

**Environmental Resource Inventory
For
Zilker Park
Austin City Limits Staging Area**

Submitted to:

**City of Austin
Planning & Development Review Department**

Prepared for :

**C3 Presents LLC
in cooperation with
Parks and Recreation Dept.**

Prepared by:

ATKINS

**11801 Domain Blvd., Suite 500
Austin, Texas 78758
TBPE Firm No. F-474**

December 2017

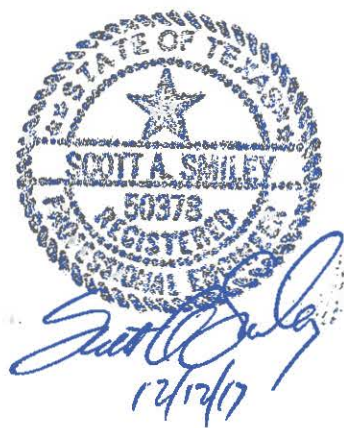


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I. GENERAL SITE INFORMATION

Zilker Park ACL Staging Area is a proposed in Zilker Park between Stratford Lane and Lady Bird Lake, east of MOPAC on an 11.12 acre tract.

This site is in the defined Edwards Aquifer Recharge Zone, is within the Lady Bird Lake Watershed, which is classified as a Water Supply Suburban Watershed, is in the Lady Bird Lake Waterfront overlay zone, is zoned P, and is in the Barton Hills Neighborhood planning area. All of the project is within the 500-year flood plain but none of the proposed activities are within the 100 year base flood elevation. The City 100 year Fully Developed Flood Plain and the FEMA 100 year Flood Plain coincide with each other.

II. Critical Environmental Features

The entire project site is located on top of the existing Butler Landfill cap, see map and report attached. Although the site is located on the mapped Edwards Aquifer Recharge Zone, a geological investigation was not performed because the landfill and cap have covered any features that may have existing in this area. No critical environmental features exist on the cap. Borings were performed to determine the thickness of the cap and proximity to Stratford Lane. Boring Logs are attached.

Two Springs are identified in the City data base that appear to be at the edge of the cap along the lake. Both features are more than 150' from the proposed activities.

III. Waiver Request

Because the site is completely on the closed Butler landfill cap, a waiver to providing the Hydrogeologic Report is requested. Although the site is on the Edwards Aquifer Recharge Zone, no natural and traditional character of the land remains. No natural geologic formations remain. The site was excavated as a quarry and subsequently filled with mostly domestic waste and then covered with an imported clay cap approximately 4' thick. The attached City Bulter Landfill Report provides additional background on this property.

Case No.: _____
(City use only)

Environmental Resource Inventory

For the City of Austin
Related to LDC 25-8-121, City Code 30-5-121, ECM 1.3.0 & 1.10.0

The ERI is required for projects that meet one or more of the criteria listed in LDC 25-8-121(A), City Code 30-5-121(A).

1. SITE/PROJECT NAME: Austin City Limits Staging Area
2. COUNTY APPRAISAL DISTRICT PROPERTY ID (#s): 105461
3. ADDRESS/LOCATION OF PROJECT: 2236 1/2 Stratford Drive, Austin TX 78746
4. WATERSHED: Lady Bird Lake Watershed
5. THIS SITE IS WITHIN THE *(Check all that apply)*
- Edwards Aquifer Recharge Zone* *(See note below)* YES No
 - Edwards Aquifer Contributing Zone* YES No
 - Edwards Aquifer 1500 ft Verification Zone* YES No
 - Barton Spring Zone* YES No
- *(as defined by the City of Austin – LDC 25-8-2 or City Code 30-5-2)*

Note: If the property is over the Edwards Aquifer Recharge zone, the Hydrogeologic Report and karst surveys must be completed and signed by a Professional Geoscientist Licensed in the State of Texas.

6. DOES THIS PROJECT PROPOSE FLOODPLAIN MODIFICATION?..... YES** NO
- If yes, then check all that apply:
- (1) The floodplain modifications proposed are necessary to protect the public health and safety;
 - (2) The floodplain modifications proposed would provide a significant, demonstrable environmental benefit, as determined by a **functional assessment** of floodplain health as prescribed by the Environmental Criteria Manual (ECM), or
 - (3) The floodplain modifications proposed are necessary for development allowed in the critical water quality zone under LDC 25-8-261 or 25-8-262, City Code 30-5-261 or 30-5-262.
 - (4) The floodplain modifications proposed are outside of the Critical Water Quality Zone in an area determined to be in poor or fair condition by a **functional assessment** of floodplain health.

**** If yes, then a functional assessment must be completed and attached to the ERI (see ECM 1.7 and Appendix X for forms and guidance) unless conditions 1 or 3 above apply.**

7. IF THE SITE IS WITHIN AN URBAN OR SUBURBAN WATERSHED, DOES THIS PROJECT PROPOSE A UTILITY LINE PARALLEL TO AND WITHIN THE CRITICAL WATER QUALITY ZONE? YES*** NO

*****If yes, then riparian restoration is required by LDC 25-8-261(E) or City Code 30-5-261(E) and a functional assessment must be completed and attached to the ERI (see ECM1.5 and Appendix X for forms and guidance).**

8. There is a total of 2 (#s) Critical Environmental Feature(s)(CEFs) on or within 150 feet of the project site. If CEF(s) are present, attach a detailed **DESCRIPTION** of the CEF(s), color **PHOTOGRAPHS**, the **CEF WORKSHEET** and provide **DESCRIPTIONS** of the proposed CEF buffer(s) and/or wetland mitigation. Provide the number of each type of CEFs on or within 150 feet of the site *(Please provide the number of CEFs)*:

2 (#s) Spring(s)/Seep(s) ____ (#s) Point Recharge Feature(s) ____ (#s) Bluff(s)
 ____ (#s) Canyon Rimrock(s) ____ (#s) Wetland(s)

Note: Standard buffers for CEFs are 150 feet, with a maximum of 300 feet for point recharge features. Except for wetlands, if the standard buffer is not provided, you must provide a written request for an administrative variance from LDC 25-8-281(C)(1) and provide written findings of fact to support your request. Request forms for administrative variances from requirements stated in LDC 25-8-281 are available from Watershed Protection Department.

9. The following site maps are attached at the end of this report (Check all that apply and provide):

All ERI reports must include:

- Site Specific Geologic Map with 2-ft Topography
- Historic Aerial Photo of the Site
- Site Soil Map
- Critical Environmental Features and Well Location Map on current Aerial Photo with 2-ft Topography

Only if present on site (Maps can be combined):

- Edwards Aquifer Recharge Zone with the 1500-ft Verification Zone
(Only if site is over or within 1500 feet the recharge zone)
- Edwards Aquifer Contributing Zone
- Water Quality Transition Zone (WQTZ)
- Critical Water Quality Zone (CWQZ)
- City of Austin Fully Developed Floodplains for all water courses with up to 64-acres of drainage

10. **HYDROGEOLOGIC REPORT** – Provide a description of site soils, topography, and site specific geology below (Attach additional sheets if needed):

Surface Soils on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups*. If there is more than one soil unit on the project site, show each soil unit on the site soils map.

Soil Series Unit Names, Infiltration Characteristics & Thickness			*Soil Hydrologic Groups Definitions (<i>Abbreviated</i>)
Soil Series Unit Name & Subgroup**	Group*	Thickness (feet)	
			A. Soils having a <u>high infiltration</u> rate when thoroughly wetted. B. Soils having a <u>moderate infiltration</u> rate when thoroughly wetted. C. Soils having a <u>slow infiltration</u> rate when thoroughly wetted. D. Soils having a <u>very slow infiltration</u> rate when thoroughly wetted. **Subgroup Classification – See <u>Classification of Soil Series</u> Table in County Soil Survey.

Description of Site Topography and Drainage *(Attach additional sheets if needed):*

List surface geologic units below:

Geologic Units Exposed at Surface		
Group	Formation	Member

Brief description of site geology *(Attach additional sheets if needed):*

Wells -- Identify all recorded and unrecorded wells on site (test holes, monitoring, water, oil, unplugged, capped and/or abandoned wells, etc.):

There are ___(##) wells present on the project site and the locations are shown and labeled

___(##s)The wells are not in use and have been properly abandoned.

___(##s)The wells are not in use and will be properly abandoned.

___(##s)The wells are in use and comply with 16 TAC Chapter 76.

There are ___(##s) wells that are off-site and within 150 feet of this site.

11. THE VEGETATION REPORT – Provide the information requested below:

Brief description of site plant communities (Attach additional sheets if needed):

Most of the project site is devoid of vegetation as can be seen on the attached photos. Bermuda Grass is dominate for hte areas will grass coverage. The existing depression has a variety of volunteer trees having grown since the last application of cap material in the 80s. The tree survey shows the types and sizes of the trees.

There is woodland community on site YES NO (Check one).

If yes, list the dominant species below:

Woodland species	
Common Name	Scientific Name
Hackberry	
Ash	
Willow	
Mesquite	
Cypress	

There is grassland/prairie/savanna on site..... YES NO (Check one).

If yes, list the dominant species below:

Grassland/prairie/savanna species	
Common Name	Scientific Name
Bermuda	

There is hydrophytic vegetation on site YES NO (Check one).

If yes, list the dominant species in table below (next page):

Hydrophytic plant species		
Common Name	Scientific Name	Wetland Indicator Status

A tree survey of all trees with a diameter of at least eight inches measured four and one-half feet above natural grade level has been completed on the site.

YES NO (Check one).

12. WASTEWATER REPORT – Provide the information requested below.

Wastewater for the site will be treated by (Check of that Apply):

- On-site system(s)
- City of Austin Centralized sewage collection system
- Other Centralized collection system

Note: All sites that receive water or wastewater service from the Austin Water Utility must comply with City Code Chapter 15-12 and wells must be registered with the City of Austin

The site sewage collection system is designed and will be constructed to in accordance to all State, County and City standard specifications.

YES NO (Check one).

Calculations of the size of the drainfield or wastewater irrigation area(s) are attached at the end of this report or shown on the site plan.

YES NO Not Applicable (Check one).

Wastewater lines are proposed within the Critical Water Quality Zone?

YES NO (Check one). If yes, then provide justification below:

No on site wastewater facilities are proposed. Only temporary, port a potty, collection could be located on site.

Is the project site is over the Edwards Aquifer?

YES NO (Check one).

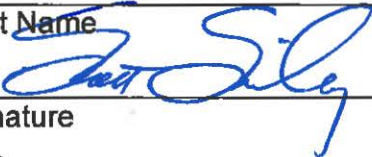
If yes, then describe the wastewater disposal systems proposed for the site, its treatment level and effects on receiving watercourses or the Edwards Aquifer.

No wastewater collection is provided. Any temporary wastewater generated on site will be hauled to appropriate disposal locations. Port a potty.

13. One (1) hard copy and one (1) electronic copy of the completed assessment have been provided.

Date(s) ERI Field Assessment was performed: 3/2017 and 6/2017
Date(s)

My signature certifies that to the best of my knowledge, the responses on this form accurately reflect all information requested.

Scott Smiley	512-342-3217
Print Name	Telephone
	scott.smiley@atkinsglobal.com
Signature	Email Address
Atkins	12/12/2017
Name of Company	Date

For project sites within the Edwards Aquifer Recharge Zone, my signature and seal also certifies that I am a licensed Professional Geoscientist in the State of Texas as defined by ECM 1.12.3(A).

P.G.
Seal

**Environmental Resource Inventory
Waiver Request Form**
For The City of Austin
Related to LDC 25-8-121(D) or City Code 30-5-121(D)

GENERAL SITE INFORMATION:

1. SITE/PROJECT NAME: Austin City Limits Staging Area
2. COUNTY APPRAISAL DISTRICT PROPERTY ID (#'s): 105461
3. ADDRESS/LOCATION OF PROJECT: 2236 1/2 Stratford Drive, Austin TX 78746
4. WATERSHED: Lady Bird Lake

5. THIS SITE IS WITHIN THE (Check all that apply)
- Edwards Aquifer Recharge Zone* (See note below)..... YES No
- Edwards Aquifer Contributing Zone* YES No
- Barton Spring Zone* YES No
- *as defined by the City of Austin – LDC 25-8-2 or City Code 30-5-2

6. DOES THIS PROJECT PROPOSE FLOODPLAIN MODIFICATION? YES** NO
- IF YES, THEN DO ANY OF THE FOLLOWING CONDITIONS APPLY? (check all that apply):
- (1) The floodplain modifications proposed are necessary to protect the public health and safety;
- (2) The floodplain modifications proposed would provide a significant, demonstrable environmental benefit, as determined by a functional assessment of floodplain health as prescribed by the Environmental Criteria Manual (ECM), or
- (3) The floodplain modifications proposed are necessary for development allowed in the critical water quality zone under LDC 25-8-261 or 25-8-262, City Code 30-5-261 or 30-5-262.
- (4) The floodplain modifications proposed are outside of the Critical Water Quality Zone in an area determined to be in poor or fair condition by a functional assessment of floodplain health.

**** If yes, then a Functional Assessment must be completed and attached to the ERI (see ECM 1.7 and Appendix X in the Environmental Criteria Manual for forms and guidance) unless conditions 1 or 3 above apply.**

7. DOES THIS PROJECT PROPOSE AN UTILITY LINE PARALLEL TO AND WITHIN THE CRITICAL WATER QUALITY ZONE? YES*** NO

*****If yes, then riparian restoration is required by LDC 25-8-261(E) and a Functional Assessment must be completed and attached to the ERI (see ECM 1.5 and Appendix X in the Environmental Criteria Manual for forms and guidance).**

REQUIRED INFORMATION FOR WAIVER REQUEST:

Pursuant to LDC 25-8-121(D) or City Code 30-5-121(D), the Director of the Watershed Protection Department (WPD) may permit an applicant to exclude information that is required in ERI report if the Director determines that the information is unnecessary because of the scope or nature of the proposed development. Please provide the requested information below to WPD for review. **Please be advised, if granted, this waiver may be rescinded in the future, if new information is discovered during the review process that requires that an ERI be completed for this site.**

1. A NARRATIVE DESCRIPTION of current site conditions and justifications to support the granting of the waiver request are attached at the end of this form.
2. The following MAPS of the site is attached:

(Map Information available at <http://www.austintexas.gov/GIS/DevelopmentWebMap/Viewer.aspx>)

- Site Location Map
- Historic Aerial Photo at least 15 years old
- Current Aerial Photo
- Topographic Map with a 2 feet contour interval

To the best of my knowledge, the responses to this form accurately and thoroughly reflect all information requested.

Scott A. Smiley

512-342-3217

Print Name

Telephone

scott.smiley@atkinsglobal.com

Signature

Email Address

Atkins

12/12/2017

Name of Company

Date

WATERSHED PROTECTION DEPARTMENT USE ONLY.

The waiver requested from LDC 25-8-121(D) of City Code 30-5-121(D) for the above reference project has been:

- Denied Approved Rescinded Approved with TCEQ Geologic Assessment

Reasoning for denial:

- Formal and/or administrative variances are required for this proposed development.
- Critical Environmental Features are present on or within 150 feet of site boundaries.
- The information provided is incomplete (see comments below).
- Denied, but the following sections can be omitted (see comments below).
- Other

Comments:

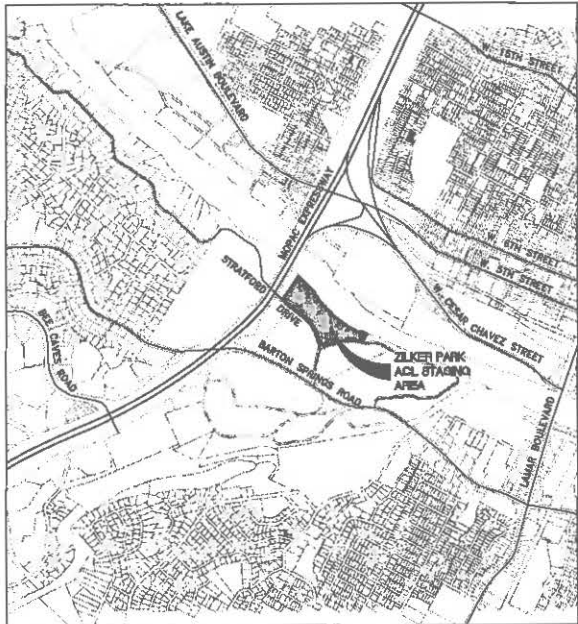
Reasoning for Approval *(This form must be included with submittal materials and referenced in your Engineer's Report and/or Summary):*

- No Critical Environmental Features are present on or within 150 feet of the site boundaries.
- The site has existing impervious cover and no significant undisturbed natural areas.
- No floodplains, slopes >15%, CWQZs, WQTZs, wetlands, and the Edwards Aquifer contributing zone are present on site and TCEQ Geologic Assessment has been completed and will be submitted *(Only for sites within the Edwards Aquifer)*.
- Other:

Comments:

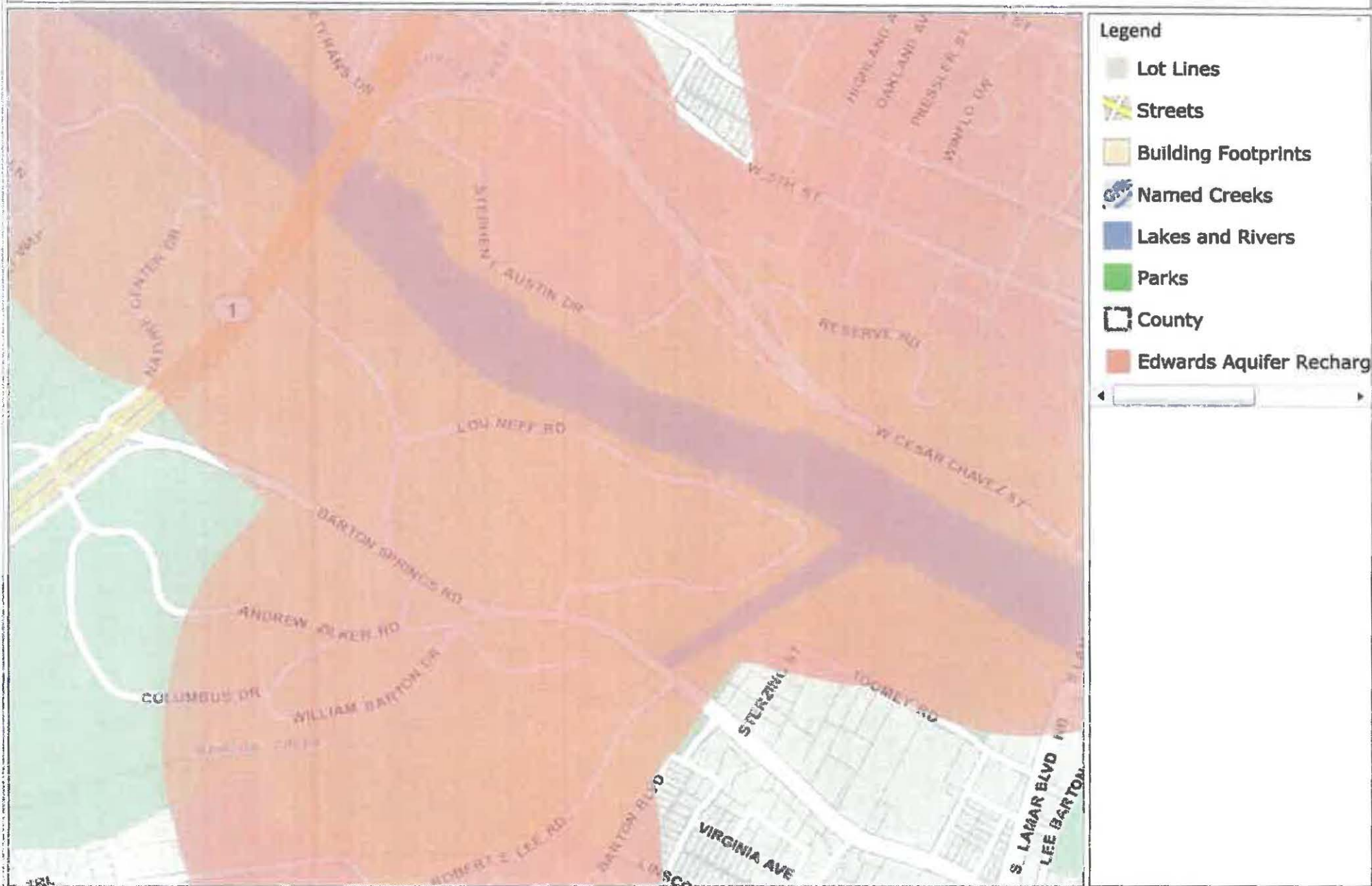
ERM Reviewer (Print Name)

If you have questions on how to fill out this form, please contact the Watershed Protection Department at 512/974-2550.



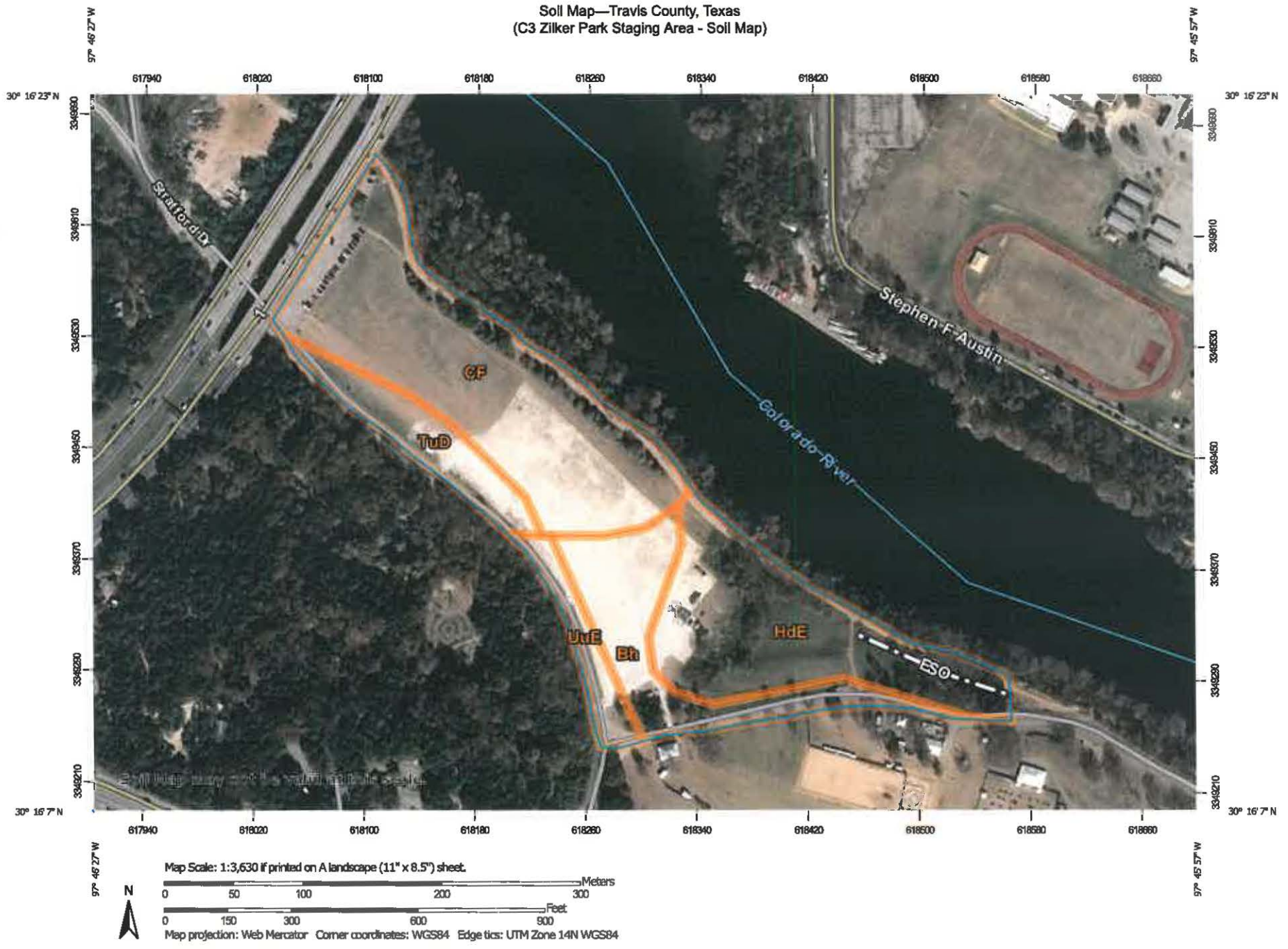
LOCATION MAP
N.T.S.





































EA AQUIFER RECHARGE VERIFICATION MAP



THIS PRODUCT IS FOR INFORMATIONAL PURPOSES AND MAY NOT HAVE BEEN PREPARED FOR OR BE SUITABLE FOR LEGAL, ENGINEERING, OR SURVEYING PURPOSES. IT DOES NOT REPRESENT AN ON-THE-GROUND SURVEY AND REPRESENTS ONLY THE APPROXIMATE RELATIVE LOCATION OF PROPERTY BOUNDARIES. THIS PRODUCT HAS BEEN PRODUCED BY THE CITY OF AUSTIN FOR THE SOLE PURPOSE OF GEOGRAPHIC REFERENCE. NO WARRANTY IS MADE BY THE CITY OF AUSTIN REGARDING SPECIFIC ACCURACY OR COMPLETENESS.

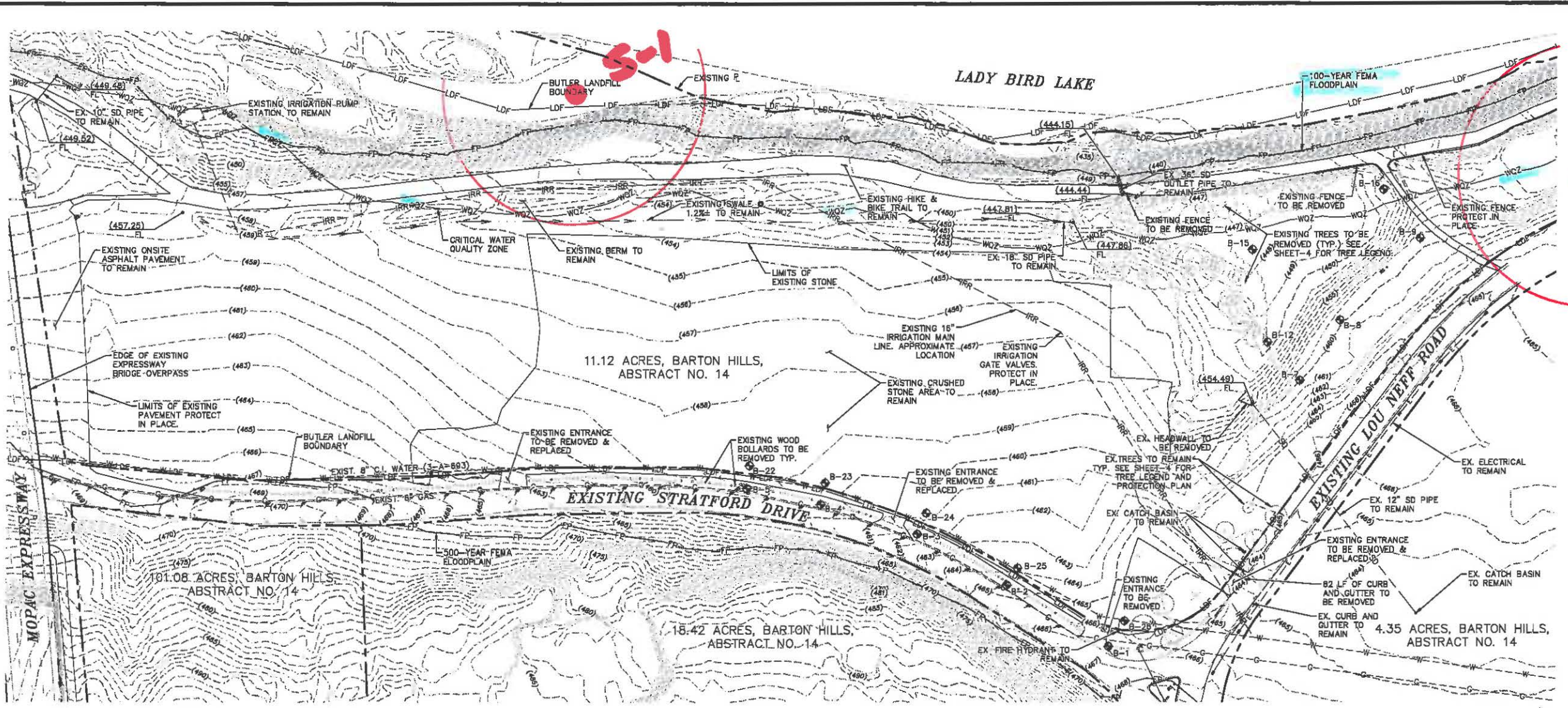
Soil Map—Travis County, Texas
(C3 Zilker Park Staging Area - Soil Map)



MAP LEGEND		MAP INFORMATION	
Area of Interest (AOI)			The soil surveys that comprise your AOI were mapped at 1:24,000.
 Area of Interest (AOI)	 Spoil Area		Warning: Soil Map may not be valid at this scale. Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.
Soils	 Stony Spot		
 Soil Map Unit Polygons	 Very Stony Spot		
 Soil Map Unit Lines	 Wet Spot		
 Soil Map Unit Points	 Other		
Special Point Features	 Special Line Features		
 Blowout	Water Features		
 Borrow Pit	 Streams and Canals		
 Clay Spot	Transportation		
 Closed Depression	 Rails		
 Gravel Pit	 Interstate Highways		
 Gravelly Spot	 US Routes		
 Landfill	 Major Roads		
 Lava Flow	 Local Roads		
 Marsh or swamp	Background		
 Mine or Quarry	 Aerial Photography		
 Miscellaneous Water			
 Perennial Water			
 Rock Outcrop			
 Saline Spot			
 Sandy Spot			
 Severely Eroded Spot			
 Sinkhole			
 Slide or Slip			
 Sodic Spot			

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
Bh	Bergstrom soils and Urban land, 0 to 2 percent slopes, rarely flooded	2.7	16.2%
CF	Cut and fill land, 1 to 20 percent slopes	7.2	42.6%
HdE	Hardeman soils and Urban land, 3 to 12 percent slopes	4.7	27.6%
TuD	Travis soils and urban land, 1 to 8 percent slopes	1.5	8.6%
UuE	Urban land and Brackett soils, 1 to 12 percent slopes	0.8	5.0%
Totals for Area of Interest		16.9	100.0%



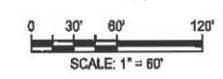
BENCH MARK USED: TEXAS COORDINATE SYSTEM, CENTRAL ZONE, NAD83 (GRID) COORDINATES AS REFERENCED TO THE CITY OF AUSTIN MONUMENT NO. N-2-2401, PER CONTROL ESTABLISHED WITH VRS GPS OBSERVATIONS.

BORING NO.	DEPTH OF LANDFILL
B-1	N/A*
B-2	N/A*
B-3	N/A*
B-4	N/A*
B-5	N/A*
B-7	5.5
B-8	4
B-9	N/A*
B-12	5.5
B-15	5
B-16	4.5
B-22	5
B-23	5
B-24	6
B-25	3
B-26	N/A*

*NO LANDFILL FOUND

- LEGEND**
- PP POWER POLE
 - GUY WIRE
 - ⊠ GAS METER
 - ⊙ FIRE HYDRANT
 - WMO WATER METER
 - ⊞ ELECTRIC VAULT
 - IRSO 5/8" IRON ROD SET W/ATKINS CAP
 - ⊕ TREE TO REMAIN
 - ⊖ TREE TO BE REMOVED
 - EXISTING EDGE OF ASPHALT
 - W- EXISTING WATER LINE
 - G- EXISTING GAS LINE
 - SD- EXISTING STORM DRAIN LINE
 - IRR- EXISTING IRRIGATION LINE
 - E- EXISTING ELECTRICAL
 - WQZ- EXISTING WATER QUALITY ZONE
 - LDF- EXISTING LANDFILL BOUNDARY
 - FP- EXISTING FLOOD PLAN

- NOTES**
1. THE INFORMATION SHOWN ON THESE DRAWINGS INDICATING THE SIZE, TYPE, AND LOCATION OF ANY UNDERGROUND, SURFACE, AND AERIAL UTILITIES OR OTHER EXISTING FEATURES IS NOT GUARANTEED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM (1-800-344-8377) FOR EXISTING UTILITY LOCATIONS AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION. THE CONTRACTOR SHALL ALSO BE FULLY RESPONSIBLE FOR FIELD VERIFYING LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES AFFECTED BY THIS PROJECT'S CONSTRUCTION, IN ORDER TO AVOID DAMAGING THOSE UTILITIES, AND SHALL IMMEDIATELY ARRANGE FOR REPAIR AND RESTORATION OF CONTRACTOR-DAMAGED UTILITIES, TO THE SATISFACTION OF THE UTILITY COMPANY, AT THE EXPENSE OF THE CONTRACTOR.
 2. THE CONTRACTOR SHALL USE CARE AND NOT DAMAGE ANY EXISTING SIDEWALKS, DRIVES, STREETS, OR OTHER FEATURES, THAT ARE NOT PART OF THIS PROJECT. ANY CONTRACTOR DAMAGE SHALL BE REPAIRED TO THE OWNER'S SATISFACTION, AT THE CONTRACTOR'S EXPENSE.
 3. THIS SURVEY WAS COMPLETED ON THE GROUND FEBRUARY 13, 2017 BY ATKINS.



THESE PLANS ARE COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND IN COMPLIANCE WITH THE CITY OF AUSTIN DEVELOPMENT CODE.

SITE PLAN APPROVAL Sheet 3 of 21
 FILE NUMBER: SP-1000-XXXXX APPLICATION DATE: XX/XX/XX
 APPROVED BY COMMISSION ON N/A UNDER SECTION: XXX OF CHAPTER XX-X OF THE CITY OF AUSTIN CODE.
 EXPIRATION DATE (25-5-61, LOC) CASE MANAGER XXXXXXXXXXXX
 PROJECT EXPIRATION DATE (ORD #170805-A) DWPZ: 002

Director, Development Review Department
 RELEASE FOR GENERAL COMPLIANCE: _____ Zoning: _____
 Rev. 1 _____ Correction 1 _____
 Rev. 2 _____ Correction 2 _____
 Rev. 3 _____ Correction 3 _____

Final plot must be recorded by the Project Expiration Date, if applicable. Subsequent Site Plans which do not comply with the Code current at the time of filing, and all required Building Permits and/or a notice of construction (if a building permit is not required), must also be approved prior to the Project Expiration Date.

DESIGNED BY: MAB/CCA DRAWN BY: JLC CHECKED BY: PAB/TPB APPROVED BY: SAS DATE: DECEMBER, 2017	NO. _____ REVISION _____ DATE: _____
ATKINS	
11001 DOMINION BOULEVARD, SUITE 600 AUSTIN, TEXAS 78758 • (512) 327-8840 TYPED REG. NO. F-474	
ZILKER PARK AUSTIN CITY LIMITS STAGING AREA SITE DEVELOPMENT PERMIT PLANS EXISTING CONDITIONS AND DEMOLITION PLAN	
SHEET NO.	3
OF	21
FILE NO. 53691-03-DEMO-REV PROJECT NO. 100053691 SP-XXXX-XXXXX	

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DEVELOPMENT WEB MAP

Map Tools: Map Tools, Map Themes, 1:2400, Map Pan, Base Map

Layers Legend

- Planning & Compliance
- Review Cases
- Stormwater Infrastructure
- Transportation
- Natural Features
- Property Information
- Neighborhood
- Land Use
- Floodplain

Map features include: Lou Neff Rd, W Cedar Creek, Lamar Beach at Town Lake Metro Park, and various elevation contours. A scale bar shows 0.1 Miles. Coordinates: (S, 105, 242.63, 40, 074, 585.16). A LEGAL DISCLAIMER is present in the bottom right corner.

DEVELOPMENT WEB MAP

Search Type: Address

Map Tools: Map Pan Map Themes: 2012 True Color

Scale: 1:2400

Map Layers:

- Planning Subprojects
- Review Cases
- Stormwater Infrastructure
- Transportation
- Natural Features
- Property Information
- Neighborhood
- Land Use
- Floodplain

DEVELOPMENT WEB MAP

Search Type: Address:

Map Tools: Map Pan: 2003 True Color

Scale: 1:2400

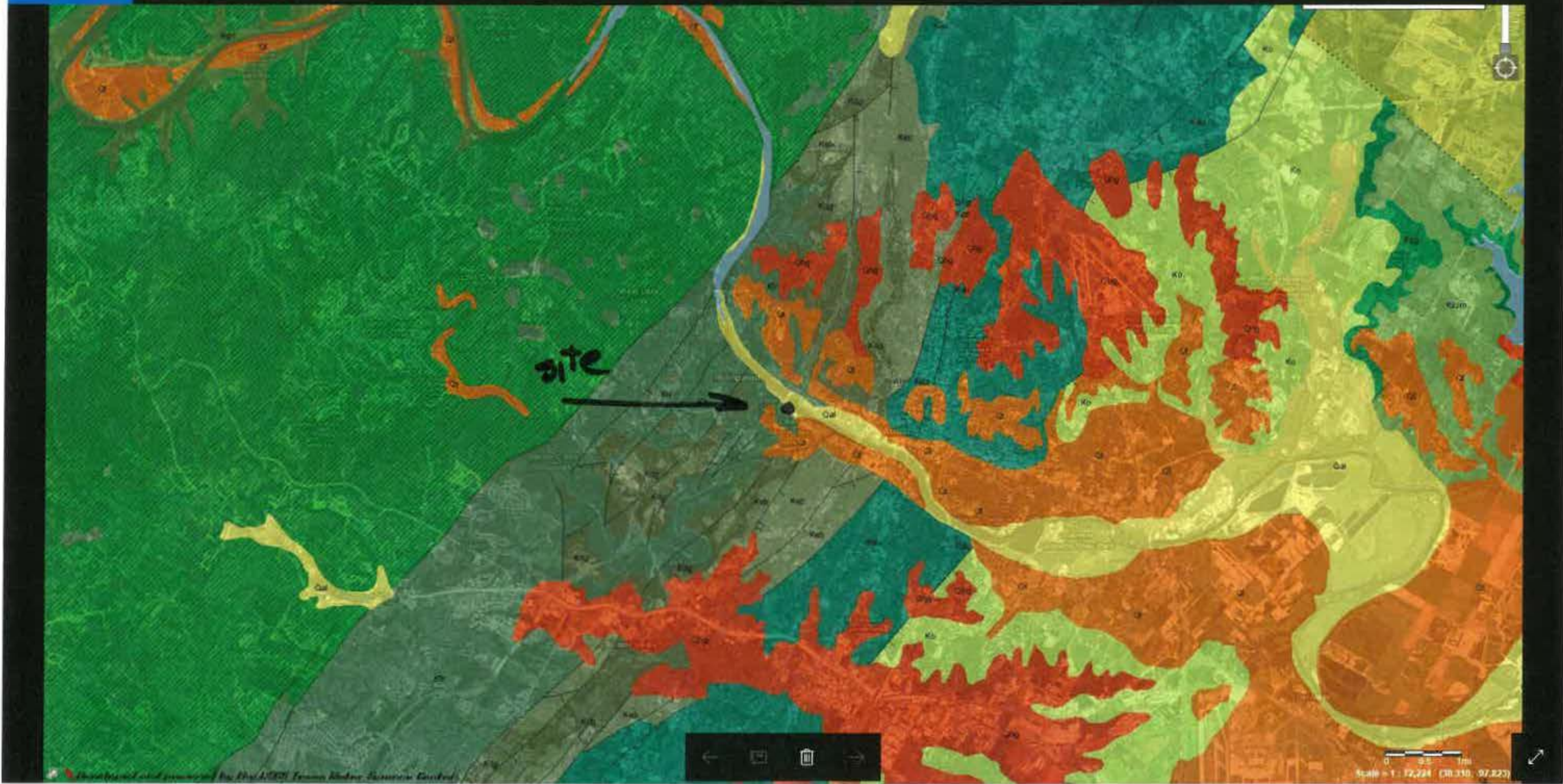
Map Layers:

- Building Footprints & Use
- Review Cases
- Stormwater Infrastructure
- Transportation
- Natural Features
- Property Information
- Neighborhood
- Land Use
- Fluvial/In

The map displays an aerial view of a river valley. A large, winding river flows through the center. To the left, a multi-lane highway runs parallel to the river. The surrounding land is divided into numerous lots, many of which are outlined in yellow. A prominent orange circle is drawn on a lot on the right side of the river. In the background, there are several large buildings and a parking lot. A baseball field is visible in the lower right quadrant. The map interface includes a search bar at the top left, map tools at the top center, and a layer legend on the right side.

View all photos

Share Zoom Slideshow Draw Edit Rotate



DEVELOPMENT WEB MAP

Search Type: Address: [] GO

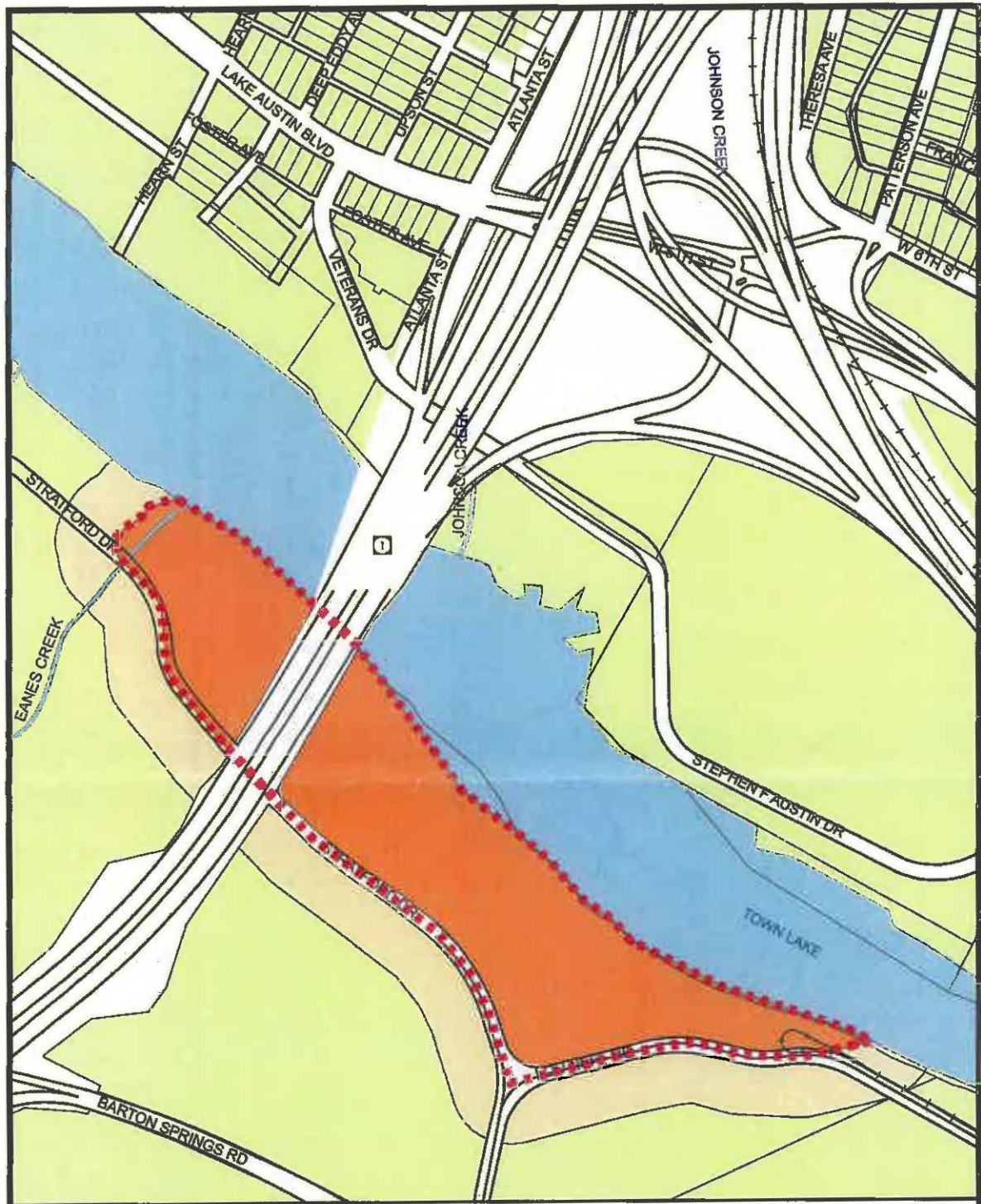
Map Tool: [Map Pan] Map Theme: [1997 BAS / WIND]

Scale: 1:1,400

Map Layers

- Underground Storage T
- Austin Watershed Regu
- Edwards Aquifer F
- Edwards Aquifer R
- Austin Energy Electric I
- 2014 Impact Fee Servic
- Regional Utilities - MUC
- Doc (read) Navulnment-2





#7. Butler

- Landfill Features**
- Estimated Landfill Boundary
 - Landfill
 - Landfill Buffer

- City of Austin Jurisdiction**
- FULL
 - LTD
 - 2 MILE
 - 5 MILE

- Lot Lines
- Roads
- Water features



Watershed Protection & Development Review Department,
 The City of Austin produced this map for the sole purpose of use as a work resource and as an estimated boundary of landfills in & around Austin. The City of Austin does not warrant the map &/or information regarding its accuracy or completeness.
 Reproduction is not permitted without permission from the City of Austin-Watershed Protection & Development Review Department.
 Date: 09.20.2008

3.7 #7, BUTLER

Location: The Butler landfill is owned by the City of Austin and is located in south Austin along the shore of Town Lake and the MoPac bridge.

Prior Use: Stockpiles of fill material and four 55-gallon drums of what appeared to be monitoring well purge water were stored in the area west of the bridge. No evidence of illegal dumping was evident.

Groundwater: Since 1984, the COA has conducted field investigations and a risk assessment for groundwater. Three monitoring wells have been installed; 2 east of the MoPac bridge, 1 west of the MoPac bridge.

Remediation: Design of erosion control improvements and remediation of the exposed landfill waste at Eanes Creek occurred in 2004, with construction scheduled to begin in 2005.

Current Conditions: Current conditions associated with this site may pose a current or future concern to human health or the environment, based on the following factors:

- proximity of recreational uses to landfill,
- exposed landfill materials due to erosion at the stream and river banks,
- unrestricted public access.

Based on the actions already being undertaken by the COA at this site, no additional actions have been recommended.

Reference: Information in this fact sheet comes from the following:

1. Geomatrix Consultants. November 2004. *2004 Supplemental Assessment to Landfills in the Vicinity of Austin, TX*. Prepared for City of Austin Public Works Department.
2. Underground Resource Management, Inc. November 1984. *Landfills in the Vicinity of Austin, TX*. Prepared for the City of Austin.

**LANDFILLS IN THE VICINITY OF
AUSTIN, TEXAS**

Prepared for
THE CITY OF AUSTIN
Austin, Texas



Prepared by
Underground Resource Management, Inc.
Austin, Texas



LANDFILLS IN THE VICINITY OF AUSTIN, TEXAS

**Prepared for
CITY OF AUSTIN**

**Prepared by
UNDERGROUND RESOURCE MANAGEMENT, INC.
Austin, Texas**

November, 1984

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EXECUTIVE SUMMARY

The following conclusions are based on the findings of this report:

- The information reviewed for this project indicates that landfills owned and/or operated by the City of Austin do not contain significant amounts of chemical or industrial wastes. The landfills will probably not cause any major environmental health hazard.
- Several military, institutional, and industrial landfills contain documented hazardous wastes. These sites are regulated by existing state or federal solid waste management programs.
- Four private sites have a high potential to contain hazardous chemical wastes. The City of Austin is not responsible for investigation or remedial work at private waste sites. Because of the potential impact on the Austin environment, however, we recommend a meeting of representatives from the City of Austin and the Texas Department of Health (TDH) to discuss additional investigations of these private sites.
- To assure proper maintenance of closed waste sites, we recommend an annual inspection and supplemental report on the 20 of the 29 landfills presented in individual sections of this report. We also recommend water quality laboratory analyses where a surface expression of landfill leachate or a monitor well can be sampled.

During this study of closed landfill and dump sites by Underground Resource Management, Inc. (URM) for the City of Austin, 66 sites were identified. These sites range in significance from large landfills or those with known hazardous contents to small recreational area trash dumps. This report is complete in the sense that every landfill site

identified during the project by URM is described or listed, even if the site has no apparent environmental impact. It is almost certain, however, that there are small waste disposal sites in and around Austin which remain undocumented. Even though stricter legislation and tighter controls by the City, the Texas Department of Health (TDH), and the Texas Department of Water Resources (TDWR) will prevent most of the past practices which are described in this report, illegal dumping may continue, and new illegal dump sites will probably be used.

In researching locations in and around Austin which are potentially contaminated with hazardous waste materials, a few sites which were not closed landfills were discovered. These sites were used for land disposal of liquid wastes and wastewater, or were where pipes and underground storage tanks had leaked. As a result, areas around Austin have been contaminated with acids, caustics, solvents, and heavy metals. Soils and ground water in Austin may contain concentrations of these or other constituents which are not attributable to landfills. Those waste sites which are not landfills are not included in this report.

All of the landfills and dump sites in this report can be categorized as one of the following: those owned and/or operated by the City of Austin, privately owned and/or operated sites, Travis County sites, and illegal disposal sites. The responsibility and jurisdiction of the City and, therefore, the recommendations in this report, depend upon whether the landfill was operated by the City or by another operator.

Of the City of Austin landfills, only Steiner Landfill was documented to contain any industrial waste. The quantities of industrial or chemical wastes in Steiner are small. The geology below this site is the Taylor Formation, in which groundwater movement is limited. The waste in Steiner is not likely to migrate from the site. A groundwater



monitoring program has been proposed by the City for Steiner Landfill to verify that the wastes will not contaminate a water supply. Water samples from three other landfills operated by the City of Austin were collected during the project. Monitor wells were installed at Mabel Davis and at Butler (Zilker Park) Landfills. Surface water samples were collected at Mabel Davis and Brinkley-Anderson.

The four ground and water surface-water samples were analyzed by URM's laboratory for 139 constituents which have been identified by the U. S. Environmental Protection Agency (USEPA) as priority groundwater pollutants. This list includes several pesticides and toxic organic chemicals. None of the four water samples from Austin landfills contained any of these priority pollutants in detectable quantities. USEPA has also defined concentrations for eight heavy metals as a criteria for toxic waste. The concentrations of these eight heavy metals in the water samples are well below these levels defined by USEPA for hazardous waste. Although some water samples do not meet the standards for drinking water (see Appendix D), they apparently will not significantly degrade the water.

Of the privately owned sites in and around Austin, several sites are being monitored by existing groundwater programs under the jurisdiction of the Texas Department of Health (TDH) or the Texas Department of Water Resources (TDWR). These sites are Austin (Longhorn) Community Disposal, Sunset Farms, the Texaco Chemical Company landfills, and the University of Texas Balcones Research Center. Bergstrom Air Force Base also has a waste disposal site evaluation program conducted by the U. S. Air Force. No recommendations are made in this report for those private sites with monitoring programs in operation. Of the remaining private sites, four have a higher potential for environmental impact than the remainder of the sites because of undocumented reports of chemical

wastes or drums in the waste. These sites are the M. E. Ruby landfill in northwestern Travis County, Hog Hill (Handy's Dump), the Whisenhunt site, and the Wingfield disposal site on US 183. Jurisdiction for these privately operated sites belongs to the TDH and/or the TDWR. It is recommended that the City of Austin coordinate actions with TDH and TDWR to implement a program which would determine whether these sites are impacting the Austin environment.

The remaining solid waste disposal sites in and around Austin are less likely to contribute to groundwater or surface-water contamination. As a minimum landfill control program, however, URM recommends that additional waste disposal sites be added to the list in this report as they are discovered. Each of the sites should be visited annually with these objectives:

- Inspection of the cover for subsidence and erosion;
- Inspection of the perimeter for leachate seepage;
- Collection of water samples for laboratory analysis; and
- Observation of illegal dumping, if it occurs.

The results of the annual field inspections should be reported in writing as a continuing supplement to this report. This report and supplemental reports should be used by City of Austin staff and the Austin Planning Department to protect the landfill cover, to prevent methane migration and collection in or below existing or proposed construction, and to minimize foundation failures from inadequately compacted waste, as well as to protect the ground and surface-water quality in the Austin environment.



INTRODUCTION

The primary purposes of the investigation of closed sanitary landfills by Underground Resource Management, Inc. (URM) for the City of Austin have been:

- To identify and locate closed landfill and dump sites in and around the city;
- To estimate the probable landfill contents and potential for hazardous contents in each site;
- To evaluate the potential for groundwater contamination and/or health hazards associated with each site; and
- To recommend groundwater monitoring or remedial cleanup, where necessary.

The area of study is shown on Figure 1. This is the second report presented to the City of Austin by URM for the Austin Closed Landfill Study. The first report was "Site-Specific Recommendations for the City of Austin Closed Sanitary Landfill Study", presented in January, 1984. In the first report, preliminary background information was presented, and recommendations were made for monitor well installations and sampling at Mabel Davis Park, Winn-Cook Park, the Butler Landfill in Zilker Park, and the Sprinkle Site. A recommendation was also made to sample leachate discharges to Little Walnut Creek from the Brinkley-Anderson landfill site.

This second report by URM discusses the history of waste disposal in Austin, typical landfill waste contents, regulatory aspects of waste disposal in Austin, and geologic factors affecting the potential for waste migration. Monitor well completion diagrams and results of laboratory analysis of the groundwater samples are also presented.

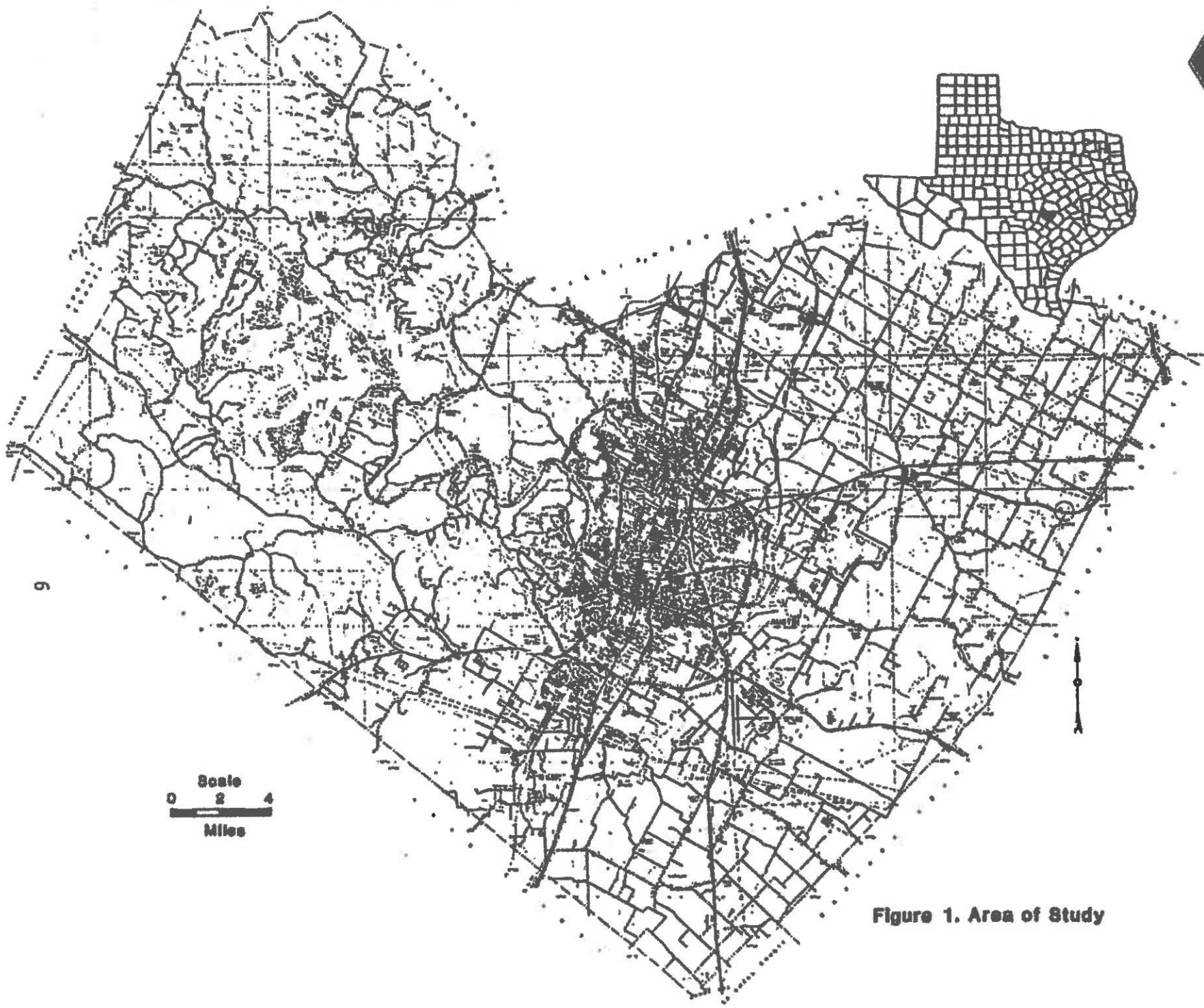


Figure 1. Area of Study

During this project, a total of 66 waste sites in or around Austin were identified by URM. Several of the historical sites were identified by long-time sanitarians or residents of Austin, and the sites may now be unrecognizable as a dump or covered by buildings. Other sites were referenced in newspaper articles with inadequate information to pinpoint their locations. Of the 66 sites, 29 were inspected in the field by a URM geologist. These 29 sites are discussed in individual sections of Appendix A. A summary evaluation of these sites is presented in Table 1. The most significant landfills in and around Austin are included in these 29 sites. Sites which are not necessarily significant and probably present no serious environmental problems are also included in the individual discussions if a URM geologist visited the site. The remaining sites are listed in Appendix B with the information obtained for each site during this project.

All of the disposal sites discovered during this project are discussed either in Appendix A or B, including those which were only used for short times, or those which are small and probably represent nominal environmental impact beyond the aesthetic impact of the waste. This report probably does not include, however, all such small sites which may exist in and around Austin.

History of Waste Disposal in Austin

A chronology of the waste sites in and around Austin for which operating dates are known is shown in Figure 2. The oldest dump site identified in this project operated in the 1200 block of South Congress Avenue from 1927 to 1929. At that time, only small amounts of trash were generated by city residents because garbage was often fed to hogs, and household trash was generally burned. When the City did begin organized trash collection, the volume collected was small and the service was not billed directly to the user. Funds came from general



TABLE 1
Site Evaluation of Major Austin Area Landfills

<u>Site Name</u>	<u>Geologic Suitability of the Site</u>	<u>Potential for Significant Hazardous Waste Contents</u>	<u>Sensitivity of Local Land Use</u>	<u>Recommendations</u>
1. Airport Dump	Medium - upper Colorado River terrace deposits underlain by Taylor Clay	Low - used by the City for a short period	Low - unused land near the airport	Annual site visit
2. Balcones Research Center	Poor - past contamination of water wells by magnesium, located on Austin Group	Confirmed - known radioactive contents	Low - University Research Facility	Existing ground-water program regulated by TDH
3. Bergstrom Air Force Base	Medium - terrace deposits of the Colorado River and Onion Creek	Confirmed - low level radioactive waste, possibly pesticides, waste paints, thinners, strippers	Low - U. S. Air Force Base	U. S. Air Force program exists
4. Bluff Springs/Knuckles Crossing	Medium - Colorado River terrace deposits underlain by Taylor Clay	Low - used by City for brush, tree trimming	Medium - open land	Annual site visit
5. Brinkley-Anderson	Poor - located adjacent to perennial stream channel, underlain by Dessau limestone of Austin Group	Medium - site closed (1968) before toxic chemicals were commonly disposed	Medium - unused area adjacent to industrial park	Regrading, water sample collection
6. Butler	Poor - on the gravel terraces adjacent to Town Lake underlain by Edwards Formation	Medium - site closed (1968) before toxic chemicals were commonly disposed	High - located in Zilker Park	Ground-water monitoring
7. Grove	Poor - located in quarry pit in Lower Colorado River terraces	Low - small site used for municipal waste only	Medium - open land	Annual site visit
8. Highway 71, Precinct 3	Poor - leachate outflow observed, on the Glen Rose Formation	Medium - used for private and municipal refuse until October, 1976	Medium - remote area used to graze cattle	Annual site visit
9. Hog Hill/Handy's Dump	Medium - site located in a drainage on Taylor Clay and a small part on Upper Colorado River terrace deposits	High - drums and glue were observed on the site	Medium - located beside a dead end street near the City Vehicle Services facility	Coordinate action with TDH



TABLE 1 (Cont'd)

Site Evaluation of Major Austin Area Landfills

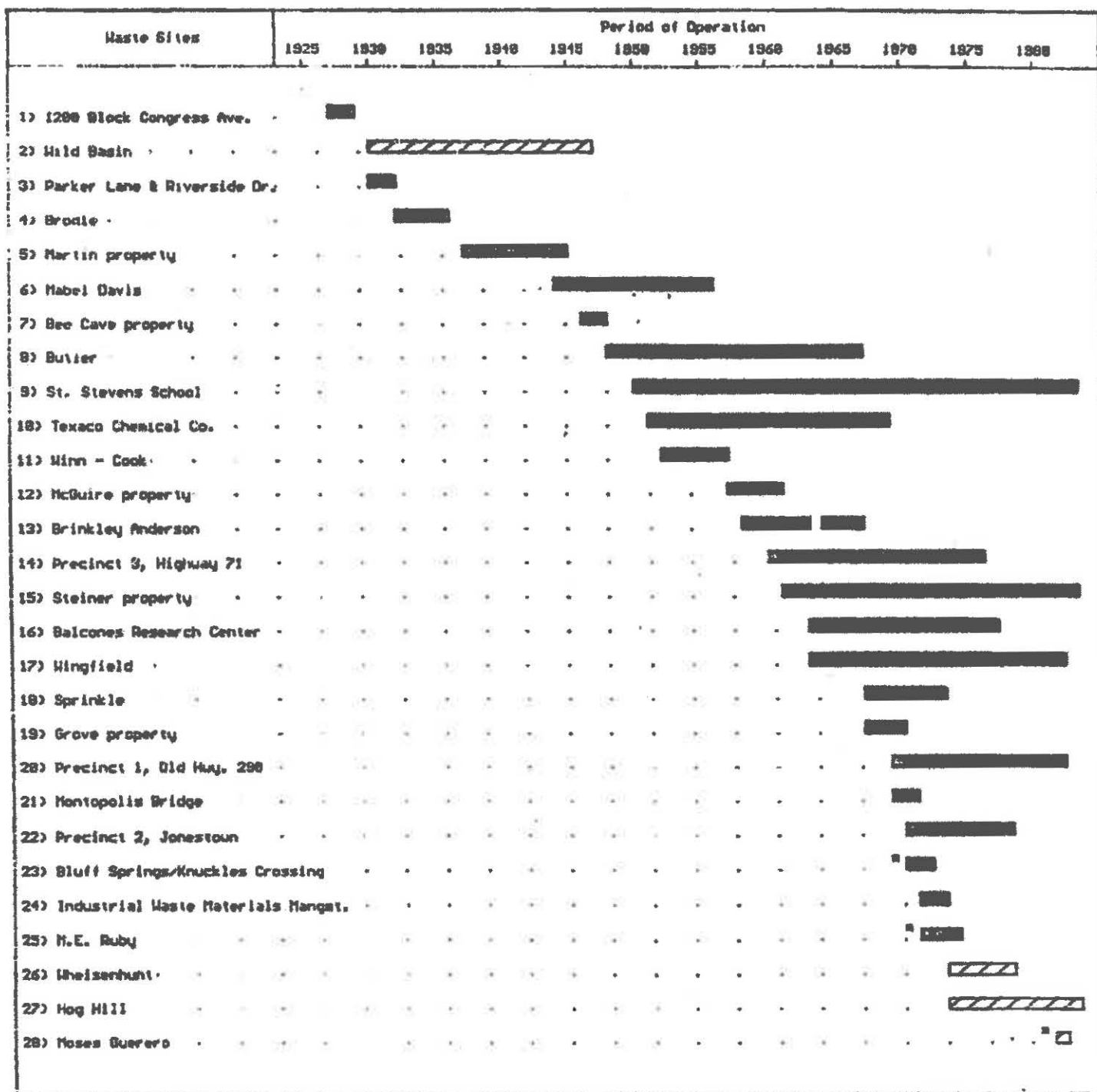
<u>Site Name</u>	<u>Geologic Suitability of the Site</u>	<u>Potential for Significant Hazardous Waste Contents</u>	<u>Sensitivity of Local Land Use</u>	<u>Recommendations</u>
10. Industrial Waste Materials Management	Excellent - deep Taylor Clay with low permeability	Confirmed - known drums of waste in the site	Low - land owned and operated by a commercial disposer	Existing ground-water monitoring program regulated by TDMR
11. Jonestown, Precinct 4	Poor - placed in a limestone quarry pit in the Fredericksburg group of the Edwards	Medium - used by country and private haulers from 1969 to 1980, site gate was attended	Medium - unused land but in an area of rapid expansion	Annual site visit
12. (Longhorn) Austin Community Disposal	Excellent - deep Taylor Clay with low permeability	Confirmed - this site accepts only non-hazardous waste but it includes the area used by Industrial Waste Materials Management	Low - an operating landfill	Ground-water monitoring program exists
13. Mabel Davis	Poor - formerly a sand and gravel pit	Low - municipal waste until 1961, pesticide wastes were removed.	High - park	Ground water monitoring
14. McGuire	Poor - formerly a sand and gravel pit	Low - municipal waste until 1961	Low - open land	Annual site visit
15. N. E. Ruby	Poor - formerly a limestone quarry in the Edwards Formation	High - drums of toxic waste were found adjacent to the fill area	Medium - unused area adjacent to an industrial park and housing development	Coordinate action with TDH
16. Montopolis Bridge	Poor - lower Colorado River terraces, adjacent to river	Medium - illegal dumping by private individuals	High - mobile home park	No action
17. Noses Guerrero	Poor - formerly a gravel pit through which water percolates quickly, near Cottonmouth Creek	Low - mostly brush, dirt, building debris, small amounts of domestic waste	Medium - open land with some low density housing	Annual site visit
18. Old 290, Precinct 1	Excellent - deep Taylor Clay with low permeability	High - Municipal, private, industrial until 1981, some known hazardous contents	Medium - a Flea Market operates on the site	Annual site visit



TABLE 1 (Cont'd)

Site Evaluation of Major Austin Area Landfills

<u>Site Name</u>	<u>Geologic Suitability of the Site</u>	<u>Potential for Significant Hazardous Waste Contents</u>	<u>Sensitivity of Local Land Use</u>	<u>Recommendations</u>
19. Sprinkle	Medium - located on the Austin chalk Formation	Medium - municipal waste until 1973	Medium - agricultural area with growth potential	Annual site visit
20. Steiner	Good - located principally on the Taylor Group	High - used by Jefferson Chemical to dispose of drums of chemical wastes	Low - operating landfills	Existing program by City of Austin
21. St. Stephen's	Medium - on Glen Rose limestone west of Austin	Low - only used for school waste	High - on private school property	No action
22. Sunset Farms Sanitary	Excellent - deep Taylor clays with low permeability	Low - no hazardous industrial or radioactive materials accepted	Low - an operating landfill	Ground-water monitoring program exists
23. Texaco Chemical	Poor - landfill in Austin chalk with shallow ground water	Confirmed - used as a laboratory waste disposal site	Medium - landfill is on an industrial site surrounded by residential development	Existing program regulated by TDMR
24. Turner	Medium - located in a sand and gravel quarry on a ridge top	Low - site operated by the land owner for municipal and private trash from 1955 - 1957	Medium - adjacent residential use	Annual site visit
25. Webberville-Govalle	Medium - located on Lower Colorado River Terrace deposits	Medium - illegal dumpsite used through the present	Medium - adjacent residential use	Surface water sampling, remove waste piles and prevent further dumping (coordinate with TDH)
26. Whisenhunt	Medium - formerly a pit in the Colorado River floodplain	High - 50 5-gal. cans of solvent from an engraving company, domestic waste	Medium - open, grass-covered field	Coordinate action with TDH
27. Wingfield	Poor - gravel pit crosses stream draining to Carson Creek. Fluvial Terrace Deposits overlie Taylor Clay	High - photos show 55-gal. drums with unidentified contents	Low - commercial area and junk yard	Coordinate action with TDH



■ City of Austin
 ■ Travis County
 ■ Industrial or Institutional
 ■ Private individual
 ▨ Dates are estimated
 □ Beginning date unknown

Figure 2: Chronology of waste sites in and around Austin.



city taxes.

A change in waste collection came in the 1960's, however, which was initiated by the growing number of businesses and large apartment complexes. Private haulers with large metal trash bins began to service these complexes and businesses. At the same time, the City of Austin began to assess a trash collection fee to the user on utility bills, and more businesses and individuals began using alternative private waste services. These private waste services paid a fee to use county or municipal landfills, or used private land for dumping. As a result of more waste and waste collectors, there was a greater task of controlling disposal. During the same time, the types and volumes of chemical and industrial waste were increasing.

Landfill Contents

The contents of Austin area landfills have been estimated for this report from information in government agency files, conversations with local sanitarians and trash haulers, data on typical municipal refuse contents, and a review of the history of industry and commerce in Austin. A list of sources used for this report is presented in Table 2. General information on the contents of landfills is presented below. Available information on the specific contents of a landfill is also presented in the individual landfill section.

Typically the composition of municipal refuse is:

Paper - 48%	Cloth - 1%
Garbage - 16%	Glass - 6%
Leaves and grass - 9%	Metals - 8%
Wood - 2%	Ashes, stone, dirt - 8%
Synthetic materials - 2%	



TABLE 2

Information Sources

- Clipping files at the Austin American-Statesman with articles pertaining to Austin area landfills.
- Records at the Austin Historical Center with landfill information.
- Mr. John Young, Texas Department of Water Resources Enforcement and Fields Operations District 14, Austin, personal conversation.
- The Agricultural Stabilization and Conservation County Committee. Aerial photographs of Travis County at 1 inch = 600 feet for 1964 and 1973. Older photos at the same scale from the Austin Historical Center.
- File records at the Texas Department of Health including correspondence files and solid waste permit files.
- Landfill files at the Austin Travis County Health Department.
- Files at the Texas Department of Water Resources.
- Chamber of Commerce: Directory of Austin Area Manufacturers, 1932, 1950, 1961-62, 1970, and 1983.
- Former and current employees of the Austin Travis County Health Department, including Mr. Frank Redding, Mr. Lawrence Jones, Mr. Don Kolberg, and Mr. Ervin Coonrod.
- Interviews with representatives of Texaco Chemical Company, the U. T. Balcones Research Center, and Bergstrom Air Force Base.
- URM field visits to 29 sites.
- Seepage survey of the south shore of Town Lake adjacent to the closed Butler Landfill on November 11, 1983, during a period when the lake level was 3 feet below normal pool.
- Telephone interviews with local waste haulers.
- Telephone interviews with Mr. Chester Faulk, City of Austin Electrical Department.
- Rod Kimbro, Texas Department of Water Resources, telephone interview.
- Field trip by Mark Shipper of URM with Mr. Andrew Covar of the City of Austin to the disposal site near Wild Basin.

This analysis is based on United States Public Health Service data for wet garbage. An analysis of municipal refuse collected by the City of San Antonio showed a similar composition, and these numbers are believed to represent a fair approximation of the composition of Austin waste.

The potential environmental impacts of typical municipal wastes as described above are surface subsidence methane gas generation, and increased concentrations of biochemical oxygen demand, dissolved iron, lead, zinc, magnesium, and nitrogen in leachate generated from a landfill. These constituents can have a negative effect on the ground and surface-water quality.

Another serious environmental concern, however, is hazardous chemical or industrial wastes which are disposed of in a landfill. Even where they are found in relatively small quantities, compared to the total volume of the landfill, they may represent a potential health hazard if they are leached from the landfill to surface or groundwater. Table 2 is a list of the possible contents of Austin landfills including toxic and hazardous materials, and their possible sources.

There are several documented cases of chemical and industrial materials which have been disposed of in closed or existing landfills in and around Austin. These cases are discussed in the individual reports on the Balcones Research Center, Bergstrom Air Force Base, Industrial Waste Materials Management, Mabel Davis, Old 290, Steiner, and Texaco Chemical Company landfills. In addition to these documented reports of hazardous wastes, there are undocumented observations of drums or barrels adjacent to, or in Hog Hill, M. E. Ruby, Whisenhunt, and Wingfield disposal sites. These four sites also have a potential for containing some quantities of hazardous materials.



TABLE 3

Possible Contents of Austin Area Landfills

<u>Material</u>	<u>Potential Sources</u>
Paper and fiber products	Residential, commercial
Plastic, styrofoam	Residential, commercial
Metal cans, scrap	Residential, commercial
Old appliances	Residential
Tires	Residential, commercial
Leaves, grass, yard trimmings	Residential, commercial, City of Austin, University of Texas
Clearing brush	Construction contractors
Putrescible garbage	Residential, agricultural, groceries, restaurants
Construction debris, lumber, masonry, plumbing, fixtures	Construction contractors
Rock, dirt, sand, gravel	Construction contractors
Asbestos	Construction contractors, industry, commercial
Pesticides	Residential, commercial, pesticide companies, Bergstrom Air Force Base
Metal-contaminated sludge	Petroleum industry, metal-finishing industry
Acids or bases	Computer industry
Photographic developer, photo resist stripper	Newspaper, printers, individuals
Paint-thinners	Computer industry, paint manufacturers
Dyes	Computer industry, paint manufacturers
Halogenated and nonhalogenated solvents	Computer industry, paint manufacturers, equipment manufacturers
Laboratory wastes	University of Texas, plastic projects, scientific laboratories, Texas Department of Health Laboratories, Hospitals
Organic chemicals	Computer industry, chemical industry, laboratories
Xylene, xylol	Scientific and computer equipment manufacturers
Pharmaceuticals	Hospitals, residences, medical laboratories
PCB-contaminated material	City electric companies, Bergstrom Air Force Base, University of Texas
Cyanide electroplating bath sludges	Metals finishing, plating industry, scientific equipment manufacturers
Urethane and solvents	Computer industry
Low-level radioactive materials	University of Texas, Bergstrom Air Force Base



It is most likely, however, that nearly all of the recent municipal waste disposal sites in Austin have at least small quantities of hazardous chemicals. These chemicals have been generated by industries, businesses, and individuals who have had either no alternative disposal options or no regulatory incentives to bury the waste any place other than the local public or private landfills. Austin is, and has historically been, the home of many businesses which are listed as small quantity hazardous waste generators. These include printers, machine shops, hospitals, furniture strippers, metal platers, computer companies, paint companies, laboratories, and scientific instrument manufacturers. Much of the waste which has been produced by these small generators is buried in Austin landfills.

Chemical wastes generated by Austin commerce and industry may arrive at the landfill in several forms. Specific wastes may be transported by the business directly to the landfill. Since the businesses are generally required to pay a fee at the landfill entrance, there is some informal screening of the waste contents. Files of the Texas Department of Health contain records of inquiries by gate-keepers as to the suitability of waste brought for disposal. Small amounts of chemical waste may also be containerized and disposed of with the regular office and home trash. These items are likely to go unnoticed. A third method of transport of chemicals to sanitary landfills is in septic cleaning tank trucks. These trucks are permitted to pump grit trap wastes, if their waste contains a minimum percentage of solids, into pits at the landfills. If there is a lack of careful monitoring, these trucks may also pump sludges from tanks other than residential septic tanks, and dispose of the material at the landfill.

In addition to the wastes generated locally, hazardous wastes have been imported to landfills in Austin from industries on the Texas Gulf

Coast. Mr. Jack Arsenault and Herb Skinner operated the Industrial Waste Materials Management site for imported waste. Arsenault, or another person, also disposed of drums which were later discovered near the M. E. Ruby Quarry on Highway 183 North, and on a tract of land known as Martin Hill, on F.M. 1325. This was strictly illegal disposal on the part of the person who had contracts to collect waste, but had no place to dispose of it. The drums found near the M. E. Ruby quarry and on Martin Hill were subsequently inventoried by personnel from the Texas Department of Water Resources, and the state initiated disposal in a licensed hazardous waste disposal facility near Robstown, Texas. As far as was determined in that investigation, there were no similar drum sites in Travis County, although there is a possibility that some exist that were never found. During the same time period, 1971-1974, the state and federal governments were developing more restrictive regulations for the disposal of industrial or hazardous waste. Many industries, recognizing the more restrictive regulations which would follow, attempted to rid themselves of stored and accumulated waste on their own properties. Discussions with officials from other municipalities who owned or operated sanitary landfills indicated that they were aware of the potential for loads of industrial wastes out of the Houston, Galveston, Corpus Christi, Texas City, and Port Arthur areas, which are probably disposed of within their sanitary landfills. It is possible that some of these barrels of waste were disposed of in landfills around Austin.

A limited survey was made by telephone of facilities in Austin which generate etiologic, or disease-carrying, waste. Of these facilities, two hospitals, Seton and Holy Cross, use incinerators which are part of their physical plant to dispose of all potentially pathogenic waste. Brackenridge Hospital waste in the same category is transported to an incinerator in Pflugerville. Austin Pathological Services Labora-

tory was also contacted and they either autoclave or incinerate all of their pathogenic waste. Doctor's offices typically autoclave wastes which might be pathogenic or send them to a laboratory.

Another potential source of hazardous waste in Austin is PCB-contaminated oil. PCB was routinely used as a fire retardant in transformer and capacitor oil before 1977. The City of Austin sold used transformers and capacitors with residual PCB oil as scrap metal. Since 1977, the City of Austin's PCB waste has been burned, according to EPA regulations, in an incinerator in Eldorado, Arkansas. All of the capacitors, and most of the transformers, have now been modified to use non-PCB oil. Texas Electrical Co-op has also used PCB oil in transformers and capacitors for 30 years. The Co-op now sends all PCB-contaminated oil to Kansas City, but prior to 1977 it was sold for fuel oil or road oiling. Some PCB-contaminated oil or metal may be disposed in Austin landfills.

Regulatory Aspects of Waste Disposal in Austin

Municipal waste disposal in the City of Austin and in Travis County is regulated by the Texas Department of Health (TDH) under the authority of these Texas laws:

- The Solid Waste Disposal Act (1969),
- Texas Health and Sanitation Laws (1945),
- The County Solid Waste Control Act (1971), and
- The Litter Abatement Act (1981).

Additional authority was given to TDH to regulate municipal hazardous waste under the Federal Resource Conservation and Recovery Act (RCRA), enacted in 1976. Within the authority of these laws, TDH has developed Departmental Municipal Solid Waste Management Guidelines.



When the Texas Department of Health began its regulatory program in 1969, all existing landfill operations were permitted under a grandfather clause. Guidelines were issued to cover basic problems of disease vectors, adequate cover, site drainage, burning, and washout. The Municipal Solid Waste Rules, Standards, and Regulations were updated in 1970 to regulate open burning and fire protection, to confine unloading to the smallest possible area, to prevent windblown waste, and to provide a separate area for heavy or bulky items.

It was not until the mid-1970's that the environmental impacts of landfills on air quality and surface and ground water were considered. By 1976, all public and private municipal waste disposal sites were required to operate by permit. Trash burning was no longer allowed. As part of their permit application process, landfill operators were required to submit information on the depth to ground water below the site, and distance to surface water. The Texas Department of Health began to exercise stricter control on the compaction and daily cover requirements.

Since the mid-1970's the state landfill records have generally included information on the owner and operator, the general class of wastes received, the type of operation, and inspection reports. For this report to the City of Austin, these records have been useful to establish the times of operation, the general character of the waste, and whether the landfill was operated within TDH guidelines. The information is not adequate, however, to establish definitively either the contents of the waste site or the potential for leachate migration.

Geologic Factors Affecting Landfills

Geologic factors which affect the suitability of a location for a landfill site are the permeability of the underlying formation, the

depth and quality of groundwater, the effectiveness of intervening layers as barriers to leachate migration, and the surface topography. Landfills in Travis County are located on or in these formations: recent alluvial deposits of the Colorado River and its tributaries, upper Colorado River terrace deposits, the Austin, the Taylor and Navarro Groups, the Edwards Formation, and the Glen Rose.

Many of the landfills are located in sand and gravel quarry pits along the Colorado River and its tributaries. The original quarries were excavated for alluvial material deposited by the river system. The alluvium is typically underlain by the relatively impermeable Taylor or Navarro Groups. These quarry pits were selected as landfill sites because they were an available hole, and they could be filled to reclaim otherwise unusable land. The disadvantages of these sites are that the alluvium is relatively permeable to landfill leachate. Since these landfills are often located near rivers or streams, the leachate may migrate to the river and, during high water conditions in the river or stream, groundwater may rise and mix directly with the waste. Where the waste is located above the high water table level, leachate may migrate vertically until the groundwater, or a less permeable layer, is encountered. A well-graded and compacted cover on these landfills is important to minimize infiltration and leachate generation.

Four sites identified in this study are located in the Austin Chalk Formation. These sites are the Balcones Research Center Landfill, Brinkley-Anderson, Texaco Chemical Company landfill, and the Sprinkle site. The Austin Chalk consists of light gray chalk, limy marl, and chalky limestone with small amounts of bentonite, glauconite, and pyrite nodules. The formation yields small quantities of water from cracks and faults in the outcrop area. This groundwater is typically under water table conditions and subject to contamination. The coefficient of

joints. Where the groundwater encounters a bed of less permeable marl in its downward migration, the water may move laterally to a surface seep. This situation apparently occurred at the Highway 71 County Landfill, and resulted in a seep of water with landfill leachate into a drainage below the site.

Site Evaluation Criteria

The URM evaluation of the potential for significant hazardous chemical and industrial wastes in the landfill was based on these factors:

- Records of hazardous wastes in landfill files;
- Documented, photographed, and undocumented observations of hazardous waste at a site;
- Documented and undocumented reports of drums or other containers likely to contain chemical waste;
- Disposal site users;
- Period of landfill operation relative to the time during the 1970's when large inventories of hazardous wastes were disposed; and
- The opportunities for illicit dumping based on landfill fences, maintenance personnel, and security.

At several sites, one of the first three factors provides definitive information that a landfill was used to dispose of potentially hazardous wastes. In the absence of reported hazardous wastes, however, it is extremely difficult to make a responsible determination that a site is "safe" or "clean". On many sites, the only available information consists of the operator and the dates of operation. This information provides some clues from typical waste disposal practices during the period of operation. Generally, sites which were used only for municipal waste, sites which were closed before 1965 and were fenced, sites with a

MDC

site operator, or those which were operated for a short time are judged to have a low potential for significant hazardous waste contents. The Mabel Davis site, however, is an example of a site which, based on these criteria, would be rated as a low potential. Illegal dumping apparently occurred after the site was closed, however, and significant amounts of pesticide were later accidentally uncovered. Rainfall runoff over the site dissolved the exposed pesticide and contaminated the stream below the site.

Every waste disposal site in Travis County potentially contains some hazardous wastes. At many sites, like St. Stephen's School, the amount of wastes is probably very small. The objective of the URM evaluation is to identify those sites where the potential for significant groundwater contamination is high, and where additional groundwater monitoring may be warranted. All waste sites, however, should be handled with an awareness of the possibility that the site may contain hazardous materials.



SITE SPECIFIC INVESTIGATIONS

Monitor Well Installation

During this study, 66 closed landfill sites or dumping areas were identified. Of those, 13 were reportedly used by the City. After a preliminary review of the sites, which included site visits, file searches, and interviews with retired City Sanitation Department workers, four sites were selected for field investigation. One criteria for selection was that the sites be representative of the other landfills used by the City, since only a limited number of wells could be drilled. Selection was also based on the present use of the closed landfills and their potential for environmental impact. The sites recommended were Zilker Park, Mabel Davis Park, Winn-Cook Elementary School, and the Smith property (Sprinkle Cut-off Road).

Monitor wells were drilled at Zilker Park and Mabel Davis Park. Wells were also planned for Winn-Cook and the Smith property, but were not drilled because access to the property was not authorized by the landowner. After the two monitor wells were installed, they were bailed dry on three different occasions. As they recovered after each bailing, groundwater stored within the fill material entered the well. This process ensured that when the groundwater sample was taken, it would be from the fill material. In addition to the well samples, a surface water sample was collected from the perennial stream that crosses the fill material at Mabel Davis Park, and a sample was collected from a seep along Little Walnut Creek, adjacent to the closed Brinkley-Anderson landfill.

The monitor wells were drilled using an 8-inch hollow-stem auger. With this drilling method, water is not added to circulate the cuttings to the surface. Instead, the hole is drilled dry, and the cuttings are