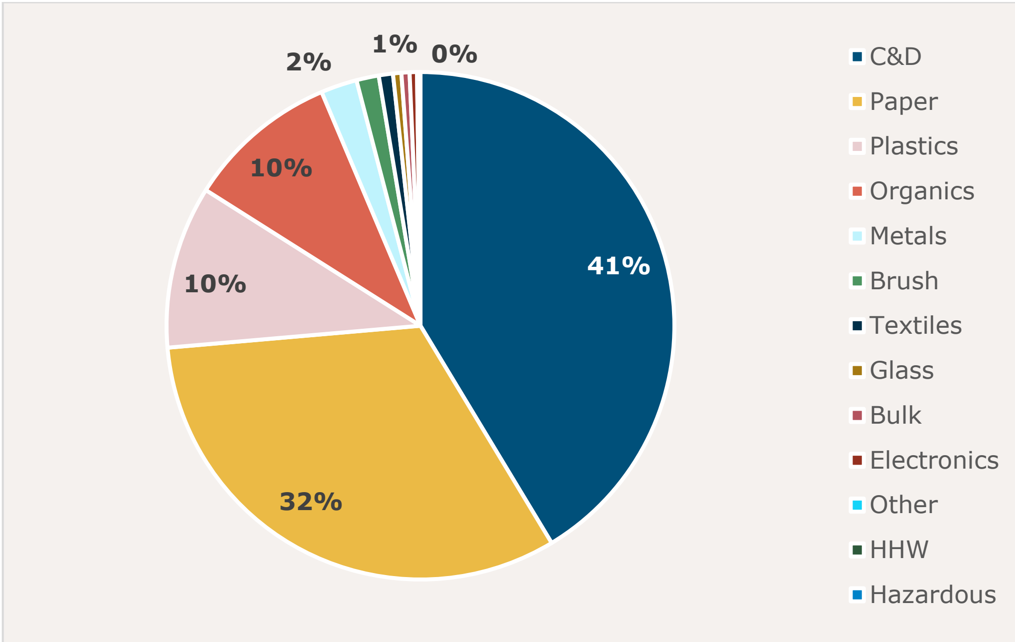

Figure 9. Estimated Commercial Waste Generation by Percent of Waste Type (volume)

INDUSTRIAL GENERATION

To get a sense of the industrial sector—the third and final category—below are the top five industrial sectors in the region by employment, according to the TWC:

1. Agriculture, Forestry, Fishing and Hunting,
2. Mining, Quarrying, and Oil and Gas Extraction,
3. Manufacturing (food, beverage, tobacco, leather, apparel, textile),
4. Manufacturing (metal, machinery, computer, electrical transportation, misc.), and
5. Manufacturing (wood, paper, printing, plastic, chemical, nonmetallic, petroleum, coal).

We used the same type of waste conversion that was performed for the commercial sector in order to determine the largest waste products generated by the industrial sector. By weight they are as follows: 38% Organics, 19% Paper, 17% Brush, 8% Construction and Demolition waste, 7% Metals, 5% Plastics, and the remaining 6% is comprised of Glass, Hazardous (leachate, aqueous waste, benzene, etc.), Textiles, Bulk, Electronics, Household Hazardous Waste, and Other (Figure 10).

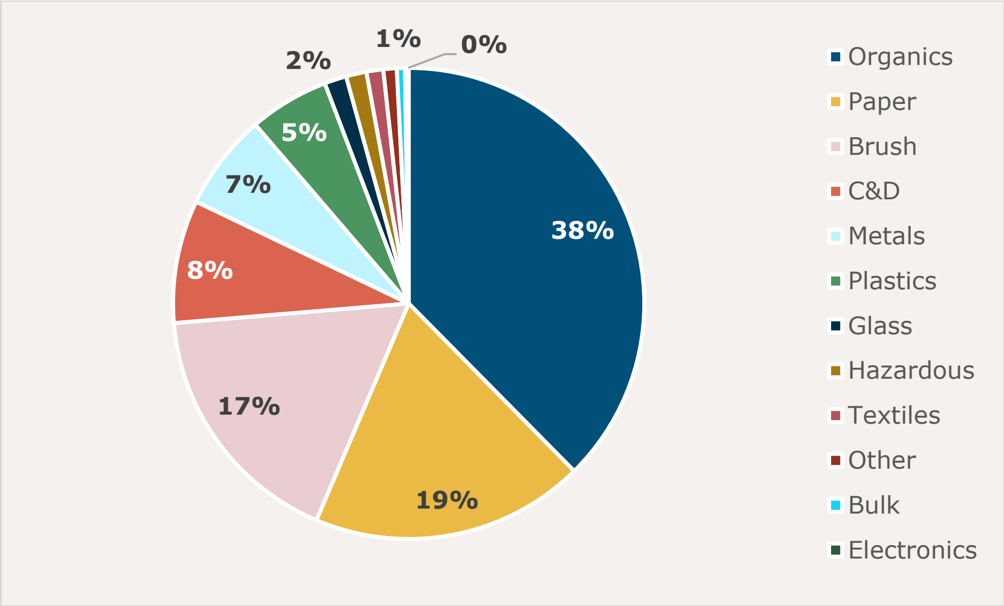

Figure 10. Estimated Industrial Waste Generation by Percent of Waste Type (tons)

We cannot display a breakdown of industrial waste by volume as we did for commercial waste because much of the Hazardous waste is liquid, and the conversions were not available.

Planned

To describe "planned" or expected generation in the region, we forecasted the types and amounts of material likely to be generated from the residential waste stream as well as from each sector of the commercial and industrial economy in the region. Throughout this section of the Attachment, we will substitute planned for words like future or projected.

The results were developed using the second approach detailed in the Methods section of this Attachment. The process for forecasting commercial and industrial waste was the same process we used in the Current section, only extrapolated into the future using employment projections. We offer the results of our analysis next, first on residential waste, then commercial waste, and last industrial waste generation.

COMPARISON OF RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL WASTE GENERATION

A projected waste generation comparison was done for the short-range, intermediate range and long-range planning periods.

Table 4 lists the projected amount of waste generated (in tons) for the last year of each planning period.

As is shown in the table, the percent of total waste by each group changes very little throughout the entire plan period.

Table 4: Comparison of Residential, Commercial, and Industrial Waste Generation in Million Tons and Percent

	2027	2032	2042
Residential			
Million tons	0.33	0.35	0.39
Percent	22%	22%	22%
Commercial			
Million tons	1.10	1.20	1.30
Percent	73%	73%	74%
Industrial			
Million tons	0.74	0.76	0.76
Percent	5%	5%	4%
Total (Million tons)	1.50	1.60	1.70

This table means that the region is projected to generate 1.5 million tons of waste in the short-range (2027). That is the total combined waste from all three categories—residents, commerce, and industry. Individually, residents are forecast to generate 327 thousand tons, commercial enterprises 1.1 million tons, and industrial enterprises 74 thousand tons of solid waste. To be clear, these raw numbers are estimates only. They are to give a sense of the scale of the waste in the region, help compare waste across categories, and give insight into where better reporting data is needed.

The percent contribution of each group is shown in Figure 11. This is the 2027 projection. It is clear to see 73% of projected waste will be commercial, 22% residential, and 5% industrial.

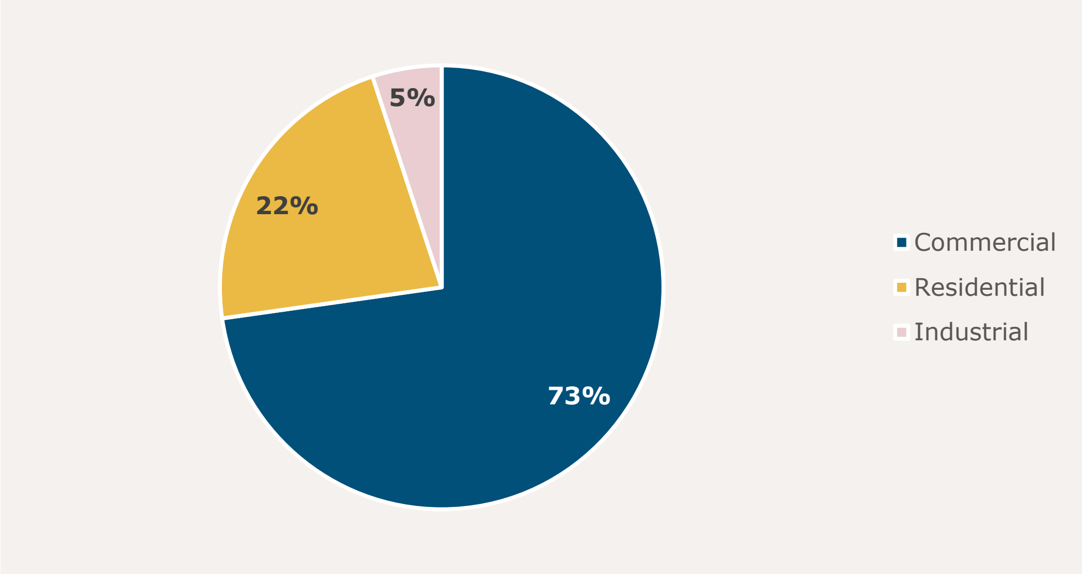

Figure 11. Projected Percent of Waste Generated by Commercial, Residential, and Industrial in 2027

RESIDENTIAL GENERATION

Due to limited residential waste generation projections, we were unable to describe any changes to the *makeup* of residential waste in the future. As a result, the assumption to be made is that the composition of future residential waste will not differ from its current composition. For more information, see Volume II, Section III.C, Table III.C.I. Current Solid Waste Management Activities in the Region.

Projected residential waste generation *amounts* were done for the short-range, intermediate range and long-range planning periods.

Short-Range. In the short-range, we estimated that annual residential waste generation between 2018 and 2027 will increase by 18%. 327 thousand tons of residential waste were forecasted to be generated. This is different from the amount calculated in Volume II, Section III.A, Table III.A.I. Residential Waste

Generation, where 394 thousand tons were forecasted and an 11% increase during this time frame. This was a result of using different methods to calculate waste generation. This will apply to every waste generation number we present in this section. We believe the generation numbers given here are more reliable than those given in Volume II, Attachment A. Demographic Information, the reasons for which will be explained in the Discussion section.

Intermediate Range. We estimated that annual residential waste generation between 2027 and 2032 will increase by 6%. In 2032, 348 thousand tons of residential waste were forecasted to be generated.

Long-Range. We estimated that annual residential waste generation between 2032 and 2042 will increase by 12%. In 2042, 388 thousand tons of residential waste were forecasted to be generated.

COMMERCIAL WASTE GENERATION

Projected commercial waste generation was done for the short-range, intermediate range and long-range planning periods.

Short-Range. Although Educational Services will be the largest employer, it will not be the largest producer of waste. In fact, Construction will be the largest waste producer and sixth largest employment sector.

The Construction industry will account for nearly 75% of commercial waste when calculated by weight, and 49% by volume. The primary waste product of the construction industry in this region is construction and demolition waste (C&D). The C&D waste in the region is composed of concrete (63%), asphalt (15%), and wood (7%).

The next largest commercial generator of waste will be Retail (store) accounting for approximately 7% of the region's waste, and 16% by volume. Although the fifth most employed sector, Retail Stores will produce an outsized amount of waste. Waste discarded by the retail sector is mostly composed of paper (46%), organics (39%), and plastics (8%).

The third largest producer of waste will be the Accommodation and Food Services sector, accounting for 6% of the region's commercial waste by weight, and 10% by volume. The types of waste disposed by this business activity is organics, mostly food (45%), followed by paper (28%), and plastics (11%).

Including all commercial enterprises in the region, the largest waste types by weight, as a percentage of the total commercial waste, are projected to be roughly:

1. C&D (73%)
2. Paper (11%)
3. Organics (10%)
4. Plastics (3%)
5. Metals (2%)
6. Glass (1%)
7. Brush (1%)
8. Other (<1%)
9. Textiles (<1%)
10. Other (<1%)

Intermediate Range. Commercial waste of all types in the region is projected to grow. Generation of compostable and recyclable materials will increase most rapidly.

Construction and demolition waste, paper products, and organics are forecasted to remain the top three largest products of commercial waste by weight.

Although the difficulty of forecasting waste generation beyond ten years becomes increasingly difficult, a notable change occurs in the Services industries where growth is projected to be highest. As a result, generation of compostable and recyclable products such as food, cardboard, composite paper, and plastic trash bags are expected to increase most.

The sectors of commercial waste expected grow below the average growth rate are centered in public administration and government services.

Long-Range. In the last 10 years of the 20-year plan, commercial waste of all types in the region is projected to grow. Moreover, the population of the region is expected to grow about 5.5% from 2032 to 2042, an indicator of increased waste generation and disposal.

The Services industries are slated to grow more rapidly than any other sector. The waste streams from those enterprises are principally compostable and recyclable material (paper, organics, plastics). Therefore, generation of compostable and recyclable materials will increase most rapidly during this time period.

INDUSTRIAL GENERATION

Projected industrial waste generation was done for the short-range, intermediate range and long-range planning periods.

Short-Range. Although the Agriculture, Forestry, Fishing, and Hunting industry will be the third largest employer, it will be in fact the largest producer of waste, accounting for nearly 61% of waste by weight. The primary waste product of the Agriculture, Forestry, Fishing, and Hunting industry in this region is mostly organics (food, leaves, grass), paper (cardboard), brush (pruning and trimmings), and construction and demolition waste (wood, pallets, crates, rock, soil, fines).

The next largest industrial generator of waste will be Manufacturing, accounting for approximately 34% of the region's waste. Waste disposed of by the manufacturing process is varied. The largest amount of waste, by weight, is categorized as hazardous. The next largest waste stream is metals, followed by paper.

The third largest producer of industrial waste will be Mining, Quarrying, and Oil and Gas Extraction, accounting for 6% of the region's industrial waste. The types of waste disposed by this industrial activity are organics, paper products, brush, and construction and demolition waste.

Including all commercial enterprises in the region, the largest waste types by weight, as a percentage of the total commercial waste, are projected to be roughly:

1. Hazardous (29%)
2. Organics (22%)
3. Paper (16%)
4. Metals (10%)
5. Brush (9%)
6. C&D (7%)
7. Plastics (4%)
8. Glass (1%)
9. Textiles (1%)
10. Other (1%)

Intermediate Range. Industrial waste of all types in the region is projected to grow. Generation of compostable and recyclable materials such as paper, organics, and plastics will increase most rapidly.

Hazardous waste, organics, and paper products and are forecasted to remain the top three largest products of industrial waste by weight.

A notable change occurs in the Manufacturing industries where growth is projected to be highest. As a result, generation of hazardous materials and metals are expected to increase most.

The sector of industrial waste expected grow below the average growth rate is Agriculture, Forestry, Fishing, and Hunting.

Long-Range. The population of the region is expected to grow about 5.5% from 2032 to 2042, an indicator of increased waste generation and disposal.

The Manufacturing and Mining industries are slated to grow more rapidly than any other sector. The waste streams from those enterprises are principally hazardous materials, metals, and recyclable material (paper, organics, plastics).

SOURCE SEPARATION

The results of our efforts to understand current and planned source separation activities are presented in this section separately.

Current

The 13 waste type categories identified by CalRecycle, based on the services offered to residents of College Station, can be separated into 5 different streams: Recycling, Trash, Brush/Yard Waste, Bulky, and Problematic (Table 5). For each of these streams, we found the total percentage of each category.

Table 5. Source Separation Example for the City of College Station

Waste Type	Waste Type Percent of Generation	Separation Category	Separation Category Percent of Generation
Paper	18%	Recycling	33%
Plastic	10%		
Metal	3%		
Glass	2%		
Food	21%	Trash	51%
Other Organic	13%		
Inerts and Other (primarily C&D)	12%		
Mixed Residue	5%		

Waste Type	Waste Type Percent of Generation	Separation Category	Separation Category Percent of Generation
Brush	7%	Brush/Yard Waste	12%
Yard Waste	5%		
Special Waste (primarily bulky waste)	3%	Bulky	3%
Electronics	<1%	Problematic	2%
Household Hazardous Waste	<1%		

Note: Due to rounding, percentages will not add up to exactly 100%.

Without considering source reduction or reuse, members of a typical household in College Station could, conservatively, divert more than 40% of the waste they generate by properly separating their recyclables, brush, and yard waste.

Planned

There are no known planned changes to source separation at this time.

LOGISTICS

Logistics is a category of activities which includes *Collection, Handling,* and *Storage.* This category is not part of the original form but has been included to group similar activities and simplify the solid waste management process at a high level.

Collection

It is important to understand, before presenting our findings, exactly what the numbers we have presented represent. When we give a percentage that reads, for example, 63% of people in the region have access to city provided curbside Trash collection, that is the percent of the total population of residents that live in a municipality that has municipal access to curbside collection. In other words, 63% of people live in a location in which there is an ordinance or other public information indicating availability of service. This figure does not represent whether these residents may opt-in to a given service or if it is compulsory.

This then leaves open the question of what the remaining 37% figure represents. It would not be true to say 37% of the population does not have curbside trash collection. Rather, 37% of people in the region live in an area of the COG where they are personally responsible for managing their solid waste and, depending on their location, may choose to contract with a private hauler, burn or bury their waste.

In summary, the results we provide in this section represent the percent of people for whom their city or town provides for and communicates about access to curbside collection services.

CURRENT

The results of our analyses are organized by curbside collection and drop-off collection.

Curbside Collection

We developed a chart to summarize the data gathered from our internet survey of city-provided solid waste collection services (Figure 12). This chart shows the percent of people in the region who have access to city-provided curbside collection for six types of waste including trash, brush, bulky waste, recycling, yard waste, and organics.

As a reminder, it is not known whether the remaining percentage of residents (shown in yellow in the chart) have access to curbside collection services.

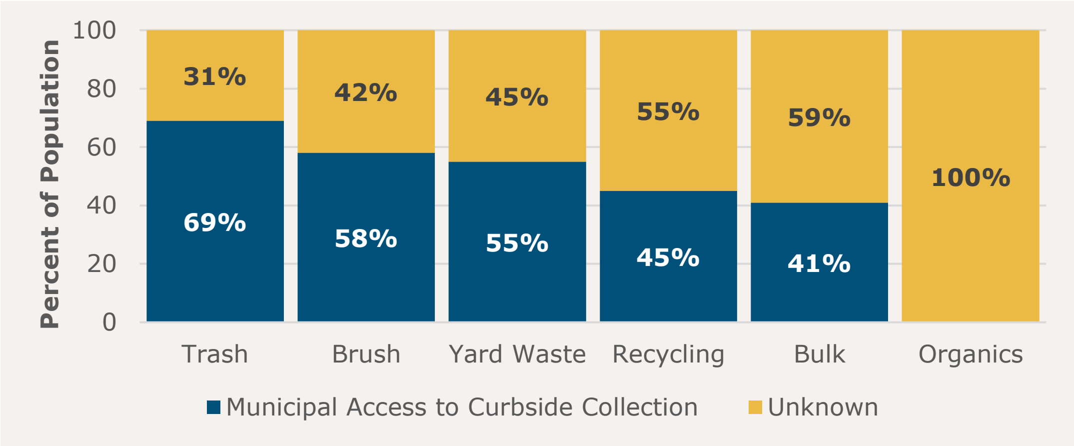

Figure 12. Estimated Percent of Population with Access to City-Provided Curbside Trash, Brush, Bulk, Recycling, Yard Waste, and Organics Collection

To further contextualize the results of our internet survey, we have also combined the results with the results of our source separation analysis to compare the significance of a given waste stream with the relative availability of communicated curbside access. Notably, organics represents the second largest expected waste in residential waste and is also expected to have the least access to curbside collection.

Table 6. Comparison of Source Separated Waste Amounts as a Percent and Curbside Availability for Single Family Homes (Example based on City of College Station)

Separation Category	Separation Category Percent of Generation	Curbside Availability Percentage
Trash	51%	69%
Brush/Yard Waste*	12%	*Brush:* 58% *Yard Waste:* 55%
Recycling	33%	45%
Bulky	3%	41%
Problematic	2%	Unknown

*While City of College Station collects brush and yard waste as one waste stream, other cities in the region further separate these waste types.

Drop-off Collection

We developed an extensive database of all the existing waste-related facilities in the region. This was done to provide insight into the extensive network of facilities involved in the solid waste pipeline. The entire list is presented in the addendum to this attachment (Table 18). We considered any facility that accepts solid waste drop-offs to participate in drop-off collection.

Drop-offs in the region occurred at landfills, transfer stations, citizens collection stations, and resource recovery centers.

There were 38 facilities in 2021 that accepted drop-offs, and another 10 facilities that did not publicly list whether they accept drop-offs.

PLANNED

Curbside Collection

Many collection services are privately run and so details about their collection services and planning are limited. There are no known planned changes at this time.

Drop-off Collection

The database of planned waste facilities in the region is presented in addendum to this attachment (Table 19).

The are no known planned changes at this time.

Handling

The results of our efforts to understand current and planned handling activities are presented here separately.

CURRENT

We developed an extensive database of all the waste facilities in the region to try to validate the aspects of waste handling in the region. This was done to provide insight into the extensive network of facilities involved in the solid waste pipeline The entire list is presented in the third addendum in Table 18.

In addition to the list of facilities, we developed a list of all haulers expected to handle waste in the region.

We considered all haulers that collected waste and all facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste to perform handling.

Handling was done at 50 facilities and by 14 haulers in the region in 2021.

Critically, data are not available to characterize the total amounts of waste that were handled or the capacity of these facilities or haulers.

PLANNED

The database of planned waste facilities in the region is presented in the addendum of this attachment (Table 19).

There are no known planned changes at this time.

Storage

The results of our efforts to understand current and planned storage activities are presented here separately.

CURRENT

We developed an extensive database of all the waste facilities in the region to try to validate the aspects of waste storage in the region. This was done to provide insight into the extensive network of facilities involved in the solid waste pipeline The entire list is presented in the third addendum in Table 18. We considered any facility that stores waste before its final disposition, whether that be disposal or recovery.

All facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste are considered storage facilities.

There were 50 facilities that stored waste in 2021.

Critically, data are not available to characterize the total amounts of waste that were stored, the length of storage, or total storage capacity for the facilities.

PLANNED

The database of planned waste facilities in the region is presented in the addendum of this attachment (Table 19).

There are no known planned changes at this time.

PROCESSING

Transportation

The results of our efforts to understand current and planned transportation activities are presented here separately.

CURRENT

We developed an extensive database of all the waste facilities in the region to try to validate the aspects of waste transportation in the region. This was done to provide insight into the extensive network of facilities involved in the solid waste pipeline. The entire list is presented in the addendum of this attachment (Table 18). We considered any facility that transports waste before its next stage as transportation.

Transportation in the region was done by haulers and occurred at transfer stations, citizens collection stations, and tire transporters.

There were 37 entities that transported waste in 2021. In the region there were 14 haulers, 2 transfer stations, 1 low volume transfer station, 29 citizens collection stations, and 5 tire transporters in the region.

The EPA estimates residents should be no more than 34 miles round-trip from a disposal facility. Otherwise, an intermediate facility should be available. Therefore, we evaluated the distance between where waste is generated and where it is disposed. About 65% of the region's population is within 17 miles one-way of a landfill. Of the remaining 35%, less than 1% is not within 17 miles one-way of a transfer station or other drop-off location (Table 7).

Table 7. Population Proximity to Waste Disposal Transportation Network

Location Type	Population within 17 Miles (count)	Population within 17 Miles (percent)
Landfills	228,956	64.9%
Transfer Stations	48,827	13.8%
Other	73,156	20.7%
No Location	1,659	0.5%
Total	352,598	100%

PLANNED

The database of planned waste facilities in the region is presented in the fourth addendum in Table 19.

There are no known planned changes at this time.

Treatment

The results of our efforts to understand current and planned treatment activities are presented here separately. There are several different types of processors that perform treatment, including those who process liquid waste, scrap tires, compost, and medical waste.

CURRENT

There were 7 facilities that processed or treated solid or liquid waste in the region in 2021 according to TCEQ-provided processor/treatment data and scrap tire facility data.

The region had 4 facilities that treated solid waste (excluding tires), and 2 facilities that treated liquid waste. These include 2 compost facilities, 1 landfill, 1 transfer station that treated waste, and 2 liquid waste processors.

Table 8. Active Waste Treatment Facilities in 2021

Permit	Facility Name	Facility Type	Waste Type	County
47043	BRAZOS VALLEY RECYCLING	5RC – Composting Facility	Solid	Brazos
42003	BRYAN COMPOSTING FACILITY	5RC – Composting Facility	Solid	Brazos
2292	TWIN OAKS LANDFILL	1 – Type I Landfill	Solid	Grimes
40018	CITY OF BRENHAM TRANSFER STATION FACILITY	5TS – Transfer Station	Solid	Washington
43026	STILL CREEK LIQUID WASTE PROCESSING FACILITY	5GG – Liquid Waste Processor	Liquid	Brazos
2381	L&G ENVIRONMENTAL LLC	5GG – Liquid Waste Processor	Liquid	Washington

Additionally, some scrap tire storage facilities are processing facilities based on their registration data. There was 1 scrap tire processor in the region. Data related to the number of tires this processor treated was unavailable.

Table 9. Active Scrap Tire Processor Facilities in 2021

Registration	Facility Type	Facility Name	County
RN110366135	Processor; Recycler	HOWDY ENTERPRISE	Burleson

Processing facilities reported using two methods to treat different waste streams, including autoclave incineration and chemical disinfection. While other treatments may have been used, there were no available data to describe them.

Of the facilities that treated solid waste, autoclave incineration was used to treat the most tons of solid waste (Table 10). Tire treatment volumes were not available.

Table 10. Solid Waste Treatment Types by Amount (tons)

Treatment Type	Amount (tons)
Autoclave	12,411
Chemical Disinfection	6,844
Chipping/Grinding	0
Composting	0
Digestion	0
Incineration	0
Other	0
Total	**19,255**

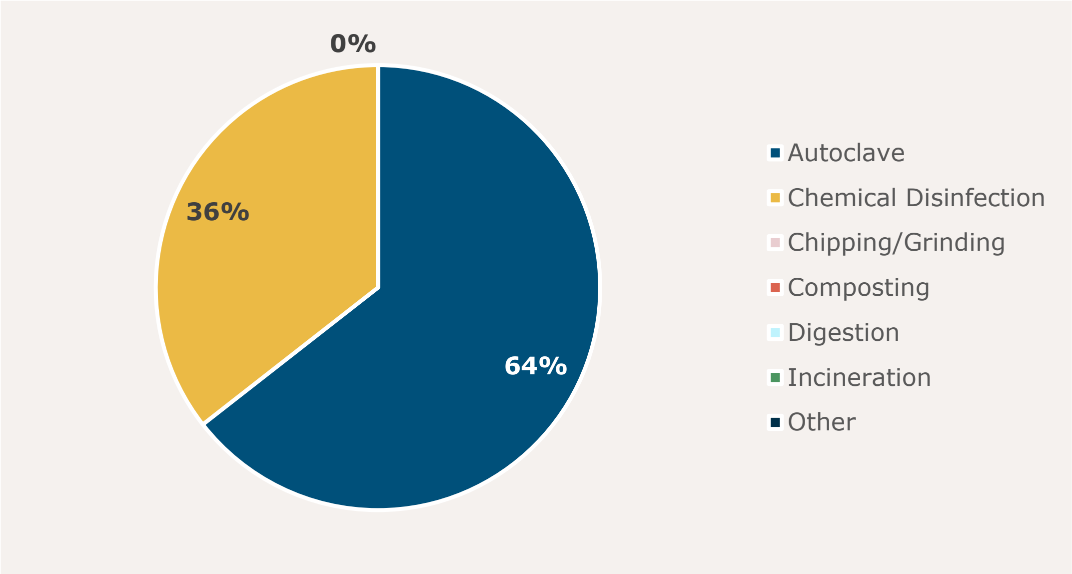

Figure 13. Solid Waste Treatment by Percent Tons of Treatment Type

Of the facilities that treated liquid waste, grease was the most treated by tons (Table 11).

Table 11. Liquid Waste Treatment Types by Amount (tons)

Type	Amount (tons)
Grease	7,270
Septage	2,034
Grit	726
Non-Hazardous Industrial Waste, Class 1	0
Non-Hazardous Industrial Waste, Class 2	0
Sludge	0
Other	0
Total	10,030

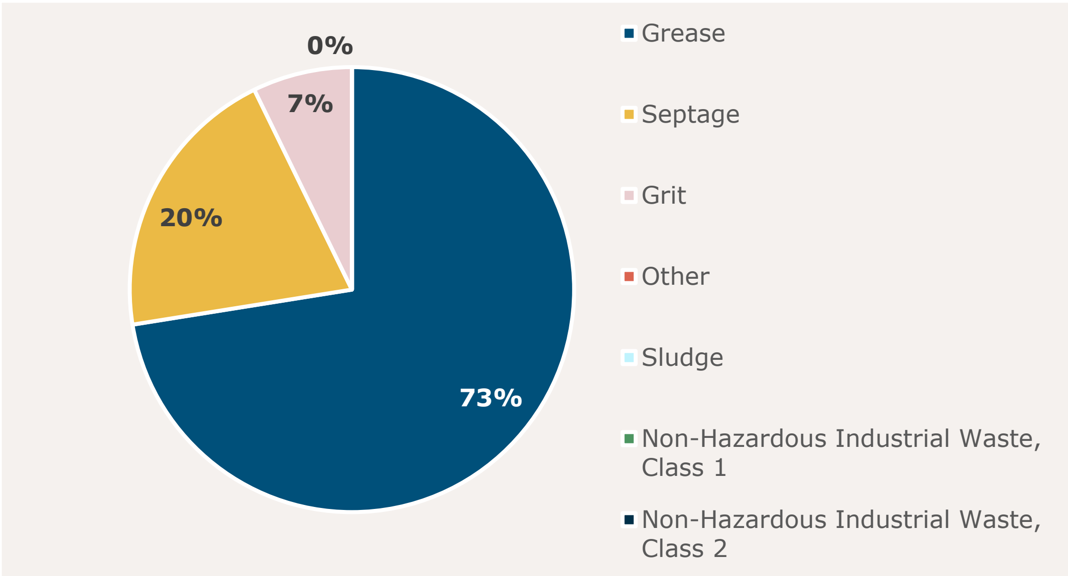

Figure 14. Liquid Waste Treatment by Percent Tons of Treatment Method

PLANNED

The database of planned waste facilities in the region is presented in addendum to this attachment in Table 19.

There are no planned changes to treatment at this time.

Resource Recovery

The results of our efforts to understand current and planned resource recovery activities are presented here separately.

CURRENT

We developed an extensive database of all the waste facilities in the region to try to validate all the aspects of resource recovery in the region. This was done to provide insight into the extensive network of facilities involved in the solid waste pipeline. The entire list is presented in the addendum of this attachment, in Table 18. We considered any facility that diverts waste from the landfill as a resource recovery facility, including some tire handlers and material recovery centers. We also included landfill gas recovery sites, though they do not actually divert materials.

There were 11 facilities that engaged in resource recovery as of 2021. There were 2 compost facilities, 1 landfill that diverted solid waste, 1 transfer station that diverted solid waste, 6 recycling and material recovery facilities, and 1 tire recycler. There may be other facilities that also participate in resource recovery but data in this area was unreliable. An example of this may be a citizens collection station that accepts source separated material. But, as we mentioned previously, data about recycling tonnage is not available for the vast majority of facilities.

PLANNED

The database of planned waste facilities in the region is presented in the addendum of this attachment in Table 19.

There are no known planned changes to resource recovery at this time.

DISPOSAL OF SOLID WASTE

The results of our efforts to understand current and planned disposal activities are presented here separately.

Current

In this section, we will present where waste is disposed in the region, the waste that was disposed in the landfills, and detail the capacity remaining in those landfills.

In 2019, disposal occurred at 1 landfill in the region (Figure 15). The landfill was of one type:

- **Type I landfills**
  There is one (1) Type I landfill which may accept all types of municipal solid waste and some nonhazardous industrial waste,

In addition to this landfill in the region, 7 landfills outside the region are permitted to accept waste from within the region. Similarly, the 1 regional landfill is permitted to accept waste generated from outside the region. The volume of waste deposited in a landfill from other regions is unknown.

In 2019, a total of 412 thousand tons of different waste types were disposed in the region's landfill (Figure 15). It is important to note here that the amount of material disposed represents actual waste disposed and may differ significantly from the estimated volume of waste generated because of different sources and calculation methods.

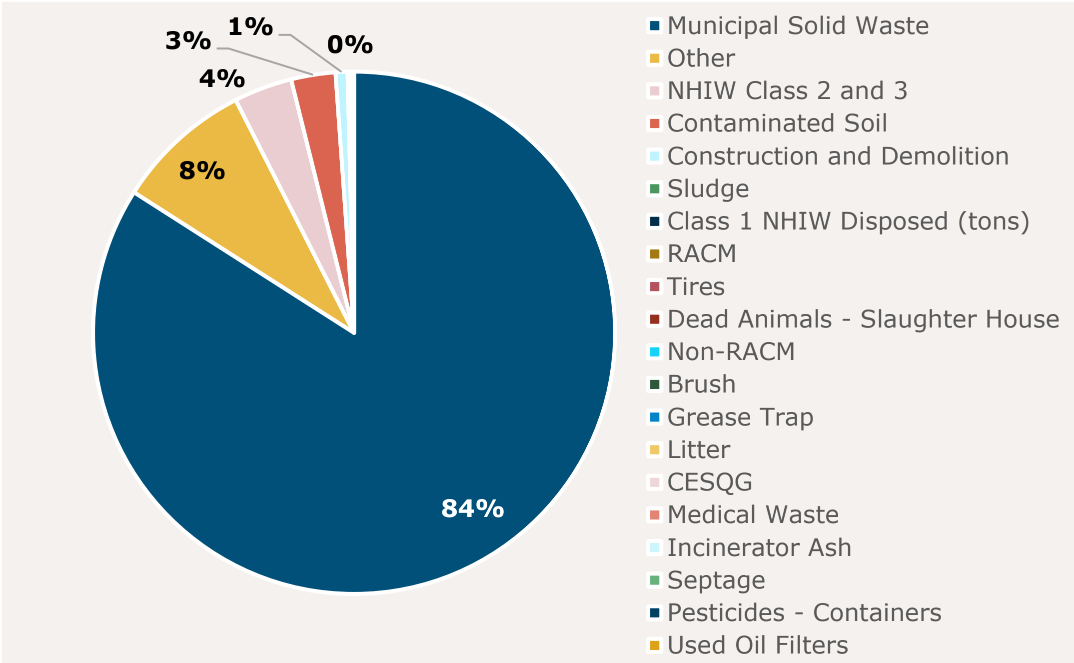

Figure 15. Materials Disposed in Regional Landfills by Percent Tons of Type

Most of the waste disposed of in the landfills was classified as Municipal Solid Waste (84%).

TCEQ reported that as of 2019 there were 61 years remaining in the region's landfill.

Table 12. Landfills and Remaining Capacity (2019)

Permit	Landfill Name	Landfill Type	County	Remaining Tons	Remaining Years
2292	Twin Oaks Landfill	I	Grimes	24,941,235	61

It is worth considering how the region's landfill capacity estimates change over time because unexpected changes or disaster events can dramatically affect the expected life of a landfill. Each landfill operator creates their own estimate, and the procedures for these estimates may result in variance between methods.

To get a sense of these effects, we compared the remaining years reported for the landfill in 2019 and 2014 (Table 13). We would expect the Remaining Years to decrease by approximately 6 years since that is the amount of time elapsed between the data points. The Twin Oaks Landfill had 61 remaining years in 2019 and 77 years in 2014. The landfill reported a decrease of 16 years in a span of 6 years. If that pattern holds—meaning the landfill capacity decreases at a rate about 2.5 times faster than the landfill had been reporting—then it will be depleted in about 24 years, not 61.

Table 13. Comparison of 2014 and 2019 Landfill Remaining Capacity (2014)

Permit	Landfill Name	Remaining Years (2014)	Remaining Years (2019)	Change in Remaining Years
2292	Twin Oaks Landfill	77	61	16

Planned

There is one planned disposal facility. It is the Brazos Valley Disposal Facility, a Type IV landfill, which has not been constructed. According to TCEQ, the landfill was originally permitted May 23, 2013. The site is currently inactive and as a permitted facility may begin operation or construction in the future. Construction and operation of the Brazos Valley Disposal Facility is anticipated to begin in the Fall of 2022.[38] It will be located in the College Station Extraterritorial Jurisdiction.

Discussion

A discussion of the results of each solid waste activity analysis will be presented in the following sections.

GENERATION

There is no simple way to describe the waste that is generated in the region. Waste is varied and comes in many types and amounts. What we do know is that commercial waste is the largest source of waste in the region, accounting for nearly 73% of all waste generation. Residential waste makes up 22%, and industrial waste contributes very little but tends to be hazardous.

Each critical group—residential, commercial, and industrial—generates different types of waste. Residential waste is mostly food, paper, and other organics. In

[38] The Eagle. (2022, January 31). The Eagle. https://newzgroup.com/TXLegals/2022/93111-2022-01-31_1001.pdf

effect, the waste generated by households is the type of waste that is mostly recyclable or compostable. On the other hand, commercial and industrial waste is primarily created by the Construction and Retail industries, of which the main waste product is classified as Construction and Demolition waste, followed by Paper, and Organics.

Current

Our analysis provided detail into the types of materials that are generated by commercial and industrial activities. This type of accounting can aid policymakers in prioritizing the types, amount, and sources of waste that are suitable for waste reduction, reuse, or diversion. By having an analysis of both solid waste generation rates and composition, decision makers have the first step in linking waste generation with waste diversion (recycling, composting, etc.).

Waste is generated from many sources and at different rates. The waste itself is heterogenous. Our description of waste generation made sense of this complexity by organizing waste generation in the region into levels (region, critical group). We will mimic that organization in this section. Specifically, we will share key takeaways for each level we examined. By the end of the section, the full picture of generation in the region will have emerged.

We began at the highest level which is region-wide generation. This gave us an account of the total amount of waste generated in the region. The result of our analysis was that about 1.3 million tons of waste were generated in 2018. The main takeaway was that waste generation was much greater than waste disposal. Typically, waste generation includes all the materials that were discarded, whether they were recycled, composted, or disposed of in a landfill. The gap between the amount of waste generated compared to what was discarded is complicated. It has to do with many factors, including the methodology we used to arrive at the generation number. We detail this disparity within the larger context of our methodology in a subsequent section called *Limitations of our Approach*.

We then stepped one level down and asked what made up that immense amount of tonnage being generated. To answer we went back to our three critical groups: residential, commercial, and industrial. We learned that waste generation in the region was mostly generated by commercial activities. In fact, about three-quarters of the waste generated came from commerce and about one-quarter came from residences. Industrial waste generation in the region was relatively negligible. A key takeaway is that although these numbers are estimates, they give a sense of the scale of the waste in the region, help compare waste across categories, and give insight into where better reporting data is needed. To that end, we will next compare waste across the categories, or critical groups. The need for better reporting data will be discussed in the next section on *Limitations of our Approach*.

RESIDENTIAL WASTE GENERATION

The *composition* of waste generated by residential households is integral for understanding a region's waste profile. This process of waste characterization helps in planning how to reduce waste, set up recycling programs, and conserve money and resources. So too is the *amount* of waste generated important for understanding the residential group's impact on the overall waste stream.

Three types of wastes make up the majority of the waste produced at residential households. They are Food, Paper, and Other Organic (see definitions of waste types in the Results section). Any waste management program with sights on maximizing waste diversion or minimization ought to account for the outsized effect of these waste types on the residential waste stream. Moreover, the makeup of the Residential waste stream is important when considering waste diversion and reuse programs. After all, most of the waste produced by residents can be recycled or composted.

As it relates to single-family and multi-family homes, we can draw three key takeaways from the data:

1. It is evident from comparing the breakdown in waste products from single- and multi-family homes that there are differences in the types and amounts of solid waste produced by each;
2. Single-family homes have a higher rate of generation than multi-family homes (9.8 vs. 5.31 lbs./dwelling unit/day); and
3. Most of the residential waste generation in the region is produced by single-family homes. These takeaways are important because they help inform where efforts and resources should be applied in service to the region's goals.

COMMERCIAL WASTE GENERATION

Similarly important to understanding the waste profile of the region is the makeup of commercially generated waste. The largest waste products of the commercial group were, by weight, Construction and Demolition waste (C&D), Paper, and Organics. By volume, the top three are C&D waste, Paper, and Plastics.

The makeup of the Commercial waste stream is important for waste management decision making, especially when considering business programs that target recycling and composting. It is also important for the systems and processes that collect, transport, process, and dispose of that waste to account for the composition of the waste.

For further insight, we divided the commercial economy into 19 sectors and analyzed the waste amounts and types produced by each. A takeaway was that the largest sectors of the commercial economy are not the largest generators of waste. As was stated in the Results section, Educational Services was the largest employer but fifth largest waste producer. Construction was the largest waste generator, but sixth largest employer. Such analysis allows solution makers to focus their attention on the sectors contributing most to the waste stream.

The makeup of the current commercial waste stream is also important because it allows for strategic and targeted action upon different types of wastes. By looking at waste generation through this lens, intervention on the entire waste stream of a sector may be considered. Or intervention can be taken on common waste products across multiple sectors. For example, construction site waste includes plastics. Plastic materials generated at construction sites are no different than plastic materials (of the same polymer) that can be found in other municipal solid waste. Precisely because they are the same, the recommendations for how to sustainably manage these materials can be consistent.

INDUSTRIAL WASTE GENERATION

The benefits and takeaways of the analysis we performed for the industrial sector were similar to commercial waste generation. A difference is that the industrial group makes up little of the overall waste stream.

LIMITATIONS OF OUR APPROACH

We used two different approaches to answer questions about generation in the region and complete the generation section of the required table. The constraints of both approaches are detailed in the following sections.

One approach was for residential waste and the other was for commercial and industrial waste. Our first approach, used for residential waste, was straightforward and based on the residential rate of generation. We called it the Generation Rates Methodology. Our second approach, used for commercial and industrial waste, was more sophisticated. We chose it because it gave us detailed information regarding employment within each economic sector and the amounts and types of waste they produce. In the aggregate, it gives us details about where the generation is happening and what changes we can expect in the future. This level of detail is useful for planning. We called this approach the Commercial & Industrial Tables Methodology.

Generation Rates Methodology

Because local generation rates were not available, the waste generated by BVCOG households was assumed to be similar to the waste generated in the landmark waste characterization study from California in 2014. Though it is expected that the waste between California homes and BVCOG homes is similar, there are likely differences that could be better understood by more local waste generation studies.

We will take a moment here to further explain the uncertainty in our waste generation totals and expound on the need for better reporting data. By generation totals, we are referring to the overview pie chart (Figure 11) made up of the generation totals of each critical group. As a reminder, these generation totals are estimates we calculated based on an EPA list of waste generation rates by the commercial and industrial groups. To determine residential waste, we used residential rates taken from a waste characterization study undertaken in California. We then totaled the residential, commercial, and industrial groups to get one number representing total waste generation in the region.

The result is that the total tons of waste generated in the region is much greater than the total tons of waste disposed of at landfills. During 2018, 412 thousand tons of waste was disposed of at landfills, according to annual landfill reporting data kept by TCEQ. The gap between the estimated waste generated in the region (1.3 million tons) compared to the waste disposed of at landfills (412 thousand tons) can be explained by many factors. These factors include, but are not limited to, the tonnage of waste diverted away from the landfill predominantly by recycling and composting, waste that was burned or buried, and inconsistent or missing data. Some examples of inconsistent or missing data are the lack of information regarding the amount of waste disposed of landfills outside of the COG, no record of the amount of waste recycled, no rates of generation local to the region, and unreliable data coming from landfills.

It is not clear how much of the difference between waste generated and waste disposed of is explained by some or all these issues. Therefore, we have not focused on the raw totals and have only included them to elucidate data quality issues that might affect regional planning. However, in our estimation, the calculations we performed are still beneficial. We are confident that the ratio of waste generation between categories is useful and should be considered when developing waste management solutions in the region.

Commercial & Industrial Tables Methodology

We used a methodology that allowed us to discover the commercial and industrial waste generated by each sector. This gave us a good idea of the types of waste being produced in the commercial economy and which sectors were producing them. The other methods we considered to complete this section did not give us that type of specificity. However, there are some assumptions built into this way of modeling commercial waste generation. It is important to understand the assumptions and uncertainty inherent in the data that belie the certainty with which we have conveyed the employment and generation numbers. In effect, the commercial waste figures ought to be understood as estimates used to communicate comparisons among the waste types and producers in the region.

Our first assumption was using for this region a nationally averaged waste generation total from the EPA waste table. We do believe, however, there is little downside to this assumption because the underlying data was taken from a waste characterization study from California in 2014. Analysis of the California study confirmed that there is little difference between the waste generated there and other cities and states around the country.[39] Therefore, this is a safe assumption to make.

Secondly, for the purposes of this Attachment, we assumed the waste generated from each profession correlates with its number of employees. The USEEIO model itself makes a similar assumption.

Our third assumption was that waste generation per employee does not change over time. Unfortunately, due to a lack of data, both historical and forward

[39] Meyer, D. E., Li, M., & Ingwersen, W. W. (2020, February). Analyzing Economy-Scale Solid Waste Generation Using the United States Environmentally-Extended Input-Output Model. U.S. Environmental Protection Agency. https://www.sciencedirect.com/science/article/abs/pii/S0921344920301166?via%3Dihub

looking, the most prudent methodological approach was to not change the generation per employee rate as we marched forward in time.

Moreover, our calculated totals, to some degree, suffer from a lack of internal consistency that arises out of our methodology which integrates data from multiple sources (EPA, CalRecycle) at multiple levels of geography (national, state).

We verified that the numbers we presented using this method were rooted in reality, and thus useful for the region to know. We did this by first summing the commercial waste generated by each sector. This gave us the total commercial waste generated in the region over one year. We then compared that total to the same total derived from the Generation Rates Methodology approach. The commercial totals, calculated differently, led to nearly the same result, diverging by only 10%. Such close results from two methods, one using state-wide generation rates (CalRecycle) and the other using national generation rates by employee (USEEIO), buoys confidence in what has been presented in this attachment.

Planned

Our analysis compared the amounts of waste generated by residential, commercial, and industrial groups. We provided detail into the future types of material that are projected to be generated by commercial and industrial activities. This type of accounting can aid policy makers in prioritizing the types, amounts, and sources of waste that are suitable for waste reduction, reuse, or diversion. By having an analysis of both solid waste generation rates and composition, decision makers have the first step in linking waste generation with waste diversion (recycling, composting, etc.).

Future waste, analogous to current waste, will be generated from many sources and at different rates. The waste itself will be heterogenous. The types of waste will be similar to how they are constituted now, there will just be more of it. The largest source of waste in the region will still be from commercial activities. Most of the waste that is generated from households will remain waste that can be recycled or composted.

The amounts of waste projected to be generated was different than in Volume II, Attachment A. In Volume II, Attachment A, we were limited by the structure of the tables. There, we concluded that the residential waste generation was really *total* waste generation, and that the commercial and industrial waste generation figures were imprecise, mostly because it was based on imprecise *disposal* data.

Therefore, we set out to develop better generation estimates in this Attachment using a different formulation and sourced from different datasets. For this reason, the generation figures we present deviate from the prior generation results given in Attachment A. This applies to all three critical groups. We believe these to be a truer representation of generation in the area.

Residential Waste Generation

The *types* of residential waste in 2027 are projected to be similar to 2018. We expect there to be slightly greater proportion of residential waste and slightly less proportion of commercial waste. This is due to a greater projected rise in total population than to the workforce. Furthermore, in the future, waste coming from households will mostly be recyclable and compostable.

As for the *amount* of waste, we project a 18% growth in residential waste generation between 2018 and 2027.

Commercial Waste Generation

Commercial waste is projected to increase throughout the 20-year plan. Though the types of waste will be similar to what is being generated currently, the amount of waste will go up. Because job growth is centered primarily in the Services sectors, waste generated by those sectors is forecasted to increase the most. As a result, the rates of recyclable and compostable waste (plastics, paper, organics) will grow faster than the rates of material typically discarded at the landfill.

The makeup of the future commercial waste stream is important because it allows for strategic and targeted action upon different types of wastes. By looking at waste generation through this lens, intervention on the entire waste stream of a sector may be considered. Or intervention on common waste products across multiple sectors. For example, construction site waste includes plastics. Plastic materials generated at construction sites are no different than plastic materials (of the same polymer) that can be found in other municipal solid waste. Precisely because they are the same, the recommendations for how to sustainably manage these materials can be consistent.

Industrial Waste Generation

Industrial waste is projected to increase throughout the 20-year plan. Though the types of waste will be similar to what is being generated currently, the amount of waste will go up. Because job growth is centered primarily in the Mining and Manufacturing sectors, waste generated by those sectors is forecasted to increase the most. As a result, the rates of Hazardous materials, Metals, and Paper are forecast to grow the fastest.

Other than having different waste products, the same takeaways apply to Industrial waste generation as was written for Commercial waste generation.

LIMITATIONS OF OUR APPROACH

Each of our methods had limitations that are important to contextualizing any conclusions that might be drawn from the results.

Generation Rates Methodology

As was the case in the Current Generation section, because local generation rates were not available, the predicted waste generated by Brazos Valley households in 2028 was again assumed to be similar to the waste generated in the waste characterization study from California in 2014. In terms of the geographic difference, it is expected the waste between California homes and BVCOG homes is similar. In terms of the time difference, it is assumed residential waste generation is similar between 2014 and 2028. Such is the case for two reasons. First, municipal waste generation per capita has changed very little since 2000. This historical record gives confidence that this rate is not liable to change substantially. Second, in reviewing other cities' waste management plans, it is common to project residential waste generation by keeping the current generation rate fixed and scaling the total waste generated by the region's population change. This the same method we used. It should be noted, however, that there is inherent uncertainty in forecasting waste generation, and given these geographic and time-bound constraints, it is appropriate to view these projections as estimates only, subject to shifts in technology. A current and local waste study should be performed for a more accurate assessment of future generation activities.

Commercial & Industrial Tables Methodology

The same limitations that were discussed in the corresponding section of Current Generation apply here.

Though, we ought to say one final point that concerns the uncertainty of long-term projections. Forecasts that stretch beyond five years have a substantial degree of unreliability due to the unpredictability of markets and technology. This is especially the case for our forecasts which tie economic projections to future waste generation. Hence, the data we provide are strictly estimates only. We are confident in our descriptions for base year 2022; but confidence in the predictions for future planning period significantly decreases over time.

Understanding the types and amounts of waste in the region can provide a better understanding of the resources in the region and to identify opportunities for material reduction or recovery. **The region should explore every opportunity to reduce and divert its generated materials, especially in its largest streams.**

In order to better understand its generation and how to divert and reduce it, the region should consider collecting and reviewing its own data to inform decisions.

SOURCE SEPARATION

We looked at source separation in College Station because they have the highest population in the region, but we also assume they have the highest level of service available compared to other cities in the region. Because we expect the other cities to offer fewer services, we also expect that they require a higher amount of source separation into different streams. As the level of separation required increases, we assume it is less likely for residents to participate, so more materials will be disposed of in landfills rather than will be diverted.

Our results offer a broad estimation of the different categories residential wastes must be separated into. However, there are some other common residential items that do not necessarily fit into those categories. These include materials such as:

- Medical waste, which for residents includes things like unused prescriptions,
- Plastic bags,
- Organic items like manures, and
- Tires.

Ideally these waste types would also be separated into unique streams. For example, unused prescriptions could be taken to some drug stores and plastic bags could be taken to some grocery stores. However, it is unlikely that this high level of separation often occurs, especially in cities outside of College Station that may not have the same options available. This likely results in these materials ending up in the trash or otherwise improperly disposed of.

We also did not take into account any reuse activities that could be occurring, and according to the EPA hierarchy, reuse is preferred above recycling.[40] Textiles, which fall into the "other organics" waste type, can be taken to reuse shops or donated instead of thrown away. This would further divert materials from landfills.

Although residents of the City of College Station have access to a high level of service that requires a high level of separation, it is unknown how much separation actually occurs.

While it is entirely possible that residents of College Station could divert 30% of the waste they generate by properly source separating, if brush and yard waste are composted and beneficially reused, residents could divert more than 40% of the waste they generate. Notably, food waste makes up a large percentage of the waste stream that is currently going to landfills in the region. If diversion opportunities for food waste are made available, residents could divert over 60% of the waste they generate. Including reuse opportunities, this figure could increase more.

LOGISTICS

Logistics is a category of activities which includes *Collection, Handling,* and *Storage.* This category is not part of the original form but has been included to group similar activities and simplify the solid waste management process at a high level.

Collection

This section has been separated by the two types of collection: curbside and drop-off.

CURBSIDE COLLECTION

Residents of the region have varying access to curbside collection services depending on the area in which they live. We know that residents of cities have greater access to curbside services than residents living in rural areas. Because data relating to curbside collection was hard to come by for these rural regions,

[40] United States Environmental Protection Agency. (2021, April 15). *Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy*. US EPA. https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy

we do not know whether almost a third of the population has access to curbside trash pickup and whether about 40% – 60% have access to other curbside collection services or not. To bridge the gap of missing data, the COG may encourage cities and counties to provide local collection data, and store that information on a regional data sharing platform. Centralizing the curbside collection data into one regional database allows regional leaders to make informed decisions and minimizes gaps in data in local and regional reports.

The first key takeaway relates to the fact that our results don't distinguish between curbside collection for multi-family housing or single-family housing. Multi-family homes typically experience lower levels of access to recycling services than residents of single-family homes because multifamily properties are commonly treated as commercial businesses, which are often ineligible to receive public recycling services.[41] This means that multi-family homes likely have less curbside collection for Brush, Bulk, Recycling, and Yard Waste. As a result, a limitation that arises in our results is that they overrepresent the actual percentage of people that have their non-trash waste collected curbside. To put it in another way, our statistics likely inflate the number of people with access to curbside collection because of those living in multi-family units.

With that said, using College Station as an example, in theory, 99% of residential waste for residents in single family homes in the city could be picked up curbside because the city offers collection for Trash, Recycling, Brush/Yard waste, and Bulk. Electronics, and Problematic wastes make up the remaining <2% of waste that a resident would have to dispose of. It should be noted that we included Inerts and Other (primarily C&D) (12%) in the Trash total, but C&D likely requires special arrangements and would not be collected curbside. Still, without including C&D, residents could have about 87% of wastes collected curbside.

It is expected that the greater the access to curbside services, because of their convenience, the more likely residents are to participate in responsible waste management. However, contamination of waste streams is a serious concern that can quickly derail curbside collection programs because of cost to mitigate contamination.

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[41] Schwartz, L. (2018, December 7). Moving Forward with Multifamily Recycling. UNC School of Government Environmental Finance Center. https://efc.web.unc.edu/2018/12/07/moving-forward-with-multifamily-recycling/

Because food waste is the largest component of the residential waste stream, the curbside collection of organics represents the greatest opportunity to increase diversion. Looking at successful models in the state could help municipalities offer this service which could improve diversion in the region significantly.

Finally, Texas Administrative Code requires municipalities to provide curbside collection of trash at least weekly. Our results reflect this reality. Outside of city limits though, access is not required. There are known examples in Texas of expansion of this requirement into the Extraterritorial Jurisdiction (ETJ) of municipalities. This expansion could be a positive step that could reduce improper waste management and serve as a model for future expansion of services both regionally and statewide. Though, this requires legislative change.

DROP-OFF COLLECTION

We created a master list of waste facilities in the region in order to get a comprehensive view of waste capabilities in the region. We believe that not only is this the best way using the available data to describe each waste activity in the region, but it may serve as the backbone of any region-wide facility database.

We found that the TCEQ-provided municipal solid waste (MSW) facility data was incomplete for the region. We supplemented that list of facilities by adding in TCEQ NOI facilities and those we found through our internet survey. In this way, we believe the master list presented in the Addendum is a thorough accounting of waste facilities in the region in 2021.

Handling

We created a master list of waste facilities in the region in order to get a comprehensive view of waste handling capabilities in the region. We believe that not only is this the best way using the available data to describe each waste activity in the region but may serve as the backbone of any region-wide facility database.

We found that the TCEQ-provided municipal solid waste (MSW) facility data was incomplete for the region. We supplemented that list of facilities by adding in TCEQ publicly maintained municipal solid waste facilities data and those we found through our internet survey. In this way, we believe the master list presented in the Addendum is a thorough accounting of waste facilities in the region in 2021.

We did not provide the type of sophisticated analysis for waste handling that we did for generation or disposal. We believe such analysis of waste handling would be unjustified. Moreover, TCEQ does not include any data about handling in their data. For this section on handling, we presented only the name and type of each facility, its location, and whether it accept drop-offs. For drop-offs, we noted which facilities definitively accepted drop-offs and for which facilities that was unknown.

TCEQ does not designate which facilities engage in the activity they call handling. All haulers that collected waste and all facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste were considered handlers. Given these considerations we believe we have presented the best available description of waste handling in the region.

Storage

We created a master list of waste facilities in the region in order to get a comprehensive view of waste capabilities in the region. We believe that not only is this the best way using the available data to describe each waste activity in the region but may serve as the backbone of any region-wide facility database.

We found that the TCEQ-provided municipal solid waste (MSW) facility data was incomplete for the region. We supplemented that list of facilities by adding in TCEQ publicly maintained municipal solid waste facilities data and those we found through our internet survey. In this way, we believe the master list presented in the Addendum is a thorough accounting of waste facilities in the region in 2021.

We did not provide the type of sophisticated analysis for waste storage that we did for generation or disposal. We believe such analysis of waste storage would be unjustified. Moreover, TCEQ does not include any data about storage in their data. Therefore, we did not provide the type of detailed analysis that we do in the upcoming treatment section. For this section on storage, we presented only the name and type of each facility, its location, and whether it accept drop-offs.

TCEQ does not designate which facilities engage in the activity they call storage. All facilities that accepted drop-off materials, transferred waste, processed waste (including resource recovery), or disposed of waste were considered storage facilities. Given these considerations, we believe we have presented the best available description of waste storage in the region.

PROCESSING

Processing is a category of activities which includes *Transportation, Treatment,* and *Resource Recovery.* This category is part of the original form, but also used to group similar activities and simplify the solid waste management process at a high level.

Transportation

We created a master list of waste facilities in the region in order to get a comprehensive view of waste capabilities in the region. We believe that not only is this the best way using the available data to describe each waste activity in the region but may serve as the backbone of any region-wide facility database.

We found that the TCEQ-provided municipal solid waste (MSW) facility data was incomplete for the region. We supplemented that list of facilities by adding in TCEQ NOI facilities and those we found through our internet survey. In this way, we believe the master list presented in the Addendum is a thorough accounting of waste facilities in the region in 2021.

We did not provide the type of sophisticated analysis for waste transportation that we did for generation or disposal. We believe such analysis of waste transportation would be unjustified. Moreover, TCEQ does not include in their data any tonnages related to the transportation of waste by each facility or the region as a whole. Therefore, neither did we provide the type of detailed analysis that we do in the upcoming treatment section. For this section on transportation, we presented only the name and type of each facility, its location, and whether it accept drop-offs.

TCEQ does not designate which facilities engage in the activity they call transportation. We considered transfer stations, citizens collection stations, and tire transporters to be transportation facilities. Given these considerations we believe we have presented the best available description of waste transportation in the region.

Proximity to disposal facility network. The EPA[42] estimates residents should be no more than 34 miles round-trip from a disposal facility. Otherwise, an intermediate facility should be available. This would not only help residents who need access to drop-off locations, but it would also make large-scale disposal more affordable because of the consolidation of curbside collection efforts to a

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[42] United States Environmental Protection Agency. (2002, June). *Waste Transfer Stations: A Manual for Decision-Making.* archive.epa.gov. https://archive.epa.gov/epawaste/nonhaz/municipal/web/pdf/r02002.pdf

network of integrated facilities. At present, the region's facilities are well-situated for these purposes. However, this analysis did not consider capacity of facilities. Moreover, as population grows, it will be important to watch where the growth occurs to ensure capacity of facilities or the potential for new intervening facilities. This analysis also assumes waste is taken to the nearest location by straight line distance. Incorporating the road network's impact on this analysis would likely reduce the total population within 17 miles of a location based on drive distance rather than straight line distance. Haulers in the region may also own landfills within the region or nearby outside the region. In some cases, it may be economically beneficial to those businesses to drive further distances to dispose of waste they have collected rather than drop it at a competitor's landfill, for example. Finally, with more data about other drop-off facilities and their capacities, similar analyses should be executed to understand the convenience of non-disposal options to encourage more diversion and ensure the infrastructure supports diversion.

Treatment

We created a master list of waste facilities in the region in order to get a comprehensive view of waste capabilities in the region. This list included treatment facilities. This catalog may serve as the backbone of any region-wide facility database.

We documented the amount of waste treated by each method. This was done for both solid and liquid wastes. We also totaled the amount of waste treated in the region. Given the limited data available, we believed this was the best way to describe waste treatment in the region.

Resource Recovery

We created a master list of waste facilities in the region in order to get a comprehensive view of waste capabilities in the region. Given the lack of available data, we believed this was the best way to describe resource recovery activities in the region. This catalog may serve as the backbone of any region-wide facility database.

We found that the TCEQ-provided municipal solid waste (MSW) facility data was incomplete for the region. We supplemented that list of facilities by adding in TCEQ-maintained public list of municipal solid waste facilities, including those not required to be permitted but that must submit a Notice of Intent (NOI) and those we found through our internet survey. In this way, we believe the master list presented in the Addendum is a thorough accounting of waste facilities in the region in 2021.

We did not provide the type of sophisticated analysis for resource recovery that we did for generation or disposal. We believe such analysis of resource recovery is not possible at this time because of a lack of data. Moreover, TCEQ does not include in their data any tonnages or rates related to recycling. For this section on resource recovery, we presented only the name and type of each facility, its location, and whether it accept drop-offs. TCEQ does not designate which facilities engage in the activity they call resource recovery, so we considered any facility that recycles, composts, recovers energy or gas, or otherwise diverts material from the landfill to be resource recovery. Given these limitations across multiple data sources, we believe we have presented the best available description of where resource recovery occurs in the region. However, we do not present the tonnages for recovery, or diversion, because that data is not available. With better data on diversion, the region would know their diversion rate and then would be able to set more specific diversion goals and have a better understanding of the amount of resources they are throwing away.

DISPOSAL OF SOLID WASTE

Our discussion of solid waste disposal is organized by two major topics: landfill capacity and the types of waste disposed.

Landfill Capacity

All waste that is generated and not beneficially reused or recycled, or improperly disposed of, ends up disposed of in landfills. Based on our generation estimate, nearly 1.3 million tons of waste would have been generated in the region in 2019 and roughly 412 thousand tons were disposed in the region's landfills. This gap cannot be easily explained, but there are many possibilities that could help explain some of the difference.

Of those 1.3 million tons, we have assumed nearly 285 thousand tons were recycled based on the estimated recycling rate of 21.9% and we have a record of 412 thousand tons being disposed. This leaves a gap of around 603 thousand tons. Plausible explanations for some of that waste is that it was reused, composted, illegally dumped, burned, or buried. Moreover, it is possible the recycling rate is actually higher, but data are not available to evaluate that.

Because of the lack of data around importing and exporting of waste in the region, it is possible that the region exported more waste than it imported. 7 landfills outside of the region took in BVCOG waste, and the 1 landfill inside the region took in waste generated from outside the region, but we have no idea the proportion of waste these transfers represent. Not knowing how much waste flows into or out of the region is a concern because it skews the comparison between the amount of waste disposed versus amount of waste generated inside the region. If more waste is exported than imported, it may explain why our calculated total generation is higher than the total disposed. A more important consequence of not understanding waste import and export is that changes outside of the region may impact landfill capacity inside the region. If an outside landfill that currently takes in BVCOG waste stops accepting that waste, maybe because of their own capacity concerns, then that waste may have to be redirected to one of BVCOG's landfills. This of course will impact BVCOG's capacity to dispose of its own waste. The result of any disruption to the import or export of regional waste cannot be assessed.

It is also possible that varying practices at landfills can lead to inconsistent data reporting. However, with all of those considerations, the most important conclusion to draw is that the data to adequately assess disposal activities is not available. This is important because setting specific reuse and recycling goals to reduce disposal is difficult without adequate data. Moreover, it may appear efforts to reduce disposal as much as possible are an overwhelming success because 32% of generated waste is making its way to regional landfills, though it would not be responsible without additional data to jump to that conclusion. That is because, for example, if significant waste is being illegally dumped and future efforts reduce that behavior and more waste makes it to the landfill, it could significantly impact landfill life projections.

Ultimately, the biggest question when it comes to disposal is whether the region has sufficient capacity in its landfills. According to the region-wide estimate of remaining landfill life, the region has sufficient landfill capacity through the entire planning period. If the planned Brazos Valley Disposal Facility is constructed, more disposal capacity will be added to the region. Since it will be a Type IV landfill, it will accommodate brush and construction and demolition waste. With this added capacity, it will be important to keep in mind a regional measure of capacity has limitations.

Considerations for using the Remaining Years (reserve capacity) of the region:

- Issues with landfill-reported data
- Inconsistent year-to-year changes in reported Remaining Years

Landfill reported data. The landfills themselves report the reserve capacity of the landfill. According to TCEQ, it is based on the permitted volume for waste capacity and facility operations. However, this means the Remaining Years figure is based on inconsistent reporting data, and thus embedded with uncertainty. For one, each landfill calculates their Remaining Years differently. Because of the lack of visibility into the landfills' reporting process, we cannot know whether their figure accounts for population growth, changes to the amount of waste imported or exported, changes to the compaction rate, and so forth.

Inconsistent Year-to-Year Capacity Estimates. There is a similar blind spot that results from comparing the Remaining Years as it was reported in 2014 compared to 2019. This is evidenced by the fact that the Twin Oaks Landfill—the region's only landfill—reported a decrease of 16 Remaining Years over a 6-year period, as detailed in the Results section. The landfill has been depleted about 2.5 times faster than expected, indicating there was some change in either capacity or disposal during that time frame. This implies that moving forward, the Remaining Years for that landfill may be shorter than what is being reported. It is imperative that the region closely monitor that landfill's capacity in particular, but also evaluate year-over-year estimates to provide context to annual reports.

Types of Waste Disposed

Municipal Solid Waste (MSW) represents the greatest proportion of waste disposed, but unfortunately, we do not know exactly what comprises it. The Texas Administrative Code defines MSW very broadly. It says MSW is "Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles, and all other solid waste other than industrial solid waste." An audit of each landfill is needed to tell us what the region's MSW is comprised of.

The major consequence to landfills labelling most waste as MSW is that it becomes difficult to give a comprehensive conclusion about disposed material in the region.

The final section of this Discussion will focus on resolving gaps in the region's disposal data. As was the case with many core waste management activities, comprehensive disposal data is not available. Detailed disposal data helps make detailed assessments that could, in turn, be useful for making specific recommendations in the regional action plan. Such data improves the development of future strategic plans and supports sustainability efforts.

An example of this type of effort is from the waste characterization study undertaken by San Antonio in 2019.[43] Region-wide data like that collected by San Antonio would help the BVCOG region set targets and prioritize waste streams for diversion. After all, San Antonio's report "indicated approximately 33 percent of the material placed in the brown carts was actual garbage material and not accepted in the City's blue recycling cart or green organics cart programs. The remaining 67 percent were materials that could theoretically have been recycled (21.2 percent), composted (45.1 percent), or recovered from household hazardous waste (0.8 percent)."

In summary, disposal capacity is adequate for the region but should be monitored closely. It is recommended that when planning for future landfills, decision makers not rely solely on the combined landfill capacity but consider travel distances to landfills or transfer stations. Furthermore, it is recommended that the region collect detailed disposal data, including origin and destination data. By doing so, the COG can support local governments in disposing of materials in a responsible manner.

Conclusion

Outlining current and future facilities and activities in the region helps visualize the waste stream from start to finish and also allows for identifying gaps in the process. Data limitations exist, making it difficult to analyze the full spectrum of operations and create specific goals and objectives.

The compiled data shows gaps, strengths, and weaknesses within the COG. Solid waste management activities in the region are typically focused around the high-population areas of the region with fewer resources in the more rural areas.

[43] Waste Characterization Study (SW-M00801a). (2020, May). City of San Antonio Waste Management Department. https://www.sanantonio.gov/Portals/0/Files/SWMD/AnnualReport/SWMD-Waste-Characterization-Study-FY2019.pdf?ver=2020-06-19-091259-460

Ultimately, the specificity, or lack of specificity, of the data will influence the specificity of the goals, objectives, and action steps.

Addendum | Volume II, Attachment III.C. Solid Waste Management Activities

Table 14. Perryman Group Employment Categories Reclassification

NAICS	Type	Texas Workforce Commission Industry	Perryman Group Industry
11	Industrial	Agriculture, Forestry, Fishing and Hunting	Agriculture
21	Industrial	Mining, Quarrying, and Oil and Gas Extraction	Mining
22	Commercial	Utilities	Transportation, Warehousing, Utilities
23	Commercial	Construction	Construction
31	Industrial	Manufacturing (food, beverage, tobacco, leather, apparel, textile)	Non-Durable MFG
32	Industrial	Manufacturing (wood, paper, printing, plastic, chemical, nonmetallic, petroleum, coal)	Durable MFG
33	Industrial	Manufacturing (metal, machinery, computer, electrical, transportation, misc.)	Durable MFG
42	Commercial	Wholesale Trade	Trade
44	Commercial	Retail Trade (store)	Trade
45	Commercial	Retail Trade (non-store)	Trade
48	Commercial	Transportation	Transportation, Warehousing, Utilities

NAICS	Type	Texas Workforce Commission Industry	Perryman Group Industry
49	Commercial	Warehousing	Transportation, Warehousing, Utilities
51	Commercial	Information	Information
52	Commercial	Finance and Insurance	Finance, Insurance, & Real Estate
53	Commercial	Real Estate and Rental and Leasing	Finance, Insurance, & Real Estate
54	Commercial	Professional, Scientific, and Technical Services	Services
55	Commercial	Management of Companies and Enterprises	Services
56	Commercial	Administrative and Support and Waste Management and Remediation Services	Government
61	Commercial	Educational Services	Services
62	Commercial	Health Care and Social Assistance	Services
71	Commercial	Arts, Entertainment, and Recreation	Services
72	Commercial	Accommodation and Food Services	Services
81	Commercial	Other Services	Services
92	Commercial	Public Administration	Government

Table 15. Residential Generation Material Type Reclassification[44]

Material Type	Material Type Category	Recategorized	Single Family: Statewide
Bulky Items	Special Waste	Special Waste	2.70%
Tires	Special Waste	Special Waste	0.10%
Remainder / Composite Special Waste	Special Waste	Special Waste	0.10%
Ash	Special Waste	Special Waste	0.00%
Treated Medical Waste	Special Waste	Special Waste	0.00%
Remainder / Composite Plastic	Plastic	Plastic	2.20%
Other Film - Other	Plastic	Plastic	1.90%
Durable Plastic Items - Other	Plastic	Plastic	1.40%
Plastic Trash Bags	Plastic	Plastic	1.20%
Plastic Grocery and Other Merchandise Bags	Plastic	Plastic	0.80%
PETE Plastic Containers	Plastic	Plastic	0.70%
Miscellaneous Plastic Containers	Plastic	Plastic	0.60%
Durable Plastic Items - #2 and #5 Bulky Rigids	Plastic	Plastic	0.60%
HDPE Plastic Containers	Plastic	Plastic	0.50%
Non-Bag Commercial and Industrial Packaging Film	Plastic	Plastic	0.10%
Film Products	Plastic	Plastic	0.00%

[44] Residential Disposal Compositions for California Regions. (2014). California's Department of Resources Recycling and Recovery (CalRecycle). https://www2.calrecycle.ca.gov/WasteCharacterization/ResidentialRates

Material Type	Material Type Category	Recategorized	Single Family: Statewide
Remainder / Composite Paper - Compostable	Paper	Paper	8.40%
Other Miscellaneous Paper - Other	Paper	Paper	4.10%
Uncoated Corrugated Cardboard	Paper	Paper	1.40%
Newspaper	Paper	Paper	1.20%
Remainder / Composite Paper - Other	Paper	Paper	0.80%
Magazines and Catalogs	Paper	Paper	0.70%
Other Office Paper	Paper	Paper	0.40%
Paper Bags	Paper	Paper	0.20%
White Ledger Paper	Paper	Paper	0.20%
Other Miscellaneous Paper - Compostable	Paper	Paper	0.20%
Phone Books and Directories	Paper	Paper	0.10%
Food	Other Organic	Food	21.00%
Remainder / Composite Organic	Other Organic	Other Organic	6.30%
Leaves and Grass	Other Organic	Yard Waste	5.10%
Prunings and Trimmings	Other Organic	Brush	4.80%
Textiles	Other Organic	Other Organic	4.80%
Branches and Stumps	Other Organic	Brush	1.90%
Carpet	Other Organic	Other Organic	1.80%
Manures	Other Organic	Other Organic	0.00%
Mixed Residue	Mixed Residue	Mixed Residue	5.10%
Tin/Steel Cans	Metal	Metal	0.80%

Material Type	Material Type Category	Recategorized	Single Family: Statewide
Other Ferrous	Metal	Metal	0.60%
Remainder / Composite Metal	Metal	Metal	0.50%
Other Non-Ferrous	Metal	Metal	0.40%
Major Appliances	Metal	Metal	0.30%
Aluminum Cans	Metal	Metal	0.20%
Used Oil Filters	Metal	Metal	0.00%
Other Wood Waste	Inerts and Other	Inerts and Other	4.00%
Rock, Soil and Fines	Inerts and Other	Inerts and Other	2.30%
Clean Dimensional Lumber	Inerts and Other	Inerts and Other	1.90%
Clean Engineered Wood	Inerts and Other	Inerts and Other	1.10%
Remainder / Composite Inerts and Other	Inerts and Other	Inerts and Other	0.90%
Concrete	Inerts and Other	Inerts and Other	0.90%
Asphalt Roofing	Inerts and Other	Inerts and Other	0.60%
Clean Pallets & Crates	Inerts and Other	Inerts and Other	0.30%
Gypsum Board	Inerts and Other	Inerts and Other	0.20%
Asphalt Paving	Inerts and Other	Inerts and Other	0.00%
Remainder / Composite Household Hazardous	Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW)	0.30%

Material Type	Material Type Category	Recategorized	Single Family: Statewide
Paint	Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW)	0.20%
Batteries	Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW)	0.10%
Used Oil	Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW)	0.00%
Vehicle and Equipment Fluids	Household Hazardous Waste (HHW)	Household Hazardous Waste (HHW)	0.00%
Clear Glass Bottles and Containers	Glass	Glass	1.00%
Brown Glass Bottles and Containers	Glass	Glass	0.40%
Green Glass Bottles and Containers	Glass	Glass	0.40%
Remainder / Composite Glass	Glass	Glass	0.10%
Other Glass Colored Bottles and Containers	Glass	Glass	0.00%
Flat Glass	Glass	Glass	0.00%
Other Small Consumer Electronics	Electronics	Electronics	0.40%
Brown Goods	Electronics	Electronics	0.20%
Video Display Devices	Electronics	Electronics	0.20%
Computer-related Electronics	Electronics	Electronics	0.20%

Table 16. Recoded Waste Types and Volume Conversions

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Prunings and Trimmings	Brush	Cubic yard	1	127	127
Branches and Stumps	Brush	Cubic yard	1	127	127
Bulky Items	Bulk	Cubic yard	1	80	80
Major Appliances	Bulk	Cubic yard	1	145	145
Tires	Bulk	One	0.12	22.5	182.3
Concrete	C&D	Cubic yard	1	860	860
Clean Pallets & Crates	C&D	Cubic yard	1	169	169
Reclaimed Asphalt Pavement	C&D	Cubic yard	1	773	773
Other Wood Waste	C&D	Cubic yard	1	329.5	329.5
Wood	C&D	Cubic yard	1	169	169
Rock, Soil, and Fines	C&D	Cubic yard	1	999	999
Carpet	C&D	Cubic yard	1	147	147
Fines	C&D	Cubic yard	1	2700	2700
Clean Dimensional Lumber	C&D	Cubic yard	1	169	169

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Clean Engineered Wood	C&D	Cubic yard	1	268	268
Gypsum Board	C&D	Cubic yard	1	467	467
Gypsum Drywall	C&D	Cubic yard	1	467	467
Asphalt Shingles	C&D	Cubic yard	1	418.5	418.5
Bricks	C&D	Cubic yard	1	3024	3024
Asphalt Roofing	C&D	Cubic yard	1	731	731
Asphalt Paving	C&D	Cubic yard	1	773	773
Flat Glass	C&D	Cubic yard	1	1400	1400
Video Display Devices	Electronics	Cubic yard	1	67	67
Computer-related Electronics	Electronics	Cubic yard	1	354	354
Brown Goods	Electronics	Cubic yard	1	343	343
Other Small Consumer Electronics	Electronics	Cubic yard	1	438	438
Other Ferrous	Metals	Cubic yard	1	225	225
Food	Organics	Cubic yard	1	463	463
Clear Glass Bottles and Containers	Glass	Cubic yard	1	380	380
Green Glass Bottles and Containers	Glass	Cubic yard	1	380	380

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Brown Glass Bottles and Containers	Glass	Cubic yard	1	380	380
Remainder/Composite Glass	Glass	Cubic yard	1	1400	1400
Glass	Glass	Cubic yard	1	380	380
Other Glass Colored Bottles and Containers	Glass	Cubic yard	1	380	380
Remainder/Composite Household Hazardous	HHW	Cubic yard	1	1671	1671
Vehicle and Equipment Fluids	HHW	Cubic yard	1	1671	1671
Paint	HHW	1 gal	0.005	10.9	2201.5
Treated Medical Waste	HHW	Cubic yard	1	140	140
Batteries	HHW	55-gal drum	0.27	600	2203.45
Used Oil Filters	HHW	Drum	0.27	437.5	1606.68
Used Oil	HHW	Gallon	0.005	7.4	1494.61
Remainder/Composite Metal	Metals	Cubic yard	1	143	143
Metal	Metals	55 gal	0.27	226.5	831.80
Tin/Steel Cans	Metals	Cubic yard	1	850	850
Aluminum Cans	Metals	Cubic yard	1	46	46

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Remainder/Composite Plastics	Plastics	Cubic yard	1	364	364
Durable Plastic Items - Other	Plastics	Cubic yard	1	50	50
PETE Plastic Containers	Plastics	30'"x42"x48"	1.30	577.5	445.50
HDPE Plastic Containers	Plastics	30"x42"x48"	1.30	612.5	472.50
Miscellaneous Plastic Containers	Plastics	Cubic yard	1	40.4	40.4
Durable Plastic Items - Number 2 and 5 Bulky Rigids	Plastics	Cubic yard	1	50	50
Plastic	Plastics	30"x42"x48"	1.30	577.5	445.50
Remainder/Composite Paper - Compostable	Paper	Cubic yard	1	138	138
Other Miscellaneous Paper - Other	Paper	Cubic yard	1	50	50
Remainder/Composite Paper - Other	Paper	Cubic yard	1	682.5	682.5
White Ledger Paper	Paper	Cubic yard	1	682.5	682.5
Other Office Paper	Paper	Cubic yard	1	682.5	682.5
Newspaper	Paper	Cubic yard	1	925	925

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Magazines and Catalogs	Paper	Cubic yard	1	428	428
Other Miscellaneous Paper - Compostable	Paper	Cubic yard	1	138	138
Paper Bags	Paper	50# dry goods	1	50	50
Phone Books and Directories	Paper	Cubic yard	1	428	428
Other Non-Ferrous	Metals	Cubic yard	1	225	225
Leaves and Grass	Organics	Cubic yard	1	375	375
Remainder/Composite Organics	Organics	Cubic yard	1	250	250
Organics (e.g., Land Clearing Debris)	Organics	Cubic yard	1	135	135
Manures	Organics	Cubic yard	1	675	675
Remainder/Composite Inerts and Others	Other	Cubic yard	1	860	860
Mixed Residue	Other	Cubic yard	1	999	999
Ash	Other	Cubic foot	0.04	42.5	1147.50
Remainder/Composite Special Waste	Other	Cubic yard	1	140	140

Waste Type	Recoded Waste Type	Volume	Cubic Yards	Weight	Weight Conversion to Convert kg to yd3
Uncoated Corrugated Cardboard	Paper	Cubic yard	1	100	100
Cardboard	Paper	Cubic yard	1	100	100
Other Film - Other	Plastics	Cubic yard	1	150	150
Plastic Trash Bags	Plastics	Cubic yard	1	35	35
Non-Bag Commercial and Industrial Packaging Film	Plastics	Cubic yard	1	32	32
Plastic Grocery and Other Merchandise Bags	Plastics	Cubic yard	1	35	35
Film Products	Plastics	Cubic yard	1	150	150
Textiles	Textiles	Cubic yard	1	150	150

Table 17. Complete Curbside Collection Service Availability Internet Survey Results

Note: (*) Indicates the information was not found online.

City	Brush	Bulk	Organics	Recycling	Trash	Yard Waste
Anderson	*	*	*	*	Yes	Yes
Bedias	*	*	*	*	Yes	*
Bremond	*	*	*	*	Yes	*
Brenham	Yes	No	*	Yes	Yes	Yes

City	Brush	Bulk	Organics	Recycling	Trash	Yard Waste
Bryan	Yes	Yes	*	No	Yes	Yes
Buffalo	*	Yes	*	*	Yes	*
Burton	*	*	*	*	Yes	*
Caldwell	*	*	*	*	Yes	*
Calvert	*	*	*	*	Yes	*
Carmine	*	*	*	*	Yes	*
Centerville	*	*	*	*	Yes	*
College Station	Yes	Yes	*	Yes	Yes	Yes
Franklin	No	*	*	*	Yes	*
Hearne	*	*	*	*	Yes	*
Iola	*	*	*	*	Yes	*
Jewett	Yes	Yes	*	*	Yes	Yes
Kurten	*	*	*	*	Yes	*
Leona	*	*	*	*	Yes	*
Madisonville	*	No	*	*	Yes	Yes
Marquez	*	*	*	*	Yes	*
Midway	*	*	*	*	Yes	*
Navasota	Yes	Yes	*	Yes	Yes	Yes
Normangee	*	*	*	*	Yes	*

City	Brush	Bulk	Organics	Recycling	Trash	Yard Waste
Oakwood	*	*	*	*	Yes	*
Snook	*	*	*	*	Yes	*
Somerville	Yes	Yes	*	Yes	Yes	Yes
Todd Mission	*	*	*	*	Yes	*
Wixon Valley	*	*	*	*	Yes	*

Table 18. Current Handling, Storage, Transportation, and Resource Recovery Permits, Registrations, Notices of Intent, and Other Identified Facilities

Note: Facilities marked with an asterisk (*) have multiple locations and/or multiple registration numbers.

Source	Site Name	Facility Type	County	Drop-off
IGI	BRAZOS COUNTY, BRYAN, PCT 4*	Citizens Collection Station	BRAZOS	Yes
IGI	BRAZOS COUNTY, BRYAN, PCT 4*	Citizens Collection Station	BRAZOS	Yes
IGI	BRAZOS COUNTY, COLLEGE STATION, PCT 3	Citizens Collection Station	BRAZOS	Yes
IGI	BRAZOS COUNTY, COLLEGE STATION, PCT 4	Citizens Collection Station	BRAZOS	Yes
IGI	BRAZOS COUNTY, KURTEN, PCT 2	Citizens Collection Station	BRAZOS	Yes
IGI	BRAZOS COUNTY, MILICAN, PCT 1	Citizens Collection Station	BRAZOS	Yes

Source	Site Name	Facility Type	County	Drop-off
TCEQ-NOI	BURLESON COUNTY CCS # 2	Citizens Collection Station	BURLESON	Yes
TCEQ-NOI	BURLESON COUNTY CCS # 3	Citizens Collection Station	BURLESON	Yes
TCEQ-NOI	BURLESON COUNTY CCS #1	Citizens Collection Station	BURLESON	Yes
TCEQ-NOI	BURLESON COUNTY CCS #4	Citizens Collection Station	BURLESON	Yes
TCEQ-NOI	BURLESON COUNTY CCS RITA	Citizens Collection Station	BURLESON	Yes
TCEQ-NOI	CITY OF NAVASOTA CITIZENS COLLECTION STATION	Citizens Collection Station	GRIMES	Yes
IGI	GRIMES COUNTY, ANDERSON	Citizens Collection Station	GRIMES	Yes
IGI	GRIMES COUNTY, BEDIAS	Citizens Collection Station	GRIMES	Yes
IGI	GRIMES COUNTY, IOLA*	Citizens Collection Station	GRIMES	Yes
IGI	GRIMES COUNTY, IOLA*	Citizens Collection Station	GRIMES	Yes
IGI	GRIMES COUNTY, NAVASOTA	Citizens Collection Station	GRIMES	Yes

Source	Site Name	Facility Type	County	Drop-off
IGI	LEON COUNTY PRECINCT 4 SOLID WASTE TRANSFER STATION	Citizens Collection Station	LEON	Yes
IGI	LEON COUNTY, BUFFALO	Citizens Collection Station	LEON	Yes
IGI	LEON COUNTY, CENTERVILLE	Citizens Collection Station	LEON	Yes
IGI	LEON COUNTY, MARQUEZ	Citizens Collection Station	LEON	Yes
TCEQ-NOI	MADISON COUNTY PRECINCT 2 CCS	Citizens Collection Station	MADISON	Yes
TCEQ-NOI	MADISON COUNTY PRECINCT 3 CCS	Citizens Collection Station	MADISON	Yes
TCEQ-NOI	MADISON COUNTY PRECINCT 4 CCS	Citizens Collection Station	MADISON	Yes
TCEQ-NOI	MADISON COUNTY PRECINT 1 CCS	Citizens Collection Station	MADISON	Yes
IGI	ROBERTSON COUNTY, BREMOND, PCT 4	Citizens Collection Station	ROBERTSON	Yes
IGI	ROBERTSON COUNTY, CALVERT, PCT 1	Citizens Collection Station	ROBERTSON	Yes
IGI	ROBERTSON COUNTY, FRANKLIN, PCT 3	Citizens Collection Station	ROBERTSON	Yes

Source	Site Name	Facility Type	County	Drop-off
IGI	ROBERTSON COUNTY, HEARNE, PCT 2	Citizens Collection Station	ROBERTSON	Yes
TCEQ-NOI	BRAZOS VALLEY RECYCLING*	Compost	BRAZOS	Yes
TCEQ-MSW	BRYAN COMPOSTING FACILITY	Compost	BRAZOS	Yes
TCEQ-MSW	TWIN OAKS LANDFILL	Landfill (Type 1)	GRIMES	Yes
TCEQ-MSW	L&G ENVIRONMENTAL LLC	Liquid Waste Processor	WASHINGTON	No
TCEQ-MSW	STILL CREEK LIQUID WASTE PROCESSING FACILITY	Liquid Waste Processor	BRAZOS	Yes
TCEQ-NOI	FM 362 TRANSFER STATION	Low Volume Transfer Station	GRIMES	Yes
TCEQ-NOI	ALAMO RECYCLE CENTERS-BRYAN TX FACILITY	Recycling & Material Recovery	BRAZOS	Yes
TCEQ-NOI	BCS STOP & GO POTTIES	Recycling & Material Recovery	BRAZOS	No
TCEQ-NOI	BRAZOS VALLEY RECYCLING*	Recycling & Material Recovery	WASHINGTON	Unknown
TCEQ-NOI	CCAA LLC	Recycling & Material Recovery	BRAZOS	Unknown
TCEQ-NOI	LIVING EARTH	Recycling & Material Recovery	BRAZOS	Unknown

Source	Site Name	Facility Type	County	Drop-off
TCEQ-NOI	TEXAS COMMERCIAL WASTE	Recycling & Material Recovery	BRAZOS	Yes
TCEQ-Tires	HOWDY ENTERPRISE*	Tire Processor	BURLESON	Unknown
TCEQ-Tires	NUCOR STEEL TEXAS	Tire Recycler	LEON	Unknown
TCEQ-Tires	A & L TIRE SHOP	Tire Transporter	BRAZOS	Unknown
TCEQ-Tires	D & S TIRE	Tire Transporter	LEON	Unknown
TCEQ-Tires	HOWDY ENTERPRISE*	Tire Transporter	BURLESON	Unknown
TCEQ-Tires	ROLLING RESCUE TIRE DISTRIBUTION	Tire Transporter	WASHINGTON	Unknown
TCEQ-Tires	THE WHEEL DEAL TIRE DISTRIBUTION	Tire Transporter	BURLESON	Unknown
TCEQ-MSW	CITY OF BRENHAM TRANSFER STATION FACILITY	Transfer Station	WASHINGTON	Yes
TCEQ-MSW	WASHINGTON COUNTY TRANSFER STATION	Transfer Station	WASHINGTON	Yes

Table 19. Planned Handling, Storage, Transportation, Treatment, and Resource Recovery Permits, Registrations, Notices of Intent, and Other Identified Facilities (as of 6/23/21)

Source	Site Name	Type	County
TCEQ-MSW	BRAZOS VALLEY DISPOSAL FACILITY	Landfill (Type 4)	Brazos

Attachment III.D. Description and Assessment of the Adequacy of Existing Solid Waste Management Facilities & Practices, and Household Hazardous Waste Programs

Note: Volume II, Attachment III.D. Description and Assessment of the Adequacy of Existing Solid Waste Management Facilities & Practices, and Household Hazardous Waste Programs is not called for in the original Volume II form but is nonetheless included. It is similarly noted at the beginning of the relevant section of the attachments that this information is included.

Introduction

As part of the 20-year planning process, TCEQ requires an assessment of the adequacy of existing facilities and practices.

Both facility and practices adequacy are important to ensure the region's facilities are able to properly manage solid waste.

The purpose of this section is to explain how we assessed the region's facility and practices adequacy.

Out of all facilities and practices in the region, none were deemed inadequate due to violations and TCEQ investigations in 2019.

This attachment will detail how we determined adequacy.

Methods

IGI used TCEQ landfill and processor data which was then analyzed according to their rating calculated by the agency. IGI searched the TCEQ Municipal Solid Waste Disposal page and analyzed the table with facility offenses under Effective Enforcement Orders. The formal criteria TCEQ has developed were used to determine if any facilities were inadequate. Citizen complaints were not used in this analysis because formal investigations would be necessary to validate or invalidate those complaints.

Surveys and regular meetings were also used to elicit feedback related to all aspects of solid waste management in the region, including facilities and practices.

Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste

Introduction

As part of the 20-year planning process, TCEQ requires an assessment of current efforts related to source reduction and waste minimization, including efforts to reduce sludge, and efforts to reuse and recycle.

The EPA defines source reduction as

> "Reducing waste at the source, and is the most environmentally preferred strategy. It can take many forms, including reusing or donating items, buying in bulk, reducing packaging, redesigning products, and reducing toxicity."[45]

Waste minimization is defined as "the use of source reduction and/or environmentally sound recycling methods prior to energy recovery, treatment, or disposal of wastes."[46] TCEQ defines sludge as "semi-solid residues from industrial or water treatment processes."[47]

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[45] United States Environmental Protection Agency. (2021, April 15). *Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy*. US EPA. https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy

[46] United States Environmental Protection Agency. (2016, February 22). *Frequent Questions | Waste Minimization | Wastes | US EPA*. US EPA. https://archive.epa.gov/epawaste/hazard/wastemin/web/html/faqs.html#:%7E:text=Waste%20Minimization%20refers%20to%20the,treatment%2C%20or%20disposal%20of%20wastes.&text=For%20example%2C%20compacting%2C%20neutralizing%2C,typically%20considered%20waste%20minimization%20practices.

[47] Texas Commission on Environmental Quality. (n.d.). *Terms and Definitions.* https://www.tceq.texas.gov/remediation/superfund/glossary.html

EPA defines recycling as "the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products."[48]

This attachment will assess the availability of source reduction, waste minimization, reuse, recycling, and sludge reduction efforts based on the existence of programs or mention of activities on municipal websites. Assessing the effectiveness of those programs or activities, however, is beyond the scope of this report.

Understanding current efforts and their potential impacts is critical to making decisions about where to focus future efforts. All the current activities have the potential to extend the life of the region's landfills, as well as reduce the effects of climate change. Further, sludge recycling can present numerous agricultural benefits.

The purpose of this section is to assess the region's efforts related to source reduction and waste minimization and recycling or reuse.

In the region, while there is always room for improvement, reuse and recycling efforts are widespread and most residents in the region have access to some reuse and recycling opportunities. Source reduction and waste minimization efforts are much less common throughout the region. No entities that compost sludge were identified in the region.

The rest of this attachment will outline the methods we used to make these assessments, show the results of our data collection (including a table showing efforts by county), provide a discussion of those results, and offer a conclusion.

Methods

We used internet research, and in some cases followed up via telephone, to gather information regarding the availability of programs to minimize the materials going to the landfill. We conducted this research for the county seats in each county in the region as an indicator of the availability of efforts within each county.

[48] United States Environmental Protection Agency. (2020, November 12). *Recycling Basics.* US EPA. https://www.epa.gov/recycle/recycling-basics

SOURCE REDUCTION, WASTE MINIMIZATION, RECYCLING, AND REUSE

To assess current source reduction and waste minimization efforts, and efforts to reuse or recycle waste in the region, we performed a search of city websites for each county seat of the region's three counties. Searches were not exhaustive and included only programs and activities listed on city websites. If the city's website did not mention any programs or activities, we assumed there were none. Because there could be efforts occurring that were not on websites, this assessment likely underrepresents the actual efforts. Many county seat websites do not have information about solid waste activities, so we also looked at TCEQ- and COG-provided facility data to find facilities that participate in recycling or reuse in the county seats.

SLUDGE

Regional efforts to reduce and reuse sludge were evaluated using a variety of methods. We identified composting entities that were listed within TCEQ-maintained publicly available Municipal Solid Waste Facilities data and performed internet research to find information on entity websites regarding the usage of sludge in their composting process. We also made calls to composting facilities.

Results

Based on the distinct methods for these assessments, the results for source reduction, waste minimization, recycling and reuse are presented separately from sludge.

SOURCE REDUCTION, WASTE MINIMIZATION, RECYCLING, AND REUSE

Source reduction and waste minimization. We were unable to find source reduction and waste minimization programs for any of the county seats.

Recycling and reuse. We were able to find programs for 5 of the 7 county seats. Those 5 counties represent about 88% of the region's 2019 population,[49] though again, looking at programs listed on the county seat's website may underrepresent

[49] *2018 Sex and Race/Ethnicity Total* Population. (2018). [Dataset]. Texas Demographic Center. https://demographics.texas.gov/Data/TPEPP/Projections/

activities occurring in the entire county. This also overestimates the number of people affected by these services because we took the entire county's population, not only the county seat. Although we grouped recycling and reuse efforts together, we primarily found efforts related to only recycling. This could be because most reuse opportunities are not typically handled by cities or counties and are done through entities such as Goodwill or Salvation Army.

Table 20. Recycling or Reuse Efforts by County Seat

County	County seat	Recycling or Reuse Efforts
Brazos	Bryan	• Collects green waste and promotes Twin Oaks Compost Facility • Provides information about nearby recycling center in College Station • Operates used oil and tire recycling center
Burleson	Caldwell	Offers Citizens Collection Station that accepts recycling
Grimes	Anderson	No programs found
Leon	Centerville	No programs found
Madison	Madisonville	Offers Citizens Collection Station that accepts some items for reuse or recycling
Robertson	Franklin	Offers collection station that accepts some items for reuse or recycling
Washington	Brenham	• Offers curbside brush/yard waste collection, it is turned into mulch at a Collection/Transfer facility • Offers curbside recycling collection

SLUDGE

Internet research led to phone calls with an employee of the Twin Oaks Compost BVSWMA Inc. Based on this phone call, this facility receives and processes municipal sludge biosolids from City of College Station, City of Bryan, and City of Navasota.

Based on discussions with employees of composting entities in the State, many bureaucratic and financial challenges present themselves upon establishing a composting operation, which is likely why reuse of biosolids is often concentrated in urban areas. Compost sites are highly capital-intensive to start up and require ironclad stormwater plans alongside extensive permits to accept and treat sludge. Further, there are societal constraints around this process due to concerns amongst members of the public related to the safety of biosolid compost.

Discussion

This section of the attachment provides an analysis of the results organized by source reduction and waste minimization, recycling and reuse efforts, and sludge reduction efforts.

SOURCE REDUCTION, WASTE MINIMIZATION, RECYCLING, AND REUSE

Source reduction and waste minimization efforts are not occurring. Because the region will have increased population growth in the next 20 years, it is important that the COG increase efforts to minimize the amount of waste going to landfills. However, because we recorded programs and activities found only on city websites, some efforts towards source reduction and waste minimization were likely not noted. Compiling consistent data across the region could create a more accurate assessment of these efforts because it would not rely solely on city websites to convey the information. Ensuring that all available waste diversion activities are publicized broadly and consistently is essential to increase participation and the diversion rate.

In general, current **reuse and recycling** efforts are widespread. Again, this characterization is based on the presence or the number of programs and activities occurring, not the actual effectiveness or results of them. There is a high level of recycling availability, mostly through drop-offs, with 4 of the 7 county seats having that option.

SLUDGE

We identified one entity that composts biosolids from a few cities, including the most populous city in the region. Though, it is unclear exactly how much is being composted.

Conclusion

In the region, there are reuse and recycling opportunities available to most residents, but there are no opportunities indicated for source reduction and waste minimization. Sludge composting is available to some residents.

Although the recycling efforts in the region are comprehensive based on the amount of population with access to recycling programs, there is still room for improvement, especially for reuse. The county seats with no programs and activities can look to the counties that participate in more efforts as an example. Using these models in the region could help counties implement or expand their own programs and activities. Population growth in the region will lead to more waste generation, so reuse and recycling efforts need to continue and expand where needed so that less waste is landfilled. Additionally, source reduction and waste minimization efforts need to increase so that less trash is generated. The Twin Oaks Composting facility should continue and expand its sludge composting.

In the future, creation of a regional data sharing platform would benefit the region. This platform could provide a place for different jurisdictions to share ideas and best practices they have learned. Also, a regional platform including all active programs and activities would make an assessment such as this one easier in the future.

Attachment III.F. Identification of Additional Opportunities for Source Reduction and Waste Minimization, and Reuse or Recycling of Waste

Introduction

In addition to the requirement to assess current source reduction and waste minimization efforts in Volume II, Section III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste, as part of the 20-year planning process, TCEQ requires the identification of new opportunities for source reduction and waste minimization, and for reuse and recycling.

As opposed to the current efforts in the region, this attachment will address source reduction and waste minimization and reuse or recycling opportunities that could potentially improve current efforts.

All the opportunities identified have the potential to extend the life of the region's landfills by reducing waste generated and landfilled. The broad categories also fit into the EPA's Waste Management Hierarchy, with Source Reduction and Reuse being the most preferred management methods, followed by Recycling/Composting. According to the EPA, "Source reduction can reduce the generation of methane"[50] and can "save natural resources, conserve energy, […] and save money for consumers and businesses," and recycling can contribute to "supplying valuable raw materials to industry, creating jobs, stimulating the development of greener technologies, […] and reducing the need for new landfills and combustors."[51]

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[50] United States Environmental Protection Agency. (2002). *What is Integrated Solid Waste Management.* US EPA. https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1000L3W.txt

[51] United States Environmental Protection Agency. (2021, April 15). *Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy.* US EPA. https://www.epa.gov/smm/sustainable-materials-management-non-hazardous-materials-and-waste-management-hierarchy#:%7E:text=EPA%20developed%20the%20non-hazardous%20materials%20and%20waste%20management,management%20strategies%20from%20most%20to%20least%20environmentally%20preferred.

The purpose of this attachment is to provide additional details and commentary related to the identification of additional opportunities required in Volume II, Section III.F, Table III.F.I Additional Opportunities for Source Reduction and Waste Minimization, Reuse and Recycling of Waste.

As shown in Volume II, Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste, there is room for improvement in the region regarding its efforts in both source reduction and waste minimization, and reuse and recycling. However, we primarily identified additional opportunities for source reduction and waste minimization because of the limited efforts in those areas.

In the rest of this attachment, we will cover the methods we used to identify additional opportunities, the results of what we found, and provide a brief discussion of what the results mean.

Methods

To identify additional opportunities for source reduction and waste minimization, and reuse or recycling, IGI talked to subject matter experts and conducted internet research. The majority of opportunities we identified are related to source reduction and waste minimization because we also considered the limited opportunities identified in Volume II, Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste.

Results

The primary results of the research are presented in Volume II, Section III.F, Table III.F.I. Additional Opportunities for Source Reduction and Waste Minimization, Reuse and Recycling of Waste.

As a summary, opportunities were identified for three categories with a focus on source reduction and waste minimization. In some instances, the opportunities were relevant to both reuse and recycling.

Table 21. Number of Opportunities for Source Reduction and Waste Minimization, and Reuse or Recycling of Waste Identified for Each Activity Type

Category of Activity	Number of Opportunities Identified
Source Reduction and Waste Minimization	16
Reuse	6
Recycle	4
Reuse/Recycle	2
Total Opportunities	28

Discussion

The opportunities for each category of activity typically relate to specific types of materials that could be diverted or specific institutions and industries that may generate large amounts of waste that could be diverted.

Source reduction and waste minimization. The source reduction and waste minimization opportunities are wide-ranging. Some opportunities focus on specific waste types and others focus on specific institutions and industries. The institutions and industries that are identified are hospitals, prisons, restaurants, businesses, government, and schools. In general, most of the opportunities are related to food waste, which based on the CalRecycle research cited in the Generation section of Volume II, Attachment III.C. Solid Waste Management Activities,[52] represents a large proportion of the *Municipal* solid waste. Additionally, city-wide recycling ordinances have been identified as an opportunity.

Reuse. The reuse opportunities are about specific waste types, but also specific industries. The materials are paint, shingles, and construction and demolition

[52] City of Los Angeles. (2006). L.A. CEQA Thresholds Guide: Your Resource for Preparing CEQA Analyses in Los Angeles (Page M.3-2). https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf

debris. The industries that could engage in more reuse are construction, hospitals, and general offices.

Recycling. The recycling opportunities are similarly about specific materials: clothing/textiles, electronics, glass, and construction and demolition debris. Notably, construction and demolition debris make up a large amount of the disposed material in the region.

Conclusion

With room for improvement in source reduction and waste minimization, reuse, and recycling, the opportunities that have been identified provide multiple approaches from focusing on specific materials, like construction and demolition waste, or specific industries, like the restaurant industry.

As source reduction and reuse are the most preferred methods in the solid waste management hierarchy, these opportunities represent some of the best ways to manage waste in the region.

As specific waste types are reduced or significant reuse opportunities develop, the opportunities for source reduction will become more and more focused. Focusing on the most frequently generated and disposed of wastes first would be aided by more accurate disposal data.

Attachment III.G. Recommendations for Encouraging and Achieving a Greater Degree of Source Reduction and Waste Minimization, and Reuse or Recycling of Waste

Introduction

As part of the 20-year planning process, TCEQ requires recommendations that would achieve a greater degree of source reduction and waste minimization, and reuse or recycling.

These recommendations are about improving leadership and project implementation. They differ from the recommendations in Volume II, Section III.F, Table III.F.I. Additional Opportunities for Source Reduction and Waste Minimization, Reuse and Recycling of Waste because they are broad management best practices rather than specific ideas.

In this section we have identified recommendations that could improve all areas of the region's solid waste project management.

The purpose of this attachment is to provide additional commentary and details about the recommendations to achieve a greater degree of source reduction and waste minimization.

The solid waste field is very interconnected, so our recommendations promote broad practices that can be utilized to achieve better results in all areas of solid waste management.

In the rest of this attachment, we will describe the methods we used to come up with the recommendations, show the results of those methods, and discuss key points.

Methods

We used two methods to come up with recommendations, both of which will be described separately.

Previous goals survey. We created a simple survey that presented each objective of the previous Regional Solid Waste Management Plan and sent it to the members of the Solid Waste Advisory Committee (SWAC). They were asked to give themselves a letter grade (A, B, C, D, or F) on each objective and were provided a place to give additional feedback.

Best practices research. We were principally involved in the development of eight RSWMPs for 2022 – 2042, including the BVCOG. We used our access to multiple planning committees to identify best practices for implementing a region-wide solid waste management plan.

Results

The primary results are shown in Volume II, Section III.G, Table III.G. Recommendations for Encouraging and Achieving a Greater Degree of Source Reduction and Waste Minimization, and Reuse or Recycling of Waste.

We will not show the overall grade that each individual objective received. Instead, we will only show the grade that each goal received, based on its objectives' grades. Additionally, we will also show the objectives that received the best and worst grade to better understand problems the region may have run into during the previous 20 years. It is important to note that 5 out of 22 members of the SWAC responded to this survey, so it does not fully represent the entire committee, but instead gives a general idea of the region's accomplishments during the previous planning period.

Table 22. Previous Regional Solid Waste Management Goals and Corresponding Grade based on Survey Results

Goal	Goal Description	Grade
Goal 1	Ensure the availability of disposal in the BVCOG region to manage municipal solid waste (MSW) after source reduction, recycling, and composting has occurred	B+
Goal 2	Ensure the availability of proper and safe management of solid waste in the BVCOG region	B
Goal 3	Reduce the amount of municipal solid waste (MSW) generated and disposed of by maximizing source reduction and recycling, to the extent feasible, through voluntary approaches	B-

Goal	Goal Description	Grade
Cumulative Grade		**B**

Table 23. Previous Regional Solid Waste Management Objective with the Highest Grade based on Survey Results

Objective	Objective Description	Grade
Goal 1, Objective 2	Support local efforts to identify areas with litter and illegal dumping disposal problems and encourage implementation of future and current enforcement programs to address these problems	A-

Table 24. Previous Regional Solid Waste Management Objectives Tied for the Lowest Grade based on Survey Results

Objective	Objective Description	Grade
Goal 1, Objective 1	Explore alternatives dealing with the disposal of special wastes	C+
Goal 3, Objective 3	Encourage waste reduction activities to certain components of the waste stream that may pose special risks or problems	C+

Discussion

Based on the cumulative grade of a B shown in Table 22, the SWAC achieved their goals with an above average grade. However, we again want to stress that the five respondents do not represent the entire committee.

The highest graded objective was related to addressing litter and illegal dumping. We offered steps in this plan related to illegal dumping because the SWAC indicated it was still a concern they would like to address.

The lowest graded objectives involved reducing and dealing with special wastes. We offered steps that could address multiple forms of problematic wastes.

Finally, the survey of committee members did illuminate some of the committee's strengths and weaknesses, but we were not able to identify all of them based on their previous successes. This was due, in part, to the fact that many committee members were not a part of the development of the previous plan and were not necessarily there throughout the entire planning period. As a result, we developed our recommendations based on our experiences and conversations with the BVCOG Solid Waste Advisory Committee and the committees of seven additional COGs. Through this access to multiple planning committees, we identified five best practices for implementing a region-wide solid waste management plan. These principles are not related to only source reduction and waste minimization and recycling or reuse, but instead are key to successful solid waste management.

These recommendations also influenced the priorities to address concerns in Volume II, Section III.I, Table III.I. Solid Waste Management Concerns and Priorities and the goals, objectives, and action steps in Volume II, Section III.L, Tables III.L. Regional Goals and Objectives and III.N. Plan of Action and Timetable for Achieving Specific Goals and Objectives.

Conclusion

Separate aspects of solid waste management are connected, with some entities that perform more than one function or have more than one role. Because of that connectedness, broad recommendations or practices are effective in improving overall waste management, as well as individual aspects of management.

These recommendations influenced the regional action plan, particularly the objectives and action steps.

In the future, the COG should continue to apply these recommendations and practices to its solid waste management. They should also remain open to accepting and trying new practices as technology progresses and new opportunities become available.

Attachment III.H. Identification of Public and Private Management Agencies and Responsibilities

Introduction

As part of the 20-year planning process, TCEQ requires identification of public and private entities involved in solid waste management. The culmination of these activities represents the larger picture of solid waste management in the region.

TCEQ does not provide specific parameters or guidelines for the entities, so we identified entities with a wide range of responsibilities.

We categorized entities into several different groups and considered the role each could play. Examples of such roles could be partners to the COG, educators to residents or businesses, or solid waste facility operators.

The purpose of this attachment is to provide lists of public and private entities involved in waste management, as well as a broad categorization of the type of responsibility each has. It will also provide additional details and commentary related to the identification of public and private entities.

Entities such as the ones we have identified will play a critical role in the region's waste management in the next 20 years. These entities could be an active part of partnerships, educational programs, and efforts to reduce waste in the region.

In the rest of this attachment, we will explain the methods we used to identify the entities, provide comprehensive lists of each entity type in the results, and provide a discussion of those results.

Methods

IGI gathered information about the entities involved in waste management within the COG region using a variety of methods, including use of multiple TCEQ data sources and online searches for additional relevant groups. We grouped the entities and facilities we identified into 10 broad categories, which are listed alphabetically. We will briefly describe the reason we chose the categories we did and explain how we found the agencies within them. We also used data we collected about the region to provide summary numbers of how many large volume commercial generators there are.

Citizens Collection Stations. We included citizens collection stations because of their role in solid waste management providing collection options for local residents.

IGI used TCEQ provided data on citizen collection stations that have submitted a Notice of Intent to Operate (NOI).

Composting Facilities. We included composting facilities because of their role in transforming organic waste into a beneficial material.

IGI used TCEQ provided data on composting facilities that have submitted an NOI, as well as TCEQ provided processor data.

Environmental Stakeholders. In this group, we included agencies that may be involved with goals and projects that relate closely to solid waste management, making them potential partners in clean up events or educational campaigns.

IGI used a list of Keep Texas Beautiful[53] affiliates to find members in the region. We also did internet searches to find environmental non-profits within the region.

Haulers. We included agencies involved with waste hauling because they could have a direct impact on their customers through cart tagging or waste audits. They also have a large role in the transport of waste.

IGI performed extensive internet searches to find private haulers and municipally operated public services. We also used information from the committee. We included both small and large-scale private operators.

Landfills. Agencies operating landfills in the region were included because of their significant role in solid waste management.

IGI used TCEQ landfill data from 2019.

Municipal Utility Districts (MUDs). We included MUDs in the region because of their potential to administer some utility services and provide some environmentally related services.

[53] Keep Texas Beautiful. (n.d.). *Affiliate List.* https://ktb.org/images/programs/affiliatenetwork/Affiliate_list_WEB.pdf

IGI used a map[54] created by the TCEQ to find MUDs in the region.

Processors. Processors were included because of the large roles they play in waste diversion and waste treatment, as well as an educational role they could play, such as offering tours of their facilities to aid public understanding.

IGI used TCEQ processor data from 2019, including tire processors. We also performed supplemental internet searches.

Recyclers. Recyclers were included because of the large roles they play in waste diversion, as well as an educational role they could play, such as offering tours of their facilities to aid public understanding.

TCEQ does not provide much data on recycling, so the majority of these were found from internet searches. We included a wide range of agencies that perform recycling services. These are mostly private entities and vary greatly in size.

Recycling Facilities. We included recycling facilities because of their role in solid waste management through maximizing resource use.

IGI used TCEQ-provided data on recycling facilities that have submitted an NOI.

Tire Handlers. We included registered scrap tire handlers because of the problems associated with tire disposal. These handlers could play a role in tire reduction efforts or efforts to beneficially reuse tires.

We used TCEQ active scrap tire registration data from 2019 to find tire handlers.

Results

We have included the total number of entities we identified for each type in Table 25. The rest of this section will list each entity, as well as provide a short description of each type. Because some entities perform more than one function, some of them will show up in more than one category. These entities will be marked by asterisks if they appear more than once. The number of asterisks indicates the number of times an entity appears across all lists. Table 26 shows

[54] Texas Commission on Environmental Quality. (n.d.). *Water Districts Viewer*. Retrieved July 19, 2021, from https://tceq.maps.arcgis.com/apps/webappviewer/index.html?id=04bbf8b322b34d8abaea7b06996d3775

the entities that appear three or more times to give an idea of the larger entities in the region. Cities, counties, and residents may also use services based outside of the region, but we have only included entities that operate within the region.

Table 25. Total Number of Solid Waste Management Entities by Type

Entities	Number Identified
Citizens Collection Stations	27
Composting Facilities	3
Environmental Stakeholders	12
Haulers	20
Landfills	1
Municipal Utility Districts	5
Processors	14
Recyclers	17
Recycling Facilities	5
Tire Handlers	7

Table 26. Solid Waste Management Entities with Three or More Responsibilities

Entity	Category Type	Total
Brannon Industrial Group, LLC dba BVR Waste and Recycling	Haulers, processors, recyclers	3
Bryan Iron & Metal, LTD dba Texas Commercial Waste	Haulers, processors, recyclers	3
City of College Station	Haulers, processors, recyclers	3
Frontier Waste Solutions	Landfills, processors, recyclers, tire handlers	3

Entity	Category Type	Total
Howdy Disposal, LLC	Haulers, tire processor: recycling, transporting	3
Professional Trash Valet, LLC dba Brazos Valley Trash Valet & Recycling	Haulers, processors, recyclers	3
Republic Services	Haulers, processors, recyclers	3

CITIZENS COLLECTION STATIONS

Some of these facilities have submitted a Notice of Intent (NOI) to operate a Citizens Collection Station to TCEQ. Citizens Collection Stations are drop-off sites, typically in rural areas, where waste is brought before being transported to a facility. None of these stations are permitted or registered, so there is very little information about them.

- Brazos County, Bryan, PCT 4
- Brazos County, College Station, PCT 3
- Brazos County, College Station, PCT 4
- Brazos County, Kurten, PCT 2
- Brazos County, Milican, PCT 1
- Burleson County CCS #1 **
- Burleson County CCS #2 **
- Burleson County CCS #3 **
- Burleson County CCS #4 **
- Burleson County CCS Rita
- City of Navasota Citizens Collection Station **
- Grimes County, Anderson
- Grimes County, Bedias
- Grimes County, Iola
- Grimes County, Navasota
- Leon County Precinct 4 Solid Waste Transfer Station
- Leon County, Buffalo
- Leon County, Centerville
- Leon County, Marquez
- Madison County Precinct 1 CCS
- Madison County Precinct 2 CCS
- Madison County Precinct 3 CCS

- Madison County Precinct 4 CCS
- Robertson County, Bremond, PCT 4
- Robertson County, Calvert, PCT 1
- Robertson County, Franklin, PCT
- Robertson County, Hearne, PCT 2

COMPOSTING FACILITIES

Two of these facilities have submitted a Notice of Intent (NOI) to operate a composting facility to TCEQ. These facilities are not permitted or registered, so there is very little information about them other than the fact that they have submitted an NOI. The other facility is a TCEQ designated compost facility. Compost facilities use organic materials to create soil amendments, fertilizers, or similar products.

- Brazos Valley Recycling
- Bryan Composting Facility
- Living Earth **

ENVIRONMENTAL STAKEHOLDERS

Environmental stakeholders include entities that may have solid waste related interests, making them potential partners. All cities in the region are considered environmental stakeholders, but we do not include them in this list. See Volume II, Attachment I. Geographic Scope for the full list of cities.

- Brazos River Authority
- Keep Brazos Beautiful
- Keep Burleson County Beautiful
- Keep Grimes County Beautiful
- Keep Leon County Beautiful
- Keep Navasota Beautiful
- Keep Robertson County Beautiful
- Keep Somerville Beautiful
- Keep Washington County Beautiful
- Lower Colorado River Authority
- Post Oak Savannah Groundwater Conservation District
- Trinity River Authority of Texas

HAULERS

Haulers includes trash and junk transporters that operate in the region.

- 3C Disposal
- BAGS Rural Garbage Service
- Brannon Industrial Group, LLC dba BVR Waste and Recycling ***
- Bryan Iron & Metal, LTD dba Texas Commercial Waste***
- Budget Disposal dba Premier Metal Buyers
- CCAA Management Series, LLC dba Brazos Valley Recycling
- City of College Station***
- CTTV, LLC dba Team 3 Rentals and Service
- Dillo Disposal LLC
- Frontier Waste Solutions***
- Haulaway Cleaning and Junk Services
- Howdy Disposal, LLC***
- Jones Trash Service
- Maroon Dumpsters, LLC
- Professional Trash Valet, LLC dba Brazos Valley Trash Valet & Recycling ***
- Pronto Services, LLC
- Republic Services***
- Rocking H Dumpsters
- Town and Country Trash Service
- Vos Transport LLC

LANDFILL

The landfill section includes the operator of the TCEQ permitted landfill.

- Brazos Valley Solid Waste Management Agency, Inc. (Twin Oaks Landfill)

MUNICIPAL UTILITY DISTRICTS (MUD)

Municipal Utility Districts are political subdivisions that can provide utility related services.

- Brazos County MUD 1
- Brazos County MUD 2
- Burleson County MUD 1
- Grimes County MUD 1
- North Zulch MUD

PROCESSORS

Processors includes entities or facilities involved in processes that transport materials, reduce hazards associated with certain materials, or are involved with resource recovery. In some cases, it may be the name of a facility, but in most cases, it is the name of the company.

- American AllWaste
- Big Company/BVR ***
- Brannon Industrial Group, LLC dba BVR Waste and Recycling ***
- Bryan Composting Facility
- Bryan Iron & Metal, LTD dba Texas Commercial Waste ***
- Bryan Iron and Metal **
- BV Trash Valet & Recycling ***
- City of Brenham Transfer Station
- City of Bryan WWTP
- City of College Station ***
- EMR Bryan Brickyard Metal Recycling - Bryan **
- Frontier Waste Solutions ***
- Ingersoll-Rand
- Professional Trash Valet, LLC dba Brazos Valley Trash Valet & Recycling ***
- Texas Commercial Waste ***
- Republic Services ***
- Washington County Transfer Station

RECYCLERS

Recyclers includes entities involved in reuse or recycling of materials. Again, this could include the name of facilities, but mostly is the company or owner.

- Brannon Industrial Group, LLC dba BVR Waste and Recycling ***
- Brazos County Citizen Collection Station
- Bryan Iron & Metal, LTD dba Texas Commercial Waste ***
- Bryan Iron and Metal **
- Burleson County CCS #1 **
- Burleson County CCS #2 **
- Burleson County CCS #3 **
- Burleson County CCS #4 **
- City of Bryan
- City of College Station ***
- City of Navasota Citizens Collection Station **
- EMR Bryan Brickyard Metal Recycling **

- Frontier Waste Solutions ***
- Organix Recycling, LLC
- Professional Trash Valet, LLC dba Brazos Valley Trash Valet & Recycling ***
- Republic Services ***
- Twin City Mission

RECYCLING FACILITIES

These facilities have submitted a Notice of Intent (NOI) to TCEQ to operate a recycling facility. These facilities are not required to be permitted or registered, so there is often very little information about them other than the fact that they have submitted an NOI.

- BCS Stop & Go Potties
- Brazos Valley Recycling
- CCAA LLC
- Living Earth (NOI to Operate Recycling Facility, Composting) **
- Texas Commercial Waste ***

TIRE HANDLERS: PROCESSING AND RECYCLING

These companies are listed as tire handlers involved with processing and recycling, classified by TCEQ.

- Howdy Disposal, LLC ***
- Nucor Steel Texas

TIRE HANDLERS: TRANSPORT

These companies are listed as tire handlers involved with transportation, classified by TCEQ.

- A & L Tire Shop
- D & S Tire
- Howdy Disposal, LLC ***
- Rolling Rescue Tire Distribution
- The Wheel Deal Tire Distribution

We have included the number of four large volume generators to give a general idea of potential areas for partnerships. For example, outreach about source reduction in schools could have a large impact and reach a large amount of people. While there are certainly other large volume generators in the region, these may represent potential partners for waste reduction and communication initiatives.

Table 27. Number of Select Large-Volume Institutions in the Region

Institution	Number in Region
Colleges[55]	6
Hospitals[56]	10
Military bases[57]	0
Schools[58]	115

Discussion

There are many entities in the region with solid waste related responsibilities. Some entities perform multiple functions, for example landfills. The list we provide is likely not exhaustive because we included entities that we found in TCEQ data or through internet searches. If an entity did not put any of its information online, we did not include it. Our list shows a large number of entities that the COG could approach for specific projects. For example, if the region is addressing tire waste, they have a starting list of tire handlers to work with.

Although we note that we included entities of varied size, we give no indication of which ones are small or large scale. We also give no indication of the scope of responsibilities each entity is involved in. However, we did note entities that play a

[55] U.S. Department of Homeland Security. (n.d.). *Homeland Infrastructure Foundation-Level Data (HIFLD).* HIFLD Open Data. Retrieved August 12, 2021, from https://hifld-geoplatform.opendata.arcgis.com/

[56] Texas Department of State Health Services. (n.d.). Center for Health Statistics. Center for Health Statistics. Retrieved August 12, 2021, from https://www.dshs.texas.gov/chs/hosp/Hosplis2021.pdf

[57] Texas Department of Transportation. (n.d.). *TxDOT Open Data Portal*. TxDOT Open Data Portal. Retrieved August 12, 2021, from https://gis-txdot.opendata.arcgis.com/

[58] Texas Education Agency. (n.d.). *Texas Education Agency Public Open Data Site*. Texas Education Agency Public Open Data. Retrieved August 12, 2021, from https://schoolsdata2-tea-texas.opendata.arcgis.com/

role in more than one category of waste activities, marked by asterisks in the Results. These asterisks give an idea of the larger stakeholders in the region. Of these entities, seven of them are involved in three different categories, shown in Table 26. Of these seven, six are private entities, and the remaining one is public.

Building relationships and increasing collaboration with these entities will help the region better understand its regional solid waste activities, as well as help achieve action plan goals.

Conclusion

We have identified many entities that perform a variety of solid waste related tasks. These entities could play a large role in helping the region meet its plan goals and find solutions for its solid waste related problems.

The wide range of entities chosen reinforces the idea that the solid waste field is large and interconnected, making it important to consider the unique roles of all players.

In the future, the region should maintain and update this list of entities, along with trying to develop contacts within these entities. Continually collaborating with a wide range of people involved in solid waste management will allow the region to be able to better tackle its issues.

Attachment III.I. Identification of Solid Waste Management Concerns and Establishment of Priorities for Addressing Those Concerns

Introduction

As part of the 20-year plan update, TCEQ requires identification of concerns related to solid waste management, as well as priorities or actions to address those concerns.

Identification of these concerns and priorities were critical to developing the goals, objectives, and action steps for the region.

Concerns in the region are related to broad solid waste related topics. The priorities to address those concerns are general actions that the region can take to help with management of its concerns.

The purpose of this attachment is to provide additional details and commentary about the reasoning behind the concerns and priorities identified in Volume II, Section III.I, Table III.I.I. Solid Waste Management Concerns and Priorities.

Because the concerns and priorities heavily influenced the region's solid waste management plan, it is important that the COG understand the context and reasoning behind them.

The rest of this attachment will describe the methods we used to identify concerns and priorities, show the results of the methods used, provide a discussion, and give a conclusion.

Methods

We identified regional concerns using a variety of techniques, each of which will be further explained.

SURVEY

At the beginning of this project, we created and distributed a survey to the region's Solid Waste Advisory Committee (SWAC) members to understand their current solid waste activities and priorities. This Solid Waste Current Activities and Priorities Survey played a large role in determining concerns and how we prioritized them. In this survey, we divided the content into six sections that were influenced by TCEQ grant categories. The sections were

- Recycling and Waste Reduction,
- Illegal Dumping,
- Solid Waste Plans,
- Household Hazardous Waste Management,
- Technical Studies, and
- Education and Training.

In each section we asked questions about current activities in the region, as well as future activities members would be interested in. At the end of the survey, we asked respondents to rank all six of the sections in order of importance. The results of the combined ratings of all respondents played a role in the order of what we referred to as Areas of Concern which were key to developing the 2022 – 2042 Regional Solid Waste Management Plan. Responses to individual survey questions also influenced the concerns. It is important to note that 15 of 22 SWAC members responded to the survey, so not all members are represented in our results. At the request of the SWAC, we sent the survey to other representatives of the region who are not a part of the committee. 2 of these representatives responded, bringing total responses up to 17. The survey results we show will contain responses from all 17 respondents.

INTERVIEWS

We conducted subject matter expert interviews to better understand common concerns across the solid waste field. We also facilitated multiple discussions during SWAC meetings to understand issues specifically related to the region.

DATA ANALYSIS

We considered all of the data we collected as part of the creation of this plan and used relevant parts of that data to inform these concerns. We analyzed several relevant data sources, including TCEQ provided landfill, facility, and funding data, municipal ordinances, and the Census.

Results

We present the final results of each method (e.g., survey, interview) separately. First, we will show relevant survey results. Next, we will describe key takeaways from our interviews and SWAC meetings. Then, we will touch on relevant aspects of the data collected during other parts of this plan, and finally we will show a table with all the concerns and priorities.

SURVEY

The survey we developed was customized for every respondent who received it to eliminate irrelevant questions and make the best use of respondents' time. One example of how the survey was customized was based on what entity the respondent represented. For example, on questions that ask about "your entity," such as in Figure 20, respondents would not have seen "your entity." Instead, they would have seen the name of the city, county, or organization they represent.

We will not show all of the results of the survey but will only show results that were the most relevant to the development of the concerns. These results also show some questions where a high number of respondents chose the same answer, such as in Figure 17 where most chose the same answer. Agreement among the respondents helps reveal what issues are the most important in the region.

Figure 16 shows Education and Training as the most agreed upon priority.

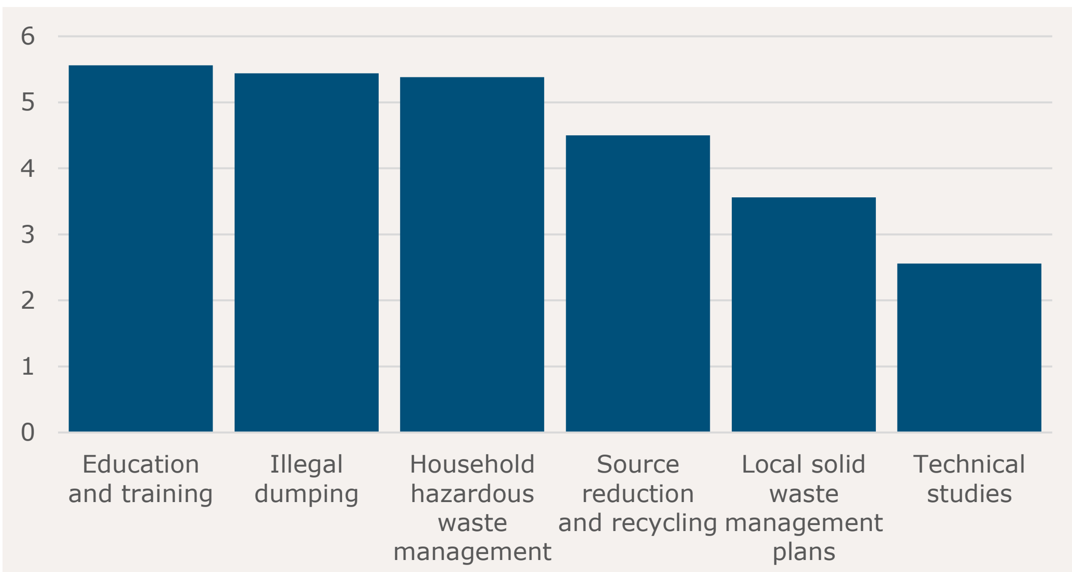

Figure 16. Survey Responses of Regional Priorities

Figure 17 shows that 13 out of 16, or 81% of respondents were interested in holding more HHW collection events. One respondent skipped this question.

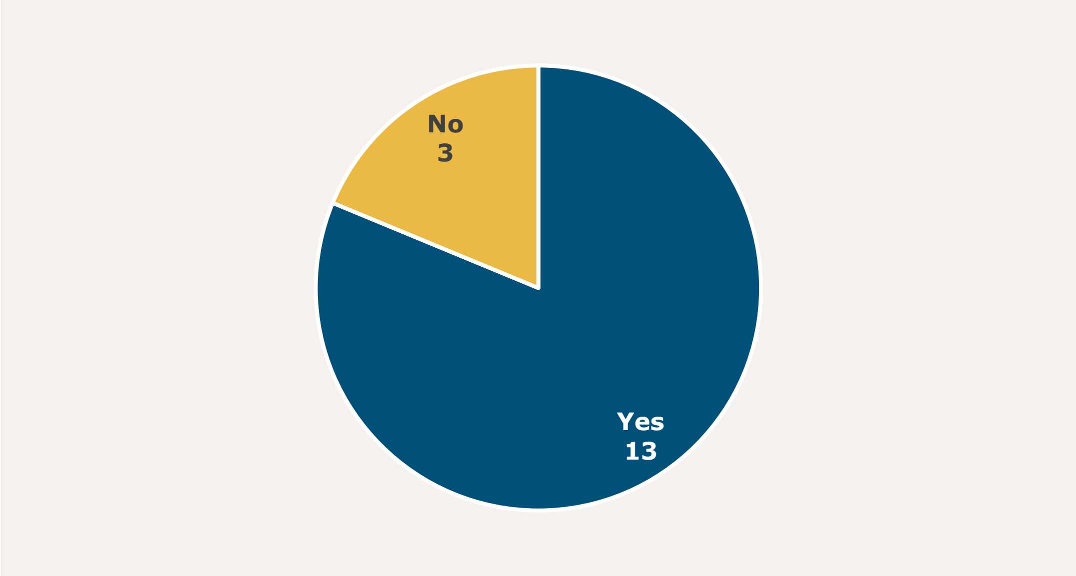

Figure 17. Survey Responses to Question: Would you like to offer more HHW collection events?

Figure 18 shows that 12 out of 16, or 75% of respondents were interested in opening a permanent HHW drop-off center. One respondent skipped this question.

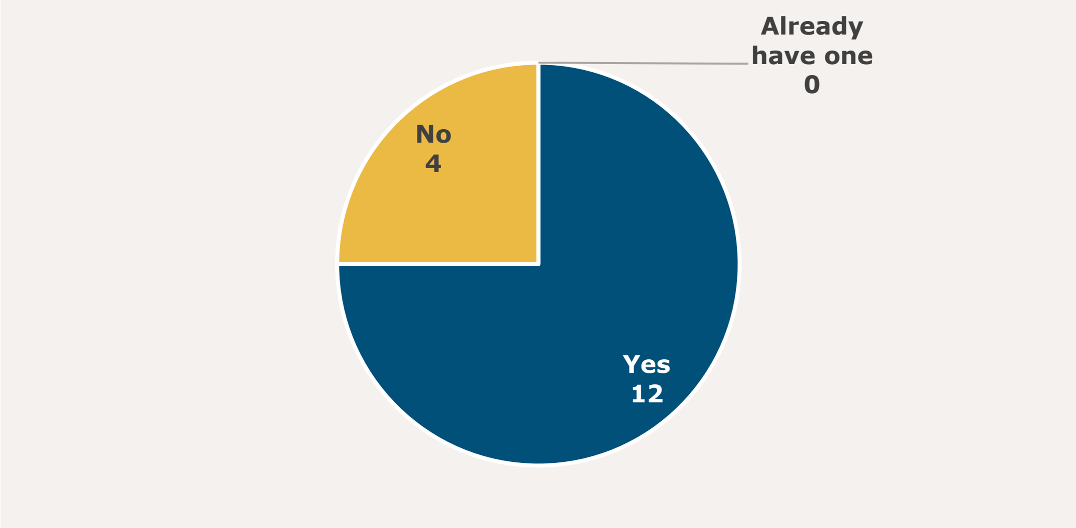

Figure 18. Survey Responses to Question: Would you like to open a permanent Household Hazardous Waste drop-off center?

Figure 19 shows specific items that respondents were interested in increasing diversion opportunities for, all of which are household hazardous wastes or what we consider problematic wastes.

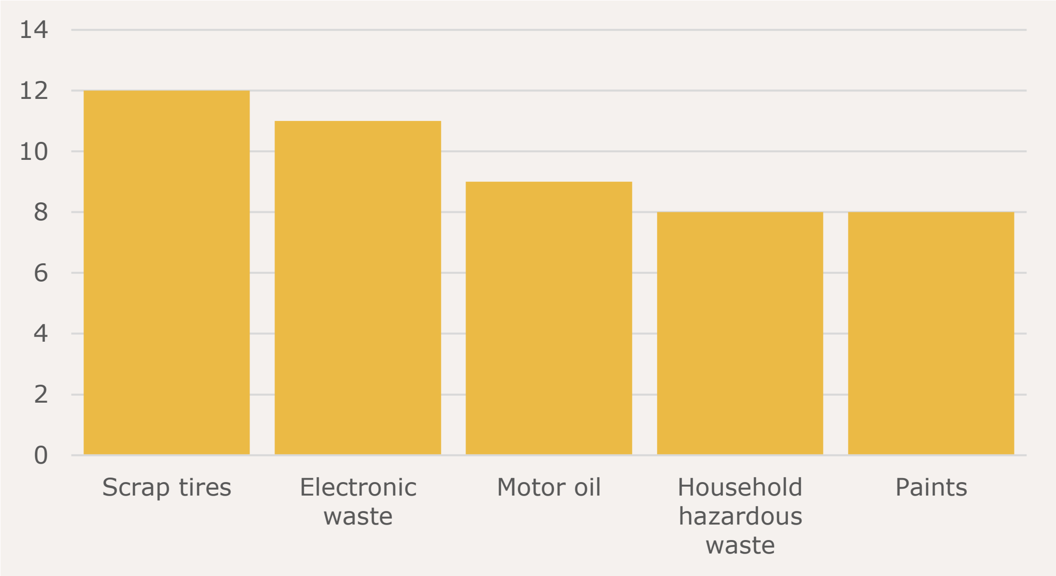

Figure 19. Survey Responses to Question: Would you like to expand waste diversion opportunities for these specific items?

Figure 20 shows that 82% of respondents would like to expand illegal dumping coordination.

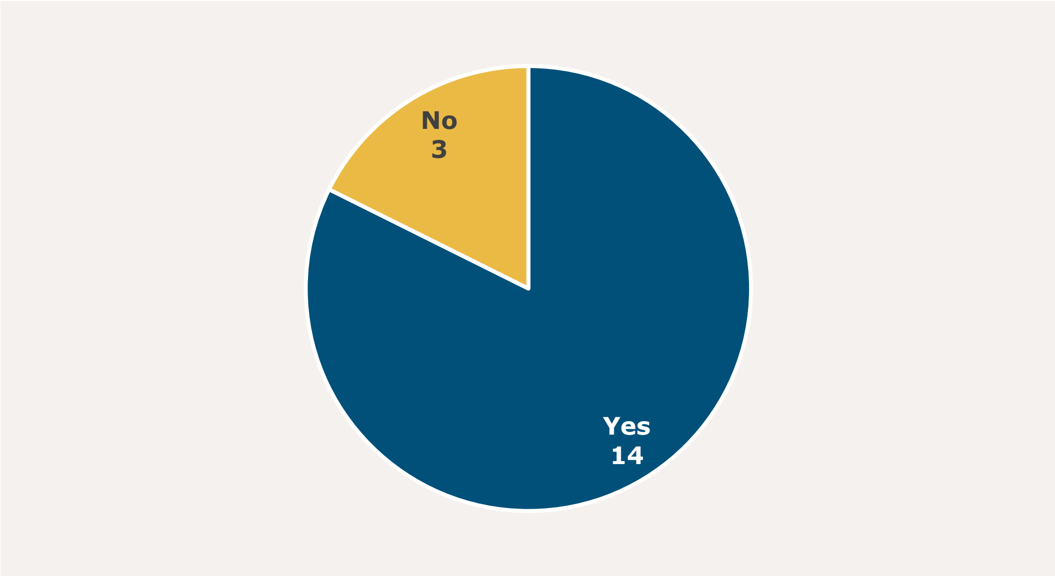

Figure 20. Survey Responses to Question: Would you like to expand illegal dumping coordination within your entity?

Figure 21 shows that half of respondents have clean up events within their city/county/COG, and half do not. One respondent skipped this question.

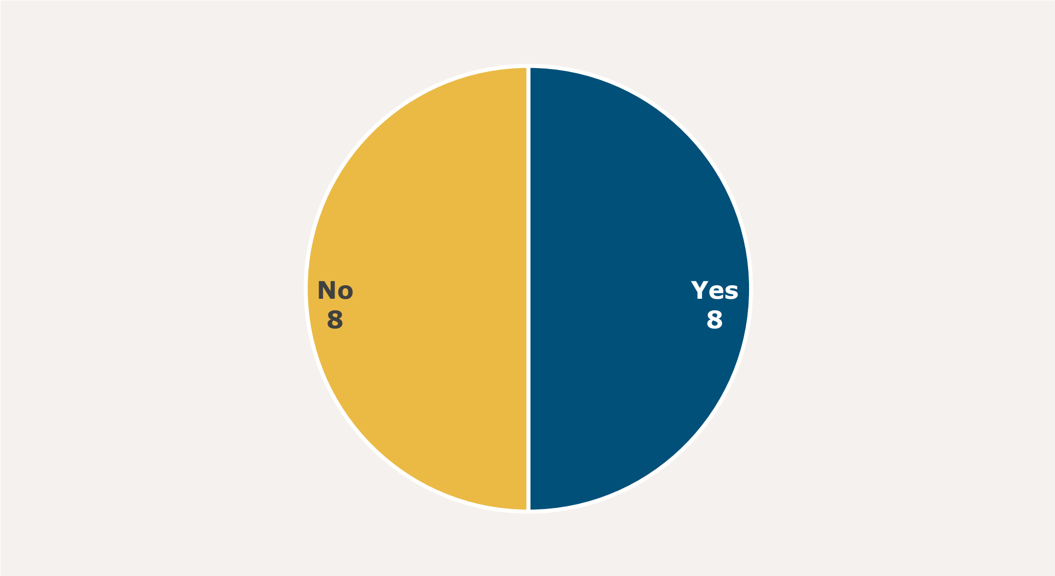

Figure 21. Survey Responses to Question: Does your entity hold community cleanup events for illegal dumping?

13 respondents answered that they would like to explore other options to address illegal dumping. Figure 22 shows these other options, including prevention and enforcement measures. Education and community clean up days were the top choices.

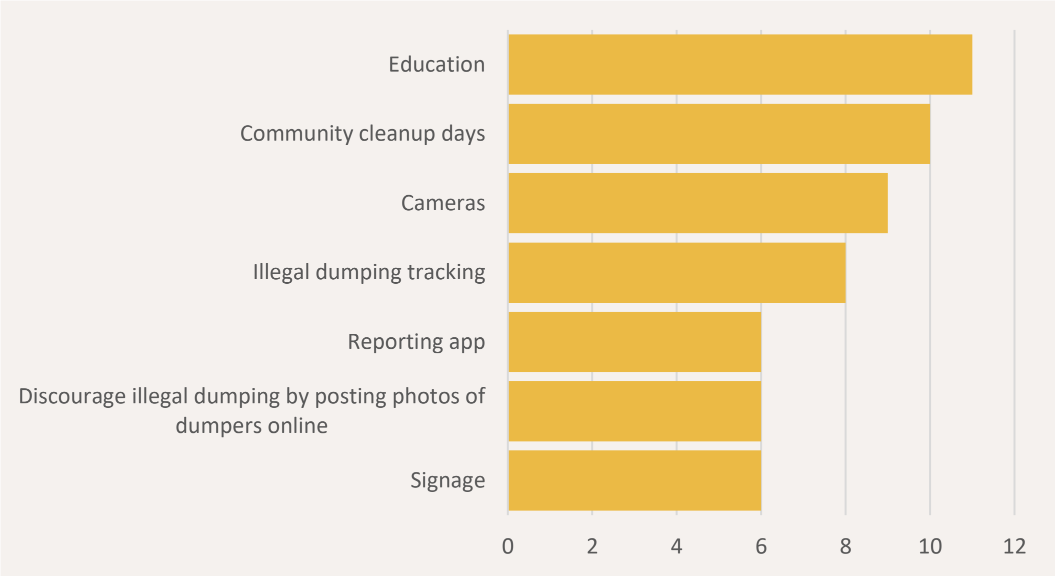

Figure 22. Survey Responses to Question: Would you like to explore other actions to address illegal dumping in the area?

INTERVIEWS

IGI conducted several interviews with industry experts. In one of these interviews, we learned from a landfill engineer that a 35–50-mile roundtrip is the maximum economical distance garbage trucks can drive to drop off their wastes at either a landfill or transfer station.

During regular SWAC meetings, IGI gave presentations regarding the plan update and used the meetings as a place to facilitate discussion. In these meetings we learned of specific problems, such as hazardous wastes associated with efforts related to the Biocorridor and illegally dumped wastes in rural areas.

DATA ANALYSIS

We have noted several things we came across during our research and data collection that directly influenced the Areas of Concern. Each of these specific points are described below.

During our research, we frequently visited city and county websites of members of the region. Through this, we concluded that many of these government websites do not have adequate information about solid waste related activities, such as where to dispose of certain materials within the region. We believe that these websites should have accurate and timely solid waste related information readily available to residents.

Based on the drop-off facilities we identified as part of Volume II, Attachment III.C. Solid Waste Management Activities, we performed specific geographic analysis for the region to determine residents' proximity to landfills, transfer stations, or other drop-off locations to dispose of their wastes.

In Volume II, Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste, we briefly touched on the benefits of local solid waste management plans. No cities in the region have a sub-regional plan. It is helpful to have local plans since there is a lot of variability in the region.

As described in Volume II, Attachment III.E. Assessment of Current Source Reduction and Waste Minimization Efforts, Including Sludge, and Efforts to Reuse or Recycle Waste, the efforts related to source reduction and recycling are comprehensive, but there is still room for improvement, particularly in parts of the region that have no existing recycling or other diversion programs. These areas of the region would benefit from improved access to waste minimization or recycling opportunities.

There are no permanent household hazardous waste drop-off centers, though there are a few regular collection events throughout the region. Although HHW makes up a small percentage of the waste stream, those materials could have a harmful impact, increasing the importance of providing safe ways to dispose of them.

As mentioned in several other Attachments, a regional data sharing platform would help the region with future data collection activities, as well as keep track of their current data and facilities.

CONCERNS AND PRIORITIES

From all of our analyses we identified five primary concerns. Table 28 shows the concerns and priority methods to address the concerns. Both the concerns and priorities will be explained in detail in the Discussion.

Table 28. Concerns and Priorities to Address Concerns

Concerns	Priorities to Address Concerns
Solid waste literacy	Improve community participation, provide education
Illegal dumping	Collect data, increase illegal dumping enforcement, increase illegal dumping prevention, improve access, improve community participation, provide education
Problematic wastes (including HHW)	Collect data, improve access, provide education
Source reduction and recycling	Improve access, improve community participation, provide education
Local solid waste plans	Collaborate, collect data, lead

Discussion

This section will be separated by concerns and priorities. We will provide context and details about both.

CONCERNS

Based on the data described in Results, we have identified six regional concerns which are described below in more detail. Refer to Table 28 to see all concerns with their corresponding priorities.

Solid waste literacy. The Education and Training topic was ranked the highest in the survey, showing its importance to the SWAC. We also noted the overall lack of timely, useful information on municipal websites. Solid waste literacy is unique because it also influences the rest of the concerns, which were addressed in the new objectives and action steps.

Illegal dumping. This section was ranked the second highest in the survey. Figure 20 shows that most respondents would like to expand illegal dumping coordination within their city/county/COG. Figure 21 gives an idea of how often illegal dumping cleanups are occurring in the region, and Figure 22 shows committee interest in expanding illegal dumping prevention and enforcement through a variety of methods.

Problematic wastes (including HHW). The Household Hazardous Waste Management topic was ranked third in the survey. Figure 17 and Figure 18 show responses that reflect an interest in expansion of HHW handling activities, including collection events and drop offs. These results show that most respondents recognized a need for more disposal opportunities. In Figure 19 respondents chose items they would like to expand diversion for. A high number chose tires and electronic waste, items that pose unique disposal issues, which is why we broadened this concern to Problematic Wastes. Motor oil, paints, and HHW were also chosen several times, further showing the desire for more household hazardous waste diversion opportunities. We also considered the overall shortage of known drop-off centers and collection events for these wastes in the region and the extra environmental problems resulting from improper handling of problematic wastes.

Source reduction and recycling. The Recycling and Waste Reduction category was ranked fourth in the survey. The SWAC also noted a need for increased recycling activities in the region.

Local solid waste plans. Solid Waste Plans were ranked fifth in the survey, and no cities in the region have local plans. According to committee members, the SWAC would like to facilitate the development and use of integrated local solid waste plans. Though there are benefits to having a broad, region-wide plan, cities and counties could maximize their own resources and work towards individualized goals with local plans.

PRIORITIES

For each of the concerns identified, we developed eight broad priorities. This was not necessarily a linear process—we often synthesized the information from multiple sections of the Volume II form, related attachments, other sources, and discussions which helped to see what the region ought to prioritize to address their concerns. The priorities are very similar to the objectives for the same reason. We listed the priorities alphabetically. In some cases, these priorities are repeated across multiple concerns. Refer to Table 28 to see all concerns with their corresponding priorities.

Collaborate. Collaboration and communication among different agencies can help facilitate and simplify development of Local Solid Waste Plans. COG-wide collaboration is important to ensure that all members of the region are working towards the same solid waste goals.

Collect data. Data collection is a priority to address Illegal Dumping, Problematic Wastes, and Local Solid Waste Plans concerns. Continually collecting and updating data allows for informed decision making. Examples of where to focus data collection are included in Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives.

Increase illegal dumping enforcement. This priority is only for the Illegal Dumping concern. It involves communication between members of the solid waste field and law enforcement officers so that illegal dumping crimes receive adequate attention. More details are in Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives.

Increase illegal dumping prevention. This priority is only for the Illegal Dumping concern and includes implementation of common illegal dumping deterrents based on data collection as a related priority.

Improve access. This priority shows up in three of the concerns, with customization for each. In the Illegal Dumping concern, it is to *improve access to solid waste drop-off opportunities*. For the Problematic Wastes concern, the specific objective is to *improve access to responsible disposal options,* and for Source Reduction and Recycling, the objective is to *improve access to diversion opportunities*. Improving access is essential because education about good solid waste practices is less useful if residents have no opportunity to participate in them. Details about where to focus efforts to improve access are in Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives.

Improve community participation. To address the Solid Waste Literacy, Illegal Dumping, and Source Reduction and Recycling concerns, we recommend improving community participation by expanding the number and diversity of people and groups involved. More specific ideas about how to improve community participation are in Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives.

Lead. Strong leadership at the COG level could encourage cities and counties to create their own plans and ultimately divert more materials from the landfill.

Provide education. Providing education addresses all of the concerns except for Local Solid Waste Plans. In some instances, the education should be broad, and in others it should target a specific audience. Consistent messaging about the specific concerns in solid waste management is necessary to keep residents informed about their opportunities and best practices. Details about providing education are in Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives.

Conclusion

A lot of different research components influenced the identification of concerns and priorities to address the concerns.

These concerns and priorities heavily influenced the action plan for the region, making them an important starting point to fully understand the action plan.

In the future, the region should closely monitor its committee member feedback, solid waste data, and success of the scheduled activities to determine if the concerns identified here require changes. As certain parts of this plan are implemented, we expect that the region's specific concerns will change accordingly. Also, as mentioned in previous attachments, a regional platform including all active programs, activities, and solid waste data would allow for the region to make data driven decisions about its concerns and priorities.

Attachment III.L. Regional Goals and Objectives, Including Waste Reduction Goals

Note: Volume II, Attachment III.L. Regional Goals and Objectives, Including Waste Reduction Goals related to Regional Goals and Objectives is not called for in the original Volume II form but is nonetheless included. It is also noted at the beginning of the relevant section of the attachments that this information is included.

Introduction

As part of the 20-year planning process, TCEQ requires COGs to establish regional goals and objectives meant to be accomplished during the 20-year planning period.

The goals and objectives are a large part of the regional action plan, which is an important tool for the COG to use as it navigates the next 20 years. The action plan provides a roadmap for the region to follow and to gauge its accomplishments. Understanding the goals and objectives and the reasoning behind them will make it easier for the region to fully implement them.

The purpose of this attachment is to provide the additional details, background, and rationale that informed the creation of the goals and objectives.

The goals and objectives are an important tool for the COG, so it is equally important to understand the data and reasoning behind them.

The rest of this document will describe the methods we used to create the goals and objectives, touch on the results, and provide a discussion of key points.

Methods

All of the data collection and research that went into the creation of this plan influenced the goals and objectives.

An initial draft of the goals, objectives, and action steps were shared with the Solid Waste Advisory Committee in order to gain feedback on the regional action plan. Any comments and feedback were integrated into the action plan to ensure the best possible plan.

Additionally, a draft of the goals, objectives, and action steps were shared with the public to further elicit feedback.

Results

The primary results are in Volume II, Section III.L, Table III.L. Regional Goals and Objectives. This section will contain a summary of those results.

A total of four goals and 19 objectives were developed with an average of about five objectives per goal. All four goals are intended to occur throughout the entire planning period. More specific timetables will be associated with action steps in Volume II, Attachment III.N. Plan of Action and Timetable for Achieving Specific Goals and Objectives.

Three of the four goals center on integrated solid waste management with the fourth goal highlighting the importance of leadership and collaboration to ensure plan success.

Figure 23. Diagram of Regional Solid Waste Management Plan Goals

There are some objectives that are repeated in multiple goals. This was done purposefully—to make them easier to remember, as well as hopefully easier to accomplish—because of their synergy. Once the region makes progress towards a particular objective the first time, it will be easier to successfully implement that same objective in other goals.

Goal 1	Maximize beneficial resource use
Goal 2	Responsibly manage problematic waste
Goal 3	Maximize proper disposal
Goal 4	Lead regional planning

Goal 1. Maximize Beneficial Resource Use. This goal includes ideas like recycling, composting, reusing, and waste reduction. For this goal, there are three objectives.

OBJECTIVES
1.A. Improve access to diversion opportunities
1.B. Improve community participation
1.C. Provide education

Goal 2. Responsibly Manage Problematic Wastes. There are three objectives for this goal.

OBJECTIVES
2.A. Improve access to problematic waste collection (includes HHW, tires, electronics)
2.B. Provide Education
2.C. Collect data

Goal 3. Maximize Proper Disposal. It is primarily related to illegal dumping and has six objectives.
OBJECTIVES
3.A. Improve access to solid waste drop-off opportunities
3.B. Improve community participation
3.C. Provide education
3.D. Collect data
3.E. Increase illegal dumping prevention efforts, and
3.F. Increase illegal dumping enforcement

Goal 4. Lead Regional Planning. There are seven objectives.
OBJECTIVES
4.A. Collaborate
4.B. Optimize funding decisions
4.C. Oversee facility planning
4.D. Review and update solid waste management plans
4.E. Make continuous improvements
4.F. Collect data
4.G. Plan for disaster waste

Discussion

The goals and objectives are intentionally short, broad, and easy to read and understand. They are short so that they are easier to remember, and they are broad so the region will be able to adapt the goals and objectives to fit changes that may come in the future or to tailor to specific problems.

GOAL 1

The Goal 1 objectives fit together and build on each other. 1.A. is about improving access to diversion opportunities, making it easier for residents and businesses to participate. 1.B. is about improving that community participation and getting more people involved, and 1.C. is about providing education to ensure people understand how and why they should participate in diversion activities. It is crucial that these objectives build on and reinforce each other to fully accomplish the goal. For example, educating people on the correct way to recycle is not useful if there are minimal opportunities available for recycling.

GOAL 2

There are some consistencies between the objectives in these goals, for example, 1.A. is similar to 2.A., and 1.C. to 2.B. This consistency shows that improving access and education are core activities that need to occur consistently, and the repetition encourages holistic thinking. Increased collection events or drop-offs would improve access, as well as offer a place for education. Educational information should be offered to event participants or drop-off visitors, as well as published on municipal and COG websites. Frequent data collection at events or drop-off centers would allow the region to make informed decisions about problematic waste management. See Volume II, Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives for more details.

GOAL 3

Again, there is repetition between the first four objectives and objectives in previous goals. That repetition not only makes it easier to remember the objectives, but also creates synergy between the different goals.

These objectives follow a logical progression and build on each other. Illegal dumping is often caused because of limited access to a proper disposal option. 3.A. aims to reduce dumping by giving more people convenient and affordable access to proper disposal. Next, 3.B. and 3.C. are about getting the community involved and educated through clean-up events or other avenues. 3.D. involves data collection about common dumping points, what kinds of materials are dumped, among others. Once the region has adequate data, they can identify regional dumping trends and then establish targeted prevention efforts as part of 3.E. Finally, 3.F. is meant to come as a last resort. Preventing illegal dumping is more desirable than cleaning up dumping that has already occurred or punishing people or businesses that have dumped. This approach promotes proactive action rather than reactive.

GOAL 4

This goal includes objectives related to strong leadership and project management. Goal 4 is meant to maximize the impact of the rest of the plan. For the most part, Goals 1 – 3 are actions that need to be taken, and Goal 4 emphasizes collaboration between multiple entities in the region in order to successfully and more easily complete those actions. This goal also contains other solid waste related tasks the COG has to do as part of TCEQ requirements.

Objective 4.A. encourages the COG to collaborate between cities, counties, and other COGs. 4.B. suggests the COG optimize their budget in order to make well informed financial decisions according to the events and activities that fit into their 20-year plan. 4.C. incorporates facility planning that the COG is required to do according to TCEQ regulations. 4.D. suggests the COG update their solid waste management plans regularly and record successes and goal progress. 4.E. allows for the COG to evolve throughout the 20-year period and advance their practices and technologies. 4.F. encourages the COG to gather data to help plan and improve for the future. Lastly, 4.G. allows for the COG to plan for disaster waste in case of a flood, hurricane, or other natural or man-made disaster. This waste can heavily impact landfill life, so it is important for the region to have plans in place that detail how to handle the wastes.

Conclusion

The goals and objectives described here are the backbone of the regional action plan. This action plan, informed by all of the data IGI collected for the region, will play a crucial role in future solid waste related decisions the COG makes.

In the future, the region should ensure that the action plan is updated as needed and that they collect and share data about their accomplishments and challenges related to plan implementation.

Attachment III.N. Recommended Plan of Action and Associated Timetable for Achieving Specific Goals and Objectives

Introduction

As part of the 20-year planning process, TCEQ requires a plan of action for goals and objectives, along with milestone dates for each.

This Recommended Plan of Action is shown in the Volume II Form. It includes the goals and objectives identified in Volume II, Section III.L, Table III.L. Regional Goals and Objectives. It also provides more detail about each objective through the action steps. Each action step has a corresponding milestone date, which is either short-range (1 – 5 years), intermediate (6 – 10 years), or long-range (11 – 20 years or more). Some action steps occur in all three planning periods: short-range, intermediate, and long-range.

The Recommended Plan of Action is influenced by the data presented in every previous section in the Volume II form. Understanding the processes and data that led to the creation of this Plan of Action will ensure that members of the region are working in the same direction towards the same goals.

The purpose of this attachment is to offer additional details and commentary about the rationale that influenced the plan of action.

This attachment will briefly describe each goal and the objectives and action steps within each goal. It will also provide additional detail about specific steps the region might take to accomplish each action step.

The rest of this document will describe the rationale IGI used to form the action plan and provide a discussion.

Methods

The action steps were influenced by the areas of concern IGI identified in the region. These concerns are explained in detail in Volume II, Attachment III.I. Solid Waste Management Concerns and Priorities. All of the data collection and analysis that were in the other parts of this plan influenced the concerns, and therefore largely influenced each action step.

Results

There are four goals for the region, and within these goals there are 19 total objectives, some of which are repeated across multiple goals. There are 48 total action steps, with an average of about 12 steps in each goal. 12 steps are short-range, 9 are intermediate term, one is long-range, and 26 are across the entire planning period. In this section we will show the entire action plan.

A summary of the results of this analysis are presented in Vol. II, Table III.N.I Plan of Action and Timetable for Achieving Specific Goals and Objectives. The action steps have been published here alongside the goals and objectives to create an at-a-glance, go-to version of the plan.

Goal 1: Maximize beneficial resource use

Objective	Action step	Key Partners	Milestones
1.A. Improve access to diversion opportunities	1.A.1. Encourage and support identification and sharing of comprehensive list of locations to divert materials from the landfill (e.g., recycling, reuse, and composting drop-off locations, schools, private businesses)	Business/private sector, cities, counties, waste industry	Short-range
	1.A.2. Encourage government agencies to lead by example in waste diversion and environmentally friendly procurement practices (e.g., establish recycling programs and buy recycled products, per TAC Chapter 328, Subchapter K, Rule 328.202)	Cities, counties, Keep America Beautiful, Keep Texas Beautiful	
	1.A.3. Explore innovative waste collection and processing methods (e.g., Recyclops collection services, and black soldier fly larvae for food waste)	Business/private sector, cities, counties, waste industry	
	1.A.4. Encourage and support expanding the composting of biosolids and organic wastes, following local successful models (e.g., Twin Oaks Landfill and Compost)	Business/private sector, cities, counties, river authorities, waste industry	Intermediate
	1.A.5. Encourage outreach to businesses throughout the region to reduce their solid waste footprint	Business/private sector, Keep America Beautiful, Keep Texas Beautiful, waste industry	
	1.A.6. Encourage exploration of innovative ways to voluntarily increase the volume of materials diverted (e.g., recycling cooperatives)	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, waste industry	
	1.A.7. Encourage exploration of opportunities to divert construction and demolition materials from landfills (e.g., Habitat for Humanity in Bryan/College Station)	Business/private sector, cities, counties, waste industry, non-profits	
1.B. Improve community participation	1.B.1. Encourage and support identification and outreach to large-volume generators with existing programs to consider accepting community-generated materials	Business/private sector, cities, counties, waste industry	Intermediate
	1.B.2. Outreach to community, civic, and school/university groups to provide volunteers for collection event activities where appropriate	Business/private sector, cities, counties, non-profits, river authorities	Short-range, intermediate, and long-range
	1.B.3. Explore working with economic development offices to recruit companies to the region which use recycled material feedstocks	Business/private sector, cities, counties	

Goal 1: Maximize beneficial resource use (continued)

1.C. Provide education	1.C.1. Promote broad public awareness using cost-effective communication tools including social media; COG, city, and county websites; and print materials, where appropriate, to provide consistent, reliable communication (e.g., where to take common reusable materials and recyclable materials)	Business/private sector, cities, counties, non-profits, river authorities	Short-range, intermediate, and long-range
	1.C.2 Support sharing audience-specific information to educate target audiences on source reduction, recycling, reuse, or composting opportunities	Business/private sector, cities, counties, local governments, non-profits, river authorities, TCEQ	

Goal 2: Responsibly manage problematic waste

Objective	Action step		Key Partners	Milestones
2.A. Improve access to problematic waste collection	2.A.1.	Encourage cities and counties to request information about on-demand curbside special waste collection (e.g., Waste Management At Your Door)	Cities, counties, waste industry	Short-range
	2.A.2.	Explore creating reuse opportunities (e.g., paint reuse program)	Cities, counties, business/private sector, non-profits	
	2.A.3.	Encourage and support local problematic waste collections events and explore developing region-wide collection events (e.g., one centralized rotating event, individual community events held on the same day)	Cities, counties, river authorities	Short-range, intermediate, and long-range
2.B. Provide education	2.B.1.	Encourage and support identifying businesses where problematic wastes can be dropped off throughout the region (e.g., Walgreens, Best Buy, Automotive Shops, Habitat Restore)	Business/private sector, cities, counties, non-profits	Short-range
	2.B.2.	Promote broad public awareness using cost-effective communication tools including social media; COG, city, and county websites; and print materials, where appropriate, to provide consistent, reliable communication	Business/private sector, cities, counties, non-profits, river authorities	Short-range, intermediate, and long-range
	2.B.3.	Leverage collection events to increase understanding of problematic waste by providing information to the media and local champions, and providing information to event participants—including print materials where appropriate (e.g., household hazardous waste source reduction, collection events, environmental impacts, and where to take problematic materials)	Business/private sector, cities, counties, non-profits, river authorities	
	2.B.4.	Support sharing audience-specific information to educate target audiences on proper problematic waste management (e.g., Biocorridor organizations)	Business/private sector, cities, counties, local governments, non-profits, river authorities, TCEQ,	
2.C. Collect data	2.C.1.	Encourage and support collection, analysis, and data sharing to improve future events (e.g., participant ZIP Code, materials collected, and cost to dispose of materials)	Business/private sector, cities, counties, river authorities, waste industry	Intermediate

Goal 3: Maximize proper disposal

Objective	Action step	Key Partners	Milestones
3.A. Improve access to solid waste drop-off opportunities	3.A.1. Continue to support and expand reduced-cost options for waste disposal (e.g., free drop-off days, income-based vouchers, and pay-per-bag programs at collection centers and/or landfills)	Cities, counties, river authorities, waste industry	Short-range
	3.A.2. Share best practices for and continue to support municipal and county collection centers	Cities, counties, Keep America Beautiful, Keep Texas Beautiful, river authorities	Short-range, intermediate, and long-range
3.B. Improve community participation	3.B.1. Support programs that encourage and enable community reporting (e.g., illegal dumping reporting app, phone line)	Cities, counties, Keep America Beautiful, Keep Texas Beautiful, river authorities	Short-range
	3.B.2. Support local community clean up events and encourage organizers to seek funding from business and civic partners, share best practices with other local organizers and recruit volunteers from schools and other community organizations	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, non-profits, river authorities	Short-range, intermediate, and long-range
3.C. Provide education	3.C.1. Promote broad public awareness using cost-effective communication tools including social media and the websites of each relevant city and county to provide consistent, reliable communication	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, non-profits, river authorities	Short-range, intermediate, and long-range
	3.C.2. Leverage cleanup events to increase understanding of illegal dumping by providing information to the media and local champions, and providing information to cleanup participants—including print materials where appropriate (e.g., event dates, penalties and impact, and where to take commonly dumped materials)	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, non-profits, river authorities	
	3.C.3. Support educating and engaging targeted segments of the community (e.g., students, residents, construction companies, property owners, and businesses) on proper disposal methods and the impact of illegal dumping	Business/private sector, cities, counties, local governments, non-profits, river authorities, TCEQ	

Goal 3: Maximize proper disposal (continued)			
3.D. Collect data	3.D.1. Encourage collection and analysis of illegal dumping data to better understand litter and illegal dumping in urban and rural areas (e.g., illegal dumping—dumping locations, cost to clean up and enforce laws, and enforcement outcomes; reduced-cost disposal options--participation, volume, and ZIP Code)	Cities, counties, Keep America Beautiful, Keep Texas Beautiful, local government, river authorities, waste industry	Intermediate
3.E. Increase illegal dumping prevention efforts	3.E.1. Support deterrents such as surveillance cameras, simple signage, beautification, and fencing in high-incident areas as part of a comprehensive illegal dumping strategy, which includes prevention, abatement, education, and enforcement	Cities, counties, non-profits	Long-range
3.F. Improve illegal dumping enforcement	3.F.1. Outreach to prosecutors and judges to increase their support of illegal dumping enforcement	Cities, counties	Short-range
	3.F.2. Encourage and support exploration of a Regional Environmental Task Force to share emerging illegal dumping issues, lessons learned, and best practices (e.g., CAPCOG model)	Cities, counties	Intermediate
	3.F.3. Support training for enforcement officers and judges	Cities, counties	Short-range, intermediate, and long-range

Goal 4: Lead regional planning

Objective	Action step	Key Partners	Milestone
4.A. Collaborate	4.A.1. Encourage and support coordination within the region and look for opportunities to harmonize collections to minimize confusion	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, waste industry	Short-range
	4.A.2. Share the Regional Solid Waste Management Plan with relevant local decision makers to increase awareness, encourage participation, and maximize benefits (e.g., cities, counties, school districts, and other civic leaders)	Cities, counties	
	4.A.3. Encourage the development of local solid waste management plans for cities and counties to implement the relevant goals 1-3 in this plan for their communities	Cities, counties	
	4.A.4. Continue annual Solid Waste Management Award program for cities, counties, businesses, and individuals within the region	Business/private sector, cities, counties	Short-range, intermediate, and long-range
	4.A.5. Utilize and customize existing resources and tools where possible to create consistency and save time and money (e.g., TCEQ- and other COG-developed educational materials)	EPA, TCEQ	
4.B. Optimize funding decisions	4.B.1. Maintain and administer local Pass-through Grant Program to dispense funds e.g., TCEQ as available to encourage committee participation and ensure alignment with regional waste management priorities; this program includes training, application requirements, scoring, authorized project categories, project recording and performance requirements, etc.	TCEQ	Short-range, intermediate, and long-range
	4.B.2. Apply for external grant funding to supplement available TCEQ funds to enable broader implementation of the Regional Solid Waste Management Plan	Federal, state, and private grant funding agencies	
4.C. Oversee facility planning	4.C.1. Evaluate Municipal Solid Waste facility permit applications	TCEQ, waste industry	Short-range, intermediate, and long-range
	4.C.2. Monitor and share annual TCEQ landfill reports regarding regional waste disposal capacity	Business/private sector, cities, counties, local governments, waste industry	
	4.C.3. Maintain municipal solid waste closed landfill inventory	TCEQ	
4.D. Review and update solid waste management plans	4.D.1. Update Regional Solid Waste Management Plan as necessary	Business/private sector, cities, counties, local governments, non-profits, waste industry	Short-range, intermediate, and long-range
	4.D.2. Continue to publish biennial status reports of regional solid waste management plan goal progress and accomplishments	TARC, TCEQ	
4.E. Make continuous improvements	4.E.1. Stay informed about changing solid waste management best practices and technologies and encourage other entities to do the same	Business/private sector, cities, counties, Keep America Beautiful, Keep Texas Beautiful, local governments, non-profits, waste industry	Short-range, intermediate, and long-range
4.F. Collect data	4.F.1. Explore developing a regional data sharing platform which could be used by cities and counties within the COG to help with solid waste planning	Cities, counties	Intermediate

Goal 4: Lead regional planning (continued)			
4.G. Plan for disaster waste	4.G.1 Continue to encourage development of local disaster debris management plans	Business/private sector, cities, counties, waste industry	Short-range, intermediate, and long-range
	4.G.2. Promote peer exchange opportunities to share best practices and existing resources for local disaster debris managements plans	Cities, counties	

Discussion

In this discussion, we will review the purpose of the goals and objectives at a high level (for more information see Volume II, Attachment III.L.). Then we will provide additional information related to action steps.

The action steps are purposefully general to be meaningful for a 20-year plan and allow for customization and changes as conditions evolve. Additionally, the data available did not allow for creating overly specific actions such as increasing the number of diverted materials by a specific percent or amount.

Another benefit of broadly applicable action steps is to allow individual cities or counties to identify which steps directly apply to their situations and tailor their own local plans accordingly to fit the needs of their community.

GOAL 1: MAXIMIZE BENEFICIAL RESOURCE USE

This goal addresses source reduction, recycling, and composting, as well as community involvement and educational outreach components. We created this goal based on concerns related to source reduction and recycling, as well as the statewide interest in increasing source reduction and waste minimization.

OBJECTIVE 1.A. IMPROVE ACCESS TO DIVERSION OPPORTUNITIES

Increasing access is the first objective in Goal 1 because we recognize that the region cannot divert materials from the landfill if there are no opportunities to do so.

1.A.1. Encourage and support identification and sharing of a comprehensive list of locations to divert materials from the landfill (e.g., recycling, reuse, and composting drop-off locations, schools, private businesses)

There are already options for waste diversion in the region, but there is not adequate information available for all of them. Having a comprehensive, region-wide list detailing the existing options for diversion and encouraging that the list is posted on the COG website as well as on city and county websites will inform residents about their diversion opportunities. This step should be completed in the short-range, with updates to the list occurring as needed.

1.A.2. Encourage government agencies to lead by example in waste diversion and environmentally friendly procurement practices (e.g., establish recycling programs and buy recycled products, per TAC Chapter 328, Subchapter K, Rule 328.202)

The region should encourage the leadership of governmental agencies, following the Texas Administrative Code's recommendations for government offices, to have recycling programs and to buy recycled products.[59] This encouragement should happen in the short-range.

1.A.3. Explore innovative waste collection and processing methods (e.g., Recyclops collection services, and black soldier fly larvae for food waste)

To keep up with changing technologies, we advise the region to explore innovative waste collection or processing methods. We offer two examples, but the region is encouraged to explore any options that would allow them to achieve higher levels of diversion. The region should explore measures in the short-range.

1.A.4. Encourage and support expanding the composting of biosolids and organic wastes, following local successful models (e.g., Twin Oaks Landfill and Compost)

There is already some composting of biosolids and other organic wastes in the region, so these efforts should be encouraged to continue and expand where possible. The plans for new facilities or expansion plans of existing ones should be completed in the intermediate period.

1.A.5. Encourage outreach to businesses throughout the region to reduce their solid waste footprint

Businesses contribute larger portions of waste to the waste streams than residences do, so it is important to encourage outreach to them to include them in source reduction efforts. Outreach should be done in the intermediate period.

1.A.6. Encourage exploration of innovative ways to voluntarily increase the volume of materials diverted (e.g., recycling cooperatives)

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[59] Office of the Secretary of State. (2020, July 2). *Texas Administrative Code, Title 30, Part 1, Chapter 328, Subchapter K, Rule 328.202.* Texas Secretary of State. https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=30&pt=1&ch=328&rl=202

The region should explore innovative measures to divert more materials, in addition to the diversion efforts it currently participates in. We offer the example of recycling cooperatives. These and other opportunities should be explored in the intermediate period.

1.A.7. Encourage exploration of opportunities to divert construction and demolition materials from landfills (e.g., Habitat for Humanity in Bryan/College Station)

Construction and demolition materials contribute significant weight and volume to landfills, but many of the materials are reusable or recyclable. The region should encourage exploring opportunities that divert these materials from the landfill. Options should be explored in the intermediate period.

OBJECTIVE 1.B: IMPROVE COMMUNITY PARTICIPATION

Active community participation is necessary to achieve the goals in this plan. The steps within this objective aim to bring together all members and sectors of the region to work towards maximizing beneficial use. Solid waste related issues do not only affect the entities that directly deal with them. They affect the entire region, requiring participation from everyone.

1.B.1. Encourage and support identification and outreach to large-volume generators with existing programs to consider accepting community-generated materials

Within large generators in the region, there is likely already some recycling occurring. We recommend that the region encourage outreach to these generators to see if they will consider accepting materials generated within the community. Partnering within the community could be beneficial for all the players involved. The large volume generators could create community good will for their business, and other eager recyclers could have a convenient place to take their materials within the community. The region should address this effort in the intermediate period.

1.B.2. Outreach to community, civic, and school/university groups to provide volunteers for collection event activities where appropriate

There are already regular collection events taking place in the region for varied items. The region should outreach to interested groups in the community to recruit volunteers for these events. This maximizes funding resources in the region because volunteers provide free staff. Ideas for potential partners can be found in Volume II, Attachment III.H. Identification of Public and Private Management Agencies and Responsibilities. This outreach should take place across the entire planning period anytime there is an event.

1.B.3. Explore working with economic development offices to recruit companies to the region which use recycled material feedstocks

The region should explore partnerships with local economic development offices to help expand the market for recyclables. Partnerships should continue throughout the planning period.

OBJECTIVE 1.C: PROVIDE EDUCATION

Education is an important part of achieving these goals. Members of the region cannot maximize their resource use and achieve more waste reduction if they are not educated on how to do so. We also created this objective in response to Advisory Committee members prioritization of education as their highest need.

1.C.1. Promote broad public awareness using cost-effective communication tools including social media; COG, city, and county websites; and print materials, where appropriate, to provide consistent, reliable communication (e.g., where to take common reusable materials and recyclable materials)

There are disjointed efforts towards educating members of the region occurring throughout the region. These efforts should not be forgotten, but the COG should promote efforts so that everyone in the region has access to consistent, accurate information about disposal or recycling efforts, and more. We specifically recommend utilization of social media, COG and municipal websites, and print materials where appropriate, such as at a collection event. This information needs to be updated and maintained throughout the entire planning period.

1.C.2. Support sharing audience-specific information to educate target audiences on source reduction, recycling, reuse, or composting opportunities

The region should share information about source reduction, recycling, reuse, and composting opportunities that are customized to the specific target audience. For example, government offices should not receive the same information that elementary school children do. This educational information needs to be maintained throughout the planning period.

GOAL 2: RESPONSIBLY MANAGE PROBLEMATIC WASTE

This goal addresses household hazardous waste (HHW) and other wastes that are problematic to collect or dispose of, such as tires and electronic waste. We created this goal based on committee member concerns related to the difficulty of handling these wastes.

OBJECTIVE 2.A: IMPROVE ACCESS TO PROBLEMATIC WASTE COLLECTION

This objective is similar to the first objective of the previous goal. Improving access is an important first step to managing wastes. Problematic wastes are potentially harmful to people and to the environment if they are thrown away, so it is important that there is widespread access to proper collection opportunities.

2.A.1. Encourage cities and counties to request information about on-demand curbside special waste collection (e.g., Waste Management At Your Door)

Cities and counties are encouraged to request information on At Your Door, an on-demand curbside collection of HHW and electronics, offered by Waste Management. Curbside collection is the most convenient way for residents to handle the disposal of their HHW and electronics. Cities and counties should consider At Your Door in the short-range.

2.A.2. Explore creating reuse opportunities (e.g., paint reuse program)

The region should explore creating reuse opportunities for common household hazardous wastes. We specifically mention a paint reuse program because it is the most common item collected at HHW events. Also, paint collection and re-blending can be done by volunteers without specialized training. Exploration and possible implementation of these should be done in the short-range.

2.A.3. Encourage and support local problematic waste collections events and explore developing region-wide collection events (e.g., one centralized rotating event, individual community events held on the same day)

We recommend that the COG supports cities and counties if they hold their own problematic waste collection events. This support could take the form of financial aid, or just sharing best practices. We also recommend consideration of region-wide collection events, such as through multiple cities holding an event on the same day, or a COG event that rotates through the region. Events should take place throughout the entire planning period.

OBJECTIVE 2.B: PROVIDE EDUCATION

Education is an important aspect of proper disposal for problematic wastes. Residents of the COG need to not only understand that these wastes cannot be thrown away with regular trash, but also understand what to do with them.

2.B.1. Encourage and support identification of businesses where problematic wastes can be dropped off throughout the region (e.g., Walgreens, Best Buy, Automotive Shops)

The COG, cities, and counties should encourage identification of businesses in the region that accept problematic wastes, such as Best Buy, Walgreens, Home Depot, etc. Consistent information across the region will help ensure that all residents know where to take some of their wastes. Identification of businesses should be completed in the short-range.

2.B.2. Promote broad public awareness using cost-effective communication tools including social media; COG, city, and county websites; and print materials, where appropriate, to provide consistent, reliable communication

Similar to step 1.C.1. in the previous goal, we recommend that the COG promote efforts that allow access to consistent, accurate information related to problematic waste for everyone in the region. Again, we specifically recommend social media, COG and municipal websites, and print materials at collection events. Information should be updated throughout the entire planning period.

2.B.3. Leverage collection events to increase understanding of problematic waste by providing information to the media and local champions, and providing information to event participants—including print materials where appropriate (e.g., household hazardous waste source reduction, collection events, environmental impacts, and where to take problematic materials)

The region should use its collection events as an opportunity to educate participants, as well as use various forms of media to advertise the events. This should be done throughout the entire planning period any time there is an event.

2.B.4. Support sharing audience-specific information to educate target audiences on proper problematic waste management (e.g., Biocorridor organizations)

The Biocorridor within the region generates hazardous wastes. Specific education is important to ensure safe disposal. Education should occur throughout the planning period.

OBJECTIVE 2.C: COLLECT DATA

Data collection is crucial to better understand the materials and participants at collection events and to better plan for the future.

2.C.1. Encourage and support collection, analysis, and data sharing to improve future events (e.g., participant ZIP Code, materials collected, and cost to dispose of materials)

The region should encourage organizers to collect data points such as participant zip code, the materials collected, and cost of disposal at all collection events. This data should be shared with others in the COG so that future events can be improved. The region should encourage an initial data collection in the intermediate period.

GOAL 3: MAXIMIZE PROPER DISPOSAL.

This goal addresses illegal dumping and the problems associated with it. We created this goal in response to committee member concerns and because of statewide issues related to dumping.

OBJECTIVE 3.A: IMPROVE ACCESS TO SOLID WASTE DROP-OFF OPPORTUNITIES

Illegal dumping often occurs because access to proper disposal is not affordable or convenient. Improving that access could reduce the amount of dumping.

3.A.1. Continue to support and expand reduced-cost options for waste disposal (e.g., free drop-off days, income-based vouchers, and pay-per-bag programs at collection centers and/or landfills)

The region should continue and expand the reduced cost options for disposal that it currently has, such as pay-per-bag options at drop-off centers. It should also look into more options to ensure adequate disposal for as many people as possible to lessen the need to illegally dump. The region should explore new reduced cost options in the short-range.

3.A.2. Encourage sharing best practices for and continue to support municipal and county collection centers

There are already many municipal and county collection centers in the region. The region should support these existing centers, as well as encourage sharing best practices amongst centers. Best practices sharing and support should continue throughout the planning period.

OBJECTIVE 3.B: IMPROVE COMMUNITY PARTICIPATION

Community involvement can help reduce dumping incidents. For example, if someone volunteers at an illegal dumping clean up event, they are less likely to ever dump because they understand the work that goes into cleaning it up. Also, these volunteers gain a better understanding of illegal dumping and are more likely to report it if they see it happening.

3.B.1. Support programs that encourage and enable community reporting (e.g., illegal dumping reporting app, phone line)

The region should support programs that enable community reporting of illegal dumping, such as a phone line or reporting app. Having a consistent method for community members to report dumping allows for a better chance of finding the perpetrator. Community reporting methods should be explored in the short-range.

3.B.2. Support local community clean up events and encourage organizers to seek funding from business and civic partners, share best practices with other local organizers and recruit volunteers from schools and other community organizations

There have been clean up events in the region in the past. These event organizers should share best practices and funding tips throughout the region. All future events should recruit volunteers from schools and other community groups to reduce costs. These practices should occur throughout the planning period for all events.

OBJECTIVE 3.C: PROVIDE EDUCATION

Education is crucial so that members of the region understand why they should not dump and understand where to properly dispose of their materials.

3.C.1. Promote broad public awareness using cost-effective communication tools including social media and the websites of each relevant city and county to provide consistent, reliable communication

As in the previous two goals, broad public awareness is the idea that everyone in the region has access to consistent and accurate information related to illegal dumping. This information should be maintained throughout the planning period.

3.C.2. Leverage cleanup events to increase understanding of illegal dumping by providing information to the media and local champions, and providing information to cleanup participants—including print materials where appropriate (e.g., event dates, penalties and impact, and where to take commonly dumped materials)

During clean up events, organizers should provide educational information to participants, including information such as where to take commonly dumped materials and the penalties of dumping. Event organizers should also use media to advertise the events. These should be done anytime there is an event.

3.C.3. Support educating and engaging targeted segments of the community (e.g., students, residents, construction companies, property owners, and businesses) on proper disposal methods and the impact of illegal dumping

The region should support providing targeted information to groups such as businesses, residents, and construction companies so that common generators of waste understand illegal dumping related issues. Information should be provided throughout the planning period.

OBJECTIVE 3.D: COLLECT DATA

Data collection is an important step in understanding unique activities in the region and for planning for the future.

3.D.1. Encourage collection and analysis of illegal dumping data to better understand litter and illegal dumping in urban and rural areas (e.g., illegal dumping—dumping locations, cost to clean up and enforce laws, and enforcement outcomes; reduced-cost disposal options--participation, volume, and ZIP Code)

The region should collect and analyze its own illegal dumping data, such as dumping locations, costs of clean up by government employees and for volunteer events, and effectiveness of reduced cost options. They should also collect data to understand the differences in rural and urban areas as it related to litter and illegal dumping. Data collection should be done in the intermediate period.

OBJECTIVE 3.E: INCREASE ILLEGAL DUMPING PREVENTION EFFORTS

Preventing illegal dumping is easier and more cost-effective than cleaning up areas where dumping has already occurred. It is also a part of a comprehensive illegal dumping strategy that includes prevention, abatement, education, and enforcement.

3.E.1. Support deterrents such as surveillance cameras, simple signage, beautification, and fencing in high-incident areas as part of a comprehensive illegal dumping strategy, which includes prevention, abatement, education, and enforcement

The region should use the data collected in 3.D.1. to determine where it should focus prevention efforts. Common prevention efforts include signage, fencing, cameras, and beautification. Data should be analyzed, and prevention efforts implemented in the long-range.

OBJECTIVE 3.F: IMPROVE ILLEGAL DUMPING ENFORCEMENT

Consistent enforcement of illegal dumping laws sends the message that future dumping will not be tolerated. Proper enforcement requires participation and support from a diverse array of stakeholders.

3.F.1. Encourage outreach to prosecutors and judges to increase their support of illegal dumping enforcement

The region should encourage outreach to its prosecutors and judges to gain their support in prosecuting illegal dumping crimes. The region should encourage conducting this outreach in the short-range.

3.F.2. Encourage and support exploration of a Regional Environmental Task Force to share emerging illegal dumping issues, lessons learned, and best practices (e.g., CAPCOG model)

The region should encourage exploration of a Regional Environmental Task Force so that best practices and illegal dumping information can be shared throughout the region. Exploration should be completed in the intermediate period.

3.F.3. Support training for enforcement officers and judges

The region should support specialized training for its law enforcement officers and judges so that they understand illegal dumping crimes and penalties. Proper enforcement can only happen after enforcers have been educated. Training should occur throughout the entire planning period.

GOAL 4: LEAD REGIONAL PLANNING

We created this goal to acknowledge the important leadership role members of the COG's Solid Waste Advisory Committee play in the successful implementation of this plan. To have a single source of solid waste management related actions for the COG, other periodic tasks required by TCEQ are included.

OBJECTIVE 4.A: COLLABORATE

Collaboration between all sectors in the region is necessary to implement this plan and to ensure that all members of the region, not just solid waste related industries, are moving in the same direction.

4.A.1. Encourage and support coordination within the region and look for opportunities to harmonize collections to minimize confusion

The region should encourage regional coordination and try to find opportunities to harmonize collected items. Harmonized collection helps minimize confusion. Coordination should happen in the short-range.

4.A.2. Share the Regional Solid Waste Management Plan with relevant local decision makers to increase awareness, encourage participation, and maximize benefits (e.g., cities, counties, school districts, and other civic leaders)

The COG should share the Regional Solid Waste Management Plan with other relevant entities in the region, such as cities, counties, and school districts. Sharing the plan helps maximize benefits and increases community involvement. The plan should be shared in the short-range.

4.A.3. Encourage the development of local solid waste management plans for cities and counties to implement the relevant goals 1-3 in this plan for their communities

The COG should encourage cities and counties to create their own solid waste management plans that implement the relevant parts of the Regional Solid Waste

Management Plan. Localized plans allow for more specific data and specialized efforts. Encouragement of local plans should happen in the short-range.

4.A.4. Continue annual Solid Waste Management Award program for cities, counties, businesses, and individuals within the region

The region should continue its solid waste award program to acknowledge good existing efforts. This also brings more community awareness to solid waste related activities. This program should continue throughout the planning period.

4.A.5. Utilize and customize existing resources and tools where possible to create consistency and save time and money (e.g., TCEQ- and other COG-developed educational materials)

Where possible, the COG should utilize existing communication resources instead of creating new materials from scratch. Many TCEQ and other COG developed materials can be applied to this region, so using these materials saves money. The region should look for these resources to use throughout the planning period.

OBJECTIVE 4.B: OPTIMIZE FUNDING DECISIONS

Most of the steps in this plan's goals require some level of funding to complete. It is important that the COG make decisions that efficiently use available funding, and that they ensure projects align with regional goals.

4.B.1. Maintain and administer local Pass-through Grant Program to dispense funds e.g., TCEQ as available to encourage committee participation and ensure alignment with regional waste management priorities; this program includes training, application requirements, scoring, authorized project categories, project recording and performance requirements, etc.

The Advisory Committee should maintain its local pass-through grant criteria so that each funding request can be evaluated on its alignment with 2022 – 2042 regional goals. The current grant funding process can be found in Addendum | Volume II, Attachment III.N. Grant Funding Program and Grant Application Selection Criteria.

4.B.2. Apply for external grant funding to supplement available TCEQ funds to enable broader implementation of the Regional Solid Waste Management Plan

Entities in the region should apply for grants outside of TCEQ to supplement their existing funds and help with implementation of the plan. Applying for external grants should occur as needed throughout the planning period.

OBJECTIVE 4.C: OVERSEE FACILITY PLANNING

Overseeing facility planning includes TCEQ required steps.

4.C.1. Evaluate Municipal Solid Waste facility permit applications

Throughout the planning period, as needed, the region should evaluate its Municipal Solid Waste facility permit applications.

4.C.2. Monitor and share annual TCEQ landfill reports regarding regional waste disposal capacity

Throughout the planning period, the region should monitor annual TCEQ landfill reports and share them with relevant groups to ensure knowledge about regional disposal capacity.

4.C.3. Maintain municipal solid waste closed landfill inventory

Throughout the planning period, as needed, the region should maintain the Closed Landfill Inventory for MSW landfills.

OBJECTIVE 4.D: REVIEW AND UPDATE SOLID WASTE MANAGEMENT PLANS

Reviewing and updating the Regional Solid Waste Management Plan, as well as any existing local plans, will help keep plans up to date and relevant.

4.D.1. Update Regional Solid Waste Management Plan as necessary

The COG should update the regional plan more often than every 20 years so that information is as useful as possible. Also, frequent updates will make the next 20-year plan easier to complete. Members of the region with local plans should update their plans as needed. Updates to both should occur throughout the planning period.

4.D.2. Continue to publish biennial status reports of regional solid waste management plan goal progress and accomplishments

The COG should continue to publish biennial progress reports to share accomplishments and progress on achieving goals. These reports are required by TARC and TCEQ, but they could also help keep members of the region up to date. Biennial reports should continue throughout the planning period.

OBJECTIVE 4.E: MAKE CONTINUOUS IMPROVEMENTS

In order to keep the recommendations and plans within the Regional Solid Waste Management Plan relevant, there needs to be continuous improvement that matches new and changing technologies.

4.E.1. Stay informed about changing solid waste management best practices and technologies

Throughout the planning period, the region should take steps to ensure it is continually informed about solid waste management practices, such as by attending conferences or performing technical studies.

OBJECTIVE 4.F: COLLECT DATA

As mentioned in previous goals, data collection is an important aspect of planning for the future.

4.F.1. Explore developing a regional data sharing platform which could be used by cities and counties within the COG to help with solid waste planning

The region should create a region wide data sharing platform that cities, counties, and others could add to and learn from. Having a centralized location for data allows for consistent, better-informed decision making. This platform should be created in the intermediate period.

OBJECTIVE 4.G: PLAN FOR DISASTER WASTE

Although disaster waste is typically associated with hurricanes, natural disasters such as floods or violent storms affect all regions. Planning for this waste in advance will help the region the next time it is faced with a disaster.

4.G.1. Continue to encourage development of local disaster debris management plans

All cities and counties within the region are encouraged to create their own disaster debris management plans so that they have a place to share localized, specific knowledge related to disaster waste. The region should continue to encourage cities and counties to do so throughout the planning period.

4.G.2. Promote peer exchange opportunities to share best practices and existing resources for local disaster debris managements plans

The region should share best practices and resources related to disaster debris planning. This collaboration could improve existing plans and help cities or counties create their own, and it should be done throughout the planning period.

Conclusion

The regional action plan described here is the culmination of the data collection that was a part of creating the other sections of this plan. Understanding the background and rationale behind the action plan is important to ensure full implementation.

In the future, the COG should maintain data on how much of the action plan they have accomplished so that they can update when necessary. They should also make note of beneficial partners they may have found, as well as note which steps they accomplished easily or struggled with. Keeping this sort of data will help improve future action steps the COG may develop, as well as future Regional Solid Waste Management Plans.

Addendum | Attachment III.N. Grant Funding Program and Grant Application Selection Criteria

PROJECT SELECTION PROCESS

The TCEQ allows the Brazos Valley Council of Governments to select projects for funding under a competitive process, a noncompetitive process, or a combination of both processes. Either a competitive or noncompetitive process may be used for funding specific projects according to the regional plan priorities.

Previously, BVCOG has used the competitive project selection process, but has the option of using one of the other selection processes. A competitive project selection process includes the issuance of a Request for Applications (RFA) with direct public notification to eligible applicants in the region. This process includes the following: an RFA; screening for eligibility; review and ranking of proposals by the SWAC; and selection of projects by the BVCOG Board of Directors. Initial project selections are made by the SWAC, with approval of the selections by the BVCOG Board of Directors. If a sufficient number of projects have not been selected under the competitive project selection or when additional funds become available, the BVCOG will identify additional projects without conducting another competitive project selection process. These additional projects are screened for eligibility and private industry is given the opportunity to review and comment on the applications. Additional projects will go through the normal approval process at the BVCOG and TCEQ.

BVCOG will, to the best of its knowledge, select projects that 1) promote cooperation between public and private entities, 2) are not readily available, and 3) will not create a competitive advantage over a private industry that provides recycling or solid waste services.

The funding categories will not have priorities.

Brazos Valley Council of Governments does not have plans to use any subregional allocation, category funding limits, grant award funding caps, or similar special standards.

Below is listed the project and/or project categories that were previously proposed for funding in priority order. Category funding limits, grant award funding caps, and/or similar special standards may be considered by the BVCOG, when appropriate.

The Brazos Valley Council of Governments does not guarantee that the following project categories will be eligible for funding under the grants program. The TCEQ has standards and requirements of the grants program that will apply to all proposed projects and/or project categories.

The following are the eligible funding categories: 1) Litter and Illegal Dumping Cleanup and Community Collection Events, 2) Local Enforcement, 3) Educational and Training Projects, 4) Household Hazardous Waste Management, 5) Source Reduction & Recycling, 6) Local Solid Waste Management Plans, 7) Municipal Solid Waste Facilities Eligible for Funding, and 8) Technical Studies.

HOW PROPOSALS WILL BE CONSIDERED

Proposals will be reviewed by eligible members of the Solid Waste Advisory Committee of the BVCOG, using screening and selection criteria developed in cooperation with the Texas Commission on Environmental Quality (TCEQ). The committee consists of representatives of various interests involved in solid waste management in the region, according to the TCEQ guidelines.

Screening Criteria

In order for any proposed project to be considered, the following screening criteria must be met. If these screening criteria are not met, the proposed project will receive no further consideration for grant funding.

1. The application must be complete and all application requirements and procedures followed, including requirements to notify private service providers of the proposed project, when applicable.

Explanation of Private Industry Notification

Required for funding under the following grant categories:

- Source Reduction and Recycling
- Municipal Solid Waste Facilities Eligible for Funding
- A demonstration project under the Educational and Training Projects category

According to state law (*Section 361.014 (b) TX Health & Safety Code*), a project or service funded under this program must promote cooperation between public and private entities, and the grant-funded project or service may not be otherwise readily available or create a competitive advantage over a private industry that provides recycling or solid waste services. In accordance with grant requirements established by the TCEQ, an Applicant for funding under one of the above listed project categories must adhere to the requirements listed below.

1. Contact in person or in writing the known private service providers of similar services which, at the time of the application development, are providing services within the geographic service area that the project intends to serve, prior to making the application. A list of private service providers within the region is available from the BVCOG.
2. Inform the private service providers of the basic details of the proposed project and consider any input and concerns from the private service providers about the project when completing the project proposal.
3. Consider, where appropriate, meeting directly with private service providers that may have a concern about the proposed project to attempt to resolve any concerns before an application is submitted.
4. Complete applicable information on appropriate forms and provide documentation that private service providers were notified of the project prior to submission of the application.

2. The proposed project must conform to eligible standards, eligible recipient standards, and allowable expense and funding standards, as established by the TCEQ and the BVCOG and under all applicable laws and regulations.
3. The applicant must agree to document the results of the project as required by the BVCOG.

4. The proposed project must be technically feasible, and there must be a reasonable expectation that the project can be satisfactorily completed within the required time frames.
5. The proposed project activities and expenses must be reasonable and necessary to accomplish the goals and objectives of the project. One factor in determining reasonableness of expenses shall be whether comparable costs are proposed for comparable goods and services.
6. The proposed project must be consistent with the approved regional solid waste management plan and must directly support implementation of the regional plan.

Selection Criteria

If a proposed project meets all of the applicable screening criteria, it will be evaluated by the Solid Waste Advisory Committee of the BVCOG, using the following selection criteria.

A. PROJECT DESCRIPTION (55 POINTS)

- Is there an adequate explanation as to why the proposed project is needed?
- Is the overall goal or objective of the proposed project clearly stated?
- Is there an estimate of the number of people who would be served or benefited by the proposed project?
- Is the geographic area affected by the proposed project clearly described?
- Is the specific waste stream targeted by the proposed project identified?
- Does the project include adequate levels of customer incentives or public education, or public input, as applicable?
- Are all aspects of the proposed project described in sufficient detail to ensure its overall feasibility or workability?
- If the proposed project includes equipment/supplies, has the applicant shown that the specified equipment/supplies are appropriate for the work to be performed?
- Are the expected benefits of the proposed project adequately described?
- Is the applicant providing matching funds?
- Is the applicant providing In-Kind Services/Funding?

B. WORK PROGRAM (20 POINTS)

- Are all of the major steps or tasks involved in the proposed project clearly presented and adequately described?

- Are responsible entities for accomplishing each step or task identified?
- Is each step or task described in terms of its effect on the total project budget?
- Is a specific timeframe for completing each step or task provided?

C. PROJECT COST EVALUATION (20 POINTS)

- Are the total related costs of the proposed project (not just grant expenditures) adequately considered?
- Are the costs of the proposed project presented in unit terms, such as cost per ton, cost per customer, or cost per capita, as applicable?
- Are the costs of the proposed project compared to any established averages, or to normal costs for similar projects?
- Will the proposed project result in a measurable cost savings, or are the costs of the proposed project otherwise reasonably justified?

D. EFFICACY – MERITS OF PROJECT (30 POINTS)

- Is the project cost-effective?
- Is there a pressing need for this project?
- Will this project have a measurable impact on the waste stream?
- Is there a viable mechanism proposed to measure any impacts?
- Will this project continue on after the grant period?
- Is the project a regionally coordinated (more than one city or county) effort?

E. LEVEL OF COMMITMENT OF THE APPLICANT (5 POINTS)

- To what extent is the applicant requesting funds for salaries or operational expenses?
- To what extent do the appropriate governing bodies support the proposed project?

F. LEVEL OF COMMITMENT – PRE-SCORED (5 POINTS)

- Was a formal signed resolution of support from the governing body attached?

G. SWAC REPRESENTATIVE ACTIVE – PRE-SCORED (30 POINTS)

- Has your SWAC Representative met the attendance requirements?

H. KEEP TEXAS BEAUTIFUL AFFLIATION- PRE-SCORED (10 POINTS)

- Is there a formal signed resolution or letter of support from a Provisional Keep Texas Beautiful (KTB) Affiliate in good standing?
- Is there a formal signed resolution or letter of support from a Certified Keep Texas Beautiful (KTB) Affiliate in good standing?

Comments: *KTB affiliate must be in good standing with Keep Texas Beautiful.*

I. PAST PERFORMANCE- PRE-SCORED (10 POINTS)

- Has not received a BVCOG Solid Waste Implementation Grant in past three years.
- Applicant met most recent grant's goals.
- Applicant did not meet most recent grant's goals.

Contingency Project Selection

- The Brazos Valley Council of Governments, in selecting projects for funding, may establish a list of additional projects from the applications submitted, to be funded if and when additional funding becomes available. The review and approval of a list of additional projects must be conducted under the same procedures and conditions as the selection of the projects to be funded immediately, and private service providers will have the opportunity to review and comment on the project applications.
- The SWAC has decided to award additional project funding if and when additional funding becomes available when a request for additional funding is submitted to the BVCOG. The funding is awarded on the availability of funds and on a first-come-first-serve basis.
- If additional funding becomes available, these projects may be submitted to the TCEQ without additional review and approval by the BVCOG being required. If a private service provider has submitted comments opposing funding of a project on such a list of additional projects, the BVCOG shall notify that private service provider of the opportunity to appeal the project selection directly to the TCEQ, prior to the BVCOG submitting the project to the TCEQ for consideration.

APPEALS PROCESS

The SWAC will adhere to the process outlined by the TCEQ for any appeals pertaining to alleged procedural errors committed by the SWAC. Each applicant will be allowed to utilize the following appeal procedures when actions of the SWAC are questioned. Any applicant appealing the SWAC actions must cite, in writing, to the Chair of the SWAC and to the Executive Director of the Brazos Valley Council of Governments, the specific procedural violation regarding the SWAC actions. Appeals must be based on a specific, identified error of the SWAC and not on factors that allow discretion by the SWAC members (e.g., Local Effort and Merits of the Project scoring factors.)

All appeals will be handled in accordance with the Texas Commission on Environmental Quality (TCEQ) and Brazos Valley Council of Governments (BVCOG) procedural guidelines:

1. Written notification to the SWAC and TCEQ – An applicant must notify the SWAC Chairman and TCEQ in writing of the alleged specific violation of the SWAC procedures within five working days following the scoring.
2. BVCOG Notification to Applicants of Appeal(s) – Within ten (10) working days following the receipt of an appeal; the BVCOG will notify all applicants in the region that the SWAC will reconvene to hear the appeal. When appropriate, the BVCOG will give specific notice to applicants that their scores may be affected by the outcome of the appeal.
3. SWAC Reconvenes to Hear the Appeal(s) – In an open meeting, the SWAC shall consult with the appellant jurisdiction and consider the appeal. With a simple majority quorum present, the SWAC will vote to either deny the appeal or to sustain the appeal and change the score(s).
4. BVCOG Notifies Applicants and TCEQ of Results of Appeal(s) – The BVCOG will send a written description of the results of the appeals meeting to all applicants in the region as well as to TCEQ. If the appeal is resolved, BVCOG staff provides final funding recommendations to the TCEQ. (Note: Applicants negatively affected by an original appeal have the same procedural rights to counter-appeal.) If the appeal is unresolved, BVCOG staff prepares an appeal file for the TCEQ.
5. TCEQ Makes Final Recommendations – The TCEQ will make one of the following final recommendations to the BVCOG Executive Director: sustain the appeal and suggest corrective actions; or reject the appeal and sustain the original SWAC score(s).

If one believes that a proposed implementation project will create a competitive advantage over a local private entity, he or she is encouraged to put those concerns in writing and/or attend the in person and/or virtual *SWAC meeting* and BVCOG Board of Directors meeting. Applicants and those who have opposing concerns will each have 10 minutes for comments at the SWAC meeting. If one feels that his or her concerns have not been carefully weighed in BVCOG's determination of funding, he or she can make a final appeal to TCEQ.

Any private service provider submitting comments opposing a project may appeal in writing to the Authorized Representative of the TCEQ a decision of the governing body approving the selection of a project for funding within (10) working days on the grounds that the project does not promote cooperation between public and private entities, or is readily available in the proposed project service area, or creates a competitive advantage over that private service provider in the provision of recycling or solid waste services.

Addendum | Attachment III.N. Closed Landfill Inventory

Included on the following pages is the Closed Landfill Inventory as of 10/26/2021.

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Brazos Valley Council of Governments
Regional Inventory of Closed Landfill Units

TCEQ

BRAZOS VALLEY COUNCIL OF GOVERNMENTS

NO CLEANUP IS REQUIRED ~ COUNTY CLERKS MUST DEED RECORD CLOSED LANDFILLS WITH APPROXIMATE OR EXACT BOUNDARIES.

FACTS

In 1993, the Texas Legislature passed House Bill (HB) 2537, which required Councils of Governments (COGs) to develop an inventory of closed municipal solid waste landfills for their regional solid waste management plans.

The Texas Commission on Environmental Quality (TCEQ, formerly the Texas Natural Resource Conservation Commission) coordinated with the 24 COGs in Texas to begin inventorying known and suspected closed municipal landfill sites. The result of this study brought forth approximately 4,200 closed municipal solid waste landfills, with 30 in the BVCOG's 7-county region. Estimated point locations were mapped and available historical information was collected into a database for each county and COG.

In 1999, Senate Bill (SB) 1447 was passed and required the COGs to carry out the inventory to a higher level of detail. Each COG was to document and map the exact boundaries of each closed landfill or approximate the boundaries if exact boundaries could not be identified. When an exact boundary can be determined, the COG is required to notify the current landowner regarding the former land use of the property and also notify the County Clerk for deed recordation. Only the sites with confidence levels rated as HIGH have been included as part of the BVCOG Closed Landfill Inventory.

SB 1447 also required that the COGs provide a copy of the closed landfill inventory report to the chief planning official of each municipality and county in which a closed landfill was identified and boundaries documented. The completed closed landfill inventory is also included in the COGs regional solid waste management plan and is provided to the TCEQ.

This inventory will provide valuable information regarding potential development limitations and for environmental consultants and others investigating historical use of properties.

Questions & Answers

Q. What is a closed municipal solid waste landfill?

A. According to rule 330.951 of the Texas Administrative Code (TAC), a closed municipal solid waste landfill is a permitted or previously permitted municipal solid waste landfill, a municipal solid waste landfill which has never been permitted, or a dumping area a defined by TAC § 330.951 (8), which stopped receiving waste and completed the closure activities.

Q. Why is there a Closed Landfill Inventory law?

A. As garbage decomposes, it produces methane gas, which can lead to explosions in high concentrations. The Closed Landfill Inventory can help to identify the potential environmental risk areas. Several years ago in the Austin area, an apartment complex built above an unknown landfill had to be evacuated because of a methane gas leak. Improperly engineered landfills may also be a source of groundwater and soil contamination.

Q. Why are BVCOG and other Texas COGs involved in this Closed Landfill Inventory?

A. It's the law. The Texas Legislature passed HB 2537, in 1993, which required COGs to develop an inventory of closed municipal solid waste landfills as part of their regional solid waste management plans. Then, additional legislation in 1999 (SB 1447) required COGs to focus more detail on site boundaries, where feasible.

Q. What happens when a closed landfill appears on the Closed Landfill Inventory?

A. Only the closed landfills that have exact boundaries or good estimations of boundaries will be deed recorded with the appropriate county clerk. When exact boundaries are known, a letter will be sent to the property owner to notify him/her that a closed landfill has been identified on his/her property. The closed landfills with poor estimations of boundaries or unknown boundaries are not deed recorded and the property owner is not notified. The closed landfills remaining on the inventory are for informational purposes only.

Q. Does the CLI require clean up for these sites?

A. No. Clean up was not included in the legislation. New legislation would have to be passed requiring clean up of sites.

Q. What happens if a closed landfill is identified on a property but there never was a landfill?

A. There is an appeal process if a property owner wants to dispute the identification of a closed landfill on the property. The property owner may offer proof that the waste was removed from the site and/or may sign an affidavit attesting that the property was never used as a landfill; however, the TCEQ ultimately makes the decision.

Q. What kind of development is allowed on a closed landfill?

A. For sites that are deed recorded, development is allowed, but limited. This limitation is to protect against any potential disturbance of the landfill's final cover or liner. Disturbance of the final cover or liner systems is prohibited according to TAC. Some of these prohibitions include borings, piers, spread footings, foundations for light standards, fence posts, manholes, on-site disposal systems and recreational facilities. (For more information, please see: TAC, Title 30, Part 1, Chapter 330, Subchapter T — Use of land over closed municipal solid waste landfills, § 330.951—§ 330.964).

Q. How did sites get on the Closed Landfill Inventory?

A. TCEQ compiled a list of sites based on data collected from complaints, inspections and permitted facilities that were at least 1/4 acre in size.

Q. What are the characteristics of sites to be deed recorded?

A. Most sites that will be deed recorded are permitted facilities owned or operated by municipalities and/or private companies. There is a small number of sites that are unpermitted facilities that will be deed recorded.

Q. Can BVCOG remove sites from the inventory?

A. No. BVCOG can recommend the removal of a site to the TCEQ, but TCEQ will make the final decision. Adequate proof must be provided that documents the suspect landfill never existed.

If you have any questions, please contact us at: (979) 595-2800.

BRAZOS County

#1293

LEGAL DESCRIPTION
A. Millican League, A-39, 22.88 Acres
Brazos County, Texas

Being a part of that certain 22.88 acre tract or parcel of land lying and being situated in the Andrew Millican League, Abstract No. 39, Brazos County, Texas, also being a part of that certain 123.879 acres of land conveyed to Brazos County, Texas by A.A. Hodde and recorded in Volume 850, Pages 352-360 of the Deed Records of Brazos County, Texas; also being identified as Municipal Solid Waste Permit No. 1793. It is the intent of the "Affidavit To The Public" to abandon the aforementioned 22.88 acres (Permit No. 1793) save and except all that certain tract or parcel of land utilized as a Municipal Solid Waste Landfill Site and being more particularly described by metes and bounds as follows:

COMMENCING at the southwest corner of a called 170.88 acre tract conveyed to A.A. Hodde by Mable Loftin, et al, and recorded in Volume 326, Page 598 of the Deed Records of Brazos County, Texas;

THENCE N 01° 03' 44" E for a distance of 1685.77 feet, at 932.85 feet pass a 3/8 inch iron rod for the north corner of a 10.00 acre tract conveyed by A.A. Hodde to Brazos County, to a point for corner;

THENCE S 88° 56' 16" E for a distance of 88.22 feet to a 3/8 inch iron rod found for the PLACE OF BEGINNING;

THENCE S 88° 56' 16" E for a distance of 700.00 feet to a metal tee post set for corner;

THENCE S 01° 03' 44" W for a distance of 480.00 feet to a metal tee post set for corner;

THENCE N 88° 56' 16" W for a distance of 600.00 feet to a metal tee post set for corner;

THENCE N 01° 03' 44" E for a distance of 140.00 feet to a 3/8 inch iron pin found for corner;

THENCE N 88° 56' 16" W for a distance of 100.00 feet to a 3/8 inch iron pin found for corner;

THENCE N 01° 03' 44" E for a distance of 335.00 feet to the PLACE OF BEGINNING and containing 7.381 acres of land, more or less.

See Attached Plat Marked Exhibit "B".

Surveyed by: ______________
A.H. Winder, R.P.L.S.
No. 3856

STATE OF TEXAS
REGISTERED
A. H. WINDER
3856
PROFESSIONAL
SURVEYOR

30° 44.52'
-96° 22.17'

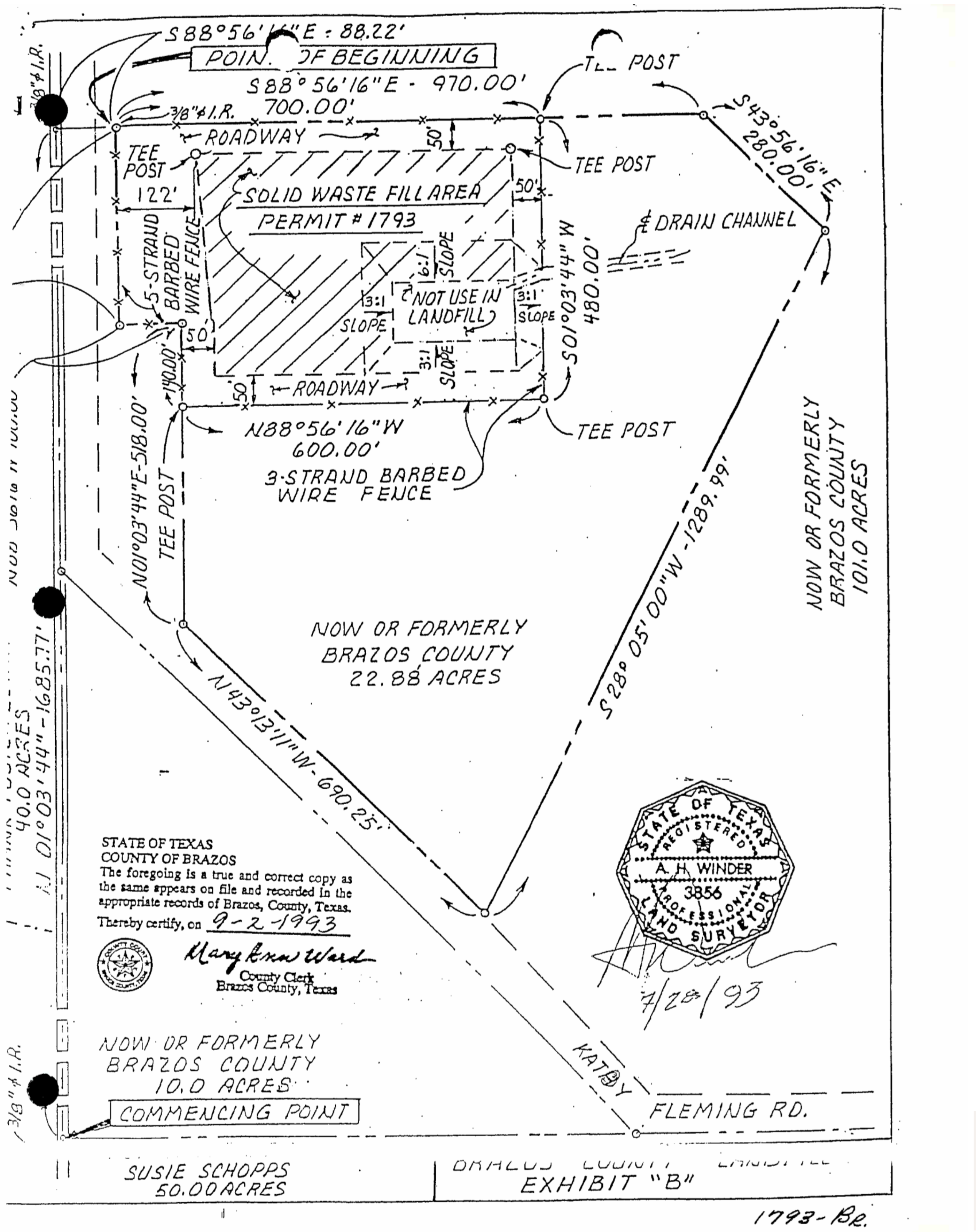
EXHIBIT "A"

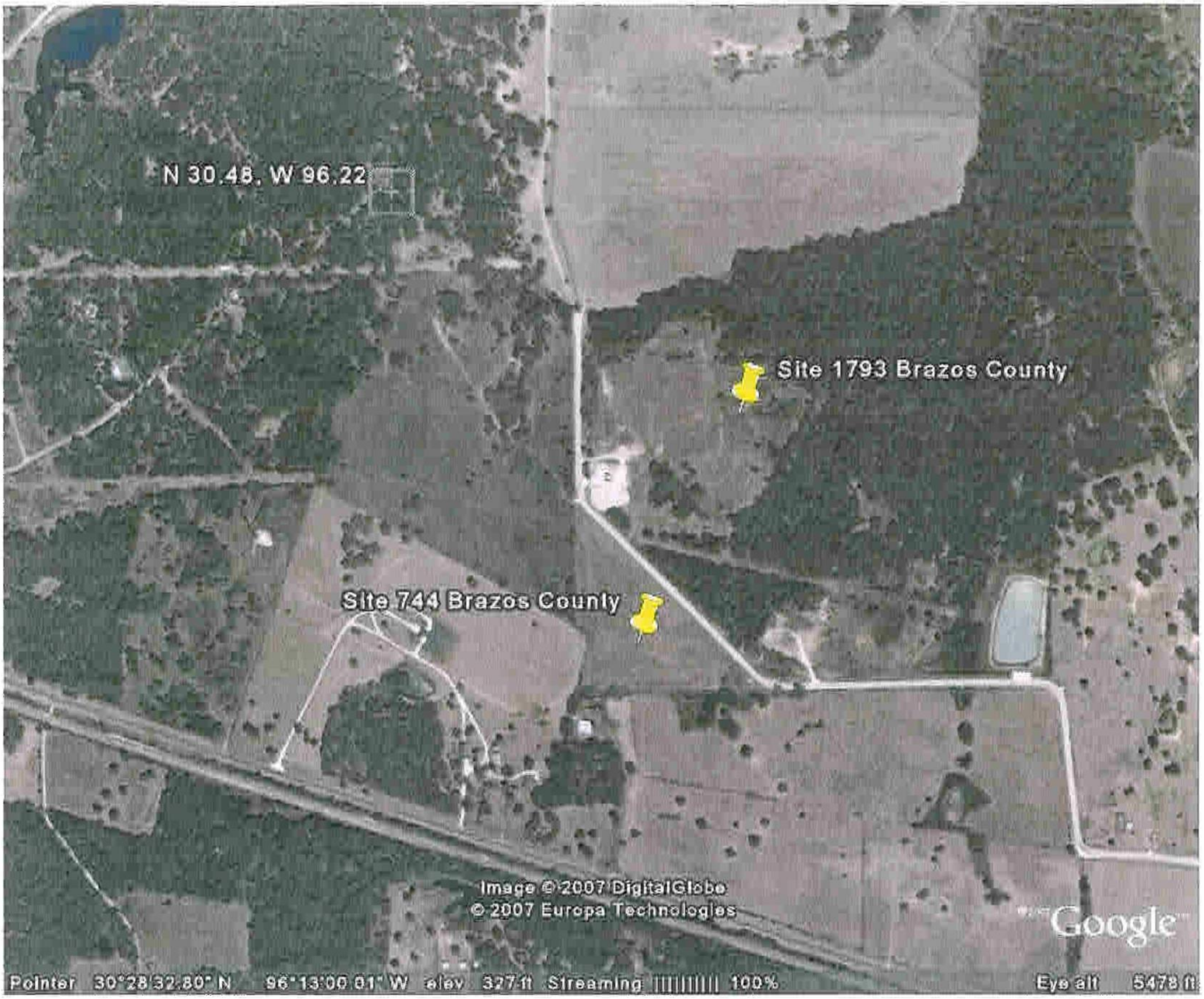
STATE OF TEXAS
COUNTY OF BRAZOS
The foregoing is a true and correct copy as the same appears on file and recorded in the County, Texas

I hereby certify, on 9-2-1993

Mary Ann Ward
County Clerk

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042




N 30.48, W 96.22
Site 1793 Brazos County
Site 744 Brazos County
Image © 2007 DigitalGlobe
© 2007 Europa Technologies
Google
Pointer 30°28'32.80" N 96°13'00.01" W elev 327 ft Streaming |||||||||| 100%
Eye alt 5478 ft

Brazos County (Precinct #1)
Permit No. 744
Page 4

LEGAL DESCRIPTION OF TRACT
OF LAND OWNED BY BRAZOS
COUNTY FOR USE
AS A SOLID WASTE DISPOSAL SITE

STATE OF TEXAS)(

COUNTY OF BRAZOS)(

All that certain tract or parcel of land, lying and being situated in Brazos County, Texas, part of the Andrew Millican League, A-39, being part of the same original tract described in a deed from Alex E. McLeod, et ux, to Eva Byrd Shanley and Mattie Pearl Loftin, dated October 24, 1929, as recorded in Vol. 76, Page 85, in the Deed Records of Brazos County, Texas, or being part of the same land conveyed from Mable Loftin, et al, to A. A. Hodde, by deed dated February 28, 1974, as recorded in Vol. 326, Page 598, in the Deed Records of Brazos County, Texas, and being more fully described by metes and bounds as follows, To-Wit:

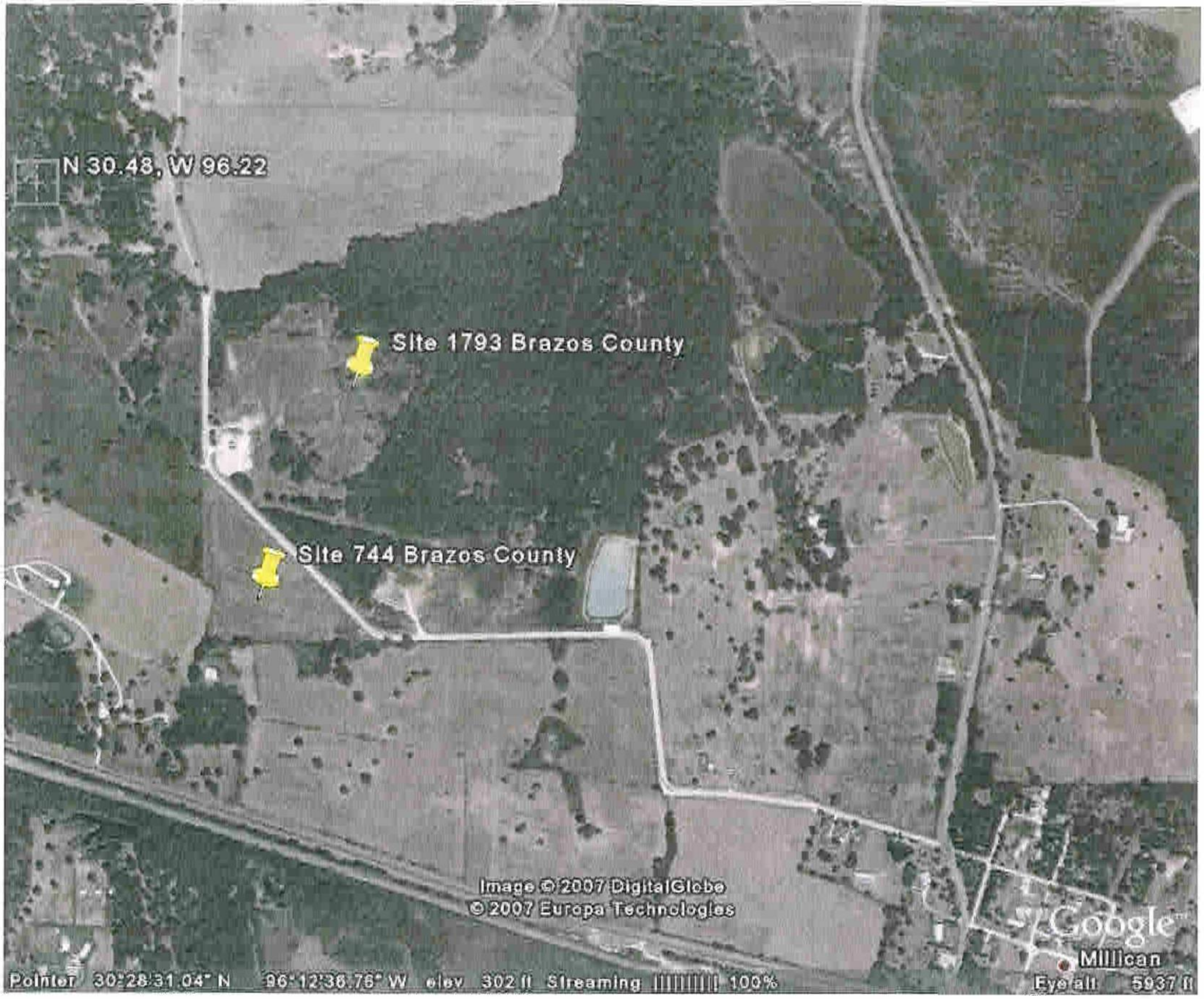
BEGINNING at an old iron shaft marker found on the apparent West line of said Millican League and on the apparent most Eastern line of the William Dever League, A-14 for the Southwest corner of said original land, recorded in Vol. 326, Page 598, being the South-west corner of the tract described herein, and being the apparent Northwest corner of the same land known as the Susie Schopps tract called 50 acres, also being on the apparent East line of the same land known as the B. F. Harrington Estate tract called 90 acres now partly owned by Alvin Gregg, et ux;

THENCE along a portion of the division line of said Millican and Dever Leagues and along a portion of the West line of said original tract, recorded in Vol. 326, Page 598, being along a portion of the East line of said Harrington Estate tract and along a portion of the East line of the same land known as the Frank Foster Estate tract called 40 acres, for the West line of the tract described herein, N 1°03'44" E 932.85 feet to a 3/8 inch iron rod marker set on said division line of said leagues for the North corner of the tract described herein, being at an angle point or turn of a proposed County Road, 60 feet in width, and being on the East line of said Foster tract;

THENCE along the Southwest margin of said proposed road for the Northeast line of the tract described herein, S 43°46'28" E 1324.63 feet to a 3/8 inch iron rod marker set at an angle point or turn in said road for the most Eastern corner of the tract described herein, and being on the North line of said Schopps tract;

THENCE leaving said proposed County Road and along a portion of the North line of said Schopps tract for the South line of the tract described herein, being along a portion of the South line of said original tract, recorded in Vol 326, Page 598, N 88°32'27" W 934.00 feet to the place of beginning and containing 10.000 acres of land.

cc: Brazos County Health Department


N 30.48, W 96.22
Site 1793 Brazos County
Site 744 Brazos County
Image © 2007 DigitalGlobe
© 2007 Europa Technologies
Google
Millican
Pointer 30°28'31.04" N 96°12'36.76" W elev 302 ft Streaming |||||||||| 100%
Eye alt 5937 ft

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

STATE OF TEXAS

AFFIDAVIT TO THE PUBLIC

COUNTY OF BRAZOS

Before me, the undersigned authority, on this day personally appeared Joe J. Estill who, after being by me duly sworn, upon oath states that he is the operator of that certain tract or parcel of land owned by Texas A&M University lying and being situated in Brazos County, Texas, and being more particularly described as follows:

All that certain tract or parcel of land lying and being situated in the Samuel McGowan Survey Abstract No. 156 in College Station, Brazos County, Texas, being a part of the Texas A&M University land and being more particularly described as follows:

Beginning at a point in the line between the said McGowan Survey and the Crawford Burnett League, N 48 degrees 26' 32" W - 1936.3 feet from the east corner of the said McGowan Survey and the southeast line of the Texas A&M University land.

Thence N 48 degrees 25' 38" W - 1268.45 feet along said league line to a fence line:

Thence through the said Texas A&M University land as follows:

S 41° 51' 19" W - 121.55 feet;	S 42° 23' 22" W - 484.72 feet;
S 42° 30' 09" W - 530.38 feet;	S 25° 32' 18" W - 111.05 feet;
S 42° 38' 27" W - 745.15 feet;	S 45° 57' 49" W - 239.47 feet;
S 44° 21' 28" E - 165.59 feet;	N 89° 25' 54" E - 159.28 feet;
S 55° 15' 27" E - 76.20 feet;	N 71° 13' 02" E - 526.67 feet;
N 75° 59' 05" E - 788.51 feet;	S 73° 16' 38" E - 191.27 feet;
S 61° 46' 29" E - 62.70 feet;	N 69° 23' 28" E - 73.67 feet;
N 27° 08' 45" E - 252.02 feet;	N 69° 36' 31" E - 48.27 feet;
N 61° 31' 12" E - 88.92 feet;	N 9° 10' 23" E - 152.19 feet;
N 74° 34' 44" E - 210.24 feet;	N 19° 57' 57" E - 193.10 feet; to

the point of Beginning and containing 47.60 acres of land more or less.

The undersigned further states that from the year 1932 to the year 1984 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Same as above.

Further, Texas A&M University was the owner and Joe J. Estill was the last operator of such Solid Waste Disposal Site.

WITNESS MY/OUR HAND(S) on this the 16th day of May, 19 84.

FILED

MAY 17 AM 9 05

COUNTY CLERK

DEPUTY

298929

Texas A&M University

Owner

SWORN TO AND SUBSCRIBED before me on this the 16th day of May,


N 30.59, W 96.35
Site 1216 Brazos County
Image © 2007 DigitalGlobe
© 2007 Europa Technologies
Google
Pointer 30°35'17.05" N 96°21'00.33" W elev 304 ft Streaming |||||||||| 100%
Eye alt 5703 ft

239715

AFFIDAVIT TO THE PUBLIC

FILED AT 9:15 O'clock A M
SEP 16 1982
FRANK BORISKIE
County Clerk, Brazos County, Bryan, Texas
By ______ Deputy

STATE OF TEXAS

COUNTY OF BRAZOS

Date Recorded 9-17-82

Before me, the undersigned authority, in this day personally appeared Bill J. Cooley who, after being by me duly sworn, upon oath states that from the year 1975 to the year 1977, he was the Leasee of that certain tract or parcel of land lying and being situated in Brazos County, Texas, and being more particularly described as follows:

All that certain tract or parcel of land lying and being situated in the Samuel Davidson League Abstract No. 13 in Brazos County, Texas, being a part of that 100 acre tract described as Tract No. 2 in deed to John A. Arhopulous dated January 3, 1945, and recorded in Volume 118, page 120 of the Deed Records of Brazos County, Texas, and being more particularly described as follows:

Beginning at an iron rod in the fence line on the southeast side of Batt's Ferry Road, S 48° 36' W - 894 feet from a crosstie at the intersection of the southeast line of Batt's Ferry Road and the northeast line of the said Arhopulous 100 acre tract.

Thence S 45° 43' W - 330.0 feet along the fence line on the southeast line of Batt's Ferry Road to an iron rod;

Thence S 45° 00' E O 660.00 feet to an iron rod;

Thence N 45° 43' E - 330.0 feet to an iron rod;

Thence N 45° 00' W - 660.0 feet to the Point of Beginning and containing 5.0 acres of land more or less.

The undersigned further states that from the year 1975 to the year 1977 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Entire tract was used as described above.

WITNESS MY HAND on this the 15th day of September, 1982.

Bill J. Cooley
Owner

SWORN TO AND SUBSCRIBED before me on this the 15 day of September, 1982.

VOL 511 PAGE 700

Jane Moore

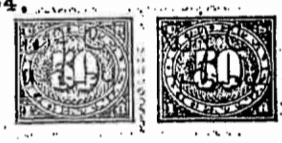

Site 6 Brazos County
N 30.49, W 96.34
© 2007 Europa Technologies
Image © 2007 DigitalGlobe
Google
Pointer 30°29'36.17" N 96°20'00.20" W elev 221 ft Streaming |||||||||| 100%
Eye alt 3980 ft

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

The State of Texas }
County of Brazos } KNOW ALL MEN BY THESE PRESENTS:-

That I, W.J.Coulter, of the County of Brazos and State of Texas, for and in consideration of the sum of Nine Hundred Sixty Nine ($969.00) Dollars to me cash in hand paid by the City of Bryan, Brazos County, Texas, the receipt of which is hereby acknowledged and confessed, have granted, sold and conveyed, and by these presents do grant, sell and convey, unto the said City of Bryan, all that certain tract or parcel of land lying and being situated in the S.F.Austin League Number Nine (9), Abstract number 62, in Brazos County, Texas, and being off the Northwest end of two tracts of land, each tract containing 40.1 acres, as shown in the following two deeds, Mrs. Myrtle Broadway Harrison and husband, J.C.Harrison to W.I.McCulloch, recorded in Volume 82 page 460, and Mrs. Velma Broadway Graham, a feme sole, to E.L.Zimmerman, recorded in Volume 85 page 306 of the Deed Records of Brazos County, Texas, and being more particularly described by metes and bounds as follows: BEGINNING at the West corner of the W.I.McCulloch 40.1 acre tract heretofore referred to, on the North Bank of Still Creek, THENCE, S.45 E. along the Southwest line of said McCulloch tract 710 varas and corner in the North line of Highway No.21, THENCE, N.60 E. along said right of way line and corner at a point where a line run N.45 W. parallel with and 18 varas distant from the last above mentioned line; THENCE, N.45 W. 318.5 varas and corner an iron stake for corner; THENCE, N.45 E. 515 varas and corner a stake (iron stake) set in the N.E.line of the E.L.Zimmerman 40.1 acre tract; THENCE, N.45 W. along the said N.E.line 417 varas and corner a stake set in the North bank of Still Creek; THENCE down said North bank of said Still Creek with its meanders to the place of beginning, containing Thirty Two and 3/10 (32.3) acres of land, to have and to hold the above described premises, together with all and singular the rights and appurtenances thereto in anywise belonging unto the said City of Bryan and its assigns forever; and I do hereby bind myself and my heirs, executors and administrators, to warrant and forever defend, all and singular the said premises unto the said City of Bryan and its assigns against every person whomsoever, lawfully claiming, or to claim the same, or any part thereof.

Witness my hand, at Bryan, Brazos County, Texas, this the 5th. day of November, A.D. ~~19~~ 1934.



W J Coulter

The State of Texas }
County of Brazos }

Before me, Lamar Bethea, a Notary Public in and for Brazos County, Texas, on this day personally appeared W.J.Coulter known ~~toxx~~ me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this the 5th. day of October, A.D.1934.

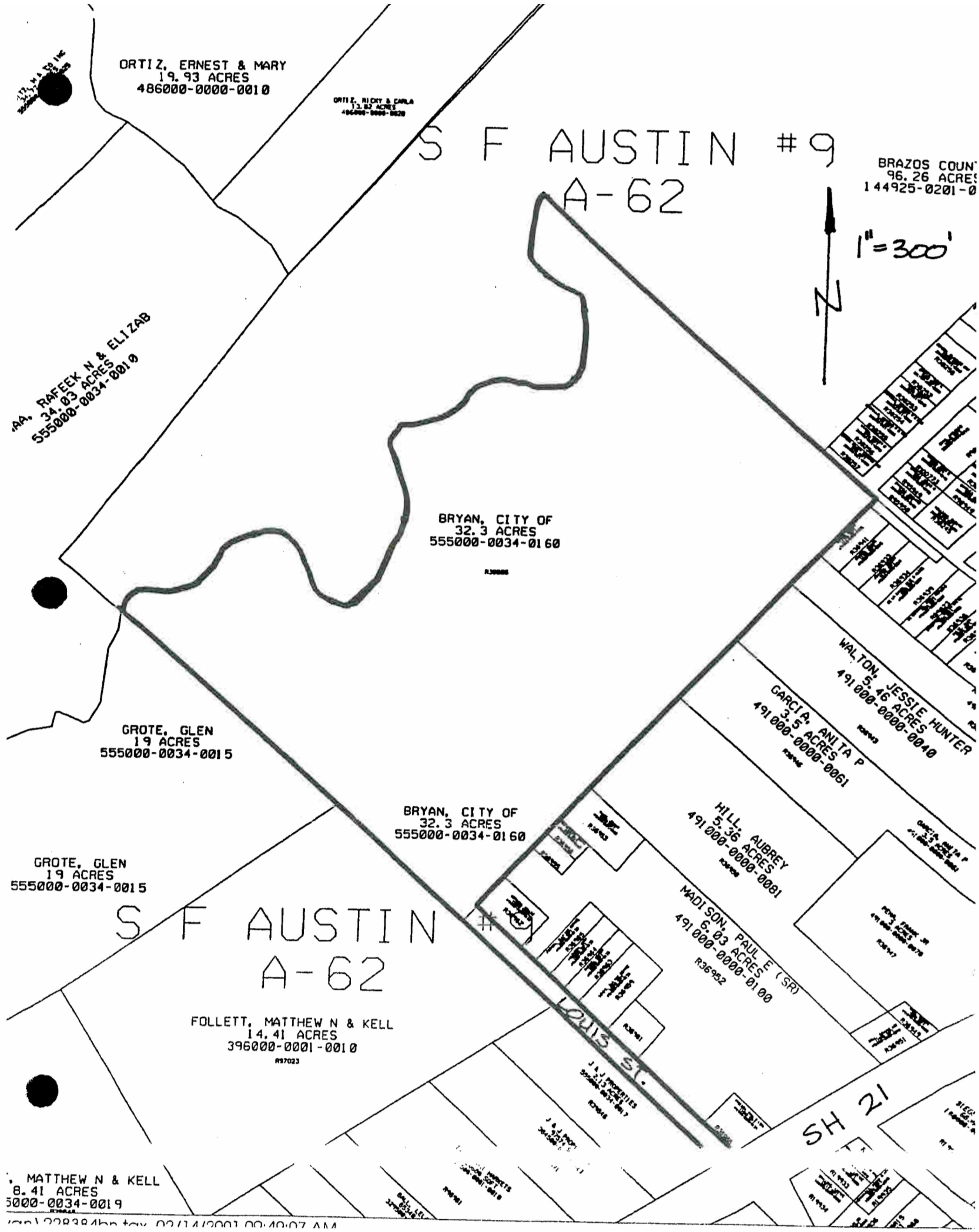
Lamar Bethea
Notary Public in and for Brazos County, Texas.

The State of Texas }
COUNTY OF BRAZOS } I, E. J. Gouy County Clerk in and for said County do hereby certify that the foregoing Instrument dated the 5 day of Nov A.D. 1934 together with its certificate of authentication, filed for record in my office the 7 day of Dec A.D. 1934 at 10 o'clock a M and duly recorded on the 10 day of Dec A.D. 1934 in Deed records of Brazos County, in Volume 98 page 7

WITNESS MY HAND AND OFFICIAL SEAL, at my office in Bryan, Texas this 10 day of Dec A.D. 1934

(L.S.)

E. J. Gouy


ORTIZ, ERNEST & MARY
19.93 ACRES
486000-0000-0010
S F AUSTIN #9
A-62
BRAZOS COUN
96.26 ACRE
144925-0201-0
1"=300'
N
AA, RAFEEK N & ELIZAB
34.03 ACRES
555000-0034-0010
BRYAN, CITY OF
32.3 ACRES
555000-0034-0160
GROTE, GLEN
19 ACRES
555000-0034-0015
WALTON, JESSIE HUNTER
5.46 ACRES
491000-0000-0040
GARCIA, ANITA P
3.5 ACRES
491000-0000-0061
BRYAN, CITY OF
32.3 ACRES
555000-0034-0160
HILL, AUBREY
5.36 ACRES
491000-0000-0081
GROTE, GLEN
19 ACRES
555000-0034-0015
S F AUSTIN #9
A-62
MADISON, PAUL E (SR)
6.03 ACRES
491000-0000-0100
R36952
FOLLETT, MATTHEW N & KELL
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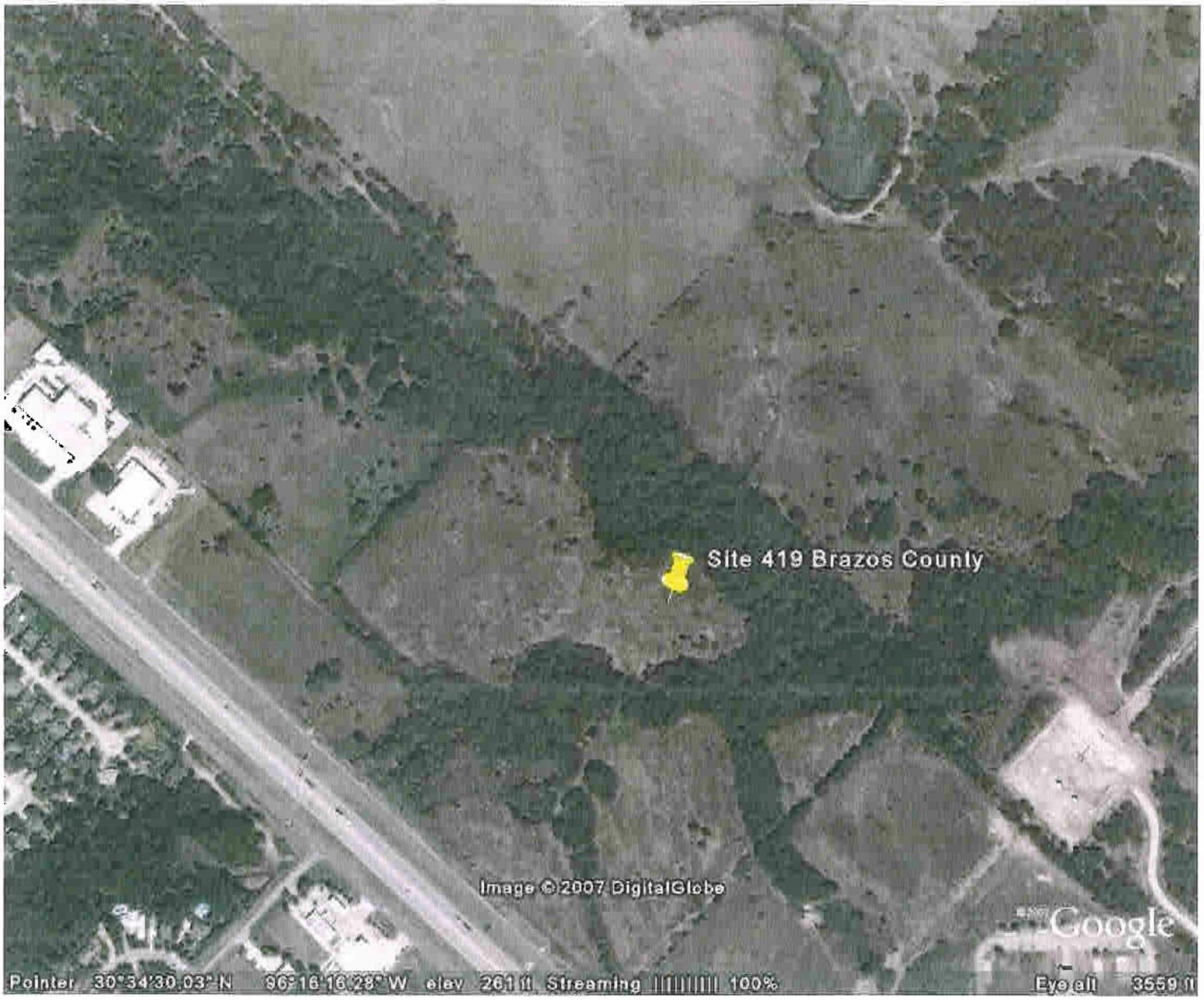
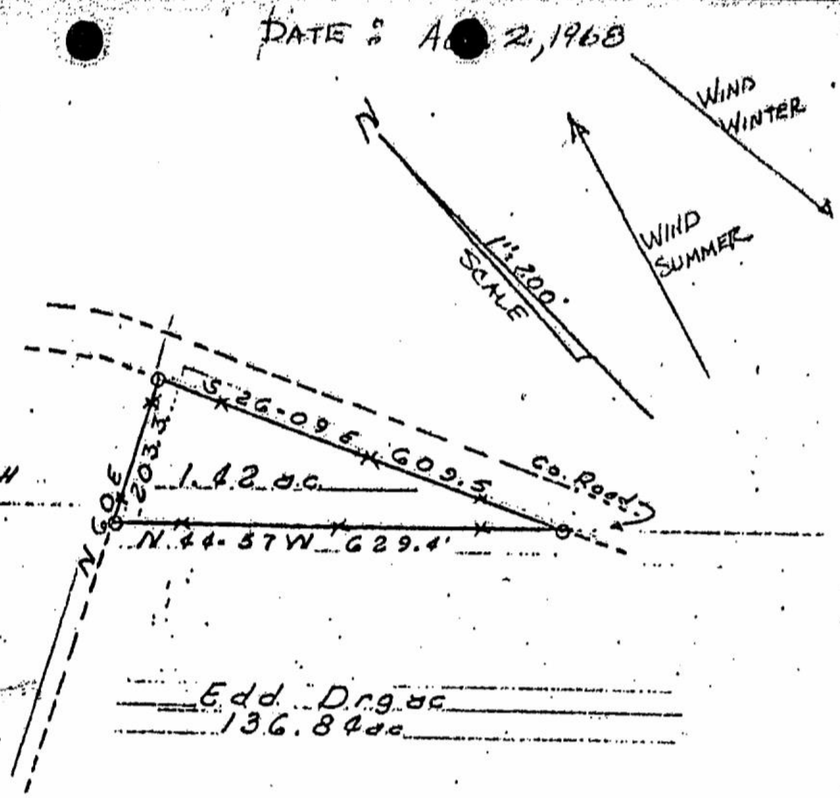
R97023
LOUIS ST.
SH 21
MATTHEW N & KELL
8.41 ACRES
5000-0034-0019


Site 419 Brazos County
Image © 2007 DigitalGlobe
Google
Pointer 30°34'30.03" N 96°16'16.28" W elev 261 ft Streaming |||||||||| 100%
Eye alt 3559 ft

BURLESON County



P L A T

1.42 ac. F. Niebling Survey Burleson County, Texas

√Being a tract or parcel of land located in Burleson County, Texas, being out of the F.Niebling Survey and being part of the Jesse Garrett (now Edd Drgac) 136.84 acre tract and being more particularly described as follows:

Beginning in the W line of a County Road, being the NE corner of a Church tract of 7.0 acres, iron pin for corner marker,

Thence with said road and a curve to the right, the tangent of which is S 26° 09' E 609.5 feet, to corner in the W line of said road, iron pin for corner marker,

Thence N 44° 57' W 629.4 feet to corner in the NE line of said Church tract, iron pin for marker in fence,

Thence with said division line between Drgac and Church tract, N 60° E 203.3 feet to place of beginning containing 1.42 acres of land more or less as surveyed on the ground Aug. 2, 1968, by E.E. Johnson, P.E.√

173

172

E.E. Johnson (signature)

E.E.Johnson P E

THE STATE OF TEXAS

COUNTY OF BURLESON

I, JOHN J. TOUPAL, COUNTY CLERK OF SAID COUNTY, DO HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT OF WRITING WITH ITS CERTIFICATE OF AUTHENTICATION WAS FILED FOR RECORD IN MY OFFICE ON THE 9 DAY OF Sept. 19 68 AT 11:10 O'CLOCK A. M., AND DULY RECORDED ON 9 DAY OF Sept. 19 68 AT 11:30 O'CLOCK A. M., IN THE Deed RECORD OF SAID COUNTY, IN VOL. 173 PAGE 170-172

WITNESS MY HAND AND SEAL OF THE COUNTY COURT OF SAID COUNTY, AT MY OFFICE IN CALDWELL, TEXAS, THE DAY AND DATE ABOVE WRITTEN.

JOHN J. TOUPAL

BY Hazelle Carnegay (signature) DEPUTY


Site 1011 Burleson County
© 2007 Europa Technologies
Google
Pointer 30°36'45.12" N 96°36'40.69" W elev 365 ft Streaming |||||||||| 100%
Eye alt 4419 ft

GRIMES County

VOL 565 PAGE 627

STATE OF TEXAS

COUNTY OF GRIMES

AFFIDAVIT TO THE PUBLIC #9052

Before me, the undersigned authority, on this day personally appeared Geraldine Binford and Hugh Robison, the Mayor and City Clerk, respectively, of the City of Navasota, Texas, who, after being by me duly sworn, upon oath state that the City of Navasota, Texas is the record owner of that certain tract or parcel of land lying and being situated in Grimes County, Texas, and being more particularly described as follows:

See Exhibit "A".

The undersigned further states that from the year 1959 to the year 1985 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that aforesaid tract, except for:

All that certain tract of land comprising 12.83 acres, more or less, conveyed by deed from Robert W. Dean to Ollie Seymour, individually and as Trustee for the heirs of John Seymour, deceased, dated March 10, 1959, and to which when recorded in the Deed Records of Grimes County, Texas, reference is here made for all purposes, said 12.83 acre tract being that area of the 44 acres hereinbefore described as fronts 158.5 varas on the public road along the North boundary line of said tract and extends for a depth in a Southernly direction along the Western boundary line of said 44 acre tract a distance 457 varas; the Eastern boundary line of said 12.83 acre tract running parallel with the Eastern boundary line of said 24 acre tract and 100 feet West thereof said Eastern boundary line, and containing 12.83 acres, more or less.

Further, the undersigned, City of Navasota, Texas, was the operator of such Solid Waste Disposal Site.

WITNESS OUR HAND on this the 2nd day of June, 1986.

CITY OF NAVASOTA, TEXAS

Hugh Robison
Mayor

Geraldine Binford
City Clerk

NOTARY PUBLIC · STATE OF TEXAS

SWORN TO AND SUBSCRIBED before me on this the 2nd day of June, 1986.

SUSIE M. HOMEYER
My Commission Expires

Susie M. Homeyer
Notary Public in and for Grimes County, Texas

EXHIBIT "A"

LEGAL DESCRIPTION OF THE SITE

"... all that certain tract of land within the Tandy Walker and Henry Wingfield Surveys in Grimes County, Texas, and being the Easternmost 44 acres out of the 120 acre tracts of land as described in deeds of record in Volume 27 pages 526-527 and Volume 39, pages 539-541, respectively of the Deed Records of Grimes County, Texas, said 44 acre tract being the identical tract conveyed by a deed from Joe Wedgeworth, et ux to Robert Seymour, et al dated June 30, 1954, and recorded in Volume 230, page 632 et seq of the Deed Records of Grimes County, Texas, to which deeds and the record thereof, reference is made for all purposes, said 44 acre tract being more particularly described as follows; to-wit: BEGINNING at the Northeast corner of said 24 acre tract a stake in the center of public road.

THENCE down a branch with its meanders and East line of said 24 acre tract as follows: (1) S 3 W, 237 vrs. (2) S 10 3/4 E, 98 vrs. (3) S 18 1/2 E, 95 vrs. to a stake for corner on the North line of said 246.3 acre tract.

573 - Go

THENCE N 89 E, along the North line of said 246.3 acre tract and Tandy Walker Survey, 22 vrs. to a stake for the Northeast corner of said 246.3 acre tract.

THENCE S 1 E, along the East line of said 246.3 acre tract, 700.8 vrs. to a stake for corner on the North line of the Missouri Pacific Railroad Right-of-Way, and 125 feet from the centerline.

THENCE N 85 W, along the North line of said railroad, 246.5 vrs. to a stake for corner.

THENCE N 1 W, 1, 101 vrs. to a stake for corner in the center of said public road, and North line of 24 acre tract.

THENCE East, along said road and North line of said 24 acre tract, 194.5 vrs. to the place of beginning, containing 44 acres, more or less; SAVE AND EXCEPT THEREFROM all that certain tract of land comprising 12.83 acres, more or less, conveyed by deed from Robert W. Dean to Ollie Seymour, individually and as Trustee for the heirs of John Seymour, deceased, dated March 10, 1959, and to which when recorded in the Deed Records of Grimes County, Texas, reference is here made for all purposes, said 12.83 acre tract being that area of the 44 acres hereinbefore described as fronts 158.5 varas on the public road along the North boundary line of said tract and extends for a depth in a Southernly direction along the Western boundary line of said 44 acre

577- Rn

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

VOL 565 PAGE 630

tract a distance 457 varas; the Eastern boundary line of said 12.83 acre tract running parallel with the Eastern boundary line of said 24 acre tract and 100 feet West thereof said Eastern boundary line, and containing 12.83 acres, more or less."

The above legal description was extracted from the warranty deed from Robert W. Dean, et ux, to the City of Navasota, Texas as recorded in Volume 234 at Page 233 of the Deed Records of Grimes County.

090527

FILED FOR RECORD AT
'86 JUN 4 AM 9 00
TRINSTON HARRIS CO. CL.
GRIMES CO. TEX.
BY Ann Ross

City of Navasota

THE STATE OF TEXAS
COUNTY OF GRIMES

THIS CERTIFIES that the foregoing instrument, with its certificates of authentication was filed for record in my office on the 4th day of June, A. D. 1986 and duly recorded by me on the 4th day of June, A. D. 1986 in Vol. 565, Page 627, of the Real Property records of Grimes County, Texas.

Trinston Harris
County Clerk, Grimes County, Texas

_______________, Deputy

Examiner Print

573-


N 30.36, W 96.04
Site 573 Grimes County
© 2007 Europa Technologies
Google
Pointer 30°21'36.00" N 96°02'24.00" W elev 256 ft Streaming |||||||||| 100%
Eye alt 3537 ft

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

VOL 438 PAGE 654
#64828

AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS

COUNTY OF Grimes

Before me, the undersigned authority, in this day personally appeared Iola I.S.D. who, after being by me duly sworn, upon oath states that he is the record owner of that certain tract or parcel of land lying and being situated in Grimes County, Texas, and being more particularly described as follows:

Block 63, out of the Iola Townsite. Recorded Vol. 61, Page 424, County Clerks Office Grimes County, Texas.

The undersigned further states that from the year 1968 to the year 1981 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Block 63, out of the Iola Townsite. Recorded Vol. 61, Page 424, County Clerks Office Grimes County, Texas.

Further, the undersigned, Iola I.S.D. was the operator of such Solid Waste Disposal Site.

WITNESS MY/OUR HAND(S) on this the 11th day of January, 1982.

RECORDER'S MEMORANDUM
At the time of recordation this instrument was found to be inadequate for the best photographic reproduction because of illegibility.

A. J. Shaw Jr. - Pres. Iola I.S.D.
Owner

Grimes County Precinct #1
Henry D. Thomas
Operator

SWORN TO AND SUBSCRIBED before me on this the 11th day of January 1982.

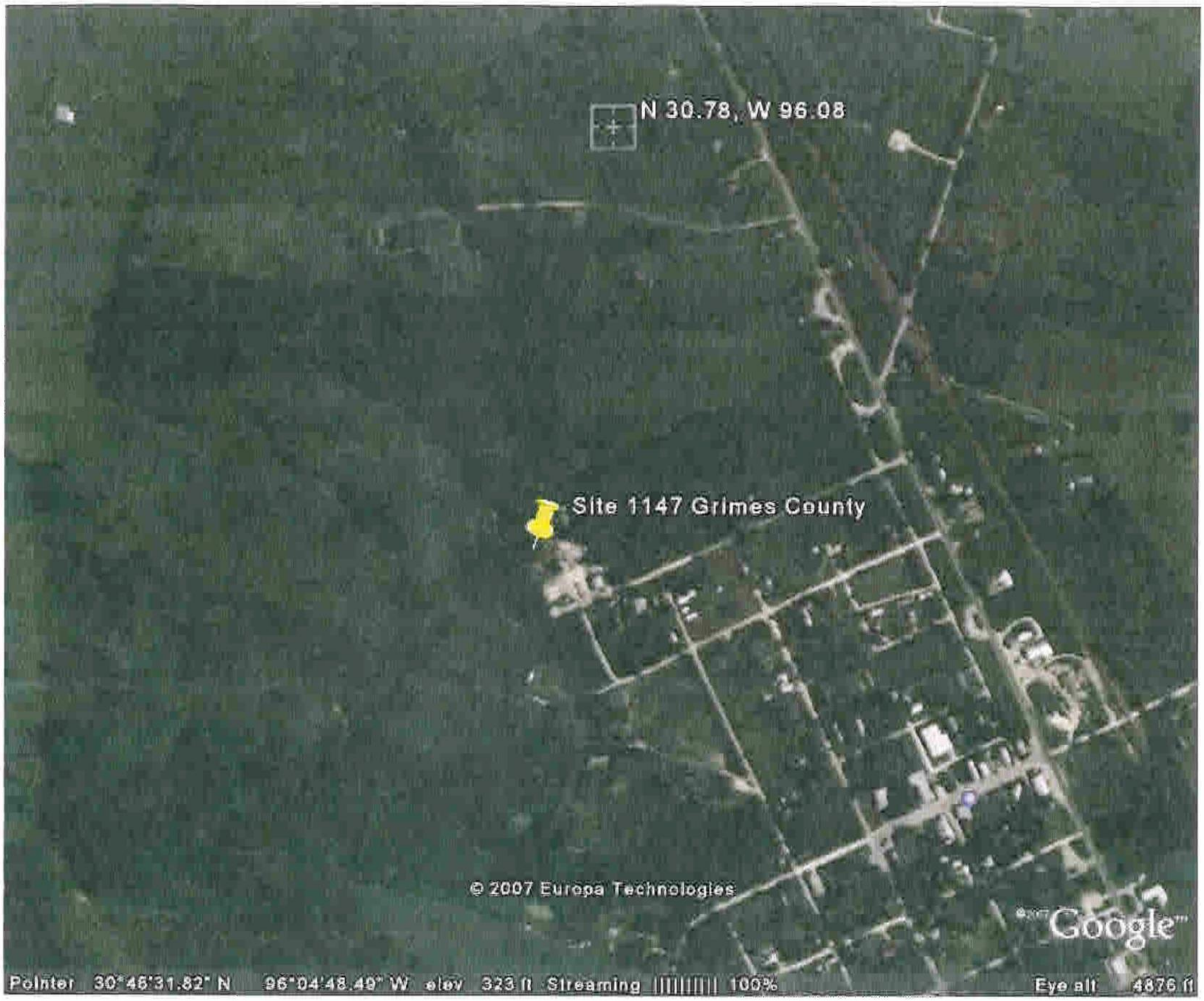
NOTARY PUBLIC COUNTY OF GRIMES, TEXAS

Doris C. Ford
Notary Public in and for
Grimes County, Texas

(AFFPUB.2)

(TRB-32 5/5/81)

1147 - Gr.


N 30.78, W 96.08
Site 1147 Grimes County
© 2007 Europa Technologies
©2007 Google™
Pointer 30°46'31.82" N 96°04'48.49" W elev 323 ft Streaming |||||||||| 100%
Eye alt 4876 ft

LEON County

1180

Hilltop Lakes Resort City
Permit No. 1180
Page 3

LEGAL DESCRIPTION OF TRACT
OF LAND FOR USE BY
HILLTOP LAKES RESORT CITY
AS A SOLID WASTE DISPOSAL SITE

STATE OF TEXAS I

COUNTY OF LEON I

BEING 9.00 acres of land out of the J. M. Viesca XI League Survey, A-30, Leon County, Texas, and being part of the 150 acre tract described in deed from Nelson E. Schwartz, Trustee, to J. B. Belin, Jr., Trustee, dated June 23, 1970, recorded in Volume 363, Page 169-170 of said County Deed Records, and being more particularly described by metes and bounds as follows:

BEGINNING at the Northwest corner of the herein described tract;

THENCE N 88 deg. 20' 42" E 245.00 feet to a corner;

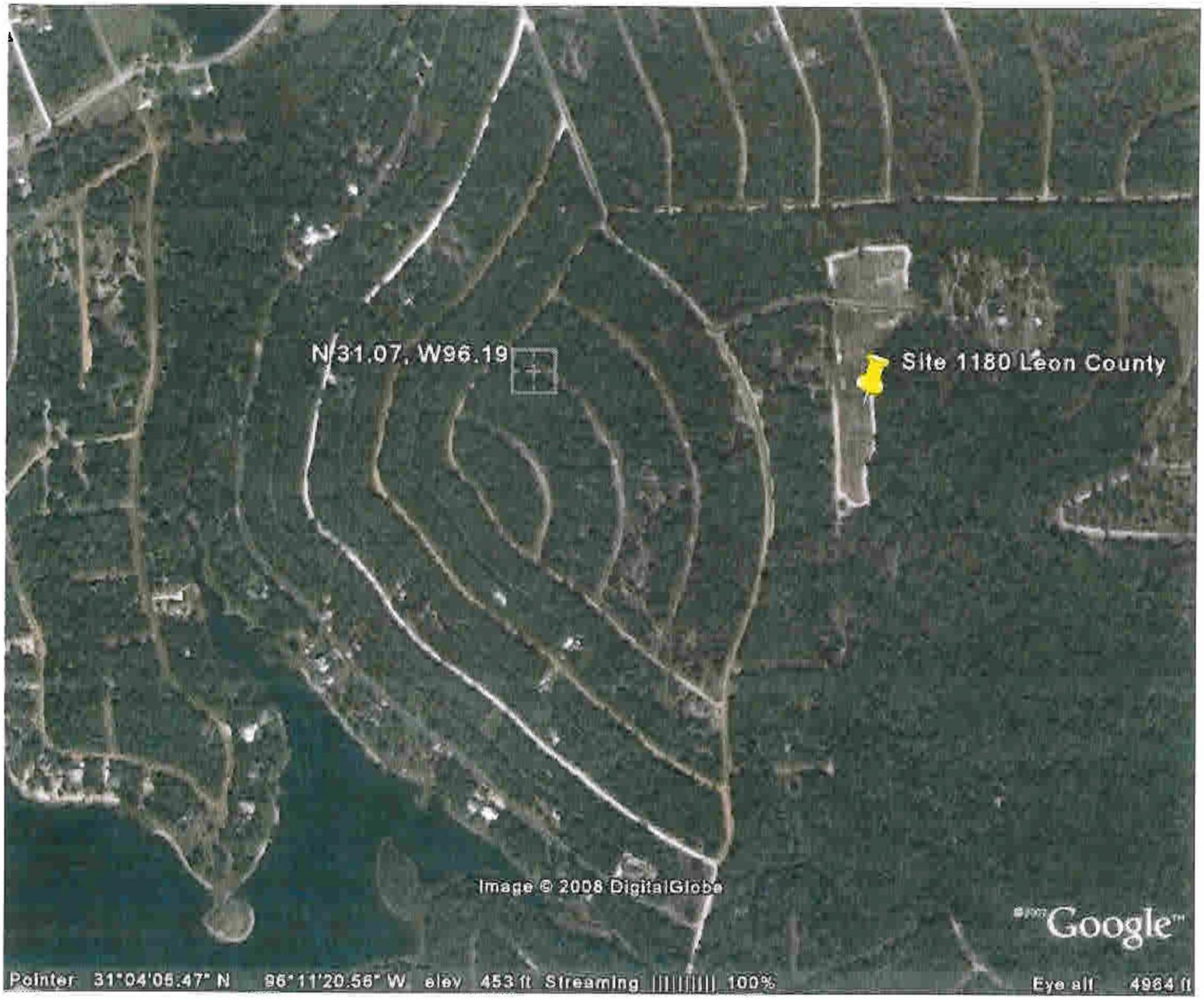
THENCE S 0 deg. 23' 18" E 1600.00 feet to a corner;

THENCE S 88 deg. 20' 42" W 245.00 feet to a corner;

THENCE N 0 deg. 23' 18" W 1600.00 feet to the PLACE OF BEGINNING and containing 9.00 acres of land.

cc: Leon County Health Officer

1180 - 4e.


N 31.07, W96.19
Site 1180 Leon County
Image © 2008 DigitalGlobe
Google
Pointer 31°04'05.47" N 96°11'20.56" W elev 453 ft Streaming |||||||||| 100%
Eye alt 4964 ft

1143

City of Normangee

BOX 37

NORMANGEE, TEXAS 77871

162940

AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS
COUNTY OF LEON

Before me the undersigned authority, in this day personally appeared R.G. Grimes, Mayor for the City of Normangee, who, after being by me duly sworn, upon oath states that the City of Normangee is the record owner of that certain tract or parcel of land lying and being situated in Leon County, Texas, and being more particularly described as follows:

BEGINNING at the intersection of the South line of Batson Avenue in the Town of Normangee, produced, with the East line of right of way in the Burlington-Rock Island Railroad;

Thence S. 8 E. with said East line 350 feet to iron stake for corner;

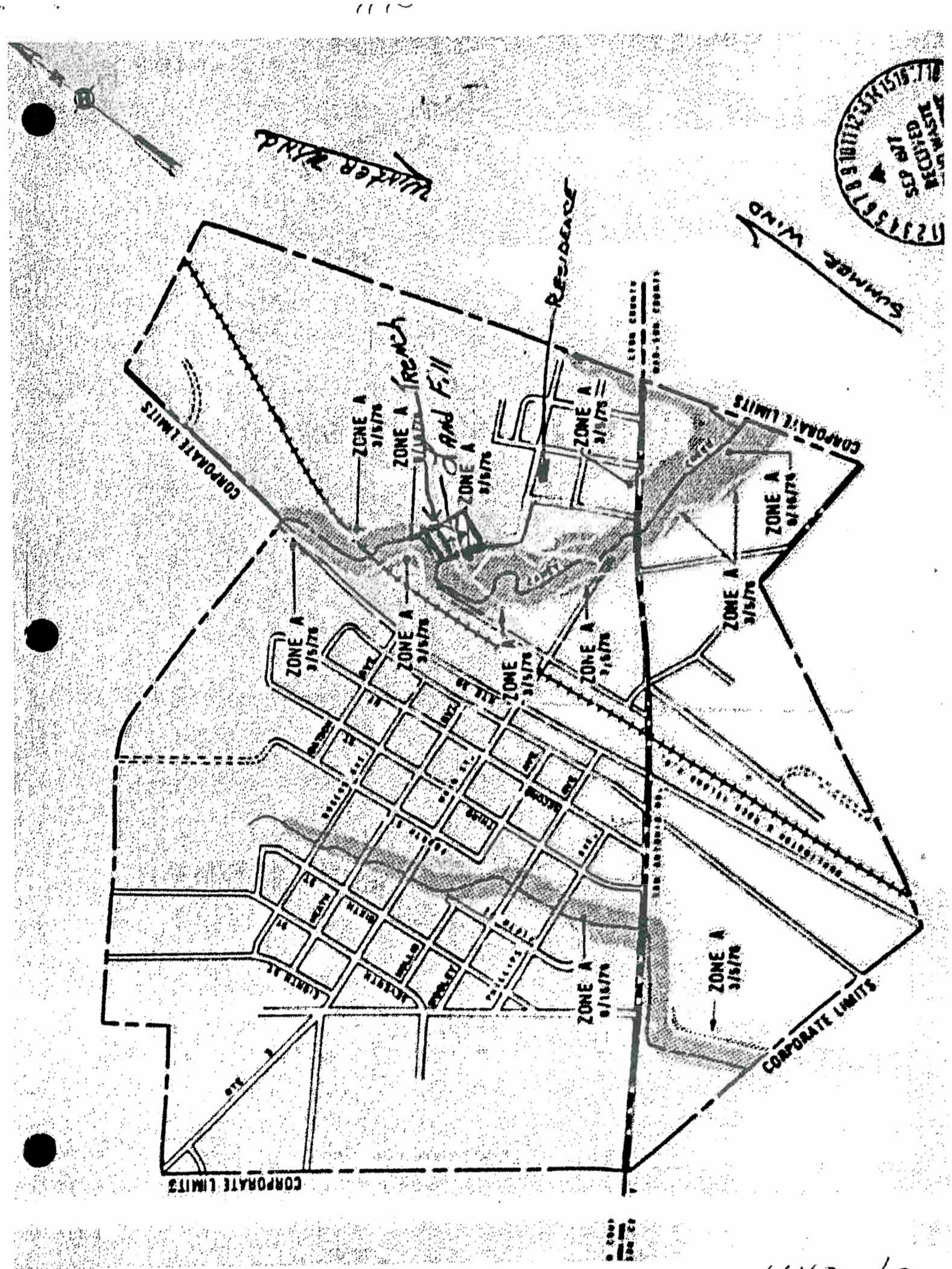
Thence N 82-3/4 E. at right angle with center line of said railroad, 677 feet to iron stake on fence enclosing said 12-1/3rd acretract;

Thence with said fence as follows; N. 40½ W. 386 feet to iron stake, continue with said fence N. 14½ E. 96 feet, N. 48 W. 651 feet to corner post in fence on East line of said right of way;

Thence South with said fence as follows, S. 5 W. 293 feet; S. 1 E. 153 feet; S. 6 E. 122.3 feet to place of beginning, and containing 8.22 acres of land as the same was surveyed by J.C. Ford. (variation of needle 8½ E)

The undersigned further states that from the year 1973 to 1981, there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Being out of and a part of the 8.22 acre tract of land in the Robert Rogers Survey, or League, A-21, in Leon County, Texas, as conveyed to the City of Normangee by J.D. Hines Et Ux by deed dated May 5, 1921, recorded in Vol. 190, page 93 of Deed Records of Leon County, Texas, and a portion so used being on the East side of Hall Street; on the North side of Block 55 in the South East corner of the 8.22 acre tract herein mentioned.


Winter Wind
Summer Wind
Residence
Trench and Fill
ZONE A
CORPORATE LIMITS

1143- Le.


Site 1143 Leon County
N 31-03, W 96-11
Normangee
Image © 2008 DigitalGlobe
© 2007 Europa Technologies
Google
Pointer 31°01'51.57" N 96°06'36.51" W elev 361 ft Streaming |||||||||| 100%
Eye alt 3639 ft

copy · PHIL 6

397

Kis: SQE
5/27/87
JLC

195134

SOLID WASTE MGMT

1987 MAY 26 AM 11: 49

TEXAS DEPT OF HEALTH

AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS

COUNTY OF LEON

Before me, the undersigned authority, on this day personally appeared H.L. Burke, Mayor for City of Buffalo who, after being by me duly sworn, upon oath states that he is the owner of record of that certain tract or parcel of land lying and being situated in LEON County, Texas, and being more particularly described as follows:

Four (4) acres of land, more or less, situated on that tract and parcel of land in Leon County, part of the S.D. McKay Survey.

The undersigned further states that from the year 1979 to the year 1982 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Further, the undersigned, CITY OF BUFFALO was the operator of such Solid Waste Disposal Site.

Notice is hereby provided to any future owner or user of the site to consult with the Texas Department of Health prior to planning or initiating any activity involving the disturbance of the landfill cover or monitoring system.

WITNESS MY/OUR HAND(S) on this the 27 day of April, 1987.

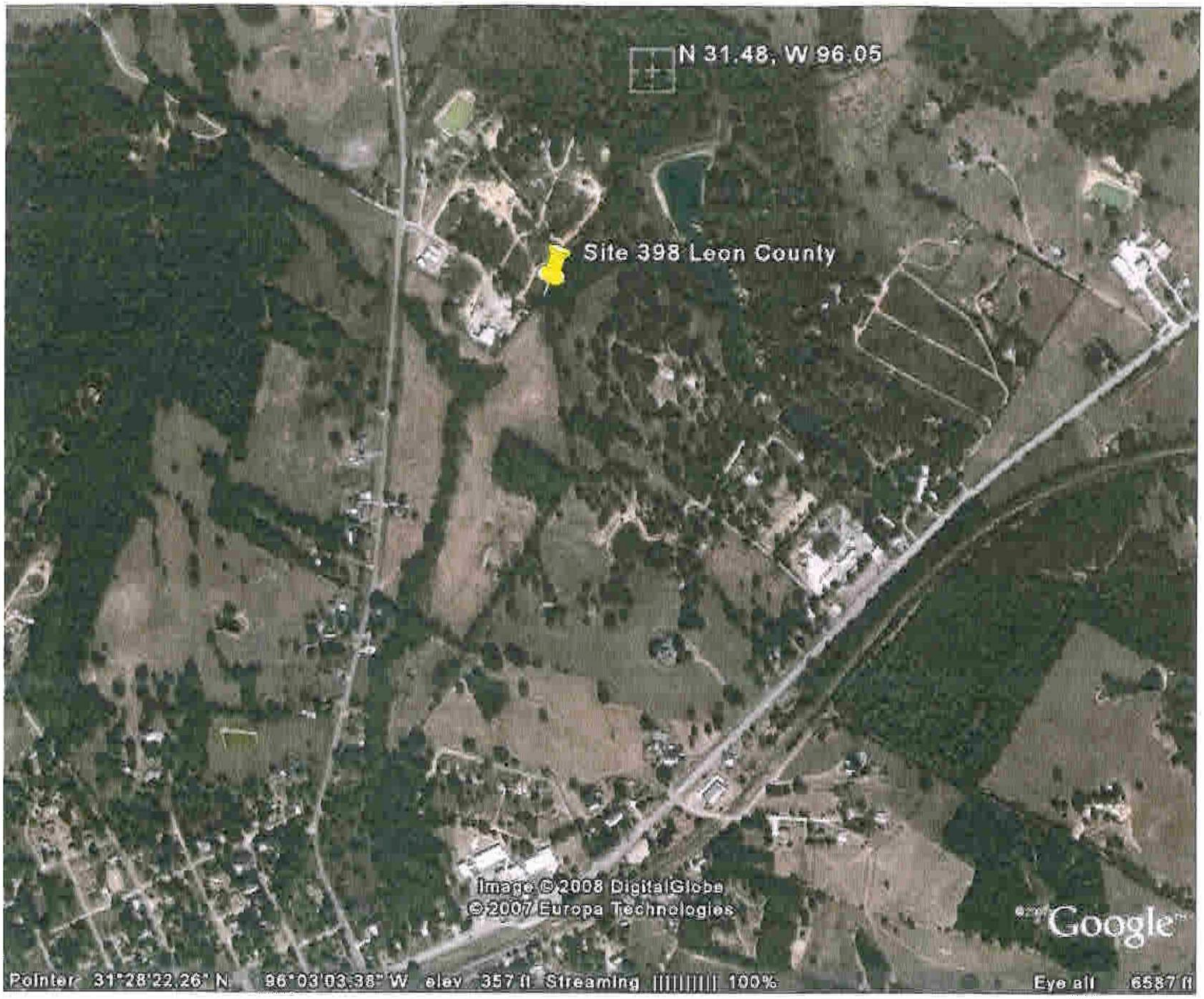
H. L. Burke
Owner; H.L. Burke, Mayor for City of Buffalo

CITY OF BUFFALO
Operator

SWORN TO AND SUBSCRIBED before me on this the 27th day of April, 1987.

Debra L. Waters
Notary Public in and for
LEON (Leon) County, Texas

(SE35 04/25/86)


N 31.48, W 96.05
Site 398 Leon County
Image © 2008 DigitalGlobe
© 2007 Europa Technologies
Google
Pointer 31°28'22.26" N 96°03'03.38" W elev 357 ft Streaming |||||||||| 100%
Eye alt 6587 ft

MADISON County

VOL 371 PAGE 617

AFFIDAVIT TO THE PUBLIC

THE STATE OF TEXAS §
§ 02987
COUNTY OF MADISON §

BEFORE ME, the undersigned authority, on this day personally appeared E. B. Andrews, duly elected Mayor of the City of Madisonville, Texas, and a Texas General Law Municipality, who, after being by me duly sworn, upon oath states that the City of Madisonville is the record owner of that certain tract or parcel of land lying and being situated in Madison County, Texas, and being more particularly described as follows:

Being a part of that certain 50 acre tract described in deed from C. V. Hendrix, Guardian to John R. Hardy et ux dated February 6, 1967 and of record in Volume 171, Page 675, Madison County Deed Records, a part of the A. RIOS LEAGUE in Madison County, Texas, and a part of the 145 acre tract of land conveyed to C. W. Cleghorn by E. Whitmire, and being known and designated as Lot No. Five (5) in the Partition of the Hendrix Estate according to deed, map and plat thereof, dated February 14, 1942, of record in Volume 61, Page 52 of the Deed Records of Madison County, Texas, situated about six (6) miles Southeast of the town of Madisonville in Madison County, Texas, and more particularly described by metes and bounds as follows:

BEGINNING at the Northeast corner of Lot No. 4 in the Partition of the Hendrix Estate, same being in the North boundary line of the A. Rios Survey, a rock for corner;

THENCE S. 81°00' E. with the North boundary line of said survey 163.2 vrs. to a concrete monument for corner from which a 16" Post Oak brs. S. 33°00' W. 9 vrs. and a 14" Post Oak brs. S. 64°00' W. 19 vrs.;

THENCE S. 9°00' W. 865 vrs. to a rock for corner from which a 5" Post Oak brs. N. 19°00' E. 1.9 vrs. and 8" Post Oak brs. S. 80°00' E. 3 vrs.;

THENCE N. 81°00' W. 163.2 vrs. to an iron rod in the East boundary line of said Lot No. 4, iron rod for corner from which a 12" Post Oak brs. S. 45°00' W. 3 vrs. and 8" Post Oak brs. S. 9°00' W. 4 vrs.;

THENCE N. 9°00' E. with the East boundary line of said Lot No. 4, 865 vrs. to the PLACE OF BEGINNING, and containing 25 acres of land as surveyed on March 19, 1965 by W. O. Kirkland, Registered Public Surveyor No. 321, in and for the State of Texas.

546
~~666~~ - MA

VOL 371 PAGE 618

The undersigned further states that from the year 1969 to June 30, 1990, there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on the entire portion of the aforesaid tract.

Further, that the City of Madisonville, Texas, was the operator of such Solid Waste Disposal Site.

WITNESS MY HAND on this the 13th day of September, 1990.

The City of Madisonville, Texas
Owner and Operator

By: E. B. Andrews
E. B. Andrews, Mayor

SWORN TO AND SUBSCRIBED before me on this the 13th day of September, 1990.

Laura Beth Rice
Notary Public, State of Texas

LAURA BETH RICE
Notary Public
STATE OF TEXAS
My Comm. Exp. Aug. 23, 1993

FILED
AT 2:25 O'CLOCK P M

SEP 17 1990
Joyce McColeman
JOYCE M. COLEMAN, COUNTY CLERK
By
DEPUTY - MADISON COUNTY, TEXAS

STATE OF TEXAS
COUNTY OF MADISON
[illegible]

2

546
~~564~~ Ma


N 30.90, W 95.96
Site 546 Madison County
Google
Pointer 30°53'59.97" N 95°57'35.93" W elev 238 ft Streaming |||||||||| 100%
Eye alt 2460 ft

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

AFFIDAVIT TO THE PUBLIC

99338

STATE OF TEXAS

COUNTY OF WALKER

Before me, the undersigned authority, on this day personally appeared James A. Lynaugh who, after being by me duly sworn, upon oath states that he is the owner of record of that certain tract or parcel of land lying and being situated in MADISON County, Texas, and being more particularly described as follows:

SEE EXHIBIT "A" (ATTACHED)

The undersigned further states that from the year 1960 to the year 1988 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

SEE EXHIBIT "B" (ATTACHED)

Further, the undersigned, Robert E. Petty, IV was the operator of such Solid Waste Disposal Site.

Notice is hereby provided to any future owner or user of the site to consult with the Texas Department of Health prior to planning or initiating any activity involving the disturbance of the landfill cover or monitoring system.

WITNESS MY/OUR HAND(S) on this the 10th day of March, 19 89.

James A. Lynaugh
Owner Director, Texas Department of Corrections

Robert E. Petty, IV
Operator Assistant Director for Facilities

SWORN TO AND SUBSCRIBED before me on this the 10th day of March, 19 89.

STATE OF TEXAS
COUNTY OF MADISON
I, Joyce M. Coleman, County Clerk of Madison Co., Texas do hereby certify that the foregoing is a true and correct copy of the original record, and the same appears on record in Vol. ___ Page ___ of the Official records of Madison Co., Texas GIVEN UNDER MY HAND AND SEAL OF OFFICE this the ___ day of March, 19 89
Joyce M. Coleman, County Clerk, Madison Co., Texas
By ______ Deputy

Notary Public in and for Walker County, Texas

ATTACHMENT

Incl. 1

(SE35 04/25/85)

1705 ...

EXHIBIT A

The following notes describe that certain tract of land located in Madison County, Texas and described in the Deed Record Books. In conveyance deed from Jacob A. Herring and Emma Herring, his wife, Augustus M. Barton and Mary Ashford Barton, his wife and Henry A, Turner and Pearl Turner, his wife, to the Prison Commission of the State of Texas dated 1 January 1916, recorded in volume 22 page 169 of Madison County Deed Records, conveying fourteen (14) tracts of land containing not less than 4,320 acres of land.

The thirteenth tract, being the subject tract, containing 246 acres, a part of the Samuel Brimberry 1,280 acre survey, patented to Samuel Brimberry, December 23,1845 and described by metes and bounds as follows, beginning on the North line of said Brimberry Survey, 490 varas from NE corner of the same.

<u>Thence</u> North 80 West 598 varas

<u>Thence</u> S 10 West 1,866 varas

<u>Thence</u> S 80 E 798 varas

<u>Thence</u> N 13 E 1,090 varas (Tie to land fill from this point.)

<u>Thence</u> N 80 W 300 varas

<u>Thence</u> N 10 E 780 varas, to the place of beginning. Containing 246 acres more or less and the boundary of which encompasses subject land fill.

EXHIBIT B

The following notes describe that certain tract of land located in Madison County, being a part of the thirteenth tract of fourteen tracts described and recorded in Volume 22 page 169 of the Madison County Deed Records, said thirteenth tract containing said landfill. From the most North Easterly corner of the Sam Brimberry Survey, a called 246 acres, from point designated in EXHIBIT A, go S 20 04' 54 W, 724.26 feet to a point, thence S 62 51' 21" W, 1,339.22 feet to a point, thence N 77 27' 27" E, 320 feet to fence corner which is the most Easterly corner of fenced area and the point of beginning.

Thence S 52 17' 31" W, 448.92 feet to fence corner,

Thence N 43 25' 01" W, 27.77 feet to angle point in fence line,

Thence N 24 47' 31" W, 497.76 feet to fence corner,

Thence N 33 23' 18" E, 8.92 feet to intersecting crossfence,

Thence N 33 59' 52" E, 70.79 feet to angle point in fence line,

Thence N 34 34' 28" E, 170.41 feet to fence corner,

Thence S 39 31' 07" E, 405.40 feet to fence corner,

Thence N 44 17' 13" E, 73.63 feet to fence corner,

Thence S 42 23' 55" E, 195.22 feet to fence corner and point of beginning, containing 4.1738 acres being subject landfill.

99338

FILED AT 2:15 O'CLOCK ___ M

MAR 13 19

COUNTY CLERK, MADISON COUNTY, TEXAS

By ___________ DEPUTY

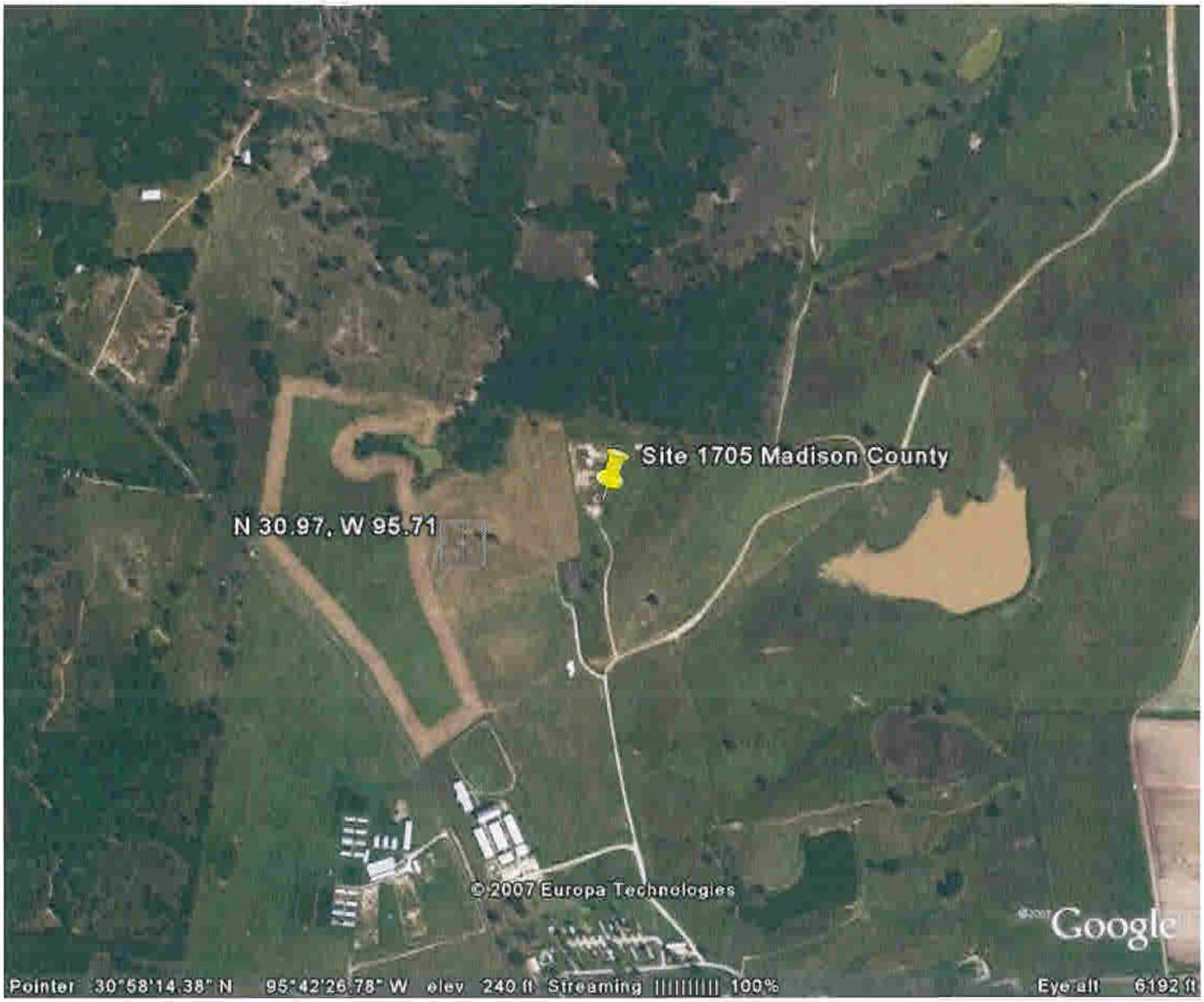
TEXAS DEPT. OF CORRECTIONS
P.O. BOX 99 H/C

ATTN: MICHAEL W LACK.

6/30/03

EXHIBIT 2

Description and Site Map of Landfill from the
Madison County, Texas, *Inventory of Closed or Abandoned Municipal Solid Waste Landfills* (2007)


Site 1705 Madison County
N 30.97, W 95.71
© 2007 Europa Technologies
©2007 Google
Pointer 30°58'14.38" N 95°42'26.78" W elev 240 ft Streaming |||||||||| 100%
Eye alt 6192 ft

ROBERTSON County

THE STATE OF TEXAS §
§
COUNTY OF ROBERTSON §

BEFORE the respective undersigned authorities, on the dates shown in our respective jurats, personally appeared THOMAS MATHEWS and FLOYD T. HAFLEY, who, after being duly sworn, upon their respective oaths state that the City of Hearne is the record owner of the following two tracts of land, to-wit:

TRACT ONE: Being a 22.181 acre tract or parcel of land lying and being situated in the GEORGE ANTONIO NIXON ELEVEN LEAGUES GRANT, Abstract No. 31 of Robertson County, Texas and being a portion of the 290.34 acre tract described in a deed from the United States of America to the City of Hearne dated November 7, 1947 recorded in Volume 148, Page 338 of the Deed Records of Robertson County, Texas and being further known as (called 22.18 acres) Tract No. 1 of the City of Hearne 28.46 acre Municipal Solid Waste Facility (Texas Department of Health Permit No. 1166 dated September 11, 1978) and as now located on the ground being more particularly described as follows:

Commencing at a 7/8" galvanized metal rod found driven into the top of a 16" creosote post fence corner marking the north corner of the Avis Payne Lessor, Trustee 16.126618 acre Seventh Tract (vol. 541, p.406-P.R.R.C.) in the southwest R.O.W. line of "Vaughn Lane" (a county road), said 16.126618 acre parcel was previously divided out of the before mentioned 290.34 acre parent tract; Thence S. 58-14-00 W. along a fence across said parent tract marking the northwest line of the Lessor parcel for a distance of 1243.54 feet to a 3/8" iron rod found beside a 10 creosote post marking the east corner of the before mentioned 22.18 acre Tract No. 1 for the TRUE PLACE OF BEGINNING;

THENCE S. 58-14-00 W. continuing along said fence and property line for a distance of 1158.11 feet to a 7/8" galvanized metal rod found driven into the top of a 16" creosote post fence corner marking the west corner of said Lessor 16.126618 acre parcel, for an angle point;

THENCE across the 290.34 acre parent tract along the lines of said 22.18 acre Municipal Solid Waste Facility Tract No. 1 for the following five calls:

1) N. 61-10-16 W. for a distance of 76.79 feet to a chain-link fence corner, for an angle point;

2) S. 58-12-13 W. for a distance of 294.58 feet to a 1/2" iron rod, set for corner,;

3) N. 33-49-10 W. (at 522.81 feet pass a 3/8" iron rod found marking an off-set corner in the southeast line of the adjoining 6.28 acre Tract No. 2 of the Municipal Solid Waste Facility) for a total distance of 595.35 feet to a 3/8" iron rod found marking both the west corner of the 22.18 acre parcel and the second off-set corner of the 6.28 acre tract, for corner;

4) N. 58-33-54 E. (at 401.94 feet pass a 3/8" iron rod found marking the most easterly corner of said adjoining 6.28 acre Tract No.

1166 - R.

2) for a total distance of 1515.52 feet to a 3/8" iron rod found marking the north corner of Tract No. 1, for corner;

5) S. 31-26-07 E. for a distance of 652.96 feet to the TRUE PLACE OF BEGINNING, containing 22.181 acres of land, more or less.

TRACT TWO: Being a 6.28 acre tract or parcel of land lying and being situated in the GEORGE ANTONIO NIXON ELEVEN LEAGUES GRANT, Abstract No. 31 of Robertson County, Texas, and being a portion of the 290.34 acre tract described in a deed from the United States of America to the City of Hearne dated November 7, 1947 recorded in Volume 148, Page 338 of the Deed Records of Robertson County, Texas and being further known as the 6.28 acre Tract No. 2 of the City of Hearne 28.46 acre Municipal Solid Waste Facility (Texas Department of Health Permit No. 1166 dated September 11, 1978) and being more particularly described as follows:

Commencing at a 7/8" galvanized metal rod found driven into the top of a 16" creosote post fence corner marking the north corner of the Avis Payne Lessor, Trustee 16.126618 acre Seventh Tract (vol. 541, p. 406-P.R.R.C.) in the southwest R.O.W. line of "Vaughn Lane" (a county road), said 16.126618 acre parcel was previously divided out of the before mentioned 290.34 acre parent tract; Thence S. 58-14-00 W. along a fence across said parent tract marking the northwest line of the Lessor parcel for a distance of 1243.54 feet to a 3/8" iron rod found beside a 10 creosote post marking the east corner of the (called 22.18 acres) Tract No. 1 of the City of Hearne 28.46 acre Municipal Solid Waste Facility, Thence N. 31-26-07 W. along the northeast line of said Tract No. 1 for a distance of 652.96 feet to a 3/8" iron rod found marking the north corner of the 22.18 acre parcel, Thence S 58-33-54 W. along the northwest line of the Tract No. 1 for a distance of 1113.58 feet to a 3/8" iron rod found marking the TRUE PLACE OF BEGINNING.

THENCE S. 58-33-54 W. continuing across the 290.34 parent acre tract along the northwest line of said Tract No. 1 for a distance of 401.94 feet to a 3/8" iron rod found marking the west corner of the 22.18 acre parcel, for an off-set corner;

THENCE S. 33-49-10 E. along the southwest line of the 22.18 acre Tract No. 1 for a distance of 72.54 feet to a 3/8" iron rod, found for the second off-set corner, a 1/2" iron rod set marking the south corner of said Tract No. 1 located S. 33-49-10 E. a distance of 522.81 feet for reference;

THENCE continuing across the 290.34 acre parent tract for the following five calls:

1) S. 62-40-56 W. for a distance of 283.00 feet to a steel rod set in a fence, for corner;

2) N. 62-58-22 E. along said fence for a distance of 698.75 feet to an angle point;

3) N. 09-45-11 E. continuing along the fence for a distance of 144.50 feet to a steel rod, set for corner;

4) S. 82-32-41 E. for a distance of 253.97 feet to a steel rod, set for corner;

5) S. 30-37-41 E. for a distance of 473.68 feet to the TRUE PLACE OF BEGINNING, containing 6.28 acres of land, more or less.

Said THOMAS MATHEWS and FLOYD T. HAFLEY further stated that from September, 1978, to July, 1992 there was operated on part of the aforesaid tracts of land a Solid Waste Disposal Site, specifically, such operation was conducted on a 13.785 acre tract out of said aforesaid tracts, this 13.785 acre tract as more fully described by metes and bounds as follows, to-wit:

Being a 13.785 acre tract or parcel of land lying and being situated in the GEORGE ANTONIO NIXON ELEVEN LEAGUES GRANT, Abstract No. 31 of Robertson County, Texas, and being a portion of the 290.34 acre tract described in a deed from the United States of America to the City of Hearne dated November 7, 1947 recorded in Volume 148, Page 338 of the Deed Records of Robertson County, Texas and being further known as a part of the (called 22.18 acres) 22.181 acre Tract No. 1 of the City of Hearne 28.46 acre Municipal Solid Waste Facility (Texas Department of Health Permit No. 1166 dated September 11, 1978) and as now located on the ground being more particularly described as follows:

Commencing at a 7/8" galvanized metal rod found driven into the top of a 16" creosote post fence corner marking the north corner of the Avis Payne Lessor, Trustee 16.126618 acre Seventh Tract (vol. 541, p. 406-P.R.R.C.) in the southwest R.O.W. line of "Vaughn Lane" (a county road), said 16.126618 acre parcel was previously divided out of the before mentioned 290.34 acre parent tract; Thence S. 58-14-00 W. along a fence across said parent tract marking the northwest line of the Lessor parcel for a distance of 1243.54 feet to a 3/8" iron rod found beside a 10 creosote post marking the east corner of the before mentioned 22.181 acre Tract No. 1 (also previously divided out of the 290.34 acre parent tract) for the TRUE PLACE OF BEGINNING;

THENCE S. 58-14-00 W. continuing along said fence and property line for a distance of 915.00 feet to a 1/2" iron rod, set for corner, a 7/8" galvanized metal rod found driven into the top of a 16" creosote post fence corner marking the west corner of said Lessor 16.126618 acre parcel located S. 58-14-00 W. a distance of 243.11 feet for reference;

THENCE N. 31-36-03 W. across both the 22.181 acre solid waste facility parcel and the 290.34 acre parent tract for a distance of 658.25 feet to a 1/2" iron rod, set for corner, a 3/8" iron rod found marking the most westerly corner of said 22.181 acre parcel located S. 58-33-54 W. a distance of 598.63 feet and another 3/8" iron rod found marking the most easterly corner of the 6.28 acre Tract No. 2 of the Municipal Solid Waste Facility located S. 58-33-54 W. a distance of 196.69 feet both for reference;

THENCE N. 58-33-54 E. continuing across parent tract along the northwest line of the 22.181 acre parcel for a distance of 916.89 feet to a 3/8" iron rod found marking the north corner of the facility, for corner;

THENCE S. 31-26-07 E. continuing across parent tract along the northeast line of the 22.181 acre parcel for a distance of 652.96 feet to the TRUE PLACE OF BEGINNING, containing 13.785 acres of land, more or less.

Notice is hereby provided to any future owner or user of the site to consult with the Texas Department of Health prior to planning or initiating any activity involving the disturbance of the landfill cover or monitoring system.

WITNESS OUR HANDS on the dates indicated in said jurats.

THOMAS MATHEWS
Mayor, City of Hearne

FLOYD T. HAFLEY
City Manager, City of Hearne

ATTEST: City Secretary

SWORN TO AND SUBSCRIBED BEFORE ME by the said THOMAS MATHEWS on this 1st day of October, 1993, to certify which witness my hand and seal of office.

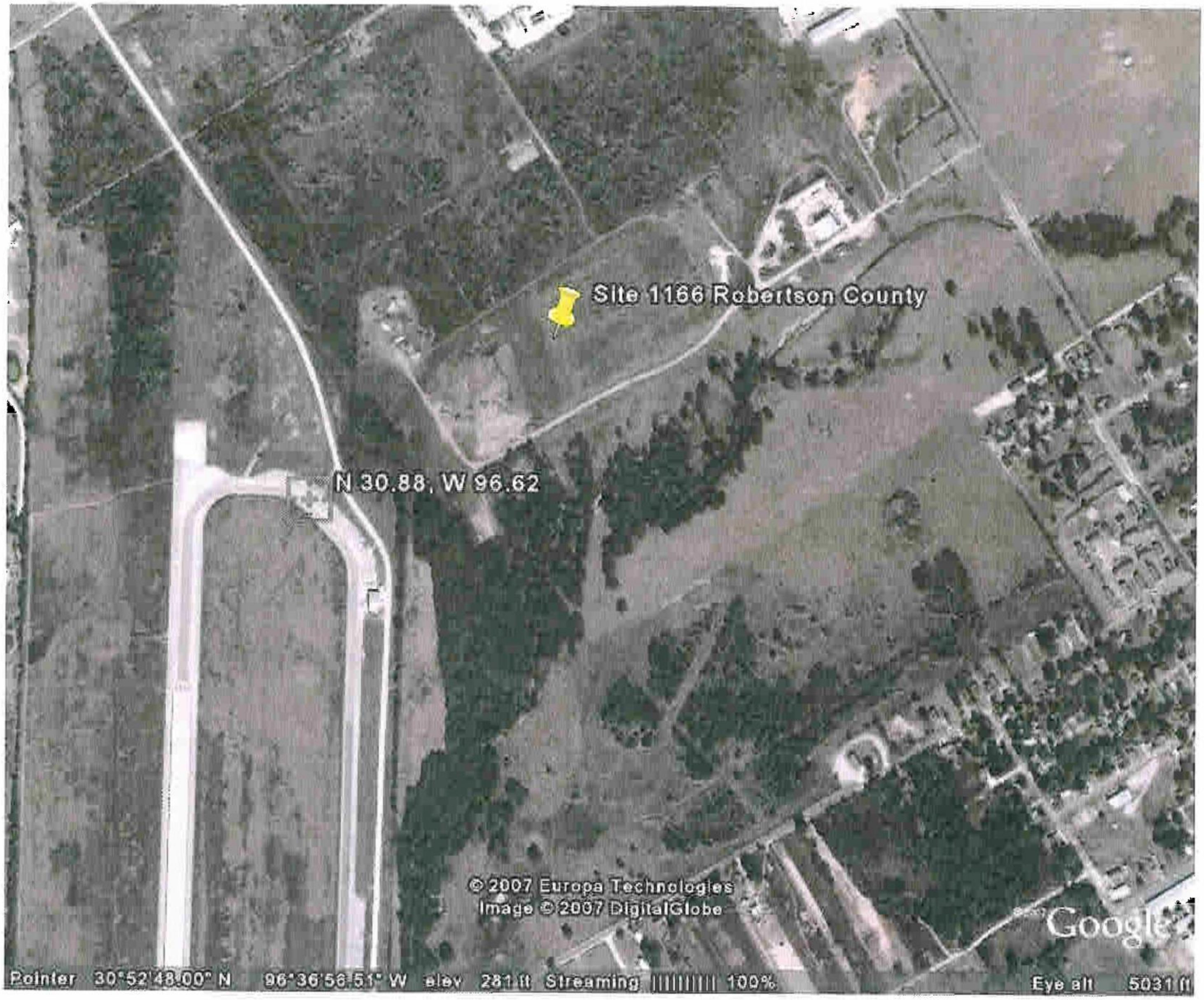
ISAIAS CONDE
Notary Public, State of Texas
My Comm. Expires 1-29-96

Notary Public, State of Texas

SWORN TO AND SUBSCRIBED BEFORE ME by the said FLOYD T. HAFLEY on this 1st day of October, 1993, to certify which witness my hand and seal of office.

ISAIAS CONDE
Notary Public, State of Texas
My Comm. Expires 1-29-96

Notary Public, State of Texas


Site 1166 Robertson County
N 30.88, W 96.62
© 2007 Europa Technologies
Image © 2007 DigitalGlobe
Google
Pointer 30°52'48.00" N 96°36'56.51" W elev 281 ft Streaming |||||||||| 100%
Eye alt 5031 ft

111

DIV. OF ...

AFFIDAVIT TO THE PUBLIC

SOLID WASTE DISPOSAL SITE

THE STATE OF TEXAS I
I
COUNTY OF ROBERTSON I

BEFORE ME, the undersigned authority, in this day personally appeared PRYSE METCALFE, JR./Mayor of the Town of Franklin, who, after being by me duly sworn, upon oath states that the Town of Franklin is the record owner of that certain tract or parcel of land lying and being situated in Robertson County, Texas, and being more particularly described as follows:

See attached EXHIBIT "A" for a description of 6-1/4 acres of land out of the SAMUEL DAMON SURVEY, ABSTRACT NO. 124 in Robertson County, Texas. Also see attached EXHIBIT "B" for a copy of the map showing the above mentioned 6-1/4 acre tract.

The undersigned further states that from the year 1912 to August, 1981 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

"ENTIRE TRACT" - Containing 6-1/4 acres of land, more or less.

Further, the undersigned, LOUIS HUGHES was the operator of such Solid Waste Disposal Site for the past 9 years.

WITNESS OUR HANDS on this the 15th day of January, 1982.

Pryse Metcalfe
CITY OF FRANKLIN
By Pryse Metcalfe, Jr., Mayor

Louis Hughes
LOUIS HUGHES - Operator

NOTARY PUBLIC ... ROBERTSON COUNTY, TEXAS

SWORN TO AND SUBSCRIBED before me on this the 15th day of January,

Keith D. Rinehart
Notary Public in Robertson County, Texas

EXHIBIT "A"

Being all that certain tract or parcel of land lying and being situated in Robertson County, Texas, and being 6¼ acres of land out of the SAMUEL DAMON SURVEY, ABSTRACT NO. 124, Robertson County, Texas and being the same property described in Deed from Aaron and Texana Miree to Prince Williams and wife, Julia Williams, dated 11-13-1896 and recorded in Book 36, page 158 of the Deed Records of Robertson County, Texas, and being more particularly described by metes and bounds as follows:

BEGINNING in the center of Gum Branch under the bridge across the same on the Franklin and Clavert Public road, known as the Patric road;

THENCE N 75 W 64 vrs; N 64 W 182 vrs with said road to a large rock in center of same for corner;

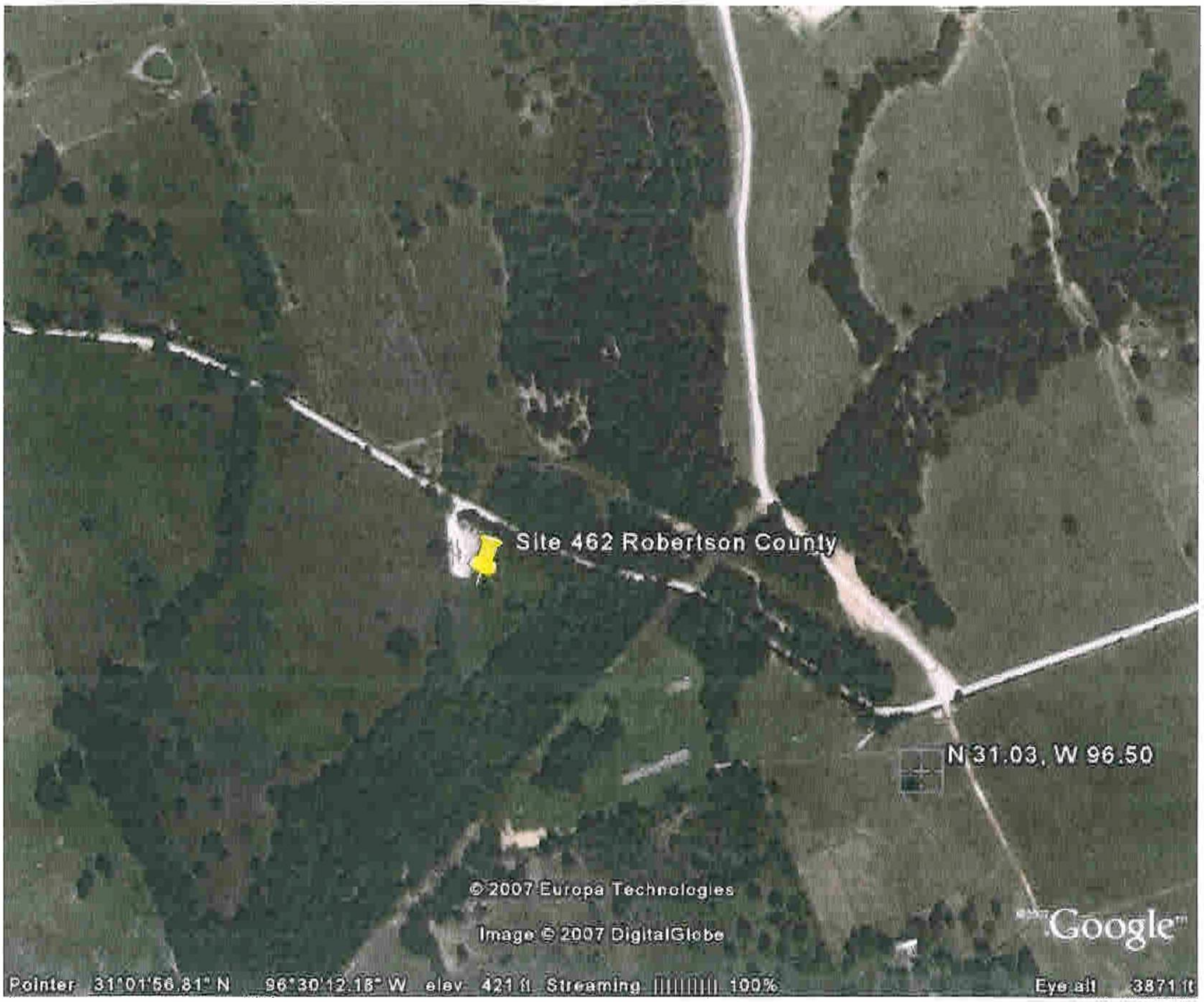
THENCE S 2 E 90 vrs to a black jack 10 inches in diameter for corner;

THENCE S 6 E 227 vrs to center of channel of Gum Branch;

THENCE up said branch with its meandering to the PLACE OF BEGINNING, containing six and one-fourth (6¼) acres of land, more or less. AND ALSO BEING THE SAME PROPERTY described in Deed from Prince Williams and wife, Julia Williams to R.M. Cole, Mayor of the City of Franklin, dated 9-23-1912 and recorded in Volume 58, page 515 of the Deed Records of Robertson County, Texas.

462 - Ro.

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042



#834

C. 2071

FILED
AT..11:00A...M. O'CLOCK

AUG 27 1992

MARY B. REAGAN
CLERK COUNTY COURT, ROBERTSON COUNTY, TX.

STATE OF TEXAS

AFFIDAVIT TO THE PUBLIC

COUNTY OF Robertson

Before me, the undersigned authority, on this day personally appeared Cooper Wiese who, after being by me duly sworn, upon oath states that he is the record owner of that certain tract or parcel of land lying and being situated in Robertson County, Texas, and being more particularly described as follows:

---------------- The City of Calvert, a municipal corporation ------------

of the County of Robertson, State of Texas, all that certain parcel of land being a part of Division No. Thirty-Seven (37) of the City of Calvert, according to map thereof recorded in Vol.3, page 285, of the Deed records of Robertson County, Texas, and described by metes and bounds as follows:

BEGINNING at the NE corner of said division No.37 iron stake for corner;

THENCE with fence S 33-45 E 893.3 feet to iron stake for corner;

THENCE S 60 W 400 feet to iron stake for corner in fence line;

THENCE with fence N 29-24 W 893.2 feet to iron stake for corner;

THENCE N 59-30 E 332.5 feet to place of beginning, containing seven and forty-eight hundredths (7.48) acres of land, more or less; and being a part of Subdivision "B" and "C" in said Division No. 37 as described in Indenture made the 19th day of November, 1948, by and between Gulf States Utilities Company, a corporation, and J. L. Crouch, recorded in Vol. 152, page 574, of said Deed Records to which reference is made, the above field notes and description having been obtained as result of survey made April 17, 1967, on the ground by R. T. Grant.

The undersighed further states that from the year 1973 to the year 1991 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Further, the undersigned, Irene Prothro was operator of such Solid Waste Disposal Site.

Notice is hereby provided to any future owner or user of the site to consult with the Texas Department of Health prior to planning or initiating any activity involving the disturbance of the landfill cover or monitoring system.

WITNESS MY/OUR HAND(S) on this the 26 day of August, 1992.

Cooper Wiese
Owner

Operator


W 96.68
Site 834 Robertson County
© 2007 Europa Technologies
Image © 2007 DigitalGlobe
Google
Pointer 30°58'03.49" N 96°40'22.09" W elev 316 ft Streaming ||||||||| 100%
Eye alt 5168 ft

WASHINGTON County

VOL 573 PAGE 194

AFFIDAVIT TO THE PUBLIC

STATE OF TEXAS 4486

COUNTY OF WASHINGTON

Before me, the undersigned authority, on this day personally appeared CLARENCE BASSINGER who, after being by me duly sworn, upon oath states that he is the record owner of that certain tract or parcel of land lying and being situated in WASHINGTON COUNTY, Texas, and being more particularly described by as follows:

All that certain tract or parcel of land lying and being situated in Washington County, Texas, being parts of the Alex McCoy and T. H. Borden Leagues, being all of the 80.46 acres tract conveyed by Mrs. Emma Schatz, et al to E. Fischer by deed dated the 19th day of September, A.D. 1917, recorded in Volume 71, page 272, Washington County Deed Records; being part of the 111.60 acres tract conveyed by G. Bluethmann, et al, to E. Fisher by deed dated the 24th day of March, A.D. 1908, recorded in Volume 56, page 434, Washington County Deed Records; being part of the 4.50 acres tract conveyed by Chas. Kasten to E. Fischer by deed dated the 12th day of October, A.D. 1911, recorded in Volume 61, page 557, Washington County Deed Records, and more fully described by metes and bounds as follows, to wit:

BEGINNING at the North corner of the Awalt tract, conveyed by Mrs. Emma Schatz, et al, to E. Fischer in the center of the Burton-Mill Creek road; this is also the West corner of the cemetery.

THENCE S 47 E 828.0 varas with the Burton-Mill Creek road to the corner;

THENCE S 33 E 101.3 varas to the East corner of the 3.0 acres tract included in the Awalt tract;

THENCE S 43 W 84.0 varas to the South corner of the Awalt tract of 3.0 acres;

THENCE N 47 W 137.5 varas to corner in the Southeast line of the 77.0 acres tract included in the Awalt tract.

THENCE S 43 W 466.2 varas to corner in the Southeast line of the tract conveyed by Bluethmann to Fischer and in the Northwest line of Jasten;

THENCE N 47 W 883.6 varas to corner in the Southeast line of the old Burton-Brenham public road;

THENCE N 60-10 e 233.0 varas along said old road to corner of the West bank of Mayfield branch;

THENCE down said branch on the West bank thereof S 9-30 E 33.3 varas to corner in the division line between the McCoy and Borden Leagues;

THENCE N 43 E 372.0 varas with said League line to the place of beginning, containing 85.04 acres of land.

surveyed by Louis Beazley December 3, 1950. Being the same land conveyed by Mrs. Louis R. Fisher, et al, to the Veterans Land Board of the State of Texas.

The undersigned further states that from the year 1964 to the to the year 1987 there was operated on the aforesaid tract of land a Solid Waste Disposal Site. Specifically, such operation was conducted on that portion of the aforesaid tract described as follows:

Being 3.95 acres of land, lying and being situated in Washington County, Texas, out of the Alex McCoy 1/4 League, Abstract 82, and being a part of that certain 85.04 acre tract of land as described in a Deed from the Veterans' Land Board of the State of Texas to Clarence Alfred Bassinger, dated September 21, 1979, recorded in Volume 382, page 53 of the Deed Records of Washington County, Texas, and being more fully described by metes and bounds as follows:

COMMENCING on a concrete monument marking the North corner of the said parent 85.04 acre tract, same being the North corner of a 1.213 acre tract conveyed out of the said parent 85.04 acre tract by Clarence Alfred Bassinger, et ux, to R. A. Sehriewer, by Deed dated June 10, 1980, recorded in Volume 395, page 468 of the said Deed Records of said county, being located in the Southwest margin of County Road No. 25, and said corner having corrected coordinates on the Texas Plane Coordinate System -Central Zone of X=3,185,268.3 feet and Y=207,606.7 feet;

THENCE along said road margin, same being the Northeast boundary the said parent 85.04 acre, and the Northeast line of the said 1.213 acre tract, South 48 degrees 54' 45" East 50.00 feet to the East corner of the said 1.213 acre tract;

THENCE South 40 degrees 02" 30" West, departing from said road margin, along the Southeast boundary of the said 1.213 acre tract, 747.00 feet to a point in same, being the North corner and PLACE OF BEGINNING of this abandoned land fill site:

THENCE South 32 degrees 00' 00" East, along the Northeast line of said fill site, 353.00 feet to the East corner of same;

THENCE South 55 degree 00' 00" West, along the Southeast line of said land fill site: 624.90 feet to the South corner of same:

THENCE North 50 degrees 00' 00" West 174.50 feet to the West corner of said fill site;

THENCE North 40 degrees 02' 30" East, along the Northwest line of this abandoned land fill site, at 309.97 feet passing the South corner of aforesaid 1.213 acre tract, and continuing on said course, along the aforesaid Southeast line of said 1.213 acre tract, a total distance of 712.70 feet to the PLACE OF BEGINNING and containing 3.95 acres of land.

NOTE: All bearings, distances and coordinates recited herein refer to the Texas Plane Coordinate System -

BRAZOS VALLEY COUNCIL OF GOVERNMENTS 2022 – 2042

873 PAGE 196

Central Zone.

To whom it may concern this is to certify that the heretofore 3.95 acre description, was prepared from an on the ground survey, made under my direction and supervision, and that said description embraces the Solid Waste Disposal Site located on the said parent 85.04 acre tract, currently owned by Clarence Alfred Bassinger, et ux.

Surveyed by Marvin Makowsky October 22, 1987.

Further, the undersigned, the City of Burton was the operator of such Solid Waste Disposal Site.

Notice is hereby provided to any future owner or user of the site to consult with the Texas Department of Health prior to planning or initiating any activity involving the disturbance of the landfill cover or monitoring system.

WITNESS MY HAND on this the 30th day of OCTOBER, 1987.

Clarence Alfred Bassinger
Clarence Alfred Bassinger,
Owner

City of Burton, Operator

Larry Winkelmann
Mayor, Larry Winkelmann

STATE OF TEXAS

COUNTY OF WASHINGTON

This instrument was acknowledged before me on 30th day of October, 1987, by Clarence Alfred Bassinger and Larry Winkelmann.

Dinah S. Gerber
Dinah S. Gerber, Notary Public

STATE OF [illegible]

My commission expires September 11, 1991.

P. O. BOX 37
CARMINE, TEXAS 78932
409 278-3428

CARTX
LAND SURVEY SERVICE

DESCRIPTION OF ABANDONED SOLID WASTE LAND FILL SITE

Being 3.95 acres of land, lying and being situated in Washington County, Texas, out of the Alex McCoy 1/4 League, Abstract 82, and being a part of that certain 85.04 acre tract of land as described in a Deed from the Veterans' Land Board of the State of Texas to Clarence Alfred Bassinger, dated September 21, 1979, recorded in Volume 382, page 53 of the Deed Records of Wahington County, Texas, and being more fully described by metes and bounds as follows:

COMMENCING on a concrete monument marking the North corner of the said parent 85.04 acre tract, same being the North corner of a 1.213 acre tract conveyed out of the said parent 85.04 acre tract by Clarence Alfred Bassinger, et ux, to R. A. Sehriewer, by Deed dated June 10, 1980, recorded in Volume 395, page 468 of the said Deed Records of said county, being located in the Southwest margin of County Road No. 25, and said corner having corrected coordinates on the Texas Plane Coordinate System - Central Zone of X=3,185,268.3 feet and Y=207,606.7 feet;

THENCE along said road margin, same being the Northeast boundary the said parent 85.04 acre, and the Northeast line of the said 1.213 acre tract, South 48° 54' 45" East 50.00 feet to the East corner of the said 1.213 acre tract;

THENCE South 40° 02' 30" West, departing from said road margin, along the Southeast boundary of the said 1.213 acre tract, 747.00 feet to a point in same, being the North corner and PLACE OF BEGINNING of this abandoned land fill site;

THENCE South 32° 00' 00" East, along the Northeast line of said fill site, 353.00 feet to the East corner of same;

THENCE South 55° 00' 00" West, along the Southeast line of said land fill site, 624.90 feet to the South corner of same;

THENCE North 50° 00' 00" West 174.50 feet to the West corner of said fill site;

THENCE North 40° 02' 30" East, along the Northwest line of this abandoned land fill site, at 309.97 feet passing the South corner of aforesaid 1.213 acre tract, and continuing on said course, along the aforesaid Southeast line of said 1.213 acre tract, a total distance of 712.70 feet to the PLACE OF BEGINNING and containing 3.95 acres of land.

NOTE: All bearings, distances and coordinates recited herein refer to the Texas Plane Coordinate System - Central Zone.

To whom it may concern, this is to certify that the heretofore 3.95 acre description, was prepared from an on the ground survey, made under my direction and supervision, and that said description embraces the Solid Waste Disposal Site located on the said parent

...OWSKY, R. P. S.
VOL. 573 PAGE 198
P. O. BOX 37
CARMINE, TEXAS 78932
409 278-3429

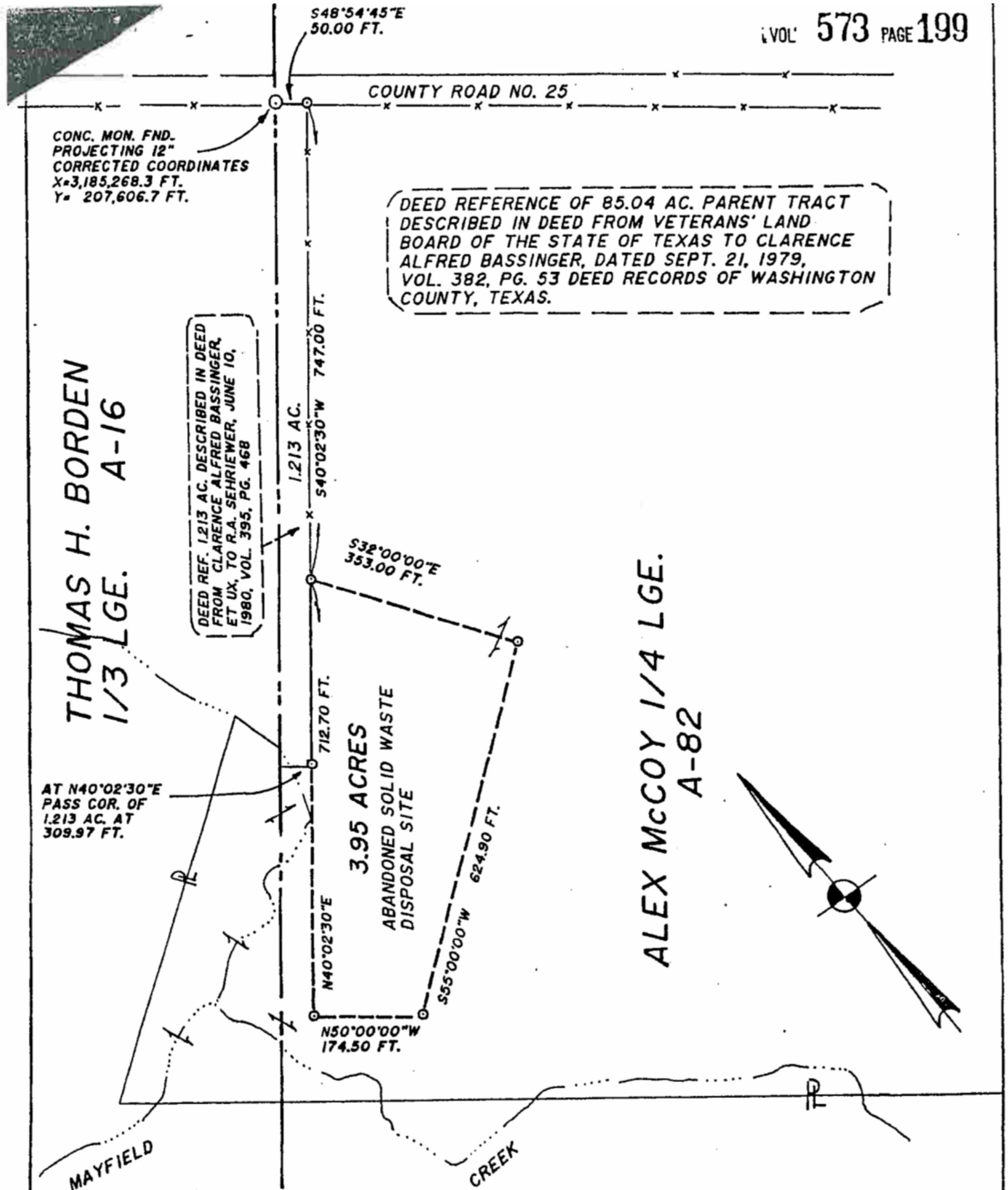
CARTX
LAND SURVEY SERVICE

85.04 acre tract, currently owned by Clarence Alfred Bassinger, et ux.

Date of signature October 22, 1987.

MARVIN MAKOWSKY
REGISTERED PUBLIC SURVEYOR
NO. 1815

STATE OF TEXAS
MARVIN MAKOWSKY
1815
REGISTERED
PUBLIC SURVEYOR



NOTE: ALL BEARINGS SHOWN HEREON REFER TO THE . TEXAS PLANE COORDINATE SYSTEM-CENTRAL ZONE.

THIS IS TO CERTIFY THAT THE MAP SHOWN HEREON WAS PREPARED FROM AN ON THE GROUND SURVEY, MADE UNDER MY DIRECTION AND SUPERVISION.

DATE OF SIGNATURE OCT. 22, 1987.

STATE OF TEXAS
MARVIN MAKOWSKY
1815-C
REGISTERED
PUBLIC SURVEYOR

MARVIN MAKOWSKY
REGISTERED PUBLIC SURVEYOR
NO. 1815
P.O. BOX 37
CARMINE, TEXAS 78932
409-278-3429
409-567-7107
409-542-0160

SHEET 3 OF 3

SCALE: 1"=200 FT.	WASHINGTON COUNTY, TEXAS	JOB NO. 2180

VOL. 573 PAGE 200

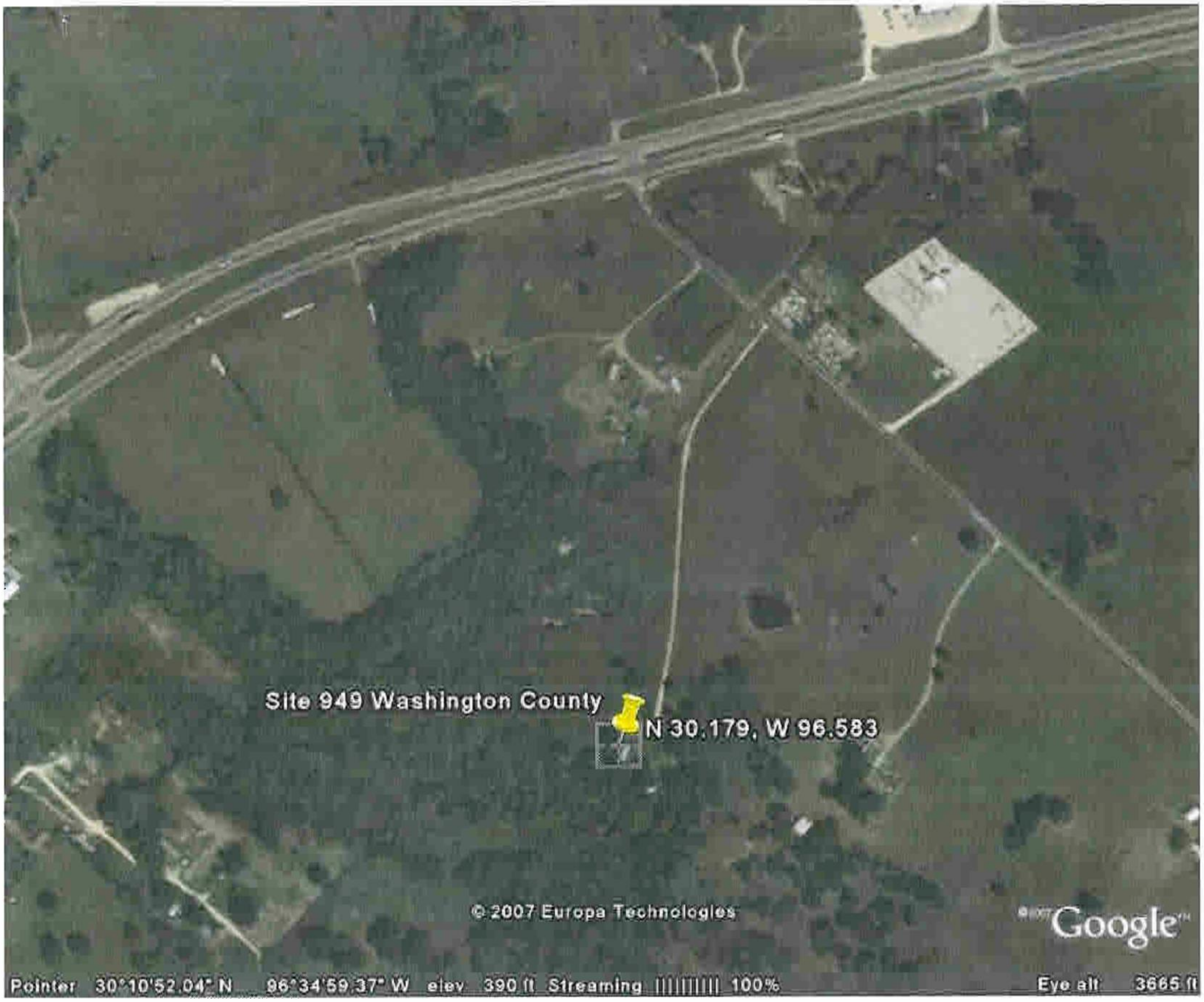
FILED
AT 2:50 P.M.
NOV 2 - 1987
Gertrude Lehrmann
GERTRUDE LEHRMANN
COUNTY CLERK, WASHINGTON COUNTY, TEXAS

STATE OF TEXAS
COUNTY OF WASHINGTON

I hereby certify that this instrument was FILED on the date and at the time affixed hereon by me and was duly RECORDED in the volume and page of the OFFICIAL RECORDS of Washington County, Texas, as stamped hereon by me on NOV 12 1987

Gertrude Lehrmann
Gertrude Lehrmann, County Clerk
Washington County, Texas

Attn: Dinah Gerber
City Burton
P.O. 455
Burton, TX
Pd. 13.25


Site 949 Washington County
N 30.179, W 96.583
© 2007 Europa Technologies
Google
Pointer 30°10'52.04" N 96°34'59.37" W elev 390 ft Streaming |||||||||| 100%
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TCEQ

DISCLAIMER: This Closed or Abandoned Municipal Solid Waste Landfill Inventory was prepared from information furnished by the Texas Commission on Environmental Quality (TCEQ, permitting records on file with TCEQ and the Texas Department of Health, and from information and geographic data developed by the Brazos Valley Council of Governments (BVCOG). The individual site maps and legal descriptions of the closed or abandoned municipal solid waste landfills represent TCEQ's and BVCOG's best judgment about the landfills' location, but neither TCEQ nor BVCOG warrants the accuracy, timeliness, or completeness of the maps or legal descriptions. Moreover, because TCEQ and BVCOG have inventoried only known municipal solid waste landfills, TCEQ and BVCOG make no representation about whether a specific tract of land may overlie an unknown municipal or other solid waste landfill.

3991 East 29th Street
Bryan, Texas 77802
(979) 595-2800
www.bvcog.net

Attachment III.O. Identification of the Process that Will be Used to Evaluate Whether a Proposed Municipal Solid Waste Facility Application Will be in Conformance with the Regional Plan

Introduction

The Texas Commission on Environmental Quality (TCEQ) reviews applications for municipal solid waste facility permits and registrations, considering numerous aspects of the applicant's capabilities and planned operations. Much of this permit review process is conducted by TCEQ staff. In support of this effort, COGs determine if a proposed facility will conform with their regional plan.

TCEQ requires an explanation of the process and criteria the COG will use to evaluate whether a proposed municipal solid waste facility will be in conformance with the regional solid waste management goals and objectives.

This COG conformance review process *only* addresses conformance with their Regional Solid Waste Management Plan's goals and objectives. While land use compatibility, height, aesthetics, traffic, and buffers (beyond rule) are some of the criteria that COGs cannot use to evaluate whether a proposed municipal solid waste facility will be in conformance with the goals and objectives of an area's RSWMP, under Texas Health and Safety Code (THSC) §364.012, counties and municipalities may restrict locations for disposal of municipal and industrial solid waste. COGs are not so authorized to impose or consider such restrictions in these conformance reviews. Land use determinations are beyond the scope of regional and local solid waste management plans, as such content is specified in THSC §363.064 and Title 30 Texas Administrative Code (TAC) §330.635.

A clear and efficient review process is important for making consistent, well-reasoned decisions that ensure new waste facilities align with the goals and objectives of the region.

The purpose of this attachment is to identify and explain the process and mechanism that the COG will use to evaluate whether a proposed municipal solid waste facility will be in conformance with the *2022 – 2042 Regional Solid Waste Management Plan (RSWMP)*.

As a part of this plan, we developed a conformance review process to include the 2022 – 2042 RSWMP goals and objectives. This conformance review process provides all the applicable information that is used to assess the conformance of a permit or registration application including the plan conformance process overview, plan conformance selection criteria, RSWMP plan conformance form instructions, and the RSWMP conformance checklist and questionnaire.

The remainder of this attachment will outline the methods we used to identify and update the region's conformance review process, present the results of those findings, provide a discussion of key points, and offer a conclusion.

Methods

We reviewed relevant Texas Administrative Code (TAC) and consulted experts to create the process the region will use for this plan. We also used design best practices to enhance usability and accessibility of the plan conformance checklist and questionnaire. Special consideration was given to the study of COG facility review applications commissioned by the North Central Texas Council of Governments (NCTCOG) and authored by R.W. Beck.[60]

Results

The plan conformance review process and all applicable information are presented in the addendum to this attachment to facilitate access to the form for printing, when necessary. The addendum includes:

- RSWMP Conformance Process Overview (including selection criteria),
- RSWMP Conformance Checklist and Questionnaire Instructions, and
- RSWMP Conformance Checklist and Questionnaire.

Discussion

The conformance process is important for aligning new facilities to the priorities of collaboration, communication, education, information tracking, and leadership,

---

[60] R.W. Beck, Inc. (2005, August). Regional and Local Review of MSW Facility Applications. North Central Texas Council of Governments. https://www.nctcog.org/nctcg/media/Environment-and-Development/Documents/Materials%20Management/NCTCOG-MSW_Facility_Applications_Final_Report.pdf

detailed in Volume II, Attachment III.I. Identification of Solid Waste Management Concerns and Establishment of Priorities for Addressing Those Concerns. Therefore, it was important that the conformance review process included all the 2022 – 2042 goals and objectives. This was a best practice to ensure the plan is shared widely. Sharing the plan with facilities and waste management leaders helps to get important players in the region onto the same page and aligned to the same vision.

Additionally, by asking for descriptions about the role facilities will play, the applicant is required to think through what their facility might do to support meeting regional objectives. For example, an applicant's recycling facility may most obviously comply with *Goal 1. Maximize Beneficial Resource Use*, but their facility and influence could help address parts of *Goals 2. Responsibly Manage Problematic Waste* and *Goal 3. Maximize Proper Disposal*.

Finally, encouraging stakeholders and committee members to work together through this process will help maximize results. Individual facilities alone cannot achieve these regional goals, but they are an important component of the integrated solid waste management system in the region.

It is important to note that the review process is not a regulatory technical review of the application, and that the region does not approve or deny permit applications. Approval of municipal solid waste management permit applications are the responsibility of TCEQ.[61]

Conclusion

TCEQ requires an explanation of the process and criteria the COG will use to assess all waste facility permit or registration applications for conformance to their Regional Solid Waste Management Plan.

The process included in this plan will help ensure that new facilities are aware of and aligned to the region's goals and objectives.

[61] Instructions for the Regional Solid Waste Management Implementation Plan (Volume II) (TCEQ-20880b/instr (rev. 09-22-2020)). (2020, September). Texas Commission on Environmental Quality. https://www.tceq.texas.gov/assets/public/permitting/waste/wasteplan/TCEQ-20880b.instr(Instructions)RSWMP_VolumeII.pdf

Addendum | Attachment III.O. Identification of the Process that Will be Used to Evaluate Whether a Proposed Municipal Solid Waste Facility Application Will be in Conformance with the Regional Plan

This addendum includes a printable form that can be used in the conformance review process.

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REGIONAL SOLID WASTE MANAGEMENT PLAN CONFORMANCE PROCESS OVERVIEW

Context

The plan conformance review process is not a regulatory technical review of the facility application, and the COG does not approve or deny permit applications. Approval of municipal solid waste management permit applications are the responsibility of the Texas Commission on Environmental Quality (TCEQ).

While land use compatibility, height, aesthetics, traffic, and buffers (beyond rule) are some of the criteria that COGs cannot use to evaluate whether a proposed municipal solid waste facility will be in conformance with the goals and objectives of an area's RSWMP, under Texas Health and Safety Code (THSC) §364.012, counties and municipalities may restrict locations for disposal of municipal and industrial solid waste. COGs are not so authorized to impose or consider such restrictions in these conformance reviews. Land use determinations are beyond the scope of regional and local solid waste management plans, as such content is specified in THSC §363.064 and Title 30 Texas Administrative Code (TAC) §330.635.

As part of the municipal solid waste management facility permit application process, the TCEQ has directed the COG to evaluate whether a proposed municipal solid waste facility application is in conformance with the COG's *2022 – 2042 Regional Solid Waste Management Plan* (RSWMP). This plan includes the region's solid waste goals, objectives, and action steps during the 20-year period. The regional plan encourages collaboration, communication, education, information tracking, and leadership by all parties involved in solid waste management within the region.

The purpose of the *Regional Solid Waste Management Plan Conformance Checklist and Questionnaire* is to provide information for consideration by the COG's Regional Solid Waste Advisory Committee regarding how a proposed facility will help achieve the goals and objectives of the 2022-2042 Plan.

TCEQ reviews applications for municipal solid waste facility authorizations, considering numerous aspects of the applicant's capabilities and planned operations. The TCEQ looks to other agencies for expertise in specific matters, such as wetlands or traffic. In support of this effort, COGs determine if a proposed facility will conform with their regional plan.

Conformance Review Process Steps

The conformance review process may take up to 100 days.

1. **Complete Parts I and II of TCEQ registration or permit application.**
   Applicants may only request a conformance review of their registration or permit application after Part 1 and Part 2 of the filing forms have been fully completed. These documents must be submitted to the BVCOG as part of this review process.

2. **Complete the Regional Solid Waste Management Plan Conformance Checklist and Questionnaire**

> **Regional Solid Waste Management Plan Conformance Selection Criteria**
>
> Applicants must indicate how their facility will be consistent with the goals and objectives of the RSWMP. Applicants are encouraged to support as many objectives as possible and commit to being a good partner. Strong explanations include specific examples of what your facility will do to help achieve the objective.

3. **Submit registration or permit application parts I and II and the Regional Solid Waste Management Plan Conformance Checklist and Questionnaire to the COG.**

4. **SWAC and Board perform conformance review**
   The entire SWAC or a subcommittee will be designated to thoroughly review and ask questions related to facility conformance based on the submitted conformance checklist and questionnaire. Recommendations will then be submitted to the BVCOG Board for final approval.

5. **COG submits conformance findings to TCEQ**
   The BVCOG will submit a letter of conformance or non-conformance with the Regional Solid Waste Management Plan to the TCEQ. Any determination of non-conformance will include an explanation of how the application fails to conform with the RSWMP. The TCEQ will consider the SWAC's comments or recommendations when it decides whether to grant the permit or registration request.

REGIONAL SOLID WASTE MANAGEMENT PLAN CONFORMANCE CHECKLIST AND QUESTIONNAIRE INSTRUCTIONS

Regional Solid Waste Management Plan Conformance Checklist and Questionnaire

To be completed by solid waste facility applicants

Facility and contact information

Facility name	
Contact name	
Phone number	
Mailing address	
Email address	

Plan conformance activities

Goal 1: Maximize beneficial resource use	
Is this your primary goal? (Y/N)	

Objective	Please indicate which Objective(s) your facility will support.
1.A. Improve access to diversion opportunities	☐
1.B. Improve community participation	☐
1.C. Provide education	☐

For each Objective you checked, describe your planned activities:

Goal 2. Responsibly manage problematic waste	
Is this your primary goal? (Y/N)	

Objective	Please indicate which Objective(s) your facility will support.
2.A. Improve access to problematic waste collection	☐
2.B. Provide education	☐
3.C. Collect data	☐

For each Objective you checked, describe your planned activities:

Goal 3. Maximize proper disposal	
Is this your primary goal? (Y/N)	

Objective	**Please indicate which Objective(s) your facility will support.**
3.A. Improve access to solid waste drop-off opportunities	☐
3.B. Improve community participation	☐
3.C. Provide education	☐
3.D. Collect data	☐
3.E. Increase illegal dumping prevention efforts	☐
3.F. Increase illegal dumping enforcement	☐

For each Objective you checked, describe your planned activities:

☐ I have reviewed the 2022 – 2042 Regional Solid Waste Management Plan goals and objectives and pledge to be a good partner in helping achieve them.

Signature

Date

Attachment IV.B. Required Approvals | Public Meeting

This attachment includes the public notice, agenda, and the transcript of the required public meeting. No public comments were received related to the plan.

Public Notice

OCTOBER 21, 2021

Wednesday, September 15, 2021 The Eagle • theeagle.com

MUNICIPAL NOTICES

PUBLIC NOTICE

The Solid Waste Advisory Committee of the Brazos Valley Council of Governments (BVCOG) will hold a public meeting Thursday, October 21, 2021 at 10:00 a.m. in the Board Room of the Center for Regional Services located at 3991 East 29th Street in Bryan, Texas. The purpose of the meeting is to receive public comments on the update of the Regional Solid Waste Management Plan -Part I and Part II. The public is invited to attend the public meeting in-person or virtually to discuss the update of the BVCOG Regional Solid Waste Management Plan -Part I and Part II. Regional Solid Waste Management Plans are required by Texas Health and Safety Code (THSC), §363.062. Contents of the RSWMP are described in THSC §363.064 and in 30 Texas Administrative Code (TAC), Chapter 330, Subchapter O. Funding for this program is provided by the Texas Commission on Environmental Quality.

Those wishing to attend virtually may join the meeting from your computer, tablet or smartphone.
https://global.gotomeeting.com/join/381078149

You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)

United States: +1 (646) 749-3122
One-touch: tel:+16467493122,,381078149#
Access Code: 381-078-149

BVCOG is a regional planning agency which includes Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington Counties. For more information, contact Candilyn McLean at (979) 595-2801 X 2050.
9-15-21, 9-19-21, 9-22-21

NOVEMBER 18, 2021

The Eagle

Order Confirmation
Order# 0000728886

Client:	BRAZOS VALLEY COUNCIL	**Payor Customer:**	BRAZOS VALLEY COUNCIL	**Sales Rep**
Client Phone:	9795952800	**Payor Phone**	9795952800	lburns
Account #:	1036350	**Payor Account:**	1036350	**Ordered By**
Address:	PO DRAWER 4128 BRYAN TX 778054128	**Payor Address:**	PO DRAWER 4128 BRYAN TX 778054128	Candilyn Mclean
Fax:		**EMail**	Lauren.Chilton@bvcog.org	

Total Amount	$301.12
Payment Amount	$0.00
Amount Due	$301.12
Tax Amount:	0.00
Payment Method:	Invoice - Statement

Status: **Blind Box** **Materials:**

Tear Sheets	Proofs	Affidavits	PO Number:
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Order Notes:
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Ad Number	Ad Type	Color	Production Notes
0000728886-01	BC CLS Legal	$0.00	
Pick Up Number	**Ad Size**	**Production Method**	**Production Color**
	2 X 4.83"	AdBooker (liner)	

Product and Zone	Placement	Position	# Inserts
BC The Eagle	C-Legal Ads	Municipal Notices	2

Run Schedule Invoice Text: Meeting of Solid Waste Advisory Committee

Run Dates 10/17/2021, 10/20/2021

Product and Zone	Placement	Position	# Inserts
BC Eagle.com	C-Legal Ads	Municipal Notices	14

Run Schedule Invoice Text: Meeting of Solid Waste Advisory Committee

Run Dates 10/17/2021, 10/18/2021, 10/19/2021, 10/20/2021, 10/21/2021, 10/22/2021, 10/23/2021, 10/24/2021, 10/25/2021, 10/26/2021, 10/27/2021, 10/28/2021, 10/29/2021, 10/30/2021

TagLine: MEETING OF SOLID WASTE ADVISORY COMMITTEE

10/14/2021 1:28:02 pm Page 1 of 2

The Eagle

Order Confirmation
Order# 0000728886

Ad Content Proof

Note: Ad size does not reflect actual ad

PUBLIC NOTICE

The Solid Waste Advisory Committee of the Brazos Valley Council of Governments (BVCOG) will hold a public meeting Thursday, November 18, 2021 at 2:30 p.m. In the Board Room of the Center for Regional Services located at 3991 East 29th Street in Bryan, Texas. The purpose of the meeting is to receive public comments on the update of the Regional Solid Waste Management Plan -Part I and Part II. The public is invited to attend the public meeting in-person or virtually to discuss the update of the BVCOG Regional Solid Waste Management Plan -Part I and Part II. Regional Solid Waste Management Plans are required by Texas Health and Safety Code (THSC), §363.062. Contents of the RSWMP are described in THSC §363.064 and in 30 Texas Administrative Code (TAC), Chapter 330, Subchapter O. Funding for this program is provided by the Texas Commission on Environmental Quality.

Those wishing to attend virtually may join the meeting from your computer, tablet or smartphone
https://global.gotomeeting.com/join/127024629
You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)
United States: +1 (571) 317-3112
- One-touch: tel:+15713173112,,127024629#
Access Code: 127-024-629

BVCOG is a regional planning agency which includes Brazos, Burleson, Grimes, Leon, Madison, Robertson, and Washington Counties. For more information, contact Candilyn McLean at (979) 595-2801 X 2050.
10-17-21, 10-20-21

10/14/2021 1:28:02 pm

Page 2 of 2

Agenda

OCTOBER 21, 2021

BRAZOS VALLEY COUNCIL OF GOVERNMENTS
HYBRID SOLID WASTE ADVISORY COMMITTEE PUBLIC HEARING and REGULAR MEETING – Washington Room
October 21, 2021 @ 10:00 A.M.
3991 EAST 29TH STREET, BRYAN, TX

If you wish to attend virtually, please join my meeting from your computer, tablet or smartphone.

https://global.gotomeeting.com/join/381078149

You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)

United States: +1 (646) 749-3122
- One-touch: tel:+16467493122,,381078149#

Access Code: 381-078-149

PUBLIC HEARING

1. **Call to order**
2. **Introductions**
3. **Public Hearing/Public Comment Period concerning Regional Solid Waste Management Plan Update**
4. **Adjourn**

AGENDA

1. **Call to Order**
2. **Introductions**
3. **Review Corrected TSU Kickoff Special Meeting with SWAC Minutes from June 10, 2021 *(action item)***
4. **Review Minutes from July 8, 2021 Regular SWAC Meeting *(action item)***
5. **Review Minutes from July 29, 2021 Special SWAC Meeting *(action item)***
6. **Citizen and Private Industry Presentations**
7. **Discuss Slate of FY 2022 Solid Waste Advisory Committee Members *(action item)***

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8. **Texas State University Presentation- Dr. Rebecca Davio**

9. **Discuss and Review the updated Regional Solid Waste Management Plan (RSWMP)** ***(action item)***

10. **Next Special SWAC Meeting – November 18, 2021 at 2:30 p.m.**

11. **Next Regular SWAC Meeting – January 27, 2022 at 10:00 a.m.**

12. **Other Business**

13. **Adjourn (action item)**

The Center for Regional Services is wheelchair accessible. For accommodations or sign interpretive services, please call BVCOG at (979) 595-2800 at least 72 hours in advance.

2

NOVEMBER 18, 2021

BRAZOS VALLEY COUNCIL OF GOVERNMENTS
HYBRID SOLID WASTE ADVISORY COMMITTEE PUBLIC HEARING and SPECIAL MEETING
November 18, 2021 @ 2:30 P.M.
3991 EAST 29TH STREET, BRYAN, TX

~ BOARD ROOM ~

If you would like to attend virtually, please join my meeting from your computer, tablet or smartphone.

https://global.gotomeeting.com/join/127024629

You can also dial in using your phone.
(For supported devices, tap a one-touch number below to join instantly.)

United States: +1 (571) 317-3112
- One-touch: tel:+15713173112,,127024629#

Access Code: 127-024-629

PUBLIC HEARING

1. **Call to order**
2. **Introductions**
3. **Public Hearing/Public Comment Period concerning Regional Solid Waste Management Plan Update**
4. **Adjourn**

AGENDA

1. **Call to Order**
2. **Introductions**
3. **Review Minutes from October 21, 2021, Regular SWAC Meeting** ***(action item)***
4. **Discuss and Review the updated Regional Solid Waste Management Plan (RSWMP) with the adjustments made by Texas State University** ***(action item)***
5. **Next Regular SWAC Meeting – January 27, 2022, at 10:00 a.m.**
6. **Adjourn (action item)**

The Center for Regional Services is wheelchair accessible. For accommodations or sign interpretive services, please call BVCOG at (979) 595-2800 at least 72 hours in advance.

1

Transcript

OCTOBER 21, 2021

Minutes

BRAZOS VALLEY COUNCIL OF GOVERNMENTS
HYBRID SOLID WASTE ADVISORY COMMITTEE PUBLIC HEARING and REGULAR MEETING
October 21, 2021 @ 10:00 A.M.
3991 EAST 29TH STREET, BRYAN, TX

Those attending virtually, joined the meeting from a computer, tablet or smartphone.

https://global.gotomeeting.com/join/381078149

They could also dial in using a phone.
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United States: +1 (646) 749-3122
- One-touch: tel:+16467493122,,381078149#

Access Code: 381-078-149

PUBLIC HEARING AGENDA

Attendance:

Brazos County:	Samantha Best, BVSWMA INC., Chair Hon. Irma Cauley, Brazos County Commissioner (online) Pete Caler, City of College Station (online) Nathan Jones, Texas A& M University (online) Eric Zaragoza, City of Bryan (online) Ron Schmidt, Texas Commercial Waste
Burleson County:	Thomas Trnka, City of Caldwell (online) Robbie Myers, Burleson County
Grimes County:	Honorable Barbara Walker, Grimes County Commissioner
Leon County:	Novalene Thurston, Leon County
Madison County:	none present
Robertson County:	Walter Qualls, Robertson County
Washington County:	Mark Marzahn, Washington County

BVOG Staff
Candilyn McLean, Solid Waste Planning Manager, BVCOG
Anna Marie Sauceda, BVCOG

Guests:

Dr. Rebecca Davio, Texas State University (online)
Molly Allred, Texas State University (online)

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Matt Pantuso, Texas State University (online)
Eric Alper, Texas State University (online)
Rev. Matt Brown, Rivergate Church
Robert Dotson, 5001 Cole Lane College Station, Texas

Absences

Katherine Lee, Grimes County
Honorable Ricky Driskell, Madison County Commissioner
Honorable David Grimes, Leon County Commissioner
Winter Adams, Leon County
Honorable Jerrod Jones, City of Buffalo, Mayor
Frankie Smith, City of Madisonville
Honorable Carl Cannon, Madison County Commissioner
William Houston, Robertson County
Zach Young, Leon County (NUCOR Steel)

1. The Public Hearing was called to order by the Chair, Ms. Samantha Best.

2. Ms. Best asked for introductions. Ms. Candilyn McLean took attendance for those attending the meeting virtually. Ms. McLean announced that there was a quorum.

3. During the public hearing/public comment period concerning Regional Solid Waste Management Plan update, there were two visitors in attendance. Rev. Matt Brown, Rivergate Church and Mr. Robert Dotson – 5001 Cole Lane, College Station, Texas, were in attendance. Mr. Eric Zaragoza, City of Bryan, explained that the municipal wastewater facility in question is a component of the City of Bryan Water Department and not the Solid Waste Department. Discussion followed. Both guests attended the meeting thinking that it concerned the Notice of Application and Preliminary Decision for TPDES Permit for Municipal Wastewater for a facility to be located at the intersection of Australia Lane and Cole Lane, in Brazos County, Texas. Both left the meeting when they realized they were at the wrong meeting. Ms. Best asked if there were any more public comments concerning the Regional Solid Waste Management Plan (RSWMP).

   Mr. Ron Schmidt – 835 N. Rosemary, Bryan, Texas, commented during the public hearing. He asked Ms. McLean if the Solid Waste grant categories were included in the draft of the RSWMP. She let him know that she did not see the grant categories in the plan. He also mentioned that there should be a statement in the RSWMP concerning the private sector conflicts as it relates to the solid waste grants program. Ms. McLean mentioned that information is included in the Request for

Applications (RFAs). But Mr. Schmidt stated, it's not currently in the draft RSWMP. Ms. McLean let him know that there is a meeting agenda item coming up where this topic could continue. Mr. Schmidt said that he would wait to continue the topic until they had come to that point in the agenda.

Ms. Best asked if there were any more comments concerning the RSWMP update. There were none. She asked for a motion to adjourn the Public Hearing.

4. Mr. Walter Qualls made a motion to adjourn the public hearing. Mr. Mark Marzahn seconds the motion. The motion passed by acclamation.

REGULAR MEETING AGENDA

Attendance:

Brazos County:	Samantha Best, BVSWMA INC., Chair Hon. Irma Cauley, Brazos County Commissioner (online) Pete Caler, City of College Station (online) Nathan Jones, Texas A& M University (online) Eric Zaragoza, City of Bryan (online) Ron Schmidt, Texas Commercial Waste (late arrival)
Burleson County:	Thomas Trnka, City of Caldwell (online) Danny Segundo, City of Somerville (online) Robbie Myers, Burleson County
Grimes County:	Katherine Lee, Grimes County
Leon County:	Novalene Thurston, Leon County
Madison County:	none present
Robertson County:	Walter Qualls, Robertson County
Washington County:	Mark Marzahn, Washington County

BVOG Staff

Candilyn McLean, Solid Waste Planning Manager, BVCOG
Anna Marie Sauceda, BVCOG

Guests:

Dr. Rebecca Davio, Texas State University (online)
Molly Allred, Texas State University (online)
Matt Pantuso, Texas State University (online)
Eric Alper, Texas State University (online)
J. Naidu, Annapurna Solutions (online)

3

Absences

Honorable Barbara Walker, Grimes County Commissioner
Honorable Ricky Driskell, Madison County Commissioner
Honorable David Grimes, Leon County Commissioner
Winter Adams, Leon County
Honorable Jerrod Jones, City of Buffalo, Mayor
Frankie Smith, City of Madisonville
Honorable Carl Cannon, Madison County Commissioner
William Houston, Robertson County
Zach Young, Leon County (NUCOR Steel)

1. The regular meeting was called to order by the Chair, Ms. Samantha Best.

2. Ms. Best asked for introductions. Ms. Candilyn McLean took attendance for those attending the meeting virtually. The quorum still existed.

3. The SWAC reviewed the corrected minutes from June 10, 2021, Special SWAC Meeting. Mr. Walter Qualls made a motion to approve the minutes. Mr. Ron Schmidt seconds the motion. The motion passed by acclamation.

4. The SWAC reviewed the minutes from the July 8, 2021, regular SWAC meeting. Mr. Ron Schmidt made a motion to approve the minutes. Mr. Walter Qualls seconds the motion. The motion passed by acclamation.

5. The SWAC reviewed the minutes from the July 29, 2021, special SWAC meeting. Mr. Mark Marzahn made a motion to approve the minutes. Mr. Robbie Myers seconds the motion. The motion passed by acclamation.

6. There were not any citizen and private industry presentations.

7. The SWAC discussed the slate of FY 2022 Solid Waste Advisory Committee SWAC) Members. Mr. Ron Schmidt had a question about the attendance records for the SWAC members. He said that the SWAC should review the attendance records prior to making a decision about making a recommendation for approval of the slate of members presented. Ms. McLean said that she would provide a copy of the SWAC attendance to the SWAC members. Mr. Ron Schmidt made a motion to table this agenda item until after the presentation. Commissioner Irma Cauley seconds the motion. The motion was approved by acclamation.

8. Texas State University made a presentation summarizing the BVCOG Regional Solid Waste Management Plan update. Dr. Rebecca Davio introduced her staff who would participate in the presentation. Dr.

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Rebecca Davio begins by informing all about the new updated materials in the RSWMP. Eric Alper begins by covering the overall purpose of the presentation, followed by Matt Pantuso and Molly Allred. Ms. McLean mentioned that the presentation was presented too quickly to be understood very well. Ms. Samantha Best mentioned that there would be a recess taken for lunch at 12:00 p.m. and then return at 12:30 p.m. to continue with the meeting.

9. There were some technical difficulties delaying the restart of the meeting until 1:15 p.m. Texas State returned after the lunch break to cover the presentation again for the SWAC. The SWAC discussed as they reviewed the updated Regional Solid Waste Management Plan (RSWMP) during the second Texas State University presentation. There were several areas of the regional plan that Texas State agreed to change, update, or modify based on conversations with the SWAC. The following was agreed upon based on comments made during the meeting as provided by Texas State University on November 2, 2021:

- Revised Action Steps and added key partners column to action plan (pages A174 – A177)
    - Revised action steps (These changes are reflected in the Plan-at-a-glance table and the discussion of each action step in Attachment N)
        - 1.A.1. Modified and approved in meeting
        - 1.A.4. Modified outside of meeting (added "Encourage and Support")
        - 1.A.6. Modified and approved in meeting
        - 1.A.7. Modified and approved in meeting
        - 1.B.1. Modified outside of meeting (added "Encourage and Support")
        - 1.B.3. Added and approved in meeting
        - 1.C.1. Modified outside of meeting (changed "Ensure" to "Promote")
        - 1.C.2. Modified and approved in meeting
        - 1.D.1. Removed and approved in meeting
        - 2.A.1. Clarified and approved in meeting
        - 2.A.3. Modified and approved in meeting
        - 2.B.1. Modified and approved in meeting
        - 2.B.2. Modified outside of meeting (changed "Ensure" to "Promote")
        - 2.B.3. Clarified and approved in meeting
        - 2.C.1. Modified and approved in meeting
        - 3.A.2. Modified outside of meeting (Updated milestone dates to "Entire Period" because of continued support of collection centers)
        - 3.C.1. Modified outside of meeting (changed "Ensure" to "Promote")
        - 3.C.2. Clarified and approved in meeting

- 3.D.1. Clarified and approved in meeting
- 3.F.2. Modified and approved in meeting
- 3.F.3. Clarified, modified, and approved in meeting
- 4.A.1. Modified and approved in meeting
- 4.B.1. Modified and approved in meeting (used Walter Qualls' language)
- 4.C.1. Clarified and approved in meeting
- 4.C.2. Modified and approved in meeting
- 4.C.3. Modified and approved in meeting
- 4.D.2. Modified and approved in meeting
- 4.E.1. Modified and approved in meeting
- 4.F.1. Clarified and approved in meeting
- 4.G.1. Modified based on email request (Added "Continue to" and changed dates to "Entire Period" to reflect continued encouragement.
- 4.G.2. Modified and approved in meeting

- Key partners
  - Added a key partners column to the Plan-at-a-Glance in Attachment III.N. and entered partners. Please feel free to review these partner lists.

- In Goal 3, use of "Increase" and "Improve" was inconsistent. These instances are all "Improve" now.
- Made sure Recycling Rate Goal green box on A24 – A26 was showing all information.
- Revised Grant Funding Objective Language for Action Step 4.B.1. (Walter Qualls language) (pages A177, A189, and A286)
- Added BVCOG Conformance Review Process (pages A274 – A279)
- Added BVCOG Conformance Review Checklist (pages A280 – A297) Note: inserted plan-at-a-glance on pages A283 – A286 to allow the plan to provide context to applicants.
- Incorporated Roll Off Companies and Recyclers (pages A144 – A148)
- Added Grant Funding Program and Grant Application Selection Criteria (pages A193 – A200)
- Incorporated Private Industry Notification (from Ron Schmidt) (page A195)
- Added Closed Landfill Inventory (pages A202 – A267)
- Answered Requests for Clarification regarding questions submitted on October 22, 2021, by Ms. McLean.

10. Ms. Samantha Best announced the next Special SWAC Meeting regarding RSWMP is on November 18, 2021, at 2:30 p.m.

11. Ms. Samantha Best also announces the next Regular SWAC Meeting regarding Grant Application Information is on January 27, 2021, at 10:00 a.m.

12. The SWAC returned to agenda item #7. Ms. McLean provided a copy of the SWAC member attendance record for the members who were attending the meeting in person and emailed a copy to the members who

were attending online. The SWAC discussed the non-attendance of some of the meetings by SWAC members. Mr. Robbie Myers made a motion to approve the slate of SWAC members asking Ms. McLean to contact the County Judges regarding the SWAC members who have missed more than two SWAC meetings this year. Mr. Walter Qualls seconds the motion. The motion passed by acclamation.

13. Mr. Walter Qualls made a motion to adjourn the meeting. Mr. Robbie Myers seconds the motion. The motion passed by acclamation.

Samantha Best

Samantha Best, Chair

Walter Qualls, Vice Chair

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NOVEMBER 18, 2021

Minutes

BRAZOS VALLEY COUNCIL OF GOVERNMENTS
HYBRID SOLID WASTE ADVISORY COMMITTEE PUBLIC HEARING and SPECIAL MEETING
November 18, 2021 @ 2:30 P.M.
3991 EAST 29TH STREET, BRYAN, TX

~ BOARD ROOM ~

Those attending virtually, the meeting from a
computer, tablet, or smartphone.
https://global.gotomeeting.com/join/127024629

They could have also dialed in using a phone.
(For supported devices, tap a one-touch number below to join instantly.)

United States: +1 (571) 317-3112
- One-touch: tel:+15713173112,,127024629#
Access Code: 127-024-629

PUBLIC HEARING AGENDA

Attendance:

Brazos County: Samantha Best, BVSWMA INC., Chair
Ron Schmidt, Texas Commercial Waste (online)
Nathan Jones, Texas A& M University (online)

Burleson County: Robbie Myers, Burleson County

Grimes County: Katherine Lee, Grimes County

Leon County: Winter Adams, Leon County (online)
Zac Young, Leon County (online)
Novalene Thurston, Leon County
Honorable Jerod Jones, Mayor City of Buffalo (online)

Madison County: Honorable Carl Cannon**,** Madison County Commissioner (online)

Robertson County: Walter Qualls, Vice Chair, Robertson County
Washington County: none present

BVCOG Staff
Candilyn McLean, Solid Waste Planning Manager, BVCOG
Anna Marie Sauceda, BVCOG

Guests
Dr. Rebecca Davio, Texas State University (online)
Molly Allred, Texas State University (online)
Halley Johnson, Texas State University (online)
Matt Patusso, Texas State University (online)

Absences
Honorable Ricky Driskell, Madison County Commissioner
Honorable David Grimes, Leon County Commissioner
Frankie Smith, City of Madisonville
William Houston, Robertson County

1. The Public Hearing was called to order by the Chair, Ms. Samantha Best.

2. Ms. Samantha Best asked for introductions. Ms. Candilyn McLean took attendance for those attending meeting virtually. Ms. McLean announced that there was a quorum.

3. Mr. Ron Schmidt commented concerning the Regional Solid Waste Management Plan update. Mr. Schmidt suggested that the SWAC that the regional plan should also include a relationship or collaboration with Keep Texas Beautiful and local affiliates. Discussion followed.

   Ms. Samantha Best asked if there were any more comments concerning the RSWMP update. She asked for a motion to adjourn the Public Hearing.

4. Mr. Walter Qualls made a motion to adjourn the public hearing. Mr. Robbie Myers seconds the motion. The motion passed by acclamation. The Public Hearing adjourned at 2:35 P.M.

SPECIAL MEETING
Attendance:

Brazos County: Samantha Best, BVSWMA INC., Chair
Ron Schmidt, Texas Commercial Waste (online)
Nathan Jones, Texas A& M University (online)

Burleson County: Robbie Myers, Burleson County

Grimes County: Katherine Lee, Grimes County

Leon County: Winter Adams, Leon County (online)
Zac Young, Leon County (online)
Novalene Thurston, Leon County
Honorable Jerod Jones, Mayor City of Buffalo (online)

Madison County: Honorable Carl Cannon**,** Madison County Commissioner (online)

Robertson County: Walter Qualls, Vice Chair, Robertson County
Washington County: none present

BVCOG Staff
Candilyn McLean, Solid Waste Planning Manager, BVCOG
Anna Marie Sauceda, BVCOG

Guests
Dr. Rebecca Davio, Texas State University (online)
Molly Allred, Texas State University (online)
Halley Johnson, Texas State University (online)
Matt Patusso, Texas State University (online)

Absences
Honorable Ricky Driskell, Madison County Commissioner
Honorable David Grimes, Leon County Commissioner
Frankie Smith, City of Madisonville
William Houston, Robertson County

1. Ms. Samantha Best called the Brazos Valley Council of Governments Solid Waste Advisory Committee Special Meeting to order.

2. Ms. Samantha Best asked for introductions. Ms. Candilyn McLean took attendance for those attending meeting virtually.

3. Ms. McLean makes correction that was brought to our attention by Mr. Walter Qualls – on first and third page. The October 21, 2021 minutes listed Mr. Qualls as representing Leon County. It should have shown him representing Robertson County not Leon County. Correction was made. Ms. Samantha Best asked for motion to approve correction. Mr. Ron Schmidt makes motion. Mr. Walter Qualls seconds the motion. Mr. Ron Schmidt withdrew motion and makes amended motion to approve minutes

with corrections. Mr. Walter Qualls seconds the motion. The motion passed by acclamation.

4. The SWAC discussed and reviewed the updated Regional Solid Waste Management Plan with prior adjustments made by Texas State University.

   The following is a listing of the changes that Texas State University agreed to make based on the conversation with the SWAC:

   a. Texas State University agreed to **add** KTB and KAB as partners in Table III.J in Volume 2, page. **Previously**, KTB was only listed next to the solid waste literacy and illegal dumping concerns.
   b. Texas State noted that **previously,** Environmental Stakeholders on page A145 lists cities and counties that are affiliates of KTB. Texas State University used an active affiliate list from KTB to complete this part. They asked that if there were needed additions to let them know.
   c. Texas State University will **add** KTB and KAB as Key Partners for some action steps in the Plan at a Glance (pages A174-A177).
   d. Texas State noted that page A198 **previously** showed scoring criteria including points awarded for being a KTB or KAB affiliate in good standing.

   Ms. Samantha Best asks if there are any more questions or comments concerning the Regional Solid Waste Management Plan update. Mr. Walter Qualls thanked Dr. Davio and her team for their assistance updating the BVCOG Regional Solid Waste Management Plan. Others expressed their gratitude, as well.

   Ms. Samantha Best asked for motion to approve addition of modifications into the RSWMP that the SWAC had discussed. Mr. Walter Qualls made a motion to approve addition of modifications into the RSWMP that the SWAC had discussed. Mr. Robbie Myers seconds the motion. The motion passed by acclamation.

5. Ms. Samantha Best announced the next Regular SWAC Meeting will be on January 27, 2022, at 10:00 a.m.

6. Mr. Robbie Myers made a motion to adjourn the meeting. Mr. Walter Qualls seconds the motion. The motion passed by acclamation.

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Samantha Best, BVSWMA INC., Chair

Public Comments

OCTOBER 21, 2021

Mr. Ron Schmidt suggested to the SWAC that the regional plan should also include a relationship or collaboration with Keep Texas Beautiful and local affiliates.

NOVEMBER 21, 2021

Mr. Ron Schmidt asked Ms. McLean if the Solid Waste grant categories were included in the draft of the RSWMP. She let him know that she did not see the grant categories in the plan. He also mentioned that there should be a statement in the RSWMP concerning the private sector conflicts as it relates to the solid waste grants program.