

SOLICITATION NO. SA 04300021**Management & Operation of the City of Austin's Type IV Landfill;
Permit No. 360A*****Date Issued: March 15, 2004******Closing Date and Time: May 20, 2004, by 3:00 PM*****Prepared by****Robert S. Kier Consulting*****October 26, 2004*****Background**

The City of Austin (COA) issued a Request for Proposals (RFP) to privatize the management and operation of the FM 812 Landfill. The primary objectives stated in the COA's solicitation were: 1) to maximize revenue and minimize costs; 2) to reduce or eliminate environmental liability; 3) to assure continued capacity for Type IV wastes (brush and construction and demolition debris) for as long as possible; and 4) to have another entity close the landfill and manage post-closure care. To our knowledge, only two entities, Industrial Environmental Services Incorporated (IESI) and Texas Landfill Management, L.L.C., responded to the RFP.

IESI owns and operates a Type IV landfill immediately west of the COA's FM 812 Landfill. Texas Landfill Management, L.L.C., is wholly owned by Bob and Jim Gregory, who also own Texas Disposal Systems, Inc. and Texas Disposal Systems Landfill, Inc. Texas Landfill Management, L.L.C., is the operating entity for the Gregory's Type I landfill, composting operation, and recycling center in southern Travis County, approximately five miles southwest of the FM 812 Landfill, and all the Garden-Ville compost facilities. These three companies are together commonly known as Texas Disposal Systems (TDS).

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Waste disposal at the FM 812 Landfill began in the 1950s or early 1960s in two wet-weather stream valleys, approximately fifty feet deep, that drained into Onion Creek immediately south of Bergstrom Airbase. This was long before there were any regulatory requirements for or state controls over the design and operation of municipal solid waste landfills. We are unaware of any liners or other barriers to leachate migration being constructed in the stream valleys or even any inspections of the landfill bottom and sidewalls for integrity by a licensed professional engineer before waste disposal; however, it has been reported that soil plugs were placed at the mouths of the stream valleys and raised upward (at least part way) as the valleys were filled.

With the advent of statewide permitting of landfills, however, in approximately 1973, the COA obtained Permit No. 360 from the Texas Department of Health, or its predecessor agency. The areal and vertical extent of the FM 812 Landfill was expanded in 1979 and again in 1983 through permit amendments [*Attachment 1*]. In 1994, design and operational requirements of the landfill were brought into compliance with the new federal RCRA Subtitle D rule through the permit modification process. Construction of a leachate collection system and a standard design, composite liner consisting of a flexible membrane over two feet of compacted, relatively impermeable clay was specified in the COA's application for the permit modification for the only remaining approved area within the permit that had not yet been filled [*Attachment 2*]. Certain other unfilled areas of the landfill (C, D-1, F, G, and parts of A-2 and E-1) were deleted from the permitted waste disposal area to conform to a state requirement that the capacity of the landfill not be increased in the process of meeting the Subtitle D rule through a simple permit modification [*Attachments 2 and 3*].

In 1997 the COA sought permission to install an alternate, performance-based liner in which the two feet of compacted clay of the composite liner was replaced by a thin (approximately one-quarter inch thick) manufactured geosynthetic clay liner. The alternate liner design and a revised Soil and Liner Quality Control Plan (SLQCP) incorporating the alternate liner design were approved by the Texas Natural Resource Conservation Commission (TNRCC), now the Texas Commission on Environmental

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Quality (TCEQ), in mid 1997 [Attachment 4]. To our knowledge, this is the liner system now being used at the FM 812 Landfill [Attachment 5] and is the only Subtitle D liner system ever installed at the landfill. Such a liner system is not a composite liner system as defined in the TCEQ municipal solid waste regulations [30 TAC §330.200(a)(2) and (b)].

The COA was forced by the Federal Aviation Administration (FAA) to agree to cease accepting all putrescible waste at the FM 812 Landfill sixty days prior to the opening of the new Austin Bergstrom International Airport in 1999 [Attachment 6]. Because the landfill was too close to Austin's new commercial airport to meet federal and state location restrictions, the COA was required to close the FM 812 Landfill to the receipt of ordinary municipal solid waste containing putrescible garbage. The COA was, however, allowed to convert to a Type IV landfill operation and to continue to receive brush and construction and demolition debris. Exposed putrescible waste at municipal solid waste landfills attracts birds, which in large numbers and size, are inimical to the safety of commercial aircraft. Brush and construction and demolition debris do not have the same potential as putrescible garbage to attract birds, and Type IV landfills are prohibited from accepting putrescible waste for disposal.

Environmental and Regulatory Issues

Privatization and potential expansion of the FM 812 landfill raises several issues of environmental and regulatory concern:

- *The continued potential for erosion and instability of the steep north side of the FM 812 Landfill bordering Onion Creek and Travis County's Richard Moya Park under existing conditions and in the event of mismanagement and/or a vertical expansion (height increase).*

The north slope of the landfill has failed once before. In 1991, a large volume of soil and formerly buried solid waste slide across Onion Creek and into the

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adjacent park, partially blocking the creek and flooding the park. In addition, flood levels along Onion Creek, even for a flood with a ten percent probability of occurring in any one year (10-year flood), would be approximately twenty-two feet up the side of the landfill; flood levels for a 100-year flood would be approximately five feet higher. Flow velocities in Onion Creek along the north side of the landfill are estimated to be more than 8.5 feet per second, which is a sufficient velocity to erode any soil that could be placed there that is not sufficiently protected [*Attachment 7*].

No remedial attempts to prevent erosion or future slope failures have yet proven to be effective over the long-term. Gabions placed along the north side of the landfill to prevent erosion have not withstood the hydraulic forces of Onion Creek. Several wells and drainage facilities have been installed to remove leachate from the landfill to reduce hydrostatic pressure within the landfill and to prevent leachate seeps from entering Onion Creek [*Attachment 8*]; however, not all of these have been operated or are still operational. According to COA staff, implementation of these measures took ten years. and as recently as July 2003, approximately twelve years after a portion of the north slope of the FM 812 Landfill failed and slid across Onion Creek, the COA was still not controlling leachate depths as required, even in the small portion of the landfill with a leachate collection system [*Attachment 9*]. The most recent investigation of the stability of the older portion of the north slope of the FM 812 Landfill, which was performed by Camp Dresser & McKee Inc., was not made available to TDS to review and to address within its response to the COA's RFP [*Attachment 10*]. Furthermore, the current attempts to pump/drain landfill leachate from behind the north slope of the landfill to reduce hydrostatic pressure with disposal of the leachate in another part of the landfill violates state and federal municipal solid waste management regulations (see below).

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Raising the height of the landfill to gain additional waste disposal capacity will tend to increase the length of the north slope, decreasing long-term stability. A repeat of the 1991 slope failure could potentially affect operations at Austin Bergstrom International Airport by once again exposing putrescible waste that attracts birds in close proximity to the airport runways. In the event the FM 812 Landfill posed a danger to commercial aircraft operations at the Austin Bergstrom International Airport, it is our understanding that the FAA will hold the COA responsible regardless of any contractual relations the COA might have with a private entity operating and managing the landfill. Prevention of another failure of the north slope of the FM 812 Landfill is critical to continued, uninterrupted operation of Austin's new airport.

- *The existence of ground water contamination, including chlorinated volatile organic compounds.*

Since 1984, fifteen monitoring wells, MW-1 through MW-15, have been installed at the FM 812 Landfill. Monitoring wells MW-4 and MW-5 have been decommissioned, and at least as of May 2004, monitoring well MW-13 did not produce sufficient water to yield a sample [Attachment 11].

Apparent ground water contamination has been detected and reported for samples from seven of the twelve monitoring wells yielding samples; monitoring wells MW-7, MW-8, MW-9, MW-10, MW-12, MW-14, and MW-15. Currently, these wells, all of which are downgradient wells, are in assessment monitoring [Attachment 12].

Corrective action is to be implemented at monitoring well MW 10, from which samples with excessive concentrations of nitrate have been persistent [Attachment 13]. Nitrate concentrations reported have ranged from 4.98 milligrams per liter (mg/L) to 260 mg/L (292 mg/L in Table 2-1 of the report provided in Attachment

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13). Background nitrate concentrations are 6.98 mg/L and the ground water protection standard established by 40 CFR Title 40, Chapter 1, Part 141.51 is 10 mg/L. Ground water flow is toward Onion Creek.

Historically, several monitoring wells have yielded samples in which volatile organic compounds (VOCs) have been detected [Attachment 14]. Monitoring wells at the FM 812 Landfill in which VOCs have been detected include MW-3, MW-8, and MW-14. VOCs detected include acetone, benzene, chlorobenzene, 1,4-dichlorobenzene, 1,1-dichloroethane, cis- and trans-1,2-dichloroethene (ethylene), and trichloroethene (ethylene). Elevated concentrations of total organic carbon (TOC), an indicator parameter for contamination by organic compounds, have been detected in monitoring well MW-10 and perhaps other, unspecified monitoring wells.

The monitoring wells from which contaminated samples have been reported are on the north and east sides of the landfill in a downgradient position with respect to ground water flow [Attachment 13]. Other than the currently planned corrective action related to nitrate contamination in samples from monitoring well MW-10 on the north side of the landfill, which is dependent on the ability to recirculate leachate into the landfill (see below), there appears to be nothing preventing contaminants emanating from the landfill from reaching Onion Creek. Potential contamination of ground and surface water because of leakage of leachate from the FM 812 Landfill must be minimized by proper control of leachate depths within the landfill.

- Continued offsite migration of potentially explosive landfill gas, despite the installation of an active landfill gas collection system.

As waste placed in a landfill degrades, landfill gas is generated, which consists of approximately fifty percent carbon dioxide and fifty percent methane.

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Exceedance of potentially explosive concentrations of the methane component of landfill gas (approximately 5 percent methane in air and known as the lower explosive limit or LEL) has been a long-standing problem at the boundary of the FM 812 Landfill. Explosive concentrations of methane, especially if they occur in enclosed structures on or adjacent to the landfill present a serious worker and public safety issue.

The COA has made two major attempts to prevent excursions of landfill gas from the FM 812 Landfill. Most recently, the COA received approval of an application for a permit modification to "renovate and improve the landfill gas collection and control system" installed at the landfill [*Attachment 15*]. Complete control of landfill gas has apparently not yet been achieved, though. As recently as September 2004, the concentration of methane exceeded the LEL in ground water monitoring well MW-8 on the north side of the landfill. Earlier in 2004, exceedances of the LEL have been reported for monitoring well MW-3 at the northwest corner of the landfill, gas monitoring probe GP-10 on the east side of the landfill, and gas monitoring probe GP-9A, the location of which is not known with certainty, but appears to also be on the east side of the landfill somewhere near gas monitoring probe GP-9 [*Attachment 16*]. Although we have no documentation, it is our understanding from discussions with COA staff that the COA has purchased several properties on the east side of FM 973 that potentially could be affected by migration of landfill gas from the FM 812 Landfill. Control of the migration of landfill gas is essential if the COA is to minimize its liability related to the FM 812 Landfill.

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- *The impermissible recirculation of landfill leachate and gas condensate derived from pre-Subtitle D portions of the landfill and water purged from ground water monitoring wells over performance-based, alternate liners.*

The COA has acknowledged verbally and in writing [*Attachment 17*] that leachate, landfill gas condensate, and even purge water from sampling of the ground water monitoring wells is recirculated into the Subtitle D portion of the FM 812 Landfill. Recirculation of these fluids violates state and federal rules and regulations. There are actually three forms of regulatory violation here:

- 1) Recirculation of leachate and landfill gas condensate is not allowed over performance-based, alternate liners, only over composite liners as defined in the TCEQ's municipal solid waste regulations and as originally specified in 1994 Subtitle D permit modification for the FM 812 Landfill [30 TAC §330.56(o)(2) and §330.200(a)(2) and (b); *Attachment 18*]; to our knowledge composite liners as defined in the municipal solid waste regulations were never installed at the FM 812 Landfill;
- 2) Leachate and landfill gas condensate can be recirculated only in the portion of the landfill from which the fluids are derived, and only if that portion has a standard design composite liner as described above, [30 TAC §330.5(e)(6)(A)(ii); *Attachment 18*]; and
- 3) Ground water purged from monitoring wells cannot be treated as leachate or landfill gas condensate; i.e., it cannot be introduced into the landfill regardless of the type of liner system in place [same cites as above; *Attachment 18*].

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As has been indicated above, it appears that all methods by which the COA is attempting to control leachate migration and to maintain a stable north slope at the FM 812 Landfill are currently dependent on recirculating fluids back into the landfill. Thus, as the FM 812 Landfill is currently managed and operated, the COA is failing to meet the regulations with respect to disposal of fluids at the landfill. Were the COA to meet those regulations, its plans to meet other requirements, such as control of landfill gas and the corrective action associated with ground water contamination at monitoring well MW 10 could be impaired.

The COA cannot continue to attempt to solve environmental problems relatively simplistically by failing to adhere to or by ignoring the requirements of all the State's municipal solid waste regulations.

- No documented plan to manage contaminated water generated at the site.

In accordance with the TCEQ municipal solid waste regulations [30 TAC §330.56(o); *Attachment 18*], there must be a plan for the management of contaminated water – water that has come in contact with leachate or solid waste. We have been unable to find such a plan in any of the documents we have been able to review pertaining to the FM 812 Landfill. A plan to manage contaminated water generated at the landfill is a regulatory requirement.

- The legality of operating as a Type IV landfill with a Type I permit.

It is unclear whether the FM 812 Landfill may continue to be operated as a Type I landfill that simply does not receive putrescible wastes or must be permitted as a true Type IV landfill that can receive only a much more limited range of wastes [30 TAC §330.41; *Attachments 19 and 20*]. The regulations governing waste

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disposal under the two types of permits are very different; e.g., waste disposed in Type I landfills must be covered at least daily and waste disposed in Type IV landfills normally need be covered only weekly [30 TAC §330.133(a); *Attachment 20*]. Documents available from TCEQ are conflicting as to whether the FM 812 Landfill: 1) may be operated under a Type I landfill permit, but simply not receive putrescible wastes; 2) may be operated under a Type I landfill permit, but in accordance with the regulations for a Type IV landfill, which are less restrictive; or 3) must actually be re-permitted (e.g., through a permit modification) as a Type IV landfill [*Attachment 19 and 21*]. Under the current situation, the COA has complied with the Federal Aviation Administration (FAA) requirement in order to receive funding and to open the Austin Bergstrom International Airport; however, the COA also has retained the potential to reopen the landfill as a Type I landfill accepting putrescible waste through demonstration to the TCEQ that its operation would pose no bird hazard 30 TAC §330.300; *Attachment 22*]. The COA must obtain a valid determination from the State as to which permitting and operating requirements apply to the FM 812 Landfill and modify its permit accordingly if needed.

- *The ability to expand the landfill vertically due to height limitations imposed by the FAA and due to the placement of final cover over most of the landfill.*

Much of the landfill appears to be at the currently permitted final height. It appears that landfill sectors areas A1 and A3, a portion of Sector B, Sector D2, and Sector E2 [*Attachment 23*] were all filled and covered prior to October 9, 1991, the date on which Subtitle D was promulgated. Thus, these portions of the landfill should be considered closed. It appears that only Sector A2 and other portions of Sector B were considered active as of the date on which the Subtitle D Rule was promulgated. It is not known, however, whether proper closure documents were ever filed or even whether, as of this date, such closure documents would be a regulatory necessity.

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Proper closure procedures, in accordance with state regulations and the landfill's operating permit, for those portions of the landfill that were still active after October 9, 1991, may not have been followed. To our knowledge, the currently applicable closure plan for the FM 812 Landfill [*Attachment 24*] specifies that the maximum area that will ever require final cover at any one time is ten acres. Furthermore, in accordance with the TCEQ municipal solid waste regulations, once closure activities have commenced – e.g., placement of final cover – they must be completed within 180 days [30 TAC §330.252 and 253; *Attachment 25*]. COA staff have made contradictory statements as to whether the existing cover over all but the currently active portion of the landfill is final cover or some intermediate cover. If the current cover over most of the landfill is actually final cover, as defined in state and federal regulations, then disposal of more waste over this cover would require that new liners be installed over that cover. In addition, height limitations imposed by the FAA have been acknowledged, but not divulged [see question and response in *Attachment 26*].

A lateral expansion of the waste disposal area within the FM 812 Landfill appears to be less of a problem, but would still require a permit amendment. As indicated in the application for a permit modification in 1994 to meet the new federal Subtitle D rule, certain unfilled areas of the landfill (C, D-1, F, G, and parts of A-2 and E-1) were deleted from the permitted waste disposal area to conform to a state requirement that the capacity of the landfill not be increased in the process of meeting the Subtitle D rule through a simple permit modification. Despite representations of COA staff [see question and response No. 21 in *Attachment 25*], these areas cannot now be again considered part of the permitted area of the landfill [*Attachments 2, 3, 24 and 27*]. The COA should strictly control the expansion of the landfill to minimize its liability and to protect public health and safety.

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- The COA's requirement that the contracting entity assume complete ownership and liability for the waste currently disposed at the FM 812 Landfill.

This requirement appears to be in contradiction with federal law [Attachment 28]. Ownership and liability for wastes disposed at the site by the COA over the last fifty years cannot be transferred by any means, let alone by simple contract. In short, regardless of what clauses the COA may place in a contract with whatever entity that may take over management and operation of the FM 812 Landfill [see question and response No. 14 in Attachment 26], the COA retains responsibility and ultimate liability for the waste already placed in the landfill and any emissions from those wastes. In reality, should the operating entity default on its responsibility for additional waste placed in or on top of the landfill, the COA would effectively become liable for any environmental impairment caused by this waste, too, because of the difficulty of determining exactly what waste caused the problem and because the liability is joint and several. Therefore, the COA should not lose control of the operation, expansion (if any), closure, and post-closure care of the FM 812 Landfill.

- Additional Environmental and regulatory Concerns

Limitation of the documents that potential contractors were allowed to view; most specifically:

- Maps of the property and the permit boundaries; are the boundaries coincident or is the permit boundary everywhere on or within the property boundary?
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- Maps of the actual waste unit boundaries; has any waste been placed outside of the property/permit boundaries?

Management & Operation of the City of Austin's Type IV Landfill

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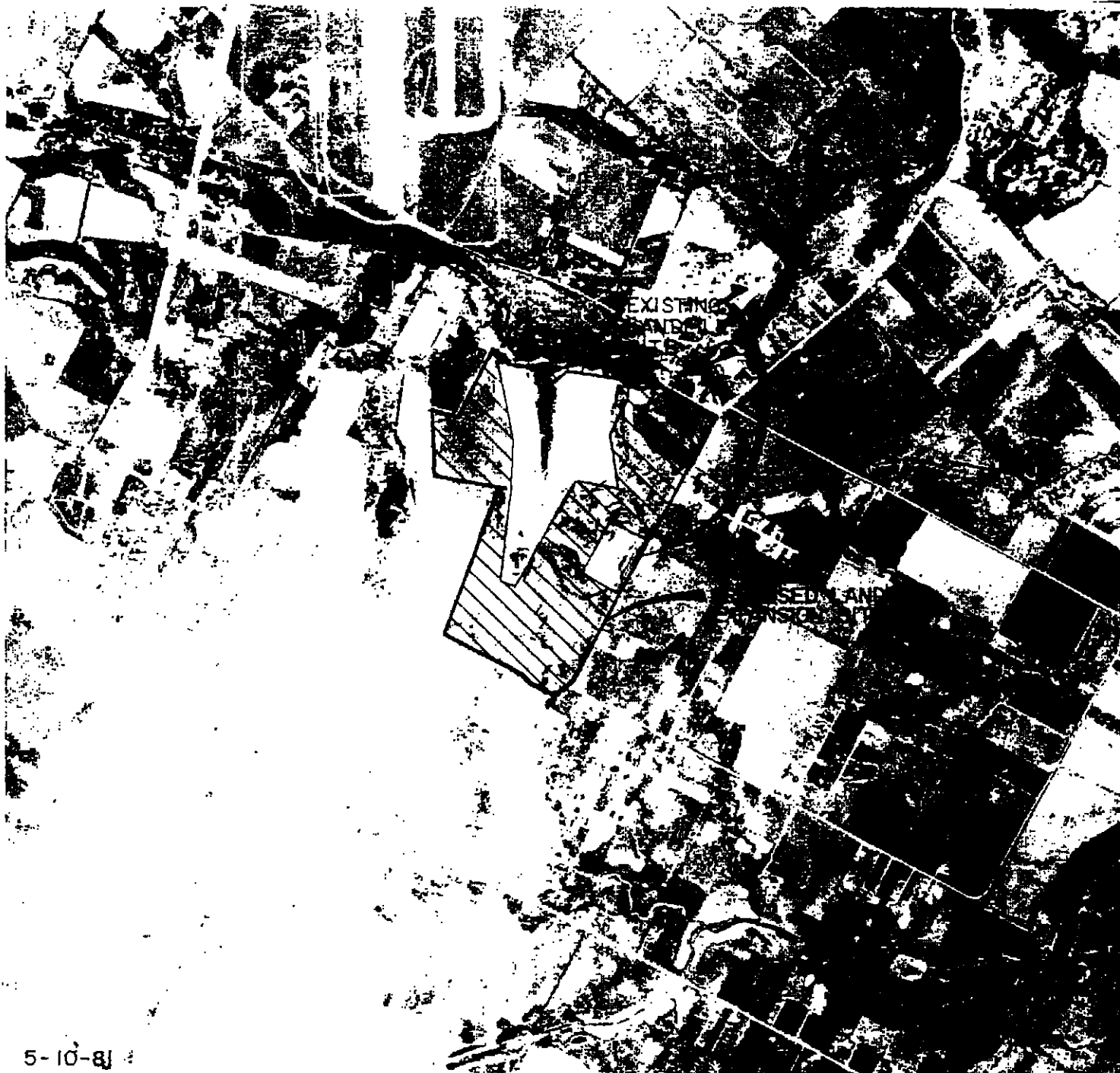
- Documents related to liner certification and locations; what liner systems have been installed where and are there any gaps between the approved liner areas?
-
- Copies of existing and continuing contractual relationships; have all existing contractual relationships related to operation and maintenance of the FM 812 Landfill been revealed?

Without detailed knowledge and understanding of these types of documents, no entity can submit a viable proposal to adequately protect the COA's interest as it manages and operates the FM 812 Landfill.

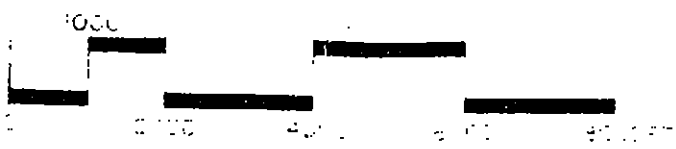
Based on the tour of the FM 812 Landfill on March 26, 2004, surface water drainage controls appear inadequate; however, this concern has not been researched.

The COA must provide much more information about existing conditions at the FM 812 Landfill. Evaluation of the proposals received in response to its RFP should be based on the contractor's proven ability to fully meet all regulations and to properly close the landfill. Only by fully disclosing information about existing conditions and by selecting a contractor based on its regulatory compliance history will the COA minimize its liability with respect to ground and surface water contamination, offsite migration of landfill gas, slope stability and leachate control, and prevention of catastrophic failures that could adversely affect operations at the Austin Bergstrom International Airport.

ATTACHMENT 1



5-10-81



AERIAL PHOTOGRAPH
 ATTACHMENT NO. 4
 SANITARY LANDFILL PERMIT APPLICATION
 CITY OF AUSTIN, TEXAS

HDR Harris, Dugan, & Richardson

ATTACHMENT 2

CONFORM TO EXISTING SLOPE
(VARIES FROM 3:1 TO 4:1)

PROPOSED
DIVERSION BERM
PREVIOUSLY
FILLED WASTE AREA

LIMITS OF FILL

LEACHATE CLEANOUT RISER PIPES

PROPOSED LOCATION FOR
LEACHATE TREATMENT AND
STORAGE FACILITY

LEACHATE CLEANOUT RISER PIPES

PROPERTY BOUNDARY

DITCH M-2

EXISTING SUBTITLE 'D' CELL SUB AREAS B-2 & B-3

LEGEND

--- LEACHATE CLEANOUT PIPES

② CELL SEQUENCE & DIRECTION



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LANCASTER
P.E. 72198, ON 11/16, 14

NOTE: TOPOGRAPHIC INFORMATION WAS OBTAINED
FROM AERIAL MAPPING FLOWN 2-11-94

SWL SOUTHWESTERN LABORATORIES

CITY OF AUSTIN
F.M. 812 LANDFILL
MSW PERMIT NO. 360-A
TRAVIS COUNTY, TEXAS

SWL Reference	REVISION GRADING	FIGURE
No. 506594-103	PLAN(SUB AREAS	3
SWL No. 54103108	B-2 & B-3)	
DATE ISSUED: 08-17-94		

2

500
(SCALE IN FEET)



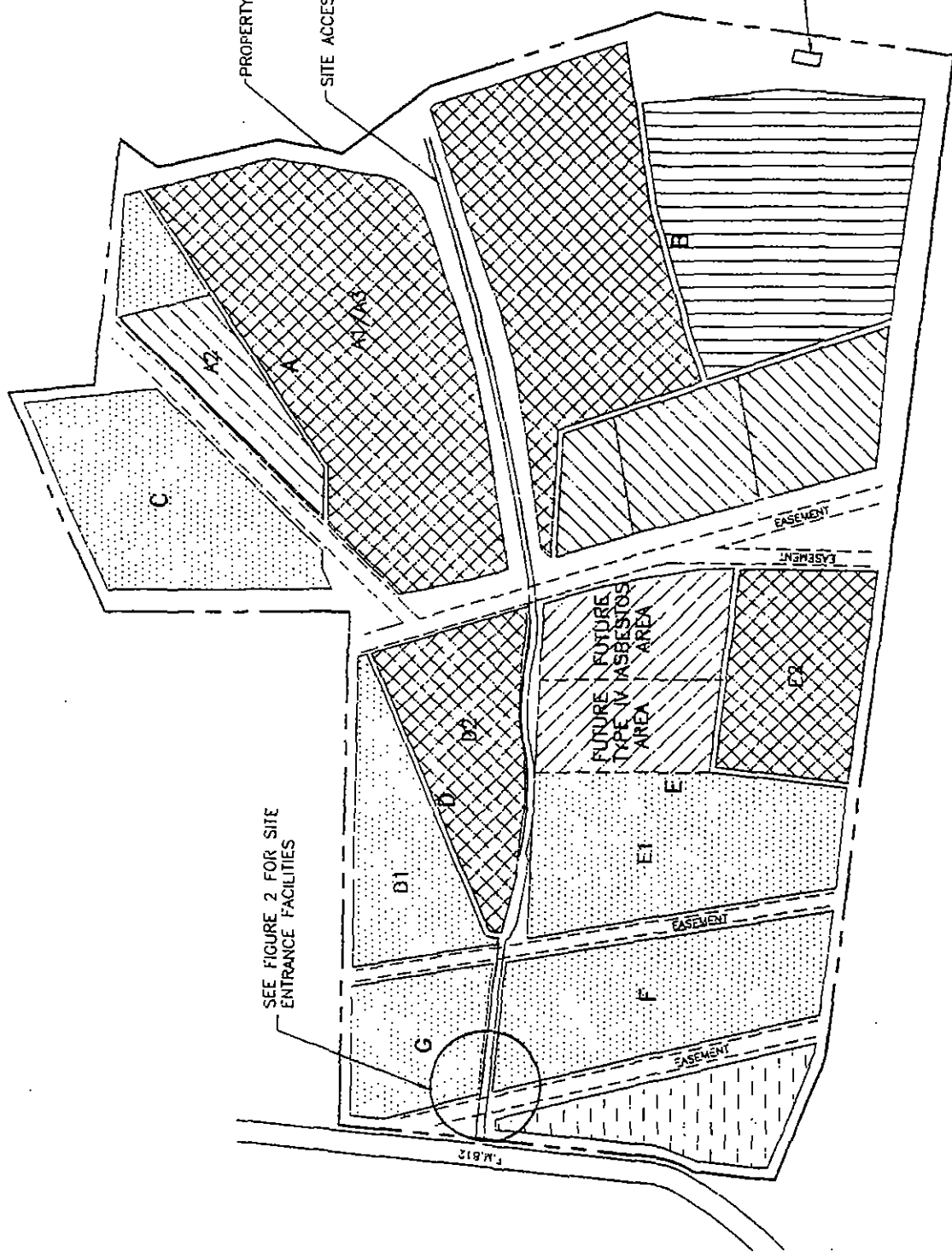
THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LANKASIER
P.E. 72198, ON 11/11/86

PROPERTY BOUNDARY
SITE ACCESS ROAD

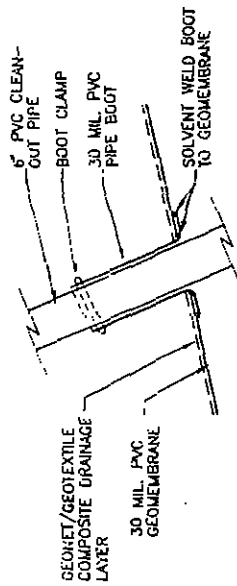
LEGEND	
	PRE SUBTITLE D
	AREAS USED AFTER 10/9/91; NO FML
	AREAS TO BE REMOVED FROM PERMIT
	FILLING NOT ALLOWED
	SUBTITLE D COMPOSITE LINER
	UNUSED NON SUBTITLE D AREA

PROPOSED LOCATION OF LEACHATE TREATMENT STRUCTURE

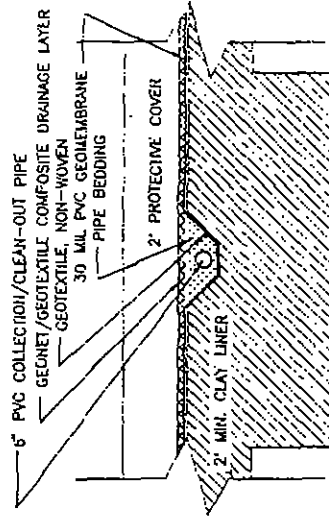
SWL <small>SOUTHWESTERN LABORATORIES</small>	
CITY OF AUSTIN F.M. 812 LANDFILL MSW PERMIT NO. 360-A TRAVIS COUNTY, TEXAS	
SWL Reference No. 506594-103	FIGURE 1
DWG NO. 9103141	SITE LAYOUT MAP
DATE ISSUED: 06-17-91	



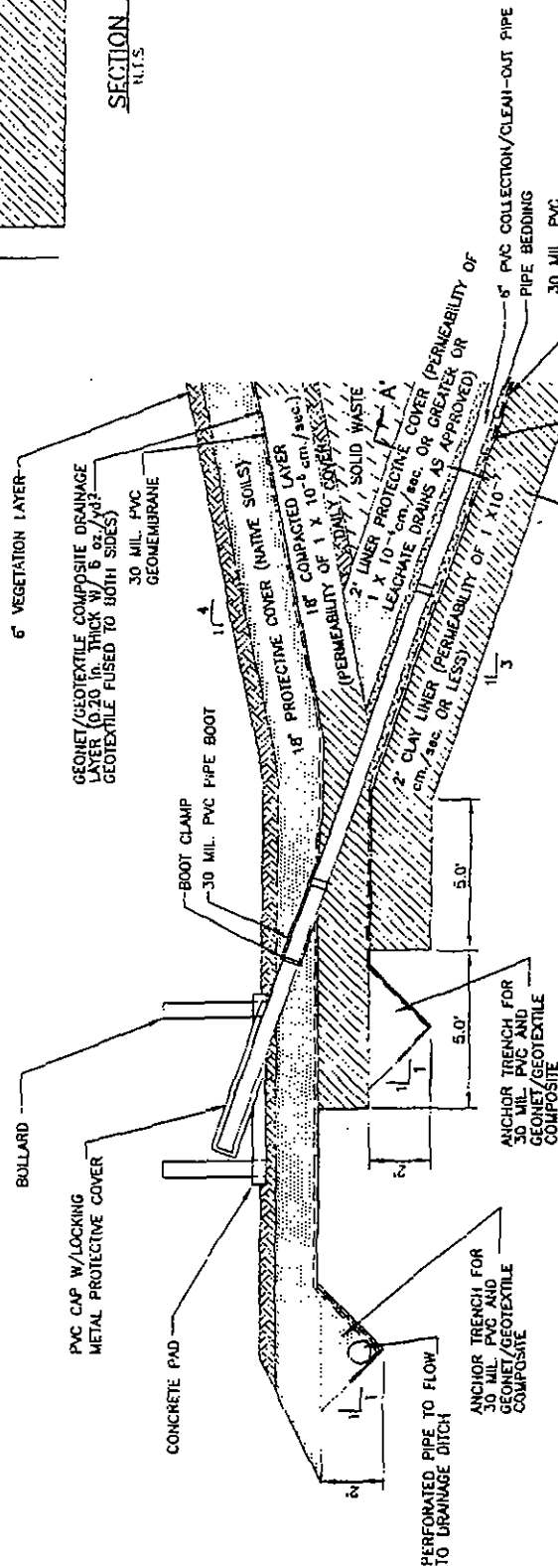
SOURCE: SECTORIZED FILL LAYOUT, ATTACHMENT NO. 6,
SANITARY LANDFILL PERMIT APPLICATION
HENNINGSON, DURHAM & RICHARDSON, JULY, 1983



BOOT CLAMP DETAIL
N.T.S.



SECTION A-A'
N.T.S.



**LEACHATE COLLECTION/CLEAN-OUT
FINAL COVER DETAIL(NORTH & EAST SLOPES)**
N.T.S.

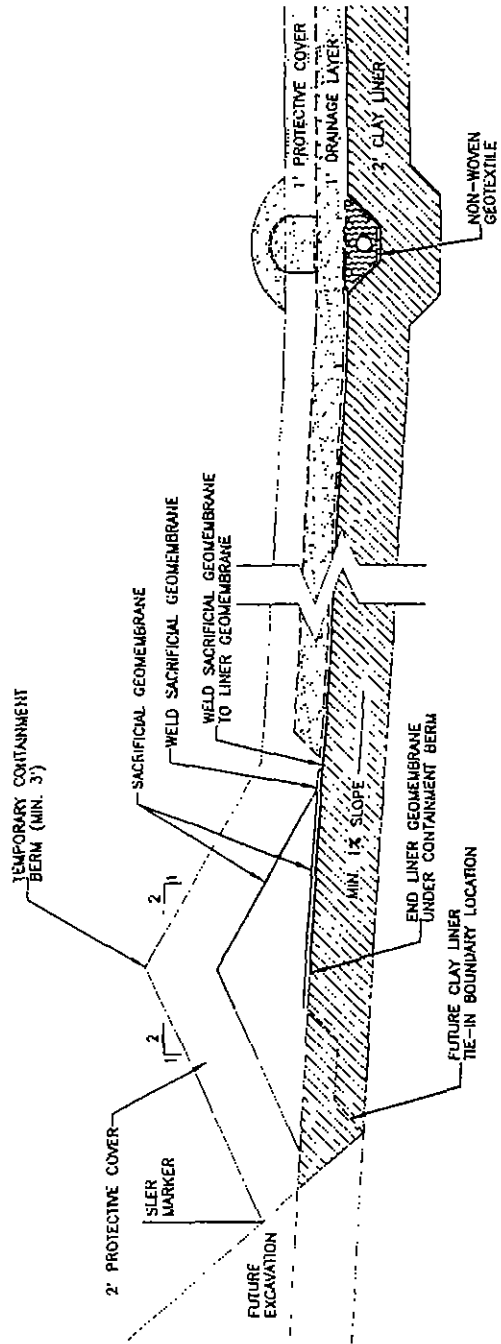
NOTES:

1. A ONE FOOT LAYER OF GRANULAR MATERIAL, MEETING THE SAME SPECIFICATIONS AS THE BOTTOM DRAINAGE LAYER, MAY BE USED IN PLACE OF THE GEONET/GEOTEXTILE COMPOSITE DRAINAGE LAYER SUBJECT TO VERIFICATION OF SLOPE STABILITY BY THE CONTRACTOR. IF A GRANULAR DRAINAGE LAYER IS USED, ONLY ONE FOOT OF EROSION PROTECTION LAYER IS REQUIRED, AS ON THE BOTTOM, A NONWOVEN GEOTEXTILE MUST BE PLACED BETWEEN THE DRAINAGE LAYER AND THE EROSION PROTECTION LAYER.

THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LAYMONSTER
P.E. 72198, ON 11/16/94




SWL SOUTHWESTERN LABORATORIES	
CITY OF AUSTIN F.M. 812 LANDFILL MSW PERMIT NO. 360--A TRAVIS COUNTY, TEXAS	FIGURE 9
SWL Reference No. 500594-103 DWG NO. 34103110 DATE ISSUED: 06-17-94	LANDFILL DETAILS



LANDFILL BOTTOM LINER TERMINATION BETWEEN CELLS
N.T.S.



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LANCASTER
P.E. 72198, ON 4/16, 1994

 SOUTHWESTERN LABORATORIES		CITY OF AUSTIN F.M. 812 LANDFILL MSW PERMIT NO. 360-A TRAVIS COUNTY, TEXAS	
SWL Reference No. 506594-103		LANDFILL DETAILS	FIGURE 11
LMS NO. 94103112 DATE ISSUED: 08-17-94			

ATTACHMENT 3



ENVIRONMENTAL SERVICES

April 8, 1994

4150 Friedrich Lane
P.O. Box 17366
Austin, Texas 78760
Phone: (512) 447-9081
Fax: (512) 443-3442

Ms. Susan Janek, P.E.
Team Leader
Permits Section
Municipal Solid Waste Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

RE: Permit Modification
City of Austin F.M. 812 Landfill
Travis County, Texas
Permit No. MSW 360-A

Dear Ms. Janek:

SWL Environmental Services (SWL) was contracted by the City of Austin to provide professional services necessary for a Class 1 permit modification request under 31 TAC §305.70. The City of Austin currently owns a 381.8 acre tract located in Travis County, Texas that is permitted as a Type I municipal solid waste landfill (MSW Permit No. 360-A).

This Permit Modification Request provides the design and operational documents that reflect the recent changes to site operational procedures implemented to meet the requirements of the revised RCRA Subtitle D. The drawings provided in this request should replace any design drawings previously submitted for operation of the remainder of the site.

The City is also requesting a revised final contour plan. The proposed final contours will not result in an increase in permitted waste volume or extension of the site life. This is due to the sacrifice of approximately 134 acres which will not be filled in areas A-2, C, D-1, E-1, F, and G of the permitted sectorized fill. The sacrifice is due to the impending closure of the site because of the opening of the City of Austin Municipal Airport (formerly Bergstrom AFB).

We are also submitting revised design drawings for sub-area B-2 & B-3 and other data necessary to complete our response to the TNRCC letter, dated March 3, 1994, to Mr. Joe Word, P.E. Please note that there is an ongoing groundwater characterization study being conducted at the landfill facility. It is anticipated to provide the results of this study in report form in July 1994. The information will be utilized to develop the groundwater sampling and analytical plan, and to document depth to groundwater as this relates to landfill cell excavation depths.

ESW1994041941031PER-MODUJANEX-1.GH

SOUTHWESTERN LABORATORIES, INC.

A member of the HHH group of companies

Ms. Susan Janek, P.E.

April 8, 1994

Page 2

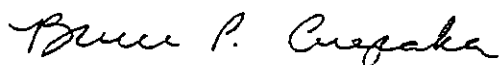
Contained in this permit modification request are the following:

- Part A - General Data;
- Subtitle D Site Modification Drawings;
- Subtitle D Drawings for Sub-Areas B-2 & B-3;
- Certification of Demonstration of Location Restrictions;
- Soil and Liner Quality Control Plan (SLQCP);
- Final Closure Plan;
- Post-closure Care Plan;
- Landfill Gas Management Plan;
- Leachate and Contaminated Water Plan;
- Site Operating Plan; and
- Design Calculations (Appendix).

If you have any questions, or require additional information, please do not hesitate to call me at 447-9081.

Sincerely,

SWL ENVIRONMENTAL SERVICES



Bruce P. Cerepaka, P.E.

Manager, Solid Waste Management

BPC/dm

Enclosure

cc: Don Ward, P.E., City of Austin

FINAL CLOSURE PLAN
CITY OF AUSTIN F.M. 812 LANDFILL
TRAVIS COUNTY, TEXAS
MSW PERMIT NO. 360-A

Prepared for:
CITY OF AUSTIN
Austin, Texas

Prepared by:
SWL/HUNTINGDON ENGINEERING & ENVIRONMENTAL, INC.
Austin, Texas

June 1994

15940C04194101PER-MOD/FINAL-C2

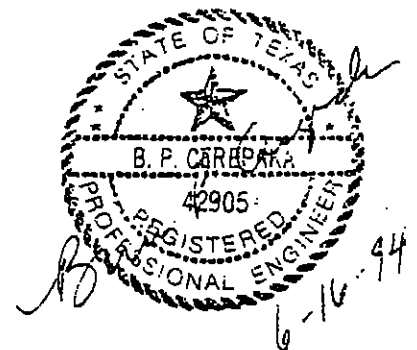


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1.0 INTRODUCTION

This Final Closure Plan (FCP) consists of procedures to be followed for closure of completed areas of the City of Austin F.M. 812 Landfill and for final closure of the entire facility. This FCP is a supplement to the existing permit 360-A. It specifically addresses requirements of Subtitle D for closure of area B of the landfill which received waste after October 9, 1991. The specific closure procedures outlined in this FCP must be acknowledged and utilized during closure operations. This FCP shall be maintained at the site office, or other designated location, as part of the operating record. The term "closure area" is used throughout this document and refers to an area of the landfill which has received its maximum amount of waste and is ready to receive final cover. The term "final site closure" refers to closure of the entire facility.

Capacity Analysis

Because this landfill is to be closed in 1998, a sizable portion of the landfill area will not be utilized. These areas that are to be removed from the landfill permit are shown on Figure 1 and include areas C, D1, G, F, a portion of A2, and part of E1. However, because permitted excavation depths and permitted heights have both been exceeded in Area B, the largest area of the landfill, it was necessary to demonstrate that the volumes in the unused areas exceed the additional volume added in Area B such that the total permitted waste volume for the site will not be exceeded. The following table shows a comparison of the fill volumes and waste volumes for the 1983 permit and the 1994 permit modification, and the volumes removed from the permit.

It is assumed that in all areas that have been used outside of Area B, the landfilling was done in accordance with permitted depths and heights. For areas that are not to be used, an average fill height was determined from comparison of February 1994 topography to the 1983 final cover plan. The average fill height plus the excavation depth were multiplied by the area to estimate the total fill volume not being utilized. In Area B, four cross-sections were used to compare previously permitted volumes to proposed volumes. The cross-sections indicate an approximate 20% increase in total fill volume. A 25% increase is assumed as a conservative estimate.

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

March 9, 1998

Mr. Donald W. Ward, P.E.,
Austin Disposal Services Manager
P.O. Box 1088
Austin, Texas 78767

Re: Municipal Solid Waste - Travis County
City of Austin - Permit No. MSW-360A
FM-812 at FM-973

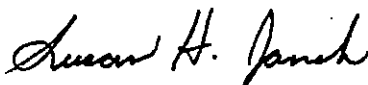
Dear Mr. Ward:

This is in response to your letter, dated January 30, 1998, indicating that an error was discovered during the preparation and approval of a modification approved in 1994 for a change in contours of Area B of the subject landfill. The review of this matter revealed that to correct the error a modification to the Site Development Plan (SDP) of the subject permit would be necessary. The requested modification is to change some areas of the landfill that were marked "Areas to be Removed from the Permit" in the 1994 modification to "Unused Non-Subtitle D Areas". This request has been reviewed and the circumstances related to the revision to the final contours of Area B. It was noted that the areas to be removed from the permit in 1994 were used to compensate for the increase in capacity of Area B with its increased contours. It was also noted that the areas removed were included in the Closure Plan as non-fill areas thereby reducing the disposal fill volume of this site. Unfortunately, once a landfill has voluntarily reduce its disposal fill area, that fill volume is lost and can only be regained by a major permit amendment.

The request to modify the SDP of Permit No. MSW-360A by correcting the Site Layout Map and gain additional lost disposal fill volume is hereby denied. This request may be resubmitted as a major amendment to the permit.

If you have any questions concerning this letter or if we may be of any assistance to you regarding municipal solid waste, you may contact Mr. Michael D. Graeber, P.E., at MC-124, P.O. Box 13087, Austin, Texas 78711; telephone number (512) 239-6671.

Sincerely,


Susan H. Janek, P.E., Manager
Regulatory Section
Municipal Solid Waste Division

SHJ/MDG/mdg

cc: ✓ TNRCC Region 11

ATTACHMENT 4

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

August 5, 1997

Doyle Smith
Maxim Technologies, Inc.
4150-B Freidrich Lane
Austin, Texas 78744

Re: City of Austin, FM 812 Landfill
Permit Modification
Alternate Liner Design
MSW Permit No. 360A

Dear Mr. Smith:

On June 27, 1997, Municipal Solid Waste Permits Section of the Texas Natural Resource Conservation Commission (TNRCC) received a request for approval of an alternate liner design (ALD) for a 21-acre cell located in the northeast corner of the City of Austin Landfill. The request was submitted by Maxim Technologies, Inc., on behalf of the City of Austin. The currently-approved liner design for this cell is a standard "Subtitle D" liner. The proposed ALD is to have a geosynthetic clay liner overlain by a 30-mil PVC geomembrane liner and a geonet drainage layer. The submitted ALD has been signed and sealed by Doyle Smith, P.E., in accordance with The Texas Engineering Practice Act.

Pursuant to 30 TAC §330.202, Alternate Design:

Alternate liner designs may be authorized by the executive director if the owner or operator provides a demonstration by computerized design modeling (for example, the "Help" and "Multi-Media" models) that shows that the maximum contaminant levels detailed in §330.200 of this title (relating to Design Criteria), Table 1 will not be exceeded at the point of compliance. At the discretion of the executive director, a field demonstration may be required to prove the practicality and performance capabilities of an alternative design.

Results of HELP and Multimed models included with the ALD submittal package indicate that the maximum contaminant levels detailed in 30 TAC §330.200, Table 1 will not be exceeded; therefore, Staff has determined that the proposed liner system design is sufficient to meet the requirements of 30 TAC §330.202, Alternate Design.

Maxim Technologies, Inc.
MSW Permit No. 360A
Page 2

A Soil and Liner Quality Control Plan (SLQCP) for the ALD was submitted to the TNRCC by separate letter dated July 18, 1997. The SLQCP is currently being reviewed by technical staff for compliance with the regulations. Commission action regarding the adequacy of the SLQCP will be provided by separate letter.

If you have any questions, please contact the project coordinator, Berney Williams, P.E., at (512) 239-6795.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Dollins". The signature is fluid and cursive, with the first name "Mark" and last name "Dollins" clearly distinguishable.

Mark Dollins, P.E., Team Leader
Permits Section
Municipal Solid Waste Division

cc: TNRCC Regional Office 5 - Tyler
Jean Doyle, TNRCC

MSW 360-A

Prepared for:
City of Austin

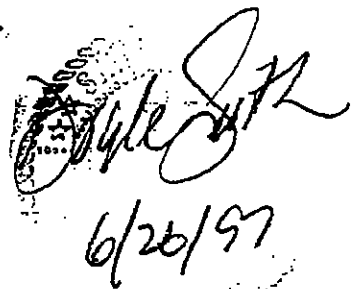
**ALTERNATE LINER DEMONSTRATION
CLASS I PERMIT MODIFICATION
F.M. 812 LANDFILL
MSW PERMIT N^o.360-A
Travis County, Texas**

Prepared by:
MAXIM TECHNOLOGIES, INC.
4150-B Freidrich Lane
Austin, Texas 78744

Project N^o 1809700537.01

June 24, 1997

1997 JUN 30 PM 4:35
SEP 19 97
SOLID WASTE MGMT.
RECORDS


6/26/97

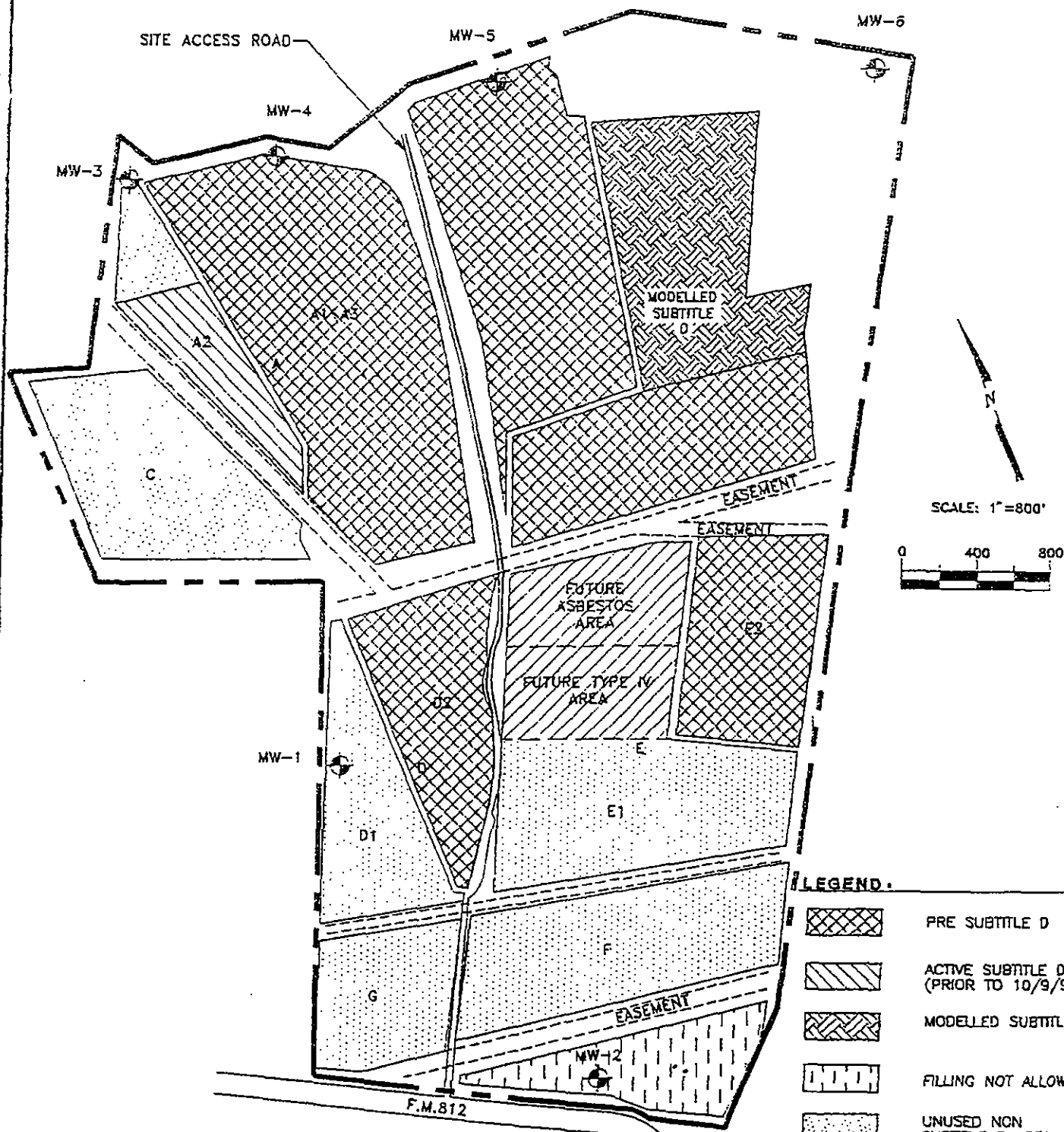
Current Approved Liner System (Default Subtitle D Liner)	Proposed Alternate Liner System
Protective Cover	Protective Cover
Leachate Collection system- (granular drainage layer)	Leachate Collection System Geonet drainage layer
30-mil PVC Geomembrane	30-mil PVC Geomembrane
2-foot thick Compacted Clay Liner	Geosynthetic Clay Liner (GCL)

1.2 Site History

The City of Austin F.M. 812 landfill is a 381.8-acre parcel of land that is located 8,000 feet east of Highway 183 and directly north of F.M. 812 in Travis County, Texas (*Figure 1 - Attachment 1*). In 1977, The Texas Department of Health issued the initial permit for the facility. Subsequently, the permit had to undergo an amendment in 1984 and a modification in 1994 to encompass and expansion and incorporate the "Subtitle D" requirements, respectively. Approximately 21-acres of the landfill is designated as a "Subtitle D" disposal area. Final closure of the landfill will begin in 1999 due to the planned opening of the new City of Austin Municipal airport within 3,168 feet of the facility.

2.0 SITE GEOLOGY AND HYDROGEOLOGY

The landfill is located in an area defined as the Austin Chalk Cliffs/Balcones Escarpment Physiographic province. This province is characterized by essentially horizontal sedimentary rocks of Cretaceous Age. The rock unit immediately underlying the landfill is the Taylor Marl. The landfill is bound on the northern perimeter by Onion Creek in an area that is hydrologically considered a "discharge zone," i.e. groundwater is migrating toward the surface. Onion creek flows from west to east and eventually discharges into the Colorado river several miles to the northeast of the facility.



John Smith
6/26/97

SITE LAYOUT MAP		
CITY OF AUSTIN F.M. 812 LANDFILL MSW PERMIT NO. 380-A TRAVIS COUNTY, TEXAS		
MAXIM TECHNOLOGIES INC.		4150-B FRIEDRICH LANE AUSTIN, TEXAS 78744
REFERENCE NO.	970537C	FIGURE 2
DRAWING NO.	1809700537.01	
DATE ISSUED	05/23/97	

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

August 14, 1997

Donald Ward, P.E.
Solid Waste Services
City of Austin
P.O. Box 1088
Austin, Texas 78767

Re: Solid Waste - Travis County
City of Austin - MSW Permit No. 360
Class I Permit Modification - Soil and Liner Quality Control Plan

Dear Mr. Ward:

On June 26, 1997, the Texas Natural Resource Conservation Commission (TNRCC) received a Class I permit modification request consisting of an addendum to the Soil and Liner Quality Control Plan (SLQCP) addressing geosynthetic clay liner (GCL) construction at the above referenced facility. On July 21, 1997, TNRCC received a revised SLQCP to address TNRCC review comments (TNRCC letter dated July 9, 1997) on the addendum; the revised SLQCP was dated July 18, 1997 and was signed by Mr. Jack C. Lind, P.E., Project Manager, MAXIM Technologies, Inc. On August 12, 1997, TNRCC received a second revised SLQCP with a minor correction; this revised SLQCP was dated August 11, 1997 and was signed by Mr. Lind.

Based on our review of the above referenced submittals, the revised SLQCP dated August 11, 1997 is acceptable and is hereby approved as a Class I Permit Modification in accordance with 30 TAC 305.70. Please enter this letter along with the corresponding accepted submittal into the facility's Site Operating Record.

If you have any questions with regard to this matter, please contact Ron Czajkowski, P.E., at (512) 239-6739.

Sincerely,

A handwritten signature in cursive script, appearing to read "Susan H. Janek".

Susan H. Janek, P.E., Manager
Permits Section
Municipal Solid Waste Division

SHJ/RLC

cc: TNRCC Region 11 Office - Chris Smith
Mr. Jack C. Lind - MAXIM Technologies, Inc.

ATTACHMENT 5

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Dan Pearson, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

February 19, 1998

The Honorable Kirk Watson
Mayor of Austin
P.O. Box 1088
Austin, TX 78767

RE: Solid Waste - Travis County
City of Austin - MSW Permit No. 360A
Addendum - Geosynthetic Clay Liner Evaluation Report (GCLER) - Cell No. 3

Dear Mayor Watson:

On February 13, 1998, the Texas Natural Resource Conservation Commission (TNRCC) received an Addendum to the GCLER for Cell No. 3 at the referenced facility. It was submitted in response to comments in our letter dated February 10, 1998, and discussions that occurred between the City, its consultants, and TNRCC staff during a meeting on February 12, 1998. The GCLER Addendum was prepared by Maxim Technologies, Inc., and was signed and sealed by Jack C. Lind, P.E. and Raymond H. Bennett, P.E.

The documentation provided in the GCLER Addendum fulfill the requirements outlined in our February 10 letter and meeting on February 12. Consequently, the GCLER is accepted. A TNRCC letter dated February 18, 1998, was transmitted to you noting the additional documentation that we require for the Flexible Membrane Liner Evaluation Report (FMLER). However, by this letter, we are authorizing waste placement in Cell No. 3 from about grid 14+00 to the tie-in with Cell No. 1 at grid 3+00. Upon a satisfactory resolution to the required documentation as noted in our February 18 letter, we will then authorize waste placement in the remainder of Cell No. 3. This letter serves in part to confirm our verbal authorization during a telephone conversation with Donald W. Ward, P.E., Landfill Manager, on February 19, 1998.

Please contact me at 512/239-6732 or Gale Baker at 512/239-6730 if you have any questions concerning this matter.

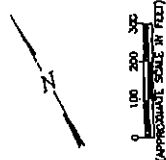
Sincerely,

A handwritten signature in black ink, appearing to read "Jerry Alfred".

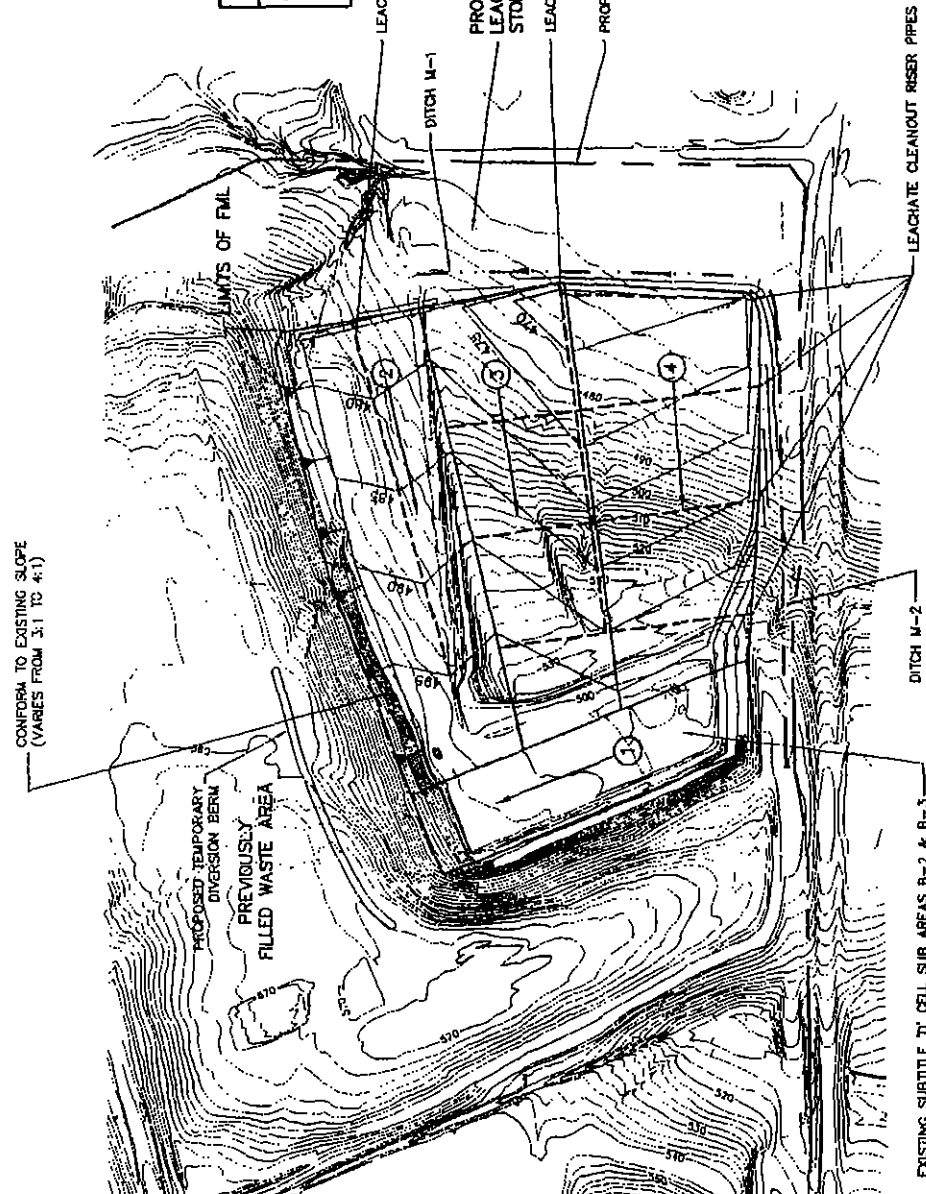
Jerry Alfred, Team Leader
Regulatory Section
Municipal Solid Waste Division

JDA/gb

cc: TNRCC Region 11 Office - Chris Smith, Waste Program Manager
Donald W. Ward, P.E., Landfill Manager, City of Austin - Solid Waste Services
Willie Rhodes, Director, City of Austin - Solid Waste Service
Jack C. Lind, P.E., Maxim Technologies, Inc., Austin

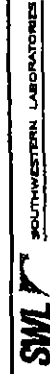


LEGEND	
---	LEACHATE CLEANOUT PIPES
②	CELL SEQUENCE & DIRECTION



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LANCASTER
P.E. 72198, ON 11-15-1994

NOTE: TOPOGRAPHIC INFORMATION WAS OBTAINED
FROM AERIAL MAPPING FLOWN 2-11-94



CITY OF AUSTIN
F.M. 812 LANDFILL
MSW PERMIT NO. 360-A
TRAVIS COUNTY, TEXAS

SWL Reference No. 506564-103	REVISED GRADING PLAN(SUB AREAS B-2 & B-3)	FIGURE 3
ENC. NO. 410310E		
DATE ISSUED 04-04-94		



THE SEAL APPEARING ON THIS DOCUMENT
WAS AUTHORIZED BY CYNTHIA C. LANCASTER
P.E. 72198, ON 6/16, 1977

HORIZONTAL SCALE: 1"=200'
VERTICAL SCALE: 1"=20'

[illegible]

ATTACHMENT 6



U.S. Department
of Transportation
**Federal Aviation
Administration**

Southwest Region
Arkansas, Louisiana,
New Mexico, Oklahoma,
Texas

Fort Worth, Texas 76193-0000

December 21, 1995

Mr. John M. Almond, P.E.
Project Director
New Airport Project Team
City of Austin Department of Aviation
2716 Terminal Drive
Austin, TX 78719

Dear Mr. Almond:

We have completed our evaluation of the proposal to utilize the remaining 120 acres of the city of Austin's Type I landfill as a Type IV facility. Our information places the closest points of the landfill approximately 4,000 feet from the thresholds of Austin Bergstrom International Airport, Runways 35L and 35R.

Type IV solid waste landfills are not considered to be in conflict with our criteria concerning landfills near airports. We do not object to the site location for the proposed city of Austin's type IV landfill facility, however, because of its proximity to the runways, we require the following actions be taken:

- a. The Type I facility be closed for 60 days before opening the Type IV facility.
- b. An active bird repellent and control program be in place at the site during the 60 days the facility is closed.
- c. That the bird repellent and control program continue as long as necessary after the Type IV facility is opened.
- d. That no putrescible waste of any kind be accepted or permitted at the facility.

e. That the facility will not permit the burning of debris at the site, and that in case of a accidental fire the facility will take immediate corrective actions to extinguish the fire and prevent its recurrence.

If there are any future request concerning this determination, please refer to file No. 95-024-TX.

Sincerely,

ORIGINAL SIGNED BY:
WILLIAM E. MITCHELL

William E. Mitchell
Airport Certification Safety Inspector

CC:

✓ Ms. Mary B. Adrian, P.E., Manager
Permits Section
Municipal Solid Waste Division
P.O. Box 13087
Austin, TX 78711-3081

RECEIVED
DEC 28 95
CENTRAL RECORDS

ATTACHMENT 7

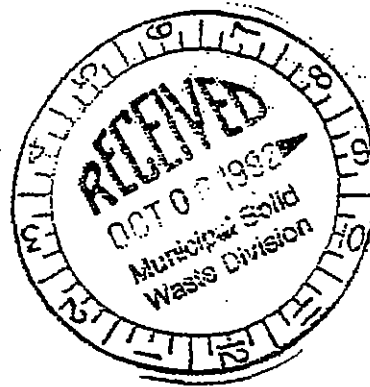
MSW - P.A. # 360

Dist 14

Investigation of Leachate Migration and Slope Stabilization at the FM 812 Landfill

#360

Phase I Report



Prepared for

City of Austin

Department of Public Works and Transportation

August 1991

AUSTIN, CITY OF

AU275.01



MSW -000000360-RP VOL: 001
REPORTS 1991 INVESTIGATION OF LEACHATE

AUSTIN, CITY OF

ENGINEERING-SCIENCE
ES

**Investigation of Leachate Migration
and Slope Stabilization at the
FM 812 Landfill**

Phase I Report

Prepared for

City of Austin

Department of Public Works and Transportation

August 1991

**Investigation of Leachate Migration and
Slope Stabilization at the FM 812 Landfill
Phase I Report**

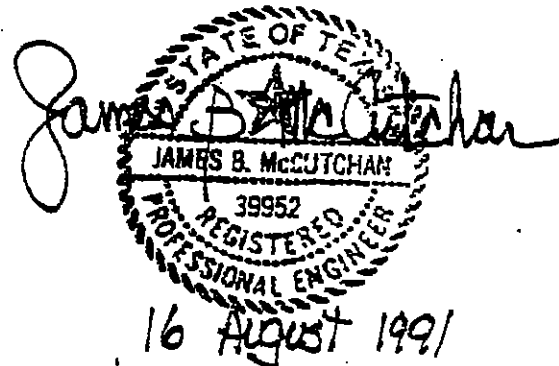
Prepared for

City of Austin
Department of Public Works and Transportation

Prepared by

Engineering-Science, Inc.
Austin, Texas

August 1991



SECTION 1

INTRODUCTION

PROJECT DEFINITION

The northern edge of the City of Austin's landfill on FM 812 (also known as the Steiner landfill) has had two problems in recent years. Those problems are the apparent release of landfill leachate and slope instabilities. Both of these problems occur along the steep face of the landfill adjacent to Onion Creek. Water found to be seeping from the north face has been described as leachate by inspectors from the Texas Department of Health. The slope to Onion Creek from the landfill suffers from erosion, scour by Onion Creek floodwater, and surficial landslides. A fairly deep landslide occurred in March 1991, when a section of the slope several hundred feet in length slid more than 50 feet toward Onion Creek.

The City of Austin (COA) has initiated a program to remediate and improve the landfill sideslope to correct these problems. COA contracted with Engineering-Science (ES) in May 1991 to act as consultants to develop and implement actions to control any leachate releases and to stabilize the north slope of the landfill.

SERVICES PROVIDED BY ENGINEERING-SCIENCE

Engineering-Science is contracted to study the north slope area of the landfill to determine methods to stabilize the slope and to control leachate releases to Onion Creek.

This project has been divided into four phases. In phase I, the site was investigated, and physical characteristics of the soil, groundwater, leachate, and surface water were determined. The history of the site was also studied. Phase II features development of alternative remedial responses to the problems found at the landfill. Phase III is design of the selected remediation. Management and inspection of construction activities during remediation are the main components of phase IV.

PHASE I SERVICES BY ES AND SUBCONTRACTORS

Much of the work required for phase I was performed by firms subcontracted by ES. The services provided by each party involved are described below.

Engineering-Science

ES served as project coordinator and compiled the phase I report, incorporating the results of the investigations conducted by all parties. ES performed general site reconnaissance and environmental assessment surveys and collected samples of the

seepage from the slope and surface water samples from Onion Creek. ES also contacted several regulatory agencies to assess the permitting consequences of any remediation. Because permitting is sensitive to the specific remedial measures to be employed, regulatory agency contact will continue through phase II as the remedial options become better understood. Sufficient information has been gained from the City of Austin development regulators (see appendix C, attachment 4) to proceed into phase II.

Southwestern Laboratories

Southwestern Laboratories (SwL) performed the subsurface investigation. Their activities included soil boring, piezometer installation, subsurface water sampling, and soil sampling. SwL performed geotechnical analyses of the soil samples gathered during the field work.

Macias & Associates

Macias & Associates (Macias) performed the site topographical survey. Macias produced a topographical map at a scale of 1 inch = 50 feet. Macias performed the field work involved in the production of the map; the actual topographic map was produced by another firm (McAlister Aerial Surveys), who used aerial photography to plot the contour lines depicting the topography.

Aan Garrett-Coleman & Associates

Aan Garrett-Coleman & Associates (AGC) was responsible for assessment of the current soil and vegetation conditions at the site and in adjacent areas and preparation of preliminary concepts for bioengineering and revegetation of the slope as a part of the remediation planning.

AnalySys

AnalySys performed the chemical analysis of all leachate, soil, and surface water samples. AnalySys replaced Trace Analytics, the initial subcontract laboratory, when Trace discontinued the part of their business which analyzes environmental samples.

SECTION 3

DESCRIPTION OF EXISTING SURFACE CONDITIONS

COVER SYSTEM

The portions of the cover which are immediately south of the north slope of the landfill are gently sloping and sparsely vegetated by native common sunflowers. This part of the cover does not pond water in depressions. Owing to the sparseness of the vegetative cover, surface erosion is active and the top part of the soil cover is being damaged by cycles of wetting and drying. Because there is no landfill gas system in this area, gases are probably venting through the cover.

SLOPE TO ONION CREEK

The slope to Onion Creek from the landfill is described topographically on the maps in appendix D. In general, the slopes are vegetated by grasses or mature stands of trees. An exception to vegetation is noted in the center of the subject area, where an area approximately 500 feet by 300 feet has been recently graded. The slopes are relatively steep, ranging from 1:1 (horizontal to vertical) to large areas from 2:1 to 2.5:1 and even flatter. No significant areas on this slope are flatter than approximately 3:1. As a result of these relatively steep slopes and the absence of drainage control structures, the slope has significant gullying in some areas.

The slope on the west end of the site (just south of the abrupt bend in Onion Creek) has been eroded and filled several times in the past decade (see appendix C, attachment 3). As a result the vegetation in this area is confined to grasses and small shrubs. Along most of the slope, existing trees screen the landfill, at least partially, as viewed from Moya Park. Only one seep, near the northwest corner of the landfill (see appendix F), was discovered during the site reconnaissance by ES in June 1991. Analysis of waters collected from the seep encountered on the slope near monitoring well 3 and above Onion Creek (see appendix F) indicates that the water contains somewhat higher levels of conductance, dissolved solids, alkalinity, sodium, manganese, and sulfate than are found in Onion Creek. The analytical results are given in appendix E.

ONION CREEK

Three samples of Onion Creek water were collected for chemical analyses. One sample was taken upstream of the landfill, another downstream of the landfill, and one just downstream of the seep mentioned above (see appendix F). Stream 1 is the name of the upstream sample; stream 3 is the downstream sample. The data in

appendix E reflect Onion Creek water quality above and below the landfill as indicated by these samples, identified as streams 1 through 3.

In his November 14, 1990, letter about seeps from this slope, Michael D. Graeber, P.E., of the Texas Department of Health indicated that a leachate seep would violate section 325.123(e) of the Municipal Solid Waste Management Regulations. This section states "Rainfall water within the landfill area that has come into contact with solid waste and other polluted waters shall not be discharged without prior specific approval of TDWR. Prior to discharge of any water that has been in contact with solid waste, a copy of TDWR's approval for such discharge shall be provided to the bureau."

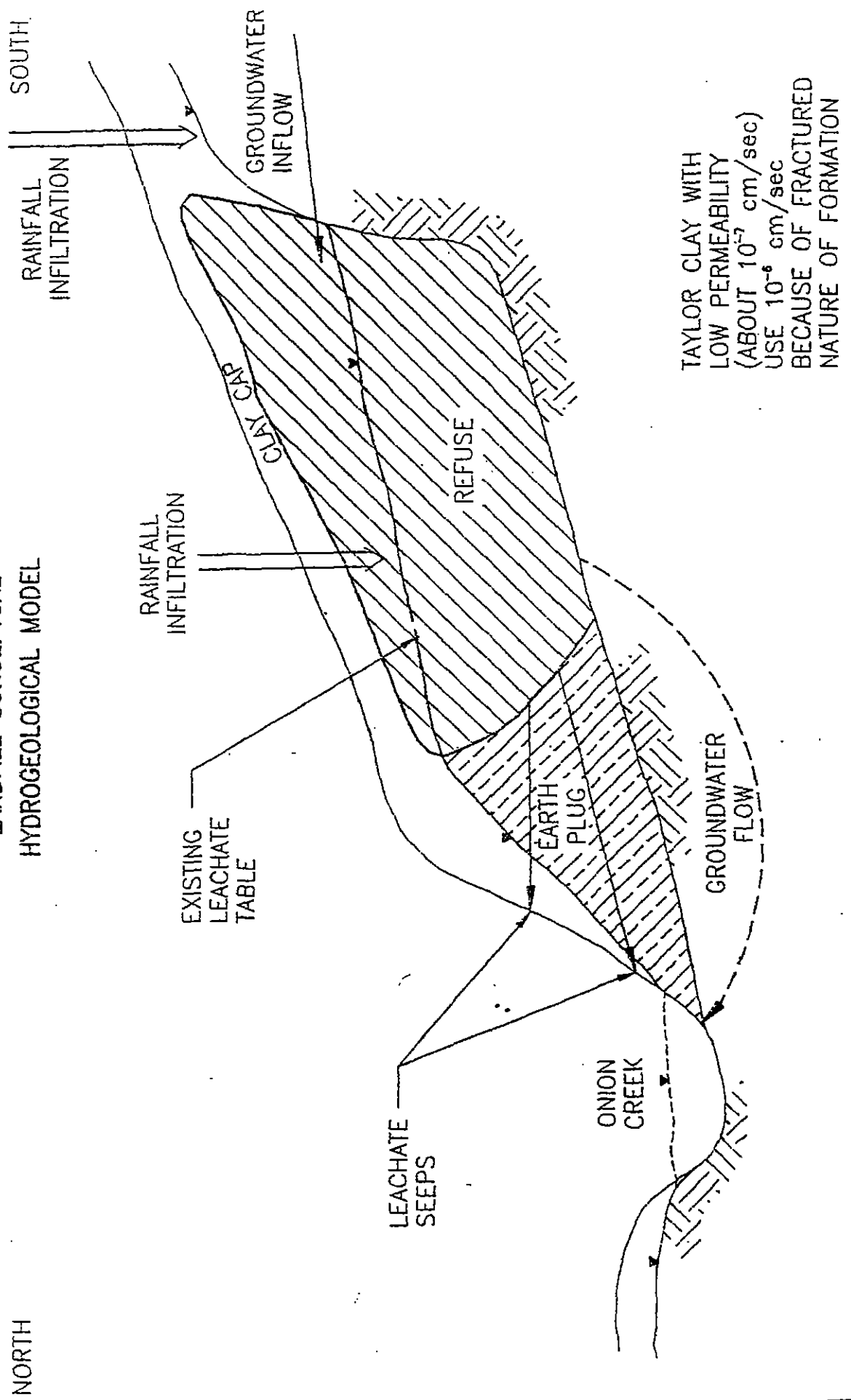
Flooding conditions along Onion Creek were investigated, using U.S. Army Corps of Engineers data. Data from current computer simulations of floods are available for the vicinity of the Burleson Road bridge and also for a location just upstream of the landfill. These data indicate that the 10-year flood level will be 453.33 feet near the Burleson Road bridge and 462.71 feet just upstream of the landfills. The 100-year flood levels are 457.48 feet and 467.74, respectively. Given that the level of the stream bank at the west end of the landfill is near 440 feet, a 100-year flood will reach nearly 30 feet above the bank level. Some very recent estimates by the Corps of Engineers suggest that flow amounts will be much greater than previously estimated and the 100-year flood can be expected to be several feet higher than previously computed.

Stream channel velocities for the 10-year and 100-year floods are expected to be over 8.5 feet per second. Because the slope to the landfill rises steeply from the stream banks, velocities of flow against the bank will be comparable to the stream channel velocities. Near the north end of the landfill where Onion Creek turns abruptly, velocities against the bank may be even higher. These conditions explain, in part, the history of erosion of the slope in front of landfill area A by Onion Creek.

Given the high flood levels at the landfill and the high velocities, there is a significant chance of continued erosion of the landfill slope by Onion Creek unless erosion protection is provided. It is anticipated that additional data from computer flood simulations will be used to assess the need for engineered structures. In addition, consideration will be given to the use of ground covers to resist this erosion.

ATTACHMENT 8

FIGURE 5.1
LANDFILL CONCEPTUAL
HYDROGEOLOGICAL MODEL



ATTACHMENT 9

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Kathleen Hartnett White, *Commissioner*
Margaret Hoffman, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

July 21, 2003

CERTIFIED MAIL# 7000 0520 0023 2386 4701
RETURN RECEIPT REQUESTED

The Honorable Will Wynn, Mayor
City of Austin
PO Box 1088
Austin, Texas 78767

Re: Notice of Violation for the Compliance Evaluation Investigation at:
The City of Austin Landfill, 10108 FM 812, Austin (Travis County), Texas
TCEQ ID No.: MSW#360-A

Dear Mayor Wynn:

On June 26, 2003, Christopher Wiatrek of the Texas Commission on Environmental Quality (TCEQ) Austin Region Office conducted an investigation of the above-referenced facility to evaluate compliance with applicable requirements for Municipal Solid Waste. Enclosed is a summary which lists the investigation findings. During the investigation, outstanding alleged violations were identified. Enclosed is a summary which lists the investigation findings. Compliance dates are included in the summary of investigation findings.

In the listing of alleged violations, we have cited applicable requirements, including TCEQ rules. If you would like to obtain a copy of the applicable TCEQ rules, you may contact any of the sources listed in the enclosed brochure entitled "Obtaining TCEQ Rules."

(Rev. 1/23/02)

REPLY TO: REGION 11 • 1921 CEDAR BEND DR., STE. 150 • AUSTIN, TEXAS 78758-5336 • 512/339-2929 • FAX 512/339-3795

P.O. Box 13087 • Austin, Texas 78711-3087 • 512/239-1000 • Internet address: www.tceq.state.tx.us

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Summary of Investigation Findings

CITY OF AUSTIN LANDFILL
10108 FM 812
AUSTIN, TRAVIS COUNTY, TX 78719
Additional ID(s): 360A

Investigation # 130614
Investigation Date: 06/26/2003

OUTSTANDING ALLEGED VIOLATIONS

Track No: 84606 Compliance Due Date: 8/30/03
30 TAC Chapter 330.111

Alleged Violation:
Investigation: 130614

Comment Date: 07/17/2003

According to the City of Austin Landfill's Leachate and Contaminated Water Plan, "The landfill manager shall monitor the depth of leachate in the landfill to ensure that a dept of 30cm immediately on top of the flexible membrane liner (FML) is not exceeded." During the investigation Mr. LeLoux informed me that leachate levels were not monitored. According to 30 Tex. Admin. Code 330.111, "The approved site development plan, the site operating plan, the final closure plan, the post-closure maintenance plan, the landfill gas management plan, and all other documents and plans required by this chapter shall become operational requirements and shall be considered a part of the operating record of the facility. Any deviation from the permit and incorporated plans or other related documents associated with the permit is a violation of this chapter." Therefore, a violation of 30 Tex. Admin. Code 330.111 has been alleged for the failure to monitor leachate levels.

Recommended Corrective Action: To comply with TCEQ regulations, leachate levels must be monitored according to the Leachate Contaminated Water Plan.

Track No: 84737 Compliance Due Date: 1/16/04
30 TAC Chapter 330.56(n)(3)(C)

Alleged Violation:
Investigation: 130614

Comment Date: 07/17/2003

According to 30 Tex. Admin. Code 330.56(n)(3)(C), "within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, provide a copy to the executive director and notify the executive director that the plan has been implemented." During the investigation it appeared that a remediation plan had not been implemented therefore, a violation of 30 Tex. Admin. Code 330.56(n)(3)(C) has been alleged.

Recommended Corrective Action: For the City of Austin Landfill to comply with 30 Tex. Admin. Code 330.56(n)(3)(C), a remediation plan must be implemented by January 16, 2004, which is the final completion date listed on the landfill gas extraction system installation schedule provided during the investigation.

AREAS OF CONCERN

Description

Are sampling results within regulatory limits at site perimeter?

Additional Comments

Until the methane concentrations are controlled and maintained under the concentrations indicated in 30 Tex. Admin. Code 330.56(n) the violation will remain outstanding, and the site will be considered to be non compliant. If methane concentrations are not controlled by the next routine investigation the City of Austin Landfill will be referred to the TCEQ enforcement division

ATTACHMENT 10



TEXAS DISPOSAL SYSTEMS

TEXAS DISPOSAL SYSTEMS, INC. • TEXAS DISPOSAL SYSTEMS LANDFILL, INC.

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July 19, 2004

Mr. Stephen T. Aden
Supervising Senior Buyer
Purchasing Office
206 E. 9th Street, Suite 15.120.
Austin, TX 78701

RE: RFP No. SA04300021 "Management & Operation of City of Austin's Type IV Landfill"

Dear Mr. Aden:

We appreciate your response on June 29, 2004, to the questions we submitted on April 13, 2004, and the opportunity to amend our proposal responding to the above referenced RFP. Based on the responses that you provided, we do not see the need or basis for amending our proposal. By and large, the responses were incomplete and at odds with information we received at the March 26, 2004 mandatory pre-proposal conference held at the landfill. In addition, several documents, e.g., the liner certification documents (Question No. 3); the report prepared by Camp Dresser & McKee Inc. related to the leachate interceptor project (No. 6 and No. 31); and the project manuals and construction drawings prepared by Lockwood Andrews & Newman, Inc., on the landfill gas control system (No. 30), were, in fact, not made available during the review period. The documents made available were limited to only those for which the City of Austin (COA) received written requests, by Texas Disposal Systems (TDS) and by others. Documents referenced in the questions TDS submitted on April 13, 2004, were not included. Those documents that were made available to us were listed in Attachment A to Mr. Gregory's letter to you, dated May 20, 2004 (See enclosed attachment).

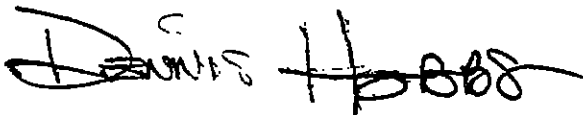
Most, if not all, of the critical issues referenced in Attachment A to Mr. Gregory's letter of May 20, 2004, remain and were not fully addressed by the responses to the questions TDS submitted on April 13, 2004. At a minimum, these include: whether the bulk of the landfill is already at final permitted grade, which is limited by the airspace agreement originally developed with Bergstrom Airbase; whether the FM 812 Landfill is in fact operating under the proper permit (the correspondence you provided suggests that it is not); whether leachate and gas condensate are being properly managed in strict accordance with the Municipal Solid Waste Management regulations; and whether an agreement was reached with the Texas Commission on Environmental Quality (TCEQ) or its predecessor agencies, to delete certain areas from the permit (labeled "No Fill" on

Mr. Stephen T. Aden
July 19, 2004
Page 2 of 2

some landfill maps) to compensate for overfilling in other areas of the landfill. As indicated in Attachment A to Mr. Gregory's May 20, 2004 letter, "Only once a potential contractor understands all the issues, questions, contractual relations, liabilities and responsibilities can any contractor develop a detailed, comprehensive response to the COA's solicitation.

Again, thank you for supplying the most recent information submitted to TDS on June 29, 2004.

Sincerely,

A handwritten signature in black ink, appearing to read "Dennis Hobbs", with a stylized flourish extending from the end.

Dennis Hobbs
Director of Special Projects

Enclosure

ATTACHMENT 11

Texas Coordinate System Locations

	N	E	Ground Surface Elevation (FL)
MW-12	10034624.18	3140524.41	471.56
MW-13	10033625.15	3140717.35	477.53
MW-14	10033135.24	3140347.00	540.60
MW-15	10032157.78	3138849.58	514.49

Monitor Well Installation
CITY of AUSTIN - F.M. 812 LANDFILL
AUSTIN, TEXAS
MONITOR WELL LOCATIONS
May, 2000
PLATE 1

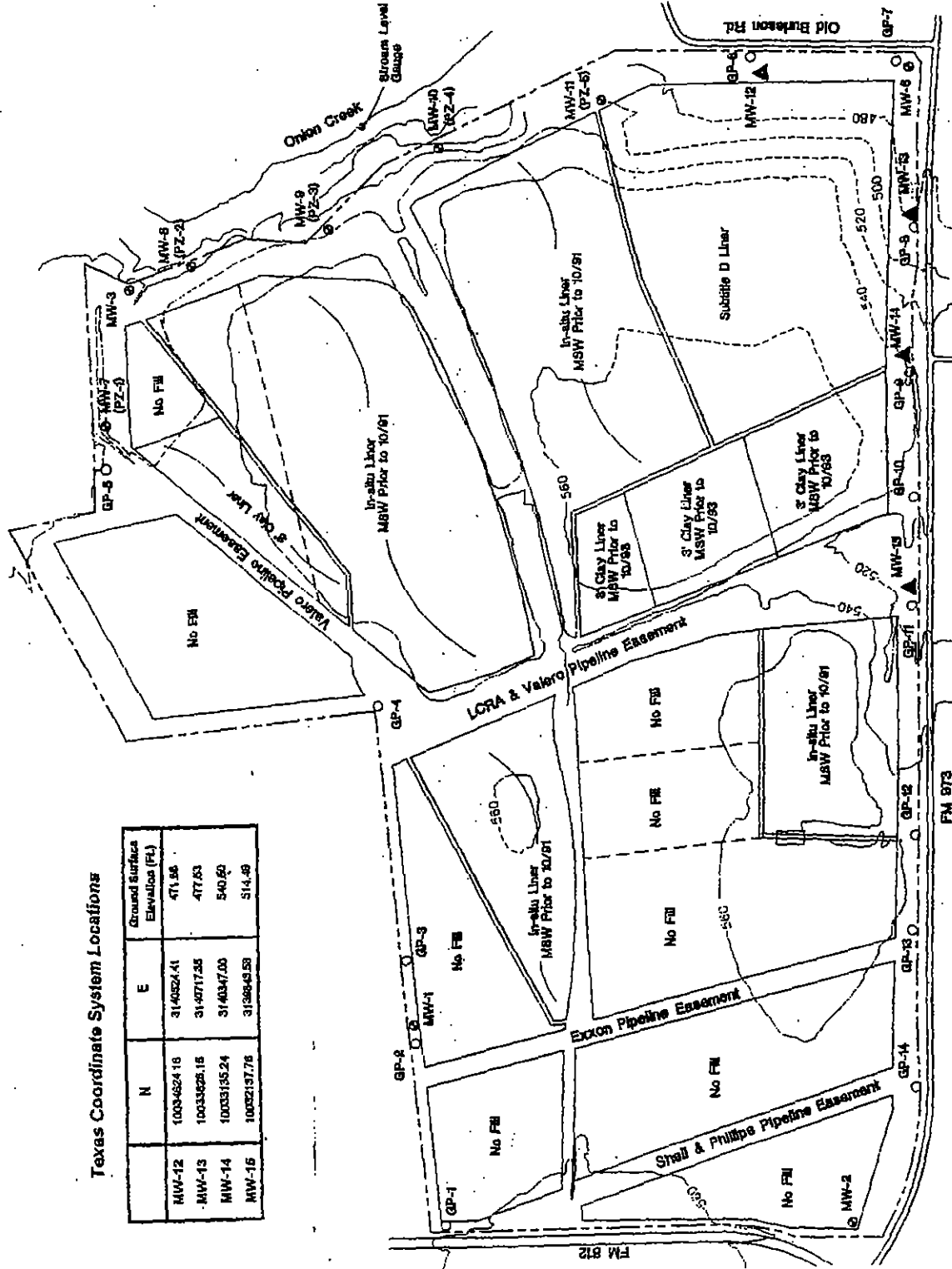
NOTE: Plan modified from drawing provided
by HBC Engineering, Inc. Figure 14
Ref: 36507210 - A2

LEGEND

- Permit Boundary
- Existing 20' Contours
- Proposed Final Contours
- Monitoring Well Locations
- Gas Monitoring Probe Locations
- New Monitoring Well Locations
(Installed 4-11-00 thru 4-18-00)



SCALE: 1" = 500'



ATTACHMENT 12

Kathleen Hartnett White, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Larry R. Soward, *Commissioner*
Margaret Hoffman, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 8, 2004

RECEIVED

APR 14 2004

**TCEQ FIELD OPERATIONS
AUSTIN REGION 11**

Mr. Robert L. Fernandez, R.E.M.
Diversion Services Division Manager
Solid Waste Services
City of Austin
P. O. Box 1088
Austin, Texas 78767-8865

Re: City of Austin FM 812 Landfill – Municipal Solid Waste Permit No. 360A
Groundwater Monitoring (WWC Tracking System No. 10441018; MSW Mail Log No. 4110)
RN102329901, CN602478810

Dear Mr. Fernandez:

This letter acknowledges that the Texas Commission on Environmental Quality, Municipal Solid Waste (MSW) Permits Section has received the combined analytical results and statistical evaluation report for groundwater samples taken at the referenced facility during the monitoring event summarized below:

Dates of Event	Wells Sampled	Type of Event
October 7-8, 2003	MW-1, 2, 3, 6, 7, 9, 11, 13 ¹	Detection monitoring ^{2,3}
	MW-10	Assessment monitoring ^{2,3}
	MW-8, 12, 14, 15	Assessment monitoring ^{4,5}

¹ Well dry - not sampled.

² Samples analyzed for constituents in Appendix B of Groundwater Sampling and Analysis Plan and for manganese and total organic carbon.

³ Samples analyzed by DHL Analytical, Inc., Round Rock, Texas.

⁴ Samples analyzed for constituents in Appendix B of Groundwater Sampling and Analysis Plan, for manganese and total organic carbon, and for constituents in Appendix II to 40 CFR Part 258.

⁵ Samples analyzed by DHL Analytical; e-Lab, Inc., Houston, Texas; and APPL, Inc., Fresno, California.

The report for the October 2003 event was prepared by Weston Solutions, Inc., Austin, Texas, and submitted under your cover letter dated December 23, 2003. Thank you for the submittal.

Please note the following comments:

1. Assessment monitoring for monitor wells MW-8, 12, 14, and 15

The October 2003 event was the first assessment monitoring event for monitor wells MW-8, 12, 14, and 15. The report for the event indicated that the wells were sampled and analyzed for all of the additional assessment constituents referred to in Title 30 Texas Administrative Code (30 TAC), Chapter 330, Section (§) 330.235(b)(1).

Mr. Robert L. Fernandez, R.E.M., Solid Waste Services, City of Austin
City of Austin FM 812 Landfill – MSW Permit No. 360A – Groundwater Monitoring
Page 2
April 8, 2004

Please note that pursuant to 30 TAC §330.235(b)(2), you may exclude from future assessment monitoring events any of the additional assessment constituents that have not been detected in any well. Wells in assessment monitoring will continue in assessment, but may do so with a reduced assessment list that includes only the constituents sampled during detection monitoring, and any of the additional assessment constituents detected during assessment monitoring.

2. Initial assessment event for MW-7 and 9

The report for the October 2003 event indicated that statistically significant changes occurred in monitor wells MW-7 (for magnesium, potassium, and total dissolved solids) and in MW-9 (for ammonia-nitrogen), and that assessment monitoring would be initiated for these two wells during the next semiannual monitoring event, anticipated for March 2004. Thank you for the information; we will look forward to receiving the report for that event.

3. Manganese in MW-14

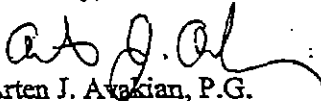
Please continue to evaluate manganese concentrations in MW-14 to determine whether corrective action is needed, or if the observed concentrations are caused by a source other than the landfill or are due to natural variation in groundwater quality. It appears that the lower 95-percent normal confidence limit on the mean of the last four measurements (0.076 mg/L) (for the data set of measurements from March 2002, September 2002, March 2003, and October 2003) is well below the groundwater protection standard for groundwater ingestion of manganese.

4. Assessment of corrective measures

This letter also acknowledges that we received your e-mail dated April 2, 2004, advising us that a report is being prepared on the assessment of corrective measures to address nitrate contamination in the vicinity of MW-10, and that you anticipate it will be submitted by May 1, 2004.

If you have any questions about this letter, please contact me by telephone at (512) 239-4419, by e-mail at aavakian@tceq.state.tx.us, or in writing at the address on our letterhead (please specify Mail Code 124 on the first line of our address).

Sincerely,


Arten J. Avakian, P.G.
MSW Permit Team III
MSW Permits Section, Waste Permits Division
Texas Commission on Environmental Quality

AJA/fef

cc: Mr. Stephen Mitchell, P.G., Project Manager, Weston Solutions, Inc., Austin

ATTACHMENT 13

**CORRECTIVE MEASURES ASSESSMENT
CITY OF AUSTIN FM 812 LANDFILL**

RECEIVED

MAY 12 2004

TCEQ FIELD OPERATIONS
AUSTIN REGION 11

Prepared for:

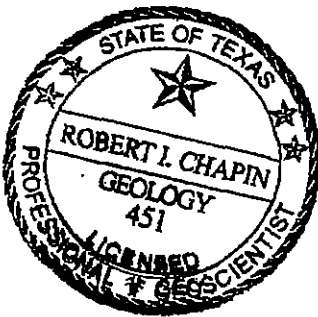
CITY OF AUSTIN
Solid Waste Services Department
2514 Business Center Drive
Austin, Texas 78744

Prepared by:

WESTON SOLUTIONS, INC.
2705 Bee Caves Road, Suite 100
Austin, TX 78746

May 2004

W.O. No. 06141.011.011.0010



Robert I. Chapin

Robert I. Chapin, P.G.
Project Geologist
Texas P.G. No. 451



Quintin K. McNulty

Quintin K. McNulty, P.E.
Project Engineer
Texas P.E. No. 89396



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TCEQ requested that assessment monitoring be performed on MW-10 in March and September 2002 after elevated nitrate concentrations were reported at MW-10 in several background (detection) monitoring events. In accordance with 30 TAC 330.235, assessment monitoring is performed semi-annually, and samples are analyzed for assessment constituents, as required in Appendix II of Title 40 of the Code of Federal Regulations (CFR) Part 258. No other assessment constituents were reported in two successive rounds of sampling at MW-10. Therefore, in a letter dated 16 December 2002, TCEQ modified the assessment requirements for MW-10 so that groundwater samples could be analyzed for only the detection monitoring constituent subset, although the well is still considered to be in an assessment monitoring program.

Between May 2001 and October 2003, the reported nitrate concentrations in groundwater samples collected from MW-10 ranged from 65.6 to 209 mg/L. The reported concentrations have exceeded the site's background nitrate concentrations of 6.98 mg/L and the 10 mg/L groundwater protection standard established under the CFR Title 40, Chapter 1, Part 141.51. Calculations based on data from the March 2003 groundwater monitoring event indicate that the nitrate concentrations reported in samples from well MW-10 represent statistically significant changes (SSCs). According to 30 TAC 330.236, if any SSCs are identified during assessment monitoring, an assessment of corrective measures is required.

1.4 OBJECTIVES

As a result of the reported SSCs for nitrate in samples from MW-10, TCEQ requested in a letter dated 27 October 2003, that COA prepare an assessment of potential corrective measures in accordance with 30 TAC 330.236. In addition, 30 TAC 330.237 requires that following the assessment of potential corrective measures, the selection of the most appropriate remedy be recommended. The purpose of this report is to satisfy these two requirements.

As described in 30 TAC 330.237(b), potential corrective measures should meet the following criteria:

- Be protective of human health and the environment.
- Attain the groundwater protection standard of 10 mg/L for nitrate.

Table 1-1
City of Austin FM 812 Landfill
Travis County, Texas
Status of Groundwater Monitoring Wells
October 2003 Groundwater Monitoring Event

Monitoring Well or Piezometer	Installation Date and Information	Status	Groundwater Monitoring Program
MW-1	Installed 1984-85	Active, Affected by Subsidence	Detection (Upgradient)
MW-2	Installed 1984-85	Active, Affected by Subsidence	Detection (Upgradient)
MW-3	Installed 1984-85	Active	Detection
MW-4	Installed 1984-85 Decommissioned 1994, not replaced	Decommissioned	Not Applicable
MW-5	Installed 1984-85 Decommissioned 1999, not replaced	Decommissioned	Not Applicable
MW-6	Installed 1984-85	Active	Detection
MW-7 (PZ-1)	Installed 1997 Converted to MW-7, 2000	Active	Detection
MW-8 (PZ-2)	Installed 1997 Converted to MW-8, 2000	Active	Detection, Assessment
MW-9 (PZ-3)	Installed 1997 Converted to MW-9, 2000	Active	Detection
MW-10 (PZ-4)	Installed 1997 Converted to MW-10, 2000	Active	Detection, Assessment
MW-11 (PZ-5)	Installed 1997 Converted to MW-11, 2000	Active	Detection
MW-12 (PZ-6)	Installed in 1997; Abandoned and replaced by a new MW-12 in 2000	Active, Affected by Subsidence	Detection, Assessment
MW-13 (PZ-7)	Installed in 1997; Abandoned and replaced by a new MW-13 in 2000	Active (Poor Production)	Detection, Not sampled (Inadequate Recovery)
MW-14	Installed 2000	Active	Detection, Assessment
MW-15	Installed 2000	Active	Detection, Assessment

increases significantly at 30 to 50 ft below ground surface (bgs), where the geology is described as very hard, thinly laminated clay-shale. The change in density is likely the top of the unweathered Taylor Group clays.

COA contracted with HBC Engineering to perform a groundwater characterization study of the FM 812 landfill property in 1997. During this investigation, additional monitoring wells were installed, the site geology was evaluated, slug tests were performed, and groundwater samples were collected.

The results of the HBC groundwater characterization provided data on the shallow, water-bearing zone. Geologic investigations indicate further evidence that the top of the unweathered clay is, in general, the base of the shallow water-bearing zone. The topography of the top of the unweathered clay generally coincides with the original ground surface, dropping off steeply toward Onion Creek, and where the former surface drainages existed (since filled with landfilled waste). These troughs in the hydrologic base level likely provide preferential pathways for the migration of leachate, as well as shallow groundwater from within or underneath the landfill, northward to Onion Creek. Groundwater gradients ranged from 0.017 ft/ft to 0.018 ft/ft in the relatively flat areas of the landfill to 0.05 to 0.07 ft/ft at the northern end of the landfill, where the potentiometric surface slopes toward Onion Creek. Hydraulic conductivity values range from a low of 3.12×10^{-3} ft/day (2.34×10^{-2} gal/day/ft²) to a high of 2.79 ft/day (20.9 gal/day/ft²) (HBC, 1999a). The potentiometric map using data collected during the October 2003 sampling event is presented as Figure 2-1.

2.2 LANDFILL CELL CONDITIONS

Landfill Cells A-3 and B-4 (Figure 1-1) are located west and east, respectively, of well MW-10. In the area of Cell A-3, the top of the slope of the cell is at approximately elevation 524 ft ASML, and the toe of slope of the landfill, along Onion Creek, is at about elevation 472 ft ASML. Well established vegetation was present across Cell A-3 (HBC, 1999b). The subsurface conditions in Cell A-3 reported by HBC Engineering generally consisted of varying thickness of soil cover underlain by waste. The thickness of soil cover was reported at a depth of 3.5 ft bgs to 24 ft bgs. Solid waste was observed beneath the soil cover with a thickness extending to a depth of approximately 68.5 ft bgs to 72.5 ft bgs. Gray clay was observed beneath the waste (HBC, 1999b).

MW-10 is located at the north end of Cell B-4. The top of slope elevation in the area of Cell B-4 is at approximately 520 ft ASML, and the toe of slope of the cell is at approximately elevation 460 ft ASML, with a gradual slope toward Onion Creek. Well established vegetation was present across Cell B-4 (HBC, 1999b). The subsurface conditions in Cell B-4 reported by HBC Engineering generally consisted of soil cover of clay and sandy clay soils, underlain by solid waste. The thickness of soil cover was reported at a depth of 4 ft bgs to 19 ft bgs. The thickness of solid waste underlying the soil extended to an approximate depth of 70.5 ft bgs. Gray clay was observed beneath the waste (HBC, 1999b). A cross-section location map is provided in Figure 2-2, and a cross-section of the Cell B-4 area in the vicinity of MW-10 is provided as Figure 2-3.

A slurry wall was constructed at the toe of the slope of Cell B-4 in 1994, approximately 24 ft north of Extraction Well, EW-6 (due north of MW-10). This slurry wall measures approximately 300 ft in total length, beginning approximately 45 ft northeast of EW-6 and extending to approximately 135 ft northwest of EW-9, as shown in Figure 2-1. The slurry wall is approximately 3 ft wide and completed at varying depths from 18 ft bgs to 24 ft bgs, where it is “keyed” into a shale to “anchor” the wall. The slurry wall is located approximately 150 ft downgradient (north) of the base of Cell B-4, and approximately 100 ft upgradient (south) of Onion Creek, as shown on Figure 2-1.

Extraction wells EW-6 through EW-9 were completed between the landfill cell and the slurry wall in 1994 to remove groundwater that accumulated behind the slurry wall. These wells presently are not in service and, according to facility personnel, they have not been in service for several years. It is not known whether the pumps in these wells are functional.

MW-10 is located at the toe of the slope of Cell B-4 upgradient of the slurry wall, as shown on Figure 2-1 and is completed to approximately 25 ft bgs. It is suspected that groundwater being monitored by MW-10 is intermingled with releases of leachate near the base of Cell B-4. The elevated nitrate concentrations reported in MW-10 are likely associated with this intermingling. Due to the absence of actively pumping extraction wells, it is likely that potentially leachate-affected groundwater is pooling behind the slurry wall. Because the existing slurry wall does not extend far beyond EW-6 and MW-10, it is believed that the potentially leachate-affected groundwater could be migrating around the edges of the slurry wall toward Onion Creek.

2.3 NITRATE CONDITIONS

Since the installation of monitoring well MW-10 in 1997, reported nitrate concentrations have ranged from 4.98 mg/L to 260 mg/L. Nitrate concentrations reported in groundwater samples collected from nearby monitoring wells during the October 2003 sampling event are shown on the isoconcentration map in Figure 2-4. A summary of historic nitrate concentrations reported in MW-10 and nearby monitoring wells is provided in Table 2-1.

The solid waste regulations require that a solid waste landfill perform detection monitoring to identify potential releases to groundwater and report any SSCs. The FM 812 Landfill detection monitoring results were evaluated in the October 2003 *Semi-Annual Groundwater Monitoring Report*, (WESTON, 2003). The report concluded that nitrate concentrations in groundwater near MW-10 represented SSCs. Following the identification of elevated nitrate near MW-10, the COA evaluated the nature and extent of the potential release of nitrate from the landfill near MW-10, by calculating the potential discharge rate of nitrate in shallow groundwater to Onion Creek. The results of that evaluation were presented in a letter from COA to TCEQ, dated 2 October 2003 (COA, 2003). The major conclusions of the nature and extent evaluation are summarized as follows:

- Onion Creek is believed to be the general base-level for shallow groundwater at the FM 812 Landfill. The potentiometric surface of shallow groundwater present at the landfill is illustrated in Figure 2-1, which is based on groundwater level measurements collected during the October 2003 groundwater monitoring event. The potentiometric surface illustrates the south-to-north component of the gradient, toward Onion Creek. Groundwater present at the northern boundary of the landfill likely contributes recharge to Onion Creek (COA, 2003).
- The potential flow rate of groundwater at MW-10 is estimated to be 5.42×10^{-02} ft³/sec. The maximum groundwater gradient, hydraulic conductivity, and thickness of the groundwater bearing zone at the landfill were used to conservatively calculate this groundwater discharge estimate. The maximum groundwater gradient (0.07 ft/ft) was observed near the northern edge of the landfill, the maximum hydraulic conductivity (2.79 ft/day) was observed at the landfill during slug tests performed by HBC in 1998, and the maximum thickness (15 ft) of the groundwater bearing zone along the toe slope of the landfill was estimated using the screened intervals of monitoring wells MW-9, MW-10, and MW-11. The estimated value is likely higher than the actual flow rate, based on the use of maximum value assumptions as mentioned above (HBC, 1999b).

- The estimated average stream flow rate for Onion Creek is 72 ft³/sec. COA estimated this rate based on a review of stream flow rate information for Onion Creek at U.S. Highway 186 (approximately 6,000 ft east of the FM 812 Landfill) from the U.S. Geological Survey stream flow database.
- A dilution factor was calculated based on the discharge rate of the groundwater bearing zone and the flow rate of Onion Creek ($Q_{\text{groundwater}}/Q_{\text{creek}}$). The calculation assumed that the entire volume of groundwater within the shallow water-bearing zone (and between MW-9 and MW-11) is discharging into Onion Creek. The dilution factor was then applied to the average nitrate-nitrogen concentration observed in MW-10 since the May 2001 monitoring event. The resulting maximum potential concentration of nitrate-nitrogen in Onion Creek was compared to Texas Surface Water Quality Standards promulgated in 30 TAC 307.6 (c).
- The calculated maximum potential concentration of nitrate-nitrogen in Onion Creek (~0.09 mg/L) due to the contribution of groundwater from the shallow water-bearing zone between MW-9 and MW-11 does not exceed the Texas Surface Water Quality Standard, for nitrate-nitrogen (10 mg/L). The modeled concentration is two orders of magnitude less than the allowable nitrate-nitrogen levels in surface water.

2.4 PLANNED CONSTRUCTION ACTIVITIES

As described in a letter dated 5 December 2003 to the TCEQ, the COA plans to construct two leachate interceptor trenches near Cell B-4 in late Spring 2004. The planned leachate interceptor trenches are designed to create a barrier to leachate migration, and possibly reduce leachate from intermingling with groundwater. The trenches are oriented parallel to the contours of the topslope and sideslope, as shown on Figure 2-5. The trenches vary in depth from 15 ft to 25 ft bgs and length from 350 ft to 400 ft. The designed base elevations of trenches B-1 and B are approximately 498 ft AMSL and 475 ft AMSL, respectively. The screened interval elevation of MW-10 is from 446 to 431 ft AMSL. The planned trenches are designed to be installed at a higher topographic elevation than the interval screened by MW-10.

Each trench is planned to have two leachate extraction wells (CDM, 1999). Each leachate extraction well contains a submersible pump with a dedicated level control system. The pumps will discharge to a header pipe, which flows to a leachate storage tank facility consisting of two 12,000-gallon tanks for temporary storage (CDM, 1999). The storage tanks are located inside a concrete secondary containment structure with a loading station used for loading leachate into COA vacuum trucks. COA will either recirculate the leachate to a cell containing an approved Subtitle D liner

system, or transport the leachate to a publicly owned treatment works (POTW) facility (CDM, 1999).

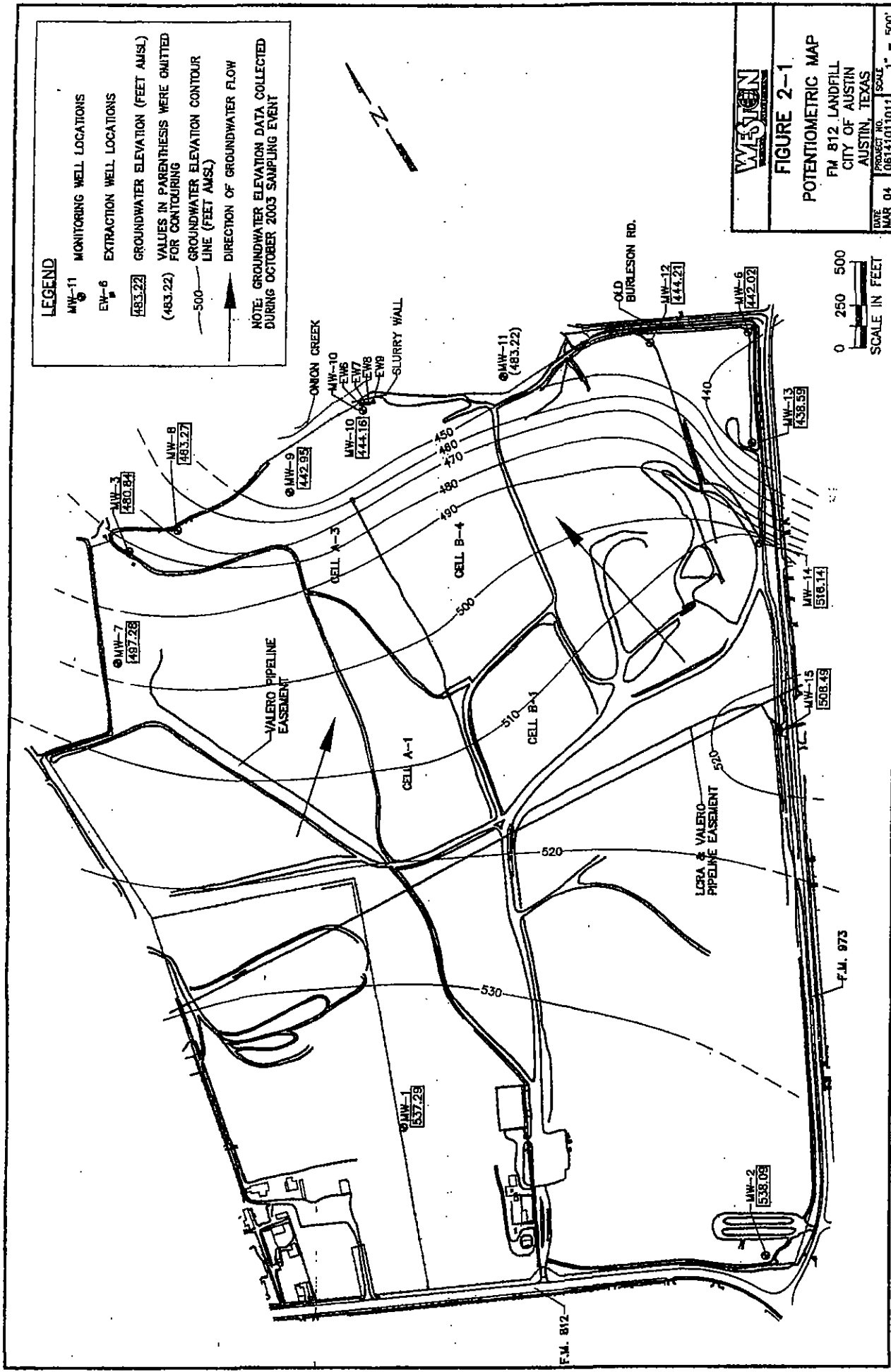
Table 2-1
City of Austin FM 812 Landfill
Travis County, Texas
Historic Nitrate Concentrations in MW-10

Nitrate Concentrations in MW-10	
Date	(mg/L)
Dec-97	278
Jun-98	292
Dec-98	207
Aug-99	4.98
Dec-99	250
May-01	209
Aug-01	70.9
Dec-01	107
Mar-02	161
Sep-02	119
Apr-03	65.6
Oct-03	66.2

LEGEND

- MW-11 MONITORING WELL LOCATIONS
- EW-6 EXTRACTION WELL LOCATIONS
- 483.22 GROUNDWATER ELEVATION (FEET AMSL)
- (483.22) VALUES IN PARENTHESIS WERE OMITTED FOR CONTOURING
- 500 GROUNDWATER ELEVATION CONTOUR LINE (FEET AMSL)
- DIRECTION OF GROUNDWATER FLOW

NOTE: GROUNDWATER ELEVATION DATA COLLECTED DURING OCTOBER 2003 SAMPLING EVENT

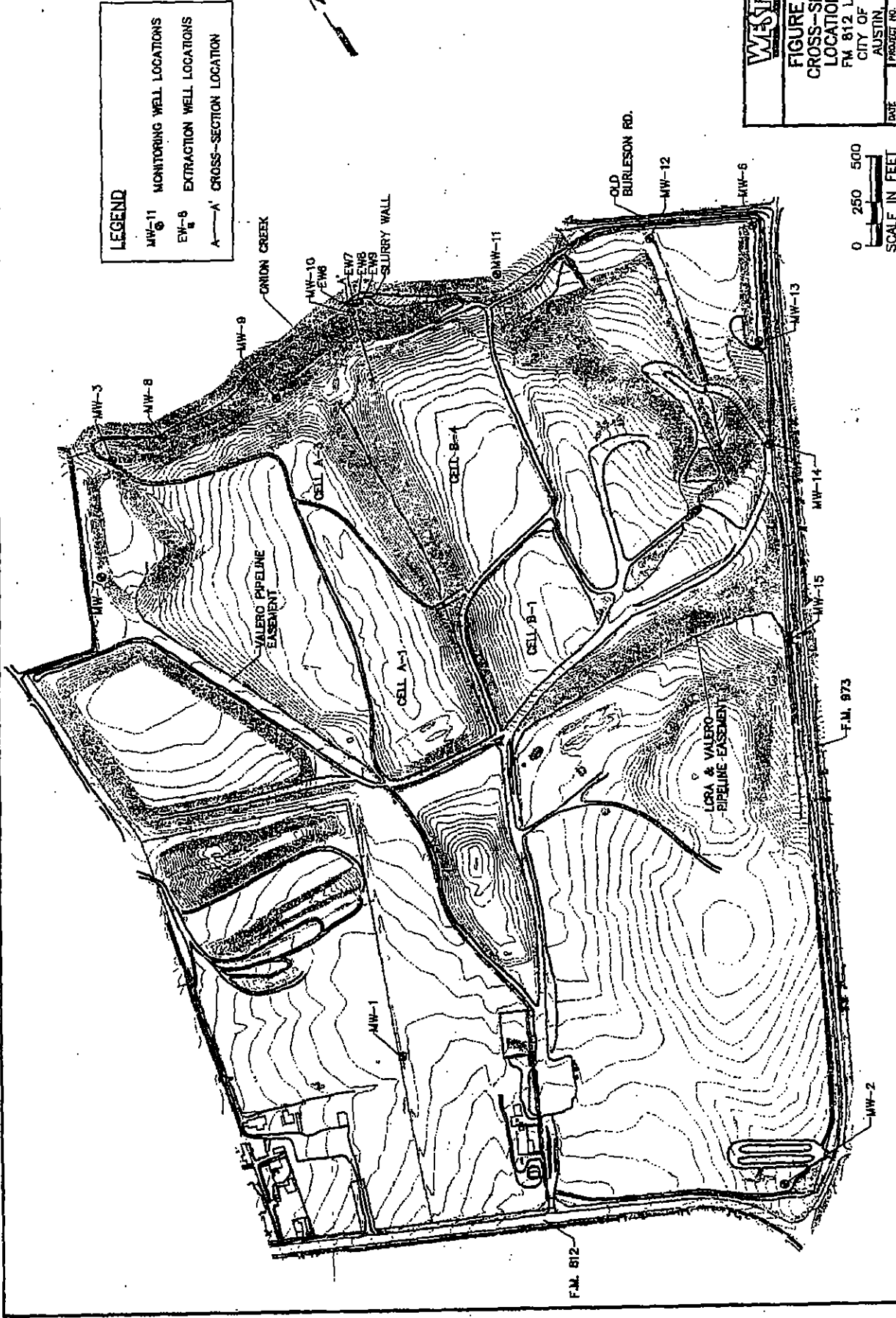


WESTON
CONSULTANTS

FIGURE 2-1
POTENTIOMETRIC MAP

FM 812 LANDFILL
CITY OF AUSTIN
AUSTIN, TEXAS

DATE: MAR 04
PROJECT NO: 0614101011
SCALE: 1" = 500'



WESTON

FIGURE 2-2

CROSS-SECTION

LOCATION MAP

FM 812 LANDFILL

CITY OF AUSTIN

AUSTIN, TEXAS

DATE: MAR 04

PROJECT NO: 08141011011

SCALE: 1" = 500'

ATTACHMENT 14



Weston Solutions, Inc.
2705 Bee Cave Road, Suite 100
Austin, Texas 78746
512-651-7100 • Fax 512-651-7101

20 May 2003

RECEIVED
MAY 20 2003
TCEQ FIELD OPERATIONS
AUSTIN REGION II

To: Bob Fernandez
Division Manager
City of Austin Solid Waste Services Division
2514 Business Center Drive
Austin, TX 78744

RE: March 2003 FM 812 Landfill Semi-Annual Groundwater Monitoring Report
Replacement Pages

Dear Mr. Fernandez:

Weston Solutions, Inc. (WESTON) is providing the attached replacement pages for the March 2003 Semi-Annual Groundwater Monitoring Report for the FM 812 Landfill. These pages will directly replace Table 3-15 and pages 4-1 and 4-2. The rest of the document is unaffected by these changes. WESTON appreciates the opportunity to continue to provide environmental services to the City of Austin Solid Waste Services and Public Works Departments. Please call me or Russ K. Johnson at (512) 651-7100 if you have any questions or need additional information.

Very Truly Yours,

WESTON SOLUTIONS, INC.

A handwritten signature in black ink, appearing to read "Stephen Mitchell".

Stephen Mitchell, P.G.
Project Manager

Copy: Steve Nelson, COA Public Works
Arten Avakian, TCEQ
Barry Kalda, TCEQ

rkj

TABLE 3-15
Summary of Groundwater Constituents that Statistically
Exceeded Upgradient or Intrawell Prediction Intervals
City of Austin
FM 812 Landfill
Travis County, Texas

Well	Upgradient Prediction Interval Concentration Exceedences	Intrawell Prediction Interval Concentration Exceedences
MW-3	Manganese, alkalinity as bicarbonate, and alkalinity as calcium carbonate	None
MW-6	Alkalinity as calcium carbonate	None
MW-7	Alkalinity as bicarbonate, and alkalinity as calcium carbonate	None
MW-8	Barium, manganese, ammonia, alkalinity as bicarbonate and alkalinity as calcium carbonate	None
MW-9	Alkalinity as bicarbonate, and alkalinity as calcium carbonate	None
MW-10	Magnesium, nitrate, alkalinity as bicarbonate, alkalinity as calcium carbonate, and total organic carbon	None
MW-11	None	None
MW-12	Barium, alkalinity as bicarbonate, and alkalinity as calcium carbonate	None
MW-13	None	None
MW-14	Manganese, alkalinity as bicarbonate, and alkalinity as calcium carbonate	None
MW-15	Manganese, alkalinity as bicarbonate, and alkalinity as calcium carbonate	None

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Semiannual groundwater monitoring has been performed at the FM 812 Landfill. An evaluation of the analytical results of the groundwater sampling, statistical evaluation, and comparison of the March 2003 data to calculated prediction intervals and 95% UTLs has been performed. Based on the analytical results of March 2003 groundwater samples, and the statistical evaluation of the groundwater monitoring data, the following conclusions are made:

- Background monitoring is complete for upgradient and downgradient monitoring wells for each of the chemicals regularly analyzed for at FM 812 as part of the detection monitoring program. WESTON's understanding is that the prediction intervals calculated for upgradient wells and historical intrawell prediction intervals for downgradient wells should be compared to the analytical results of future detection monitoring events but should not be recalculated based on new data.
- Background monitoring was performed at MW-13. However, background monitoring was performed for a reduced analyte list (metals, VOCs, ammonia, total organic carbon) due to inadequate water yield from this well.
- Several organic constituents previously found at MW-3, MW-8, and MW-14 were again reported, although at concentrations below current federal Maximum Contaminant Levels (MCLs). 1,1-Dichloroethane (MCL = 0.005 mg/L) was reported at MW-14 (0.00098 mg/L), benzene (MCL = 0.005 mg/L) was reported to be present in MW-3 (0.00072 mg/L) and MW-8 (0.0003 mg/L) and cis-1,2-dichloroethene (MCL = 0.07 mg/L) was reported in MW-3, MW-8, and MW-14 (at concentrations up to 0.00116 mg/L). These constituents were identified during previous monitoring periods with a recommendation for continued detection monitoring to verify their presence.
- Barium, magnesium, manganese, alkalinity as bicarbonate, total alkalinity as calcium carbonate, and TOC concentrations reported in downgradient wells that exceeded the calculated upgradient prediction intervals do not necessarily indicate significant changes in site conditions at this time since concentrations of these constituents in downgradient wells have historically exceeded upgradient 95% UTLs on a consistent basis.

- The reported ammonia concentrations in MW-8 exceeded their respective upgradient 95% UTL and prediction interval, indicating that ammonia may be present in MW-8 at concentrations which are elevated compared to upgradient conditions. However, the concentration of ammonia in MW-8 did not exceed intrawell 95% UTL or prediction interval, indicating that no statistically significant changes in the concentrations of these constituents have occurred at this well. These results are consistent with previous monitoring periods.
- The reported nitrate concentrations in MW-12 exceeded their respective upgradient 95% UTL, indicating that nitrate may be present in MW-12 at concentrations which are elevated compared to upgradient conditions. However, the concentration of nitrate in MW-12 did not exceed the upgradient prediction interval, intrawell 95% UTL, or prediction interval, indicating that no statistically significant changes in the concentrations of these constituents have occurred at this well. These results are consistent with previous monitoring periods.
- In MW-10, the reported concentrations of magnesium, nitrate, alkalinity as bicarbonate, total alkalinity as calcium carbonate, and TOC exceeded the upgradient prediction intervals. However, the concentrations for each of these constituents were below intrawell prediction intervals, indicating that no statistically significant changes in the concentrations of these constituents have occurred in MW-10. These results are consistent with previous monitoring events.

The March 2003 monitoring results suggest that although the groundwater conditions at the FM 812 Landfill have not changed significantly from previous monitoring periods, the concentrations of several metals and water quality parameters are slightly elevated in downgradient portions of the site. Low concentration VOCs (benzene, 1,1-dichloroethane, cis-1,2-dichloroethene, trans-1, 2-dichloroethene and vinyl chloride) also were reported at some locations (MW-3, MW-8, MW-13, and MW-14), however the concentrations of these VOCs remain below applicable MCLs.

4.2 RECOMMENDATIONS

Based on the available information presented in this report, recommendations are as follows:

- Detection monitoring should continue to be performed on at least a semiannual basis to assess groundwater conditions and comply with the landfill permit and applicable regulations. The results of future detection monitoring analyses should

Reg. 11

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

August 25, 1999

The Honorable Kirk Watson
Mayor of Austin
P. O. Box 1088
Austin, Texas 78767

Re: Solid Waste – Travis County
City of Austin FM 812 Landfill – MSW Permit No. 360-A
Groundwater Monitoring Results

Dear Mayor Watson:

We have reviewed responses to our letter dated January 27, 1999 (regarding the August 1994, December 1997, and June 1998 groundwater monitoring events), as well as analytical results for groundwater samples taken during the December 1998 monitoring event at the referenced facility, summarized below:

Dates of Event	Wells Sampled	Type of Event
December 18-22, 1998	MW-1, 2, 3, 5 ¹ , 6 PZ-1, 2, 3, 4, 5, 6 ¹ , 7 ²	Pre-Subtitle D monitoring for alternative Subtitle D constituents listed in Appendix B of Groundwater Sampling and Analysis Plan ^{3,4}

¹ Well not sampled (filter-pack material in purge water suggesting failure of well screen).

² Well not sampled (insufficient water).

³ Samples analyzed by DHL Analytical, Round Rock, Texas.

⁴ Metals analyzed for dissolved-phase concentrations.

Responses to comments in our letter dated January 27, 1999, were provided in a letter dated March 31, 1999, from Mr. Russell C. Ford, Senior Hydrogeologist, HBC Engineering, Inc., Austin, Texas. The responses are acceptable. The results for the December 1998 monitoring event were submitted to the TNRCC under a cover letter dated March 23, 1999, from Donald W. Ward, P.E., Disposal Services Manager, City of Austin. Thank you for the responses and report. Please note and/or address the following comments:

1. Volatile organic compounds (VOCs):

VOCs have been detected intermittently at low concentrations in groundwater samples from

monitor wells MW-3 and piezometer PZ-2. If VOCs are detected consistently, or if concentrations increase, it may be necessary to begin early detection monitoring for VOCs in accordance with 30 TAC §330.234, and the facility's groundwater sampling and analysis plan (GWSAP). A summary of VOC detections is provided below:

Monitor Well Detected Compound	MCL or GWPS ($\mu\text{g/L}$) ¹	Reported Concentrations ($\mu\text{g/L}$)						
		February 1993	July 1993	August 1994	December 1996	December 1997	June 1998	December 1998
MW-3								
acetone	3,700		<25	<10	<100	<20	<20	42
acetone ³	3,700	-	-	-	-	-	<10	31.9
benzene	5	3.5	3.3	1 ²	<0.4	<5	2.74	3.55
benzene ³	5	-	-	-	-	-	2.66	3.81
chlorobenzene	100	1.3	<1	<10	<0.4	<5	<2	<2
1,4-dichlorobenzene	75	na ⁴	na	0.9 ²	<0.3	<5	2.36	3.08
1,4-dichlorobenzene ³	75	-	-	-	-	-	2.29	2.88
cis-1,2-dichloroethylene	70	na	na	2 ²	<1.2	<5	<2	<2
cis-1,2-dichloroethylene ³	70	-	-	-	-	-	2.08	<2
PZ-2								
cis-1,2-dichloroethylene	70	(piezometer installed October 1997)					<2	3.33

¹ MCL - maximum contaminant level for drinking water; GWPS - groundwater protection standard (shown in italic type) for constituents with no established MCL.

² Estimated quantity.

³ Duplicate sample.

⁴ Not analyzed.

2. Inorganic constituents

a. Iron and ammonia in piezometer PZ-2

Iron concentrations appear to be increasing in PZ-2 (2.61 mg/L in December 1997, 6.15 mg/L in June 1998, and 14 mg/L in December 1998), suggesting a possible leachate impact to groundwater, or other impact from the landfill that may be increasing iron solubility in the vicinity of the well. Ammonia has also been reported from PZ-2 at modest concentrations (1.86 mg/L in December 1997, 2.19 mg/L in June 1998, and 2.07 mg/L in December 1998).

b. Nitrate in piezometer PZ-4

Nitrate concentrations have been very high in PZ-4 (278 mg/L in December 1997, 292 mg/L in June 1998, and 207 mg/L in December 1998). Please describe in detail any activities in this area (e.g., fertilization of vegetation on recently modified slope?)

Reg 11

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*



TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

January 27, 1999

The Honorable Kirk Watson
Mayor of Austin
P. O. Box 1088
Austin, Texas 78767

RECEIVED

FEB 02 1999

FEB 02 1999

TNRCC-Field Operations
Austin Region 11

Field Operations
Region 11

Re: Solid Waste – Travis County
City of Austin FM 812 Landfill – MSW Permit No. 360-A
Groundwater Monitoring Results

Dear Mayor Watson:

We have reviewed responses to our letter dated September 17, 1997, regarding the December 1996 groundwater monitoring event, as well as analytical results for groundwater samples taken in August 1994, December 1997, and June 1998 at the referenced facility. (The groundwater sampling and analysis plan and laboratory documents have been addressed in our letter dated January 26, 1999; the groundwater monitoring system will be addressed separately in a third letter.) The monitoring events are summarized below:

Dates of Event	Wells Sampled	Type of Event
August 26, 1994	MW-1, 2, 3, 5, 6	Pre-Subtitle D monitoring for SE 65 Group 3 (chloride, total dissolved solids, total organic carbon) and Group 4 (iron and manganese), and volatile organic compounds (VOCs) ¹
December 29-30, 1997	MW-1, 2, 3, 5, 6	Pre-Subtitle D monitoring, for SE 65 Group 1 (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc), Group 2 (calcium, magnesium, sodium, potassium, carbonate and bicarbonate, sulfate, fluoride, nitrate, alkalinity), Group 3, and Group 4, and VOCs ²
June 22-26, 1998	MW-1, 2, 3, 5, 6, and PZ-1, 2, 3, 4, 5 ³	Pre-Subtitle D monitoring for Subtitle D constituents in Appendix B of proposed Groundwater Sampling and Analysis Plan dated February 1996 ^{2,4}

¹ Samples analyzed by RMT, Inc., Madison, Wisconsin.

² Samples analyzed by Intertek Testing Services, Richardson, Texas.

³ Piezometers PZ-1, 2, 3, 4, and 5 installed in September 1997.

⁴ Heavy metals analyzed for dissolved-phase concentrations, other metals and inorganics analyzed for total concentrations.

Thank you for the responses and reports. Please note and/or address the following comments:

1. Responses to TNRCC letter dated September 17, 1997

Responses to comments in our letter dated September 17, 1997, were provided in a letter dated November 10, 1997, from Mr. Russell C. Ford, Senior Hydrogeologist, HBC Engineering, Inc., Austin, Texas. The responses are acceptable.

2. Volatile organic compounds (VOCs):

Monitor Well Detected Compound	MCL ($\mu\text{g/L}$) ¹	Reported Concentrations ($\mu\text{g/L}$)						
		June 1992	February 1993	July 1993	August 1994	December 1996 ⁴	December 1997	June 1998 ⁴
MW-3								
benzene	5	3.3	3.5	3.3	1 ²	<0.4	<5	2.74
chlorobenzene	100	<1	1.3	<1	<10	<0.4	<5	<2
1,4-dichlorobenzene	75	na ³	na	na	0.9 ²	<0.3	<5	2.36
cis-1,2-dichloroethylene	70	na	na	na	2 ²	<1.2	<5	<2
MW-4 (removed between July 1993 and August 1994 monitoring events)								
benzene	5	2.9	2.9	3.2				
chlorobenzene	100	<1	1.2	1.0				
trans-1,2-dichloroethylene	100	<1	1.2	1.1				
trichloroethylene	5	1.6	1.3	<1				
MW-7 (installed in September 1997?)								
benzene	5							2.66
1,4-dichlorobenzene	75							2.29
cis-1,2-dichloroethylene	100							2.08

¹ MCL - maximum contaminant level for drinking water.

² Estimated quantity.

³ Not analyzed.

⁴ The following VOCs also detected during the June 1998 event are suspected to be inadvertent contaminants from sampling or safety equipment (e.g., gloves), or from the laboratory environment: *carbon disulfide* at 4.88 $\mu\text{g/L}$ in MW-6; *4-methyl-2-pentanone* at 2.03 $\mu\text{g/L}$ in PZ-2 and 4.44 $\mu\text{g/L}$ in PZ-5; *chloroform* at 3.6 $\mu\text{g/L}$ in one field blank, and 4.08 $\mu\text{g/L}$ in the other field blank; *acetone* at 13.4 $\mu\text{g/L}$ in one field blank.

VOCs have been detected intermittently in groundwater at concentrations below levels that require action at this time. If VOCs are detected consistently, or if concentrations increase in the future, it may be necessary to begin early detection monitoring for VOCs in accordance with 30 TAC §330.234, and the facility's groundwater sampling and analysis plan (GWSAP).

ATTACHMENT 15

Robert J. Huston, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Kathleen Hartnett White, *Commissioner*
Margaret Hoffman, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

January 29, 2003

RECEIVED

Mr. William E. Rhodes, P.E.
Director
Solid Waste Services
City of Austin
P. O. Box 1088
Austin, Texas 78767-8865

JAN 30 2003

TCEQ REGION 11
AUSTIN, TEXAS

Re: Solid Waste – Travis County – TCEQ Region 11
City of Austin FM 812 Landfill – Permit No. MSW-360A
Technically Complete Permit Modification Request – Landfill Gas Collection and Control System
(MSW Mail Log Nos. 03-804, 935, and 1254)

Dear Mr. Rhodes:

The Texas Commission on Environmental Quality (TCEQ), Municipal Solid Waste (MSW) Permits Section has reviewed your application for a permit modification, requesting authorization to renovate and improve the landfill gas collection and control system at the referenced facility. The request was received in this office on December 6, 2002, in a letter dated December 5, 2002, with attachments, submitted on behalf of the facility by Ms. Julie D. Hastings, P.E., of Lockwood, Andrews & Newnam, Inc., Austin, Texas. Additional information was received on December 19, 2002, in a letter from Ms. Hastings dated December 19, 2002, and on January 28, 2003, in a letter from Ms. Hastings dated January 27, 2003.

Our evaluation indicates that the information presented is sufficient for a permit modification. The application is hereby declared technically complete. Because the changes are being made in part for the purpose of landfill gas remediation, the modification is being processed according to Title 30 Texas Administrative Code (30 TAC), Chapter 305, Section (§) 305.70(k)(5), which requires the City, as the permit holder, to mail a Notice of Application and Preliminary Decision in accordance with 30 TAC §39.106. The notice must be mailed to the persons listed in 30 TAC 39.413 (the permit holder must contact the Notice Team in the TCEQ Office of the Chief Clerk, telephone number 512-239-3315, to obtain the names and addresses of persons on any relevant mailing list referred to in 30 TAC §39.413(11)). The text of the notice must comply with 30 TAC §39.411(b)(1)-(3), (6), (7), (9), and (12), and must provide the location and phone number of the appropriate TCEQ regional office where a copy of the application is available for review and copying. An example notice is enclosed with this letter.

After the notice is mailed, the permit holder must file a notarized certification with the TCEQ Office of the Chief Clerk stating that the notice was provided as required by 30 TAC §39.106 (the certification must be mailed to the attention of the Notice Team, Mail Code 105, at the address shown on this letterhead). An example certification is enclosed with this letter.

Mr. William E. Rhodes, P.E., Director, Solid Waste Services
City of Austin FM 812 Landfill – Permit No. MSW-360A
Technically Complete Permit Modification Request – Landfill Gas Collection and Control System
Page 2

If you have any questions regarding this matter, please contact Mr. Arten J. Avakian in the MSW Permits Section at (512) 239-4419, or in writing at the address on our letterhead (please specify Mail Code 124 on the first line of our address).

Sincerely,

A handwritten signature in black ink that reads "Wayne R. Harry". The signature is written in a cursive, slightly slanted style.

Wayne R. Harry, P.E., Acting Team Leader
MSW Permits Section
Waste Permits Division
Texas Commission on Environmental Quality

WRH/aja

cc: Mr. Robert L. Fernandez, Diversion Services Manager, Solid Waste Services, City of Austin

Enclosures

ATTACHMENT 16



COPY

P.O. Box 1088

Austin, Texas 78767

September 29, 2004

Mr. Arten Avakian, P.G. MC-124
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Dear Mr. Avakian:

Quarterly methane gas monitoring for the City of Austin FM 812 Landfill (Permit No. 360-A) has been completed for the period July through September 2004. Attachment I contains the data collected during this sampling event on Thursday, September 9, 2004. This quarterly sampling is conducted in addition to the weekly monitoring required of the City of Austin at this landfill.

Gas levels were detected with a LANTEC GA-90 gas monitor at our permanent probe locations, monitor wells, piezometer wells, and from three on-site structures. The attachment indicates readings for methane, carbon dioxide, oxygen, gas well pressures (where applicable), and water levels. For this quarter all levels did not exceed 5.0% Methane by volume of air except for MW-08. This higher reading for MW-08 could be attributed to the temporary shutdown of the flare system at that time due to instrumentation malfunctioning or as a result of construction activities around the well area. On 9/16/04 and 9/27/04 weekly monitoring readings were taken (see attachment) which indicate that MW-08 is now below 5.0% Methane by volume of air.

If you have any questions, please don't hesitate to contact me at (512) 974-1962.

Sincerely,

Hani E. Michel

Hani E. Michel, P.E.
Solid Waste Services Department

Attachment

Cc: Mr. Barry Kalda, TCEQ Region 11
Mr. Christopher Wiatrek, TCEQ Region 11

RECEIVED

OCT - 4 2004

TCEQ FIELD OPERATIONS
AUSTIN REGION 11

www.austinrecycles.com

(512) 974-1949  Fax (512) 974-1999

Printed On Recycled Paper with Kenaf

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH ₄	%CO ₂	%O ₂	Well Pressure	Water Level
GP-01	09/09/04	9:40	0.1	1.8	16.8	-00.00	15.87
GP-02	09/09/04	9:55	0.3	1.7	18.8	+00.00	16.24
GP-03	09/09/04	10:01	0.2	0.8	19.9	+00.00	24.12
GP-04	09/09/04	10:09	0.2	3.3	11.9	+00.00	12.50
GP-05	09/09/04	10:16	0.2	2.5	16.8	+00.00	24.13
GP-06	09/09/04	11:02	0.2	1.3	19.3	+00.00	31.10
GP-07	09/09/04	11:11	0.1	0.6	19.2	-00.10	32.45
GP-08	09/09/04	11:27	0.0	5.3	15.6	+00.00	24.69
GP-09	09/09/04	11:34	0.1	8.3	11.8	+00.00	27.12
GP-09A	09/09/04	11:38	0.1	0.0	19.9	+00.00	27.47
GP-09B	09/09/04	11:41	0.1	0.0	20.0	-00.10	25.34
GP-10	09/09/04	11:50	0.1	0.3	19.6	-00.00	24.49
GP-10A	09/09/04	11:54	0.1	0.2	19.6	+00.00	24.35
GP-10B	09/09/04	11:58	0.1	4.9	15.1	-00.00	24.33
GP-11	09/09/04	12:15	0.1	3.9	17.1	+00.00	8.65
GP-12	09/09/04	12:18	0.0	2.1	17.5	+00.00	13.19
GP-13	09/09/04	12:23	0.1	1.1	19.1	+00.00	10.82
GP-14	09/09/04	12:28	0.0	0.6	19.9	-00.00	DRY
MW-01	09/09/04	9:47	0.1	0.0	20.6	N/A	16.25
MW-02	09/09/04	12:33	0.0	0.0	20.2	N/A	8.41
MW-03	09/09/04	10:51	0.2	0.1	20.1	N/A	27.20
MW-04	09/09/04	PLUGGED	N/A	N/A	N/A	N/A	N/A
MW-05	09/09/04	PLUGGED	N/A	N/A	N/A	N/A	N/A
MW-06	09/09/04	11:17	0.1	0.1	20.4	N/A	32.01
PZ-01/MW-07	09/09/04	10:22	0.2	0.2	19.3	N/A	24.68
PZ-02/MW-08	09/09/04	10:36	6.2	6.2	15.5	N/A	20.40
PZ-03/MW-09	09/09/04	10:42	0.2	0.2	18.3	N/A	16.04
PZ-04/MW-10	09/09/04	12:48	0.0	0.0	19.6	N/A	14.02
PZ-05/MW-11	09/09/04	10:56	0.1	0.1	20.1	N/A	30.25
MW-12	09/09/04	11:07	0.1	0.1	10.6	N/A	30.90
MW-13	09/09/04	11:23	0.1	0.1	17.2	N/A	39.57
MW-14	09/09/04	11:46	0.1	0.1	19.9	N/A	27.29
MW-15	09/09/04	12:11	0.0	0.0	19.8	N/A	7.95
PZ-06	09/09/04	PLUGGED	N/A	N/A	N/A	N/A	N/A
PZ-07	09/09/04	PLUGGED	N/A	N/A	N/A	N/A	N/A
SCALEHOUSE	09/09/04	12:57	0.0	0.0	20.3	N/A	N/A
OFFICE	09/09/04	13:02	0.0	0.0	20.4	N/A	N/A
RECYCLING	09/09/04	13:06	0.0	0.0	20.5	N/A	N/A

Date	Time	Barometric Pressure (in Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
9/9/2004	10:00	30.08	75.9	8	N

DATA
EXTRACTED BY:

Cody C. Rogers

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	9/16/2004	14:53	0.0	0.7	19.1	-00.00	32.36
GP-08	9/16/2004	15:57	0.0	7.1	14.6	+00.00	24.64
GP-09	9/16/2004	15:02	0.0	9.3	10.4	-00.00	27.12
GP-09A	9/16/2004	15:07	0.0	0.0	20.0	+00.00	27.42
GP-09B	9/16/2004	15:10	0.0	0.1	20.1	-00.00	25.61
GP-10	9/16/2004	15:15	0.0	8.5	14.6	-00.20	24.46
GP-10A	9/16/2004	15:21	0.0	0.1	19.5	+00.10	24.49
GP-10B	9/16/2004	15:28	0.0	5.9	14.0	+00.00	24.49
GP-11	9/16/2004	15:32	0.0	3.6	16.3	-00.00	8.60
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	9/16/2004	14:42	0.0	0.0	20.3	N/A	27.27
MW-04	PLUGGED						
MW-05	PLUGGED						
MW-06							
PZ-01/MW-07							
PZ-02/MW-08	9/16/2004	14:35	4.4	3.3	16.5		20.43
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	9/16/2004	14:49	0.0	0.0	20.3	N/A	30.22
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06	PLUGGED						
PZ-07	PLUGGED						
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
9/16/2004	15:00	29.86	93.9	3	V

DATA
EXTRACTED BY:

Cody C. Rogers

CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	9/27/2004	13:23	0.1	0.5	19.7	-00.00	32.50
GP-08	9/27/2004	13:29	0.0	6.2	16.8	+00.10	24.69
GP-09	9/27/2004	13:34	0.0	8.5	12.8	+00.00	27.21
GP-09A	9/27/2004	13:39	0.0	0.1	20.3	-00.00	27.55
GP-09B	9/27/2004	13:43	0.0	0.1	20.3	+00.00	25.25
GP-10	9/27/2004	13:48	0.0	0.8	20.1	+00.00	24.64
GP-10A	9/27/2004	13:53	0.0	0.2	20.1	+00.00	24.60
GP-10B	9/27/2004	13:57	0.0	8.6	15.2	-00.10	24.66
GP-11	9/27/2004	14:04	0.0	3.5	18.3	+00.00	8.81
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	9/27/2004	13:12	0.0	0.1	20.6		27.68
MW-04	PLUGGED						
MW-05	PLUGGED						
MW-06							
PZ-01/MW-07							
PZ-02/MW-08	9/27/2004	13:05	4.1	3.6	16.4		20.66
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	9/27/2004	13:19	0.0	0.0	20.6		30.25
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06	PLUGGED						
PZ-07	PLUGGED						
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
9/27/2004	13:00	30.02	81.0	8	NNE

DATA
EXTRACTED BY:

Cody C. Rogers



COPY

P.O. Box 1088

Austin, Texas 78767

July 7, 2004

Mr. Arten Avakian, P.G. MC-124
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Dear Mr. Avakian:

Quarterly methane gas monitoring for the City of Austin FM 812 Landfill (Permit No. 360-A) has been completed for the period April through June 2004. Attachment I contains the data collected during this sampling event on Thursday, June 3, 2004. This quarterly sampling is conducted in addition to the weekly monitoring required of the City of Austin at this landfill.

Gas levels were detected with a LANTEC GA-90 gas monitor at our permanent probe locations, monitor wells, piezometer wells, and from three on-site structures. The attachment indicates readings for methane, carbon dioxide, oxygen, gas well pressures (where applicable), and water levels.

For this quarter all levels did not exceed 5.0% by volume of air.

If you have any questions, please don't hesitate to contact me at (512) 974-1962.

Sincerely,

Hani E. Michel

Hani E. Michel, P.E.
Solid Waste Services Department

Attachment

Cc: Mr. Barry Kalda, TCEQ Region 11
Mr. Christopher Wiatrek, TCEQ Region 11
Mr. Wayne Harry, P.E.

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JUL - 9 2004

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AUSTIN REGION 11**

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**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01	06/03/04	9:40	0.5	1.0	14.7	-00.00	16.34
GP-02	06/03/04	9:56	0.6	0.7	8.2	-00.00	16.66
GP-03	06/03/04	10:02	0.7	1.2	16.0	-00.00	23.75
GP-04	06/03/04	10:09	0.7	2.3	10.9	+00.20	13.15
GP-05	06/03/04	10:17	0.7	1.2	13.4	-00.00	23.71
GP-06	06/03/04	11:24	0.7	0.9	18.1	+00.00	31.00
GP-07	06/03/04	11:34	0.6	2.0	11.0	+00.00	32.17
GP-08	06/03/04	11:52	0.7	3.6	15.1	+00.00	24.57
GP-09	06/03/04	12:03	4.8	8.4	6.3	+00.00	27.15
GP-09A	06/03/04	12:08	0.9	0.1	18.3	+00.00	27.35
GP-09B	06/03/04	12:12	0.7	0.0	18.5	-00.00	25.76
GP-10	06/03/04	12:18	0.7	4.2	16.8	+00.00	25.40
GP-10A	06/03/04	12:22	0.7	0.0	18.5	-00.00	24.96
GP-10B	06/03/04	12:26	0.8	7.2	13.3	+00.00	24.86
GP-11	06/03/04	12:36	0.7	2.9	13.2	+00.00	10.15
GP-12	06/03/04	12:42	0.8	0.8	14.5	-00.10	14.80
GP-13	06/03/04	12:47	0.7	0.1	15.9	-00.00	10.31
GP-14	06/03/04	13:00	0.7	0.2	10.0	+00.00	DRY
MW-01	06/03/04	9:49	0.6	0.1	18.4	N/A	16.65
MW-02	06/03/04	12:53	0.7	0.0	18.7	N/A	07.00
MW-03	06/03/04	10:35	1.7	0.9	18.2	N/A	27.16
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06	06/03/04	11:40	0.7	0.6	16.5	N/A	32.00
PZ-01/MW-07	06/03/04	10:27	0.7	0.1	18.1	N/A	24.00
PZ-02/MW-08	06/03/04	10:43	0.7	0.0	18.4	N/A	12.85
PZ-03/MW-09	06/03/04	10:52	0.6	0.0	18.4	N/A	15.50
PZ-04/MW-10	06/03/04	11:09	0.8	0.1	18.3	N/A	13.66
PZ-05/MW-11	06/03/04	11:19	0.7	0.0	18.5	N/A	30.22
MW-12	06/03/04	11:30	0.7	1.6	12.6	N/A	30.84
MW-13	06/03/04	11:45	0.7	1.6	13.9	N/A	40.00
MW-14	06/03/04	12:01	0.7	0.1	18.3	N/A	27.18
MW-15	06/03/04	12:31	0.7	0.0	18.5	N/A	09.43
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE	06/03/04	13:15	0.7	0.0	18.9	N/A	N/A
OFFICE	06/03/04	13:07	0.7	0.0	18.8	N/A	N/A
RECYCLING	06/03/04	13:21	0.8	0.0	18.9	N/A	N/A

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
6/3/2004	10:00	30.16	75.0	7	ESE

DATA
EXTRACTED BY:

Cody C. Rogers

U.S. POSTAGE
0.37
JUL - 8 '64

Mr. Barry Kalda
Texas Commission on Environmental Quality
Region 11
1921 Cedar Bend Drive #150
Austin, Texas 78758-5336

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	4/8/2004	11:12	0.2	1.7	13.4	+00.00	32.00
GP-08	4/8/2004	11:19	0.4	5.2	14.0	-00.00	24.65
GP-09	4/8/2004	11:25	3.3	2.4	11.3	-00.00	26.15
GP-09A	4/8/2004	11:29	0.6	0.1	18.4	+00.00	26.33
GP-09B	4/8/2004	11:34	0.4	0.0	18.4	-00.00	21.67
GP-10	4/8/2004	11:38	0.7	5.1	15.4	+00.00	24.65
GP-10A	4/8/2004	11:44	0.4	0.0	18.5	-00.00	24.10
GP-10B	4/8/2004	11:47	1.4	8.1	13.0	-00.00	24.03
GP-11	4/8/2004	11:52	0.3	1.1	10.6	+00.10	10.38
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	4/8/2004	11:00	6.8	4.1	16.9	N/A	27.20
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	4/8/2004	11:06	0.4	0.0	18.8	N/A	30.75
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
4/8/2004	11:00	29.96	70.0	8	N

DATA
EXTRACTED BY:

51,537

CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING

LOCATION	DATE	TIME	%CH ₄	%CO ₂	%O ₂	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	3/25/04	10:18	0.3	2.4	12.0	+00.00	32.40
GP-08		10:22	0.3	5.3	14.0	+00.00	25.20
GP-09		10:27	1.3	4.5	9.5	-00.30	26.93
GP-09A		10:29	0.5	0.1	18.5	-2.30	26.91
GP-09B		10:31	0.2	0.0	18.6	+00.30	25.30
GP-10		10:39	1.9	9.6	12.3	+00.00	24.51
GP-10A		10:42	0.3	0.0	18.7	+00.30	24.00
GP-10B		10:45	1.1	6.4	13.9	+1.10	24.00
GP-11		10:50	0.3	1.1	8.7	+00.00	10.63
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	3/25/04	9:45	2.2	5.0	16.2	N/A	27.3
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	3/25/04	10:00	0.3	0.0	18.7	N/A	30.2
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
3/25/04	12:00	30.14	75	14 mph	E

DATA
EXTRACTED BY:

Carley [Signature] 3/25/04

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	3/18/2004	12:25	0.3	2.3	12.4	+00.00	32.00
GP-08	3/18/2004	12:29	0.3	6.1	13.0	-00.10	24.78
GP-09	3/18/2004	12:34	0.8	4.9	7.7	+00.00	26.04
GP-09A	3/18/2004	12:39	0.4	0.1	18.4	-00.00	26.41
GP-09B	3/18/2004	12:43	0.3	0.0	18.6	+00.00	24.87
GP-10	3/18/2004	12:48	2.4	7.9	13.8	+00.10	24.23
GP-10A	3/18/2004	12:54	0.3	0.0	18.6	-00.00	23.63
GP-10B	3/18/2004	12:56	0.3	1.0	18.3	-00.00	23.62
GP-11	3/18/2004	13:00	0.3	0.9	10.8	+00.10	10.32
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	3/18/2004	12:11	16.8	9.9	14.1	N/A	27.36
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	3/18/2004	12:19	0.3	0.0	18.8	N/A	29.98
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
3/18/2004	13:00	29.99	73.9	13	S

DATA
EXTRACTED BY:

Cody C. Rogers

Kathleen Hartnett White, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
Larry R. Soward, *Commissioner*
Margaret Hoffman, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 23, 2004

COPY

Mr. Hani E. Michel, P.E.
Project Manager, Solid Waste Services
City of Austin
P. O. Box 1088
Austin, Texas 78767-8865

Re: City of Austin FM 812 Landfill – MSW Permit No. 360A
Landfill Gas Monitoring (WWC Tracking System No. 10551407; MSW Mail Log No. 4933)
RN10232990, CN602478810

Dear Mr. Michel:

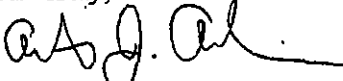
This letter acknowledges that the Texas Commission on Environmental Quality, Municipal Solid Waste (MSW) Permits Section received your letter dated March 19, 2003, transmitting the report for the first quarter 2004 methane monitoring event at the referenced facility, summarized below:

Monitoring Date	Methane Detections > 0.5 Percent (by volume)
March 11, 2004	MW-3 (22.9%)

Thank you for the submittal. The report indicated that you are directing your contractor that completed construction and initial balancing of the gas collection and control system (in December 2003) to fine-tune the system to control methane migration in the vicinity of MW-3.

If you have any questions regarding this matter, please contact me by telephone at (512) 239-4419, by e-mail at aavakian@tceq.state.tx.us, or in writing at the address on our letterhead (please specify Mail Code 124 on the first line of our address).

Sincerely,


Arten J. Avakian, P.G.
MSW Permit Team III
Municipal Solid Waste Permits Section
Waste Permits Division

AJA/fe

cc: Mr. William E. Rhodes, P.E., Director, Solid Waste Services, City of Austin
Mr. Robert L. Fernandez, Diversion Services Manager, Solid Waste Services, City of Austin

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JUN 25 2004

TCEQ FIELD OPERATIONS
AUSTIN REGION 11

Rgm 11



P.O. Box 1088

Austin, Texas 78767

March 19, 2004

Mr. Arten Avakian, P.G. MC-124
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

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MAR 25 2004

MSW SECTION
TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

Dear Mr. Avakian:

January 2004 *March 2004*
Quarterly methane gas monitoring for the City of Austin FM 812 Landfill (Permit No. 360-A) has been completed for the period ~~October 2003~~ through ~~December 2003~~. Attachment I contains the data collected during this sampling event Thursday, March 11, 2004. This quarterly sampling is conducted in addition to the weekly monitoring required of the City of Austin at this landfill.

Gas levels were detected with a LANTEC GA-90 gas monitor at our permanent probe locations, monitor wells, piezometer wells, and from three on-site structures. The attachment indicates readings for methane, carbon dioxide, oxygen, gas well pressures (where applicable), and water levels

Methane levels exceeding 0.5% by volume of air were recorded in the following wells:

Gas Well Location	Methane Gas level
MW3	22.9%

For this quarter all levels did not exceed 0.50% except for one probe that continues to exhibit high readings. We are working towards remediating this situation with SCS Field Services inc. who completed the construction of the FM 812 Landfill gas collection system project on 12/30/03 and performed the initial well balancing. More fine-tuning of the wells is planned by SCS Field services in order to improve the situation with MW3.

If you have any questions, please don't hesitate to contact me at 974-1962.

Sincerely,

Hani E. Michel

Hani E. Michel, P.E.
Solid Waste Services

Attachment

Cc: Mr. Barry Kalda, TCEQ Region 11
Mr. Christopher Wiatrek, TCEQ Region 11
Mr. Wayne Harry, P.E.

MAIL LOG# 4933

WWC# 10551407

NO RESPONSE ☐ STAFF ☒ *Arten 3/26/04*
TEAM ☐ I ☐ II ☐ III

www.austinrecycles.com

(512) 974-1949  Fax (512) 974-1999

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	3/1/2004	14:58	0.3	2.2	12.6	+00.00	32.05
GP-08	3/1/2004	15:04	0.2	7.2	11.6	-00.10	24.75
GP-09	3/1/2004	15:09	0.3	2.2	12.3	-00.10	25.30
GP-09A	3/1/2004	15:14	0.3	0.0	18.6	-00.00	25.58
GP-09B	3/1/2004	15:17	0.2	0.0	18.8	-00.00	23.78
GP-10	3/1/2004	15:21	30.0	27.5	7.5	+00.00	23.56
GP-10A	3/1/2004	15:25	0.5	0.0	18.6	+00.00	23.00
GP-10B	3/1/2004	15:28	0.5	1.2	17.9	+00.00	22.92
GP-11	3/1/2004	15:33	0.3	0.6	11.0	+00.00	9.97
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	3/1/2004	14:44	21.9	13.0	12.1	N/A	28.02
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	3/1/2004	14:53	0.3	0.0	18.5	N/A	30.25
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
3/1/2004	15:00	29.96	72.0	Calm	0

DATA
EXTRACTED BY:

CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	2/23/04	3:50	0.3	2.2	12.9	+00.00	32.40
GP-08		3:55	0.3	9.2	10.3	-00.20	25.20
GP-09		4:00	0.3	2.4	14.0	+00.30	25.56
GP-09A		4:05	0.2	0.1	12.5	-00.00	25.41
GP-09B		4:10	0.3	0.0	12.5	-00.10	25.45
GP-10		4:15	27.1	24.5	8.4	+00.80	24.00
GP-10A		4:20	0.5	0.1	12.4	+00.00	24.71
GP-10B		4:25	0.5	1.3	12.0	+00.20	24.15
GP-11		4:30	0.4	0.5	14.7	+00.00	10.10
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03		3:41	14.7	8.5	14.5	N/A	22.65
MW-04		Plugged					
MW-05		Plugged					
MW-06							
PZ-01							
PZ-02							
PZ-03							
PZ-04							
PZ-05	✓	3:46	0.3	0.0	12.8	N/A	30.40
PZ-06		Plugged					
PZ-07		Plugged					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
2/23/04	4:40	29.76	67		Calm

Carley Reitz
2/23/04

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	2/19/2004	15:00	0.3	2.4	12.3	+00.20	32.13
GP-08	2/19/2004	15:08	0.3	11.7	8.0	+00.00	24.93
GP-09	2/19/2004	15:14	0.3	1.9	13.8	+00.00	24.14
GP-09A	2/19/2004	15:18	0.3	0.1	18.5	+00.00	24.45
GP-09B	2/19/2004	15:27	0.3	0.0	18.7	+00.10	19.15
GP-10	2/19/2004	15:30	18.8	29.4	6.3	-00.00	23.34
GP-10A	2/19/2004	15:35	0.4	0.0	18.4	-00.00	22.10
GP-10B	2/19/2004	15:38	0.5	2.0	17.5	+00.10	22.15
GP-11	2/19/2004	15:45	0.3	0.6	14.1	-00.00	10.01
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	2/19/2004	14:41	24.3	14.3	11.7	N/A	28.61
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	2/19/2004	14:56	0.3	0.0	18.8	N/A	30.32
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
2/19/2004	14:53	29.81	75.0	23	S

DATA
EXTRACTED BY:

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	2/3/2004	13:00	0.2	1.4	17.2	-00.00	32.40
GP-08	2/3/2004	13:05	0.3	5.0	13.6	+00.80	25.00
GP-09	2/3/2004	13:10	0.2	6.3	8.5	+00.00	26.30
GP-09A	2/3/2004	13:15	0.3	0.0	19.0	+01.80	26.11
GP-09B	2/3/2004	13:20	0.3	0.0	19.1	+00.80	25.95
GP-10	2/3/2004	13:25	0.3	5.1	16.5	+00.60	24.98
GP-10A	2/3/2004	13:30	0.3	0.0	18.9	+00.00	25.31
GP-10B	2/3/2004	13:35	0.7	11.3	13.1	+00.40	24.81
GP-11	2/3/2004	13:40	0.2	0.3	18.5	+00.60	10.00
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	2/3/2004	12:45	25.0	9.7	14.0	N/A	30.52
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	2/3/2004	12:50	0.2	0.0	19.1	N/A	30.75
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
2/3/2004	14:30	30.21	56.0	11	SE

DATA
EXTRACTED BY:

Conley Leloux

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH ₄	%CO ₂	%O ₂	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	1/26/2004	12:35	0.2	2.0	16.2	-00.10	32.18
GP-08	1/26/2004	12:40	0.4	8.0	11.0	+00.10	24.90
GP-09	1/26/2004	12:45	0.3	5.0	11.4	-00.10	25.25
GP-09A	1/26/2004	12:50	0.3	0.1	18.8	+00.00	25.55
GP-09B	1/26/2004	12:53	0.2	0.0	18.9	-00.10	13.80
GP-10	1/26/2004	12:58	0.4	9.9	14.3	+00.00	24.04
GP-10A	1/26/2004	13:02	0.3	0.0	18.8	+00.20	24.70
GP-10B	1/26/2004	13:06	0.6	8.6	14.5	+00.10	24.75
GP-11	1/26/2004	13:10	0.3	0.5	18.1	+00.00	9.60
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	1/26/2004	12:21	31.4	19.5	9.4	N/A	30.01
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	1/26/2004	12:28	0.3	0.0	18.9	N/A	30.51
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
1/26/2004	13:00	29.91	68.0	21	NW

DATA
EXTRACTED BY:

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	1/22/2004	13:49	0.3	1.5	16.4	+00.00	32.45
GP-08	1/22/2004	13:54	0.3	8.4	10.8	-00.00	25.00
GP-09	1/22/2004	14:00	0.3	4.5	13.1	-00.00	25.41
GP-09A	1/22/2004	14:04	0.3	0.1	18.9	-00.00	25.72
GP-09B	1/22/2004	14:07	0.3	0.0	19.0	+00.10	16.67
GP-10	1/22/2004	14:11	0.3	6.9	14.6	-00.10	23.90
GP-10A	1/22/2004	14:16	0.3	0.0	18.9	-00.00	24.83
GP-10B	1/22/2004	14:20	0.7	9.5	14.1	+00.10	24.75
GP-11	1/22/2004	14:24	0.4	0.3	18.6	+00.00	9.71
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	1/22/2004	13:35	29.5	18.4	10.1	N/A	30.13
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	1/22/2004	13:45	0.2	0.0	19.1	N/A	30.70
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
1/22/2004	13:00	30.31	59.0	7	NE

DATA
EXTRACTED BY:

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	1/12/2004	15:01	0.3	2.3	14.7	+00.00	32.50
GP-08	1/12/2004	15:05	0.4	5.7	13.4	+00.00	25.10
GP-09	1/12/2004	15:10	0.4	6.8	13.1	-00.10	27.21
GP-09A	1/12/2004	15:14	0.4	0.5	18.4	+00.00	27.44
GP-09B	1/12/2004	15:17	0.3	0.3	18.7	+00.10	26.54
GP-10	1/12/2004	15:22	0.3	7.1	14.6	+00.00	25.15
GP-10A	1/12/2004	15:26	0.3	0.0	19.0	+00.00	25.40
GP-10B	1/12/2004	15:30	0.7	10.1	14.1	+00.00	25.55
GP-11	1/12/2004	15:35	0.3	0.3	18.9	-00.00	9.89
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	1/12/2004	14:44	21.3	13.0	12.6	N/A	30.01
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	1/12/2004	14:56	0.3	0.1	19.0	N/A	30.77
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
1/12/2004	15:00	30.38	66.0	9	SSE

DATA
EXTRACTED BY:

**CITY OF AUSTIN LANDFILL (PERMIT NUMBER 360-A)
GAS MONITORING**

LOCATION	DATE	TIME	%CH4	%CO2	%O2	Well Pressure	Water Level
GP-01							
GP-02							
GP-03							
GP-04							
GP-05							
GP-06							
GP-07	1/5/2004	14:38	0.3	1.3	17.4	+00.10	32.48
GP-08	1/5/2004	14:46	0.3	4.1	15.0	+00.00	25.02
GP-09	1/5/2004	14:51	0.2	11.2	9.5	+00.00	27.13
GP-09A	1/5/2004	14:57	6.4	0.3	18.9	+00.00	27.40
GP-09B	1/5/2004	15:00	0.3	0.3	19.0	-00.00	24.00
GP-10	1/5/2004	15:04	0.3	6.8	16.2	+00.00	25.30
GP-10A	1/5/2004	15:08	0.4	0.1	19.1	-00.00	25.52
GP-10B	1/5/2004	15:12	1.2	23.6	8.5	-00.00	25.45
GP-11	1/5/2004	15:16	0.3	0.5	19.1	+00.10	9.62
GP-12							
GP-13							
GP-14							
MW-01							
MW-02							
MW-03	1/5/2004	14:20	23.7	14.4	12.2	N/A	30.12
MW-04		PLUGGED					
MW-05		PLUGGED					
MW-06							
PZ-01/MW-07							
PZ-02/MW-08							
PZ-03/MW-09							
PZ-04/MW-10							
PZ-05/MW-11	1/5/2004	14:32	0.4	0.1	19.1	N/A	30.77
MW-12							
MW-13							
MW-14							
MW-15							
PZ-06		PLUGGED					
PZ-07		PLUGGED					
SCALEHOUSE							
OFFICE							
RECYCLING							

Date	Time	Barometric Pressure (" Hg)	Temperature (°F)	Wind Velocity (MPH)	Wind Direction
1/5/2004	14:00	30.27	44.1	17	N

DATA
EXTRACTED BY:

Monitor Well Installation
CITY of AUSTIN - F.M. 812 LANDFILL
AUSTIN, TEXAS
MONITOR WELL LOCATIONS
May 2000
PLATE I

NOTE: Plan modified from drawing provided
by HEC Engineering, Inc. Figure 14
Ref# 98857310 - A2

LEGEND

- Permit Boundary
- Existing 20' Contours
- Proposed Final Contours
- Monitoring Well Locations
- Gas Monitoring Probe Locations
- New Monitoring Well Locations
(Installed 4-11-00 thru 4-18-00)

SCALE: 1" = 500'

Texas Coordinate System Locations

	N	E	Ground Surface Elevation (FT)
MW-12	10034624.16	314024.41	471.86
MW-13	10033626.15	3140717.35	477.63
MW-14	10033135.24	3140347.00	540.50
MW-15	10032137.76	3139843.58	514.40

