Docket No. 2014-1487-MSW
Municipal Solid Waste Permit No. 1312A

APPLICATION OF:	§	**BEFORE THE**
	§	
THE CITY OF FARMERS BRANCH,	§	
CAMELOT LANDFILL TX, LP	§	**TEXAS COMMISSION ON**
MODIFICATION FOR SLURRY	§	
WALL INSTALLATION and	§	
MONITOR WELLS INSTALLATION	§	**ENVIRONMENTAL QUALITY**

MOTION TO OVERTURN AND REQUEST FOR STAY

TO THE HONORABLE COMMISSIONERS:

COMES NOW, the City of Carrollton and files this Motion to Overturn the Executive Director's decision to grant the City of Farmers Branch's ("Applicant" or "City of Farmers Branch") application for a modification to authorize the installation of a slurry wall and monitor wells at the Camelot Landfill, located in Denton County, Texas and operating under municipal solid waste Permit Number 1312A. In addition, Carrollton requests a stay of the Executive Director's ("ED") decision to grant the Permit Modification until the Commission has ruled on the Motion to Overturn. In support, the City of Carrollton shows the following:

I. Background

The City of Farmers Branch owns the Camelot Landfill, which is located in the City of Lewisville, in Denton County, Texas. The eastern boundary of the landfill is adjacent to the municipal city limits of the City of Carrollton and real property owned by the City of Carrollton.[1] Volatile organic compounds (VOCs) and other hazardous constituents have been detected in groundwater samples from monitoring wells at the Camelot landfill for approximately two decades.[2] Despite having almost 20 years to correct the problem, VOCs in

[1] App. Ex. 8, Camelot Landfill Location Map. The City of Carrollton has filed an Appendix in Support of Motion to Overturn. Documents contained in the Appendix will be referred to as "App. Ex."

[2] App. Ex. 14 (VOCs exceeding the maximum contaminate level ("MCL") detected in MW-4 in 1994 and MW-10 in 1996); App. Ex. 33, Contamination Plume; App. Ex. 2, Permit Modification at pp. 1-3; App. Ex. 1, Major Amendment, Part III, Site Development Plan, Appendix IIIH, Groundwater Monitoring, Sampling and Analysis

certain observation wells at Camelot still exceed the groundwater protection standards ("GWPS") and VOC levels are increasing in multiple point-of-compliance ("POC") wells.[3]

In December 2012, the Applicant filed an application to modify Permit Number 1312A to allow it to install a slurry wall and additional monitor wells as an additional "corrective measure" to address the contamination (the "Permit Modification").[4] Specifically, the City of Farmers Branch sought authorization to install a slurry wall along portions of the eastern, southern, and southwestern portions of the landfill in the vicinity of the contamination.[5]

In June 2014, Carrollton filed comments objecting to the Permit Modification.[6] In September 2014, TCEQ staff filed responses to the City of Carrollton's comments.[7] On September 18, 2014, the Executive Director (the "ED") issued final approval of the Permit Modification.[8] The Chief Clerk's letter notifying the persons on the mailing list for this matter of the ED's final approval of the Permit Modification is dated September 23, 2014.[9] This Motion to Overturn is timely as it is filed within 23 days of the date of that letter.

II. Summary of Argument

The Permit Modification was improperly granted because the Applicant failed to demonstrate that it met all relevant statutory and regulatory criteria. The Commission should reverse the ED's decision to issue the Permit Modification because:

- The Permit Modification was improperly administered as a notice modification;
- The Permit Modification does not comply with 30 TAC §§ 330.409;
- The Permit Modification does not comply with 30 TAC §§ 330.411;

Plan (GWSAP), Table III-H-B-2, IIIH-B-18 to III-B-69; App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 25, 44-48.

[3] App. Ex. 31, 2013 Annual Groundwater Detection / Assessment Monitoring Report, February 2014; Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 113-121.

[4] App. Ex. 2, Permit Modification.

[5] *Id*.

[6] App. Ex. 4, City of Carrollton's Permit Modification Comments.

[7] App. Ex. 5, TCEQ Staff's Responses to City of Carrollton Comments.

[8] App. Ex. 6, TCEQ ED's Final Approval of Permit Modification.

[9] App. Ex. 7, Notice of Executive Director's Final Approval of Permit Modification

- The Permit Modification does not comply with 30 TAC §§ 330.413;
- The Permit Modification does not comply with 30 TAC §§ 330.415;
- The Applicant failed to demonstrate that the proposed slurry wall will achieve source containment; and,
- The Applicant has failed to discuss the excavation, storage, or disposal of hazardous substances.

For these and other reasons, the City of Carrollton files this Motion to Overturn and respectfully requests that this application for a modification be denied.

III. The Applicant Failed to Demonstrate That All Relevant Statutory and Regulatory Requirements Will Be Met

A. The Permit Modification was improperly administered as a notice modification.

Nine months **before** the Permit Modification was filed, the Applicant filed an application for a major amendment for Permit Number 1312B in March 2012 (the "Major Amendment").[10] Among other things, the Major Amendment proposes an over-200 foot vertical expansion over the pre-Subtitle D portion of the landfill.[11] The contamination plume is located down-gradient of the pre-Subtitle D portion of the landfill.[12] In the Permit Modification, the Applicant claims that the slurry wall "is an institutional control that is designed to provide a hydraulic barrier between the landfill and the point of compliance and augments the selected remedies of landfill gas collection and control and monitored natural attention."[13]

The Major Amendment, however, proposes to install the **exact same** slurry wall proposed in the Permit Modification.[14] In fact, the Major Amendment and the Permit Modification propose substantively similar modifications to the Groundwater Sampling and Analysis Plan

[10] App. Ex. 1, Major Amendment.
[11] App. Ex. 1, Major Amendment at I/II-2-7.
[12] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 25, 44-51, 58, 118-119; App. Ex. 33, Contamination Plume; App. Ex. 29, Camelot Groundwater Monitoring Presentation to TCEQ staff.
[13] App. Ex. 2, Permit Modification at p. 25.
[14] *Compare* App. Ex. 1, Major Amendment, Site Development Plan, at IIIA-C-ii to IIIA-C-23 *and* App. Ex. 2, Permit Modification, Site Development Plan Replacement Pages, at B-ii to B-23; App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 17-23.

("GWSAP") to install a slurry wall as an additional corrective measure.[15] In the Major Amendment, the Applicant states that the slurry wall is needed to make the demonstration that GWPS will not be exceeded at the POC wells per 30 TAC § 330.331(a) for the vertical expansion over the contaminated pre-subtitle D area.[16] The Major Amendment is currently under technical review. The City of Carrollton, the City of Lewisville, state and local elected officials, and numerous residents of both cities are opposed to the proposed expansion of the Camelot Landfill.

The Major Amendment is subject to a contested-case hearing while the Permit Modification is typically only subject to notice and comment.[17] Moreover, a full permit application is required for a major amendment, but an abbreviated application, *e.g.*, only revisions to those pages of a permit or registration that are proposed to be changed, are required to be submitted for a Permit Modification.

The ED processed the Permit Modification as a notice modification pursuant to 30 TAC § 305.70(l). By doing so, Carrollton has been deprived of its opportunity to have the slurry wall – which is proposed in the Major Amendment currently under technical review – addressed in the Major Amendment process including a contested-case hearing. Carrollton filed comments stating that the Applicant was circumventing the requirements applicable to a major amendment by seeking the approval of the slurry wall in a permit modification.[18] Moreover, Carrollton objected to granting the Permit Modification, which would authorize the construction of the slurry wall by the Applicant, while the Major Amendment was pending seeking approval to

[15] *Compare* App. Ex. 1, Major Amendment, Part IIIH-H, Assessment of Corrective Measures (ACM), IIIH-H-32c to IIIH-H-32g and App. Ex. 2, Permit Modification, Attachment 1, SDP Replacement Pages (Redline/Strikeout Copy), Attachment 11, Groundwater Sampling and Analysis Plan, at pp. 25-27.
[16] App. Ex. 1, Major Amendment, Appendix IIIB, 9.1, pg. IIIB-22.
[17] *See* 30 TAC §§ 305.70(i) (relating to the submission of comments on a modification subject to notice) and 39.411(b)(10) (relating to notice of a municipal solid waste application).
[18] App. Ex. 4, City of Carrollton's Permit Modification Comments at pp. 2-4.

construct the exact same slurry wall.[19] Carrollton requested that pursuant to 30 TAC § 305.70(g)(2)(B), the ED find that the Permit Modification did not qualify as a permit modification and that the requested change required an amendment to the permit in accordance with 30 TAC § 305.62(c)(1).[20]

Section 305.62(c)(1) defines a "major amendment" as "an amendment that changes a substantive term, provision, requirement, or a limiting parameter of a permit". The slurry wall, as proposed in the Major Amendment, is as an integral component of the waste containment system designed to meet the POC requirements of 30 TAC 330.331(a)(1).[21] As such, it constitutes a substantive term, requirement or limiting parameter of the permit. It cannot proceed as a Permit Modification, as a matter of law. In this case, it constitutes a "major amendment."

TCEQ staff, however, responded to Carrollton's comments stating that permit modification are available for minor changes that do not substantially alter permit conditions or reduce the capability of the facility to protect human health and environment.[22] The ED determined that the slurry wall met these requirements and stated that authorization of the slurry wall as part of the waste containment system is subject to the procedural and public participation requirements for a major amendment.[23] The response, however, fails to acknowledge that as a practical matter, once a slurry wall is installed it will be nearly impossible to completely "un-install" and it may be difficult to make necessary modifications to it based on the outcome of the contested-case hearing on the Major Amendment. Since a Major Amendment is already pending seeking to install the exact same slurry wall, the Permit Modification should be denied and the slurry wall should be addressed in the pending Major Amendment.

[19] *Id*.
[20] *Id*.
[21] *See, e.g.*, App. Ex. 1, Major Amendment at IIIA-4, IIIA-8, IIIB-1 and Figure 1.2.
[22] App. Ex. 5, TCEQ Staff's Response to Slurry Wall Comments at p. 1.
[23] *Id*.

B. **The Permit Modification does not comply with 30 TAC § 330.409**.

30 TAC § 330.409(g)(B) states that if constituents are detected at statistically significant levels above the groundwater protection standard ("GWPS") during a sampling event, the owner or operator of the a municipal solid waste ("MSW") landfill "**install at least one additional monitoring well between the monitoring well with the statistically significant level and the next adjacent wells along the point of compliance before the next sampling event** and sample these wells in accordance with subsection(d)(1) of this section….". (emphasis added).

In the Permit Modification, the Applicant seeks to install additional monitor wells.[24] The Permit Modification, however, fails to install the required additional monitoring wells between the monitoring wells with statistically significant levels and the next adjacent wells in accordance with 30 TAC § 330.409 (g)(1)(B).[25] In its comments, the City of Carrollton stated that the Permit Modification, which includes revisions to the Corrective Action Plan, fails to comply with 30 TAC § 330.409.[26] TCEQ staff responded by claiming that additional monitor wells had been installed cross gradient and down gradient from the impacted monitor wells "MW-10, MW-11, and MW-12 in accordance with 30 TAC § 330.409 ….".[27] The plume of contamination exceeding the GWPS, however, includes monitoring wells MW-12, MW-12A, MW-11, MW-10, MW-10A, and MW-26.[28] No new monitor wells have been installed between each of the impacted monitor wells and the next adjacent well along the point of compliance ("POC") and the Permit Modification falls to include the installation of the required additional wells.[29] As such, the Applicant's Permit Modification should be rejected and the ED should

[24] App. Ex. 2, Permit Modification at p. 5 & Figure 1.
[25] 30 TAC § 330.409(g) became effective in 2006. The Applicant also failed to comply with the requirements contained in the predecessor rule 30 TAC § 330.235(g).
[26] App. Ex. 4, Slurry Wall Comments at pp. 11-12.
[27] App. Ex. 5, TCEQ Staff's Response to Slurry Wall Comments at p. 3.
[28] App. Ex. 33, Contamination Plume.
[29] *See* App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 58-60; App. Ex. 33, Contamination Plume; App. Ex. 2, Permit Modification.

demand that the Applicant comply with 30 TAC § 330.409.

C. **The Permit Modification does not comply with 30 TAC §§ 330.411**

30 TAC § 330.411(a) states that the owner or operator of a landfill shall initiate an assessment of corrective measures within 90 days of discovering that constituents of concern have been detected at statistically significant levels above the GWPS and shall complete it within 180 days of initiating the assessment.[30] VOCs and other constituents of concern exceeding the GWPS were detected at the Camelot landfill as early as 1996,[31] but an Assessment of Corrective Measures was not completed until 2009.[32] In 2010, the Applicant selected the pre-existing landfill gas collection and control system ("LFGCCS") and monitored natural attenuation ("MNA") as the selected remedies to address the contamination despite evidence showing that VOC levels had continued to increase even after the LFGCCS had been installed and expanded multiple times.[33] Not surprisingly, the selected remedies of LFGCCS and MNA have not worked. Despite having almost 20 years to correct the problem, VOCs in certain observation wells at Camelot still exceed the GWPS and VOC levels are increasing in multiple POC wells.[34]

The Applicant now proposes to install a slurry wall – the exact same slurry wall the Applicant was already proposing to install in the Major Amendment – as an additional corrective measure to "augment" the failed LFGCCS and MNA remedies.[35] The Applicant, however, has made no attempt to comply with 30 TAC § 330.411 with respect to the proposed slurry wall remedy. Both EPA and TCEQ rules (40 CFR §258.56 and 30 TAC § 330.411) require a landfill owner or operator to conduct a careful and thorough deliberative process when the release of

[30] *See* 30 TAC § 330.411(a).
[31] App. Ex. 14 (VOCs exceeding the maximum contaminate level ("MCL") detected in MW-4 in 1994 and MW-10 in 1996); App. Ex. 33, Contamination Plume; App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 25, 44-48.
[32] *See* App. Ex. 23, Assessment of Corrective Measures.
[33] *See* App. Ex. 26, Selection of Remedy; App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 55.
[34] App. Ex. 31, 2013 Annual Groundwater Detection / Assessment Monitoring Report, February 2014; Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 113-121.
[35] *See* App. Ex. 2, Permit Modification at p. 25.

hazardous constituents occurs into the environment in order to select an appropriate corrective measure.[36] This process requires the evaluation of a wide range of potential remedial alternatives including investigation, identification, and removal of the solid and potentially hazardous waste that is the source(s) of the environmental contamination. Applicant has not done a thorough analysis of any of this.

While the Applicant prepared a 2009 Assessment of Corrective Measures and 2010 Selection of Remedies choosing LFGCCS and MNA as remedies,[37] the Applicant has made no attempt to conduct a new or substantively-revised assessment of corrective measures and selection of remedies in accordance with 30 TAC § 330.411 with respect to the proposed slurry wall.[38] 30 TAC § 330.411(c) requires an applicant to address the "effectiveness" of a potential corrective measure. The Applicant has consistently maintained that landfill gas – and not leachate – is the conduit for the movement of VOCs from the landfill to the groundwater down gradient of the pre-Subtitle D area. In fact, the Applicant emphatically claims in the Permit Modification that "the GWPS exceedances were caused by landfill gas migration."[39] In the Assessment of Corrective Measures, the Applicant rejected a slurry wall as an alternative remedy claiming that a slurry wall "does nothing to reduce the mass or source of VOCs and arsenic."[40]

But if landfill gas is causing the contamination and a slurry wall will "do nothing" to reduce the mass or source of the contamination, why is the Applicant proposing a slurry wall in the Permit Modification? The Applicant calls the slurry wall an additional hydraulic barrier, but if landfill gas is the conduit of the migration of hazardous constituents, why is an additional hydraulic barrier needed? Has leachate from the pre-Subtitle D area of the landfill breached the sidewall or in-situ shale liner and thus into the groundwater or the underlying Woodbine aquifer?

[36] Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 65-77.
[37] *See* App. Ex. 23, Assessment of Corrective Measures and App. Ex. 26, Selection of Remedy.
[38] *See* App. Ex. 1, Permit Modification.
[39] App. Ex. 2, Permit Modification, page 2.
[40] App. Ex. 23, Assessment of Corrective Measures at p. 12.

Is groundwater passing through the landfill? If leachate is in fact the conduit of the migration of hazardous constituents, then the Applicant must make this demonstration in the Assessment of Corrective Measures and explain how a slurry wall will be the appropriate remedy to reduce or eliminate the migration of hazardous constituents in the selection of remedies. The Applicant has simply made no attempt to analyze the effectiveness of a slurry wall in accordance with the requirements of 30 TAC § 330.411(c). Rather than comply with 30 TAC § 330.411(c), the Applicant states that "the TCEQ has suggested that the installation of the slurry wall …. would be considered an enhancement to the current Corrective Action Plan ….".[41] But simply saying that TCEQ staff views a slurry wall as an enhancement is not sufficient to comply with the detailed requirements of 30 TAC § 330.411(c).

In response to Carrollton's comments, TCEQ staff stated that in evaluating the effectiveness of potential corrective measures in accordance with 30 TAC § 330.411(c), the ED relied on EPA documentation regarding the use of slurry walls as hydraulic barriers.[42] The response also asserts that state law, Texas Water Code § 26.351(3) supports the use of a slurry wall as a corrective action measure.[43] Texas Water Code § 26.351(3), however, addresses taking corrective action in response to a release from an underground or aboveground storage tank, not a landfill. With respect to the EPA publication, the Applicant is required to conduct an assessment in compliance with 30 TAC § 330.411(c), not the ED. And while a properly designed, constructed, and monitored slurry wall installed by an experienced slurry contractor professionally supervised by an experienced slurry wall engineer in a location that has suitable site-specific subsurface conditions and materials can produce an effective hydraulic barrier, the Applicant has wholly failed to make these demonstrations in the Permit Modification.

[41] App. Ex. 2, Permit Modification at p. 1.
[42] *See* App. Ex. 5, TCEQ Staff's Response to Comments at p. 4.
[43] *Id*.

The Applicant has failed to even explain why a slurry wall is necessary and how it will be effective in containing, controlling, and removing the contamination. Simply pointing to a general EPA document is not a proper assessment. Finally, the Applicant has made no attempt to comply with 30 TAC § 330.411(d) which requires a landfill owner to discuss the results of a corrective measures assessment in a public meeting prior to selecting a remedy. The Applicant has never discussed the effectiveness of the slurry wall remedy in a public meeting in accordance with 30 TAC § 330.411(d). Carrolton pointed out this deficiency in its comments but TCEQ staff failed to address 30 TAC § 330.411(d) in the response.[44] The Permit Modification should be denied and the Applicant should be required to prepare the required assessment of remedies explaining how a slurry wall will be effective at controlling the source and hold a public meeting before selecting a slurry wall as an additional remedy.

D. **The Permit Modification does not comply with 30 TAC §§ 330.413**

30 TAC § 330.413 states that based on the results of the ACM conducted under 30 TAC § 330.411, the Applicant "shall select a remedy that, at a minimum, meets the standards listed in subsection (b) of this section." The Applicant must submit a report to the ED for review and approval. The report "shall describe the remedy or remedies proposed for selection and the way it or they meet the standards in subsection (b) of this section."[45] As shown, the Applicant has simply made no attempt to analyze the effectiveness of a slurry wall in accordance with the requirements of 30 TAC § 330.411(c) or the requirements of 30 TAC § 330.413(b).

First, the source of the hazardous constituents has never been properly identified by the Applicant. 30 TAC § 330.413(b)(3) requires the remedy to control the source(s) of releases so as to reduce or eliminate, to the maximum extent practicable, further releases of 40 CFR 258 Appendix II constituents into the environment. In order to control the source(s) of the hazardous

[44] *Id*.
[45] 30 TAC § 330.413(a).

constituents, the size and location of the source(s) must be known. The Applicant must investigate its landfill in order to determine where the hazardous constituents were disposed and therefore are released into the environment. The Camelot landfill is over 4,000 feet long along its southern boundary where the groundwater is being impacted by hazardous constituents. These hazardous constituents listed in Appendix II of 40 CFR Part 258 are manmade, chlorinated hydrocarbons that do not occur in nature.

These same chlorinated hydrocarbons have been regulated as a hazardous waste since approximately concurrent with the time when the Camelot landfill was initially operational in the early 1980's and these chemicals are restricted for disposal in municipal landfills. It is likely that disposal of these hazardous constituents occurred at one or more discrete locations and are not common to the municipal refuse that is pervasive throughout the landfill. Because the Applicant has not conducted the required investigations of the source(s), it is not known how, where, and how much of these chemicals were disposed in the landfill. Moreover, the size and scope of the source(s) or plume of contamination within the landfill is unknown. This information is necessary to allow an appropriate remedy selection process under the EPA and TCEQ rules.

Second, the Applicant has failed to address the effectiveness of the slurry wall remedy "in controlling the source to reduce further releases" in accordance with 30 TAC § 330.413(c)(2). As explained in the prior section the Applicant has not explained how the proposed slurry wall will control the further migration of hazardous constituents into the groundwater.

Third, the slurry wall will be installed up gradient of MW-26, MW-27, MW-28, MW-12A, and MW-10A.[46] VOCs have been detected in samples from each of these wells. As such, the VOC plume is already down gradient of the proposed slurry wall. The Applicant fails to

[46] *See* App. Ex. 1, Major Amendment, GWSAP, Table 2-1, Observation Wells, IIIH-2e & Figure IIIH-A-1; App. Ex. 33, Contamination Plume.

explain how the slurry wall will stop the further migration of the hazardous constituents already found in MW-26, MW-27, MW-28, MW-12A, and MW-10A.

In response to Carrollton's detailed comments regarding the Applicant's failure to comply with 30 TAC § 330.413, TCEQ staff responded by simply stating that the ED previously determined that the 2009 Assessment of Corrective Measures complied with 30 TAC § 330.411 and 30 TAC § 330.413.[47] But this is irrelevant. The 2009 Assessment of Corrective Measures concluded that a slurry wall "does nothing to reduce the mass or source of VOCs and arsenic" but "continued operation of the LFGCCS should remediate not only migrating gas, but also address the groundwater (arsenic and VOCs) issues in the affected wells by control of the source."[48]

The ED may have approved this ACM in 2009, but the ED obviously does not agree with the statements contained in the 2009 ACM any longer. And why should the TCEQ staff or ED agree with the claims made in the 2009 ACM? The Applicant's installation of a LFGCCS in 2005, expansion of the LFGCCS in 2007-2008, and the further expansion of the LFGCCS in 2009-2010, have all failed to reduce or eliminate VOC detections and concentrations in groundwater monitoring wells.[49] In fact, increasing trends of VOC are shown in time-history plots for background well MW-1R and "point of compliance" groundwater monitoring wells MW-9, MW-26, MW-27 and "observation" wells MW-11, MW-12, MW-10A, and MW-12A.[50] Moreover, VOC in the observation wells are above GWPS.[51] As such, history shows that the Applicant's conclusions regarding contamination at the site are inaccurate at best and misleading

[47] *See* App. Ex. 5, TCEQ Staff's Response to Comments at p. 4.
[48] App. Ex. 23, Assessment of Corrective Measures at p. 12.
[49] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 36 and ¶¶ 25-57 (noting that Applicant's corrective measures since 2001 have proven unreliable, uninformed, misleading, and ineffective).
[50] *See* App. Ex. 31, 2013 Annual Groundwater Detection / Assessment Monitoring Report, February 2014.
[51] *Id*.

at worst. Because the Applicant has failed to comply with TAC § 330.413, the Permit Modification should be denied.

E. **The Permit Modification does not comply with 30 TAC §§ 330.415**

30 TAC § 330.415 requires the Applicant to initiate and complete the proposed remedial activities based on the scheduled established under § 330.413(d).[52] 30 TAC § 330.415(d) states, "All solid wastes that are managed in accordance with a remedy required under § 330.413 of this title, or an interim measure required under subsection (a)(3) of this section, shall be managed in a manner that is protective of human health and the environment and that complies with applicable Resource Conservation and Recovery Act requirements."

In the introduction of the RCRA Corrective Action Plan (Final), OSWER Directive 9902.3-2A, May 1994, eight tasks are deemed necessary to ensure a complete corrective action program including locating the source the contamination, characterizing the nature and extent of the contamination, and implementing corrective measures to prevent and remediate the release of hazardous constituents. As shown, the Applicant has not located the source of the contamination, properly characterized the nature and extent of the contamination, or implemented corrective measure to prevent or remediate the contamination.[53] As such, Applicant has not complied with 30 TAC §330.415(d).

In addition, the Applicant has failed to comply with 30 TAC § 330.415(b). 30 TAC § 330.415(b) states that if the requirements of § 330.413(b) are not being achieved with the selected remedies (as in this case), the landfill or operator must implement other remedies that achieve compliance with § 330.413(b). As shown, the Applicant has failed to make the required demonstrations that a slurry wall remedy will achieve compliance with § 330.413(b). In response to Carrolton's comments regarding the Applicant's failure to comply with § 330.415,

[52] *See* 30 TAC § 330.415(a).
[53] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶¶ 95-105.

TCEQ staff provided a brief response stating that the ED has determined that Applicant is in compliance with 30 TAC § 330.415.[54] Because the Applicant has failed to comply with TAC § 330.415, the Permit Modification should be denied.

F. **The Applicant has failed to demonstrate that the proposed slurry wall will achieve source containment**.

In the Permit Modification, the Applicant claims that the slurry wall is an additional "hydraulic barrier" between the landfill and the POC wells but fails to make the required demonstrations that the proposed slurry wall will actually control the source of the contamination or act as an effective hydraulic barrier.

1. **The Applicant has not identified the source of the contamination.**

As shown, the Applicant has never identified the source of the contamination and has failed to explain the purpose of the slurry wall or demonstrate how it will achieve source containment. If landfill gas is the source as the Applicant claims, the Applicant has failed to demonstrate how the slurry wall will contain the landfill gas. In fact, above the water table the slurry wall soil-bentonite backfill will desiccate and crack similar to existing soils during hot, dry periods.[55] This is a consequence of the moderate to high plasticity of the soil-bentonite backfill.[56] As such, the slurry wall will not prevent landfill gas migration, the alleged culprit of the contamination.[57]

If leachate is the source, the Applicant must state that leachate is the source in revised Nature and Extent and ACM reports. The Applicant is putting the cart before the horse by proposing a slurry wall "remedy" without properly identifying the source (leachate presumably) and preparing an appropriate ACM detailing how the slurry wall will control the source.

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[54] *See* App. Ex. 5, TCEQ Staff's Response to Comments at p. 4.
[55] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 153.
[56] *Id*.
[57] *Id*.

2. **The proposed slurry wall cannot contain contamination already down-gradient**.

MW-26 is showing an increasing trend of cis-1,2-Dichloroethyene (cis-1,2-DCE), 1,1-Dicloroethane (1,1-DCA), and trans-1,2-Dichloroethylene (trans-1,2-DCE) and has detected Vinyl Chloride (VC) above the GWPS.[58] MW-27 is showing an increasing trend of cis-1,2-Dichloroethyene (cis-1,2-DCE) and 1,1-Dicloroethane (1,1-DCA).[59] MW-26 and MW-27 are both located down gradient of the slurry wall near the Elm Fork of the Trinity River.[60] Due to the wells location near the Trinity River, it is possible that cis-1,2-Dichloroethyene (cis-1,2-DCE), 1,1-Dicloroethane (1,1-DCA), trans-1,2-Dichloroethylene (trans-1,2-DCE) and Vinyl Chloride (VC) have already migrated from the landfill to or near the Elm Fork of the Trinity River and/or Midway Branch.

The proposed slurry wall, however, will be installed up gradient of MW-26, MW-27, MW-28, MW-12A, and MW-10A.[61] In MW-10A, Vinyl Chloride (VC) concentrations have been well above the MCL of 2 UG/L since 2011.[62] In MW-12A, concentrations of TCE have been above the GWPS since it was installed in 2009. The concentration of cis-1,2-Dichloroethyene (cis-1,2-DCE) have doubled since the well was installed in 2009 and is currently at a record high.[63] Moreover, the cis-1,2-DCE concentrations have been well above the MCL of 70 µG/L and increasing since the well was installed in 2009.[64] Furthermore, the trend for trans-1,2-Dichloroethylene (trans-1,2-DCE) is steadily increasing.[65] As such, harmful contaminants are already down gradient of the proposed slurry wall. Thus, the slurry wall will

[58] *See* App. Ex. 31, 2013 Report, Assessment Monitor Wells, p. 341.
[59] *Id*. at 342.
[60] *See* App. Ex. 1, Major Amendment, GWSAP, Table 2-1, Observation Wells, IIIH-2e & Figure IIIH-A-1.
[61] *Id*.
[62] *See* App. Ex. 31, 2013 Report, Assessment Monitor Wells, p. 346.
[63] *Id*. at 347.
[64] *Id*.
[65] *Id*.

not stop the further migration of the hazardous constituents already found in MW-26, MW-27, MW-28, MW-12A, and MW-10A

3. **The Applicant has failed to demonstrate that the Eagle Ford shale is a competent confining unit**.

The Applicant proposes to install a slurry wall along the eastern and southern side of the landfill.[66] The Applicant proposes keying the slurry wall three feet into the unweathered shale.[67] The Applicant claims that the slurry wall trench will be "extended to key into the aquiclude material (i.e., the unweathered shale) to form a bottom seal. The proposed slurry wall will be keyed a minimum of three feet into the aquiclude below the alluvial strata."[68] The Applicant's claim that the slurry wall will act as a hydraulic barrier is premised on the idea that the slurry wall will be keyed into the Eagle Ford Shale that will act as an "aquiclude." The Applicant, however, has failed to demonstrate that the Eagle Ford shale is an effective lower hydraulic confining unit present for purposes of "keying" the proposed slurry wall into an aquitard or aquiclude. Moreover, the data presented in the Major Amendment and geologic data from the neighboring DFW landfill suggests that the unweathered Eagle Ford Shale at the site is not a continuous competent confining unit.

In addition, the Applicant has failed demonstrate the presence and thickness of the Eagle Ford shale at the Camelot Landfill. Instead, the Applicant makes unsubstantiated assumptions regarding the presence and thickness of the Eagle Ford shale without supporting scientific data. The Applicant has not drilled and sampled any borings along the alignment of the slurry wall to determine the total thickness of the Eagle Ford shale. The data from the nearby DFW landfill indicates that the Eagle Ford is not present near sections of the Elm Fork. As such, the Applicant

[66] App. Ex. 2, Permit Modification, Figure 1.
[67] App. Ex. 2, Permit Modification, at p. 4.
[68] *Id*.

has failed to demonstrate that the Eagle Ford shale is an effective lower hydraulic confining unit in the area of the slurry wall.

Considering the consequences of a failure to contain elevated concentrations (above MCL) of chlorinated VOCs, reliance on the Eagle Ford as a competent, effective confining unit at this site appears unwarranted. The following data supplied by the Applicant in connection with the Major Amendment suggests that the Eagle Ford Shale at the site is more transmissive than typically encountered in the area:

- **Unit dry weights**. The unit dry weights are unusually low for the Eagle Ford indicating that significant weathering, i.e., change in properties, has occurred. In the Major Amendment, the Applicant lists mean dry unit weights of 113.7 pounds per cubic foot (pcf) for "weathered shale" and 111.4 pcf for "unweathered shale."[69] Not only is the mean value for unweathered shale unusually low – typical values are in the 115 to 120 pcf range – but the unweathered shale is actually **less dense** than the weathered shale. Since weathering reduces density, Table 3-1 raises serious questions about the quality and properties of "unweathered shale." Causal factors could include the reduced thickness near the western edge and recent unloading from documented, previous sand and gravel mining over much of the site. Reduced unit dry weights are favorable for increased transmissivity.

- **Permeability test results**. The laboratory permeability test results are higher than typically encountered. In the Major Amendment, the Applicant reports that the unweathered Eagle Ford shale zone indicates a mean vertical laboratory hydraulic conductivity (permeability) of only 2.5×10^{-8} cm/sec.[70] Horizontal laboratory permeability would be at least an order of magnitude more, i.e., approximately 2.5×10^{-7} cm/sec. Similar geology reports at the nearby DFW Landfill concluded that horizontal permeability is an order of magnitude greater than vertical permeability and field measured values of permeability were an order of magnitude greater than laboratory results.[71] A complete tabulation of laboratory results at the Camelot Landfill is provided in Major Amendment.[72] The laboratory results appear to indicate a higher permeability than typically encountered increasing the risk of leakage through the Eagle Ford. Moreover, a prior letter from the Texas Department of Health ("TDH") indicating that a portion of the Eagle Ford shale failed as an adequate liner raises concerns.[73] Finally, a 1993 Soil and Liner Evaluation Report ("SLER") for the Camelot Landfill (relied upon by TCEQ staff in the response to comments) indicates that a signification portion (4+

[69] *See* App. Ex. 1, Major Amendment, Geotechnical Report, Table 3-1, at IIIJ-8.
[70] *See* App. Ex. 1, Major Amendment, Geology Report, Section 2.1.2.2, at IIIG-14.
[71] *See* App. Ex. 24, Geology Report, DFW Landfill, MSW #1025B, Revision 5.2, July 2009, at p. 48.
[72] *See* App. Ex. 1, Major Amendment, Geology Report, Table 3-4, at IIIG-34.
[73] *See* App. Ex. 9, July 11, 1991 letter from TDH to Farmer's Branch.

acres) of the Eagle Ford shale floor at the landfill contains slickensided faults and the Applicant was required to construct a compacted clay bottom liner.[74]

- **Boring Data**. Boring data is insufficient to adequately characterize the Eagle Ford as a sufficient confining unit.[75] As an initial matter, site-specific boring log information prior to 1995 contains very limited information on the Eagle Ford.[76] For example, the pre-1995 boring logs have limited penetration into shale (typically five feet or less), very limited sampling and small sample size (approximately one sample per boring), and limited description (typically the log simply indicates "gray shale.").[77] Moreover, subsequent borings by Reed and Carel through 2010 were similar to the pre-1995 borings and simply "tagged" the shale and provided very little information.[78]

In addition, the boring data from the deeper borings indicate wet layers, mechanical fractures, and loss of drilling mud in the Eagle Ford. In 1995, Reed performed three deep borings. The boring log for DB-1 indicates that it was drilled in an area where the overburden alluvium had been removed and that it encountered water at 29 feet.[79] Soft zones and fractures were also noted.[80] In addition, the boring log for DB-3 reported a number of fractures and slickensides.[81]

In 2010, Weaver Boos (WB) performed additional borings. Those logs contain more information than the logs performed by Carel or Reed.[82] Interestingly, a number of the WB borings used air-rotary coring in the upper portions of the shale interval and mud-rotary coring in the lower portions.[83] WB did not explain why it changed from air-rotary to mud-rotary coring. Switching from air-rotary coring to mud-rotary coring typically indicates that groundwater was encountered making air-rotary drilling difficult. In addition, identifying wet layers is relatively easy for shale intervals cored with air rotary, but becomes more difficult for the mud-rotary intervals.

[74] See App. Ex. 10, 1993 SLER at Attachment 1, p. 5.
[75] *See* App. Ex. 1, Major Amendment, Site Exploration Data, at IIIG-B-1 to IIIG-B-212.
[76] *See Id.*
[77] *See Id.*
[78] *See Id.*
[79] *Id*. at IIIG-B-65.
[80] *Id*.
[81] *Id*. at IIIG-B-68-69.
[82] *Id*. at IIIG-B-161 to *Id*. at IIIG-B-212.
[83] *Id*.

Further, and atypically, neither Rock Quality Designation (RQD) nor core recovery information was provided WB.[84] In the absence of core recovery information, the material actually logged may be a fraction of the cored interval and the absence of RQD may indicate that the core was so disturbed/damaged that adequate description and/or testing is prevented.

In addition, while the WB borings report "mechanical fractures," they do not list any typical, commonly-encountered Eagle Ford secondary structures such as joints, fissures, fractures, and slickensides.[85] This suggests that the secondary structures were either misidentified or missed altogether. Multiple boring logs, however, do identify wet bedding planes, mechanical factures, and lost drilling mud in the Eagle Ford.[86]

In addition, the WB borings logs do not contain Unified Soil Classification as required.[87]

Moreover, the Applicant has failed to demonstrate the presence and thickness of the shale throughout the site, particularly in the area near the proposed slurry wall. The vast majority of the borings conducted at the Camelot Landfill merely "tag" the top of the shale rather than penetrate to a measurable depth to verify the thickness of the shale.[88] In fact, the only WB borings that penetrate the shale to determine its thickness are located in the Northeast Section of the landfill.[89] For example, borings WB1 to WB14 located in the northern section of the landfill penetrated the shale to show thickness.[90] But in the southern portion of the landfill, borings WB15 and WB16 as well as prior borings at MW4R, MW5, MW-9, MW-10, MW-10B, MW-11,

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[84] *See Id.*
[85] *See Id.*
[86] *See Id.* (WB-1 (mechanical fractures and wet bedding planes); WB-2 (mechanical fractures and wet bedding planes); WB-4 (wet bedding planes); WB-5 (mechanical fractures and wet bedding planes); WB-6 (wet bedding plans and a loss of 60 gallons of drilling mud); WB-7 (wet bedding planes); WB-8 (wet bedding planes); WB-9 (mechanical factures); WB-10 (mechanical fractures and wet bedding planes); WB-11 (reported loss of all drilling mud); WB-12 (wet bedding planes); WB-13 (reported rounded solution cavities); and, WB-14 (reported lost drilling mud at facture zone.)).
[87] *See* 30 TAC §330.63(e)(4) (boring logs must contain a "description of each layer using the unified soil classification.").
[88] *See* App. Ex. 1, Major Amendment, Site Exploration Data, at IIIG-B-1 to *Id.* at IIIG-B-212.
[89] *Id.* at IIIG-B-2 (map), IIIG-B-161 to IIIG-B-212 (boring logs), and IIIG-C-1 to IIIG-C-12 (geologic cross sections).
[90] *See Id.*

MW-12, MW-12A, MW-12B, MW-13, MW 13-R, MW-22, MW-23, MW-24, MW-25, MW-26, MW-27, MW-28, B-6 and TB-7 merely tag the shale or penetrate a few feet into the shale.[91] This is inadequate to demonstrate shale presence or thickness, particularly when taking into account the likely presence of shale overbank shale in the area. None of the borings near the slurry wall penetrate the shale to adequately demonstrate its presence or thickness.[92]

The presence and thickness of the shale is a significant concern given the lack of Eagle Ford shale at the nearby DFW Landfill. At the DFW Landfill across the Elm Fork of the Trinity River, shale thickness varies from 0-65 feet.[93] At DFW, portions of the Eagle Ford are "believed to have been eroded by the ancient equivalent of the Trinity River."[94] In the areas where the shale is not present, "the alluvium is in direct hydraulic communication with the Woodbine."[95] In addition, recharge to the Woodbine from the Trinity River may occur at the DFW site "based on the possibility that the Eagle Ford shale is absent beneath the river."[96]

At DFW landfill, the Woodbine is monitored. The Applicant, however, does not propose to monitor the Woodbine at Camelot. The same geologic features present at DFW, however, may also be present at Camelot. Namely, the Eagle Ford may have been eroded by the ancient equivalent of the Trinity River. Moreover, the alluvium may be in direct hydraulic communication with the Woodbine. The facility boundaries of the Camelot Landfill extend to the center of the Elm Fork increasing the likelihood that the alluvium and Woodbine are in direct hydraulic communication within the facility. In sum, the Applicant has not conducted sufficient site-specific investigation to determine the presence, quality, and thickness of the shale in the area where the slurry wall will be "keyed" into the shale.

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[91] *See Id*.
[92] *See Id*.
[93] *See* App. Ex. 24, Geology Report, DFW Landfill, MSW #1025B, Revision 5.2, July 2009, at p. 29.
[94] *Id*.
[95] *Id*. at 33.
[96] *Id*. at 37.

Considering that historic shallow groundwater testing has shown a prolonged period of chlorinated VOCs above the MCLs, and increasing trends, consequences of leakage through the Eagle Ford suggest unreasonable risks.

4. **The Applicant has failed to demonstrate that the Slurry Wall will be an effective barrier to horizontal groundwater and/or DNAPL flow.**

The Applicant has failed to account for the impact of gravel on the construction and effectiveness of the slurry wall. The Camelot Landfill is an old gravel pit and the presence of gravel in the alluvium is well known.[97] The slurry wall design and CQA documents do not address the problems of gravel deposits above the Eagle Ford and their impact on construction and performance.[98] Further the one-pass method is not suited to address the gravel issue. The Permit Modification does not contain acceptance criteria or requirements for soil to be used in the backfill relative to gradation and Atterberg Limits.[99] As such, unacceptable backfill could be used in the slurry wall.[100] In fact, there is not a discussion of unacceptable materials, such as gravel, and their handling and disposition.[101] Unacceptable materials, such as coarse gravel, cannot be effectively addressed using the one-pass method.[102]

Not only does gravel pose a problem relative to quality trench excavation, inclusion of gravel in the soil-bentonite backfill can significantly increase the permeability in localized areas by creating "windows."[103] Permeable windows in the slurry wall can also create a "funnel effect" that significantly alters groundwater flow patterns and bypass down-gradient monitoring points.[104]

[97] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 145.
[98] *See* App. Ex. 2, Permit Modification; App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 146.
[99] *See Id.*
[100] *See Id.*
[101] *See Id*.
[102] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 146.
[103] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 147.
[104] *Id*.

In addition, potential non-aqueous phase liquids (NAPLs) and dense non-aqueous phase liquids (DNAPLs) from Landfill gas condensate is an unrecognized problem.[105] The top of Eagle Ford shale contours will control DNAPL movement – *i.e*. DNAPLs will follow the low points.[106] The low points, however, are also the most probable location for thicker and coarser gravel deposits due to sediment mechanics.[107] Accumulation of gravel in localized "channels" has eroded into the surface of the Eagle Ford shale.[108] The scale of these channels is often similar to the scale of the current Trinity channels and narrower than typical monitor well spacing.[109] The Applicant's Top of Shale Strata Elevation Contour Map indicates that the top of shale slopes toward the perimeter of the site.[110] As such, any DNAPL will migrate toward the perimeter.[111] The combination of DNAPLs and possible "windows" in the slurry wall caused by gravel is a realistic concern that has not been accounted for by the Applicant.[112] The Applicant has failed to demonstrate how a slurry wall will contain such DNAPLs. In fact, the proposed slurry wall does not extend along the entire western boundary of the landfill. In sum, the documented presence of buried, highly permeable gravel reduces the effectiveness of the slurry wall and may in fact funnel contamination through gravel "channels."

5. **The slurry wall will divert highly-contaminated (VOC above MCL) groundwater around its ends and into inadequately monitored areas**.

The latest groundwater elevation data from 2013 indicates a relatively flat gradient along most of the proposed alignment with the exception of the northwest corner.[113] In addition, the Groundwater Contour Maps show little change in groundwater elevations in monitoring wells along the most of the proposed alignment of the slurry wall with the lowest point near the

[105] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 148.
[106] *Id*.
[107] *Id*.
[108] *Id*.
[109] *Id*.
[110] *See* App. Ex. 1, Major Amendment, IIIG-C-11.
[111] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 148.
[112] *Id*.
[113] *See* App. Ex. 31, 2013 Report, Figures 1 & 2.

southeast corner at MW-9.[114] In addition, there is a second slight dropoff at the extreme western end near the MW-12 and MW-12A locations.[115]

As such, any "damming" or "mounding" of groundwater behind the slurry wall, a commonly-observed consequence, could easily redirect groundwater particularly around the west end.[116] Although a new monitoring well is proposed for that west-end location, MW-13R2, subsurface variation, e.g. a gravel-filled channel, could effectively route contamination around the well location.[117] The documented presence of buried, highly permeable gravel "channels" typically has more influence on groundwater movement and pollution migration than groundwater contouring.[118] As such, rather than preventing contamination, the slurry wall could have the effect of diverting highly-contaminated (VOC above MCL) groundwater around the west end and into inadequately monitored areas.[119]

6. **The slurry wall will increase the potential for leakage of highly-contaminated (VOC above MCL) groundwater into the underlying Woodbine Aquifer.**

Increased leakage of highly-contaminated (VOC above MCL) groundwater into the underlying Woodbine Aquifer is a major concern because: (1) the potential for increased head inside the slurry wall; and (2) the suspect properties of the Eagle Ford.[120] This is particularly concerning given that the Applicant is not monitoring the Woodbine and no effort has been made to define the hydraulic communication, or lack thereof, between the shallow alluvium and the Woodbine.[121] Any increase in head inside the "containment area" caused by the slurry wall

[114] *Id*.
[115] *Id*.
[116] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 151.
[117] *Id*.
[118] *Id*.
[119] *Id*.
[120] App. Ex. 34, Affidavit of Stephen D. Phillips, PG at ¶ 154.
[121] *Id*.

installation will increase the potential for leakage into the underlying Woodbine and/or horizontally under the key.[122] The goal should be to reduce the head, not increase it.[123]

G. **The Applicant has failed to discuss the excavation, storage, or disposal of hazardous substances**.

The alignment of the slurry wall passes through an area (MW-10A, 11, 12, and 12A) where the groundwater is contaminated above GWPS levels for cis-1,2 DCE, TCE, and VC.[124] Excavation for the slurry wall will bring to the surface groundwater and soils contaminated with the above hazardous substances. The Permit Modification does not address a health and safety plan, a requirement that the construction company be hazardous waste management, generation, and disposal certified, that the individuals working at the site have taken the 40 hour Hazardous Waste Site Worker Certification course with the necessary 8 hours refresher training, medical monitoring for all workers on site, a Sampling and Analysis Plan to determine levels of contamination of the groundwater and soils being excavated, a pollution prevention plan, or a plan on how to dispose of any excess water and/or soil and any water and/or soil that is contaminated above concentration levels allowed to be used in the slurry backfill.[125]

IV. Request for Stay

The Permit Modification permits Applicant to immediately install a slurry wall at the Camelot Landfill. Unless the enforcement of the Permit Modification is temporarily stayed, the Applicant may install the disputed slurry wall before the Commissioner rules on Carrollton's Motion to Overturn. Installation of the slurry wall while the Motion to Overturn is under consideration may effectively moot Carrollton's rights relating to both (1) the propriety of installing a slurry wall and (2) the appropriate manner and method of installing a slurry wall. Quite simply, once the slurry wall is installed, it will be difficult as a practical matter to

[122] *Id*.
[123] *Id*.
[124] *See* App. Ex. 33, Contamination Plume.
[125] See App. Ex. 2, Permit Modification.

completely undo such installation, thereby depriving Carrollton of its rights in connection with the Motion to Overturn. Carrollton asks that the Commission stay the enforcement of the Permit Modification until the Commission has ruled on the Motion to Overturn.

V. Conclusion

For all of the above reasons and the additional reasons contained in the Affidavit of Stephen D. Phillips, PG, the City of Carrollton requests that the application for the modification to allow the installation of the slurry wall and additional monitor wells at the Camelot Landfill be denied, or, in the alternative, requests that the application to install the slurry wall be consolidated into the City of Farmers Branch's pending application for a major amendment for the Camelot Landfill where all of the above issues can be reviewed thoroughly.

Dated: October 16, 2014

Respectfully submitted,

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