ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D

PERMIT AMENDMENT APPLICATION

Prepared for

Waste Management of Texas, Inc.

September 2010

Revised February 2011

Prepared by

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February 1, 2011

Mr. P. Hunt Prompuntagorn, Project Manager
MSW Permits Section – MC-124
Waste Permits Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

Re: Atascocita Recycling and Disposal Facility - Harris County
Municipal Solid Waste (MSW) - Permit No. 1307D
Permit Amendment Application - First Notice of Deficiency (NOD)
Tracking Nos. 14452326 & 14476346; CN600127856/RN100216142

Dear Mr. Prompuntagorn:

This response to the First Notice of Deficiency, addressed to Mr. Steve Jacobs, Director of Landfill Operations, dated December 14, 2010, is submitted on behalf of Waste Management of Texas, Inc. The permit amendment application has been revised as appropriate and one original and three copies are enclosed with this letter. The revision number and date are noted on each revised page and the revisions are highlighted as requested. Our responses to the Texas Commission on Environmental Quality (TCEQ) staff comments are presented below in the order received.

Part I of the Application

1. The fourth paragraph on Page I-3 indicates that the Atascocita RDF will receive about 1,165,000 tons per year (approximately 3,730 tons per day). Please include in this paragraph the basis of operating days consistent with the basis used in the Site Operating Plan.

RESPONSE: As requested, Part I, Section 1.2, page I-3 has been revised to include the requested information.

2. The first paragraph on Page I-4 states "The facility is authorized to accept liquid wastes for solidification." Please revise this statement to indicate the facility will continue to accept liquid wastes for solidification.

RESPONSE: As requested, Part I, Section 1.4, page I-4 has been revised to state the facility will "continue to accept liquid wastes for solidification."

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Part II of the Application

3. The last paragraph of Section 1.1 indicates the United State Army Corps of Engineers (USACE) is currently reviewing the wetland delineation and mitigation plan as part of the proposed Section 404 Individual Permit. However, the last sentence of this paragraph indicates that a copy of the Section 404 Individual Permit was issued by the USACE and is included in Appendix IID. Please revise accordingly.

RESPONSE: As requested, Part II, Section 1.1, page II-2, has been revised to state "A copy of the Section 404 Individual Permit Application and the Public Notice for the Individual Permit as issued by the USACE SWG are included in Part II, Appendix IID of this permit amendment application."

4. Section 4 indicates that the facility layout maps/drawings are provided to show the items identified in Title 30 of the Texas Administrative Code (30 TAC) Section (§)330.61(d). The provided maps/drawings seem to leave out the interior facility roadways to provide access to fill areas and dimensions of landfill units/cells. Please include the interior facility roadways and dimensions of landfill units/cells in the facility layout maps/drawings.

RESPONSE: As requested, Part II, Appendix IIA, has been revised to include interior facility roadways and dimensions of future landfill units/cells on the applicable facility layout maps/drawings. Drawing IIA.9 includes the acreage of constructed cells in Phases 1 through 4 and the acreage and dimensions of future cells in Phases 5 and 6. Drawings IIA.11 through IIA.13 depict the location of interior facility roads, which includes the site entrance road and landfill access roads.

5. Please address growth trends in Section 6 in accordance with 30 TAC §330.61(f)(2).

RESPONSE: Growth trends are addressed in accordance with 30 TAC §330.61(h)(3) in Appendix IIB – Land Use Analysis. 30 TAC §330.61(f)(2) states "A series of aerial photographs can be used to show growth trends" and does not require "a series of aerial photographs" to be used to meet the requirements of 30 TAC §330.61(h)(3).

6. The third paragraph of Section 13.1 on Page II-19 indicates that Drawing C2-B-1, the Federal Emergency Management Administration (FEMA)'s Flood Insurance Rate Map (FIRM), shows a portion of the waste disposal footprint within the limits of the 100-year floodplain, Zone AE, because the FIRM has not been revised to reflect the approved Letter of Map Revision – Fill (LOMR-F), dated September 15, 2009, to exclude the mentioned portion from the 100-year floodplain. Please provide drawings which clearly show floodplain mitigation structures, and the 100-year floodplain as a result of the approved LOMR-F, or make reference to the location in Part II of the application that contains these drawings. Please make sure to include engineering details, including cross-sections with freeboard information, for the floodplain mitigation structures.

Please note that all berms/levees design to prevent the 100-year flood event should have a freeboard of at least three feet in accordance with 30 TAC §330.307(b)(1).

RESPONSE: Section 13.1 has been revised to clarify the limits of the 100-year floodplain. The effective Flood Insurance Rate Map (FIRM) dated June 18, 2007 does not reflect the LOMR-F issued by FEMA on September 15, 2009. A copy of the approved LOMR-F is included in Appendix IIK. The LOMR-F removes the portion of the waste disposal footprint shown within the limits of the 100-year floodplain from the 100-year floodplain not applicable to the Atascocita RDF.

The Harris County Flood Control District (HCFCD) is the Floodplain Administrator as designated by FEMA. An evaluation of the 100-year floodplain has been conducted by Dannenbaum Engineering Corporation for the expansion of the Atascocita RDF. This evaluation has been reviewed and approved by the HCFCD; refer to Appendix IIK for a copy of this approval letter. Drawing II-A-20 has been included to depict the 100-year floodplain.

7. The provided FIRM shows that some portions of the facility, south of the expansion area including the area within the waste footprint, are in the shaded Zone X (flood-prone areas that are inundated by the 100-year flood with average depths of less than 1 foot as defined in the FIRM). Please provide information and/or a demonstration to ensure that the waste disposal areas will be protected from the 100-year flood event.

RESPONSE: HCFCD defines the shaded Zone X as the 0.2% chance flood area and not part of the 100-year floodplain. This document is available at http://www.tsarp.org/downloads/FloodInsuranceRateMaps.pdf.

No changes are required in response to this comment.

Part III of the Application

8. Several sections in Attachment B make reference to Part IV of the application for required information specified in 30 TAC §330.63(b)(2). Information must be cross referenced within the same part of the application. Please include the required information in the appropriate sections where cross references are cited.

RESPONSE: 30 TAC §330.63(b)(2) does not require addressing operational requirements in Attachment B. References to Part IV – Site Operating Plan are included in Attachment B to refer to Part IV for operational procedures. The references to Part IV – Site Operating Plan have been clarified to refer to "operational procedures."

Please note that the sections on "Liquid Stabilization" and "Truck Wheel Wash" within Section 2 – Waste Movement include discussion that addresses the applicable sanitation operational requirements of 30 TAC §330.63(b)(3).

9. Section “Large Item Storage” on Page B-4 of Attachment B indicates the large items will be stored in steel roll-off containers until transported off-site. Please provide in this section a location where these roll-off containers will be placed and revise the Drawing B.3 to include the large item storage location.

RESPONSE: The section on “Large Item Storage” on page B-4 has been clarified to state that a storage area for large items and white goods may be provided within the waste disposal footprint and that a large item storage area may also be provided near the citizen disposal facility for the convenience of a citizen drop-off area. Further, Drawing B.2, Note 4 states “The large item storage area will be located within the waste disposal footprint and will be relocated periodically as the active working face moves.” The identification of the location of the “Large Item Storage” meets the requirements of 30 TAC §330.63(b)(2).

10. Section “Citizen Disposal Facility” on Page B-5 of Attachment B indicates the unloading area will include a minimum of two roll-off boxes for collection. However, the roll-off boxes are not included in the provided Drawing B.5. Furthermore, the Drawing B.5 seems to leave out generalized construction details for the Citizen Disposal Facility/Stabilization Facility and it’s cross-section drawing in accordance with 30 TAC §§330.63(b)(2)(D) & (E). Please include the generalized construction details in these drawings.

RESPONSE: The citizen disposal facility/stabilization facility is an existing facility. As requested, Drawing B.5 has been revised to incorporate generalized construction details of this existing facility to meet the requirements of 30 TAC §§330.63(b)(2)(D) & (E), and to depict an area where the roll-off boxes may be located.

11. Section “Liquid Stabilization” on Page B-5 of Attachment B indicates a temporary metal solidification basin will be used for liquid wastes solidification process. Please provide a typical generalized construction details for this unit in accordance with 30 TAC §§330.63(b)(2)(D) & (E). In addition, the last sentence of this section indicates that the basin will be covered. Please provide the type(s) of cover material.

RESPONSE: Drawing B.6 has been added that includes generalized construction details for the temporary metal solidification basin. Page B-6 has been revised to include the types of materials to be used to cover the basin.

12. The second paragraph of Section “Leachate Storage Facility” on Page B-6 of Attachment B states “The Atascocita RDF will recirculate leachate or transport to an off-site POTW from the leachate storage tank, not to exceed storage volume available.” Please provide more information to clarify the “not to exceed storage volume available” in this statement.

RESPONSE: Part III, Attachment B, page B-6; Part III, Attachment D, Section 2.5, page D-6; and Part III, Attachment D6, Section 2.3, page D6-5 have been revised to clarify the maximum allowable storage volume.

13. Please provide freeboard information for the proposed leachate storage tank's secondary containment basin in accordance with 30 TAC §330.63(b)(2)(F).

RESPONSE: Part III, Attachment B, page B-6; Part III, Attachment D6, Section 2.3, page D6-5; and Part III, Attachment D6, Appendix D6-D have been revised to provide freeboard information.

14. The second paragraph on Page C-1 of Attachment C indicates that the Harris County Flood Control District (HCFCD) approved the facility expansion drainage design on March 5, 2010. Please provide this document or make reference to the location in Part III of the application that contains this document.

RESPONSE: As requested, a reference to the HCFCD approval letter is now included. The document is included in Part III, Attachment C2, Appendix C2-C, page C2-C-2.

15. Please provide off-site drainage run-on information in Section 1.1 of Attachment C1.

RESPONSE: As requested, Attachment C1, Section 1.1 has been revised to include reference to the surface water run-on at the permit boundary. The analysis of off-site drainage run-on is included in the current permitted and postdevelopment hydrology and hydraulic evaluations.

16. Section 2.1 of Attachment C1 indicates that the USACE Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) and River Analysis System (HEC-RAS) were used to compute required drainage parameters. To facilitate our review, please provide electronic input data for these computations, preferably on a compact disk, and include the programs' version and information on any assumption in this section or in Section 2.2 of Attachment C1.

RESPONSE: As requested, attached is a CD that includes the HEC-HMS and HEC-RAS electronic files. The reference to HEC-HMS included in Section 2.2.1, page C1-4 has been clarified to include the version of HEC-HMS used (Version 3.3). The reference to HEC-RAS included in Section 2.2.2, page C1-4 also now includes a reference to the version of HEC-RAS used (Version 3.0.1). Attachment C1, Section 1 and Section 2 has been revised to include modeling assumptions used.

17. Please include a soil loss calculation method in Section 2.1 of Attachment C1.

RESPONSE: As requested, Attachment C1, Section 2.1, page C1-4 has been revised to include a reference to the soil loss calculation method.

18. The second paragraph on Page C1-5 of Attachment C1 defines "The Current Permitted Condition" (CPC) as the condition of the existing permit (MSW Permit No. 1307C) and the existing condition of the proposed expansion area. However, the last sentence of this section states "The current permitted condition is defined within MSW Permit No. 1307C…" The information of the proposed expansion area was not included in the MSW Permit No. 1307C. Please revise this statement as necessary. In addition, the third paragraph indicates that the CPC contains two separate drainage system, the west and the east systems. However, the following sentence indicates that the evaluation of the CPC includes evaluation of the west and the east systems and the proposed expansion area. Please make sure that the defined CPC is used properly to avoid any confusion.

RESPONSE: As requested, Attachment C1, Section 3, page C1-5 has been revised to clarify references to the "current permitted condition".

19. Please include 100-year floodplain information on Drawings C1-A-1 and C1-A-2 in accordance with 30 TAC §330.63(c)(2). Additional maps or drawings may be required to capture all essential information.

RESPONSE: The 100-year floodplain information is included in Attachment C2 – Regional Drainage and Flood Control Analysis as required by 30 TAC §330.63(c)(2). Refer to Attachment C2, Attachment C2-B, Drawing C2-B-2 and C2-B-3. However, as requested, we have duplicated this information on Drawings C1-A-1 and C1-A-2 included in Attachment C1-A.

20. The first bullet on Page C1-5 of Attachment C1 indicates that drainage features, a channel (west outfall) and a 78 inches culvert, are utilized to convey the drainage from the west system into Garners Bayou at the discharge point CP1.a. Please include these drainage features in Drawings C1-A-1 and C1-A-2 or make reference to the location in Part III of the application that contains these drainage features information.

RESPONSE: As requested, we have included a reference to Drawing C3-3 – West Pond, which shows the location of these drainage features.

21. The third bullet on Page C1-9 of Attachment C1 indicates that drainage features, an outfall, a lateral weir along the east ditch, and an 18 inches culvert, are utilized to convey the drainage from the William Pond to William Gully at the discharge point CP4.b. Please include these drainage features in Drawing C1-A-2 or make reference to the location in Part III of the application that contains these drainage features information.

RESPONSE: As requested, we have included a reference to Drawing C3-4 – East Detention Pond and Floodplain Mitigation Channel, which shows the location of these drainage features.

22. Property boundary, current permit boundary, and drainage area boundary lines/attributes in most drawings, especially Drawings C1-A-1 and C1-A-2, are overlapped and form a solid line which makes it difficult to determine the actual permit boundary. Please revise these drawings to make sure that the permit boundary is clearly shown.

RESPONSE: As requested, we have revised Drawings C1-A-1 and C1-A-2 to clarify the location of the permit boundary and drainage area boundary lines.

23. Section 5.2 of Attachment C1 indicates that the diversion channel redirecting the stormwater run-on from along the northern border to the east to Williams Gully will cross a power easement via a 6-foot by 6-foot box culvert. Please include the culvert location in Drawing C1-A-2.

RESPONSE: As requested, we have revised Drawing C1-A-2 to depict the location of this drainage feature.

24. Section 6.2 on Page C1-15 of Attachment C1 indicates that the time frame for maintenance activities will vary based on weather, ground conditions, and other site-specific conditions. Under these conditions, please give a specific time frame to perform and complete the maintenance activities (i.e. within a week after the inspection). Please also give a specific time frame to perform and complete the maintenance activities under normal conditions (i.e. within 72 hours after the inspection). The same also apply to the Intermediate Cover Erosion and Sediment Control (ESC) in Appendix C1-F.

RESPONSE: As requested, Attachment C1, Section 6.2, page C1-15 has been revised to provide a time frame to perform and complete maintenance activities for the final cover stormwater system. Further, Appendix C1-F, page C1-F-6 has been revised to provide a time frame to perform and complete maintenance activities for the intermediate cover stormwater system. The time frame for maintenance activities is consistent with §330.165(g) which requires eroded areas to be repaired within five days of detection.

25. The third bullet on Page C1-16 of Attachment C1 indicates that tracking of daily cover to reduce velocity of stormwater runoff will be utilized. Due to the thickness of daily cover (only 6 inches) and the required characteristic (intact and slope) to promote drainage, we do not recommend the tracking. Please revise this bullet accordingly.

RESPONSE: As requested, Attachment C1, page C1-16 has been revised to remove the term "tracking".

26. The fourth bullet on Page C1-16 of Attachment C1 states "Should erosion of daily cover be observed, additional controls may be constructed …" Please revise and avoid the word "may" and similar phrases that use ambiguous language within the drainage ESC plan to specify what, when, and where such ESC devices will be used to control erosion and sediment transport. The ESC plan must clearly specify and commit to those ESC

measures that will be implemented. It is suggested that a commitment to implement the additional/supplemental erosion control measures while maintaining flexibility could be provided by a statement such as "in the event that additional soil stabilization or erosion control measures are deemed necessary, one or more of the following measures will be implemented. The same also apply to the Intermediate Cover ESC Plan in Appendix C1-F.

RESPONSE: As requested, Attachment C1, page C1-16 and Appendix C1-F have been revised to clarify a commitment to the erosion and sediment controls that will be implemented.

27. Please revise a typographical error on the rule citation in the first sentence on Page C1-17, "§330.63(e)(1)(D)(iii)" instead of "§330.63(c)(1)(D)(iii)".

RESPONSE: As requested, the typographical error has been corrected.

28. The second paragraph on Page C1-F-1 of Appendix C1-F states "Slopes that drain to ongoing waste placement, pre-excavated areas, areas that have received only daily cover, or areas under construction that have not received waste are not covered under this appendix." Please revise this statement to ensure that stormwater from slopes that drain to these areas does not indirectly continue to flow to the site perimeter stormwater management system.

RESPONSE: As requested, Appendix C1-4, page C1-F-1 has been revised to clarify that slopes from these areas do not contribute to offsite runoff.

29. Please include the 100-year floodplain mitigation berm/levee in the applicable cross-sections in Attachment D2.

RESPONSE: Part III, Attachment D2 has been revised to include the perimeter road/berm on the applicable cross sections.

30. Drawing D3.12 in Attachment D3 and Drawing H2.4 in Attachment H delineate a final cover tie-in which includes a 4-foot compact clay barrier required for Class 1 industrial solid waste (Class 1) sectors. The design of the Class 1 barrier consists of a 4% slope cap and a very steep (approximately 200% as shown in the drawing) sidewalls to separate Class 1 waste from MSW waste. However, the foot of the Class 1 barrier sidewall that tie into the landfill excavation sidewall liner system seems to have a potential to trap leachate and/or condensate which may lessen the integrity of the landfill excavation sidewall liner system. Please provide an explanation or a statement to ensure that this tie-in will also be sloped so that MSW leachate can migrate to the MSW liner's leachate collection system.

RESPONSE: The Atascocita RDF has ceased acceptance of Class 1 nonhazardous industrial waste and will not accept the Class 1 nonhazardous industrial waste in the future. Detail FC7 on Drawing D3.12 shows the existing compacted clay

barrier that was constructed in accordance with the approved permit conditions in Phases 2, 3, and 4 and is shown for reference only. The approved design provided an aggregate drain around the perimeter of the compacted clay barrier to collect the leachate and allow it to drain through the protective cover into the sidewall geocomposite. No additional Class 1 nonhazardous industrial sectors are proposed by this permit amendment. Drawing D3.12 has been revised to clarify that the compacted clay barrier and aggregate drain are existing features.

31. It is not clear that the Class 1 trench/sector has a separate Class 1 leachate collection system. Please provide this information in Attachment D6, including a Class 1 leachate management plan or make reference to the location in Part III of the application that contains these information.

RESPONSE: Class 1 nonhazardous industrial sectors were constructed in Phases 2, 3, and 4 with leachate collection systems in accordance with the approved permit conditions. No additional Class 1 nonhazardous industrial sectors are proposed by this permit amendment. The leachate from these sectors will be managed in accordance with Part III, Attachment D6 – Leachate and Contaminated Water Management Plan.

32. Please provide relevant stormwater drainage equations for all calculated values on Page D6-C-2 of Appendix D6-C.

RESPONSE: Part III, Appendix D6-C, page D6-C-2 has been revised to include the relevant stormwater drainage equations for all calculated values.

33. Section 3 of Attachment D6 indicates that contaminated water will be stored in the proposed leachate storage tank and leachate that is mixed with contaminated water will not be recirculated. Please provide a protocol on how the recirculation of the mixed liquid be avoided.

RESPONSE: Contaminated water will not be stored in the on-site leachate storage facility. Part III, Attachment D6, Section 3.3, page D6-7 and Appendix D6-5, Section 2.3 have been revised accordingly.

34. Please provide a management plan for contaminated water generated onsite.

RESPONSE: The management plan for contaminated water generated onsite is located in Part III, Attachment D6, Section 3.

35. The Liner Quality Control Plan (LQCP) on Page D7-1 of Attachment D7 indicates that a detailed description of the geology and geotechnical design of the site is provided in Attachments E and D5. An inadequate summary of Attachment E is provided in the LQCP. The LQCP should be a stand-alone document to provide guidance for the

construction and testing of the constructed liner system. Please revise the LQCP to include all essential and required information in accordance with 30 TAC §330.339.

RESPONSE: Part III, Attachment D7, Section 1.3 has been revised to include a summary of the geology and geotechnical design of the site.

36. Please include a statement in Attachment D7 to ensure that all field sampling and testing, both during construction and after completion, will be performed by a licensed professional engineer in accordance with 30 TAC §330.339(a)(2).

RESPONSE: 30 TAC §330.339(a)(2) includes the following requirements: "All field sampling and testing, both during construction and after completion, shall be performed by a person acting in compliance with the provisions of the Texas Engineering Practice Act and other applicable state laws and regulations. The professional of record who signs the soil liner evaluation report or his representative should be on site during all liner construction."

Section 1.2 defines the CQA monitor as a representative of the Geotechnical Professional (GP) who works under the direct supervision of the GP. Sections 4.1, 5.1, 6.1, and 7.1 have been revised to clarify that field sampling and testing will be performed in accordance with 30 TAC §330.339(a)(2).

37. Please revise Section 8 of Attachment D7 to provide information to ensure that the weight of the liner system, including any ballast, must be sufficient to offset any unbalanced upward or inward hydrostatic forces on the liner by a factor of 1.5 or more.

RESPONSE: Part III, Attachment D7, Section 8.2, page D7-31 has been revised to state that the ballast will offset hydrostatic forces with a minimum factor of safety of 1.5 as demonstrated in Appendix D7-C.

38. Please provide a table or a paragraph describing a sequence of construction activities for installing the temporary dewatering system, liners, leachate collection system, etc.). Please also include a statement to ensure that all soil testing and evaluation of constructed soil liners will be complete prior to installing the leachate collection system.

RESPONSE: Part III, Attachment D7, Section 1 has been revised to include a summary describing the sequence of construction activities and a statement that all soil testing and evaluation of constructed soil liners will be complete prior to installing the leachate collection system.

39. Please include information regarding surface drainage entering and departing the completed fill area in Attachment H, Drawing H2.1.

RESPONSE: Part III, Attachment H, Drawing H2.1 has been revised to include the requested information.

40. Please provide a statement in Attachments H and I to ensure that the closure plan and the post-closure plan will be placed in the site operating records in accordance with 30 TAC §§330.457(f)(1) and 330.463(b)(3).

RESPONSE: Part III, Attachment H, Section 1, page H-1; and Part III, Attachment I, Section 1, I-1 have been revised to include the requested information.

The following comments are provided by Mr. Arten Avakian, P.G., of the TCEQ MSW Permits Section, regarding geological, groundwater, landfill gas, site operating plan, and miscellaneous issues.

Part I of the Application

41. The latitude and longitude coordinates stated for the facility differs slightly in different parts of the application. On the Part I form, the coordinates are stated as N 29° 57' 14", W 95° 14' 36", whereas in the Part I narrative, Section 2.3 the longitude stated is N 29° 57' 12" (difference in minutes). On Drawings IC.5 (Permit Boundary) and IIA.8 (General Site Plan), the coordinates of the site benchmark are expressed as northing and easting (N789,929.71, E3,189,458.65). In Figure E4-1 (Seismic Impact Zone Map), the coordinates are given in decimal degrees format (29.953889N, 95.226667W). Please revise the application to ensure that the same site coordinates are used throughout, and where expressed as northing and easting or in decimal degrees format, also provide the coordinates in degree-minute-second format so they may be readily compared. The coordinates used to represent the site location should be the latitude and longitude of the permanent facility benchmark.

RESPONSE: As requested, the latitude and longitude coordinates and elevation of the permanent facility benchmark have been clarified. The Part I Form; Part I, Section 2.3; Part II, Drawing IIA.8; and Part III, Figure E4-1 have been revised and are now consistent. Drawing IC.1 – Permit Boundary is the permit boundary metes and bounds and includes the correct site benchmark information, and does not require revision.

42. The coordinates of the permanent facility benchmark are noted on Drawing IIA.8 (General Site Plan), however, we could not find the benchmark on the drawing. Please verify that the benchmark is included on the drawing, and provide a prominent label to help locate the feature.

RESPONSE: As requested, Part II, Drawing IIA.8 has been revised to include the location of the permanent facility benchmark.

43. Identify in the Section 3 of the narrative to Part I, and in the table of contents for the narrative which maps in Part I show the information required by 30 TAC §305.45(a)(6)(A).

RESPONSE: As requested, Section 3 has been revised to identify Drawing IA.3A – Water Wells as the drawing that shows each well and surface water body within one mile of the permit boundary.

Please note that there are no springs within one mile of the permit boundary. As a result, the designation for "spring" has been removed from the legends in Part I, Appendix IA, Drawing IA.3; Part II, Appendix IIA, Drawings IIA.2, IIA.3, and IIA.4; and Part III, Attachment E, Appendix E1, Figure E1-6.

44. Some of the well symbols and labels on Drawing IIA.10 (Groundwater and Landfill Gas Monitoring Plan) are not readable. Please revise the drawing so that all information is legible.

RESPONSE: As requested, Part II, Drawing IIA.10 has been revised to clarify locations of groundwater monitoring wells and landfill gas probes.

45. Section 8.1 and Drawing IIA.4 both reference Part III of the Application, Attachment E for details required by 30 TAC §330.61(h)(5) (description and discussion of all known wells within 500 feet of the proposed facility). Please revise the application to include the details required by §330.61(h)(5) within Part II.

RESPONSE: As requested, Part II, Section 8.1, and Drawing IIA.4 have been revised to include the details of all known wells within 500 feet of the proposed facility.

Part II of the Application

46. Please have the responsible licensed professional geoscientist seal Section 10, General Geology and Soils Statement, in accordance with 30 TAC §330.57(f)(2).

RESPONSE: As requested, Part II has been revised to include the professional geoscientist seal and professional engineer seal for applicable sections. These seals were previously included in the application in Attachments D, E, and F, and in Appendix IIJ – Location Restrictions. The Part II Table of Contents has been revised to incorporate the appropriate seals.

47. Please provide details in Sections 10.1 and 10.2 about the stratigraphy beneath the area, in accordance with 30 TAC §330.61(j)(1). Include names of units, ages, and depositional systems. Also provide information about surface soils. Include copies of the geologic maps, legend, and stratigraphic column that appear in Part III.

RESPONSE: Text from Attachment E, Section 4.2 – Site Stratigraphy text has been copied into Part II, Section 10.1 – General Geology and Section 10.2 – General Soils to provide the information requested. In addition, Drawing IIA.16 – Geologic Vicinity Map and Drawing IIA.17 – Geologic Vicinity Legend have been added to Appendix IIA – Maps and Drawings.

48. Provide a summary in Section 10.3 of the fault study detailed in Appendix E8 of Part III, Attachment E, in accordance with 30 TAC §330.61(j)(2). Also, please verify who conducted the study (Furgo South, Inc. or Fugro Consultants, Inc.) and revise accordingly.

RESPONSE: Part II, Section 10.3 – Fault Areas has been revised to incorporate the summary of the fault study conducted by Fugro Consultants, Inc. (Fugro). The summary as presented in Part III, Attachment E, Section 2.1 – Fault Areas is duplicated in Part II, Section 10.3.

49. Provide a summary in Section 10.4 of the seismic impact zone evaluation (Appendix E4 of Part III, Attachment E), in accordance with 30 TAC §330.61(j)(3). Describe what was examined, and what was found (or not found).

RESPONSE: The Attachment E, Section 2.2 – Seismic Impact Zones text has been duplicated in Part II, Section 10.4 – Seismic Impact Zones.

50. Provide a summary in Section 10.5 of the unstable area evaluation (Part III, Attachment D5), in accordance with 30 TAC §330.61(j)(4). Describe what was examined, and what was found (or not found).

RESPONSE: The summary of the unstable area evaluation provided in Part II, Section 10.5 has been revised to highlight what was examined and what was found.

51. Please have the responsible qualified groundwater scientist (licensed professional geoscientist or licensed professional engineer) seal the groundwater portion of Section 11, Groundwater and Surface Water Statement, in accordance with 30 TAC §330.57(f).

RESPONSE: As requested, Part II has been revised to include the professional geoscientist seal and professional engineer seal for applicable sections. These seals were previously included in the application in Attachments D, E, and F and in Appendix IIJ – Location Restrictions. The Part II Table of Contents has been revised to incorporate the appropriate seals.

52. Please provide more discussion or a figure, or both to better illustrate the hydrogeologic units and aquifers mentioned in the text, and how they relate to the stratigraphic units in the area.

RESPONSE: Part II, Section 11.1 – Groundwater has been revised to include additional text and a table that have been duplicated from Attachment E, Section 3 – Regional Aquifers to comply with the request.

53. In Section 12.1, please identify the locations of water wells (by name and/or number) in the text, and reference Drawing IIA.4. Indicate the well depth, screen interval, etc.,

whether any of the wells are in use, and if they are inside or outside the groundwater monitor well network. In accordance with 30 TAC §330.61(l)(1), wells that will not be used must be plugged and abandoned.

RESPONSE: As requested, Part II, Section 12.1 has been revised to identify the location of any and all existing or abandoned water wells located within the facility and to provide the additional information requested. Refer to Part II, Drawing IIA-4 – Water Wells.

54. Some of the symbols and labels on Drawing IIA.5 (Locations of Oil and Gas Producing Wells) are not readable. Please revise Drawing IIA.5 (and Figure E4-2 in Appendix E4 of Part III, Attachment E, which presents the same information) so that all information is legible. Please also reference Drawing IIA.5 in Section 12.2 of Part II.

RESPONSE: As requested, Part II, Drawing IIA.5 has been revised for clarity. Part II, Section 12.2 has been revised to include a reference to Drawing IIA.5.

55. Please provide definitive statements of whether water wells or oil and gas wells are located within facility boundary (and whether they are inside or outside the groundwater monitor well network), whether they exist or have been plugged and abandoned, and whether they are producing or not.

RESPONSE: Section 8.1 – Wells Within 500 Feet has been revised to include additional text related to water wells duplicated from Attachment E. Note that the current text of the last paragraph states that there are no producing oil or gas wells within 500 feet of the permit boundary.

56. Please specify in Appendix IIJ (page IIJ-1) which documents in Part II, Appendix IIA support the Easements and Buffer Zones Location Restriction certification. Reference these same documents in the discussion of the location restriction in Section 17.1.

RESPONSE: As requested, Part II, Appendix IIJ and Section 17.1 has been revised to reference the documents that support the Easement and Buffer Zones Location Restriction certification.

57. Please specify in Appendix IIJ (page IIJ-4) which documents in Part III, Attachment E support the Groundwater Location Restriction certification. Reference these same documents in the discussion of the location restriction in Section 17.4.

RESPONSE: As requested, Part II, Appendix IIJ and Section 17.4 have been revised to reference the documents that support the Groundwater Location Restriction certification.

58. Please specify in Appendix IIJ (page IIJ-8) which documents in Part III, Attachment E support the Seismic Impact Zone Location Restriction certification. Reference these same documents in the discussion of the location restriction in Section 17.8.

RESPONSE: As requested, Part II, Appendix IIJ and Section 17.8 have been revised to reference the documents that support the Seismic Impact Zone Location Restriction certification.

59. Please specify in Appendix IIJ (page IIJ-9) which documents in Part III, Attachment D support the Unstable Areas Location Restriction certification. Reference these same documents in the discussion of the location restriction in Section 17.9.

RESPONSE: Part II, Appendix IIJ, page IIJ-9 and Section 17.9 have been revised to reference the information in Part III, Attachment D that support the Unstable Areas Location Restriction certification.

60. The application states that Class 1 nonhazardous industrial waste will not be accepted in the cells of future landfill phases 5 and 6. Please clarify whether the facility is still accepting Class 1 waste in cells of existing landfill phases 1 through 4. If so, please detail cells, and when acceptance will cease.

RESPONSE: As stated in Part II, Section 2.1, the Atascocita RDF will no longer accept Class 1 nonhazardous industrial waste. The facility has reached its available Class 1 nonhazardous disposal capacity within the existing lined areas authorized for disposal of Class 1 waste in Phases 2, 3, and 4. Phase 1 was not authorized to accept Class 1 waste. There are no changes required.

Part III of the Application

General Comments

61. This amendment application will replace the existing permit if the permit amendment is granted. Therefore, copies of any prior studies that are cited in the amendment application or relied upon to support the application must be included in the application.

RESPONSE: Noted.

Attachment D – Waste Management Unit design

62. Several of the landfill unit cross sections in Part III, Attachment D2 (notably sections 1, 2, and 3) pass through or very near groundwater monitor wells and gas probes that are not shown on the sections. Please add these wells and probes and their water-level information to the sections in accordance with 30 TAC §330.63(d)(4)(E).

RESPONSE: Part III, Attachment D2 has been revised to depict monitor wells, gas probes, and water level information on all applicable landfill unit cross sections.

Attachment E – Geology Report

63. Please include statements about hydraulic conductivity of the subsurface geologic units in the description of the generalized stratigraphic column in the facility area, in accordance with 30 TAC §330.63(e)(1)(B).

RESPONSE: Hydraulic conductivities for the aquifers have been included in the generalized stratigraphic column (Table E-1). Hydraulic conductivities for the individual units that comprise the aquifers are generally not available. However, geologic studies tend to focus on the aquifer as a whole unit and therefore the hydraulic conductivities of the aquifer are available and included in this submittal.

64. Please address the following comments regarding the fault study in Appendix E8 to Attachment E:

a. Include in Appendix E8 the five previous studies mentioned in Section 3.2.

RESPONSE: The five previous fault studies – Norman, 1979; Norman, 1980; McClelland, 1980; Tolunay-Wong, 2003; and Ireland, 2003 – have been copied and included in this application as Appendix E8-A. Note that the copy quality is not good but is the best that can be done with the copies that are available. The Norman, 1979 and 1980 fault studies were summarized in the 2004 permit application on pages 193 through 200. Tolunay-Wong, 2003 and Ireland, 2003 were included in the 2004 permit application on pages 201 through 205. McClelland, 1980 was not included in the previous permit application; however, a copy has been located and it is included in the new Appendix E8-A.

b. Provide Figure 2 (Regional Tectonic Map) at larger scale to better illustrate the distance of the facility from the Humble Salt Dome.

RESPONSE: Figure 2 was produced by scanning the referenced map and pasting the image into an AutoCAD drawing. The map is a regional map with the intent of illustrating the regional geology in the area of the facility. We were unable to adjust the graphics of this map without distortion. However, Figure E4-2 depicts the oil and gas wells located on the south flank of the Humble Salt Dome. A review of published geologic reports on the Humble Field shows that this salt dome is a feature that stretches from a depth of approximately 10,000 feet to about 1,100 feet below the current surface. The exact location of the salt dome depends on the depth examined, but in general the dome is about 1 mile north of the northernmost point of the existing Atascocita RDF, or about 2 miles north of the northern extent of this proposed expansion.

c. Some of the information on Figure 3 (Regional Tectonic Map Legend) is faint and hard to read. Please revise the figure so that all information is legible.

RESPONSE: Figure 3 was produced by scanning the referenced map legend and pasting the image into an AutoCAD drawing. The information presented on Figure 3 was rescanned by an outside printing and reproduction company for resubmittal; however, the new scan does not appear to be of any higher quality than the original scan used to prepare Figure 3. The original Figure 3 produced from the electronic drawing appears to be a good reproduction of the original document.

d. It appears there may be patterning in Figures 2 and 3 that is not reproducing well. Please attempt to produce the figures in a manner that will preserve the patterning.

RESPONSE: The original Figures 2 and 3 produced from the electronic drawing appear to be good reproductions of the original documents. Photocopies of the original figures appear to lose details. Figures 2 and 3 have been regenerated from the original electronic drawings and have been resubmitted.

e. The symbols for the proposed and existing landfill permit boundaries on Figure 4 appear to be the same. Please revise as needed to differentiate the boundaries. Also, revise the map legend to indicate if the teeth on the faults symbols are on the upthrown side or downthrown side of the fault.

RESPONSE: Figures 1 and 4 have been revised to differentiate between the existing landfill permit boundary and the proposed landfill permit boundary. The map legend on Figure 4 has been revised to indicate that the teeth on the fault represent the downthrown side of the fault. Revised Figures 1 and 4 are included in the attached submittal.

f. Show all of the features and localities discussed in the text (for example, in Sections 3.5.2, 3.5.3. 3.5.4, 3.5.5, and 3.9) on a figure.

RESPONSE: Different methods of fault mapping can produce varying results. The purpose of discussing these features that were identified in the general vicinity of the site was to demonstrate the validity of the methods for mapping faults in the area. Many of the features that were identified are significant distances (in some cases miles away) from the facility and/or trend in a direction that would not impact the facility. In order to focus on the features that could impact the facility, only the features that were identified that could possibly impact the facility have been presented on Figure 4.

g. Document the dates of site visits in Section 3.8.

RESPONSE: A site visit to observe exposed excavation walls for indications of faulting was conducted on January 22, 2009. Section 3.8 has been revised to include the site visit date.

h. Verify which references in Section 5.0 are cited in the text (marked with *).

RESPONSE: Section 5.0 has been reviewed and updated to indicate what references are cited in the text. Section 5.0 has also been expanded to include the McClelland study.

i. Show where the stratigraphic markers summarized in Figure 7 were selected on the geophysical logs in Appendix A. Describe each marker in Figure 7 and/or in the text, and indicate how many and which of the criteria described in Section 4.4.1 were met for each marker.

RESPONSE: The stratigraphic markers that were selected for this study are tabulated on Figure 6. The geophysical logs in Appendix A have been updated to show the markers. The markers were selected based on the four criteria listed in Section 4.4.1. Each marker that was selected met all four criteria. Section 4.4.2 has been revised to include a statement that the markers selected for this study met all four criteria.

j. Provide a "walk-through" narrative of the analysis of criteria in Section 4.4.3 that led to the conclusion at end of section.

RESPONSE: Stratigraphic markers were selected using the criteria presented in Section 4.4.1. The markers were continually evaluated as the electric logs became available. The logs were overlaid on a light table to facilitate selecting and matching the markers. As markers and depths were identified, the marker information was plotted on a scaled drawing, both vertically and horizontally. The drawing was prepared with a vertical exaggeration of 10 times, meaning the vertical scale is 10 times greater than the horizontal scale. This vertical exaggeration allows ready recognition of vertical offsets of markers. The criteria presented in Section 4.4.3 establish the requirements necessary to identify the presence or absences of a fault. Figure 7 presents the stratigraphic markers to scale. The section was prepared with a vertical exaggeration of 10 times. Each marker was evaluated for 1) marker offset, 2) offset increasing with depth, 3) permanent offset, 4) offset occurring over a short distance, and 5) offset greater than limits of the method. There were no markers present that were offset. Therefore, no faults are present.

k. Modify the last sentence in Section 4.5 to clarify that "Therefore, it is concluded that there are no faults within 200 feet of the proposed expansion."

RESPONSE: The last sentence in Section 4.5 has been modified to read "Therefore, it is concluded from this study that there are no faults within 200 feet of the proposed expansion."

65. The fault study in Appendix E8 concludes that the subsurface fault identified in an oil field southeast of the site projects to the surface outside of the expansion area. Please provide a discussion in Section 2 of Attachment E, and a summary in Section 10.3 of Part II of the application, explaining how the landfill has been designed to maintain structural integrity and resist disruption, in case the subsurface fault projects to the surface within the expansion area.

RESPONSE: The purpose of this study was to determine the possibility of faulting that could impact the proposed expansion of this facility. The study was performed in accordance with TCEQ's requirements. The study included drilling, logging, and interpreting geophysical borings that extended 300 feet into Pleistocene soil. No offsets in the stratigraphic markers associated with faulting were identified. The results of this exhaustive study conclude that there are no faults that would impact the proposed expansion, and that there has been no movement in Holocene time within at least 200 feet of the waste disposal facility (as required by §330.555).

The fault study was conducted by a registered professional engineer with vast experience in identifying and delineating faulting in the Gulf Coast. This study was actively peer reviewed by Dr. H.C. Clark.

In addition, it should be noted that the fault in question (located at a depth of about 7,000 feet and 1 mile southeast of the site) was created prior to the Pleistocene (more than 2 million years ago). More than 3 million barrels of oil have been removed from the nearby Alco-Mag Field and more than 160 million barrels have been removed from the nearby Humble Salt Dome Field. Both fields are in the late stages of depletion. Since the fault study demonstrated that no fault was advanced to the surface during the time of extraction of those high volumes of oil production, and since that oil production has all but stopped, it is unlikely movement would ever resume.

66. In Section 2.3 of Attachment E, explain what "site observations" and "review of existing documentation" were performed during the determination of potential unstable areas.

RESPONSE: Part III, Attachment E, Section 2.3 has been revised to include an explanation of the site observations and review of existing documentation performed during the determination of the potential unstable areas.

67. In Section 3 of Attachment E, provide references back to Table E-1 when mentioning formation and unit names.

RESPONSE: Section 3.1.1.1 has been revised to include a reference to Table E-1.

68. The thickness given for the Chicot Aquifer in Section 3.1.1.1 (600 feet) differs from the thickness reported in Table E-1 (700 feet). Please review and revise accordingly.

RESPONSE: As documented by Baker, 1989, and others, the thickness of the regional Chicot Aquifer is difficult to define. The 700-foot thickness in Table E-1 was measured from the Generalized Regional Geologic Cross Section in the approximate location of the facility projected onto the section (from Baker, 1989). The 2004 Permit identifies the Chicot as being about 500 feet thick but the source of that data is not cited. To provide consistency within the document we have revised both references to state that the thickness of the Chicot in the vicinity of the site ranges in approximate depth between 500 to 700 feet.

69. Please identify in which named, regional stratigraphic unit each of the facility units (Unit I, Unit II/III, Unit IV, and Unit V) resides. Include the information in Table E-5. Please also include in Table E-5 the characteristics used to differentiate the units.

RESPONSE: As shown in Table E-1, the site is located within the Beaumont Formation. Table E-5 has been modified to reflect that location. Also, Table E-5 has been modified to provide a reference to the more detailed stratigraphic description discussion in Section 4.2 of Attachment E. Section 1.2.2 has been modified to reflect the estimated Beaumont thickness in the area of the site.

70. Please include a description of the color of each unit at the site (as done for Unit IV-A).

RESPONSE: Text has been modified in the appropriate parts of Section 4.2 to include the range of colors for each lithologic unit.

71. In Figures E1-4 and E1-5, the source reference information may be mistaken for the figures title. We suggest that the font size of the source reference be reduced, and a prominent figure-specific title be added (in addition to the title in the title block).

RESPONSE: The font size of the reference has been reduced and relocated under the legend.

72. Please provide more detail in Table E-2 regarding recharge zones for the Evangeline Aquifer.

RESPONSE: Additional information regarding recharge zones for the Evangeline Aquifer has been included in Table E-2.

73. In the first paragraph of Section 3.2 of Attachment E, identify which wells (of any status) are inside property boundary, including wells remaining, wells plugged and abandoned, and any wells unaccounted for.

RESPONSE: Well identifications inside the permit boundary have been added to Section 3.2.

74. Please add an explanation of the well use codes in Table E-3, to the footnotes for the table.

RESPONSE: An explanation of the well use codes has been included in the footnotes at the end of Table E-3.

75. Please add boring location coordinates to Table E-4, and modify the subheadings so they will be legible when the pages are copied (currently, shading masks the information in the subheadings).

RESPONSE: The boring location coordinates have been added to Table E-4, and the shading has been removed from the subheadings.

76. Much of the information in Figures E2-2 is not legible. Please revise the figure (for example, larger scale and/or lighter contours) so that all information will be readable. Please address the same issues for Figure E3-1.

RESPONSE: Figures E2-2 and E3-1 have been modified so that the information shown on the map is legible.

77. Section 4.1.4 states that the minimum boring depth was 1 foot. Please verify whether this is correct, and revise as needed.

RESPONSE: The 1-foot depth listed in Section 4.1.4 was a typographical error. It has been corrected.

78. On Figure E3-1, the left most digit of the northing value is masked by the figure border. Please revise the figure as needed to prevent the information from being masked.

RESPONSE: Figure E3-1 has been revised to show the coordinates.

79. Clarify in the text whether the BME piezometers were installed in separate boring near the geotechnical boring or in the same boring, and whether the boring logs for the piezometers were developed from piezometer borings, or transcribed from the geotechnical boring logs.

RESPONSE: Section 4.1.1 of Attachment E has been updated with a description of sampling and logging procedures for the piezometer boreholes.

80. Please show piezometer location on the cross section location map in Figure E3-1.

RESPONSE: The piezometer locations have been included on Figure E3-1.

81. Please consider using patterns or other alternatives to color on the geologic cross sections in Figures E3-1 through E3-8. Cross sections must be legible when reproduced; color differentiation is lost or masks other information when the cross sections are reproduced in black and white.

RESPONSE: Clean black and white copies of Figures E3-1 through E3-8 are included with this submittal and appear legible to us.

82. Please clarify in Section 4.2.5 which borings were used to determine the thickness of Unit V.

RESPONSE: Sections 4.2.5 and 5.5.1.5 have been modified to clarify which borings were used to determine the thickness of Unit V.

83. Please reference Appendix E-5 (Laboratory Tests) in Section 5.1 of Attachment E.

RESPONSE: Part III, Attachment E, Section 5.1, page E-27 has been revised to reference Appendix E-5.

84. In Table E-7, explain the meaning of "NP" and "N/A" in line for Unit IV. Also, please describe how the average hydraulic conductivities were calculated, include the source data in Appendix E5, and add a footnote to the table referencing the appendix for the source data.

RESPONSE: Table E-7 has been revised as requested. The results for laboratory permeability tests performed on samples from borings BME-6, BME-12, and BME-15 were inadvertently not included in the geotechnical laboratory test summary table located in Appendix E5 in the initial submittal of this permit application. Part III, Attachments D and E have been revised to incorporate these permeability results.

85. In Appendix E5, please indicate the corresponding site unit (that is, Unit I, II/III, IV, or V) for each sample in the table on pages E5-1 thru E5-16. Also, indicate sample depths in the table (in addition to sample elevation).

RESPONSE: Part III, Attachment E, Appendix E-5 has been revised to indicate the corresponding site unit, elevation, and depth of each sample.

86. Please identify the location of the laboratory data for atterberg limits and moisture content required by 30 TAC §330.63(e)(5)(B)(iv) and (v).

RESPONSE: Part III, Attachment E, Section 5.1 has been revised to identify the location of the laboratory data.

87. In Section 5.5 (and/or elsewhere as needed), please reference summary tables when discussing hydraulic conductivity. Include footnotes for the tables, referencing source data in appendices.

RESPONSE: Part III, Attachment E, Section 5.5 has been revised to reference summary tables.

88. Please clarify in the last sentence of the second paragraph of Section 5.5.2 that it is the groundwater potentiometric level of Unit IV that is separated by 75 feet from that of the main Chicot Aquifer (rather than the groundwater itself), if that is what was intended.

RESPONSE: The sentence has been revised for clarification.

89. In the groundwater flow velocity discussion in Section 5.5.2, please reference the groundwater velocity computations on page E6-24 in Appendix E6 to Attachment E. On the computation sheet, document how the conversion constant 2835 was determined.

RESPONSE: The groundwater flow velocity calculation sheet is referenced in Section 5.5.2 as being located on page E6-24 in Appendix E6 in Attachment E. 2835 is a commonly used conversion value that converts measurements of velocity from cm/sec into feet/day. It is widely used; in fact, it is used on the inside of the front cover of C.W. Fetter's Applied Hydrogeology, 1994.

90. Please include the 1993 report by Rust Environmental, mentioned in Table E16, in an appendix to Attachment E. Add a footnote to Table E-16 to reference the source data in the report.

RESPONSE: The Rust, 1993 reference was inadvertently carried forward from the citations contained the 2004 Subsurface Investigation Report prepared by Golder. We have been unable to locate a copy of the 1993 Rust report. All references to Rust, 1993 have been changed to Golder, 2004. The result of the 1993 study prepared by Rust Environmental was the subsequent installation of new monitoring wells, refurbishment and development of existing monitoring wells, and decommissioning of piezometers as described in the letter/report dated August 11, 1994 to Waste Management. We were able to locate a partial copy of that letter/report. The monitoring well construction summaries and data sheets contained in the 1994 letter/report are included in Appendix E2.

91. Please revise Figures E6-4 through E6-7 to show piezometer identifiers for BME borings (in addition to boring identifiers).

RESPONSE: Figures E6-4 through E6-7 have been revised to show the piezometers for the BME borings.

92. Please revise Figures E6-11 through E6-14 to show where part of Unit I will remain.

RESPONSE: Figures E6-11 through E6-14 have been revised to show where part of Unit I will remain.

93. In Figure E6-17, the crosshatch pattern in the southern portion of the site appears to be on the opposite side of the limit line compared to other figures that show similar information. Please examine the figure and revise as needed.

RESPONSE: On Figure E6-17, the crosshatch pattern in the southern portion of the site has been corrected.

94. Please explain the anomalous Unit IV water levels shown on Figure E6-21 (for example, for MW3-3 & MW10-2).

RESPONSE: Water levels shown for Unit IV wells MW-3-3 and MW-10-2 appear to be anomalously high as the comment points out. We suspect these to be erroneous readings because the high water levels are 10 to 20 feet higher than any of the water level elevations for Unit IV in the site wells. For the past five semi-annual events, the water levels in MW-10-2 appear to have stabilized at the typical Unit IV elevations near sea level. The water levels in MW-3-3 have been stabilized at typical Unit IV levels for the past five years.

Attachment F – Groundwater Monitoring Plan

95. Please revise Section 4.1 (Plume of Contamination) to acknowledge the arsenic mobilization in the area of monitor well MW7-1, which apparently is caused by landfill gas releases.

RESPONSE: Section 4.1 in Attachment F has been modified to reflect that the increase of arsenic in groundwater in MW7-1 was apparently caused by a landfill gas release from the landfill.

96. In Section 4.3 (Assessment Monitoring), please reference the exact sections of the Landfill Gas Management Plan where the landfill gas oxidation activity is described. Include figures in Attachment F identifying the wells and contaminants discussed in Sections 4.3 and 4.4 of Attachment F.

RESPONSE: The landfill gas oxidation activity is described in Section 5.2.3 – Landfill Gas Oxidation System of Attachment G – Landfill Gas Management Plan. The related permit modifications are contained in Appendix G6 – Incident Specific Remediation Plans. These references have been included in Section 4.3 as requested.

Monitoring well MW7-1 is in assessment and is identified as such on Figure F1-6.

97. In Sections 1, 1.1, 1.2, 3.2, and 3.3, please include and reference summary tables when discussing hydraulic conductivity. Include footnotes for the tables, referencing source data in appendices.

RESPONSE: References in Sections 1 and 3 have been revised or added, as appropriate.

98. In Section 3.3, please reference figures that show the area extents and points of compliance (POCs) for Unit IV and Unit II/III (as done for Unit I).

RESPONSE: Section 3.3 has been revised to provide references to figures that show the extents and POCs for Unit IV and Unit II/III.

99. The second paragraph of Section 1.2.3 first references Figure E3-10 for Unit I, but then references the figure again for Unit II/III. Please revise the section to reference the figure intended for Unit II/III.

RESPONSE: The figure reference for Unit II/III has been corrected in Section 1.2.3.

100. Acknowledge in an appropriate location in Attachment F that the owner or operator will submit a certification in accordance with 30 TAC §330.401(e) that the facility is in compliance with the groundwater monitoring requirements in 30 TAC §330.403, §330.405, §330.407, and §330.409 before placing waste in new landfill units.

RESPONSE: In accordance with 30 TAC §330.401(e), a groundwater monitoring system design certification signed by a qualified groundwater scientist has been provided on page F-v. Attachment F, Section 3, has been revised to include a statement that the owner or operator will submit a certification in accordance with 30 TAC §330.401(e) that the facility is in compliance with the groundwater monitoring requirements in 30 TAC §330.403, §330.405, §330.407, and §330.409 before waste is placed in new landfill units.

101. In Section 2.1, please reference one or more figures showing the area extents of the stratigraphic units at the facility.

RESPONSE: Section 2.3 has been revised to include figures showing the extents of the stratigraphic units.

102. In Section 2.2, please reference one or more figures showing all leachate collection sumps.

RESPONSE: Section 2.2 has been revised to include a reference to a figure showing the leachate collection sumps.

103. In Section 2.3, please acknowledge environmental receptors in addition to other listed receptors.

RESPONSE: Section 2.3 has been modified to acknowledge that the wildlife using surface water bodies could also be environmental receptors.

104. In Section 2.3, please reference one or more figures when discussing POCs.

RESPONSE: Section 2.3 has been revised to include figure references that depict the POC locations.

105. Please state the criteria for the phases of groundwater monitor well installation in the Attachment F narrative (in Section 3, or other suitable location), and modify the note on Figures F1-1 through F1-4 to reference the narrative.

RESPONSE: Attachment F, Section 3 has been modified to describe monitoring well phasing. Also, Figures F1-1, F1-2, and F1-4 have been modified to depict well phasing for Units I and IV. The note regarding phasing has been removed from Figure F1-3 (Unit II/III monitoring) because Unit II/III sand does not exist on the eastern expansion area and all Unit II/III monitoring wells have been installed.

106. Figure F1-5, illustrating a typical groundwater monitor well, indicates 2-inch or 4-inch casing, but only 2-inch well screen. Please modify the figure as needed to show the intended typical well details.

RESPONSE: Figure F1-5 has been revised as requested.

107. The well counts and designations in Section 3.1 do not match those in Figure F1-5 for Units IV (figure appears to be missing upgradient wells MW3-3 and MW15-3, and lists MW33-4 as a downgradient well) and possibly Unit I. Please review the text and figures and revise as needed.

RESPONSE: Section 3.1 and Figure F1-5 have been revised to show the proper well count for Unit IV.

108. Please add location coordinates to the table of monitor wells in Figure F1-5.

RESPONSE: Monitoring well coordinates have been added to Figure F1-5.

109. Please address the following comments regarding locations of groundwater monitor wells:

    a. According to Figures E6-4 through E6-7, the area of MW3-3 and MW 32-4 at time may not be upgradient from the facility, but downgradient.

RESPONSE: The Unit IV potentiometric maps (Figures E6-4 through E6-7) that were originally submitted were contoured using only the data from the southernmost part of the site. The figures have been modified to include the appropriate Unit IV water levels from wells on the adjacent tracts, including water levels from existing monitoring well MW3-3. The revised potentiometric surface maps show that the area near existing MW3-3 and proposed MW32-4 is clearly upgradient from waste.

    b. The location of monitor well MW13-4 appears to be downgradient from northernmost landfill sector (Sector 4). Extend the POC to MW13-4 and fill in wells as needed to comply with 30 TAC §330.403(a).

RESPONSE: The POC has been extended and a monitoring well has been added. Figure F1-1 has been revised to show the modified POC and the additional well.

c. In Figure F1-2, the extent of Unit I removal differs from that shown in figures in Attachment E6. Also, the orientation of the pattern on the map designating areas where Unit I has been removed differs from that in the legend. Please revise the figures as needed for consistency and accuracy.

RESPONSE: Figure F1-2 has been revised as requested.

d. In Figures F1-1 through F1-4, or other suitable figures, show which existing wells (background and POC) will be plugged.

RESPONSE: Figures F1-1a, F1-2a, and F1-3a have been added to show which existing wells will be plugged.

e. Show MW7-1 on the monitoring plan for Unit I (Figure F1-2). According to Section 4.3, MW7-1 will continue in assessment monitoring until the concentrations of all Title 40 Code of Federal Regulations Part 258, Appendix II constituents are at or below background values.

RESPONSE: MW7-1 has been added to Figure F1-2 as requested.

110. Revise Section 2.3.1 of the Groundwater Sampling and Analysis Plan to allow up to 7 days recovery time for slowly recovering wells, before declaring a well dry.

RESPONSE: The current GWSAP allows for a 24-hour recovery time, which is appropriate for the saturated sands and silts monitored at the facility. The monitoring wells typically recover quickly, usually within an hour, or not at all. When the surrounding sands and silts become dry, a 7-day recovery time will likely provide the same result as the 24-hour recovery time.

The TCEQ "Guidelines for Preparing a Ground-Water Sampling and Analysis Plan (GWSAP)", Section 5, Timing and Order of Sampling, second sentence recommends "Sampling should be done preferably within 24 hours of purging." The guidance document does allow for approval of "a maximum of seven days" recovery time if a well is slow to recharge; however, there are no site-specific or well-specific conditions that indicate that an overturn of the approved and long-standing GWSAP requirement is needed at this facility.

This change could require a return trip to the facility by our monitoring consultant's staff to check for recovery, incurring additional costs that are not justified due to the unlikelihood that any additional protection to human health or the environment will result. No revisions have been made as a result of this comment.

Attachment G – Landfill Gas Management Plan (LGMP)

111. In first paragraph of Section 1.2, please delete the qualifying phrase "in monitoring probes."

RESPONSE: Part III, Attachment G, Section 1.2 has been revised to incorporate the wording of 30 TAC §330.371(a)(2) and reads "(2) the concentration of methane gas does not exceed 5% methane by volume in monitoring points, probes, subsurface soils, or other matrices at the facility permit boundary".

112. In Section 2, please describe how certain structures are "ventilated" such that they do not need methane monitors. If a structure is enclosed, it should be monitored whether ventilated or not.

RESPONSE: As requested, Part III, Attachment G, Section 2.5 has been revised to state that the waste processing structure, waste inspection structure, and air compressor structure are not enclosed structures. Each structure is open at all times on at least one side.

113. Please show and identify facility structures on Figure G1.1.

RESPONSE: As noted in Section 2.5, facility structures are identified in Part III, Attachment B, Drawings B.2 and B.3. However, as requested, Part III, Attachment G, Drawing G1.3 has been added to include identification of facility structures.

114. Please include a figure showing offsite structures that could be potential receptors of landfill gas migration.

RESPONSE: Part III, Attachment G, Drawing G1.4 has been added to include identification of off-site structures within ¼ mile (1,320 feet) of the waste disposal boundary consistent with the notice requirements that are pursuant to 30 TAC §330.371(c)(1) addressed in comment 117 below. Section 2.7 has been revised to clarify that the habitable structures located off site within ¼ mile (1,320 feet) of the waste disposal area are depicted on Drawing G1.4 in Appendix G1.

115. In Section 2, please note that proposed gas probes will be installed in phases, and that the phasing schedule is provided in Figure G1.1.

RESPONSE: As requested, Part III, Attachment G, Section 2 has been revised to include discussion that the proposed gas probes will be installed in phases and to include a reference to Drawing G1.1 for the phasing schedule.

116. Throughout Section 4 (and other sections of the LGMP as needed), please replace the qualifying phrase "in LFG monitoring probes" with "at the facility boundary" as stated in

30 TAC §330.371(a)(2). Situations may occur where methane is detected above the action level at the facility boundary, but not in a gas probe.

RESPONSE: As requested, the phrase "in LFG monitoring probes" has been replaced with the more appropriate regulatory phrase of "in LFG monitoring points, probes, subsurface soils, or other matrices."

117. Please revise Section 4.2 to specify that notification to the public, pursuant to 30 TAC §330.371(c)(1) will include all residents, tenants, and owners of property within ¼ mile (1320 feet) of the probe(s) in which methane has been detected above the action level, and within ¼ mile of the line connecting adjacent probes that exhibit detections above the action level.

RESPONSE: Part III, Attachment G, Section 4.2 has been revised to include "residents, tenants, and owners of property within ¼ mile (1,320) feet" in the notification discussion.

118. We were unable to locate boring and/or completion logs in Attachment G for some gas probes. Please provide boring and completion logs for all existing gas probes.

RESPONSE: Part III, Attachment G, Appendix G3 has been revised to incorporate boring and completion logs for the following existing gas probes: GMP-18R, 23, 24, 28, 29, 36, and 37.

119. Please revise the proposed gas probe layout in the expansion area to provide a gas probe spacing of not greater than 600 feet.

RESPONSE: The proposed gas probe layout and spacing in the expansion area has been designed to be consistent with §330.371. There are no revisions required to the application.

120. Please include probe location coordinates in the table on Figure G1.2.

RESPONSE: As requested, coordinates for each gas monitoring probe location has been added to Drawing G1.2.

121. In Section 3.1.3, please include a bullet for measuring gas temperature, which is mentioned in text following the bullet list.

RESPONSE: As requested, Section 3.1.3 has been revised to clarify the monitoring procedure. The reference to measuring temperature is related to measuring ambient temperature, not gas temperature.

Part IV of the Application (Site Operating Plan) (SOP)

122. Please include operating procedures for the liquid waste stabilization facility mentioned in the SOP, and for any other waste processing activities.

RESPONSE: As requested, Section 8.25 has been revised to include storage and processing unit operations. The Site Inspection and Maintenance Schedule has been moved to Section 8.26.

123. Please revise Section 3.1 to specify that the landfill manager or anyone else assuming responsibility for facility operations will have Class A license at the time of performing the duties (not "within six months of being assigned to the . . . position").

RESPONSE: As requested, Part IV, Section 3.1, page IV-7 has been revised to state that the landfill district manager and landfill manager will obtain the applicable required municipal solid waste operator license in accordance with §§30.201, 30.207, and 30.210-30.214. The landfill district manager and landfill manager may also obtain the applicable required provisional license, consistent with §30.211.

124. In Section 3, please identify applicable training requirements relating to industrial nonhazardous waste, in accordance with 30 TAC §330.127(4).

RESPONSE: Part IV, Table 3-1, page IV-11 has been revised to include applicable industrial nonhazardous waste training requirements for site personnel.

125. Please revise Section 5.3 to indicate that the facility will maintain load inspection records for all inspected loads (not just those randomly inspected).

RESPONSE: Part IV, Section 5.2, page IV-18 has been revised to clarify that the facility will maintain load inspection records for randomly inspected loads and inspected loads as directed by the landfill manager, and not visually observed or screened loads.

126. In Section 8.2, please reference a figure that shows all unloading areas and processing areas (for example, citizen's collection station, and liquid waste stabilization facility).

RESPONSE: As requested, Part IV, Section 8.2, page IV-29 has been revised to reference Part III, Attachment B, Drawing B.3 that shows various unloading and processing areas.

127. In Sections 8.6 and 8.6.1, please reference a figure (for example, Drawing IC.2) that shows all easements on the facility property.

RESPONSE: As requested, Part IV, Section 8.6.1, page IV-32 has been revised to reference Part I, Appendix IC, Drawing IC.2 that shows all easements on the facility property.

128. Section 8.7 references Figure D1.2 in Attachment III, for the location of the permanent facility benchmark; however, we were unable to find the benchmark on the figure. Please provide a figure in the SOP that shows the location and coordinates of the permanent benchmark.

RESPONSE: Part IV, Section 8.7, page IV-35 has been revised to reference Part III, Attachment B, Drawing B.2 that has been updated to show the location and coordinates of the permanent benchmark.

129. Please revise Section 8.8 to state in accordance with 30 TAC §330.145 that the facility will provide for cleanup of all public access roads serving the facility (not just Wilson Road).

RESPONSE: Part IV, Section 8.8, page IV-35 has been revised to include an alternative cleanup frequency and distance, which is allowed under 30 TAC §330.145. The majority of waste hauling vehicles (90 percent) use Wilson Road and Atascocita Road east of the Wilson Road intersection. The Atascocita RDF will provide for daily cleanup of these roads used by waste hauling vehicles. Atascocita Road west of the Wilson Road intersection is used by only 10 percent of waste hauling vehicles, and Atascocita RDF will provide weekly or as needed cleanup.

130. In Section 8.13, please specify how often salvaged items will be removed from site.

RESPONSE: As requested, Part IV, Section 8.13, page IV-39 has been revised to state that salvaged items will be removed on an as-needed basis and will not be stored on site in excess of 180 days.

131. In Section 8.14, please provide a summary of the findings of the endangered species investigation, to support conclusion that the facility will not result in the destruction or adverse modification of critical habitat, or cause or contribute to the taking of any endangered or threatened species.

RESPONSE: As requested, Part IV, Section 8.14, page IV-39 has been revised to include a summary of the findings of the endangered species investigation.

132. Please include a statement in Section 8.15, that gas monitoring records will be maintained in the site operating record.

RESPONSE: As requested, Part IV, Section 8.15, page IV-39 has been revised to state that the gas monitoring records will be maintained in the site operating record.

133. In Section 8.16, please reference a figure that shows the wells discussed in the text, and table that identifies the wells.

RESPONSE: As requested, Part IV, Section 8.16, page IV-39 has been revised to reference Part II, Appendix IIA, Drawing IIA.4 that shows and identifies the wells discussed in the text.

134. Please include in the Alternative Daily Cover Operating Plan (ADCOP) (Appendix IVB to the SOP), all of the supporting documents, including the final authorizations to use each specific alternative daily cover (ADC).

RESPONSE: As noted on page IVB-1, the Atascocita RDF is authorized to use two types of ADC: petroleum contaminated soils and tarps of various geosynthetic materials. Authorization from TCEQ has been granted through the issuance of Permit No. MSW 1307C, dated December 8, 2004. Further, TCEQ conducted additional review of the authorized ADC materials as part of the required Site Operating Plan updates approved by TCEQ on May 5, 2006. Refer to Section IV – Other Permit Conditions, Paragraph G of the issued permit, page 10 of 13. A copy of TCEQ Permit No. MSW 1307C is included as Appendix IVB-B. No additional documentation is required.

135. Please delete the second paragraph of Section 8.18.4 of the SOP, and the last paragraph of Section 4 of the ADCOP, which mention reserving the "right to request a temporary authorization" in the future. The availability of the temporary authorization mechanism is a matter subject to statute and commission rules, and cannot be codified in a permit.

RESPONSE: Part IV, Section 8.18.4, page IV-42 and Part IV, Appendix IVB, Section 4, page IVB-5 have been revised to state that the Atascocita RDF may request a temporary authorization in accordance with 30 TAC §305.62(k)(1)(A).

136. Please delete the second sentence in Section 2.1 of the ADCOP, which states "other ADC materials by other manufacturers that have similar characteristics may be used at the Atascocita RDF." Each ADC must be tested and approved.

RESPONSE: Part IV, Appendix IVB, Section 2.1, page IVB-2 has been revised as requested.

137. Please list each specific tarp type (for example, Thor Durashield, Reef Griffolyn, Total Polypropylene, Phillips Sumika, Marlex, Kym Geotex) in Section 2 of the ADCOP.

RESPONSE: As requested, Part IV, Appendix IVB, Section 2.1, page IVB-2 has been revised to include each specific tarp type. Further, geosynthetic materials manufactured by other tarp manufacturers that have equal or greater material characteristics may also be used.

138. Please provide supporting documentation in the ADCOP on the effectiveness of each approved ADC.

RESPONSE: Please see the response to comment 134.

139. In Section 3.1 of the ADCOP, please specify how much volume of petroleum contaminated soil (PCS) material may be stockpiled for ADC, and how long. Also provide procedures for operation of the PCS stockpile.

RESPONSE: Part IV, Appendix IVB, Section 3.1, page IVB-4 has been revised to include the stockpile volume and procedures for operation of the PCS stockpile.

140. Please include statements in Section 2 of the ADCOP acknowledging the constituent limits for PCS, in accordance with 30 TAC §330.165(d)(4).

RESPONSE: Part IV, Appendix IVB, pages IVB-2 and IVB-3 have been revised to acknowledge the constituent limits for PCS.

141. Please revise Section 2.2 of the ADCOP to clarify that it is the constituent limits for PCS to be used as ADC that are included in the rule.

RESPONSE: Part IV, Appendix IVB, Section 2.2, page IVB-2 has been revised as requested.

142. Please revise Section 2.2 of the ADCOP to state the actual requirements for acceptance (state the testing requirements, acceptance criteria, and outcomes).

RESPONSE: As requested, Part IV, Appendix IVB, Section 2.2, page IVB-2 has been revised to state the actual requirements for acceptance.

143. Please remove the list of special wastes from Section 1 of the Special Waste Acceptance Plan (SWAP) (Appendix IVC to the SOP). The list does not match the rule (30 TAC §330.3) exactly, and the rule is subject to change.

RESPONSE: The list of special wastes in Section 1, page IVC-1 has been revised to be consistent with §330.3(148). Additional discussion related to special waste types that will be accepted has also been incorporated into Section 1.

144. In Section 1 of the SWAP, in the list of wastes that will not be accepted, revise item 6 on page IVC-4 to match the structure of the applicable rule (30 TAC §330.15(e)(6)) (that is, join sub-item (i) with sub-item (a), and delete sub-items (ii) and (iii) which are not prohibited under the conditions specified).

RESPONSE: As requested, Section 1, page IVC-4 has been revised to update item 6 to match the structure of 30 TAC §330.15(e)(6).

145. Please delete sub-item (iv) (regarding containers of liquid food waste) from item 6 in Section 1 of the SWAP, as there is no corresponding provision in the rule.

RESPONSE: Section 1, page IVC-4 has been revised as requested.

146. Please expand Section 5 of the SWAP to discuss the various waste processing activities at the facility (for example, liquid waste stabilization). Provide a separate subheading for each distinct activity.

RESPONSE: Liquid waste stabilization is the only processing operation conducted applicable to special wastes. Section 5 – Operational Procedures has been renumbered and is now Section 9. Section 9 – Operational Procedures includes liquid waste stabilization procedures and other applicable special waste operation procedures.

147. In Section 2 of the SWAP, please expand the discussion of testing procedures that will be followed to ensure that the facility does not accept a Class 1 waste or other prohibited waste.

RESPONSE: Section 2 – Special Waste Evaluation Criteria has been moved to Section 3. Section 2 – Hazardous Waste Determination and Class 1 Industrial Waste Determination has been added to Appendix IVC to address this comment. In addition, Section 4 – Quality Assurance/Quality Control – Analytical Information, Section 5 – Waste Approval Updates, and Section 7 – Waste Discrepancies and Rejected Loads have been added to provide additional requirements related to the acceptance of special wastes.

148. Please clarify in Sections 4 and 5 of the SWAP whether liquid waste stabilization will occur at the facility, and if so, reference the section(s) of the SOP that detail the operation procedures.

RESPONSE: The Atascocita RDF is permitted to accept liquid waste for stabilization and will continue to accept this waste on a case-by-case basis. Liquid waste stabilization procedures are included in Section 9 – Operational Procedures, and Section 8.25 – Storage and Processing Unit Operations.

149. In Section 5 of the SWAP, please reference a figure showing the various waste unloading areas at the facility (for example, citizen's collection station, liquid waste stabilization facility, and any other).

RESPONSE: As requested, Attachment B, Drawing B.3 is now referenced for the various waste unloading areas at the facility in Section 9 – Operational Procedures.

150. In Section 5 of the SWAP, please provide handling procedures for each special waste that may require special handling.

RESPONSE: Section 9 – Operational Procedures has been expanded to provide handling procedures for each special waste that may require special handling.

151. In Section 8.21 of the SOP, please state positively whether the facility has ceased accepting Class 1 nonhazardous industrial waste in cells of existing landfill phases 1 through 4. If the facility will continue to accept Class 1 waste in phases 1, 2, 3, or 4, please detail which cells, and when acceptance will cease.

RESPONSE: As requested, Part IV, Section 8.21 has been revised to state that the Atascocita RDF has ceased accepting Class 1 nonhazardous industrial waste.

152. Section 8.25 of the SOP indicates that leachate depth in sumps will be measured and recorded monthly. Please explain in the SOP how it was determined that monthly measurements would be adequate. Please also describe the monitoring devices or other features or practices that will be in place to give timely warning if any leachate pump malfunctions.

RESPONSE: Leachate measurement is performed by transducers, hydrostatic measurement devices, and/or water level measurement tape or rod. Each sump within the leachate collection system has its own pump. Measuring leachate depth on a monthly basis at a minimum is an industry and TCEQ standard for frequency of leachate measurement within each sump.

We trust these responses are satisfactory to you and meet the rules and regulations of the TCEQ. If you need additional information, please let us know.

Sincerely,

BIGGS & MATHEWS ENVIRONMENTAL
TBPE NO. F-256 ◆ TBPG NO. 50222

Kenneth J. Welch, P.E.
Principal Engineer

Attachments: Part I Application Form
Revised Permit Amendment Application (original and three copies)

cc: Mr. Steve Jacobs, WMTX (1)
Mr. Charles Rivette, P.E., WMTX (1)

ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D

PERMIT AMENDMENT APPLICATION

RESPONSE TO FIRST NOTICE OF DEFICIENCY

VOLUME 1 OF 2

Prepared for

Waste Management of Texas, Inc.

September 2010

Revised February 2011

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 • Mansfield, Texas 76063 • 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D

PERMIT AMENDMENT APPLICATION

VOLUME 1 OF 2

CONTENTS

Texas Commission on Environmental Quality

Permit or Registration Application for Municipal Solid Waste Facility

Part I

A. General Information

Facility Name:	Atascocita Recycling and Disposal Facility			
Physical or Street Address (if available):	3623 Wilson Rd			
(City) (County)(State)(Zip Code):	Humble	Harris	TX	77396
(Area Code) Telephone Number:	281-446-6545			
Charter Number:	0022300000			

If the application is submitted on behalf of a corporation, provide the Charter Number as recorded with the Office of the Secretary of State for Texas.

Operator Name[1]:	Waste Management of Texas, Inc. (Attn: Chuck Rivette)			
Mailing Address:	~~1001 Fannin, Ste 4000~~800 Gessner, Suite 1100			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	~~7700~~77024
(Area Code) Telephone Number:	~~713-512-6345~~713-647-5542			
(Area Code) FAX Number:	~~281-922-0014~~713-647-5549			
Charter Number:	0022300000			

If the permittee is the same as the operator, type "Same as Operator".

Permittee Name:	Same as Operator			
Physical or Street Address (if available):				
(City) (County)(State)(Zip Code):				
(Area Code) Telephone Number:				
Charter Number:				

If the application is submitted by a corporation or by a person residing out of state, the applicant must register an Agent in Service or Agent of Service with the Texas Secretary of State's office and provide a complete mailing address for the agent. The agent must be a Texas resident.

Agent Name:	Steve Jacobs			
Mailing Address:	~~1001 Fannin, Suite 4000~~9708 Giles Rd.			
(City) (County)(State)(Zip Code):	~~Houston~~Austin	~~Harris~~Travis	TX	~~7700~~78754
(Area Code) Telephone Number:	~~713-512-6345~~512-272-6245			
(Area Code) FAX Number:	~~281-992-0014~~512-272-6289			

Application Type:

☒	Permit	☒	Major Amendment	☐	Minor Amendment
☐	Registration	☐	Modification	☐	Temporary Authorization
		☒	w/Public Notice		
		☐	w/out Public Notice	☒	Notice of Deficiency Response

[1] The operator has the duty to submit an application if the facility is owned by one person and operated by another [30 TAC 305.43(b)]. The permit will specify the operator and the owner who is listed on this application [Section 361.087 Texas Health and Safety Code].

Facility Classification:

☒	Type I	☐	Type IV	☐	Type V	☐	Type IX
☐	Type I AE	☐	Type IV AE	☐	Type VI		

Activities covered by this application (check all that apply):

☐	Storage	☐	Processing	☒	Disposal

Waste management units covered by this application (check all that apply):

☐	Containers	☐	Tanks	☐	Surface Impoundments	☒	Landfills
☐	Incinerators	☐	Composting	☐	Type IV Demonstration Unit	☐	Type IX Energy/Material Recovery
☐	Other (Specify)			☐	Other (Specify)		
☐	Other (Specify)			☐	Other (Specify)		

Is this submittal part of a Consolidated Permit Processing request, in accordance with 30 TAC Chapter 33?

☐ Yes ☒ No

If yes, state the other TCEQ program authorizations requested.

Provide a brief description of the portion of the facility covered by this application. For amendments, modifications, and temporary authorizations, provide a brief description of the exact changes to the permit or registration conditions and supporting documents referenced by the permit or registration. Also, provide an explanation of why the amendment, modification, or temporary authorization is requested.

Permit amendment application for a horizontal expansion at the existing Atascocita Recycling and Disposal Facility to provide long-term waste disposal capacity for the individuals, businesses, and communities in Harris County and surrounding areas.

Does the application contain confidential Material? ☐ Yes ☒ No

If yes, cross-reference the confidential material *throughout the application* and submit as a separate document or binder conspicuously marked "CONFIDENTIAL."

Alternative Language Notice Instructions

For certain permit applications, public notice in an alternate language is required. If an elementary school or middle school nearest to the facility offers a bilingual program, notice may be required to be published in an alternative language. The Texas Education Code, upon which the TCEQ alternative language notice requirements are based, trigger a bilingual education program to apply to an entire school district should the requisite alternative language speaking student population exist. However, there may not exist any bilingual students at a particular school within a district which is required to offer the bilingual education program. For this reason, the requirement to publish notice in an alternative language is triggered if the nearest elementary or middle school, as a part of a larger school district, is required to make a bilingual education program available to qualifying students and either the school has students enrolled at such a program on-site, or has students who attend such a program at another location in satisfaction of the school's obligation to provide such a program as a member of a triggered district.

If it is determined that an alternative language notice is required, the applicant is responsible for ensuring that the publication in the alternate language is complete and accurate in that language. Electronic versions of the Spanish template examples are available from the TCEQ to help the applicant complete the publication in the alternative language.

Alternative Language Notice Application Form:

Alternative language notice confirmation for this application:

1. Is a bilingual program required by the Texas Education Code in the school district where the facility is located? ☒ YES ☐ NO

   (If NO, alternative language notice publication not required)

2. If YES to question 1, are students enrolled in a bilingual education program at either the elementary school or the middle school nearest to the facility? ☒ YES ☐ NO

(IF YES to questions 1 and 2, alternative language publication is required; If NO to question 2, then consider the next question)

3. If YES to question 1, are there students enrolled at either the elementary school or the middle school nearest to the facility who attend a bilingual education program at another location? ☐ YES ☐ NO

(If Yes to questions 1 and 3, alternative language publication is required; If NO to question 3, then consider the next question)

4. If YES to question 1, would either the elementary school or the middle school nearest to the facility be required to provide a bilingual education program but for the fact that it secured a waiver from this requirement, as available under 19 TAC ' 89.1205(g)? ☐ YES ☐ NO

(If Yes to questions 1 and 4, alternative language publication is required; If NO to question 4, alternative language notice publication not required)

If a bilingual education program(s) is provided by either the elementary school or the middle school nearest to the facility, which language(s) is required by the bilingual program? **Spanish**

Note: Applicants for new permits and major amendments must make a copy of the administratively complete application available at a public place in the county where the facility is, or will be, located for review and copying by the public.

Public place where administratively complete permit application will be located.				
Public Place (e.g., public library, county court house, city hall, etc.):	Octavia Fields Library			
Mailing Address:	1503 S. Houston Avenue			
(City) (County)(State)(Zip Code):	Humble	TX		77338
(Area Code) Telephone Number:	281-446-3377			

Except for Type I AE and Type IV AE landfill facilities, for permits, registrations, amendments, and modifications requiring public notice, provide the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted.
http://www.wm.com/wm/texas/permits.asp

B. Facility Location

Local Government Jurisdiction:	Harris County
Within City Limits of:	N/A
Within Extraterritorial Jurisdiction of City of:	Houston

Is the proposed municipal or industrial solid waste disposal or processing facility located in an area in which the governing body of the municipality or county has prohibited the disposal or processing of municipal or industrial solid waste? (If YES, provide a copy of the ordinance or order):

☐ YES ☒ NO

Provide a description of the location of the facility with respect to known or easily identifiable landmarks.

3 miles SE of Humble, Texas; 3 miles E of US Highway 59 on the south side of Atascocita Road

Detail the access routes from the nearest United States or state highway to the facility.

Provide the latitudinal and longitudinal geographic coordinates of the facility.

Latitude	**N** 29° 57' 12"
Longitude	**W** 95° 14' 36"
Elevation (above msl)	63.07 feet

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

Texas Department of Transportation District Location:

TXDOT District Name & Number:	Houston District			
District Engineer's Name:	Delvin Dennis, P.E.			
Street or P. O. Box:	P.O. Box 1386			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	77251
(Area Code) Telephone Number:	713-802-5000			
(Area Code) FAX Number:	713-802-5075			

The local governmental authority or agency responsible for road maintenance:

Agency Name	TxDOT North Harris			
Contact Person's Name:	Alan Moreau			
Street or P. O. Box:	16803 Eastex Freeway			
(City) (County)(State)(Zip Code):	Humble	Harris	TX	77396
(Area Code) Telephone Number:	281-319-6450			
(Area Code) FAX Number:	281-319-6499			

State Representative:

District Number:	District 141			
State Representative's Name:	The Honorable Senfronia Paige Thompson			
District Office Address:	10527 Homestead Road			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	77016
(Area Code) Telephone Number:	713-633-3390			
(Area Code) FAX Number:	512-463-6306			

State Senator:

District Number:	District 15			
State Senator's Name:	Senator John Whitmire			
District Office Address:	P.O. Box 12068			
(City) (County)(State)(Zip Code):	Capitol Station		TX	78711
(Area Code) Telephone Number:	713-864-8701			
(Area Code) FAX Number:	713-864-5287			

Council of Government (COG) Information:

COG Name:	Houston-Galveston Area Council			
COG Representative's Name:	Jack Steele			
COG Representative's Title:	Executive Director			
Street or P. O. Box:	3555 Timmons Lane, Suite 120			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	77027
(Area Code) Telephone Number:	713-993-4509			
(Area Code) FAX Number:	713-993-2414			

River Basin Information:

River Authority:	Harris County Flood Control District			
Contact Person's Name:	Diane Blackburn, Watershed Coordination Department			
Watershed Sub-Basin Name:	Greens Bayou Watershed			
Street or P. O. Box:	10555 Northwest Freeway, Suite 170			
(City) (County)(State)(Zip Code):	Humble	Harris	TX	77338
(Area Code) Telephone Number:	713-316-4870			
(Area Code) FAX Number:	713-316-4888			

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

C. Maps

The maps referenced are provided in Parts I and II of this permit amendment application. The drawings depicting the information requested are referenced below.

General

For permits, registrations, and amendments only, submit a topographic map, ownership map, county highway map, or a map prepared by a registered professional engineer or a registered surveyor which shows the facility and each of its intake and discharge structures and any other structure or location regarding the regulated facility and associated activities. Maps must be of material suitable for a permanent record, and shall be on sheets 8-1/2 inches by 14 inches or folded to that size, and shall be on a scale of not less than one inch equals one mile. The map shall depict the approximate boundaries of the tract of land owned or to be used by the applicant and shall extend at least one mile beyond the tract boundaries sufficient to show the following:

each well, spring, and surface water body or other water in the state within the map area; **(See Part I, Appendix IA, Drawing IA.3 – General Topographic Map and Part II, Appendix IIA, Drawing IIA.2 – General Topographic Map and Drawing IIA.3 – Land Use Map.)**

the general character of the areas adjacent to the facility, including public roads, towns and the nature of development of adjacent lands such as residential, commercial, agricultural, recreational, undeveloped, etc; **(See Part I, Appendix IA, Drawing IA.3 – General Topographic Map and Part II, Appendix IIA, Drawing IIA.2 – General Topography and IIA.3 – Land Use Map)**

the location of any waste disposal activities conducted on the tract not included in the application; **(See Part I, Appendix IA, Drawing IA.3 – General Topographic Map)**
and

Local Government Official:

Name:	Ed Emmett			
Title:	Harris County Judge			
Address:	1001 Preston, Suite 911			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	77002
(Area Code) Telephone Number:	713-755-4000			
E-mail Address:	judge.emmett@cjo.hctx.net			

Local Government Official:

Name:	Donald G. McMannes			
Title:	City of Humble Mayor			
Address:	114 W. Higgins			
(City) (County)(State)(Zip Code):	Humble	Harris	TX	77338
(Area Code) Telephone Number:	281-446-3061			
E-mail Address:	N/A			

Local Government Official:

Name:	Herminia Palacio, M.D., M.P.H.			
Title:	Executive Director, Harris County Public Health & Environmental Services			
Address:	2223 West Loop South			
(City) (County)(State)(Zip Code):	Houston	Harris	TX	77027
(Area Code) Telephone Number:	713-439-6000			
E-mail Address:	N/A			

the ownership of tracts of land adjacent to the facility and within a reasonable distance from the proposed point or points of discharge, deposit, injection, or other place of disposal or activity. **(See Part I, Appendix IB, Drawing IB.1 – Land Ownership Map)**

General location maps **(See Part I, Appendix IA, Drawing IA.1 – General Highway Map and Drawing IA.2 – Detailed Highway Map).**

For permits, registrations, and amendments only, submit at least one general location map at a scale of one-half inch equals one mile. This map shall be all or a portion of a county map prepared by Texas Department of Transportation (TxDOT). If TxDOT publishes more detailed maps of the proposed facility area, the more detailed maps shall also be included in Part I. Use the latest revision of all maps.

Land ownership map **(See Part I, Appendix IB, Drawing IB.1 – Land Ownership Map)**
Provide a map that locates the property owned by adjacent and potentially affected landowners. The maps should show all property ownership within 1/4 mile of the facility, on-site facility easement holders, and all mineral interest ownership under the facility.

Landowners list **(See Part I, Appendix IB, page IB-1)**
Provide the adjacent and potentially affected landowners' list, keyed to the land ownership map with each property owner's name and mailing address. The list shall include all property owners within 1/4 mile of the facility, easement holders, and all mineral interest ownership under the facility. Provide the property, easement holders', and mineral interest owners' names and mailing addresses derived from the real property appraisal records as listed on the date that the application is filed. Provide the list in electronic form, as well.

D. Property owner information

For permits, registrations, amendments, and modifications that change the legal description, a change in owner, or a change in operator only, provide the following:

(1) the legal description of the facility; **(See Part I, Appendix IC – Legal Description)**

(A) the abstract number as maintained by the Texas General Land Office for the surveyed tract of land;

(B) the legal description of the property and the county, book, and page number or other generally accepted identifying reference of the current ownership record;

(C) for property that is platted, the county, book, and page number or other generally accepted identifying reference of the final plat record that includes the acreage encompassed in the application and a copy of the final plat, in addition to a written legal description;

(D) a boundary metes and bounds description of the facility signed and sealed by a registered professional land surveyor;

(E) on-site easements at the facility, and

(F) drawings of the boundary metes and bounds description; and

(2) a property owner affidavit signed by the owner. **(See page 9 of this form)**

E. Legal authority

Provide verification of the legal status of the owner and operator, such as a one-page certificate of incorporation issued by the secretary of state. List all persons having over a 20% ownership in the proposed facility. **(See Part I, Section 5 and Appendix ID – Legal Authority)**

Indicate Ownership status of the facility:									
☐	Private	☒	Corporation	☐	Partnership	☐	Proprietorship	☐	Non-Profit Organization
☐	Public	☐	Federal	☐	Military	☐	State	☐	Regional
☐	County	☐	Municipal	☐	Other (Specify)				

Does the operator own the facility units and the facility property?	☒ Yes ☐ No

If "No," for permits, registrations, amendments, and modifications that changes the legal description, a change in owner, or a change in operators submit a copy of the lease for the use of or the option to buy the facility units or facility property, as appropriate, and identify:				
Owner Name:				
Street or P. O. Box:				
(City) (County)(State)(Zip Code):				
(Area Code) Telephone Number:				
(Area Code) FAX Number:				
Charter Number:				

F. Evidence of competency

For permits, registrations, amendments, and modifications that change the legal description, a change in owner, or a change in operators submit a list of all Texas solid waste sites that the owner and operator have owned or operated within the last ten years.				
Site Name	Site Type	Permit/Reg. No.	County	Dates of Operation
See Part I, Section 6 – Evidence of Competency				

Submit a list of all solid waste sites in all states, territories, or countries in which the owner and operator have a direct financial interest.			
Site Name	Location	Dates of Operation	Regulatory Agency (Name & Address)
See Part I, Section 6 – Evidence of Competency			

A licensed solid waste facility supervisor, as defined in 30 TAC Chapter 30, Occupational Licenses and Registrations will be employed before commencing facility operation.

Provide the names of the principals and supervisors of the owner's and operator's organization, together with previous affiliations with other organizations engaged in solid waste activities.		
Name	Previous Affiliation	Other Organization
See Part I, Section 6 – Evidence of Competency		

For landfill permit applications only, evidence of competency to operate the facility shall also include landfilling and earthmoving experience if applicable, and other pertinent experience, or licenses as described in 30 TAC Chapter 30 possessed by key personnel. The number and size of each type of equipment to be dedicated to facility operation will be specified in greater detail on Part IV of the application within the site operating plan.

Landfilling/Earthmoving Equipment Types	Personnel Experience or Licenses
See Part I, Section 6 – Evidence of Competency	**See Part I, Section 6 – Evidence of Competency**

For mobile liquid waste processing units, submit a list of all solid waste, liquid waste, or mobile waste units that the owner and operator have owned or operated within the past five years. Submit a list of any final enforcement orders, court judgments, consent decrees, and criminal convictions of this state and the federal government within the last five years relating to compliance with applicable legal requirements relating to the handling of solid or liquid waste under the jurisdiction of the commission or the United States Environmental Protection Agency. Applicable legal requirement means an environmental law, regulation, permit, order, consent decree, or other requirement.

Solid waste, liquid waste, or mobile waste units owned or operated within past 5 years	Texas and federal final enforcement orders, court judgments, consent decrees, and criminal convictions
Not Applicable	

G. Appointments

Provide documentation that the person signing the application meets the requirements of 30 TAC §305.44, Signatories to Applications. If the authority has been delegated, provide a copy of the document issued by the governing body of the owner or operator authorizing the person that signed the application to act as agent for the owner or operator. **(See Part I, Section 7 – Appointments)**

H. Application Fees

For a new permit, registration, amendment, modification, or temporary authorization, submit a $150 application fee. **(See Part I, Section 8 – Application Fees)**

For authorization to construct an enclosed structure over an old, closed municipal solid waste landfill in accordance with 30 TAC 330 Subchapter T, submit a $2,500 application fee.

If paying by check, send payment to:

Texas Commission on Environmental Quality
Financial Administration Division, MC 214
P. O. Box 13087
Austin, Texas 78711-3087

Payment may be made online using TCEQ e-pay at www.tceq.state.tx.us/e-services/	
E-pay confirmation number	582EA000077203

PROPERTY OWNER AFFIDAVIT

"I, Steve Jacobs, on behalf of Waste Management of Texas, Inc.
(property owner)

acknowledge that the State of Texas may hold **Waste Management of Texas, Inc**. either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the facility. For a facility where waste will remain after closure, I acknowledge that I have a responsibility to file with the county deed records an affidavit to the public advising that the land will be used for a solid waste facility prior to the time that the facility actually begins operating as a municipal solid waste landfill facility, and to file a final recording upon completion of disposal operations and closure of the landfill units in accordance with Title 30 Texas Administrative Code §330.19, Deed Recordation. I further acknowledge that **Waste Management of Texas, Inc**. and the State of Texas shall have access to the property during the active life and post-closure care period, if required, after closure for the purpose of inspection and maintenance."

Steve Jacobs
Director of Landfill Operations

2-2-2011
(Date)

Signature Page

I, Steve Jacobs (Operator), Director of Landfill Operations (Title),

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ Date: 2-2-2011

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

I, _____ (Print or Type Operator Name), hereby designate _____ (Print or Type Representative Name)

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

_____
Printed or Typed Name of Operator or Principal Executive Officer

_____
Signature

SUBSCRIBED AND SWORN to before me by the said Steve Jacobs

On this 2ND day of February, 2011

My commission expires on the 8th day of June, 2013

JANET M. FULK
NOTARY PUBLIC STATE OF TEXAS
COMMISSION EXPIRES:
06-08-2013

Janet M. Fulk
Notary Public in and for

Travis County, Texas

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

ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D

PERMIT AMENDMENT APPLICATION

PART I
SITE AND APPLICANT INFORMATION

Prepared for

Waste Management of Texas, Inc.

September 2010

Revised February 2011

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 • Mansfield, Texas 76063 • 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

CONTENTS

waste disposal activities. The 193-acre non-waste disposal area is designated for buffer, entrance facilities, a Type IX Beneficial Landfill Gas Recovery Facility (Type IX Registration No. 48006), a solidification facility, a citizen convenience drop-off area, leachate storage, a maintenance facility, and drainage facilities. The currently permitted maximum final contour elevation is 255 feet-msl. The currently permitted elevation of deepest excavation is 15.4 feet-msl.

The proposed landfill expansion will consist of a horizontal expansion to the east of the current permitted area into property owned by WMTX. The permit boundary will increase to a total area of 647.1 acres. This increase includes a 27.3-acre deduction in the southwest corner of the current permit boundary, and an increase of 170.7 acres to the east of the current permit boundary. The waste disposal footprint will increase to a total of 423.7 acres. The remaining waste disposal footprint to be developed includes 97.8 acres of the currently permitted Phase 5 area, and a 118.9-acre area that is identified as Phase 6. The total non-fill areas will be increased to 223.4 acres. The currently permitted maximum final contour elevation of 255 feet-msl will remain for this expansion. The revised elevation of deepest excavation will be 11.7 feet-msl.

The proposed landfill expansion will result in a remaining waste disposal capacity of approximately 49,400,000 cubic yards of waste and daily/intermediate cover, or approximately 39,520,000 tons of waste capacity.

WMTX projects that in 2010 the Atascocita RDF will receive about 1,165,000 tons (approximately 3,730 tons per day). The waste acceptance rate will vary over the life of the facility depending on market conditions. WMTX anticipates the maximum rate of waste disposal to be approximately 1,911,000 tons per year (approximately 6,120 tons per day). The waste acceptance rate per day is based on the facility being authorized to accept waste six days per week.

The following table provides a summary of the current permit conditions and proposed permit conditions:

PERMIT CONDITION SUMMARY

	Current Condition	Proposed Condition
Permitted Area	503.7 acres	647.1 acres
Waste Disposal Unit Area	310.7 acres	423.7 acres
Buffer / Other Areas	193.0 acres	223.4 acres
Total Permitted Capacity	52,500,000 cy	76,400,000 cy
Total Remaining Capacity	25,500,000 cy	49,400,000 cy
Remaining Projected Site Life	16 years	26 years
Maximum Elevation of Final Cover (msl)	255 ft	255 ft
Elevation of Deepest Excavation (msl)	15.4 ft	11.7 ft

The major classifications of solid waste to be accepted at the Atascocita RDF include municipal solid waste, special waste, and Class 2 and 3 industrial wastes. Special

wastes accepted at the facility authorized by §330.171(c) include treated medical waste, dead animals and/or slaughterhouse waste, regulated asbestos-containing materials (RACM), nonregulated asbestos-containing material (non-RACM), empty containers, municipal hazardous waste from a conditionally exempt small quantity generators, and sludge, grease trap waste, grit trap waste, or liquid wastes from municipal sources. In addition, other special wastes will be accepted based on a waste-specific approval as authorized by §330.171(b) and the facility Special Waste Acceptance Plan included in Part IV – Site Operating Plan. The facility ~~is authorized~~will continue to accept liquid wastes for solidification. The waste classifications are defined in §330.3.

The Atascocita RDF is currently authorized to accept Class 1 nonhazardous industrial waste; however, the facility will no longer accept this type of waste. The facility has reached its available Class 1 disposal capacity within the existing lined areas acceptable for disposal of Class 1 waste in Phases 2 through 4. The existing available disposal capacity within Phases 1, 2, 3, and 4 and future Phases 5 and 6 will not be authorized to accept Class 1 nonhazardous industrial waste.

Consistent with §330.15, the facility will not accept for disposal Class 1 nonhazardous industrial waste; lead acid storage batteries; used motor vehicle oil; used oil filters; whole used or scrap tires; refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC); bulk or noncontainerized liquid waste from nonhousehold sources; regulated hazardous waste; polychlorinated biphenyls (PCB) waste; radioactive materials; or other wastes prohibited by TCEQ regulations.

2 FACILITY LOCATION

30 TAC §330.59(b)(1)-(3)

2.1 Location Description

The Atascocita RDF is an existing Type I Municipal Solid Waste Disposal Facility located in Harris County, Texas. The Atascocita RDF is located southeast of the intersection of Atascocita Road and Wilson Road in north Harris County. The site is approximately 2.4 miles east of U.S. 59 North and 1 mile north of Beltway 8. Garners Bayou is located along the southern permit boundary. The southeastern corner of the City of Humble is across Atascocita Road from the northwest corner of the Atascocita RDF. The next nearest community is the City of Houston, which is centered about 15 miles to the southwest. The Atascocita RDF is inside the extraterritorial jurisdiction of the City of Houston and outside the City of Humble city limits.

The facility is located at 3623 Wilson Road, Humble, Texas, 77396.

2.2 Access Routes

The main local public roadways providing access to the facility are Wilson Road, Will Clayton Parkway, Atascocita Road, and Old Humble Road. The regional access routes for the facility remain Beltway 8 and US Highway 59. The entrance to the Atascocita RDF is via an existing 36-foot-wide concrete paved roadway. The driveway contains a stop sign control for traffic exiting onto Wilson Road. There is a distance of approximately 1,200 feet between the gatehouse and Wilson Road.

Refer to Part II, Section 9 – Transportation for more detailed transportation information. Refer to Drawing IA.1 – General Highway Map – Harris County for the location of the facility in relation to the surrounding roads.

2.3 Geographic Coordinates

The latitudinal and longitudinal geographic coordinates of the facility are:

Latitude: N 29°57'12"
Longitude: W 95°14'36"
Elevation (above msl): 63.07 feet

The State Plane Coordinates (NAD 27) of the facility are:

N 789,929.71
E 3,189,458.65

3 MAPS

30 TAC §§305.45(a)(6), 330.59(c)(1)-(3)

3.1 General Location Maps

The following maps, collectively as a group, comply with the rule requirements of §330.59(c)(1)-(2) and §305.45. Drawing IA.3A depicts the information required by 30 TAC §305.45(a)(6)(A). These general location maps are included in Appendix IA – General Location Maps.

- Drawing IA.1 – General Highway Map – Harris County
- Drawing IA.2 – Detailed Highway Map – Harris County (Texas Department of Transportation, General Highway Map for Harris County, Texas)
- Drawing IA.3 – General Topographic Map (USGS General Topographic Map for the Humble and Harmaston, Texas Quadrants)
- Drawing IA.3A – Water Wells and Springs Within One-Mile Radius
- Drawing IA.4 – Aerial Photograph
- Drawing 1A.5 – General Site Plan
- Drawing 1A.6 – Entrance Road and Entrance Facilities Plan

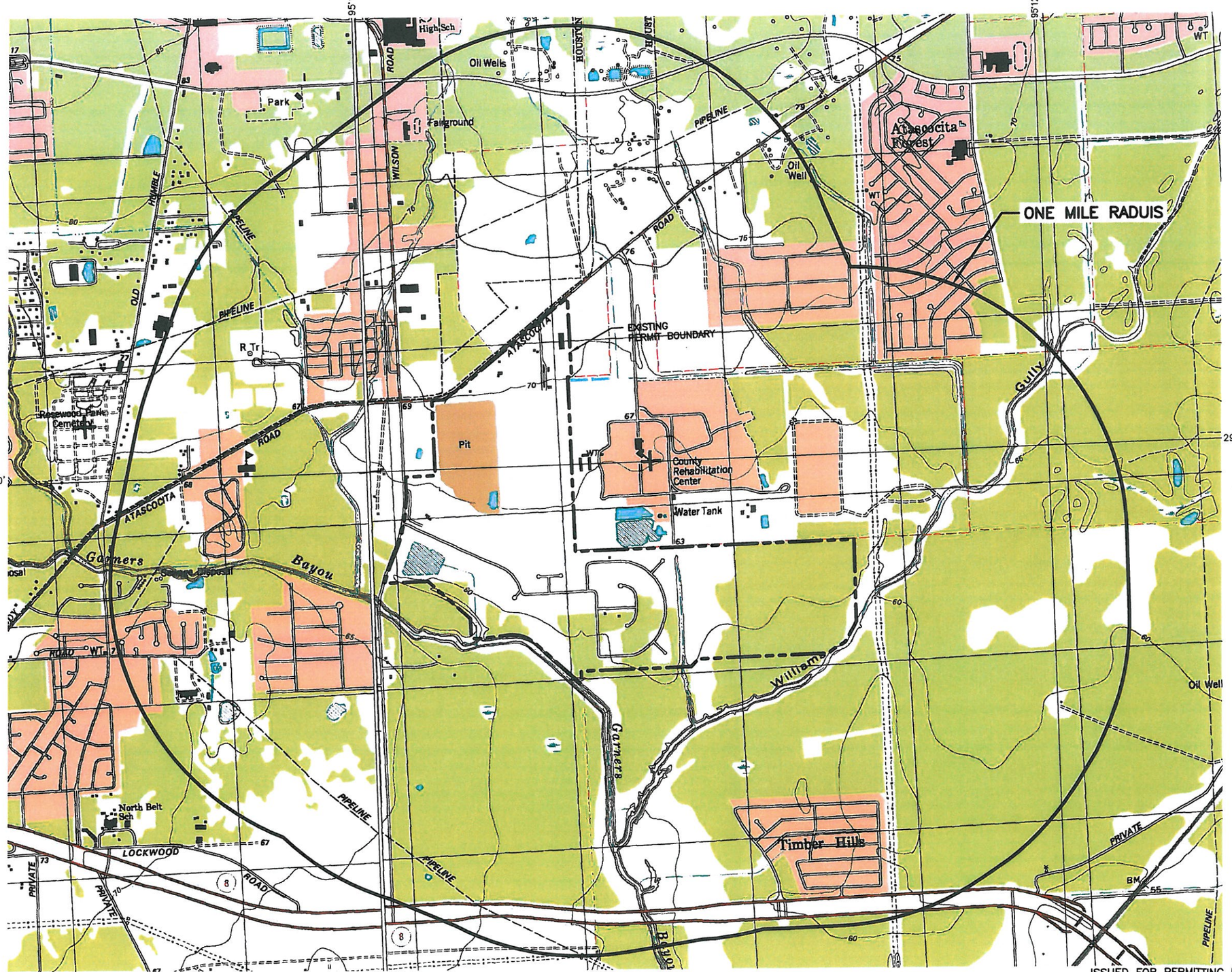
3.2 Land Ownership Map and Land Owners List

A Land Ownership Map and Land Owners List are included in Appendix IB, and reflect current property ownership within one-quarter mile of the permit boundary and all mineral interest ownership under the facility. The map and list meet the requirements of 30 TAC §305.45(a), §330.59(c)(3), and §281.5. The list is also provided in electronic format on the enclosed cd per the requirements of 30 TAC §330.59(c)(3)(B).

ATASCOCITA RECYCLING AND DISPOSAL FACILITY

APPENDIX IA
GENERAL LOCATION MAPS

CONTENTS



0 1000 2000
SCALE IN FEET

HARMASTON, TX	HUMBLE, TX
1995	1995
NIMA 6943 I NW-SERIES V882	NIMA 6943 IV NE-SERIES V882

ROAD CLASSIFICATION

Primary highway hard surface	Light-duty road, hard or improved surface
Secondary highway hard surface	Unimproved road

Interstate Route · U.S. Route · State Route

LEGEND

PERMIT BOUNDARY

SURFACE WATER BODY OR OTHER WATER

NOTES:

1. REFER TO PART II, APPENDIX IIB – LAND USE ANALYSIS FOR DETAILED LAND USE INFORMATION AND LAND USE MAP. LAND USE ANALYSIS AND MAP HAS BEEN PREPARED BY TBG PARTNERS.
2. THERE ARE NO CEMETERIES, HISTORICALLY SIGNIFICANT SITES, ARCHAEOLOGICALLY SIGNIFICANT SITES AND NO SITES HAVING EXCEPTIONAL AESTHETIC QUALITY WITHIN ONE MILE OF THE PERMIT BOUNDARY.
3. THERE ARE NO INTAKE/DISCHARGE STRUCTURES LOCATED WITHIN OR ASSOCIATED WITH THE FACILITY.
4. REFER TO FIGURE IA.4–AERIAL PHOTOGRAPH FOR GENERAL CHARACTER OF AREAS ADJACENT TO THE FACILITY.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED PROFESSIONAL ENGINEER
2/01/2011

ISSUED FOR PERMITTING PURPOSES

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	SAB	KJW	KJW

GENERAL TOPOGRAPHIC MAP

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

DSN. KJW	DATE : 09/10	DRAWING	IA.3
DWN. SRC	SCALE : GRAPHIC		
CHK. KJW	DWG : IA.3–GenTopo.dwg		

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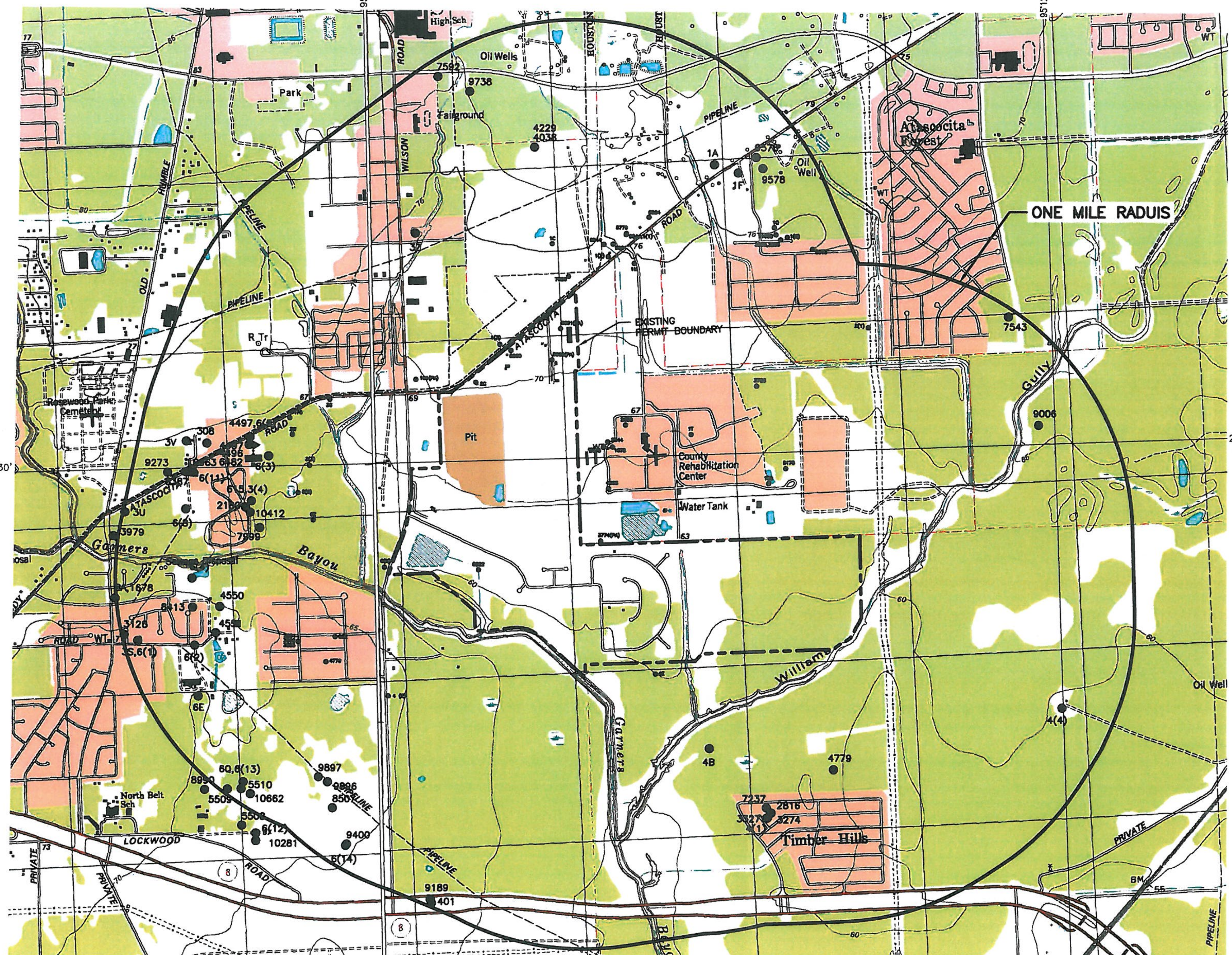

HARMASTON, TX
1995
NIMA 6943 I NW-SERIES V882

HUMBLE, TX
1995
NIMA 6943 IV NE-SERIES V882

0 1000 2000
SCALE IN FEET

ROAD CLASSIFICATION

Primary highway hard surface ....
Light-duty road, hard or improved surface ......
Secondary highway hard surface ....
Unimproved road ......
Interstate Route
U.S. Route
State Route

LEGEND

PERMIT BOUNDARY
SURFACE WATER BODY OR OTHER WATER
4(4) WATER WELL
9189(PA) WATER WELL (PLUGGED)

NOTES:

1. REFER TO PART III, APPENDIX E FOR WATER WELL INFORMATION.
2. THERE ARE NO SPRINGS LOCATED WITHIN ONE MILE OF THE PERMIT BOUNDARY.

STATE OF TEXAS
JOHN MICHAEL SNYDER
GEOLOGY
595
LICENSED
PROFESSIONAL GEOSCIENTIST
2-1-2011

WATER WELLS AND SPRINGS WITHIN ONE-MILE RADIUS

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

ISSUED FOR PERMITTING PURPOSES

REVISIONS

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	SAB	JMS	JMS

TBPE FIRM NO. F-256		TBPG FIRM NO. 50222	
DSN. JMS	DATE : 01/11	DRAWING	
DWN. SRC	SCALE : GRAPHIC	IA.3A	
CHK. JMS	DWG : IA.3-GenTopo.dwg		

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ATASCOCITA RECYCLING AND DISPOSAL FACILITY
HARRIS COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 1307D

PERMIT AMENDMENT APPLICATION

PART II
EXISTING CONDITIONS AND
CHARACTER OF THE FACILITY AND SURROUNDING AREA

Prepared for

Waste Management of Texas, Inc.

September 2010

Revised February 2011

Prepared by

BIGGS & MATHEWS ENVIRONMENTAL
1700 Robert Road, Suite 100 • Mansfield, Texas 76063 • 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

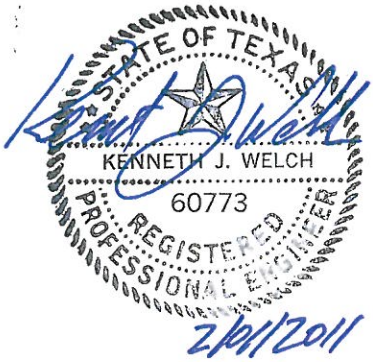
TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

2/01/2011

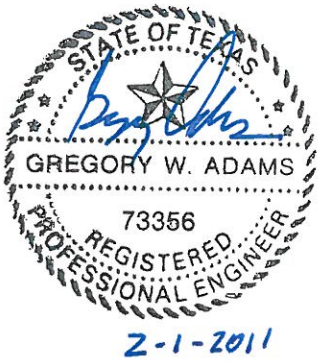
CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)



For Sections 8.1, 10.1, 10.2, 10.4, 11.1, 12.1, 12.2



For Section 10.5

1 EXISTING CONDITIONS SUMMARY

30 TAC §330.61(a)

1.1 Existing Conditions

The Atascocita Recycling and Disposal Facility (RDF) is an existing 503.7-acre Type I Municipal Solid Waste Disposal Facility owned and operated by Waste Management of Texas, Inc. (WMTX). The Atascocita RDF is located in north Harris County, southeast of the intersection of Atascocita Road and Wilson Road. The facility is located between Garners Bayou on the south of the existing permit boundary and Williams Gully on the east of the proposed expansion. Harris County owns the adjacent property immediately to the east of the current permit boundary and north of the proposed permit boundary. The approximate 600-acre property consists of park areas, sports fields, the Harris County Road Maintenance Facility, Harris County Correctional Facilities, the Fire Department Training Facility, a State of Texas Correctional Facility, and the Harris County Wastewater Treatment Facility.

The current permitted Atascocita RDF consists of a permit boundary of about 503.7 acres. The area within the permit boundary consists of a total of 310.7 acres of permitted waste disposal footprint, and a total of about 193 acres of non-waste disposal area. The waste disposal footprint includes an approximate 207-acre active waste disposal area (Phases 1 through 4) and an approximate 103.7-acre future disposal area (Phase 5). Phase 1 includes 90.9 acres of pre-Subtitle D lined area and 6.5 acres of Subtitle D lined area. Phase 1 has received only municipal solid waste. Phases 2, 3, and 4 include 109.6 acres and were constructed following implementation of the Subtitle D requirements. Phase 3, Cell 1 is an 11.2-acre lined area for municipal solid waste only. The Phase 2, Phase 3 (Cells 2, 3, and 4), and Phase 4 areas consisting of 98.4 acres were constructed and authorized to allow placement of Class 1 nonhazardous waste below existing ground surface. No additional Class 1 nonhazardous industrial waste capacity is available within the existing lined areas. Phase 5 includes 103.7 acres and is permitted to accept Class 1 nonhazardous industrial waste in areas below existing ground surface. The Phase 5 liner has not been constructed and is currently used as a soil borrow area for ongoing waste disposal activities. Final cover has been constructed on an 8.3-acre area located in the northwest corner of the active waste disposal area. The currently permitted maximum final contour elevation is 255 feet-msl. The currently permitted elevation of deepest excavation is 15.4 feet-msl.

Locations outside the permitted waste disposal areas are used for buffer distance between waste disposal areas and the permit boundary, entrance facilities, a Type IX Beneficial Landfill Gas Recovery Facility (Type IX Registration No. 48006), a solidification facility, a citizen's convenience drop-off area, leachate storage, a maintenance facility, perimeter access, and surface water drainage facilities. The existing surface water drainage facilities of perimeter drainage systems and detention

facilities are permitted through the Harris County Flood Control District (HCFCD) and the Federal Emergency Management Agency (FEMA).

There are several easements within the Atascocita RDF permit boundary, none of which impact the development or operations of the facility. There is an existing 100-foot right-of-way identified by Harris County for the proposed Greens Road. The future roadway right-of-way is located along the existing south permit boundary and extends along the southern boundary of the future expansion area.

The expansion area is immediately adjacent to and east of the current permitted easternmost permit boundary. The expansion area will extend into property owned by WMTX that continues beyond Williams Gully. The expansion area will add approximately 170.7 acres to the permit boundary. The expansion area is a relatively flat, vegetated area that generally drains south and eastward to Williams Gully. The property has been harvested for timber over the past several years. A small area along the south property boundary is within the 100-year floodplain. Based on evaluations conducted by Knudson, LP, there are existing jurisdictional waters of the United States within the overall property and future permit boundary. The United States Army Corps of Engineers Galveston District (USACE SWG) is currently reviewing the wetland delineation and mitigation plan submitted by Knudson as part of a proposed Section 404 Individual Permit. A copy of the Section 404 Individual Permit Application and the Public Notice for the Individual Permit as issued by the USACE SWG are included in Part II, Appendix IID of this permit amendment application.

1.2 Special Conditions

A detailed discussion of site-specific conditions that potentially require special design considerations as set forth in §330.61(a), including impact on surrounding area, transportation, geology, soils, groundwater, surface water, abandoned oil and water wells, floodplains, wetlands, endangered or threatened species, and Texas Historical Commission review is included in Sections 8 through 15 of Part II. As documented, there are no existing site-specific conditions that require special design considerations or possible mitigation of conditions.

2 WASTE ACCEPTANCE PLAN

30 TAC §330.61(b)

2.1 Properties and Characteristics of Waste

The major classifications of solid waste to be accepted at the Atascocita RDF include municipal solid waste, special waste, and Class 2 and 3 industrial wastes. Special wastes accepted at the facility authorized by §330.171(c) include treated medical waste, dead animals and/or slaughterhouse waste, regulated asbestos-containing materials (RACM), nonregulated asbestos-containing material (non-RACM), empty containers, municipal hazardous waste from a conditionally exempt small quantity generator, and sludge, grease trap waste, grit trap waste, and liquid wastes from municipal sources. In addition, other special wastes will be accepted based on a waste-specific approval as authorized by §330.171(b) and the facility Special Waste Acceptance Plan included in Part IV – Site Operating Plan. The facility is authorized to accept liquid wastes for solidification. The waste classifications are defined in §330.3.

The Atascocita RDF is currently authorized to accept Class 1 nonhazardous industrial waste; however, the facility will no longer accept this type of waste. The facility has reached its available Class 1 disposal capacity within the existing lined areas authorized for disposal of Class 1 waste in Phases 2 through 4. The existing available disposal capacity within Phases 1, 2, 3, and 4 and future Phases 5 and 6 will not be authorized to accept Class 1 nonhazardous industrial waste.

Consistent with §330.15, the facility will not accept for disposal Class 1 nonhazardous industrial waste; lead acid storage batteries; used motor vehicle oil; used oil filters; whole used or scrap tires; refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC); bulk or noncontainerized liquid waste from nonhousehold sources; regulated hazardous waste; polychlorinated biphenyls (PCB) waste; radioactive materials; or other wastes prohibited by TCEQ regulations.

2.2 Volume and Rate of Disposal

The Atascocita RDF serves individuals, businesses, and communities in Harris County and surrounding Texas counties. The landfill received an average of approximately 1,142,000 tons of incoming waste (approximately 3,660 tons per day) in 2009. WMTX anticipates that in 2010 the landfill will receive approximately 1,165,000 tons of incoming waste (approximately 3,730 tons per day). The waste acceptance rate will vary over the life of the facility depending on market conditions.

The estimated maximum annual waste acceptance rate for the Atascocita RDF projected for five years is as follows:

Year	Estimated Maximum Annual Waste Acceptance Rate
1	1,165,000 tons
2	1,188,000 tons
3	1,212,000 tons
4	1,236,000 tons
5	1,261,000 tons

As population and economic conditions and available landfill disposal capacity change within the region, the volume of incoming waste could vary considerably. WMTX will maintain records to document the annual waste acceptance rate for the facility. If the rate exceeds the estimated rate and is not due to a temporary occurrence, WMTX will file a permit modification application consistent with §330.125(h). The modification would propose any needed changes in the site operating plan to properly manage the increased waste acceptance rate, if any. As provided by §330.125(h), the estimated waste acceptance rate is not a limiting parameter of the permit.

Once expanded the landfill will provide a total remaining waste disposal capacity, as of April 2009, of approximately 49,400,000 cubic yards of waste and daily cover (or approximately 39,520,000 tons).

The TCEQ defines population equivalent as "the hypothetical population that would generate an amount of solid waste equivalent to that actually being managed based on a generation rate of five pounds per capita per day and applied to situations involving solid waste not necessarily generated by individuals." Based on this definition, the approximate current and projected population equivalents of the areas capable of being served were calculated as follows:

$$\text{Current Annual Average} = 3{,}660 \text{ tons/day} \times \frac{6 \text{ days}}{\text{week}} \times \frac{52 \text{ weeks}}{\text{year}} = 1{,}142{,}000 \text{ tons/year}$$

Population Equivalent:	Year 1	Year 2	Year 26
	=1,165,000 tons/year	= 1,477,000 tons/year	= 1,911,000 tons/year
	÷ 365 days/year	÷ 365 days/year	÷ 365 days/year
	x 2,000 lb/ton	x 2,000 lb/ton	x 2,000 lb/ton
	÷ 5 lb/person/day	÷ 5 lb/person/day	÷ 5 lb/person/day
	= 1,277,000 persons	= 1,619,000 persons	= 2,094,000 persons

3 GENERAL LOCATION MAPS

30 TAC §330.61(c)

Consistent with §330.61(c), the general location maps are provided in Appendix IIA – Maps and Drawings. These general location maps are provided in addition to the maps included in Part I, Appendix IA – General Location Maps. These maps, collectively as a group, accurately show the proximity of the facility to surrounding features and specifically show the items identified in §330.61(c)(1)-(12). Refer to Appendix IIA, Drawing IIA.1 through Drawing IIA.7 for the general location maps.

4 FACILITY LAYOUT MAPS

30 TAC §330.61(d)

Consistent with §330.61(d), the facility layout maps are provided in Appendix IIA – Maps and Drawings. These facility layout maps, collectively as a group, specifically show the items identified in §330.61(d)(1)-(9). Refer to Appendix IIA, Drawing IIA.8 through Drawing IIA.15 for the facility layout maps.

5 GENERAL TOPOGRAPHIC MAP

30 TAC §330.61(e)

The United States Geological Survey (USGS) General Topographic Map is included in Appendix IIA – Maps and Drawings as Drawing IIA.2 – General Topographic Map. The topographic map consists of the 7-1/2 minute quadrangle sheets for Humble and Harmaston, Texas. Drawing IIA.2 is at a scale of 1 inch equals 2,000 feet as required by §330.61(e).

6 AERIAL PHOTOGRAPH

30 TAC §330.61(f)

Consistent with §330.61(f), the aerial photograph of the site and surrounding area is presented in Appendix IIA as Drawing IIA.7 – Aerial Photograph. This aerial photograph represents conditions as flown April 13, 2009. The aerial photograph shows the area within at least a 1-mile radius of the permit boundary. In addition, the permit boundary and limits of waste are shown.

Refer to Appendix IIB – Land Use Analysis for a discussion of growth trends as required by §330.61(h)(3). A series of aerial photographs is not required to depict growth trends.

7 LAND USE MAP

30 TAC §330.61(g)

Consistent with §330.61(g), a land use map is included in Appendix IIB – Land Use Analysis as Drawing IIB.3 – Land Use Map, prepared by TBG Partners. The land use features identified and depicted on this drawing as required by §330.61(g) include the facility permit boundary, uses within the permit boundary, and existing uses such as agricultural, industrial, and residential uses within 1 mile of the permit boundary. Locations of residences, commercial establishments, schools, licensed day care facilities, churches, cemeteries, ponds or lakes, and recreational areas within 1 mile of the permit boundary are shown. In addition, we have included a land use map within the group of general location maps included in Appendix IIA – Maps and Drawings to further depict the overall requirements of §305.45. Refer to the general location maps and facility layout maps, Drawings IIA.1 through IIA.15, for drainage, pipeline, and utility easements within the permit boundary.

8 IMPACT ON SURROUNDING AREA

30 TAC §330.61(h)

Consistent with §330.61(h), an evaluation of the impact on the area surrounding the facility was conducted by TBG Partners. Refer to Appendix IIB – Land Use Analysis for a detailed land use analysis and discussion regarding impact on the surrounding area. The land use analysis addresses zoning within 2 miles of the facility, character of surrounding land uses within 1 mile of the facility, growth trends within 5 miles of the facility, proximity to residences and other uses within 1 mile of the facility.

8.1 Wells Within 500 Feet

Consistent with §330.61(h)(5), a description of known wells within 500 feet of the facility has been prepared. A water well search was conducted to locate any water wells on the site and within a one-mile radius of the permit boundary. The water well search included a search of state records and a windshield search for water wells. The water well search details and the state well numbering system identification number ~~cross reference table may be found with additional information about each of the wells in Part III, Attachment E – Geology Report, Table E-3~~are listed in the table below. Consistent with §330.61(c)(2), the water wells located within 500 feet of the proposed permit boundary are shown on Drawing IIA.4 – Water Wells.

There is one existing non-potable water well (5091) within the permit boundary outside the limits of the waste disposal area and outside the groundwater monitoring system. Four plugged water wells (5092, 5260, 5822 and 2C) inside the permit boundary have been identified on the map. Also, one water well that is located at the permit boundary line (3774) was identified as plugged and abandoned in the 2004 permit but remains listed in the HGSCD database.

Atascocita RDF
Water Well Locations Identified Within 500-foot Radius of the Site

Map ID	State ID	HGSD ID	Depth(ft)	Install Date	Completion Formation*	Well Use**
5091	65-07-1	5091	50	1987	Chicot	O
5092	65-07-1	5092 (2)	80	1987	--	P
5260	65-07-1	5260 (2)	350	1982	--	O
5822	65-07-4	5822 (1)	550	1999	Evangeline	I
2C	65-07-2C		147	Nov-70	Not Determined	D

Sources: Harris Galveston Subsidence District (HGSD) Radius Report 12/2009.
TWDB Well Reports provided by search firm.
TWDB wiid.twdb.state.tx.us 1/2010.

Note: A blank HGSD field indicates the well did not also appear in the HGSD database report.

(1) Well location from 2004 permit field verification. Mislocated in HGSD records.
(2) Well plugged and abandoned.

*Completion formation designations are from water well published information including water well driller's forms.
**Well Use Codes: P = Public, D = Domestic, I = Industrial, U = Unused, O = Other.

An oil and gas well search of state records was conducted in December 2009 to locate any oil and gas wells on the site and within 1 mile of the permit boundary. The search included a review of records and maps on file at the Texas Railroad Commission. The oil and gas search details are included in Part III, Attachment E – Geology Report. Consistent with §330.61(h)(5) there are no producing oil and gas wells located within 500 feet of the permit boundary, as shown on Drawing IIA.5 – Locations of Oil and Gas Producing Wells.

9 TRANSPORTATION

30 TAC §330.61(i)

Consistent with §330.61(i)(1) through (4), a transportation study prepared by HDR is included as Appendix IIC – Transportation Study. The transportation study provides information on the availability and adequacy of access roads, provides data on the existing and expected vehicular traffic on access roads within 1 mile of the facility during the expected site life of the facility, and projects the volume of traffic expected to be generated by the facility on the access roads within 1 mile of the facility. Documentation of coordination with the Texas Department of Transportation (TxDOT), Harris County, and the Humble ISD is also included in Appendix IIC.

9.1 Airport Impact

Consistent with §330.61(i)(5), an evaluation of the facility impact on surrounding airports was conducted in accordance with §330.545. Refer to Appendix IIA – Maps and Drawings, Drawing IIA.6 – Airport Map for the location of the facility in relationship to area airports. The airport map uses the FAA Sectional Aeronautical Chart, Houston, 75th Edition, dated March 17, 2005 as the base drawing. The map depicts the location of the facility, a 5,000-foot radius, a 10,000-foot radius, and a 6-mile radius from the facility permit boundary. As depicted on Drawing IIA.6, the closest airport is the George Bush Intercontinental Airport, located approximately 4.3 miles from the Atascocita RDF.

The Atascocita RDF, as currently permitted and as proposed through this landfill expansion, has been critically evaluated and determined to be consistent with the location restrictions as required by §330.545. The currently permitted facility was authorized by the U.S. Department of Transportation, Federal Aviation Authority (FAA) for a maximum landfill elevation of 256 ft-msl and implementation of a Bird Control Plan Protocol throughout the life of the facility, as filed under FAA File No. 93-015TX. As documented in correspondence dated October 23, 2009, representatives from WMTX met with representatives of the City of Houston's Department of Aviation to discuss the proposed landfill expansion. As noted, the landfill expansion is to the east and farther away from the George Bush Intercontinental Airport, the maximum landfill elevation of 256 ft-msl will be maintained, and the Bird Control Plan Protocol was implemented and continues to be followed. As requested, the FAA responded in correspondence dated December 9, 2009, that the FAA has no objection to the proposed landfill expansion, provided the landfill continues to implement the Bird Control Plan.

Refer to Appendix IIH for documentation of coordination with FAA regarding location of the facility in relation to airports in the designated areas as required by §330.61(i)(5) and §330.545.

A Bird Control Plan Protocol has been developed from recommendations presented by LGL Limited Environmental Research Associates. The protocol is on file with the FAA, File No. 93-015 TX. The Bird Control Plan Protocol is included in Part IV – Site Operating Plan for the facility. Refer to Part IV, Section 8.11 – Disease Vector Control.

10 GENERAL GEOLOGY AND SOILS STATEMENT

30 TAC §330.61(j)

Consistent with §330.61(j)(1)-(4), a general discussion of the geology and soils of the site has been prepared. Detailed discussion of the geology of the site can be found in Part III, Attachment E of this application.

10.1 General Geology

The Atascocita RDF site lies in the Gulf Coastal Plain of Texas physiographic province approximately 50 miles northwest of the Gulf of Mexico. The Gulf Coastal Plain is a nearly smooth, featureless, depositional plain with adjacent low, rolling hills extending westward to the Balcones Fault Zone and to shallow bays, barrier islands, and beaches along the Gulf of Mexico. The plain rises gently inland to the west to an elevation of about 200 feet above sea level.

In the Harris County area, the land slopes approximately 2 feet per mile southeast toward the Gulf of Mexico. The generally flat relief of the Gulf Coastal Plain is broken by broad shallow valleys of larger streams and narrow valleys of smaller streams that drain the region. Several salt domes form broad mounds on the surface with up to about 100 feet of relief. The local topography at the site is generally flat. The natural surface relief across the site generally ranges from approximately elevation 55 to 70 feet above mean sea level (msl).

The nearest surface water bodies to the site are Garners Bayou to the southwest of the site, and Williams Gully to the southeast of the site. Williams Gully drains southwestward into Garners Bayou, which then drains southward into Green's Bayou located about 2-1/2 miles south of the site. Green's Bayou flows south and southeastward toward Galveston Bay.

Geologic History

Thousands of feet of clastic sediments underlie the Gulf Coastal Plain. These deposits represent continental (alluvial plain), transitional (delta, lagoon, and beach), and marine (continental shelf) deposition of sand, gravel, silt, and clay, with progressively finer grained sediments occurring gulfward. A regional geologic map for the area is presented in Appendix IIA on Drawing IIA.16 and Drawing IIA.17.

Deposition of Gulf Coastal Plain formations occurred in cycles from late Eocene to Quaternary. Each cycle began with a gradual tilting of the land. Subsequently, large volumes of clastic material from the continent were then transported and deposited in each of the depositional environments. Subsidence of the depositional plains and periods of lesser sediment accumulation caused the landward migration of gulf waters. The cycle would then begin again as gradual tilting or uplift of the land occurred. The

resulting oscillating shoreline continued to move toward the Gulf of Mexico with each cycle to near its present position. During the Quaternary, sea level was lower during glacial periods and deep valleys were cut into older sediments. The valleys were subsequently filled with younger sediments. Subsequently, sea level rose to near its current level (Baker, 1979).

Regional Stratigraphy and Structure

The regional geologic stratigraphic units extend from the Pleistocene Series Beaumont Formation to the deeper Upper Miocene Series Fleming Formation. Within the Pleistocene and underlying Pliocene Series units are the two defined aquifers (or hydrogeologic units) of the region, the Chicot Aquifer and Evangeline Aquifer. These aquifers are collectively termed the Gulf Coast Aquifer. They are hydraulically separated from the underlying Jasper by a continuous aquiclude of varying thickness, the Burkeville Confining System. The total thickness of these stratigraphic units in the area of the site, from the surface to the base of the Upper Miocene Series Fleming Formation, is about 2,500 feet.

The youngest formation, the Beaumont Formation, crops out at the surface at the site (Barnes, 1982). Holocene alluvium deposits are present across the site in selected locations from overbank flooding; however, the deposits are not in appreciable amounts. General stratigraphic positions of these geologic units, along with corresponding general regional hydrogeologic units, are presented in Table II-10.1 (Baker, 1979). It should be noted that Table II-10.1 is a generalized depiction of regional geological stratigraphic information for the part of the area of the Coastal Plain of Texas that includes the site. The information should not be construed to represent the specific geologic stratigraphy for the site in every respect. Site-specific geologic and hydrogeologic information, as discerned from site explorations, is discussed throughout this report.

The Beaumont Formation generally consists of cohesive soils (i.e., clays), but it also consists of minor gravel, fine sand, clayey sand, sandy clay, and occasionally limey clay (Barnes, 1982). Clay and sand deposits of the Beaumont pinch out, coalesce, and grade into each other. The limited lateral occurrence of the deposits makes correlation of individual beds difficult, even over short lateral distances. The sand/clay ratio varies considerably vertically and horizontally in the Gulf Coastal Plain sediments. Baker (1979) reports that delineation of the Pleistocene units is “exceedingly difficult” due to lithologic similarities and the lack of a correlatable fossil record.

Underlying the Beaumont, the Montgomery, Bentley, and Willis Formations similarly comprise deposits of clay, silt, sand, and minor amounts of gravel (Barnes, 1982). The Montgomery and Bentley Formations form the upper and lower portions of the Lissie Formation. The Beaumont Formation is approximately 230 feet thick in the vicinity of the site (Golder, 2004). The underlying Pliocene Goliad Sand is characterized by a coarser distribution of clastic material including sand, gravel and carbonate cemented sand interbedded with finer grained silt and clay than the overlying units.

The Upper Miocene Fleming Formation is considered to be the aquiclude to the overlying more permeable sediments. The Fleming Formation is primarily clay and

sandy clay interbedded with lesser amounts of sand and sandstone (Wood, et al., 1963). The lithologies of the Fleming Formation are part of the hydrogeologic unit designated the Burkeville Confining System.

Table II-10.1
Atascocita RDF
Stratigraphy of Part of the Coastal Plain of Texas (Modified from Baker, 1979)

System	Series	Stratigraphic Units		Hydrogeologic Units	Approximate Thickness in Site Vicinity (ft)	Hydraulic Conductivities
Quaternary	Holocene	Alluvium		←site Chicot Aquifer	500 to 700*	645 gpd/ft^2
	Pleistocene	Beaumont Clay				
		Lissie Formation	Montgomery Formation			
			Bentley Formation			
		Willis Sand				
Late Tertiary	Pliocene	Goliad Sand		Evangeline Aquifer	1700	250 – 500 gpd/ft^2
	Upper Miocene	Fleming Formation		Burkeville Confining Unit	400±	Confining Unit
		Oakville Sandstone				

*From various sources.

Most stratigraphic units of the Gulf Coastal Plain thicken toward the Gulf of Mexico as a result of subsidence of the depositional basin. Locally, the thickness of some stratigraphic units has been increased by down-to-the-coast growth fault systems. Formation outcrops generally strike northeast to southwest nearly parallel with the coastline. Regional dip of Pleistocene formations in the area of the site is to the southeast at about 10 to 20 feet per mile.

Gulf Coastal Plain sediments are pierced in places across the region by diapiric salt domes. Oil and gas production activities and some mining activities are often associated with these salt domes.

Figure E1-1 – Geologic Vicinity Map and Figure E1-2 – Geologic Vicinity Legend have been copied in Appendix IIA – Maps and Drawings and renumbered Drawing IIA.16 – Geologic Vicinity Map and Drawing IIA.17 – Geologic Vicinity Legend.

The stratigraphy beneath the Atascocita RDF was characterized using information from a number of studies performed for the original landfill and the proposed amendment. The most recent of the previous studies were Attachments 4 and 5 of the 2004 permit amendment for the site. The following descriptions are copied from Part III, Attachment E, Section 4.2 – Site Stratigraphy and include references found within that

Attachment that have not been recreated in Part II~~recreated and were modified, where appropriate, from the original text~~.

Site Stratigraphy

The stratigraphy beneath the Atascocita RDF was characterized using information from a number of studies previously performed for the site and the proposed amendment. The most recent of these were Attachments 4 and 5 of the 2004 permit amendment for the site and the study conducted for this permit amendment.

For identification purposes, the interpreted units have been labeled as Units I through V. Each unit may consist of one or more depositional environments causing lateral and vertical variations in lithology within each hydrogeologic unit. Each of the five identified stratigraphic units is within the Beaumont Formation (Golder, 2004). The following paragraphs present our interpretation of the stratigraphy beneath the site. Where appropriate, specific areas of the site are identified by referencing sector phases as shown on the inset on Figure E2-2 in Part III, Attachment E, Appendix E2. The proposed expansion area is also identified as Phase 6.

Unit I

The surficial stratum identified at the site has been designated as Unit I. The upper portion of Unit I consists of clay, sandy clay, and silty clays. The Unit I clays overlie the silts and sands and their admixtures of the lower portion of Unit I. This silty, sandy zone is referred to as Unit I – Silt. The clays in Unit I have been described as tan to brown to gray to dark gray. The Unit I – Silt is described as tan to gray. Isolated and laterally discontinuous layers and lenses of sands and silts are common to this tidal influenced channel fill and interchannel flood depositional environment. Floodplain clayey soils are located adjacent to the channel fill silts and sands. Unit I thickness averages approximately 20 feet.

On the existing portion of the site, Unit I consists primarily of clayey lithologies with a sand/silt channel occurring in a north-northeast to south-southwest trend. On the eastern area of the proposed expansion area, the basal silt zone is continuous and ranges in thickness from 3 to 24 feet. It is generally thinner on the western part of the proposed expansion area and becomes thicker towards the eastern part of the site.

The hydraulic conductivity of the silt/sand portions of Unit I averages 3.76×10^{-4} cm/sec (Part III, Attachment E, Table E-16). The hydraulic conductivities of the upper clayey portions of Unit I range from 1.1×10^{-7} cm/sec to 3×10^{-8} cm/sec. The basal clastic portion of Unit I is primarily silt or silty sand but ranges from fine silt to clayey silt, sandy silt, silty sand, and sand. The basal sands and silts are underlain by the clayey portion of Unit II.

Unit II/III

The Unit II and III clays, sands, and silts represent depositional cycles similar to Unit I with some upper clays and channel fills. Units II and III are typically identified and discussed in combination with each other (Unit II/III) because both units are primarily clays that are

indistinguishable from each other. The clays in Unit II/III have been described as tan to reddish brown to brown to gray. The silt and sands have been described as gray to tan. Original characterization studies were generally focused on the depositional sequences rather than the lithologic and hydrostratigraphic characterization. In addition, the narrow sands that occur on the existing portion of the site are in most cases also indistinguishable and act as a single hydrostratigraphic unit. A generally north/south trending channel fill sand within the Unit II/III clayey interval has been identified on the existing part of the site (Part III, Attachment E, Appendix E6, Figures E6-18 and E6-19).

The clayey portions of Unit II/III are interpreted to be floodplain depositional environments. These clays have limited, discontinuous sands and silts in addition to the main north/south channel fill. Unit II/III becomes primarily clay in the deeper portions of the unit. Clays in Unit II/III exhibit hydraulic conductivities in the range of 1×10^{-7} cm/sec to 1×10^{-9} cm/sec. The overall thickness of the Unit II/III clay interval ranges from about 10 to 50 feet in the proposed expansion area.

Unit IV

Unit IV consists primarily of a series of sand layers with isolated interbeds of clay. The clay interbeds are laterally discontinuous and are referred to as Unit IV-A on cross sections. The sand is gray and dense to medium-dense, coarse to very fine-grained with subrounded grains, and is well-sorted. The unit ranges in thickness from about 90 to 120 feet and is continuous across the entire Atascocita RDF site. As calculated from multiple slug tests, and as shown in Part III, Attachment E, Table E-14, hydraulic conductivity in Unit IV ranges from 2.07×10^{-3} cm/sec to 5.33×10^{-6} cm/sec, and averages approximately 1.99×10^{-5} cm/sec. Unit IV is the uppermost aquifer beneath the site for groundwater monitoring purposes. Unit IV is separated beneath the site from deeper parts of the Chicot Aquifer by the underlying Unit V clay, which is continuous across the site.

Unit IV-A

Unit IV-A occurs as clay lenses within the overall Unit IV sand stratum. The clay lenses, where present, range in thickness from less than 10 feet to a maximum thickness of about 25 feet. In the proposed expansion area these clay lenses occur over most of the east and south side of the site (see Part III, Attachment E, Appendix E3, Figures E3-2 through E3-8). The clays in Unit IV-A are described as brown to reddish brown, hard, blocky, and contain some silt and sand. These clays generally occur within Unit IV sand between approximate elevation 0 to -50 feet msl.

Unit V – Lower Confining Unit

Unit V underlies the thick sands of Unit IV and consists of stiff, gray, dense to very dense clay that is occasionally silty and sandy. Unit V is continuous across the site. A contour map of the top of Unit V is shown in Part III, Attachment E, Appendix E3 on Figure E3-9. More than 25 geotechnical and geophysical borings reached depths sufficient to identify this unit. Thickness ranged from 7 to more than 30 feet and averaged about 20 feet where fully penetrated. Borings that fully penetrate Unit V are the more recent borings on the south side of the site. The thicknesses were determined from geotechnical and geophysical borings that fully penetrated Unit V. These borings are geotechnical

borings BME-4, BME-6, BME-15, B-104, and geophysical borings GB-1 through GB-7. Laboratory permeability tests of Unit V show an average hydraulic conductivity of 3.7 x 10^{-8} cm/sec. This unit is the lower confining unit to the uppermost aquifer (Unit IV) beneath the site.

~~For identification purposes, we have labeled the interpreted units as hydrogeologic units I through V. Each unit may consist of one or more depositional environments causing lateral and vertical variations in lithology within each hydrogeologic unit.~~

10.2 General Soils

The information from the field explorations included in Attachment E indicates that the subsurface materials at the site consist of the four general soil units that have been identified at the site, and are summarized as:

Table II-10.2
Atascocita RDF
Generalized Site Stratigraphy

Geologic Unit		Lithology	Average Depth to Top of Unit (ft)	Average Thickness of Unit (ft)	Hydrogeologic Unit	
Regional	Site				Site	Regional Aquifer
Beaumont Formation	Unit I	Clay, sandy clay, silty clay	--	20	Unit I Silts – Upper Groundwater Unit	Upper Chicot
	Unit II/III	Clay, sand, silt, and intermixes	20	27	Clays – Aquitard Sands – Groundwater Unit	
	Unit IV and Unit IV-A	Sand with clay layers	47	100	Uppermost Aquifer IV-A – Clay Lenses – Aquitard	
	Unit V	Clay	147	20*	Aquiclude – Lower Confining Unit	

*Where penetrated.
**Detailed lithologic descriptions of each on-site stratigraphic unit are included in Part III, Attachment E, Section 4.2.

- ~~Unit I – sandy and silty clays underlain by sands and silts~~
- ~~Unit II/III – clay to silty and sandy clay~~
- ~~Unit IV – sand with isolated clay interbeds~~
- ~~Unit V – clay to silty and sandy clay that arecontinuous across the site~~

The laboratory test results are included in Part III, Attachment E, Appendix E5 – Laboratory Tests. These test results were reviewed along with the boring logs to develop generalized soil properties for use in the analyses. As shown on the cross sections in Attachment E, Appendix E3, the landfill excavation will encounter clay, silty and sandy clay, silt, sandy and clayey silt, sand, and silty and clayey sand.

10.3 Fault Areas

Consistent with §330.61(j)(2) and §330.555, fault areas documentation was prepared as part of this application to demonstrate that the Atascocita RDF meets the location restriction for fault areas. The following summary text is duplicated from Part III, Attachment E, Section 2.1 – Fault Areas.

The property on which the Atascocita RDF is located was examined for the presence of faulting according to §330.555 criteria. A fault study was conducted by Fugro Consultants, Inc., entitled "Study of Geologic Faulting, Atascocita Recycling and Disposal Facility," dated May 28, 2010 and February 1, 2011, to determine the possibility of geologic faulting in the vicinity of the proposed expansion area. The complete study is reproduced in Part III, Attachment E, Appendix E8 and is summarized below.

The study included assessment of the risk using existing data and included review of the following:

- Previous fault studies for the existing facility
- Recent and historical aerial photographs of the site
- Available geologic literature and data, including published and unpublished information from Fugro files related to surface faulting in the Houston area
- LIDAR (Light Detection and Ranging) imagery data for evidence of surface faulting
- Topographic maps and other surface fault maps of the area to evaluate geomorphic features possibly associated with surface faulting
- Subsurface geologic structure maps, including maps prepared by Cambe Geological Services and Geomap Company, for presence of faults at depths that might project to the surface
- Observation of site excavation pit areas for evidence of surface faulting
- Oil and gas field data for evidence of differential subsidence or faulting

In addition, a site walkover was conducted by an experienced geologist and engineer familiar with faulting and solid waste disposal facilities to identify possible physical evidence caused by faulting. The facility was examined for indications of faulting in accordance with §330.555(b)(1-12). No unusual scarps or topographic breaks were interpreted within 200 feet of the site. No evidence of faulting was found associated with formation outcrops. No evidence of faulting was found by examination of area roadways. No evidence of faulting was found by inspection of open excavations on the site. No unusual relief or topographic features, such as sag ponds or truncated alluvial spurs, and no vegetation changes were observed on the site. No evidence of structural damage to buildings on the property was identified.

Two off-site features (the presence of a subsurface fault identified on the subsurface structure maps and the alignment of Green's Bayou, Garners Bayou and Williams Gully near the facility) were identified that could potentially be interpreted as the possibility of a fault being present near or through the southeast portion of the proposed expansion area. Further investigation using a series of geophysically logged borings was accomplished to determine if a northeast-southwest trending fault existed within 200 feet of the proposed expansion area. A line of seven geophysical borings, extending diagonally from the northwest corner to the southeast corner of the proposed expansion area were drilled. Based on the interpretation of the logs from the geophysical borings there are no offsets in the stratigraphic markers associated with faulting.

In summary, based on the review of regional data including LIDAR, aerial photographs, and subsurface geologic structure maps, there are no geologic faults within 1/2-mile of the existing facility. In addition, no fault scarps were observed at the surface within 200 feet of the site and there was no evidence of vertical subsidence on any outcrops of geologic materials. No vertical displacement or stratigraphic offset indicative of faults was observed in outcrops or in any of the cores from the site borings. There is no active faulting within 200 feet of the site; therefore, the site complies with §330.555.

~~The property on which Atascocita RDF is located was examined for the presence of faulting according to §330.555 criteria. A fault study entitled "Study of Geologic Faulting", dated May 28, 2010, was conducted by Furgo South, Inc. that included reviewing aerial photographs for the site, reviewing available geologic literature and maps of the area, conducting site reconnaissance, and examining the subsurface boring data from the site. The existing Atascocita RDF site and proposed expansion area are not located within a fault area.~~

Refer to ~~More detailed information is provided in~~ Part III, Attachment E – Geology Report, Appendix E8 – Fault Study for the complete fault study. The Registered Professional Engineer responsible for Part II, Section 10.3 – Fault Areas; Appendix IIJ, page IIJ-7, Fault Area Location Restrictions; and Part III, Attachment E, Appendix IIE – Fault Study is Mr. Robert P. Ringholz, P.E., Fugro Consultants, Inc.

10.4 Seismic Impact Zones

Consistent with §330.61(j)(3) and §330.557, seismic impact zones documentation was prepared as part of this application to demonstrate that the Atascocita RDF meets the location restriction for seismic impact zones. The text below is copied from Part III, Attachment E, Section 2.2 – Seismic Impact Zones and may include references that are not reproduced. Part III, Attachment E, Appendix E4, Figure E4-1 – Seismic Impact Zone Map has been copied and incorporated in Part II, Appendix IIA, Drawing IIA.18 – Seismic Impact Zone Map.

The location criterion in §330.557 requires that new municipal solid waste landfill (MSWLF) units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the executive director that all containment structures (including liners, leachate collection systems, and surface water control systems) are designed to resist the maximum horizontal acceleration in lithified earth

material for the site. A seismic impact zone is defined as an area with a probability of 10 percent or greater that the maximum horizontal acceleration in rock, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years. If the maximum horizontal acceleration is less than 0.10g, then the design of the unit will not be required to incorporate an evaluation of seismic effects.

Areas within the United States where seismic effects need to be evaluated, as determined by the USGS, are shown in Appendix IIA on Drawing IIA.18. As indicated on this drawing, the Atascocita RDF is not located within a seismic impact zone.

~~TCEQ regulations state that no new MSWLF units or lateral expansions shall be located in seismic impact zones, unless the owner or operator demonstrates that all containment structures, including liners, leachate collection systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth material for the site.~~

~~The seismic impact zone as defined by §330.557 is an area with a 10 percent or greater probability that the maximum horizontal acceleration in lithified earthen material, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years. Part III, Attachment E, Appendix E4, Figure E4-1 shows the site location on the seismic impact zone map for Texas. The existing Atascocita RDF site and proposed expansion area are not located within a seismic impact zone.~~

10.5 Unstable Areas

Consistent with §§330.61(j)(4), 330.63(e)(2), and 330.559, unstable areas documentation was prepared as part of this application to demonstrate that the Atascocita RDF meets the location restriction for unstable areas.

An unstable area is defined by the TCEQ as a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill's structural components responsible for preventing releases from the landfill. An unstable area can include poor foundation conditions, areas susceptible to mass movement, and karst terrains.

~~The determination of potential unstable areas at the landfill site is based on site observations and a review of existing documentation for the site. Based on this review, the foundation conditions and the local geologic and geomorphologic features are stable. In addition, there is no evidence to suspect mass movement of natural formations of earthen material on or in the vicinity of this site. No foundation problems exist at the site. The proposed landfill components were evaluated with respect to differential settlement, heave and slope stability. The detailed analysis is included in Part III, Attachment D5 – Geotechnical Design. Based on the results of these analyses, the existing and proposed man-made features have been predicted to have adequate factors of safety with respect to stability. The site is not located in a karst area.~~

The evaluation of potential unstable areas at the site is based on the following observations, analyses, and reviews of site specific information.

- Existing features including structures and liner systems did not exhibit evidence of foundation movements.

- The boring logs and laboratory data did not indicate the presence of poor foundation conditions.

- The settlement and heave analyses presented in Part III, Attachment D, Appendix D5-A show that the landfill components will not undergo detrimental differential settlement.

- The slope stability analyses presented in Part III, Attachment D, Appendix D5-B show that landfill components will be stable.

- Evidence to suspect mass movement of natural formations of earthen material on or in the vicinity of this site was not observed at the site, in the borings or on the geologic maps.

- Evidence of karst terrain was not observed at the site, in the borings or on the geologic maps.

Based on ~~site observations, a review of existing geological data, and geotechnical analysis of the structural components of the landfill development~~this evaluation, the site is not located in an unstable area and the integrity of the landfill is not expected to become impaired by natural, surface, or subsurface local human-made features or events.

11 GROUNDWATER AND SURFACE WATER

30 TAC §330.61(k)

11.1 Groundwater

Consistent with §330.61(k)(1), a discussion of groundwater conditions at and near the facility has been prepared. A groundwater investigation report is included in Part III, Attachment E, Section 4. The groundwater monitoring system proposed for the site is discussed in Part III, Attachment F, Section 3.

The Gulf Coast Aquifer (Kasmarek and Strom, 2002) is classified by the State of Texas as a major aquifer. In Texas, the Gulf Coast Aquifer extends from the Rio Grande Valley and northeastward to the Louisiana border, encompassing more than 50,000 square miles and all or parts of 54 counties (Ashworth and Hopkins, 1995). The Chicot and Evangeline comprise the Gulf Coast Aquifer (Kasmarek and Strom, 2002). These aquifers are regionally connected in a "leaky artesian aquifer" condition. The Chicot is the uppermost aquifer. The Evangeline occurs below the Chicot. The Burkeville Confining System, including the Fleming Formation, serves as the aquiclude to the Evangeline. Clay interbeds occurring within the Chicot and Evangeline serve as aquicludes to overlying sandy zones preventing local downward migration of groundwater. Deeper, confined zones within each aquifer results in a "leaky artesian aquifer" situation. This upward pressure gradient condition also prevents downward migration of groundwater. Hydraulic properties of the Chicot and Evangeline are summarized in Table II-11.1 as follows.

The primary sources of groundwater in the area are two regional aquifers, the Chicot and Evangeline. Recharge to the Chicot Aquifer is by precipitation on the sandy outcrops of the formations that comprise the aquifer. The site is on an outcrop of the clayey portion of the Beaumont Formation, and thus does not serve as a recharge area for the aquifer. Groundwater in the Chicot is used for domestic and municipal requirements. The recharge of the Evangeline from the Chicot system is primarily from the compaction of overlying clays. However, the confined groundwater in deeper zones commonly results in a leaky artesian aquifer condition, with upward pressures that prevent downward migration of groundwater. Groundwater from the Evangeline Aquifer is used for domestic and municipal requirements.

Table II-11.1
Atascocita RDF
Hydraulic Properties of Regional Aquifers
Compiled from Wood, et al., 1963

Parameters	Chicot Aquifer	Evangeline Aquifer
Composition	Sand, Silt, and Clay	Sand
Transmissivity	225,000 gpd/feet	100,000 gpd/feet
Hydraulic Conductivity	645 gpd/square feet	250-500 gpd/square feet
Water Table/Confined	Confined	Confined
Groundwater Flow Rate	50 feet/year	25-50 feet/year
Water Quality Total Dissolved Solids Chlorides	 <500 ppm TDS <250 mg/l	 <500 ppm TDS <100 mg/l
Recharge Zones	Beaumont Formation	Northwest and West Outcrop of Evangeline**
Regional Water Table	See Part III, Attachment E, Appendix E1, Figure E1-4	See Part III, Attachment E, Appendix E1, See Figure E1-5
Present Use of Water	Municipal, Industrial, Irrigation	Municipal, Industrial, Irrigation
Identification of Water Wells Within 1 Mile	See Part III, Attachment E, Table E-3	See Part III, Attachment E, Table E-3

*Regional groundwater potentiometric surface map(s) are included in Part III, Attachment E, Appendix E1, Figures E1-4 and E1-5.
**Additional information regarding the Evangeline Aquifer Recharge Zone can be found in Part III, Attachment E, Section 3.1.1.2.

Groundwater conditions at the site were determined using data from a combination of piezometers and monitoring wells that are a part of the approved site Subtitle D groundwater monitoring system. Details and logs of the borings, monitoring wells and piezometers are provided in Part III, Attachment E, Appendix E2.

11.2 Surface Water

Consistent with §330.61(k)(2), a discussion of surface water at and near the site has been developed. The surface water drainage evaluation and design is included in Part III, Attachment C – Facility Surface Water Drainage Report.

The Atascocita RDF is located in the Greens Bayou watershed near the confluence of Garners Bayou and Williams Gully. The Garners Bayou and Williams Gully confluence is approximately 3,500 feet south of the facility permit boundary. Garners Bayou continues approximately an additional 5,000 feet before connecting with Greens Bayou.

The Garners Bayou drainage area adjacent to the facility includes areas north and west of the facility, including the current permitted Atascocita RDF. Surface water runoff from the facility enters Garners Bayou at two discharge points. Surface water is routed to these discharge points through existing perimeter drainage channels and detention ponds.

The Williams Gully drainage area adjacent to the facility includes areas north and east of the current permitted Atascocita RDF. There are no constructed drainage facilities routing surface water runoff from the Atascocita RDF to Williams Gully. Surface water runoff from the proposed expansion area enters Williams Gully through one existing drainage feature; the majority of the surface water sheet flows across the proposed expansion area to Williams Gully.

The Atascocita RDF is located within Harris County. As such, detailed evaluations and flood studies have been conducted and submitted for approval to the HCFCD. Refer to Part II, Appendix III for documentation and a copy of the HCFCD approvals.

11.3 Stormwater Permitting

The facility has been designed to prevent the discharge of pollutants into waters of the state of Texas or waters of the United States, as defined by the Texas Water Code and the federal Clean Water Act, respectively. WMTX submitted a notice of intent (NOI) to comply with TPDES General Permit No. TXR050000 relating to stormwater discharge associated with industrial activity (Multi-Sector General Permit) and received Permit No. TXR05N515. A copy of the permit is included in Appendix IIG – TPDES Permit.

12 ABANDONED OIL AND WATER WELLS

30 TAC §330.61(l)

12.1 Water Wells

There are three known abandoned water wells within the permit boundary but outside of the waste disposal footprint of the Atascocita RDF. There is one existing non-potable water well within the permit boundary outside the limits of the waste disposal area and outside the groundwater monitoring network. Refer to Part II, Appendix IIA, Drawing IIA.4 – Water Wells for the location of known water wells within the permit boundary. However, should any unknown abandoned water wells be discovered during facility development, Atascocita RDF will immediately provide written notification to the TCEQ executive director of their location.

A copy of the well plugging report for any found well will be submitted to the appropriate state agency and executive director within 30 days after the well is plugged. A permit modification will be submitted to the executive director if revisions to the liner installation plan are required as the result of well abandonment.

12.2 Oil and Gas Wells

There are no known existing or abandoned crude oil or natural gas wells or other wells associated with mineral recovery within the Atascocita RDF permit boundary. Refer to Part II, Appendix IIA, Drawing IIA.5 for the oil and gas wells or dry holes in the site vicinity. If any abandoned crude oil or natural gas wells or other wells associated with mineral recovery are located, the landfill will provide written notification to the TCEQ's executive director of their location within 30 days of their discovery. For any abandoned crude oil or natural gas wells, or other wells associated with mineral recovery, the landfill will also provide the executive director of the TCEQ with written certification that all such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the executive director of the TCEQ within 30 days after the well has been plugged. A permit modification will be submitted to the executive director if revisions to the liner installation plan are required as the result of well abandonment. Any producing crude oil or natural gas well that does not affect or hamper landfill operations may be installed or remain in its current state if identified in the permit for the landfill.

13 FLOODPLAINS AND WETLANDS

30 TAC §330.61(m)

13.1 Floodplains

Consistent with §330.61(m)(1) and §330.547, an evaluation of the 100-year floodplain has been prepared by Dannenbaum Engineering Corporation for the Atascocita RDF. The continued development of the Atascocita RDF will be conducted outside the 100-year floodplain. Refer to ~~Part III, Attachment C2 – Regional Drainage and Flood Control Analysis~~ Appendix IIK for documentation and approvals received from FEMA and the HCFCD for development of the Atascocita RDF. The limits of the 100-year floodplain are depicted on Drawing IIA.20.

The Federal Emergency Management Agency (FEMA) has defined the limits of the 100-year floodplain in the vicinity of the landfill as Zone AE; base flood elevations have been determined by FEMA. The limits of the floodplain are depicted ~~in Part III, Attachment C2,~~ on Drawing ~~C2-B-1~~IIA.19, which is a drawing compiled from the Flood Insurance Rate Map (FIRM), Community Panel Number 48201C0505L, with an effective date of September 28, 1990, and a most recent revision date of June 18, 2007. ~~As depicted on Drawing C2-B-1, portions of the permit boundary along Garners Bayou and Williams Gully are located within the FEMA defined 100-year floodplain. Drawing C2-B-1 also shows that a portion of the waste disposal footprint is within the limits of the 100-year floodplain.~~ However the FIRM panel has not been revised to reflect modifications to the floodplain approved after June 18, 2007.

As part of the current permit, the Atascocita RDF has constructed the west pond, east pond, floodplain mitigation channel, and the perimeter berm. ~~The perimeter berm hydraulically disconnects the 100-year floodplain and Phase 5, a permitted future fill area, which is shown in the 100-year floodplain on Drawing C2-B-1.~~ The floodplain mitigation channel provides floodplain storage mitigating the volume of storage removed by the perimeter berm.

A Letter of Map Revision – Fill (LOMR-F) was prepared by Dannenbaum Engineering Corporation to revise the 100-year floodplain to account for the improvements and developments with the 100-year floodplain. The LOMR-F, which officially modifies the 100-year floodplain, was approved by FEMA on September 15, 2009 (see Part III, Attachment C2, Appendix C2-C). A copy of the LOMR-F determination is included in Appendix IIK – Floodplain Documentation.

The Harris County Flood Control District (HCFCD) is the agency having jurisdictional authority of the downstream receiving channels from the Atascocita RDF (Garners Bayou and Williams Gully). Dannenbaum Engineering Corporation conducted a drainage analysis for the expansion of the Atascocita RDF. The purpose of the analysis was to

demonstrate to the HCFCD that the proposed expansion of the Atascocita RDF will not impact the flooding condition of the receiving channels.

Dannenbaum Engineering Corporation conducted a regional drainage analysis of the Atascocita RDF. A HEC-RAS analysis of Garners Bayou and Williams Gully was performed and the 100-year water surface elevations for the current permitted and postdeveloped landfill conditions were determined. The limits of the 100-year floodplain for the current permitted and postdevelopment conditions are depicted ~~in Part III, Attachment C,~~ on Drawing~~s C2-B-2 and C2-B-3, respectively~~ IIA.20.

Based on the HEC-RAS evaluation of the current permitted landfill conditions, no pre-Subtitle D or Subtitle D landfill units are located within the 100-year floodplain. Based on the HEC-RAS evaluation of the postdeveloped landfill conditions, no pre-Subtitle D or Subtitle D landfill units are located within the 100-year floodplain and no waste disposal operations will take place within the 100-year floodplain. ~~Refer to Part III, Attachment C2, Appendix C2-C for a~~A copy of the HCFCD approval for the expansion of the Atascocita RDF is included in Appendix IIK – Floodplain Documentation.

13.2 Wetlands

Consistent with §330.61(m)(2) and (3) and §330.553, a wetlands determination for the facility under applicable federal, state, and local laws has been prepared. The wetlands determination was conducted to evaluate areas subject to jurisdiction under Section 404 of the federal Clean Water Act and areas subject to determination under state designation, as defined in 30 TAC §307.3(81). There are no local laws related to wetland areas. Further, if the state definition of wetland conflicts with the federal definition in any manner, the state regulations provide that the federal definition prevails.

A wetlands determination was conducted for the currently permitted Atascocita RDF (facility) boundary, as defined by Permit No. MSW 1307C. Based on this wetlands determination and the development of the Atascocita RDF, the United States Army Corps of Engineers, Galveston District (USACE SWG) issued Nationwide Permit 39 (SWG-03-39-004). The construction of the Atascocita RDF (Permit No. MSW 1307C) was conducted consistent with this authorization. A copy of Nationwide Permit No. 39 is included in Appendix IID – Wetlands Documentation.

A wetlands determination for the proposed Atascocita RDF expansion area was conducted by Knudson, L.P. and is included as Appendix IID – Wetlands Documentation. The wetlands determination identified jurisdictional waters of the United States, including wetlands. As such, coordination with the United States Army Corps of Engineers, Galveston District (USACE SWG) has resulted in an Individual Permit application submittal for the Atascocita landfill expansion. Refer to Appendix IID – Wetlands Documentation for a copy of the Individual Permit, as submitted to USACE SWG, and subsequent documentation.

13.2.1 Wetlands Delineation Study

Environmental investigations and wetlands delineation for the proposed Atascocita RDF expansion area were conducted between December 2002 and January 2003. All studies were acknowledged and verified by the United States Army Corps of Engineers, Galveston District (USACE SWG) on May 14, 2003. The USACE SWG issued an approved determination [D-5292] for the expansion area, which was scheduled to expire on May 14, 2008.

An Individual Permit (IP) for impacts to waters of the U.S., including wetlands, was submitted to the USACE SWG in March 2008. The IP was submitted for the proposed expansion area totaling approximately 190 acres. As a result of the impacts to waters of the U.S., including wetlands, the landfill expansion permit boundary was reduced to approximately 170 acres.

Based on USACE SWG review comments, an updated delineation of waters of the U.S., including wetlands, was conducted for the proposed expansion area between August 3 and September 16, 2009. Specifically, in a letter dated July 2, 2009, the USACE SWG requested a wetland delineation be conducted per the *1987 Corps of Engineers Wetland Delineation Manual* and the *2008 Interim Regional Supplement for the Atlantic and Gulf Coastal Plain*.

The environmental investigations, wetlands delineation, impacts to waters of the U.S., including wetlands, and subsequent IP have been under the professional direction of Ms. Katie Northrup, a Professional Geoscientist (#1215) and Certified Professional Wetland Scientist (#120554).

The proposed expansion of the Atascocita RDF results in approximately 17.95 acres of jurisdictional wetlands and 950 linear feet of jurisdictional waters of the U.S. to be filled and/or excavated. Approximately 1.2 acres of jurisdictional wetlands and 3,200 linear feet of jurisdictional waters of the U.S. will be avoided [Wetland 4 (portion) through Wetland 7 and Wetland 12 through Wetland 18, consecutively; the majority of Williams Gully, and CRK 1] due to the facility design. To the extent practicable, the proposed landfill expansion has been designed to avoid waters of the U.S., including wetlands. The following table details proposed impacts to waters of the U.S., including wetlands.

Wetlands and Other Waters of the U.S.
Identified within the Atascocita RDF Expansion Area
Harris County, Texas

Wetland/Water Body ID	Water Type/Class[1]	Wetland (acres)	Length (linear feet)	Construction Impacts
Wetland 1A	PFO	3.07	–	Yes
Wetland 1B	PFO	9.29		Yes
Wetland 2	PFO	0.27	–	Yes
Wetland 3	PFO	0.09	–	Yes
Wetland 4	PFO	2.92	–	Yes
Wetland 4	PFO	0.39	–	No
Wetland 5	PFO	0.08	–	No
Wetland 6	PSS	0.06	–	No
Wetland 7	PSS	0.11	–	No
Wetland 8	PFO	0.96	–	Yes
Wetland 9	PFO	0.07	–	Yes
Wetland 10	PSS	0.42	–	Yes
Wetland 11	PFO	0.03	–	Yes
Wetland 12	PEM	0.44	–	No
Wetland 13	PEM	0.01	–	No
Wetland 14	PEM	0.01	–	No
Wetland 15	PEM	0.07	–	No
Wetland 16	PEM	0.01	–	No
Wetland 17	PEM	0.01	–	No
Wetland 18	PSS	0.01	–	No
Wetland 19	PEM	0.83	–	Yes
Ditch 1	Ephemeral	–	650	Yes
CRK 1	Ephemeral	–	268	No
Williams Gully	Perennial	–	300	Yes
Williams Gully	Perennial	–	2,922	No
Avoided Features	PEM (6)	0.55	–	
	PSS (3)	0.18		
	PFO (2)	0.47	–	
	Ephemeral	–	268	
	Perennial	–	2,922	
Total Avoidances		1.20	3,190	
Impacted Features	PEM (1)	0.83	–	
	PSS(1)	0.42	–	
	PFO (8)	16.70	–	
	Ephemeral	–	650	
	Perennial	–	300	
Total Impacts		17.95	950	

[1]PEM = palustrine emergent, PSS = palustrine sapling and shrub, PFO = palustrine forest

Approximately 1.2 acres (including six PEM wetlands comprising 0.55 acre, three PSS wetlands comprising 0.18 acre, and two PFO wetlands comprising 0.47 acre) are proposed to be avoided as a result of best management practices (BMP). Additionally, an approximate 300-foot ephemeral stream (CRK 1) containing an OHWM and approximately 3,000 feet of Williams Gully will be avoided due to facility design.

13.2.2 Permits Required

Unavoidable impacts to jurisdictional wetlands and waters of the U.S., including those that cannot be avoided by facility design, will be mitigated for within either a USACE SWG approved mitigation bank or within an in-lieu fee mitigation project. WMTX will provide compensatory mitigation to a USACE SWG approved mitigation bank or in-lieu fee mitigation project for construction impacts to approximately 17.95 acres of wetlands. An IP for impacts to waters of the U.S., including wetlands, submitted to the USACE SWG in May 2010 is currently undergoing review. The IP was placed on public notice in June 2010. Receipt of the IP will be obtained prior to disturbance or development within streams and wetland areas. The mitigation plan accompanying the IP will satisfy all USACE SWG requirements for mitigation of impacts to wetlands.

13.2.3 Demonstration of Compliance with Location Restrictions

New MSWLF units and lateral expansions shall not be located in wetlands unless the owner or operator submits each of the demonstrations identified in §330.553(b)(1)-(5) to the executive director. Accordingly, the remainder of this section provides the required demonstrations by listing each paragraph of §330.553(b)(1)-(5), followed by information on how the facility will comply with each of these requirements to meet the wetlands location restrictions. A certification of compliance with the wetlands location restrictions is included in Appendix IIJ.

> *(1) Where applicable under the Clean Water Act, §404 or applicable State wetlands laws, the presumption that a practicable alternative to the proposed landfill is available that does not involve wetlands shall be clearly rebutted.*

As detailed above, approximately 19.15 acres of wetlands and 4,140 linear feet of waters of the U.S. are present within the proposed project area. Approximately 17.95 acres of jurisdictional wetlands and 950 linear feet of jurisdictional waters that cannot practicably be avoided would be filled and/or excavated. Approximately 1.2 acres of wetlands are proposed to be avoided as a result of reducing the proposed landfill expansion footprint and incorporation of BMP devices. Additionally, an approximate 300-foot ephemeral stream (CRK 1) containing an OHWM and approximately 3,000 feet of Williams Gully will be avoided through facility design.

Project design has exercised environmental sequencing (avoidance, minimization, compensation) with respect to potential impacts to waters of the U.S., including wetlands, as defined in TCEQ regulations. Methods of development, while avoiding jurisdictional wetlands, were analyzed. As a result, all wetland areas within the 100-year floodplain will be avoided during this expansion. These areas comprise approximately 1.2 acres. The facility can meet the project goals while avoiding these jurisdictional areas.

A comprehensive evaluation of wetland areas was completed as part of the design to analyze and minimize impacts to jurisdictional waters. Goals of the landfill expansion could not feasibly be achieved without impacting, to some degree, certain wetland areas. Given the central location of impacted wetlands in the expansion area, the landfill could

not be sized or shifted in a manner that could practicably avoid these areas and continue to meet the expansion goals for this facility.

WMTX will provide compensatory mitigation to a USACE SWG approved mitigation bank or in-lieu fee mitigation project for construction impacts to approximately 17.95 acres of wetlands.

(2) The construction and operation of the MSWLF unit shall not:

(A) cause or contribute to violations of any applicable State water quality standard;

During all phases of construction activities, WMTX will incorporate BMP devices to assist in the control of erosion, sedimentation, and post-construction total suspended soils. A BMP is defined by the USACE SWG as: policies, practices, procedures, or structures implemented to mitigate adverse environmental effects on surface water quality resulting from development. BMP devices are categorized as structural or non-structural. Such BMP devices to be used singularly or in combination will include avoidance, minimization, and/or the construction of barricade fences, silt fences, filter socks, and straw bale dikes. The Facility Surface Water Drainage Report is presented in Part III, Attachment C. The surface water design includes an Erosion and Sediment Control Plan for all phases of landfill operation. Also, the Site Operating Plan (SOP), Part IV, Section 8.18 addresses operational requirements to provide adequate cover over the waste, and to inspect, maintain, and repair erosion at the site.

(B) violate any applicable toxic effluent standard or prohibition under of the Clean Water Act, §307;

The facility will operate a landfill gas collection and control system with flare, a leachate/contaminated water collection and storage system, and stormwater management detention basins on the site. Such control measures are for compliance with Clean Water Act §307. No effluent violations are anticipated at this facility.

(*C) jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Endangered Species Act of 1973; and*

The Atascocita RDF development and operation will not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species.

In response to comments from the U.S. Fish and Wildlife Service (USFWS), the survey for threatened and endangered species was conducted in April 2002, by Ms. Katie Northrup, a Professional Geoscientist (#1215) and Certified Professional Wetland Scientist (#120554) with the botanical knowledge and experience qualifying her to conduct the survey. The method of survey included knowledge of the species, including its edaphic and hydrologic requirements. The expansion area was traversed using walking transects. No colonies of *Hymenoxys texana* were encountered during the

survey as the expansion area lacks the particular habitat requirements. Therefore, it is highly unlikely that *Hymenoxys texana* will be impacted by the Atascocita RDF expansion.

Team members conducted reviews of the Texas Parks and Wildlife Department (TPWD) Natural Diversity Database (NDD) in 2008 and again in 2009 for records regarding threatened and endangered species, candidates for listing as threatened or endangered species, sensitive natural communities, and other features of concern known or suspected to occur in the expansion area. The USFWS annotated county lists of rare species were referenced. The expansion area was once again evaluated for federal and state-listed threatened and endangered species and their associated habitats during the detailed field surveys. Species evaluated during field surveys included the Bald eagle (*Haliaeetus leucocephalus*) and Texas prairie dawn-flower (*Hymenoxys texana*) federally-listed as DM (Delisted Taxon, Recovered, Being Monitored First Five Years) and E (endangered), respectively. The bald eagle has been delisted; however, the species will continue to be regulated under the *Bald Eagle and Golden Eagle Protection Act* (USFWS, 2006). Again, based on literature review and initial and subsequent field evaluations, no federal or state-listed threatened or endangered species or their critical habitat were observed, nor could the habitat within the expansion area support these species. Therefore, no impact to threatened or endangered species is anticipated as a result of the construction or operation of the Atascocita RDF. The threatened/endangered species assessment and related agency correspondence is presented in Appendix IIE.

> *(D) violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.*

The facility is designed and will be operated to prevent discharges of waste. Furthermore, the facility neither abuts nor is it located adjacent to any marine or coastal area, and therefore is not expected to violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972.

> *(3) The MSWLF unit shall not cause or contribute to significant degradation of wetlands. The owner/operator shall demonstrate the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:*
>
> *(A) erosion, stability, and migration potential of native wetland soils, muds, and deposits used to support the MSWLF unit;*

As previously mentioned, erosion and sediment control BMP devices will be implemented throughout each phase of site development activities and during landfill operation. The facility is designed with adequate calculated factors of safety against slope stability (see Part Ill, Attachment D) and with surface water drainage design and erosional stability (see Part Ill, Attachment C). The BMP devices and engineering controls will be used to manage stormwater runoff, maintain stability, and minimize erosion/sedimentation.

(B) erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;

Native soils will be excavated from the expansion area to provide soils for the MSWLF operations throughout the Atascocita RDF site life (e.g., daily and intermediate cover, soil liner construction, construction of access roads, final cap construction, etc.). No soils from outside the facility permit boundary are expected to be used for landfill operations. BMP devices will be used to prevent erosion and sedimentation as well as stabilize areas of bare earth during and following construction activities.

(C) the volume and chemical nature of the waste managed in the MSWLF unit;

The major classifications of solid waste to be accepted at the Atascocita RDF include municipal solid waste, special waste, and Class 2 and 3 industrial wastes. Special wastes to be accepted at the facility are authorized by §330.171 and the facility Special Waste Acceptance Plan included in Part IV – Site Operating Plan. The facility is authorized to accept liquid wastes for solidification. The waste classifications are defined in §330.3.

Consistent with §330.15, the facility will not accept for disposal Class 1 nonhazardous industrial waste; lead acid storage batteries; used motor vehicle oil; used oil filters; whole used or scrap tires; refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC); bulk or noncontainerized liquid waste from nonhousehold sources; regulated hazardous waste; polychlorinated biphenyls (PCB) waste; radioactive materials; or other wastes prohibited by TCEQ regulations. Refer to Part II, Section 2 – Waste Acceptance Plan for a detailed discussion of the properties and characteristics of waste and the volume and rate of disposal.

(D) impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;

(E) the potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment; and

The facility is designed and will be constructed and operated to prevent releases of solid waste in accordance with the technical portions of the permit amendment application pursuant to the regulations in Chapter 330. Although avoided waters of the U.S., including wetlands, exist in close proximity to the expansion area, during all phases of construction activities, WMTX will incorporate BMP devices to assist in the control of erosion, sedimentation, and post-construction total suspended soils. Additionally, the facility will operate a landfill gas collection and control system with flare, a leachate/contaminated water collection and storage system, and stormwater management detention basins on the site. Such control measures are for compliance with Clean Water Act §307. No effluent violations are anticipated at this facility. During operation, there may be occasional windblown wastes. As described in the SOP (Part IV, Section 8.25), routine inspections will be made daily for such wastes, followed by pickup to remove this litter. Thus, the facility is expected to have minimal impacts to the wetland areas, fish, wildlife or other aquatic resources and their habitat.

(F) any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected

(4) To the extent required under the Clean Water Act, §404 or applicable State wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by Texas Commission on Environmental Quality) by first avoiding impacts to wetlands to the maximum extent practicable as required by paragraph (1) of this section, then minimizing unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions (e.g., restoration of existing degraded wetlands or creation of manmade wetlands).

Environmental sequencing has been implemented for this site. To achieve the goals of the landfill expansion, wetland areas were identified through delineation activities. Section (1) presented above describes the environmental sequencing for the wetlands associated with the expansion area. Since avoidance and minimization of impacts are not practicable within the expansion area for 17.95 acres of jurisdictional wetlands and 950 linear feet of jurisdictional waters of the U.S., compensation for impacts is currently proposed. WMTX will provide compensatory mitigation to a USACE SWG approved mitigation bank or within an in-lieu fee mitigation project for construction impacts to approximately 17.95 acres of wetlands.

(5) Sufficient information shall be made available to the executive director to make a reasonable determination with respect to these demonstrations.

The Wetland Mitigation Plan for the Atascocita RDF proposed expansion will be made available to the executive director, as appropriate. The Wetland Mitigation Plan will be included as part of the IP application submitted to the USACE.

14 ENDANGERED OR THREATENED SPECIES

30 TAC §330.61(n)

Consistent with §330.61(n) and §330.551, an evaluation of endangered or threatened species at or near the site has been prepared by Knudson, L.P. and is documented in Appendix IIE – Endangered or Threatened Species Documentation.

Based on site visits conducted by qualified biologists at Knudson, L.P., there are no threatened or endangered species or critical habitat found on the site.

Based on evaluation conducted by Knudson, L.P., and coordination with the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department, in accordance with §330.551(a), the facility and the operation of the facility will not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species.

Coordination with the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department regarding the locations and specific data relating to endangered and threatened species in Texas is provided in Appendix IIE – Endangered or Threatened Species Documentation.

15 TEXAS HISTORICAL COMMISSION REVIEW

30 TAC §330.61(o)

Consistent with §330.61(o), a review letter was submitted to the Texas Historical Commission documenting compliance with the Natural Resources Code, Chapter 191, Texas Antiquities Code. The state Historic Preservation Officer determined that no historic properties are affected and the project may proceed. Documentation of the coordination with the Texas Historical Commission is provided in Appendix IIF – Archaeological Survey. The archaeological survey completed by PBS&J/Northrup Associates for the Atascocita RDF property is also provided in Appendix IIF – Archaeological Survey.

16 COUNCIL OF GOVERNMENTS AND LOCAL GOVERNMENT REVIEW REQUEST

30 TAC §330.61(p)

Consistent with §330.61(p), Parts I and II of the application were submitted for review to the Houston-Galveston Area Council of Governments to determine compliance with the regional solid waste plan. Since the Atascocita RDF is not located within the city limits of any city, there is not an appropriate local government solid waste plan and review process. Documentation of the coordination with the Houston-Galveston Area Council of Governments is provided in Appendix III – Houston-Galveston Area Council of Governments Documentation. Documentation from the Houston-Galveston Area Council of Governments that the Atascocita RDF landfill expansion is consistent with the regional solid waste plan is included in Appendix III.

17 LOCATION RESTRICTIONS

30 TAC §§330.543 through 330.563

Location restriction statements and certifications have been prepared for the Atascocita RDF in accordance with §330.1 and §330.451. Refer to Appendix IIJ – Location Restriction Certifications for certifications.

17.1 Easements and Buffer Zones

The Atascocita RDF expansion is consistent with the provisions of §330.543 related to easements and buffer zones.

17.1.1 Easement Protection

No solid waste unloading storage, disposal, or processing operations shall occur within any easement, buffer zone, or right-of-way that crosses the facility. No solid waste disposal shall occur within 25 feet of the center line of any utility line or pipeline easement but no closer than the easement, unless otherwise authorized by the executive director. All pipeline and utility easements shall be clearly marked with posts that extend at least 6 feet above ground level, spaced at intervals no greater than 300 feet. There are no pipeline or utility easements that will affect solid waste unloading, storage, disposal or processing operations; refer to Drawing IIA.9 – Site Layout Plan.

17.1.2 Buffer Zones

The buffer distances between the permit boundary and waste disposal area are identified on Drawing IIA.9 – Site Layout Plan. As shown, the buffer distances for the expansion area consisting of Phases 5 and 6 exceed the minimum buffer distance of 125 feet. The currently permitted and active waste disposal areas are within Phases 1, 2, 3, and 4. As discussed, there is no proposed height increase or new waste disposal capacity within Phases 1, 2, 3, or 4; as such, the existing buffer distances comply with the requirements of §330.543(b).

17.2 Airport Safety

The facility is consistent with the provisions of §330.545 related to airport safety. The evaluation of the facility impact on surrounding airports is discussed in detail in Part II, Section 9.1 – Airport Impact. Documentation of coordination with the Federal Aviation Administration is provided in Appendix IIH – Federal Aviation Administration Documentation.

17.3 Floodplains

The facility is consistent with the provisions of §330.547 related to floodplains. A discussion of floodplains is provided in Part II, Section 13.1 – Floodplains. Additional documentation is provided in Part II, Appendix IIK; and in Part III, Attachment C2 – Regional Drainage and Flood Control Analysis.

17.4 Groundwater

Consistent with the provisions of §330.549 related to groundwater, the facility is not located within the recharge zone of the Edwards Aquifer as identified in 30 TAC Chapter 213. Additional information related to aquifers beneath the facility ~~groundwater~~ is provided in Part II, Section 11.1 – Groundwater ~~of this Part~~ and in Part III, Attachment E – Geology Report and Attachment F – Groundwater Monitoring Plan.

17.5 Endangered or Threatened Species

The facility is consistent with the provisions of §330.551 related to endangered or threatened species. The evaluation of the facility's potential impact on endangered or threatened species is provided in Part II, Section 14 – Endangered or Threatened Species. Additional information is provided in Part II, Appendix IIE – Endangered or Threatened Species Documentation.

17.6 Wetlands

The facility is consistent with the provisions of §330.553 related to wetlands. A discussion of wetlands is provided in Part II, Section 13.2 – Wetlands. Additional documentation is provided in Part II, Appendix IID – Wetlands Documentation.

17.7 Fault Areas

The facility is consistent with the provisions of §330.555 related to fault areas. A discussion of fault areas is provided in Part II, Section 10.3 – Fault Areas. Additional information is provided in Part III, Attachment E – Geology Report, Appendix E-8 – Fault Study.

17.8 Seismic Impact Zones

The facility is consistent with the provisions of §330.557 related to seismic impact zones. A discussion of seismic impact zones is provided in Part II, Section 10.4 – Seismic Impact Zones, and Drawing IIA.18 – Seismic Impact Zone Map. Additional information is provided in Part III, Attachment E – Geology Report.

17.9 Unstable Areas

The facility is consistent with the provisions of §330.559 related to unstable areas. A discussion of unstable areas is provided in Part II, Section 10.5 – Unstable Areas. Additional information is provided in Part III, Attachment D5 – Geotechnical Design, Appendix D5-A – Settlement/Heave Analysis, and Appendix D5-B – Slope Stability Analyses.

17.10 Coastal Areas

The facility is consistent with the provisions of §330.561. The facility will not accept Class 1 nonhazardous industrial waste, other than regulated asbestos containing material (RACM), in the existing remaining disposal capacity for Phases 1, 2, 3, and 4 and future Phase 5 and 6; further, the facility~~it~~ is not located within ~~a coastal~~the areas as defined in 30 TAC §335.584(b)(3)-(4).

17.11 Type I Landfill Permit Issuance Prohibited

The facility is consistent with the provisions of §330.563; it is not subject to the conditions specified in Texas Health and Safety Code §361.123.

ATASCOCITA RECYCLING AND DISPOSAL FACILITY

APPENDIX IIA
MAPS AND DRAWINGS

CONTENTS

95°15'

95°12'30"

29°57'30"

0 1000 2000

SCALE IN FEET

HUMBLE, TX 1995

NIMA 6943 IV NE-SERIES V882

HARMASTON, TX 1995

NIMA 6943 I NW-SERIES V882

ROAD CLASSIFICATION

Primary highway hard surface .....

Secondary highway hard surface .....

Light-duty road, hard or improved surface .....

Unimproved road .....

Interstate Route U.S. Route State Route

LEGEND

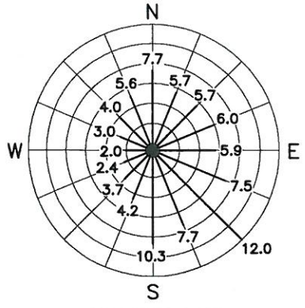
PERMIT BOUNDARY

LANDFILL FOOTPRINT

SURFACE WATER BODY OR OTHER WATER

WIND ROSE

SOURCE: TCEQ PUBLIC WIND ROSE ANNUAL 1984–1992



CALM WINDS 9.18%

WIND ROSE REPRESENTS AVERAGE PERCENT OF TIME WIND BLOWS FROM EACH OF THE 16 COMPASS POINTS SHOWN.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
2/01/2011

ISSUED FOR PERMITTING PURPOSES

GENERAL TOPOGRAPHIC MAP

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW

DSN. KJW DATE : 09/10

DWN. SRC SCALE : GRAPHIC

CHK. KJW DWG : IIA.2–GenTopo.dwg

DRAWING IIA.2

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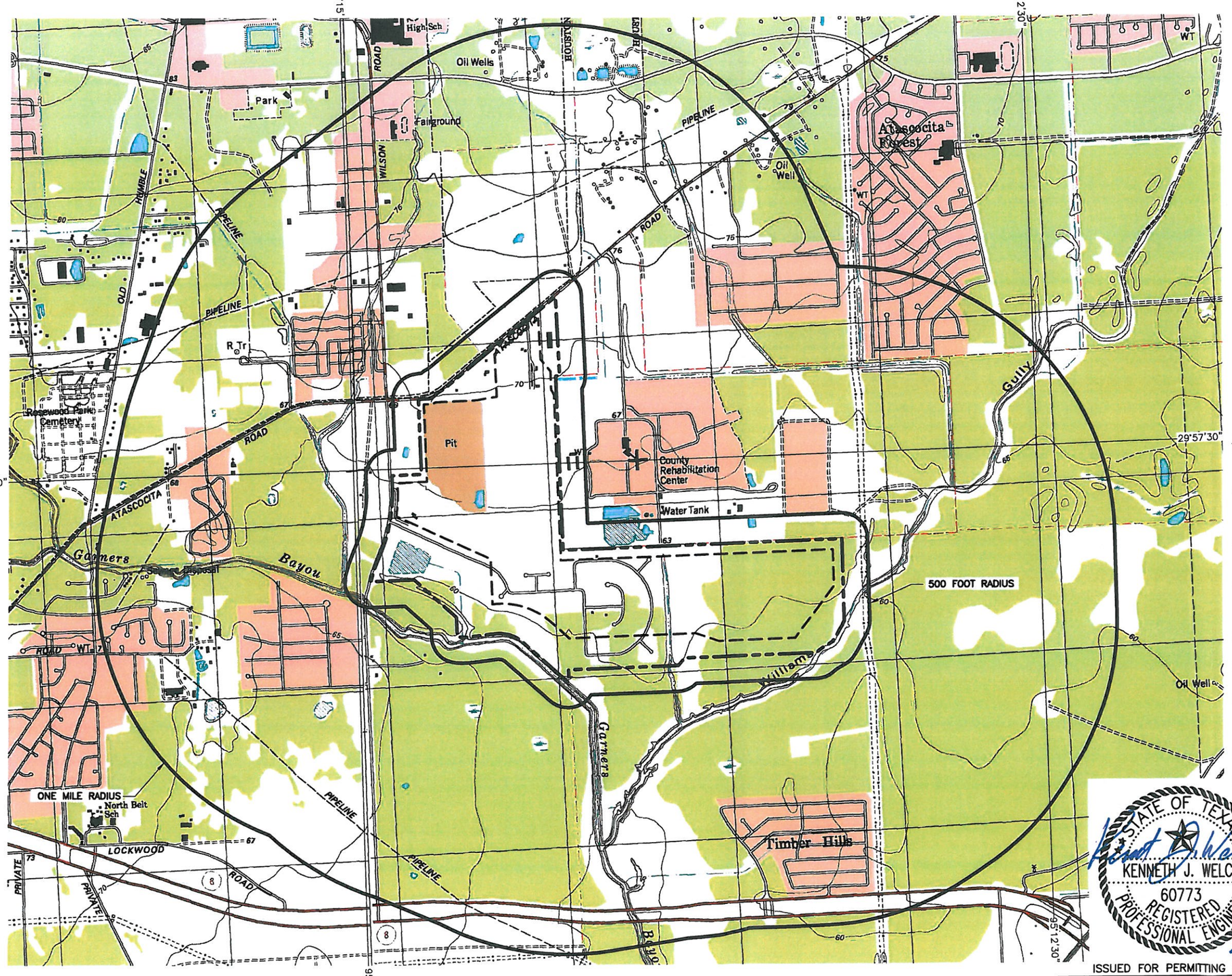

HUMBLE, TX 1995 — NIMA 6943 IV NE-SERIES V882

HARMASTON, TX 1995 — NIMA 6943 I NW-SERIES V882

ROAD CLASSIFICATION

- Primary highway hard surface .....
- Secondary highway hard surface .....
- Light-duty road, hard or improved surface .....
- Unimproved road .....
- Interstate Route
- U.S. Route
- State Route

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- SURFACE WATER BODY OR OTHER WATER

NOTES:

1. REFER TO APPENDIX IIB – LAND USE ANALYSIS FOR DETAILED LAND USE INFORMATION AND LAND USE MAP. LAND USE AND CHARACTER OF THE LAND HAS BEEN PREPARED BY TGB PARTNERS.
2. THERE ARE 3,490 SINGLE FAMILY HOMES, 1,148 MOBILE/MANUFACTURED HOMES, AND 151 COMMERCIAL AND INDUSTRIAL BUSINESSES WITHIN ONE MILE OF THE PERMIT BOUNDARY.
3. THERE ARE 4 SCHOOLS, 1 DAYCARE CENTER, 7 CHURCHES, 6 RECREATIONAL FACILITIES, AND 3 RECREATIONAL CENTERS LOCATED WITHIN ONE MILE OF THE PERMIT BOUNDARY.
4. THERE ARE NO CEMETERIES, NO HISTORICALLY SIGNIFICANT SITES, NO ARCHAEOLOGICALLY SIGNIFICANT SITES AND NO SITES HAVING EXCEPTIONAL AESTHETIC QUALITY WITHIN ONE MILE OF THE PERMIT BOUNDARY.
5. THERE ARE 3 CORRECTIONAL FACILITIES WITHIN ONE MILE OF THE PERMIT BOUNDARY.
6. THERE ARE NO OTHER COMMERCIAL OR BUSINESS ESTABLISHMENTS WITHIN ONE MILE OF THE PERMIT BOUNDARY.
7. REFER TO PART I, APPENDIX C–LEGAL DESCRIPTION, PERMIT BOUNDARY AND DRAINAGE, PIPELINE AND UTILITY EASEMENTS FOR DRAINAGE, PIPELINE, AND UTILITY EASEMENTS WITHIN THE PERMIT BOUNDARY.
8. THERE ARE NO INTAKE/DISCHARGE STRUCTURES LOCATED WITHIN OR ASSOCIATED WITH THE FACILITY.
9. THERE ARE NO WASTE DISPOSAL ACTIVITIES WITHIN THE PERMIT BOUNDARY THAT ARE NOT INCLUDED IN THIS PERMIT AMENDMENT APPLICATION.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED PROFESSIONAL ENGINEER
2/01/2011

ISSUED FOR PERMITTING PURPOSES

REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW	

GENERAL LAND USE

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. KJW	DATE : 09/10	DRAWING	
DWN. SRC	SCALE : GRAPHIC	IIA.3	
CHK. KJW	DWG : IIA.3–LandUse.dwg		

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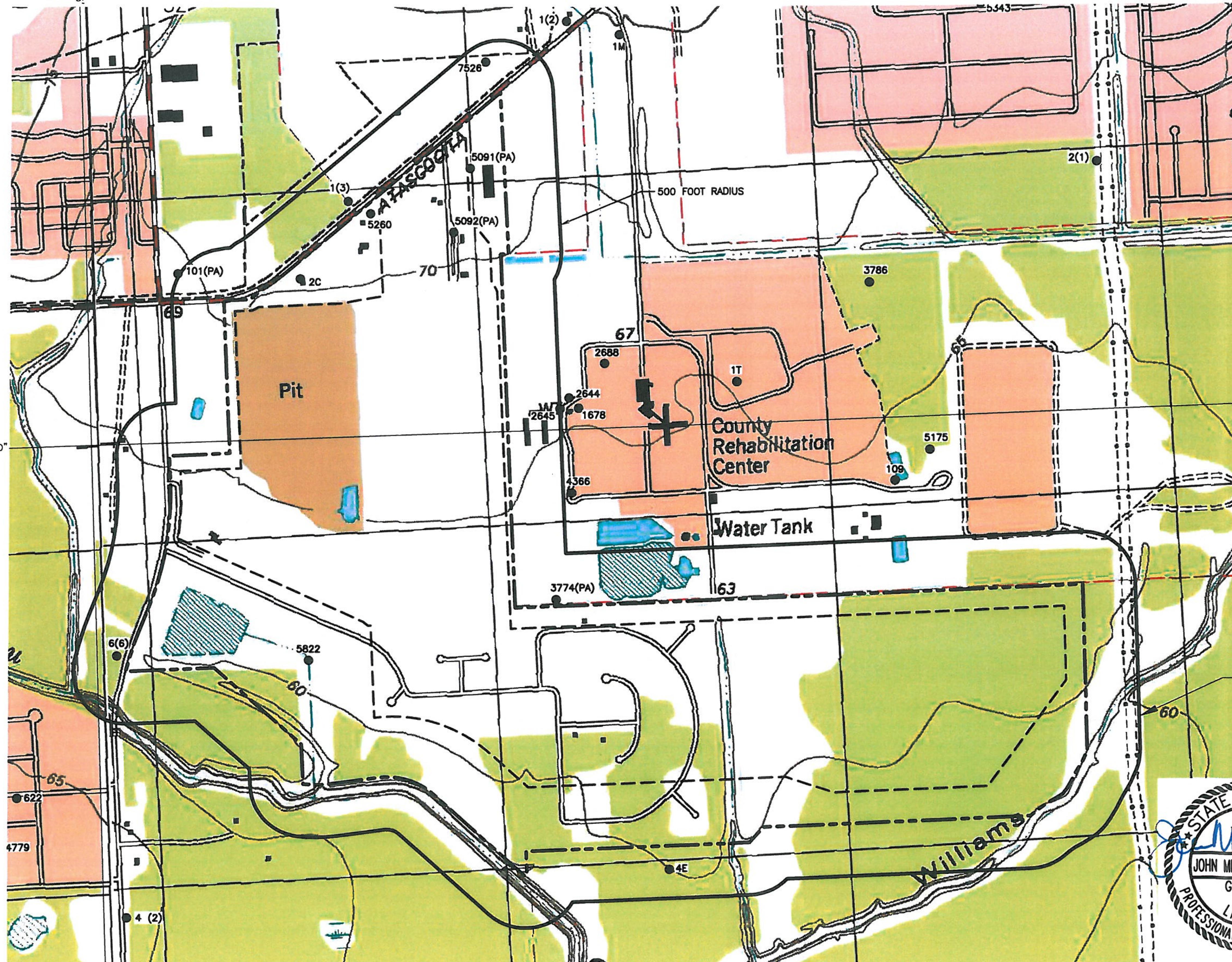

SCALE IN FEET: 0 — 500 — 1000

HUMBLE, TX	HARMASTON, TX
1995	1995
NIMA 6943 IV NE-SERIES V882	NIMA 6943 I NW-SERIES V882

ROAD CLASSIFICATION

Primary highway hard surface .... — Light-duty road, hard or improved surface ......

Secondary highway hard surface .... — Unimproved road ......

Interstate Route — U.S. Route — State Route

LEGEND

- PERMIT BOUNDARY
- LANDFILL FOOTPRINT
- SURFACE WATER BODY OR OTHER WATER
- 4(4) WATER WELL
- 9189(PA) WATER WELL (PLUGGED)

NOTES:

1. REFER TO PART III, ATTACHMENT E FOR WATER WELL INFORMATION.

WATER WELLS WITHIN 500 FEET	
MAP ID	STATE ID
6(6)	65-06-6(6)
5091	65-07-1
5092	65-07-1
5260	65-07-1
7526	65-07-1
1(3)	65-07-1(3)
101	65-07-101
2645	65-07-106
2C	65-07-2C
3774	65-07-4
5822	65-07-4
4E	65-07-4E

STATE OF TEXAS
JOHN MICHAEL SNYDER
GEOLOGY
595
LICENSED
PROFESSIONAL GEOSCIENTIST

2-1-2011

ISSUED FOR PERMITTING PURPOSES

WATER WELLS

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256 — TBPG FIRM NO. 50222

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	FAW	JMS	JMS

DSN. KJW	DATE : 09/10	DRAWING	
DWN. SRC	SCALE : GRAPHIC	IIA.4	
CHK. KJW	DWG : IIA.4-WtrWells.dwg		

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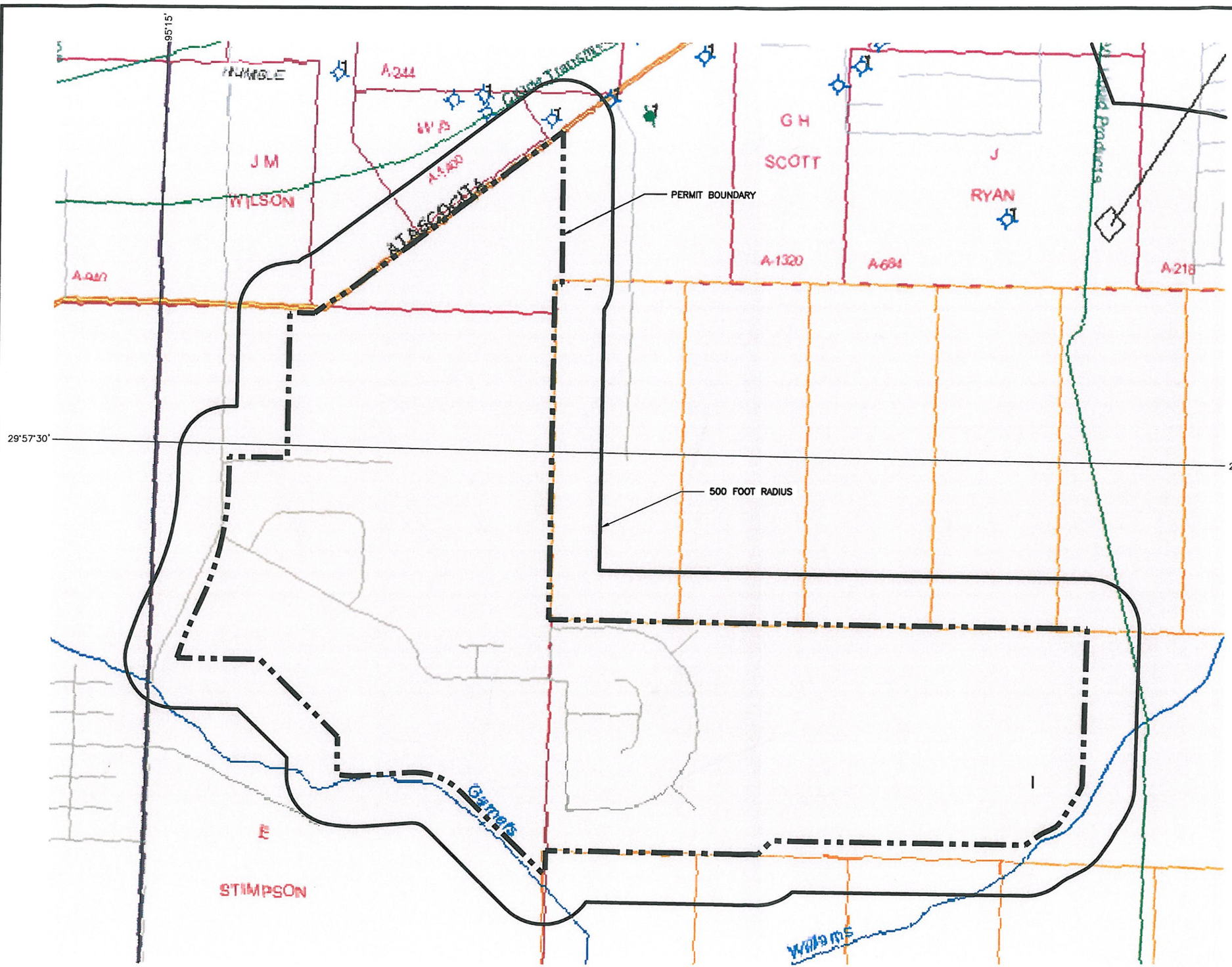
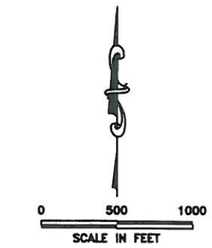


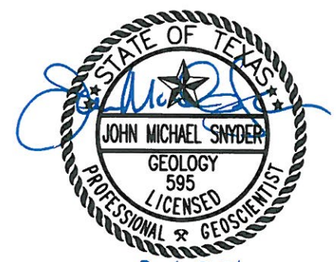


LEGEND

- PERMIT BOUNDARY
- OIL WELLS
- PLUGGED OIL WELLS
- PERMITTED LOCATION
- DRY HOLE
- CANCELED LOCATION
- GAS WELLS
- UNDERGROUND PIPELINE

NOTES:

1. OIL AND GAS WELL LOCATIONS DOWNLOADED FROM RAILROAD COMMISSION OF TEXAS ON SEPTEMBER 17, 2008.
2. THERE ARE NO PRODUCING WELLS WITHIN 500 FEET OF THE PERMIT BOUNDARY.
3. REFER TO PART III, ATTACHMENT E FOR OIL AND GAS WELL INFORMATION.



ISSUED FOR PERMITTING PURPOSES

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	FAW	JMS	JMS

LOCATIONS OF OIL AND GAS PRODUCING WELLS

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. EAF	DATE : 09/10	DRAWING	IIA.5
DWN. SRC	SCALE : GRAPHIC		
CHK. JMS	DWG : IIA.5-GasWells.dwg		

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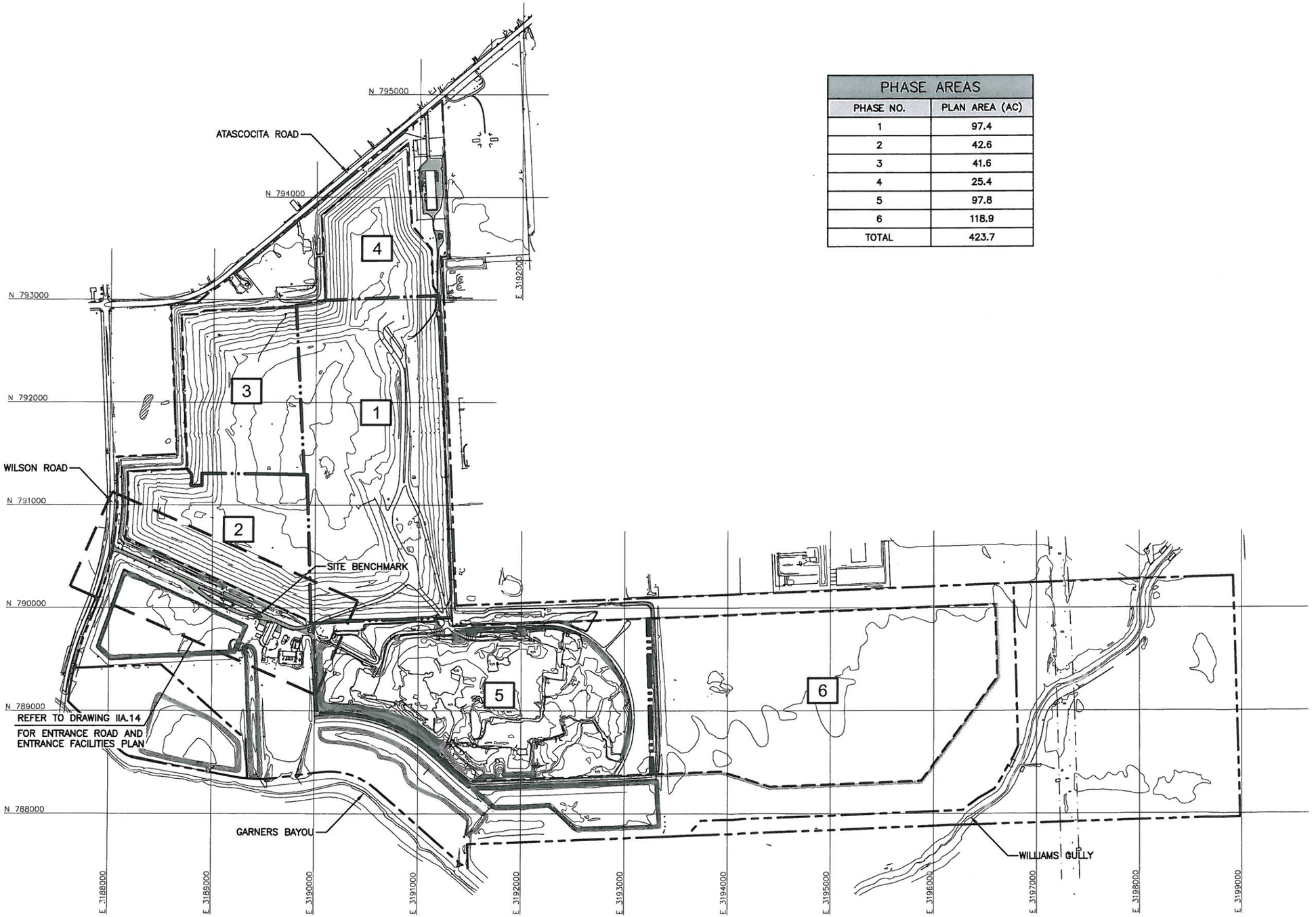

PHASE AREAS	
PHASE NO.	PLAN AREA (AC)
1	97.4
2	42.6
3	41.6
4	25.4
5	97.8
6	118.9
TOTAL	423.7

0 500 1000
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. PERMIT BOUNDARY, PROPERTY BOUNDARY AND PERMANENT BENCHMARK PROVIDED BY MARTIN SURVEY ASSOCIATES, INC.
3. PERMANENT BENCHMARK INFORMATION:
   COORDINATES (NAD 27): N 789929.71
   E 3189458.65
   LATITUDE: N 29°57'12"
   LONGITUDE: W 95°14'36"
   ELEVATION: 63.07 FT-MSL
4. ACCESS CONTROL PROVIDED BY FENCE LOCATED ALONG PERMIT BOUNDARY OR PROPERTY BOUNDARY. SITE ENTRANCE IS GATED.
5. ACTIVE WASTE DISPOSAL AREA PHASE 1 THRU 4.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
2/01/2011

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW

GENERAL SITE PLAN

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. KJW	DATE : 09/10	DRAWING	IIA.8
DWN. SRC	SCALE : GRAPHIC		
CHK. KJW	DWG : IIA.8-GenSitePlan.dwg		

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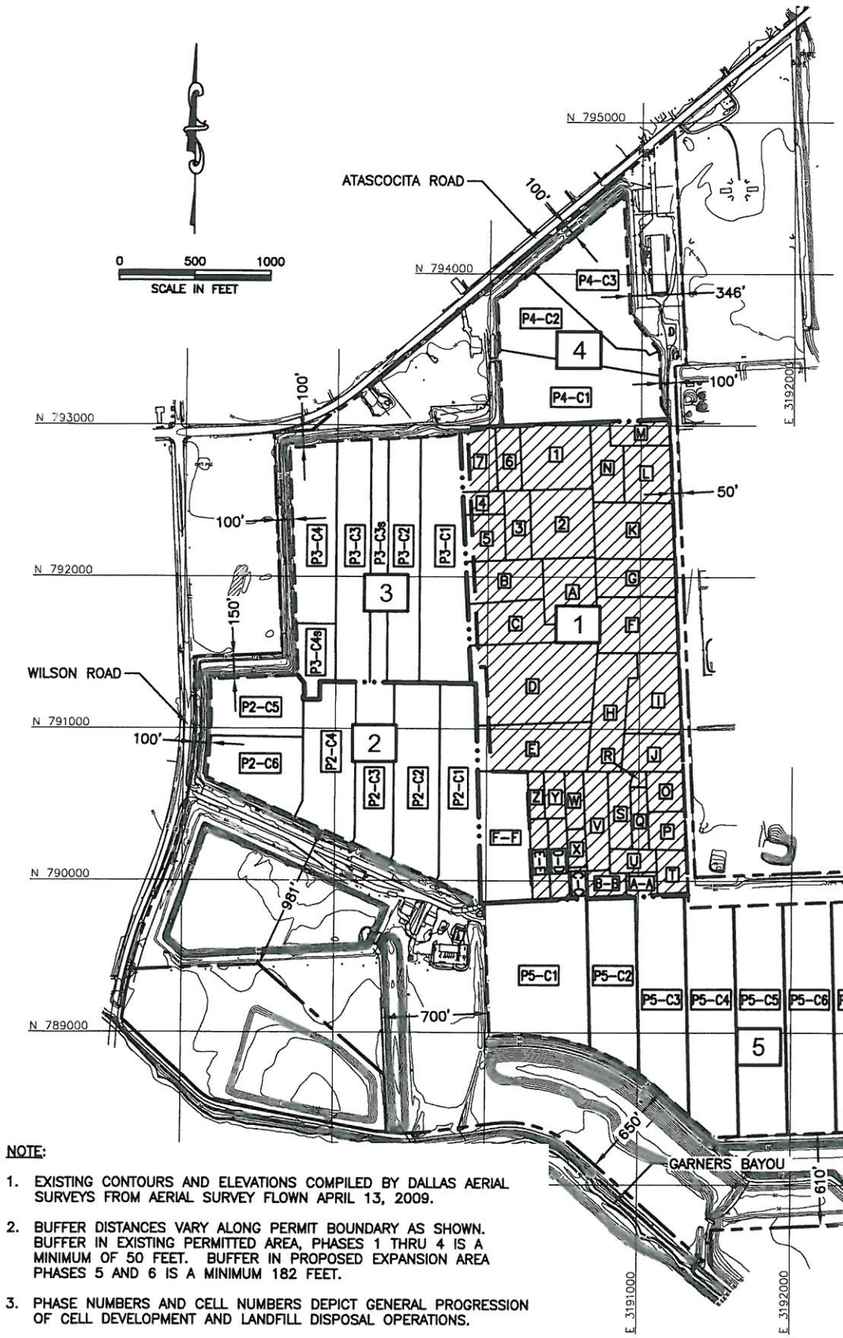

PHASE 1 AREAS			
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE
1A (CELLS 1–7, A–N)	71.9	INSITU	MSW ONLY
1B (CELLS O–Z, A–A – E–E)	19	CONSTRUCTED CLAY	MSW ONLY
1C (CELL F–F)	6.5	COMPOSITE	MSW ONLY
PHASE 1	97.4		

PHASE 2 AREAS			
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE
P2–C1	8.4	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P2–C2	8.7	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P2–C3	6.5	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P2–C4	7.7	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P2–C5	5.4	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P2–C6	5.9	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
PHASE 2	42.6		

PHASE 3 AREAS			
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE
P3–C1	11.2	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P3–C2	7.7	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P3–C3	4.2	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P3–C3S	8.2	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P3–C4	7.8	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P3–C4S	2.5	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
PHASE 3	41.6		

PHASE 4 AREAS			
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE
P4–C1	9.5	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P4–C2	7.5	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
P4–C3	8.4	COMPOSITE	CLASS 1 BELOW/ MSW ABOVE GROUND
PHASE 4	25.4		

PHASE 5 AREAS					
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE	LENGTH (FEET)	WIDTH (FEET)
P5–C1	12.51	COMPOSITE	MSW ONLY	893	664
P5–C2	7.18	COMPOSITE	MSW ONLY	1058	320
P5–C3	8.94	COMPOSITE	MSW ONLY	1298	320
P5–C4	10.86	COMPOSITE	MSW ONLY	1515	320
P5–C5	11.13	COMPOSITE	MSW ONLY	1515	320
P5–C6	11.13	COMPOSITE	MSW ONLY	1515	320
P5–C7	11.13	COMPOSITE	MSW ONLY	1515	320
P5–C8	11.13	COMPOSITE	MSW ONLY	1515	320
P5–C9	11.13	COMPOSITE	MSW ONLY	1515	320
PHASE 5	97.8				

PHASE 6 AREAS					
CELL NO.	PLAN AREA (AC)	LINER TYPE	WASTE TYPE	LENGTH (FEET)	WIDTH (FEET)
P6–C1	11.83	COMPOSITE	MSW ONLY	1515	340
P6–C2	11.13	COMPOSITE	MSW ONLY	1515	320
P6–C3	11.49	COMPOSITE	MSW ONLY	1567	320
P6–C4	12.24	COMPOSITE	MSW ONLY	1682	320
P6–C5	12.36	COMPOSITE	MSW ONLY	1682	320
P6–C6	12.36	COMPOSITE	MSW ONLY	1683	320
P6–C7	12.36	COMPOSITE	MSW ONLY	1683	320
P6–C8	12.36	COMPOSITE	MSW ONLY	1683	320
P6–C9	11.20	COMPOSITE	MSW ONLY	1514	320
P6–C10	11.25	COMPOSITE	MSW ONLY	1106	484
PHASE 6	118.9				

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION
- PRE-SUBTITLE D LINED AREA
- C5–C1 CELL DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. BUFFER DISTANCES VARY ALONG PERMIT BOUNDARY AS SHOWN. BUFFER IN EXISTING PERMITTED AREA, PHASES 1 THRU 4 IS A MINIMUM OF 50 FEET. BUFFER IN PROPOSED EXPANSION AREA PHASES 5 AND 6 IS A MINIMUM 182 FEET.
3. PHASE NUMBERS AND CELL NUMBERS DEPICT GENERAL PROGRESSION OF CELL DEVELOPMENT AND LANDFILL DISPOSAL OPERATIONS.
4. ACTIVE WASTE DISPOSAL AREA IS PHASE 1 THRU 4. PHASES 5 & 6 ARE FUTURE WASTE DISPOSAL AREAS.
5. EXISTING VEGETATION AND FENCING PROVIDE SCREENING OF DEPOSITED WASTE. VISUAL SCREENING IS PROVIDED AS PART OF ONGOING WASTE DISPOSAL OPERATIONS AND SEQUENCE OF DEVELOPMENT.
6. THE SITE ENTRANCE ROAD IS AN EXISTING CONCRETE PAVED ROADWAY THROUGH THE GATE HOUSE AREA.
7. THERE ARE NO PIPELINE OR UTILITY EASEMENTS THAT WILL AFFECT SOLID WASTE UNLOADING, STORAGE, DISPOSAL, OR PROCESSING OPTIONS.

STATE OF TEXAS
KENNETH J. WELCH
60773
REGISTERED
PROFESSIONAL ENGINEER
2/01/2011

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REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW

SITE LAYOUT PLAN

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 | TBPG FIRM NO. 50222

DSN. KJW	DATE : 09/10	DRAWING
DWN. SRC	SCALE : GRAPHIC	IIA.9
CHK. KJW	DWG : IIA.9.dwg	

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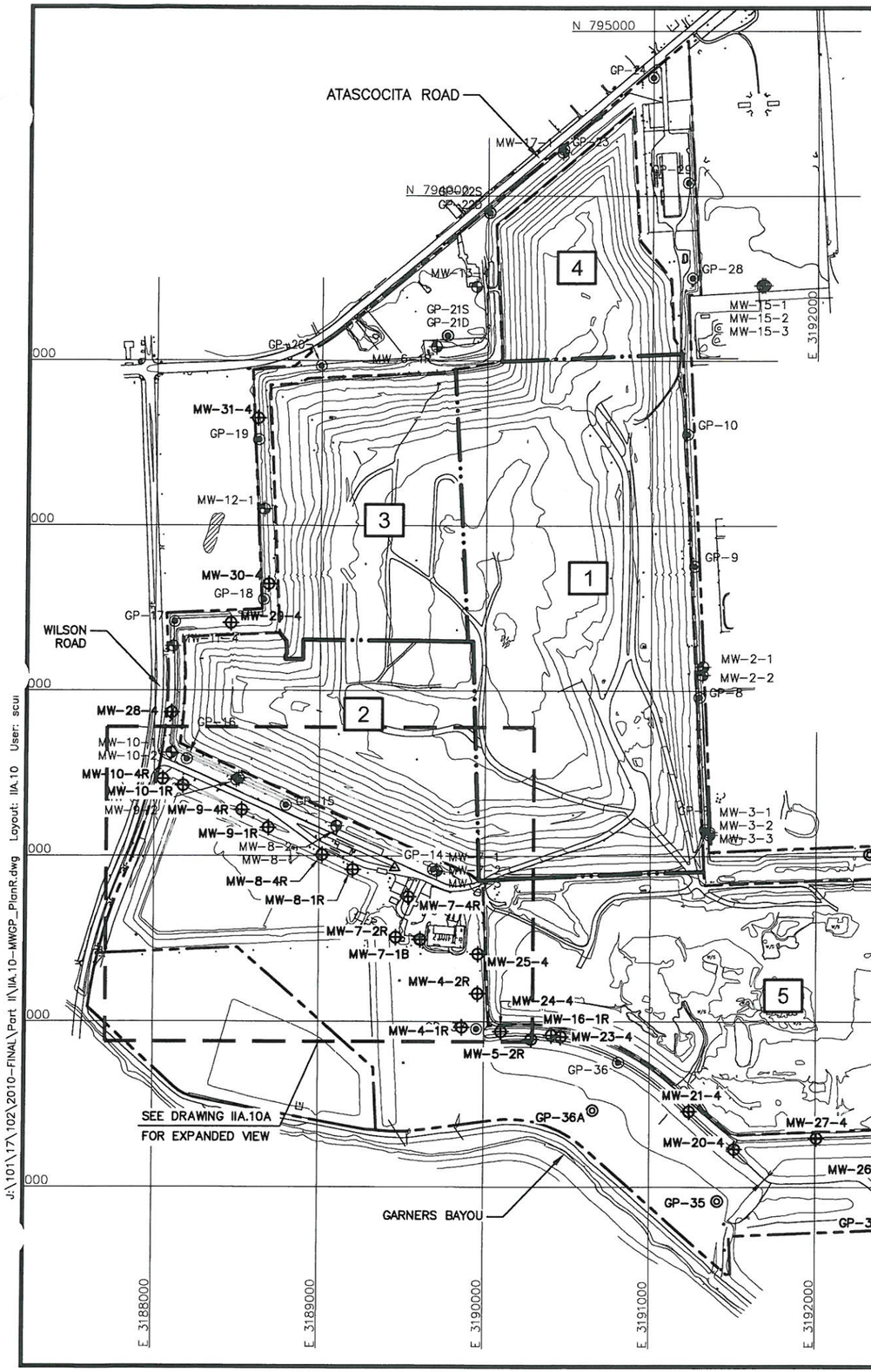

GAS PROBE INSTALLATION SCHEDULE	
PRIOR TO ACCEPTING WASTE IN CELL	INSTALL GAS PROBE
P5-C1	GP-36A, GP-35
P5-C3	GP-30, GP-34
P5-C6	GP-31, GP-33
P5-C9	GP-38, GP-46
P6-C3	GP-39, GP-45
P6-C5	GP-40, GP-44
P6-C8	GP-41, GP-42, GP-43
GAS PROBE ABANDONMENT SCHEDULE	
PRIOR TO ACCEPTING WASTE IN CELL	GAS PROBE
P5-C1	GP-36

GROUNDWATER MONITORING WELL INSTALLATION TABLE	
PRIOR TO ACCEPTING WASTE IN CELL	INSTALL MONITORING WELL
P6-C1	MW 34-4, MW 35-4, MW 36-4
P6-C6	MW 37-4, MW 38-4, MW 18-1, MW 19-1, MW 20-1, MW 21-1

0 400 800
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION
- EXISTING GROUNDWATER MONITORING WELL
- PROPOSED GROUNDWTER MONITORING WELL
- EXISTING LANDFILL GAS PROBE
- PROPOSED LANDFILL GAS PROBE

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. ACTIVE WASTE DISPOSAL AREA PHASE 1 THRU 4.

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GROUNDWATER AND LANDFILL GAS MONITORING PLAN

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

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REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW	

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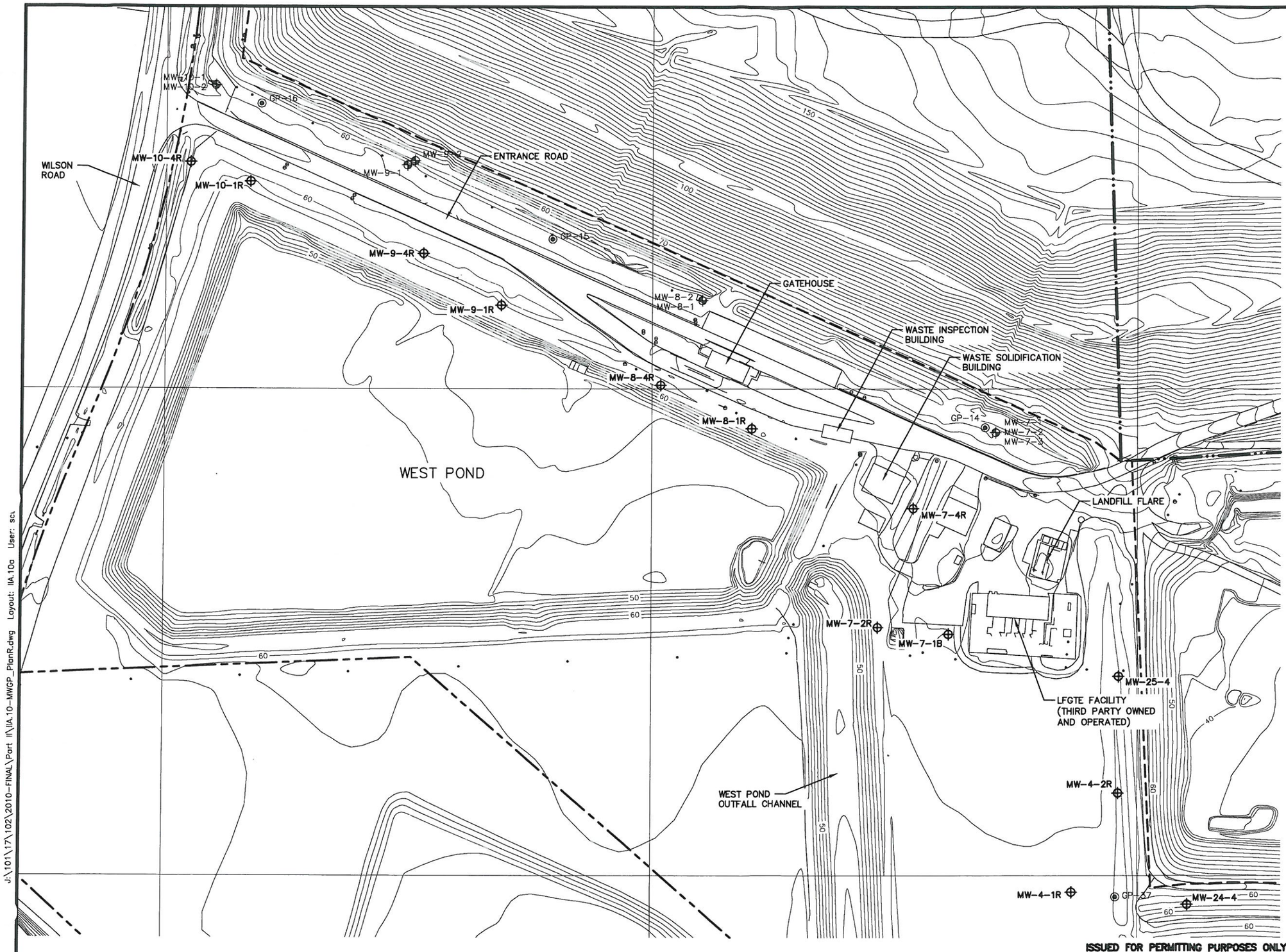

0 100 200
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION
- EXISTING GROUNDWATER MONITORING WELL
- PROPOSED GROUNDWTER MONITORING WELL
- EXISTING LANDFILL GAS PROBE
- PROPOSED LANDFILL GAS PROBE

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. ACTIVE WASTE DISPOSAL AREA PHASE 1 THRU 4.

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GROUNDWATER AND LANDFILL GAS MONITORING PLAN

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

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CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
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DSN. KJW	DATE : 01/11	DRAWING	IIA.10A
DWN. SRC	SCALE : GRAPHIC		
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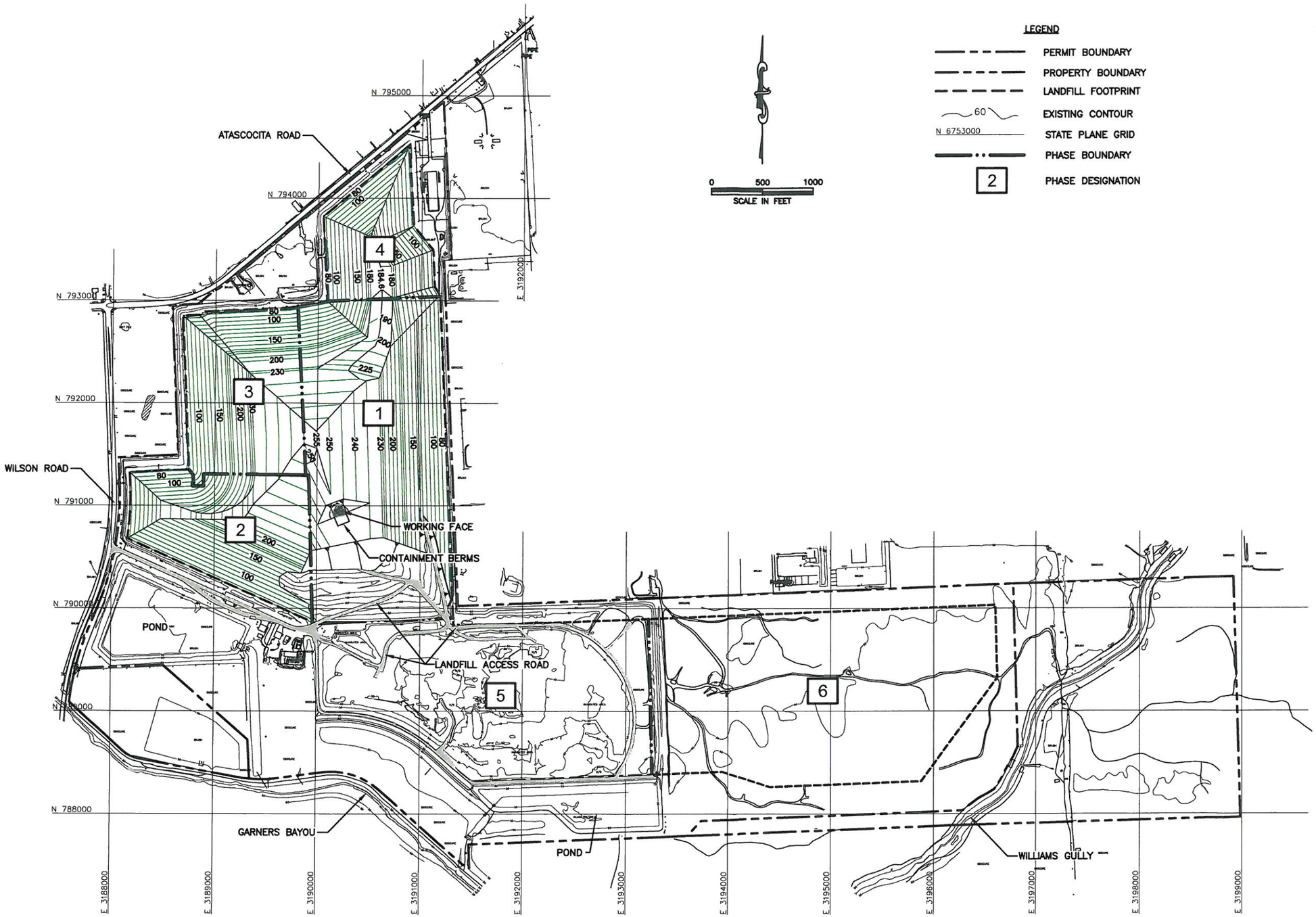

0 500 1000
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- N 675300 STATE PLANE GRID
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. THIS PLAN IS FOR GENERAL CONDITIONS AND MAY NOT REFLECT THE EXACT CONFIGURATION OF THE LANDFILL. THE ACTUAL SIZE OF THE INCREMENTS FOR EXCAVATION, LINING, OR FINAL COVER MAY VARY WITH SITE OPERATIONS.
3. THE LANDFILL ACCESS AND HAUL ROADS WILL BE SURFACED TO PROVIDE ALL WEATHER ACCESS. ROAD LOCATIONS TO BE DETERMINED DURING SITE OPERATIONS AND LOCATIONS WILL VARY.
4. THE RUN-ON STORMWATER CONCTROL SYSTEM WILL CONSIST OF THE PERIMETER DRAINAGE CHANNEL, RUN-ON STORMWATER DIVERSION BERM AND CHANNEL, AND UNCONTAMINATED STORMWATER SUMP.
5. REFER TO PART III, ATTACHMENT C-DRAINAGE DESIGN REPORT FOR STORMWATER SYSTEMS AND EROSION AND SEDIMENT CONTROL PLAN. REFER TO PART III, ATTACHMENT D6-LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAINMENT AND DIVERSION BERM CALCULATIONS.
6. UNCONTAMINATED STORMWATER COLLECTED IN SUMPS WILL BE PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (DUST CONTROL, IRRIGATIONS, ROAD AND LINER CONSTRUCTION).
7. PHASE 1 THRU 4 DEVELOPMENT DEPICTS ONGOING WASTE DISPOSAL OPERATIONS IN EXISTING LINED AREAS PHASE 1 THRU 4. EXCAVATION AND LINER CONSTRUCTION ONGOING IN PHASE 5.
8. MONITOR WELLS AND GAS PROBES TO BE INSTALLED AS SHOWN ON DRAWING IIA.10.

STATE OF TEXAS
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1	01/11	NOD 1 RESPONSE	SRC	FAW	KJW	KJW

PHASE 1 THROUGH 4 DEVELOPMENT

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DSN. KJW	DATE : 09/10	DRAWING	IIA.11
DWN. SRC	SCALE : GRAPHIC		
CHK. KJW	DWG : IIA.11-Ph_1-4Dev.dwg		

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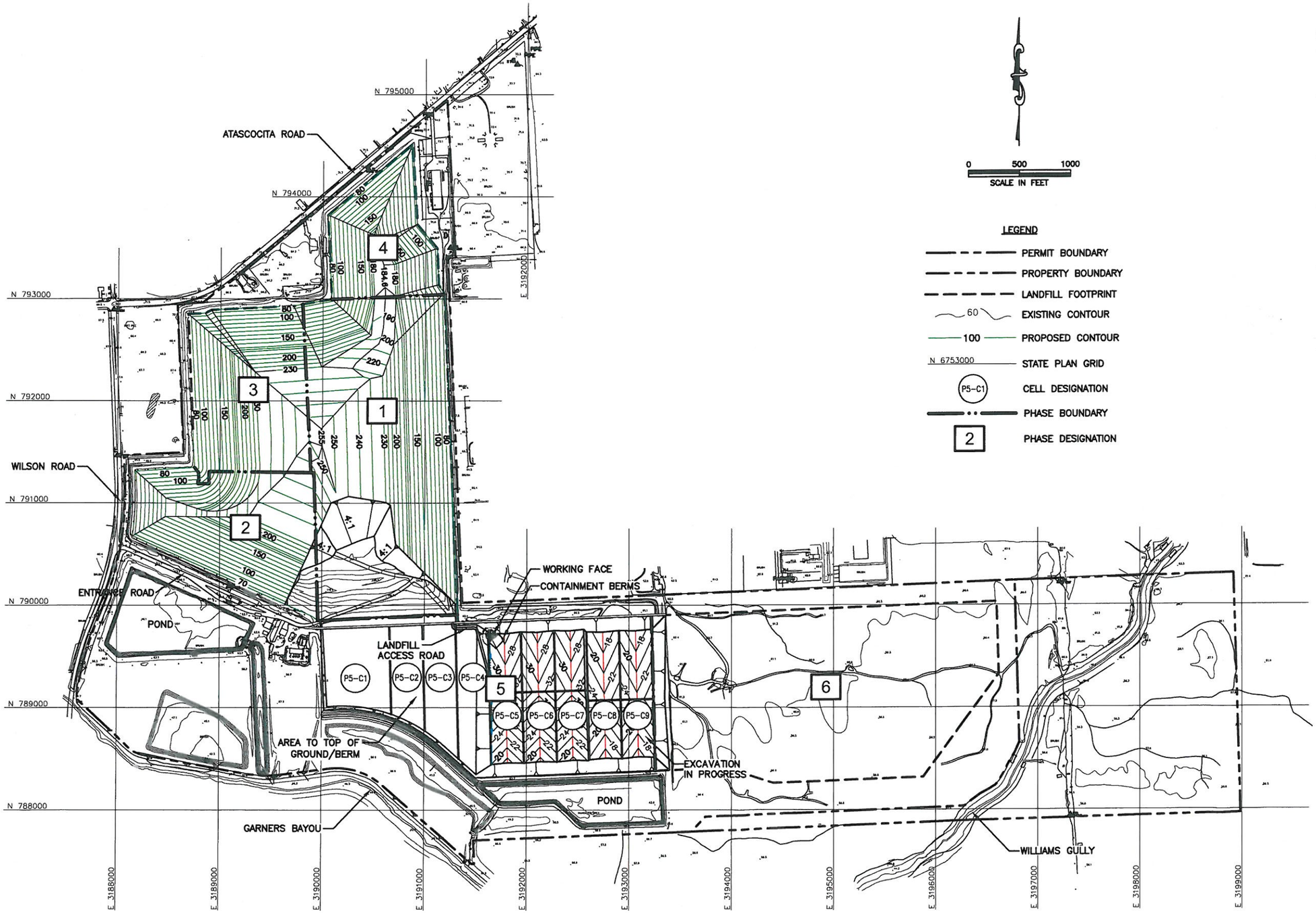

0 500 1000
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- 100 PROPOSED CONTOUR
- N 6753000 STATE PLAN GRID
- P5-C1 CELL DESIGNATION
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
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3. THE LANDFILL ACCESS AND HAUL ROADS WILL BE SURFACED TO PROVIDE ALL WEATHER ACCESS. ROAD LOCATIONS TO BE DETERMINED DURING SITE OPERATIONS AND LOCATIONS WILL VARY.
4. THE RUN-ON STORMWATER CONTROL SYSTEM WILL CONSIST OF THE PERIMETER DRAINAGE CHANNEL, RUN-ON STORMWATER DIVERSION BERM AND CHANNEL, AND UNCONTAMINATED STORMWATER SUMP.
5. REFER TO PART III, ATTACHMENT C-DRAINAGE DESIGN REPORT FOR STORMWATER SYSTEMS AND EROSION AND SEDIMENT CONTROL PLAN. REFER TO PART III, ATTACHMENT D6-LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAINMENT AND DIVERSION BERM CALCULATIONS.
6. UNCONTAMINATED STORMWATER COLLECTED IN SUMPS WILL BE PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (DUST CONTROL, IRRIGATIONS, ROAD AND LINER CONSTRUCTION).
7. PHASE 5 DEVELOPMENT DEPICTS ONGOING WASTE DISPOSAL OPERATIONS IN PHASE 5 TO MAXIMUM WASTE FILL ELEVATION OF APPROXIMATELY 70 FT-MSL OR TOP OF PERIMETER BERMS. EXCAVATION AND LINER CONSTRUCTION ONGOING IN PHASE 5.
8. WASTE FILL GENERALLY WEST TO EAST IN DIRECTION.
9. MONITORING WELLS AND GAS PROBES TO BE INSTALLED AS SHOWN ON DRAWING IIA.10.

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2/01/2011

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1	01/11	NOD 1 RESPONSE	SRC	SAB	GWA	GWA	

PHASE 5 DEVELOPMENT

WASTE MANAGEMENT OF TEXAS, INC.
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DSN. KJW	DATE : 09/10	DRAWING	IIA.12
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CHK. KJW	DWG : IIA.12-Ph_5Dev.dwg		

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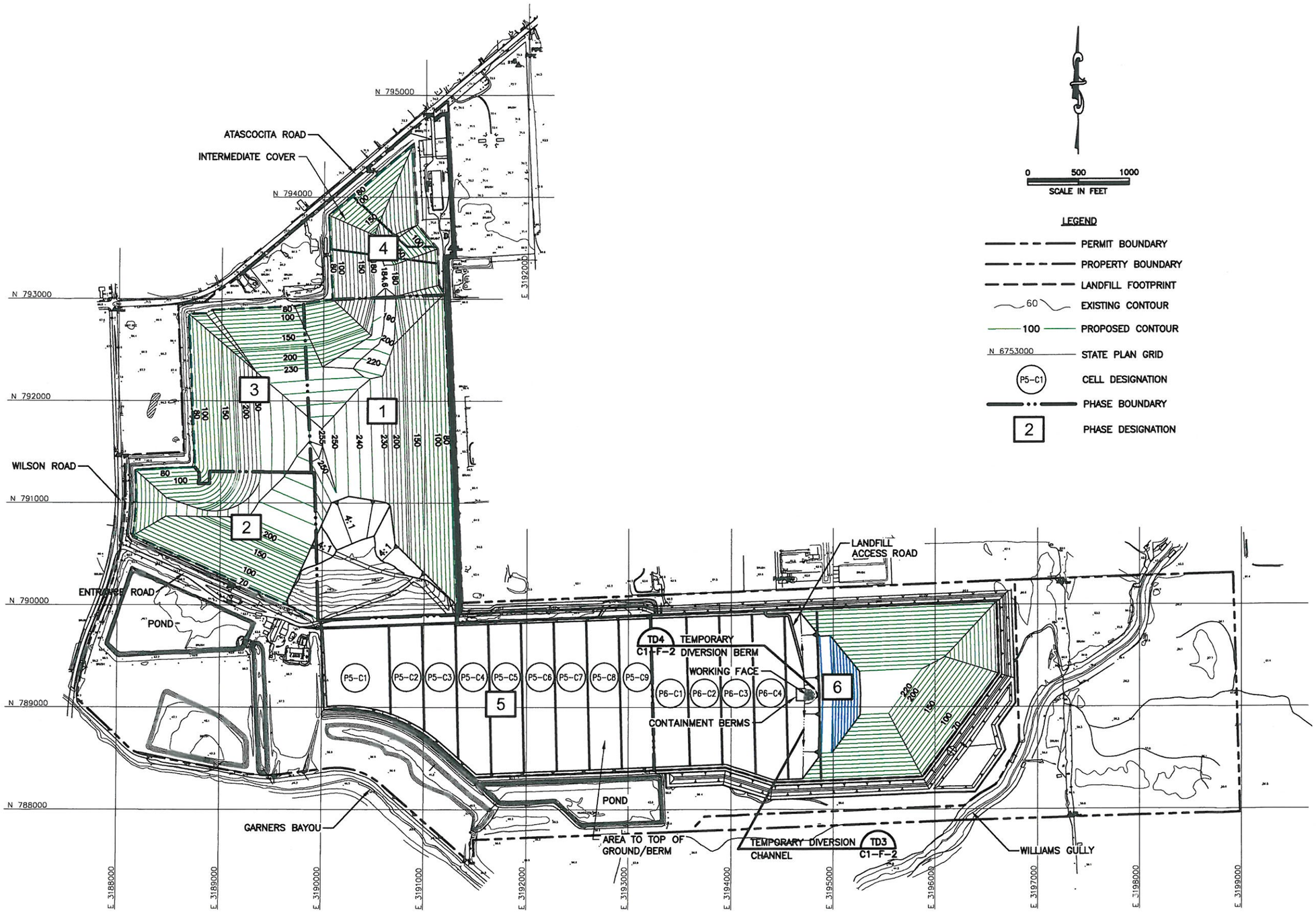

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- 60 EXISTING CONTOUR
- 100 PROPOSED CONTOUR
- N 6753000 STATE PLAN GRID
- P5-C1 CELL DESIGNATION
- PHASE BOUNDARY
- 2 PHASE DESIGNATION

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009.
2. THIS PLAN IS FOR GENERAL CONDITIONS AND MAY NOT REFLECT THE EXACT CONFIGURATION OF THE LANDFILL. THE ACTUAL SIZE OF THE INCREMENTS FOR EXCAVATION, LINING, OR FINAL COVER MAY VARY WITH SITE OPERATIONS.
3. THE LANDFILL ACCESS AND HAUL ROADS WILL BE SURFACED TO PROVIDE ALL WEATHER ACCESS. ROAD LOCATIONS TO BE DETERMINED DURING SITE OPERATIONS AND LOCATIONS WILL VARY.
4. THE RUN-ON STORMWATER CONTROL SYSTEM WILL CONSIST OF THE PERIMETER DRAINAGE CHANNEL, RUN-ON STORMWATER DIVERSION BERM AND CHANNEL, AND UNCONTAMINATED STORMWATER SUMP.
5. REFER TO PART III, ATTACHMENT C-DRAINAGE DESIGN REPORT FOR STORMWATER SYSTEMS AND EROSION AND SEDIMENT CONTROL PLAN. REFER TO PART III, ATTACHMENT D6-LEACHATE AND CONTAMINATED WATER MANAGEMENT PLAN FOR CONTAINMENT AND DIVERSION BERM CALCULATIONS.
6. UNCONTAMINATED STORMWATER COLLECTED IN SUMPS WILL BE PERIODICALLY REMOVED FROM EXCAVATED AREAS BY PUMPING TO PERIMETER DRAINAGE CHANNELS OR USED IN SITE OPERATIONS (DUST CONTROL, IRRIGATIONS, ROAD AND LINER CONSTRUCTION).
7. PHASE 6 DEVELOPMENT DEPICTS ONGOING WASTE DISPOSAL OPERATIONS IN PHASE 6 TO MAXIMUM WASTE FILL ELEVATION OR BOTTOM OF FINAL COVER.
8. WASTE FILL GENERALLY EAST TO WEST IN DIRECTION.
9. MONITOR WELLS AND GAS PROBES TO BE INSTALLED AS SHOWN ON DRAWING IIA.10.

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REVISIONS						
1	01/11	NOD 1 RESPONSE	SRC	SAB	GWA	GWA
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

PHASE 6 DEVELOPMENT

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

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TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN. KJW	DATE : 09/10	DRAWING	
DWN. SRC	SCALE : GRAPHIC	IIA.13	
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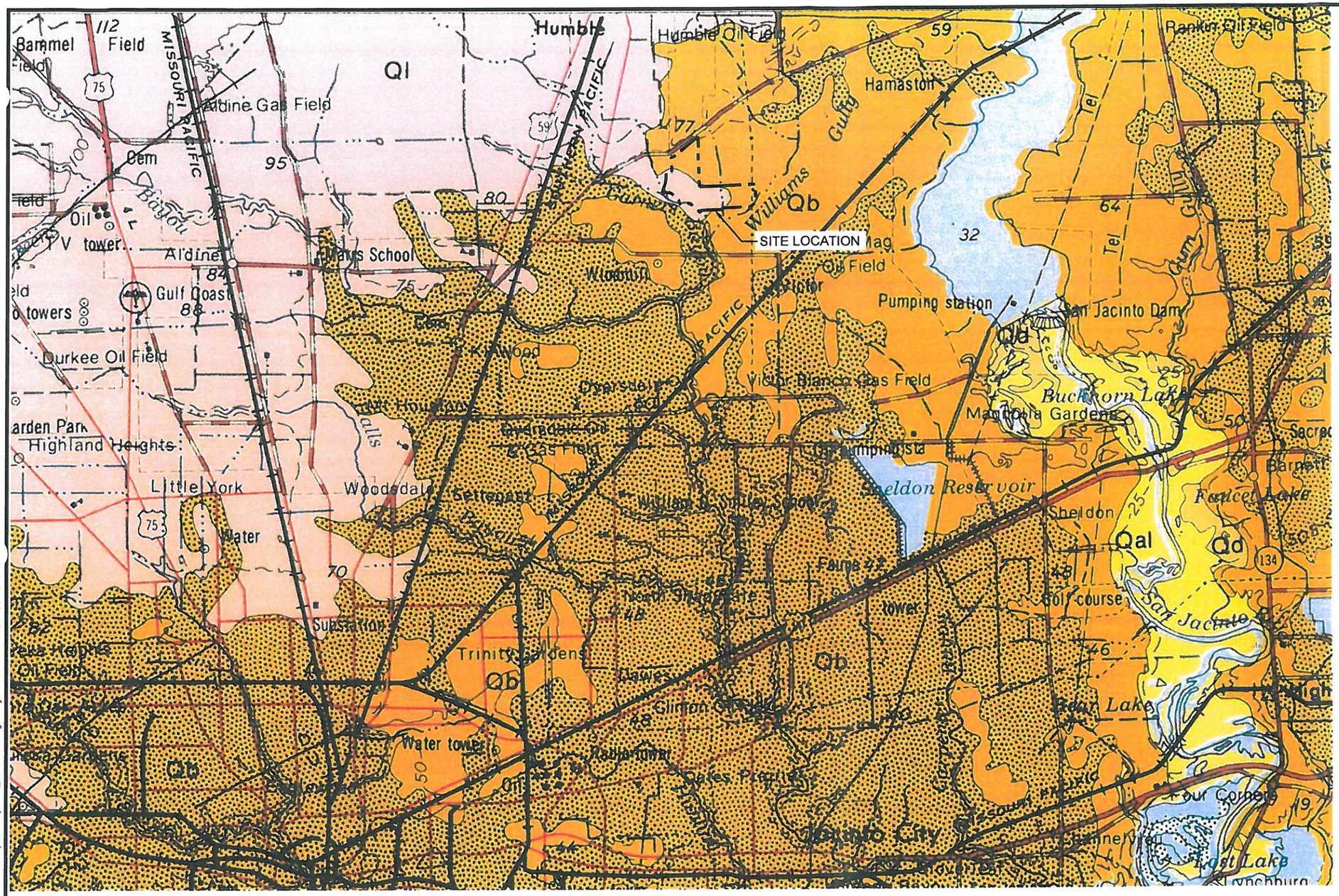

INDEX OF GEOLOGIC MAPPING

For opinion on age of rocks on Hockley salt dome (area A), see Deussen, Alexander, and Lane, L. L. (1925) Hockley salt dome, Harris County, Texas: Bulletin of the American Association of Petroleum Geologists, v. 9, p. 1031–1060; and Stenzel, H. B. (1946) Gypsum resources and mining on the Hockley Dome, Harris County Texas: University of Texas Publication 4301, p. 207–226. For area B, see Fisher, W. L., McGowen, J. H., Brown, L. F., Jr., and Groat, C. G. (1972) Environmental geologic atlas of the Texas Coastal Zone––Galveston–Houston area: The University of Texas at Austin, Bureau of Economic Geology. For area C, see Fisher, W. L., Brown, L. F., Jr., McGowen, J. H., and Groat, C. G. (1973) Environmental geologic atlas of the Texas Coastal Zone––Beaumont–Port Arthur area: The University of Texas at Austin, Bureau of Economic Geology. For area D, see McGowen, J. H., Brown, L.F., Jr., Evans, T. J., Fisher, W. L., and Groat, C. G. (1976) Environmental geologic atlas of the Texas Coastal Zone––Bay City–Freeport area: The University of Texas at Austin, Bureau of Economic Geology. For area E, see St. Clair, A. E., Proctor, C. V., Jr., Fisher, W. L., Kreitler, C. W., and McGowen, J. H. (1975) Land and water resources––Houston–Galveston Area Council: The University of Texas at Austin, Bureau of Economic Geology. For area F, see Kier, R. S., Garner, L. E., and Brown, L. F., Jr. (1977) Land resources of Texas: The University of Texas at Austin, Bureau of Economic Geology. For area G, see Verbeek, E. R., and Clanton, U. S. (1978) Map showing surface faults in southeastern Houston metropolitan area, Texas: U.S. Geological Survey Open–File Report 78–797. for area H, see Verbeek, E. R., Ratzlaff, K. W., and Clanton, U. S. (1979) Faults in parts of north–central and western Houston metropolitan area, Texas: U.S. Geological Survey, Miscellaneous Field Studies, Map MF–1136. For references concerning caprock on Damon Mound, see Veatch, A. C., in Hayes, C. W., and Kennedy, William (1903) Oil fields of the Texas–Louisiana Gulf Coastal Plain: U.S. Geological Survey Professional Paper 126, p. 137; and Bevier, G. M. (1925) The Damon Mound oil field, Texas: Bulletin of the American Association of Petroleum Geologists, v. 9, p. 523.

NOTE:

1. SEE FIGURE E1–2 FOR LEGEND.

Elizabeth Floyd

Elizabeth Floyd
GEOLOGY
2045
LICENSED

2/1/2011

Houston part of sheet:

Prepared by the Army Map Service (GUDV), Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1956 from: United States Quadrangles, 1:24,000, U.S. Geological Survey, 1952; Texas 1:25,000, Army Map Service, 1947–49; United States Quadrangles, 1:31,680, U.S. Geological Survey, 1919–20; USC&GS Charts 1280 and 1282, 1945. Planimetric detail revised by photo–planimetric methods. Control by USGS, CE and USC&GS. Map field checked 1956.

VIRGIL E. BARNES, PROJECT DIRECTOR

This revision of the Houston sheet of the Geologic Atlas of Texas relies heavily on recent publications and maps listed in the Index of Geologic Mapping. for credits and sources used for the original 1968 edition of the Houston sheet, the user is referred to that edition of the map. the base for the present edition of the Houston sheet was revised by R. L. Dillon, who also scribed the geologic mapping.

CONTOUR INTERVAL 50 FEFT
WITH SUPPLEMENTARY CONTOURS AT 25 FOOT INTERVALS

TRANSVERSE MERCATOR PROJECTION
1981 MAGNETIC DECLINATION FOR THIS SHEET
IS 6°00'E. MEAN ANNUAL CHANGE IS 6.3' WESTERLY

GEOLOGIC ATLAS OF TEXAS, HOUSTON SHEET

PAUL WEAVER MEMORIAL EDITION

REVISED 1982

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REVISIONS							
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GEOLOGIC VICINITY MAP

**WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT**

BIGGS & MATHEWS
ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
817–563–1144

TBPE FIRM NO. F–256		TBPG FIRM NO. 50222		
DSN. BAF	DATE : 01/11			DRAWING
DWN. SRC	SCALE : GRAPHIC			IIA.16
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EXPLANATION

Holocene

FS

Fill and spoil

Fill, F, material dredged for raising land surface above alluvium and barrier-island deposits and for creating land. Spoil, S, dredged material along waterways

Qal

Alluvium

Clay, silt, and sand, organic matter abundant locally; includes point-bar, natural levee, stream channel, backswamp, coastal marsh, mud-flat, and narrow beach deposits that are shown by line symbol

Qbi

Barrier-island deposits

Sand, silt, and clay; mostly sand, well-sorted, fine-grained, abundant shells and shell fragments; interfingers with clay and silt in landward direction; includes beach ridge, spit, tidal channel, tidal-delta, and sand dune deposits

Holocene or late (?) Pleistocene

Qd | Qd?

Deweyville Formation

Sand, silt, and clay, some gravel; includes point-bar, natural levee, stream channel, and backswamp deposits at a level only slightly above that of the present floodplain; sand coarser than that in alluvium; surface characterized by relict meanders of much larger radius of curvature than those of present streams, some scattered pimple mounds; thickness locally more than 50 feet. High-level Deweyville, Qd?, surfaces cut into the Beaumont Formation, and high-level Deweyville deposits along Trinity River are intermediate in position between the surface of the Beaumont and the level of most Deweyville deposits

Pleistocene

Qbb, Qb, Qb

Beaumont Formation

Beaumont Formation, Qb, with barrier-island and beach deposits, Qbb, mapped separately. Beaumont Formation, Qb, mostly clay, silt, and sand; includes mainly stream channel, point-bar, natural levee, backswamp, and to a lesser extent coastal marsh and mud-flat deposits; concretions of calcium carbonate, iron oxide, and iron-manganese oxides in zone of weathering; surface almost featureless, characterized by relict river channels shown by meander patterns and pimple mounds on meanderbelt ridges, separated by areas of low, relatively smooth, featureless backswamp deposits without pimple mounds; thickness ± 100 feet. The stippled overprint (source shown in Index to Geologic Mapping) shows areas that are "Dominantly clay and mud of low permeability, high water-holding capacity, high compressibility, high to very high shrink-swell potential, poor drainage, level to depressed relief, low shear strength, and high plasticity; geologic units include interdistributary muds, abandoned channel-fill muds, and overbank fluvial muds." The nonstippled areas are "Dominantly clayey sand and silt of moderate permeability and drainage, low to moderate compressibility and shrink-swell potential, level relief with local mounds and ridges, and high shear strength; geologic units include meanderbelt, levee, crevasse splay, and distributary sands"

QUATERNARY

Pleistocene

Barrier-island and beach deposits, Qbb, mostly fine grained sand normally without shell material; surface slightly higher than that of surrounding deposits, characterized by numerous pimple mounds and rounded depressions; probably part of "Ingleside" barrier-island system; thickness less than 30 feet
Physical properties: "Dominantly sand, high to very high permeability, low water-holding capacity, low compressibility, low shrink-swell potential, good drainage, low ridge and depressed relief, high shear strength, and low plasticity. Geologic units include beach, foredunes, barrier-strandplain-chenier vegetated flats, Pleistocene barrier and strandplain sands"

Ql

Lissie Formation

Upper part, clay, silt, sand, and very minor siliceous gravel of granule and small pebble size, gravel more abundant northwestward, locally calcareous, concretions of calcium carbonate, iron oxide, and iron-manganese oxides common in zone of weathering; fluviatile; surface fairly flat and featureless except for numerous rounded shallow depressions and pimple mounds. Lower part, clay, silt, sand, and minor amount of gravel; gravel slightly coarser than in upper part, noncalcareous, iron oxide concretions more abundant than in upper part; fluviatile; very gently rolling; thickness ± 200 feet

Qw

Willis Formation

Clay, silt, sand, and minor siliceous gravel of granule to pebble size including some petrified wood; sand coarser than in younger units. Deeply weathered and lateritic, indurated by clay and cemented by iron oxide locally, concretions of iron oxide numerous, noncalcareous; fluviatile; maximum thickness 75 feet

QUATERNARY

Miocene

T

Tertiary rocks on Hockley salt dome

Sandstone, very fine grained, hard, abundant porcelaneous to opaline cement, poorly bedded, jointed, grayish white; possibly Catahoula Formation (Stenzel, 1946) (See Index of Geologic Mapping for reference.)

TERTIARY

CR

Outcrop of caprock reported on Damon Mound

Not found. Reportedly used for building stone (Bevier, 1925)

U
D

Fault

U, upthrown; D, downthrown side

10,000-meter Universal Transverse Mercator grid ticks, shown in blue

INDEX OF GEOLOGIC MAPPING

For opinion on age of rocks on Hockley salt dome (area A), see Deussen, Alexander, and Lane, L. L. (1925) Hockley salt dome, Harris County, Texas: Bulletin of the American Association of Petroleum Geologists, v. 9, p. 1031–1060; and Stenzel, H. B. (1946) Gypsum resources and mining on the Hockley Dome, Harris County Texas: University of Texas Publication 4301, p. 207–226. For area B, see Fisher, W. L., McGowen, J. H., Brown, L. F., Jr., and Groat, C. G. (1972) Environmental geologic atlas of the Texas Coastal Zone--Galveston–Houston area: The University of Texas at Austin, Bureau of Economic Geology. For area C, see Fisher, W. L., Brown, L. F., Jr., McGowen, J. H., and Groat, C. G. (1973) Environmental geologic atlas of the Texas Coastal Zone--Beaumont–Port Arthur area: The University of Texas at Austin, Bureau of Economic Geology. For area D, see McGowen, J. H., Brown, L.F., Jr., Evans, T. J., Fisher, W. L., and Groat, C. G. (1976) Environmental geologic atlas of the Texas Coastal Zone--Bay City–Freeport area: The University of Texas at Austin, Bureau of Economic Geology. For area E, see St. Clair, A. E., Proctor, C. V., Jr., Fisher, W. L., Kreitler, C. W., and McGowen, J. H. (1975) Land and water resources--Houston–Galveston Area Council: The University of Texas at Austin, Bureau of Economic Geology. For area F, see Kier, R. S., Garner, L. E., and Brown, L. F., Jr. (1977) Land resources of Texas: The University of Texas at Austin, Bureau of Economic Geology. For area G, see Verbeek, E. R., and Clanton, U. S. (1978) Map showing surface faults in southeastern Houston metropolitan area, Texas: U.S. Geological Survey Open–File Report 78–797. for area H, see Verbeek, E. R., Ratzlaff, K. W., and Clanton, U. S. (1979) Faults in parts of north–central and western Houston metropolitan area, Texas: U.S. Geological Survey, Miscellaneous Field Studies, Map MF–1136. For references concerning caprock on Damon Mound, see Veatch, A. C., in Hayes, C. W., and Kennedy, William (1903) Oil fields of the Texas–Louisiana Gulf Coastal Plain: U.S. Geological Survey Professional Paper 126, p. 137; and Bevier, G. M. (1925) The Damon Mound oil field, Texas: Bulletin of the American Association of Petroleum Geologists, v. 9, p. 523.

Houston part of sheet:
Prepared by the Army Map Service (GUDV), Corps of Engineers, U.S. Army, Washington, D.C. Compiled in 1956 from: United States Quadrangles, 1:24,000, U.S. Geological Survey, 1952; Texas 1:25,000, Army Map Service, 1947–49; United States Quadrangles, 1:31,680, U.S. Geological Survey, 1919–20; USC&GS Charts 1280 and 1282, 1945. Planimetric detail revised by photo–planimetric methods. Control by USGS, CE and USC&GS. Map field checked 1956.

VIRGIL E. BARNES, PROJECT DIRECTOR
This revision of the Houston sheet of the Geologic Atlas of Texas relies heavily on recent publications and maps listed in the Index of Geologic Mapping. for credits and sources used for the original 1968 edition of the Houston sheet, the user is referred to that edition of the map. the base for the present edition of the Houston sheet was revised by R. L. Dillon, who also scribed the geologic mapping.

CONTOUR INTERVAL 50 FEFT
WITH SUPPLEMENTARY CONTOURS AT 25 FOOT INTERVALS

TRANSVERSE MERCATOR PROJECTION
1981 MAGNETIC DECLINATION FOR THIS SHEET
IS 6°00'E. MEAN ANNUAL CHANGE IS 6.3' WESTERLY

GEOLOGIC ATLAS OF TEXAS, HOUSTON SHEET

PAUL WEAVER MEMORIAL EDITION

REVISED 1982

STATE OF TEXAS
Elizabeth Floyd
GEOLOGY
2045
LICENSED
PROFESSIONAL GEOSCIENTIST

Elizabeth Floyd
2/1/2011

ISSUED FOR PERMITTING PURPOSES

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

GEOLOGIC VICINITY LEGEND

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS
ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS • WICHITA FALLS
817-563-1144

TBPE FIRM NO. F-256		TBPG FIRM NO. 50222	
DSN. BAF	DATE : 01/11		DRAWING
DWN. SRC	SCALE : GRAPHIC		IIA.17
CHK. JMS	DWG : IIA.17_GeoVicin.dwg		

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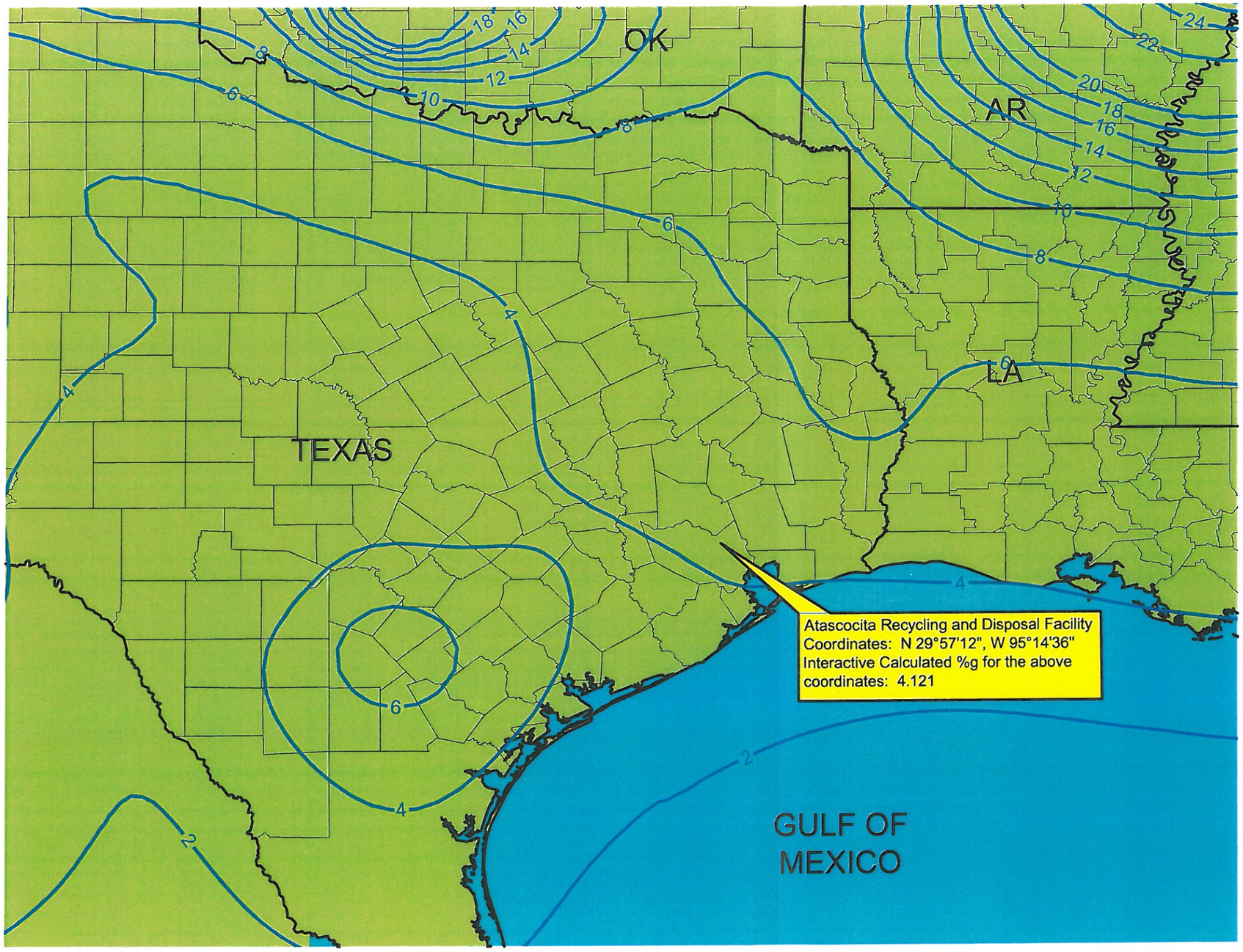


Not To Scale

LEGEND

CONTOUR OF PEAK HORIZONTAL ACCELERATION

STATE OF TEXAS
JOHN MICHAEL SNYDER
GEOLOGY
595
LICENSED
PROFESSIONAL GEOSCIENTIST

2-1-2011

Source: USGS Interactive National Seismic Hazard Maps - 2002
Peak Horizontal Acceleration (%g) with 2% Probability of Exceedance in 50 years
URL: http://earthquake.usgs.gov/research/hazmaps/

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
1	01/11	NOD 1 RESPONSE	SRC	SAB	JMS	JMS

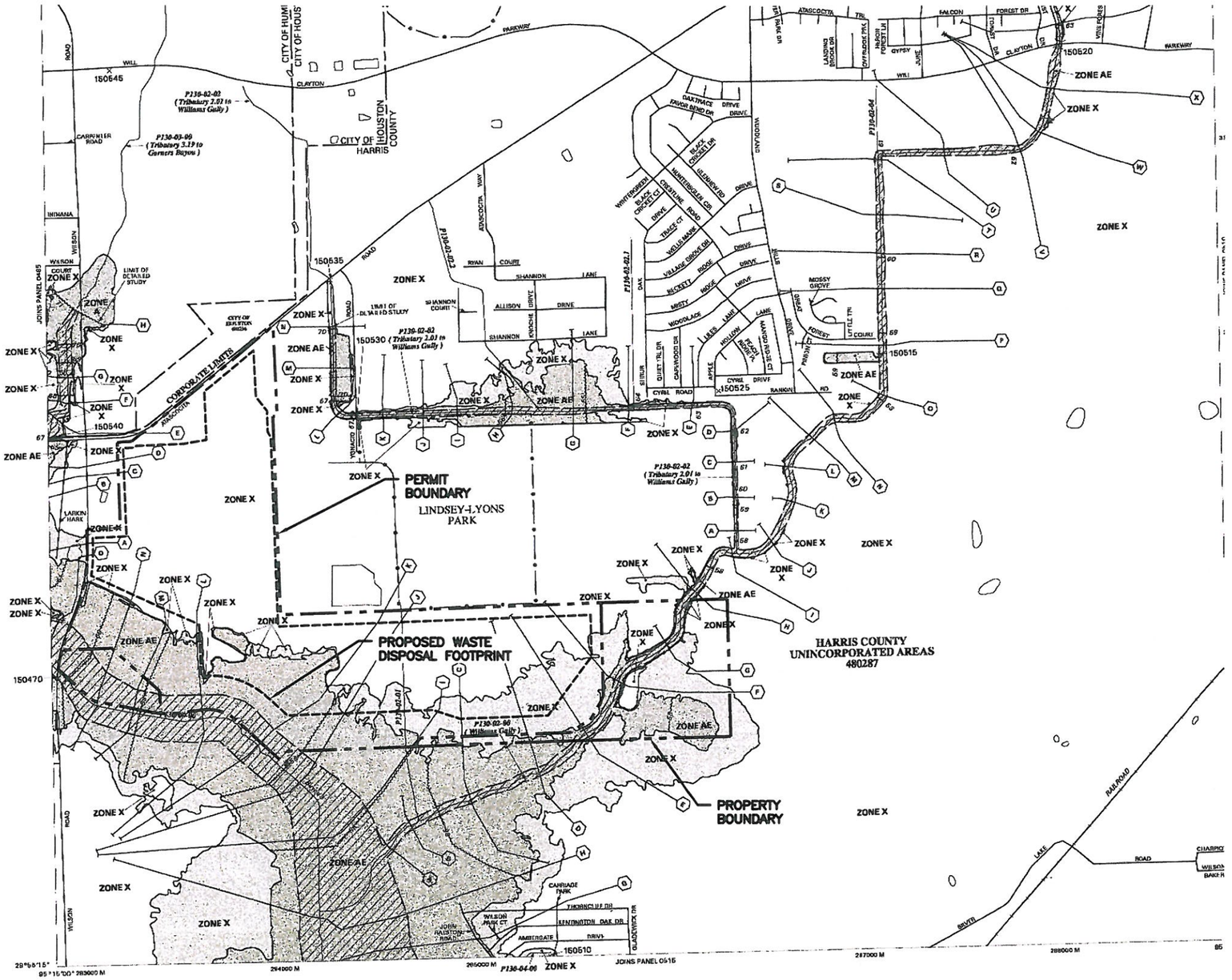
SEISMIC IMPACT ZONE MAP

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

BIGGS & MATHEWS ENVIRONMENTAL
CONSULTING ENGINEERS
MANSFIELD
DALLAS ◆ WICHITA FALLS
817-563-1144
TBPE FIRM NO. F-256 TBPG FIRM NO. 50222

DSN.	JMS	DATE :	01/11
DWN.	SRC	SCALE :	GRAPHIC
CHK.	JMS	DWG :	IIA.18_Seismic-USGS.dwg

DRAWING IIA.18



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SCALE IN FEET

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** — Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.
- **ZONE A99** — Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** — Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross Section Line
- Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000mN — 1000-meter Universal Transverse Mercator grid values, zone 16
- 600000 FT — 5000-foot grid ticks
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 — River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
SEPTEMBER 30, 1992
NOVEMBER 6, 1996
APRIL 20, 2000
JUNE 18, 2007: to change base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to reflect updated topographic information, and to change floodway.

- LANDFILL PERMIT BOUNDARY
- PROPERTY BOUNDARY

NOTES:
1. THIS MAP HAS BEEN COMPILED FROM FEMA FLOOD INSURANCE RATE MAP (FIRM) OF HARRIS COUNTY, TEXAS AND INCORPORATED AREAS COMMUNITY PANEL NUMBER 48201C0505L, REVISED JUNE 18, 2007.

2-1-11

STATE OF TEXAS
A.C. FLORES VARELA
56939
REGISTERED PROFESSIONAL ENGINEER

Alejandro Flores V.

ISSUED FOR INFORMATIONAL PURPOSES ONLY

REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY

FLOOD INSURANCE RATE MAP (FIRM)

WASTE MANAGEMENT OF TEXAS, INC.
ATASCOCITA RECYCLING AND DISPOSAL FACILITY
MAJOR PERMIT AMENDMENT

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-9570

DSN.	DEC	DATE :	09/10
DWN.	BME	SCALE :	GRAPHIC
CHK.	DEC	DWG :	IIA.19-FIRM.dwg

DRAWING IIA.19

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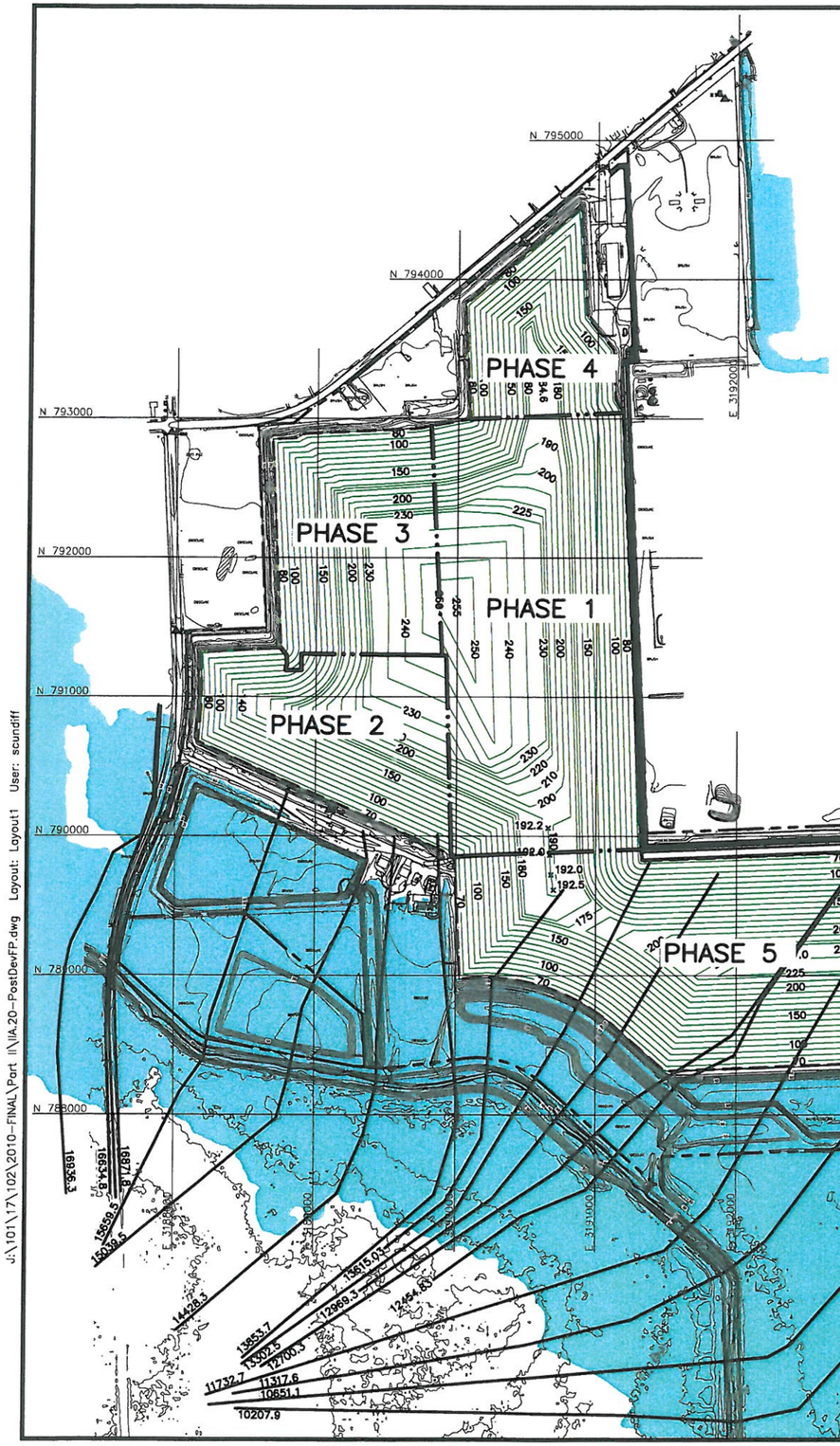

GARNERS BAYOU FLOOD STAGE ANALYSIS SUMMARY		
HEC–RAS Cross Section	100–YEAR WATER SURFACE (FT–MSL)*	PERIMETER BERM ELEVATION (FT–MSL)**
10207.9	57.87	62.72
10650.1	57.94	62.00
11317.6	58.13	62.00
11732.7	58.31	62.00
12454.83	58.57	62.00
12700.3	58.57	62.00
12969.3	58.65	62.00
13302.5	58.67	62.00
13615.03	58.75	62.00
13853.7	58.72	64.00
14428.3	58.84	64.00
15039.5	58.87	64.00
15659.5	59.28	64.00

WILLIAMS GULLY FLOOD STAGE ANALYSIS SUMMARY		
HEC–RAS Cross Section	100–YEAR WATER SURFACE (FT–MSL)*	PERIMETER BERM ELEVATION (FT–MSL)**
3409.2	52.37	62.89
4113.2	52.70	63.00
4669.9	52.95	63.00
5243.3	53.29	63.00
5733.1	53.68	63.00
6251.7	53.99	63.00
6811.1	54.27	63.00
7472.3	54.68	
7857.1	54.88	
8322.3	55.28	

* 100–YEAR WATER SURFACE ELEVATIONS REFERENCE THE FEMA DATUM. FINAL COVER CONTOUR ELEVATIONS REFERENCE THE SITE DATUM. SEE PAGE C2–2 FOR A DISCUSSION OF THE DATUM.

** FINAL COVER CONTOUR ELEVATIONS REFERENCE THE SITE DATUM. SEE PAGE C2–1 FOR A DISCUSSION OF THE DATUM.

NOTE:

1. EXISTING CONTOURS AND ELEVATIONS COMPILED BY DALLAS AERIAL SURVEYS FROM AERIAL SURVEY FLOWN APRIL 13, 2009. CONTOURS OUTSIDE THE PERMIT BOUNDARY TAKEN FROM 2001 LIDAR MAPPING PROVIDED BY DANNENBAUM.
2. HEC–RAS CROSS–SECTION STATION IS IN FEET.
3. 100–YEAR FLOODPLAIN PROVIDED BY DANNENBAUM. FLOODPLAIN DATA COMPILED FROM FEMA FLOOD INSURANCE RATE MAP (FIRM) PANEL 48201C0505L, REVISED JUNE 18, 2007, AND THE LOMR–F ISSUED BY FEMA ON SEPTEMBER 15, 2009.
4. SEE ATTACHMENT C3 FOR DRAINAGE SYSTEM PLANS AND DETAILS.

0 500 1000
SCALE IN FEET

LEGEND

- PERMIT BOUNDARY
- PROPERTY BOUNDARY
- LANDFILL FOOTPRINT
- PHASE BOUNDARY
- 60 EXISTING CONTOUR
- N 6753000 STATE PLANE GRID
- 100–YEAR FLOODPLAIN

2-1-11

STATE OF TEXAS
A.C. FLORES VARELA
56939
REGISTERED
PROFESSIONAL ENGINEER

Alejandro Flores V.

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
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100–YEAR FLOODPLAIN MAP POSTDEVELOPED

WASTE MANAGEMENT OF TEXAS, INC. ATASCOCITA RECYCLING AND DISPOSAL FACILITY MAJOR PERMIT AMENDMENT

DANNENBAUM
ENGINEERING CORPORATION
T.B.P.E. FIRM REGISTRATION #392
3100 WEST ALABAMA HOUSTON, TX 77098 (713) 520-9570

DSN.	DEC	DATE :	01/11
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ATASCOCITA RECYCLING AND DISPOSAL FACILITY

APPENDIX III
HOUSTON-GALVESTON AREA COUNCIL OF GOVERNMENTS
(HGAC)
DOCUMENTATION

H-GAC

Houston-Galveston Area Council

November 16, 2010

Mr. Steve Jacobs
Waste Managementof Texas, Inc.
1001 Fannin, #4000
Houston, TX 77002

Dear Mr. Jacobs:

This is to advise you that the H-GAC BOARD OF DIRECTORS has reviewed your request for the Atascocita Facility Extension grant application, H-GAC #128-10, SAI #TX-R-20101008-0001-16.

After reviewing staff comments and the recommendations of its advisory Projects Review Committee, the H-GAC BOARD OF DIRECTORS has found your project to be *consistent.* This action was taken by the Board at its regular monthly meeting on November 16, 2010.

Please find attached, a summary of staff comments, findings and recommendations of the Projects Review Committee, and action taken by the Board of Directors regarding this application. These comments, findings and actions reflect the status of the application as it progressed through H-GAC's review process. These comments are also being forwarded to the agency to which this application is addressed.

Sincerely,

Steve Howard
Chief Operating Officer

SH:ace
Enclosures

cc: Texas Commission on Environmental Quality

Mailing Address
PO Box 22777
Houston, Texas 77227-2777
Phone 713-627-3200

Recycled

Physical Address
3555 Timmons Lane, Suite 120
Houston, Texas 77027-6456
Phone 713-627-3200

SUMMARY OF COMMENTS AND ACTIONS
BOARD OF DIRECTORS MEETING

MEETING DATE:	November 16, 2010
PROJECT APPLICANT:	Waste Managementof Texas, Inc.
PROJECT TITLE:	Atascocita Facility Extension
PROJECT #:	SAI # TX-R-20101008-0001-16 H-GAC #128-09
SUMMARIZED BY:	Cheryl Mergo, Community & Environmental
PROPONENTS:	Charles Rivette, Director of Planning & Project Development Waste Management of Texas, Inc.
STAFF COMMENTS:	Staff recommends a finding of consistency with H-GAC Regional Plans and Policies.
PROJECTS REVIEW COMMITTEE RECOMMENDATION:	To find the project consistent as recommended by staff.
MOTION:	Bobby Marshall, Councilmember, City of Missouri City
SECOND:	Todd Fontenot, Commissioner, Liberty County
VOTE:	Unanimous

APPLICANT: Waste Management of Texas, Inc.
800 Gessner, Suite 1100
Houston, TX 77024
Attn.: Mr. Charles Rivette, Sr. Manager, Market Area, Planning & Project Development

TITLE & DESCRIPTION: Atascocita Recycling and Disposal Facility
Type I Municipal Solid Waste Management Facility
Application #MSW-1307D

FUNDING: N/A

PERMITTING REPRESENTATIVE: Mr. Richard Carmichael, P.E.
MSW Permit Section, MC 124
Waste Permits Division
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

AREA AFFECTED: Site Location: The site is located is located at 3623 Wilson Road southeast of the City of Humble in northeast Harris County. The site is located in the ETJ of the City of Houston.
Service Area: The primary service area includes the following counties: Harris, Liberty, Montgomery, Brazoria, Galveston, Fort Bend and Waller.

SYNOPSIS: The permit application is a major amendment to an existing permit for a vertical and lateral expansion of a Type I municipal solid waste landfill. The existing permitted area currently totals approximately 503.7 permitted acres. The permit amendment would increase the total permitted area to approximately 647.1 acres. This increase includes a 27.3 acre deduction in the southwest corner of the current permit boundary, and an increase of 170.7 acres to the east of the current permit boundary. It is estimated that the site will receive approximately 3,730 tons per day and the maximum rate of disposal based on the expansion will be 6,120 tons per day. The landfill will have an estimated site life of 26 years.

Based on a current elevation of 63.07 ft. above mean sea level (msl), the maximum height of the landfill will be 255 ft. above msl (191.93 feet above ground). This amendment does not include a request to increase maximum elevation.

Permit Condition Summary

	Current Condition	Proposed Condition
Permitted Area	503.7 acres	647.1 acres
Waste Disposal Area	310.7 acres	423.7 acres
Remaining Site Life	16 years	26 years
Max. Elevation of Final Cover (msl)	255 ft	255 ft

SYNOPSIS: (continued)

The main public roadways providing access to the site are Beltway 8, Atascocita Road, and Wilson Road.

The principle source of waste will be Type I MSW resulting from incidental to municipal, community, commercial, institutional and recreational activities, including garbage, putrescible wastes, rubbish, ashes, brush, street cleanings, dead animals, abandoned automobiles, and all other solid waste other than industrial waste. Class 2-3 industrial wastes may be accepted at this facility. Construction and demolition waste may also be accepted at the facility. Class 1 nonhazardous industrial waste will no longer be accepted at the site.

Land use within a one-mile radius of the site consists of predominantly undeveloped and agricultural areas. Single-family residential developments exist northeast and southwest of the site. Governmental facilities are immediately east of the site. Garners Bayou extends along the southern site boundary. There are approximately 1,148 mobile or manufactured homes and 3,490 permanent single-family homes located with one-mile of the permit boundary. There are 151 commercial and industrial businesses located within one mile of the site.

There is a public use airport (George Bush Intercontinental Airport) located within five miles from the facility. The height of the landfill is in compliance with FAA mandated height limits. Additionally, the facility has implemented a Bird Control Plan.

The site was initially permitted in 1981 and first received waste in 1983. The site has been amended twice since the original permit was issued. This amendment would be the fourth major amendment. In addition to the landfilling operations, the overall facility includes a recycling facility and a gas recovery facility.

CONFORMANCE TO REVIEW CRITERIA:

The application is located in Subregion 8 of the H-GAC's solid waste plan. The application affects many of the goals, objectives, and subregion recommendations of the plan, specifically, the Project Review/Siting Criteria goals and objectives.

Goal: *Provide adequate solid waste capacity throughout the H-GAC region.*
Objectives:

- encourage appropriate distribution of facilities to minimize transportation costs
- encourage development of facilities for which there is an apparent need
- encourage the development of larger regional facilities to the extent practical and where such facilities would be the best alternative
- encourage expansion and redevelopment of existing sites, where feasible, over siting of new facilities when they meet current environmental criteria

Goal: *Minimize the negative visual impacts of solid waste disposal, handling, and management facilities.*
Objectives:

- encourage landscaping and visual screening of sites

- allow aerial buildup appropriate to surrounding topography and screening

Goal: *Maintain appropriate buffers and setbacks from sensitive land uses*
Objectives:
- require consideration of surrounding land uses

LOCAL GOVERNMENT NOTICE & COMMENTS:

As part of the review process for solid waste management permits, H-GAC asks for local government comments. To date, we have not received any local government comments.

STAFF COMMENTS & RECOMMENDATIONS:

Staff comments are:

Prohibition of Class1 industrial waste. The landfill will no longer accept Class1 industrial waste at the site. The exclusion of Class 1 waste will minimize the risks of odors as Class 1 waste can cause odor issues due to the waste composition.

Growth Trend/Land Use. This portion of Harris County has experienced substantial urban/suburban development since the last amendment (2004). The development has been concurrent with the operation of the existing landfill. Additional residential development is planned and H-GAC staff doesn't anticipate the landfill expansion to negatively influence the planned development.

Land Use	Amendment C (2004)	Amendment D (2010)
Single-family homes	664	3,490
Mobile/manufactured homes	1,084	1,148
Commercial/industrial businesses	84	151
Schools	1	4

Pending additional receipt of local government comments, staff recommends the project be found consistent, with plans, policies, and H-GAC review criteria.

H-GAC STAFF:

Cheryl Mergo
Sustainable Development Program Manager
(713) 993-4520

ATASCOCITA RECYCLING AND DISPOSAL FACILITY

APPENDIX IIJ
LOCATION RESTRICTION CERTIFICATIONS

CONTENTS

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
EASEMENTS AND BUFFER ZONES

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Kenneth J. Welch, P.E., certify that the site indicated above will be in compliance with the Easements and Buffer Zones Location Restriction, as stated in 30 TAC §330.543 – Easements and Buffer Zones.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS KENNETH J. WELCH 60773 REGISTERED PROFESSIONAL ENGINEER 2/01/2011

Supporting documentation is provided in Part II, Appendix IIA – Maps and Drawings, Drawing IIA.9 – Site Layout Plan.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
AIRPORT SAFETY

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Kenneth J. Welch, P.E., certify that the site indicated above will be in compliance with the Airport Safety Location Restriction, as stated in 30 TAC §330.545 – Airport Safety.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS KENNETH J. WELCH 60773 REGISTERED PROFESSIONAL ENGINEER 2/01/2011

Supporting documentation is provided in Part II, Section 9.1 Airport Impact; and Part II, Appendix IIH – Federal Aviation Administration Documentation.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
FLOODPLAINS

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, A.C. Flores Varela, certify that the site indicated above will be in compliance with the Floodplains Location Restriction, as stated in 30 TAC §330.547 – Floodplains.

Firm:	Dannenbaum Engineering Corporation
Address:	3100 West Alabama Houston, TX 77098
Signature, Seal, and Date	2-1-11 STATE OF TEXAS A. C FLORES VARELA 56939 REGISTERED PROFESSIONAL ENGINEER alejandro Flores V

Supporting documentation is provided in Part II, Section 13.1 – Floodplains; Part II, Appendix IIK – Floodplain Documentation; and Part III, Attachment C2 – Regional Drainage and Flood Control Analysis.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste. 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
GROUNDWATER

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, John Michael Snyder, P.G., certify that the site indicated above will be in compliance with the Groundwater Location Restriction, as stated in 30 TAC §330.549 – Groundwater.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS JOHN MICHAEL SNYDER GEOLOGY 595 LICENSED PROFESSIONAL GEOSCIENTIST 2-1-2011

Supporting documentation ~~is provided in~~ related to aquifers beneath the facility is provided in Part II, Section 11.1 – Groundwater; Part III, Attachment E – Geology Report; and Attachment F – Groundwater Monitoring Plan.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
ENDANGERED OR THREATENED SPECIES

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Carlos Hinojosa, certify that the site indicated above will be in compliance with the Endangered or Threatened Species Location Restriction, as stated in 30 TAC §330.551 – Endangered or Threatened Species.

Firm:	Knudson, LP
Address:	8588 Katy Freeway, Suite 441 Houston, TX 77024
Signature, Seal, and Date	SWS PCP PWS Carlos O. Hinojosa 2078 PROFESSIONAL WETLAND SCIENTIST 02/01/2011

Supporting documentation is provided in Part II, Section 14 – Endangered and Threatened Species; and Part II, Appendix IIE – Endangered or Threatened Species Documentation.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
WETLANDS

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Carlos Hinojosa, certify that the site indicated above will be in compliance with the Wetlands Location Restriction, as stated in 30 TAC §330.553 – Wetlands.

Firm:	Knudson, LP
Address:	8588 Katy Freeway, Suite 441 Houston, TX 77024
Signature, Seal, and Date	SWS PCP EDUCATION EXPERIENCE PWS ETHICS Carlos O. Hinojosa 2076 PROFESSIONAL WETLAND SCIENTIST 02/01/2011

Supporting documentation is provided in Part II, Section 13.2 – Wetlands; and Part II, Appendix IID – Wetlands Documentation.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
FAULT AREAS

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Robert P. Ringholz, P.E., certify that the site indicated above will be in compliance with the Fault Areas Location Restriction, as stated in 30 TAC §330.555 – Fault Areas.

Firm:	Fugro Consultants, Inc.
Address:	6100 Hillcroft P.O. Box 740010 Houston, TX 77274
Signature, Seal, and Date	

Supporting documentation is provided in Part II, Section 10.3 – Fault Areas; and Part III, Attachment E – Geology Report, Appendix E8 – Fault Study.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
SEISMIC IMPACT ZONES

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, John Michael Snyder, P.G., certify that the site indicated above will be in compliance with the Seismic Impact Zones Location Restriction, as stated in 30 TAC §330.557 – Seismic Impact Zones.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS JOHN MICHAEL SNYDER GEOLOGY 595 LICENSED PROFESSIONAL GEOSCIENTIST 2-1-2011

Supporting documentation is provided in Part II, Section 10.4 – Seismic Impact Zones and Drawing IIA.18 – Seismic Impact Zone Map; and Part III, Attachment E – Geology Report, Section 2.2 and Appendix E4.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
UNSTABLE AREAS

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Gregory W. Adams, P.E., certify that the site indicated above will be in compliance with the Unstable Areas Location Restriction, as stated in 30 TAC §330.559 – Unstable Areas.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS GREGORY W. ADAMS 73356 REGISTERED PROFESSIONAL ENGINEER 2-1-2011

Supporting documentation is provided in Part II, Section 10.5 – Unstable Areas; Part III, Attachment D – Waste Management Unit Design; Appendix D5-A – Settlement/Heave Analysis, and Appendix D5-B – Slope Stability Analyses.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
COASTAL AREAS

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Kenneth J. Welch, P.E., certify that the site indicated above will be in compliance with the Coastal Areas Location Restriction, as stated in 30 TAC §330.561 – Coastal Areas.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS KENNETH J. WELCH 60773 REGISTERED PROFESSIONAL ENGINEER 2/01/2011

Supporting documentation is provided in Part II, Section 2.1 – Properties and Characteristics of Waste; and Part II, Appendix IIA, ~~– Maps and Drawings~~ Drawing IIA.1 – County Highway Map.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

LOCATION RESTRICTION
CERTIFICATION OF COMPLIANCE
TYPE I AND TYPE IV LANDFILL PERMIT ISSUANCE PROHIBITED

General Site Information:

Site:	Atascocita Recycling and Disposal Facility
Site Location:	Harris County, Texas
TCEQ Permit Application No.:	1307D

Statement of Compliance:

I, Kenneth J. Welch, P.E., certify that the site indicated above will be in compliance with the Type I and Type IV Landfill Permit Issuance Prohibited Location Restriction, as stated in 30 TAC §330.563 – Type I and Type IV Landfill Permit Issuance Prohibited.

Firm:	Biggs & Mathews Environmental, Inc.
Address:	1700 Robert Road, Suite 100 Mansfield, TX 76063
Signature, Seal, and Date	STATE OF TEXAS KENNETH J. WELCH 60773 REGISTERED PROFESSIONAL ENGINEER 2/01/2011

Supporting documentation is provided in Part II, Section 1.1 – Existing Conditions; ~~and Character of the Site~~; Part II, Section 16 – Council of Governments and Local Government Review Request; Appendix III – H-GAC Documentation.

Owner / Operator of Site:

Owner / Operator:	Waste Management of Texas
Address:	1001 Fannin, Ste 4000 Houston, TX 77002
Official's Name and Title:	Steve Jacobs, Director of Landfill Operations South Texas Market Area
Signature:	
Date:	2-2-2011

ATASCOCITA RECYCLING AND DISPOSAL FACILITY

APPENDIX IIK

FLOODPLAIN DOCUMENTATION

HARRIS COUNTY FLOOD CONTROL DISTRICT APPROVAL OF

ATASCOCITA RDF EXPANSION DRAINAGE DESIGN

PREPARED BY
DANNENBAUM ENGINEERING CORPORATION

HARRIS COUNTY

Public Infrastructure Department
Architecture & Engineering Division

10555 Northwest Frwy., Suite 120
Houston, Texas 77092
(713) 956-3000

March 5, 2010

Mr. A.C. Flores Varela, P.E.
Dannenbaum Engineering Corporation
3100 West Alabama
Houston, TX 77098

SUBJECT: Drainage Analysis for Atascocita Recycling & Disposal Facility Expansion Drainage Design; Units P130-00-00 & 130-02-00: Key Map 376; Pct 2; Project No. 2006351

Dear Mr. Varela:

Harris County and the Harris County Flood Control District (HCFCD) have reviewed the above referenced report. Details of our understanding of the design are given on the attached review memo.

The report includes statements that the project will cause no adverse impact to the receiving waterways in storm events up to and including the 100-year event. The documentation within the report generally supports the conclusions stated by the engineer. Based on the stated conclusions, HCFCD interposes no objection to the referenced report. Please note, this acceptance does not necessarily mean that the entire report, including supporting data and calculations, has been completely checked and verified. However, the report is signed, dated, and sealed by a Professional Engineer licensed to practice in the State of Texas, which therefore conveys the licensed engineer's responsibility and accountability.

If you have any questions or need any additional information, please do not hesitate to contact the reviewers.

Sincerely,

Joshua Stuckey, CFM
Assistant Deputy Director

JS/fr
Attachments

cc: Raymond J. Anderson, HCPID
Dan Mushen, HCPID

MEMORANDUM

Harris County
Flood Control District
9900 Northwest Freeway
Houston, Texas 77092
713 684-4000

DATE: March 5, 2010

TO: Josh Stuckey, CFM
Harris County Permits Division

FROM: Myron M. Harris, P.E.
Watershed Coordination Department

RE: Project No. 2006351
Atascocita Recycling & Disposal Facility Expansion Drainage Design
HCFCD Units P130-00-00, P130-02-00; Key Map 376P; Pct 2

Objective

The referenced report dated December 23, 2009, by Dannenbaum Engineering Corp., has been reviewed pursuant to the HCFCD Policy, Criteria, and Procedure Manual and Section 3.02 of the "Regulations of Harris County, Texas for the Approval and Acceptance of Infrastructure." The goals of the review are to provide technical support to the Harris County Floodplain Administrator and to apply HCFCD policy and criteria where appropriate.

This review addresses issues regarding hydraulic and hydrologic drainage design criteria only. Design criteria regarding the site layout of the proposed development and drainage facilities will be reviewed upon submittal of site plans.

Submitted Report

Atascocita Recycling & Disposal Facility
Expansion Drainage Design
December 12, 2009

Consulting Engineer The Report was prepared by:

Dannenbaum Engineering Corporation
3100 West Alabama
Houston, TX 77098
TBPE No. 392
A.C. Flores Varela, P.E.
TX P.E.# 56939

HCFCD Jurisdiction

The proposed development outfalls directly into HCFCD right-of-way and is located within a watershed where HCFCD detention and impact fee requirements apply.

Project Summary

Dannenbaum Engineering Corp was contracted by Waste Management of Texas, Inc., to conduct a drainage analysis for the expansion of Atascocita Recycling and Disposal Facility, located in the north central part of Harris County, Texas. The proposed project will expand the operations of the existing 503-acre permitted municipal solid facility to a total permitted size of 674 acres. The study has been conducted to demonstrate to the HCFCD that the proposed project will not impact the flooding conditions of the downstream receiving channels (Garner Bayou and Williams Gully). Current on-site drainage is accommodated through two existing drainage systems of which outfalls to Garner Bayou (P130-00-00). Both systems will undergo be modified to service the proposed detention facility.

Report's Findings

The report states, "The proposed development at Atascocita RDF, including the site expansion and diversion channel will not adversely affect the receiving channels. Flood stages do not increase for any modeled event". Also, "The proposed expansion does not induce adverse impacts to the 1% floodplain". Detention Summary Table 6.1 and Table 6.2 are attached.

HCFCD Planning Technical Review Comments

The Planning Department offers the following:

The report includes statements that the project will cause no adverse impact to the receiving waterways in storm events up to and including the 100-year event. The documentation within the report generally supports the conclusions stated by the engineer. Based on the stated conclusions, HCFCD interposes no objection to the referenced report. Please note, this acceptance does not necessarily mean that the entire report, including all supporting data and calculations, has been completely checked and verified. However, the report is signed, dated, and sealed by a Professional Engineer licensed to practice in the State of Texas, which therefore conveys the licensed engineer's responsibility and accountability.

HCFCD Criteria

Additional Harris County Flood Control District criteria that you should be aware of include the following:

1. Design plans for the proposed project must be submitted to the Flood Control District for review and signature.

2. All work proposed within existing and future Flood Control District right-of-way must be designed and constructed in accordance with its Policy, Criteria, and Procedure Manual.

3. The owner is responsible for obtaining all necessary federal, state, and local permits. Approval for such permits must be obtained prior to receiving a HCFCD right-of-way permit from Harris County.

Floodplain Information

A portion of the project is located in the regulatory floodplain of Garners Bayou (P130-00-00). A LOMR-F was submitted and approved for this area in July of 2009, (Project No. 2003622).

Environmental Review & Permitting

Harris County Flood Control District's Environmental Department suggests that the U.S. Army Corps of Engineers be contacted to determine if a permit is required for this project. Copies of permits necessary for work within HCFCD rights-of-way should be given to HCFCD at least 48 hours prior to construction.

MMH:td
Attachments: Detention Summary Table 6.1 and Table 6.2

cc: Diane Blackburn, CFM

Memo 3-5-10 P# 2006351 Atascocita Recycling & Disposal Facility Expansion Drainage Design.doc

Table 6.1
Detention Summary
Atascocita Recycling & Disposal Facility Expansion
Internal Systems

Existing West Detention Pond

Detention Basin Drainage Area	264.96	ac
Detention Storage Rate	1.04	ac-ft/ac
Detention Storage Provided	275	ac-ft
Pond Top of Bank	61.00	ft-1978

Storm Frequency	50% 2-yr	10% 10-yr	4% 25-yr	1% 100-yr
Design Water Surface Elevation (ft-1978)	48.48	54.95	57.71	60.24
Freeboard Allowed (ft)	12.52	6.05	3.29	0.76
Existing Outflow (cfs)	104	174	215	238
Maximum Outflow Provided (cfs)	91	176	216	238

Existing East Detention Pond

Detention Storage Provided	219	ac-ft
Pond Top of Bank	60.00	ft-1978

Storm Frequency	50% 2-yr	10% 10-yr	4% 25-yr	1% 100-yr
Design Water Surface Elevation (ft-1978)	48.57	57.02	58.59	59.97
Freeboard Allowed (ft)	11.43	2.98	1.41	0.03
Existing Outflow (cfs)	130	296	350	379
Maximum Outflow Provided (cfs)	138	329	394	421

Proposed Detention Pond

Detention Storage Provided	52	ac-ft
Pond Top of Bank	61.00	ft-1978

Storm Frequency	50% 2-yr	10% 10-yr	4% 25-yr	1% 100-yr
Design Water Surface Elevation (ft-1978)	52.97	56.76	58.55	60.16
Freeboard Allowed (ft)	8.03	4.24	2.45	0.84
Existing Outflow (cfs)	NA	NA	NA	NA
Maximum Outflow Provided (cfs)	17	28	34	41

Combined East System

Total Drainage Area	417.92	ac
Total Detention Storage Provided	271	ac-ft
East System Detention Storage Rate	0.65	ac-ft/ac

Entire Atascocita RDF (without Diversion Channel)

Total Drainage Area	682.88	ac
Total Detention Storage Provided	546	ac-ft
Site Detention Storage Rate	0.80	ac-ft/ac

Table 6.2
Detention Summary
Atascocita Recycling & Disposal Facility Expansion
Diversion Channel

Detention Basin Drainage Area	212.48	ac
Detention Storage Rate	0.41	ac-ft/ac
Detention Storage Provided	88	ac-ft
Pond Top of Bank	61.23	ft-1978

Storm Frequency	50% 2-yr	10% 10-yr	4% 25-yr	1% 100-yr
Design Water Surface Elevation (ft-1978)	47.51	53.3	56.29	59.91
Freeboard Allowed (ft)	13.72	7.93	4.94	1.32
Existing Outflow (cfs)	NA	NA	NA	NA
Maximum Outflow Provided (cfs)	62	126	153	186

Entire Atascocita RDF (with Diversion Channel)

Total Drainage Area	895.36	ac
Total Detention Storage Provided	634	ac-ft
Site Detention Storage Rate	0.71	ac-ft/ac

FEDERAL EMERGENCY MANAGEMENT AGENCY APPROVAL OF

LETTER OF MAP REVISIONS BASED ON FILL (LOMR-F) DETERMINATION DOCUMENT

PREPARED BY
DANNENBAUM ENGINEERING CORPORATION

Federal Emergency Management Agency

Washington, D.C. 20472

September 15, 2009

THE HONORABLE ED EMMETT
COUNTY JUDGE, HARRIS COUNTY
1001 PRESTON STREET
SUITE 911
HOUSTON, TX 77002

CASE NO.: 09-06-2736A
COMMUNITY: HARRIS COUNTY, TEXAS
(UNINCORPORATED AREAS)
COMMUNITY NO.: 480287

DEAR MR. EMMETT:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Revision based on Fill (LOMR-F) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMR-Fs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Sincerely,

Kevin C. Long

Kevin C. Long, Acting Chief
Engineering Management Branch
Mitigation Directorate

LIST OF ENCLOSURES:

LOMR-F DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region
Mr. Alejandro C. Flores, P.E.

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	HARRIS COUNTY, TEXAS (Unincorporated Areas)	Parcels of land, as described in the Special Warranty Deed, recorded as Document No. P430821; described in the Warranty Deed, recorded as Document No. L203614; described in the Substitute Trustee's Deed, recorded as Document No. R087717; described in the Special Warranty Deed, recorded as Document No. P430822; described in the Warranty Deed, recorded as Document No. P028699; described in the Warranty Deed, recorded as Document No. R001722; described in the Deed Without Warranty, recorded as Document No. R157798; described in the Substitute Trustree's Deed, recorded as Document No. R087719; described in
	COMMUNITY NO.: 480287	
AFFECTED MAP PANEL	NUMBER: 48201C0505L	
	DATE: 6/18/2007	
FLOODING SOURCE: P130-00-00 (GARNERS BAYOU)		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 29.952, -95.246 SOURCE OF LAT & LONG: ESRI: FEMA GEOCODE/GOOGLE MAPS DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
--	--	39.48 Acre Tract	3623 Wilson Road	Portion of Property	X (unshaded)	58.8 feet	--	--

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
DETERMINATION TABLE (CONTINUED)
PORTIONS REMAIN IN THE FLOODWAY
FILL RECOMMENDATION
GROUND SUBSIDENCE

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Revision based on Fill for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the described portion(s) of the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document revises the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Kevin C. Long

Kevin C. Long, Acting Chief
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

described in the Warranty Deed, recorded as Document No. P682281; and described in the Warranty Deed, recorded as Document No. R015622; all deeds recorded in the Office of the County Clerk, Harris County, Texas

Please note: All Elevations in this Determination Document are referenced to the North American Vertical Datum of 1988 (2001 Adjustment)

The portion of properties are more particularly described by the following metes and bounds:

39.48 Acre Tract
COMMENCING at a 5/8 inch iron rod with cap (RPLS 4524) found for the most Southerly Southwest corner of said 136.132 acre tract and from which a ¾ inch iron pipe found for the Southeast corner of said 136.132 acre tract bears N 87°45'28" E, 1926.05 feet and the Southeast corner of said 116.132 acre tract bears S 02°35'52" E, 229.38 feet; thence North 02°35'52" W along the West boundary line of said 136.132 acre tract and the East boundary line of said 116.3526 acre tract a distance of 648.83 feet to the Point of BEGINNING; thence N 48°35'08" W a distance of 422.39 feet to a point of curve; thence in a Northwesterly direction, following a curve to the left; said curve having a radius of 1400.00 feet, a central angle of 46°56'43", a long chord of N 72°03'30" 1115.27 feet; for a arc length of 1147.09 feet to a point of tangent; thence the following courses; N 5°31'51" W, 40.68 feet; N 14°19'07" E, 181.25 feet; N 40°38'00" E, 113.96 feet; S 84°15'54" E, 79.97 feet; S 63°52'02" E, 178.72 feet; N 82°59'38" E, 259.89 feet; N 17°22'46" E, 85.89 feet; N 57°52'20" W, 96.99 feet; N 61°07'45" W, 504.72 feet; N 35°44'02" W, 82.20 feet; N 02°27'19" E, 53.66 feet; N 32°43'19" E, 60.25 feet; S 88°28'32"E, 201.63 feet; S 68°50'09" E, 320.18 feet; S 39°38'28" E, 243.30 feet; S 08°11'21" E, 153.57 feet; N 77°38'28" E, 99.47 feet; N 89°29'36" E, 354.63 feet; S 88°06'52" E, 356.71 feet; N 78°36'24" E, 201.42 feet; N 89°23'30" E, 149.44 feet; N 51°51'03" E, 111.63 feet; N 85°33'35" E, 118.20 feet, S 19°59'35" E, 169.03 feet; S 12°05'35" E, 145.81 feet; S 59°34'15" W, 110.02 feet; S 69°18'23" W, 135.67 feet, S 01°22'34" W, 139.13 feet; S 12°57'47" E, 96.96 feet; S 27°47'18" E, 60.21 feet; S 68°32'24" E, 80.54 feet; S 44°20'19" E, 154.49 feet; S 08°00'34" E, 78.43 feet; S 13°18'44" W, 65.04 feet; S 44°20'58" E, 215.21 feet; N 29°46'03" E, 75.55 feet; N 37°10'13" E, 138.67 feet; N 46°04'31" E, 194.16 feet; S 45°09'29" E, 71.28 feet; S 33°47'23" W, 89.13 feet; S 39°33'17" W, 163.61 feet; S 16°30'48" W, 66.24 feet; S 87°44'13" W, 1020.91 feet; N 63°08'56" W, 86.31 feet; N 48°35'08" W, 61.40 feet to the Point of BEGINNING

0.04 Acre Tract
COMMENCING at a 5/8 inch iron rod with cap (RPLS 4524) found for the most Southerly Southwest corner of said 136.132 acre tract and from which a ¾ inch iron pipe found for the Southeast corner of said 136.132 acre tract bears N 87°45'28" E, 1926.05 feet; thence N 66°57'07" E, a distance of 1590.54 feet to the Southwest corner of this 0.04 acre tract and the Point of BEGINNING; thence N 25°00'22" E, a distance of 33.24 feet to a point for corner; thence N 83°38'56" E, a distance of 30.35 feet to a point for corner; thence S 55°18'56" E, a

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Kevin C. Long

Kevin C. Long, Acting Chief
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

distance of 52.75 feet to the Southeast corner of this 0.04 acre tract; thence S 87°44'13" W, a distance of 87.65 feet to the Point of BEGINNING

DETERMINATION TABLE (CONTINUED)

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
--	--	0.04 Acre Tract	3623 Wilson Road	Portion of Property	X (unshaded)	58.2 feet	--	--

PORTIONS OF THE PROPERTY REMAIN IN THE FLOODWAY (This Additional Consideration applies to the preceding 2 Properties.)

A portion of this property is located within the Special Flood Hazard Area and the National Flood Insurance Program (NFIP) regulatory floodway for the flooding source indicated on the Determination/Comment Document while the subject of this determination is not. The NFIP regulatory floodway is the area that must remain unobstructed in order to prevent unacceptable increases in base flood elevations. Therefore, no construction may take place in an NFIP regulatory floodway that may cause an increase in the base flood elevation, and any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management. The NFIP regulatory floodway is provided to the community as a tool to regulate floodplain development. Modifications to the NFIP regulatory floodway must be accepted by both the Federal Emergency Management Agency (FEMA) and the community involved. Appropriate community actions are defined in Paragraph 60.3(d) of the NFIP regulations. Any proposed revision to the NFIP regulatory floodway must be submitted to FEMA by community officials. The community should contact either the Regional Director (for those communities in Regions I-IV, and VI-X), or the Regional Engineer (for those communities in Region V) for guidance on the data which must be submitted for a revision to the NFIP regulatory floodway. Contact information for each regional office can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/about/regoff.htm.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

Kevin C. Long

Kevin C. Long, Acting Chief
Engineering Management Branch
Mitigation Directorate

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

FILL RECOMMENDATION (This Additional Consideration applies to the preceding 2 Properties.)

The minimum NFIP criteria for removal of the subject area based on fill have been met for this request and the community in which the property is located has certified that the area and any subsequent structure(s) built on the filled area are reasonably safe from flooding. FEMA's Technical Bulletin 10-01 provides guidance for the construction of buildings on land elevated above the base flood elevation through the placement of fill. A copy of Technical Bulletin 10-01 can be obtained by calling the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or from our web site at http://www.fema.gov/mit/tb1001.pdf. Although the minimum NFIP standards no longer apply to this area, some communities may have floodplain management regulations that are more restrictive and may continue to enforce some or all of their requirements in areas outside the Special Flood Hazard Area.

GROUND SUBSIDENCE (This Additional Consideration applies to the preceding 2 Properties.)

The location of this request is in an area subject to ground subsidence, the lowering of the ground as a result of natural occurrences such as soil settlement, or artificial occurrences such as the extraction of water or oil from the ground. While the elevations submitted with this request show the subject property is currently above the Base Flood Elevation (BFE), the property may "subside" with the passage of time to the extent that property elevations could be below the BFE and flood insurance may be required.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 6730 Santa Barbara Court, Elkridge, MD 21075.

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