State Office of Administrative Hearings

Lesli G. Ginn
Chief Administrative Law Judge

February 17, 2017

Tucker Royall, General Counsel
Texas Commission on Environmental Quality
P.O. Box 13087
Austin Texas 78711-3087

Re: **SOAH Docket No. 582-15-2082; TCEQ Docket No. 2015-0069-MSW; In Re: Application of 130 Environmental Park, L.L.C. for Proposed Permit No. 2383**

Dear Mr. Royall:

The above-referenced matter will be considered by the Texas Commission on Environmental Quality on a date and time to be determined by the Chief Clerk's Office in Room 201S of Building E, 12118 N. Interstate 35, Austin, Texas.

Enclosed are copies of the Proposal for Decision and Order that have been recommended to the Commission for approval. Any party may file exceptions or briefs by filing the documents with the Chief Clerk of the Texas Commission on Environmental Quality no later than March 9, 2017. Any replies to exceptions or briefs must be filed in the same manner no later than March 20, 2017.

This matter has been designated **TCEQ Docket No. 2015-0069-MSW; SOAH Docket No. 582-15-2082**. All documents to be filed must clearly reference these assigned docket numbers. All exceptions, briefs and replies along with certification of service to the above parties shall be filed with the Chief Clerk of the TCEQ electronically at http://www14.tceq.texas.gov/epic/eFiling/ or by filing an original and seven copies with the Chief Clerk of the TCEQ. Failure to provide copies may be grounds for withholding consideration of the pleadings.

Sincerely,

Kerrie Jo Qualtrough
Administrative Law Judge

Sincerely,

Casey A. Bell
Administrative Law Judge/Mediator

Enclosures
cc: Mailing List

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STYLE/CASE: 130 ENVIRONMENTAL PARK LLC

SOAH DOCKET NUMBER: 582-15-2082

REFERRING AGENCY CASE: 2015-0069-MSW

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SOAH DOCKET NO. 582-15-2082
TCEQ DOCKET NO. 2015-0069-MSW

APPLICATION OF	§	BEFORE THE STATE OFFICE
130 ENVIRONMENTAL PARK, L.L.C.	§	
FOR PROPOSED PERMIT NO. 2383	§	OF
	§	
	§	ADMINISTRATIVE HEARINGS

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SOAH DOCKET NO. 582-15-2082
TCEQ DOCKET NO. 2015-0069-MSW

APPLICATION OF	§	**BEFORE THE STATE OFFICE**
130 ENVIRONMENTAL PARK, L.L.C.	§	
FOR PROPOSED	§	**OF**
PERMIT NO. 2383	§	
	§	**ADMINISTRATIVE HEARINGS**

PROPOSAL FOR DECISION

130 Environmental Park, L.L.C. (130EP) applied to the Texas Commission on Environmental Quality (TCEQ or Commission) for a municipal solid waste (MSW) permit to construct and operate the 130 Environmental Park Landfill (Facility or Site). The Facility would include a new Type I MSW landfill (Landfill) to be located on a tract of land, referred to as the Hunter Tract, in Caldwell County, Texas, more than two miles north of Lockhart, Texas. The TCEQ directly referred 130EP's application (Application) to the State Office of Administrative Hearings (SOAH), without a deadline, for a contested case hearing and the issuance of a proposal for decision (PFD).

The Executive Director (ED) supports issuance of the permit, with several parties opposed. Specifically, the following parties participated in the hearing and are opposed to the Application: Caldwell County (County); the Office of Public Interest Counsel (OPIC); and several individuals, TJFA, L.P. (TJFA), and Environmental Protection in the Interest of Caldwell County (EPICC) (collectively, Protestants). The Plum Creek Conservation District (District) also participated in the hearing but did not take a position on whether the Commission should issue the requested permit. The District has an easement on the Hunter Tract and operates the "Site 21 Reservoir," an impoundment necessary to protect human life from flooding downstream of the reservoir.

As set out in more detail in this PFD, 130EP's Application does not comply with a number of requirements in the TCEQ's rules. Specifically, the Application contains the following deficiencies:

1. The Application failed to list the District's easement on the Hunter Tract, as required by 30 Texas Administrative Code (TAC) §§ 281.5(6) and 330.59.

2. 130EP did not obtain approval from the ED of its boring plan for the subsurface investigation of the Site prior to initiating work, as required by 30 TAC § 330.63(4).

3. 130EP did not obtain a floodplain development permit from the County, as required by 30 TAC § 330.63(c)(2)(D)(ii).

The Administrative Law Judges (ALJs) leave it to the Commission's discretion whether to deny the Application based on these deficiencies. However, the parties thoroughly litigated the issues raised by the deficiencies in the contested case hearing.

In addition, the ALJs have concerns regarding the compatibility of the Landfill with the Site 21 Reservoir on the Hunter Tract. As will be discussed extensively in this PFD, the Commission must determine whether situating an MSW Landfill in very near proximity to the 100-year floodplain, immediately upstream of a flood control structure needed to protect human life, is a compatible land use.

Nevertheless, the ALJs have examined all the issues argued by the parties and conclude that, but for the noted deficiencies with the Application, 130EP has met the TCEQ's requirements for issuance of a Type I MSW landfill permit. If the Commission finds that the noted deficiencies do not warrant denial of the Application, the ALJs recommend that the Commission issue the Draft Permit with the following changes:

1. The Permit Boundary should include the entire length of the access road from the entrance at US 183 to the entrance of the Facility at the Permit Boundary.

2. The Permit Boundary should include the entire screening berm.

3. 130EP's operating hours should have the standard hours as set out in 30 TAC § 330.135.

I. JURISDICTION, NOTICE, AND PROCEDURAL HISTORY

No one contested the Commission's jurisdiction to act on the Application or SOAH's jurisdiction to convene a hearing and prepare a PFD. In addition, no one contested the adequacy of notice regarding the Application or the hearing. Therefore, the ALJs will address these issues only in the findings of fact and conclusions of law in the Proposed Order attached to this PFD.

130EP filed Parts I and II of the Application on September 4, 2013,[1] which the ED declared administratively complete on September 27, 2014.[2] 130EP filed Parts III and IV of the Application on February 18, 2014, and the ED declared those parts administratively complete on February 28, 2014.[3] The ED determined that the Application was technically complete on October 28, 2014,[4] and prepared a draft permit (Draft Permit), technical summary, and a compliance history report.[5]

On March 26, 2015, SOAH ALJs Casey A. Bell and Sharon Cloninger held a preliminary hearing in Lockhart, Texas. The ALJs admitted the County, the District, OPIC, and the ED as parties. The ALJs also admitted and subsequently aligned the following protestants: EPICC, TJFA, James Abshier, Claudia and Robert Brown, Ann and Troyce Collier, Byron Friedrich, the King Family Trust, Brenda Martin, Frank Sughrue, Bill and Pam Young, and Joe Colley.[6] Ben Pesl was also admitted as a party, but he did not participate in the contested case hearing.

The parties conducted discovery during 2015 and 2016. As a result of a discovery dispute regarding 130EP's alleged spoliation, or destruction, of discoverable materials, Protestants sought leave to enter the Site to conduct geophysical probes of 130EP's piezometers; drill up to 15 borings on the site; perform in-situ testing of the soils at the Site, including tests of

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[1] ED-SO-1 at 9.

[2] ED-SO-1 at 9.

[3] ED-SO-1 at 9.

[4] ED-SO-1 at 11-12.

[5] ED-SO-1 at 14; ED-SO-8 at 50-59, 62-73.

[6] On October 29, 2015, the ALJs unaligned TJFA from the other Protestants. *See* Order No. 7 (Oct. 29, 2015).

hydraulic conductivity; and collect samples to be tested at a lab. The ALJs allowed these parties to conduct discovery on the Hunter Tract, which they did during February and March 2016. In addition, 130EP conducted additional investigations at the Site, including soil borings and laboratory testing of collected soil samples.[7] 130EP subsequently submitted the additional information to the ED as its May 2016 supplement to the Application.[8]

On July 26, 2016, Protestants filed a motion to strike certain portions of 130EP's prefiled testimony. The basis of Protestants' motion was 130EP's alleged spoliation of discoverable material regarding its geologic interpretation and characterization of the subsurface at the Site. On August 3, 2016, 130EP responded to Protestants' motion and disagreed with their assertions. However, an affidavit confirmed that 130EP had destroyed boring samples and field logs pursuant to its consultant's retention policy and need for storage space.[9]

On August 11, 2016, the ALJs issued Order No. 26 and found that 130EP had a duty to reasonably preserve discoverable material. 130EP breached its duty because it knew or should have known that there was a substantial chance that a contested case hearing on the Application would take place, and that documents in its possession or control would be material and relevant to the hearing. By destroying the field logs and soil samples, 130EP precluded Protestants from conducting full discovery.

However, the ALJs overruled Protestants' motion to strike and admitted 130EP's prefiled evidence.[10] The ALJs determined that striking 130EP's prefiled testimony was not appropriate because any remedy must be proportionate to the prejudice suffered by Protestants due to the destruction of the discoverable material. The ALJs concluded that because Protestants were

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[7] 130EP-7.

[8] 130EP-7.

[9] 130EP Aug. 3, 2016 Response to Motion, Att. A (Affidavit of John Michael Snyder, P.G.). On page three of his affidavit, Mr. Snyder stated, "Pursuant to [Biggs & Mathews Environmental, Inc.'s] standard instructions to Stefan Stamoulis, he did not retain copies of the field logs and, pursuant to BME's standard document retention policies, neither did BME. The soil samples from the [130 EP] site that Mr. Adams and I inspected in our office were then placed in a secure storage unit, then disposed of as storage space was needed for other projects on which BME was working."

[10] Order No. 26 (Aug. 11, 2016).

allowed to conduct an investigation at the Site, outside of the discovery period, in response to their prior spoliation assertions, no other action was necessary to remedy the prejudice caused by the destruction of possible evidence.

On August 15-26, 2016, ALJs Bell and Kerrie Jo Qualtrough convened the evidentiary hearing at SOAH in Austin, Texas. The parties filed closing arguments on October 24, 2016, and responses to those closing arguments on November 28, 2016.

After the initial review of the parties' post-hearing briefs, the ALJs determined that Protestants' responses to closing arguments made new arguments regarding the sufficiency of the Application that were not included in their initial closing arguments, even though Protestants presented evidence on those issues in their direct case. Therefore, the other parties had not had opportunity to respond to those new arguments, and the ALJs allowed the parties to submit reply briefs for a full discussion of the technical issues.[11] Accordingly, the parties submitted reply briefs on December 22, 2016, and the evidentiary record closed on that date.

After the conclusion of the evidentiary hearing, 130EP and Protestants filed various motions to admit additional evidence and strike portions of closing arguments. The ALJs make the following rulings on those motions:

1. 130EP's October 24, 2016 Motion to Admit Into Evidence Invoices for Reporting and Transcription Costs – **Granted** in Order No. 29 (Nov. 2, 2016), admitting 130EP-60.

2. Protestants' November 28, 2016 Motion to Re-open the Record for Admission of Affidavit of Patton Spencer King – **Granted** in Order No. 31 (Dec. 7, 2016), admitting Protestants Ex. 46.

3. 130EP's December 13, 2016 Motion to Admit Affidavit of David Green – **Granted** in Order No. 32 (Dec. 15, 2016), admitting 130EP-61.

4. Protestants' December 22, 2016 Motion to Re-Open the Record to Admit Protestants' Exhibits P-47 & P-48 – **Denied** on the basis that the exhibits are not relevant.

[11] Order Nos. 31 (Dec. 7, 2016), 32 (Dec. 15, 2016).

5. Protestants' December 22, 2016 Motion to Strike Portions [of 130EP's] Response to Closing Arguments – **Granted in its entirety** because the referenced portions of 130EP's response go beyond the evidentiary record.

II. BACKGROUND FACTS

On September 4, 2013, 130EP filed the Application seeking authorization for the Type I Landfill for disposal of MSW, special waste, and Class 2 and Class 3 industrial wastes.[12] Special waste includes regulated asbestos-containing materials, non-regulated asbestos-containing materials, and empty containers.[13] The Facility would include the Landfill with a waste management unit boundary (Landfill footprint) of approximately 202 acres, a large item storage area, a reusable materials staging area, a citizens' convenience center, a used/scrap tire storage area, a wood waste processing area, a leachate storage facility, and a truck wheel wash.[14]

On September 4, 2013, 130EP also applied to the TCEQ for a registration authorizing a Type V MSW transfer station at the Site. On February 5, 2015, the TCEQ issued Registration No. 40269 to 130EP for the transfer station with a facility boundary consisting of the same 520 acres as the permit boundary (Permit Boundary or Facility Boundary) for the Facility.[15]

The Facility's Permit Boundary would encompass approximately 520 acres out of the 1,229-acre Hunter Tract.[16] The Hunter Tract is currently owned by Cathy Moore Hunter[17] and is located in northern Caldwell County on the northeast corner of State Highway 130 (SH 130)[18] and Farm to Market (FM) 1185, more than two miles north of Lockhart.[19]

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[12] 130EP Welch-1 at 4.

[13] 130EP-2 at 27.

[14] 130EP-1 at 43-44.

[15] 130EP-8; 130EP Welch-1 at 4-5.

[16] 130EP-1 at 42.

[17] 130EP-1 at 27, 42.

[18] At this location, US Highway 183 (US 183) runs along the SH 130 frontage road. 130EP-1 at 43, 46.

[19] 130EP-1 at 46, 58.

The Hunter Tract is subject to an easement owned by the District for use of the Site 21 Reservoir. This reservoir was created in 1962 with the construction of the Site 21 Dam, originally designed as a low-hazard dam needed to protect downstream agricultural areas from flooding.[20] Since then, development downstream of the Hunter Tract has increased, causing the Site 21 Dam to be reclassified as a high-hazard dam necessary for the protection of human life.

III. ISSUES

A. Sufficiency of Property Rights

The TCEQ requires that Part I of an application contain the information prescribed by 30 TAC §§ 281.5 and 330.59.[21] Section 281.5(6) provides that an MSW application must include "a list of adjacent and potentially affected landowners and their addresses along with a map locating the property owned by these persons."[22] The MSW rules also state that an application must include additional property owner information that includes:

> (1) the legal description of the facility;
>
> (A) the legal description of the property and the county, book, and page number or other generally accepted identifying reference of the current ownership record;
>
> (B) 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;
>
> (C) a boundary metes and bounds description of the facility signed and sealed by a registered professional land surveyor; and
>
> (D) drawings of the boundary metes and bounds description; and
>
> (2) a property owner affidavit signed by the owner that includes the following:

[20] The PFD refers to the flood-retarding structure for the Site 21 Reservoir as the "Site 21 Dam."

[21] 30 Texas Administrative Code (TAC) § 330.59(a)(1).

[22] 30 TAC § 281.5(6).

(A) acknowledgment that the State of Texas may hold the property owner of record either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the facility;

(B) for facilities where waste will remain after closure, acknowledgment that the owner has 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 § 330.19 of this title (relating to Deed Recordation); and

(C) acknowledgment that the facility owner or operator 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.[23]

In addition, Section 330.67 of 30 TAC chapter 330 includes the following requirements regarding property rights:

(a) It is the responsibility of an owner or operator to possess or acquire a sufficient interest in or right to the use of the surface estate of the property for which a permit is issued, including the access route. The granting of a permit does neither convey any property rights or interest in either real or personal property; nor does it authorize any injury to private property, invasion of personal rights, or impairment of previous contract rights; nor any infringement of federal, state, or local laws or regulations outside the scope of the authority under which a permit is issued.

(b) The owner or operator shall retain the right of entry to the facility until the end of the post-closure care period for inspection and maintenance of the facility.

(c) Executive director approval or a permit will be required if any on-site operations subsequent to closure of a landfill facility involve disturbing the cover or liner of the landfill.

(d) It is also the responsibility of an owner or operator to obtain any permits or approvals that may be required by local agencies such as for building construction, discharge of uncontaminated waters into ditches under

[23] 30 TAC § 330.59(d).

control of a drainage district, discharge of effluent into a local sanitary sewer system, etc.[24]

I. 130EP

130EP asserts that the Application contains all the necessary information required by Section 330.59(d). The current owner of the Site is Cathy Moore Hunter, a natural person.[25] 130EP and Ms. Hunter entered into an agreement for the purchase of the Hunter Tract, including the Site.[26] Prior to the development of the Facility, 130EP agreed to purchase the Hunter Tract from Ms. Hunter, and 130EP will then own and operate the Facility.[27]

As noted by 130EP, the Application includes an affidavit executed by Ms. Hunter acknowledging:

(1) the State of Texas may hold the property owner of record either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the Facility;

(2) the owner of the Site has a responsibility to file in the deed records of Caldwell County an affidavit to the public advising that the Site 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; and

(3) the Facility owner or operator and the State of Texas shall have access to the Site during the active life and post-closure care period after closure of the Facility for the purposes of inspection and maintenance.[28]

The Application also includes a metes and bounds description of the Permit Boundary and a drawing of that description, signed and sealed by a registered professional land surveyor.[29]

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[24] 30 TAC § 330.67.

[25] 130EP-1 at 49.

[26] 130EP-1 at 26-32, 42; 130EP-18; 130EP-19.

[27] 130EP-1 at 49.

[28] 130EP-1 at 26-32.

[29] 130EP-1 at 70-72.

130EP states that the identifying reference of the current ownership record for the Site is Volume 533, Page 637 in the Official Public Records of Real Property of Caldwell County, Texas.[30]

2. The County

The County argues that 130EP has failed to comply with 30 TAC § 330.67 regarding property rights. A review of the evidence shows that portions of the access road, although on the Hunter Tract, will be outside of the Permit Boundary. For this reason, the County maintains that 130EP has not complied with Section 330.67(a). In addition, according to the County, 130EP has not shown compliance with the requirement in Section 330.67(b) that it will "retain the right of entry to the facility until the end of the post-closure care period for inspection and maintenance of the facility."

3. The District

The District is the owner of and uses an easement on the Hunter Tract for the purpose of operating the Site 21 Reservoir and Site 21 Dam, a structure used to retard flood flows to protect downstream life and property from flooding. However, the Application did not identify the District as the owner of the "SCS" reservoir.[31] Nor did the Application show that the District's easement is about 327 acres of land out of a larger tract consisting of approximately 1,245.71 acres, according to the District. In addition, the Application failed to reference the Plum Creek Small Watershed Protection Work Plan Agreement (Work Plan) that covers the area to be used for the Landfill. The District contends that its easement is the dominant estate, and therefore the surface owner cannot interfere with the District's use of that property right. Furthermore, according to the District, "the easement language has to be interpreted to assure that none of the obligations in the Work Plan, including the operation and maintenance of the

[30] 130EP-1 at 70-72.

[31] 130EP-1 at 66. The terms "SCS" stands for the Soil Conservation Service.

dam at Site 21 and the related impoundment, are adversely affected by the actions of landowners outside of the easement area."[32]

4. Protestants

Protestants assert that 130EP did not comply with 30 TAC § 330.67 for a number of reasons. Part of the access road from US 183 to the Site is not included within the Permit Boundary. Protestants argue that an owner or operator must acquire a sufficient right to use the access route to a proposed facility and retain that right to the end of the post-closure period.[33] Because 130EP did not include the access road in its Application, 130EP has failed to demonstrate compliance with the TCEQ's rules. Protestants also argue that 130EP failed to assess the effect of its operations on the District's property rights.[34]

5. OPIC

OPIC concludes that 130EP has met the necessary requirements for the sufficiency of the property rights except for the length of the access road not included within the Permit Boundary. In order for the TCEQ to have clearer enforcement authority over the access road, OPIC recommends that the Permit Boundary be modified to include the entirety of the access road.

6. The ED

The ED asserts that 130EP submitted the information required by 30 TAC § 330.59(d). The ED did not discuss the Application's failure to identify the District's easement as required by Section 281.5(6) or the property rights requirements in Section 330.67.

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[32] District Closing at 4.

[33] 30 TAC § 330.67(a).

[34] Protestants Closing at 93.

7. The ALJs' Analysis

The ALJs conclude that 130EP provided sufficient information to comply with 30 TAC § 330.59(d).[35] However, Section 330.59(a) requires compliance with 30 TAC § 281.5 as well, and that rule provides that an application must include "a list of adjacent and potentially affected landowners and their addresses along with a map locating the property owned by these persons . . . ."[36] By failing to recognize the District's ownership of the easement on the Hunter Tract in its landowners list,[37] 130EP failed to meet this requirement. However, the Application discussed the easement and the Site 21 Reservoir,[38] and the District conceded it had actual notice of the Application and participated fully in the hearing.

The District and Protestants express concern that 130EP has failed to protect the District's easement and its corresponding property rights arising from that easement.[39] The TCEQ's rule at 30 TAC § 330.141(a) provides that "[n]o solid waste unloading, storage, disposal, or processing operations shall occur within any easement, buffer zone, or right-of-way that crosses the site." To that end, 130EP has not proposed to conduct any activities at the Facility within the District's easement.[40] In addition, 30 TAC § 330.67(a) makes clear that:

> The granting of a permit does neither convey any property rights or interest in either real or personal property; nor does it authorize any injury to private property, invasion of personal rights, or impairment of previous contract rights; nor any infringement of federal, state, or local laws or regulations outside the scope of the authority under which a permit is issued.

As demonstrated by 130EP, the Application meets the objective requirements in the rules, and the ALJs cannot conclude that operation of the Facility as set out in the Application will impair or injure the District's property rights in its easement.

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[35] 130EP-1 at 20, 26-32, 69-72, 131.

[36] 30 TAC § 281.5(6).

[37] 130EP-1 at 66.

[38] 130EP-1 at 42, 48.

[39] District Closing at 13; Protestants Closing at 93.

[40] District Ex. 1 at 13; 130EP-1 at 131; 130EP-6 at 38.

In addition, the ALJs conclude that 130EP has met the necessary requirements in 30 TAC §§ 330.67(a) and (b) regarding the access road. As 130EP argues, the requirements in Section 330.67(a) are in the form of performance standards as opposed to application requirements. Nevertheless, 130EP has shown that it has acquired the necessary property rights in the Hunter Tract, including the land over which the access road will run. Accordingly, the ALJs conclude that 130EP has shown that the Application met the property rights requirements in 30 TAC §§ 330.59 and 330.67. However, the ALJs will discuss whether the access road should be included within the Permit Boundary in the section on Transportation and Traffic in this PFD.

B. Legal Authority, Evidence of Competency, and Compliance History

The applicable rules required 130EP to provide verification of its legal status, typically in the form of a one-page certificate issued by the Texas Secretary of State (SOS). Further, 130EP was required to list in the Application all persons having over a 20% ownership interest in the proposed facility.[41]

Concerning evidence of competency, the rules call for the Application to include: (a) a list of all Texas solid waste sites operated by 130EP in the last 10 years; (b) a list of all solid waste sites in which it has a direct financial interest; (c) the names of the principals and supervisors of its organization and their previous affiliations with other organizations engaged in solid waste activities; (d) landfilling and earthmoving experience and other pertinent experience or licenses possessed by key personnel; and (e) the number and size of each type of equipment for facility operation.[42]

Finally, the TCEQ utilizes compliance history when making decisions regarding the issuance of an MSW landfill permit. There are numerous elements of compliance history,

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[41] 30 TAC § 330.59(e).

[42] 30 TAC § 330.59(f).

including enforcement orders, court judgments, criminal convictions, consent decrees, notices of violations, and participation in pollution reduction programs.[43]

1. 130EP

The Application includes a Certificate of Fact from the Texas SOS indicating that 130EP, a Georgia limited liability company, filed an application for registration with the Texas SOS on August 20, 2013, and that 130EP is in existence.[44] 130EP contends that it alone will own and operate the Facility, and that although Green Group Holdings, L.L.C. (GGH) is a member of 130EP, GGH has no ownership interest in the Facility based on such membership.[45]

The Application indicates that 130EP has not owned or operated a solid waste site in Texas in the last 10 years and that it has no direct financial interest in any other solid waste site.[46] Ernest Kaufmann, Oscar Allen, and Thad Owings are listed as the principals and supervisors of 130EP's organization. The Application indicates that in the last 20 years, Mr. Kaufmann has been an executive and manager with Browning-Ferris Industries (BFI), has led groups of professionals in developing and permitting MSW landfills, and has been a member of the Solid Waste Association of America and the National Solid Waste Management Association. According to the Application, Mr. Allen has been an engineer and executive in the waste-to-energy business for 15 years and has operated numerous waste-to-energy facilities with Covanta, which operation involved overseeing landfills. As for Mr. Owings, the Application states that he has worked in the waste industry for over 20 years with BFI, Allied Waste Industries, and Republic Services, and has direct experience in landfill construction and management.[47] Since the Application was filed, David Green has taken over from Mr. Kaufmann as president and manager of 130EP, effective July 26, 2016.[48]

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[43] 30 TAC § 60.1(a), (c).

[44] 130EP-1 at 75.

[45] 130EP Response at 6 (citing Ga. Code Ann. 14-11-501(a), Tex. Bus. Org. Code § 101.106(b)). It is undisputed that GGH is the sole member of 130EP.

[46] 130EP-1 at 24, 50.

[47] 130EP-1 at 50-51.

[48] 130EP-61 at 1.

The Application sets forth in a chart the different types of equipment to be dedicated to the Facility, which includes a compactor, a dozer, a scraper, an excavator, a haul truck, a motor grader, a farm tractor, a pickup truck, a water truck, a stormwater pump, and a rotary broom. The chart lists the number and minimum sizes of each of these types of equipment. Further, the chart indicates that there may be multiples of some of the equipment dedicated to the Facility in the event waste disposal reaches 750,001 tons per year.[49] Concerning questioning at the hearing of 130EP's witness Martha O'Brien regarding a trash compactor, 130EP contends that the CAT 836 compactor that the Application represents will be dedicated to operations at the Facility is a piece of mobile equipment driven over waste to reduce its volume.[50]

130EP argues that no affirmative showing of demonstrated experience or competency to operate a landfill is required by the rules. Otherwise, contends 130EP, new operators with no prior experience could not obtain an MSW landfill permit, creating a monopoly for existing owners and operators in the state. Instead, 130EP maintains that it needed only to provide the information required by the rule, and the TCEQ can then consider such information in evaluating 130EP's competency. Further, because the permit sought is for a new facility, 130EP claims that there is no compliance history for the ED to review, and, with support from the ED, that this lack of history cannot be a basis for denial of the Application. 130EP asserts that the compliance histories of GGH, which is not the applicant and will not own or operate the Facility, and Pintail Landfill, LLC (Pintail), another entity in which GGH is a member, are not relevant and not required by the rules to be considered in determining 130EP's compliance history.

2. The County

The County notes that 130EP witness Kerry D. Maroney, who became engineer of record on the Application after September 2013 and prepared and supervised preparation of the portion of the Application dealing with competency, admitted that he did not inquire into the information provided to him by Mr. Kaufmann regarding the evidence of competency that was included in the Application. The County further contends that Mr. Maroney did not know what position

[49] 130EP-1 at 52.

[50] 130EP Reply at 11.

Mr. Kaufmann held with 130EP, had no information about Mr. Allen or Mr. Owings and their affiliation with 130EP, and did not know Mr. Kaufmann's relationship to GGH. According to the County, the Application contained minimal and broad information regarding 130EP's management and personnel. Additionally, the County asserts that the Application failed to identify the positions at 130EP held by Mr. Allen and Mr. Owings, offered no information regarding the compliance history of any of the 130EP principals and supervisors, and does not identify any assets owned by 130EP. Therefore, argues the County, it is impossible to evaluate 130EP's competency and financial solvency, and thus the Application fails to meet the requirements of the applicable rules.

3. OPIC

OPIC takes the position that the Application does not meet the requirements of 30 TAC § 330.59(e) and (f) because 130EP did not disclose GGH's ownership interest in 130EP; GGH's interest in Pintail, an applicant for another MSW permit in Texas whose application was returned by the TCEQ as deficient; or the other GGH subsidiaries that are involved in solid waste activities. According to OPIC, 130EP failed to include this required information, which rendered the ED unable to accurately determine 130EP's competence or compliance history. OPIC contends that Section 361.089(g) of the Texas Health and Safety Code required 130EP to disclose in the Application GGH's ownership interest because GGH owns more than 20% of 130EP. OPIC points out that the ED, during its technical review, asked 130EP in writing to identify all individuals that own more than 20% of 130EP. However, 130EP did not provide this information, responding only that no other person or entity has over a 20% ownership interest in the proposed facility. Further, OPIC cites Mr. Kaufmann's deposition testimony that at least nine waste management companies report to GGH, but none of those entities or the solid waste sites they manage were included in the Application. Finally, OPIC asserts that 130EP should have disclosed Mr. Kaufmann's affiliations to GGH and the GGH subsidiaries involved in solid waste management, pursuant to 30 TAC § 330.59(f)(5).

4. Protestants

According to Protestants, the information provided in the Application regarding competency is inaccurate, unreliable, and contains false statements. Protestants contend that 130EP failed to identify the positions or roles that Mr. Allen and Mr. Owings hold or play with 130EP and note that Mr. Kaufmann testified that neither Mr. Allen nor Mr. Owings is an officer or employee of 130EP.[51] Further, Protestants insist that the Application is deficient regarding the information it provides concerning Mr. Kaufmann's affiliation with Pintail and other similar companies. Protestants also take issue with Mr. Kaufmann having stepped down recently as president and manager of 130EP, arguing that such action makes the Application inaccurate and criticizing 130EP for failing to correct such inaccuracy.

Protestants maintain that because GGH is the sole member and 100% owner of 130EP, the Facility is a proposed facility of GGH. Additionally, Protestants claim that Mr. Kaufmann and Mr. Green's sparse knowledge and inconsistent testimony regarding officers and management of 130EP and GGH demonstrate that the corporate formalities between the two companies are ignored and that they are one and the same. Based on GGH's ownership of 130EP, Protestants argue that to comply with 30 TAC § 330.59(e), the Application should have (a) identified other landfills owned or operated by GGH, or that GGH is involved with, so as to comply with 30 TAC § 330.59(f); (b) listed GGH's environmental permits, including Pintail's application for an MSW landfill permit and the registration for Pintail's transfer station, so as to comply with 30 TAC § 305.45(a)(8); and (c) identified GGH, as well as two other corporations identified in franchise tax forms as having more than a 20% interest in GGH.

According to Protestants, 130EP failed to demonstrate that its principals or supervisors have landfill operation and earthmoving experience as required by the rule. They further maintain that the Application includes inaccurate and unreliable information regarding the equipment for operating the Facility, and that such information fails to show that the equipment is sufficient for the volume of waste projected. Protestants point to the description in the Application's site operating plan (SOP) of a landfill compactor for compacting waste in the

[51] 130EP-1 at 50; Protestants Ex. 11 at 5, 9.

Landfill and contend that an objection lodged by 130EP's counsel at the hearing during which he stated "there's no trash compactor proposed for this facility" is a judicial admission against 130EP, rendering the Application untruthful or inaccurate.

5. The ED

The ED found that the information provided in the Application was sufficient to meet the requirements of 30 TAC § 330.59(f). As to compliance history, the ED explains that the TCEQ develops and reviews compliance history reports pursuant to 30 TAC § 60.1. The compliance history incorporates data from the applicant derived from scores associated with enforcement events. The compliance report includes enforcement information related to the applicant, both specific to the facility at issue and other facilities owned or operated by the applicant. However, the ED does not use compliance information from other states in preparing a compliance history for a facility. The ED states that there is no compliance history to consider for the Facility given that it is new. However, this lack of history is not a basis for denying the Application, according to the ED.

6. The ALJs' Analysis

Based on the general and limited information required, the Application meets the requirements of the rules regarding legal authority, 30 TAC § 330.59(e), and evidence of competency, 30 TAC § 330.59(f).

Although 130EP did not respond to the ED's request in a notice of deficiency (NOD) for identification of persons with greater than 20% ownership interests in 130EP, such failure to respond is not the issue to be decided here. Rather, the issue is whether the Application meets the requirements of the rules.[52] The rule regarding legal authority, 30 TAC § 330.59(e), requires identification of persons having over a 20% ownership in the Facility, not in 130EP. The Application is clear that 130EP is the sole owner of the Facility, and there is no evidence to the contrary. GGH's membership in and ownership of 130EP does not give GGH any legal

[52] *See* 30 TAC § 55.210(b).

ownership interest in the Facility,[53] so 130EP was not required by 30 TAC § 330.59(e) to list GGH, or any other subsidiary of GGH, as an owner of the Facility.

Further, contrary to OPIC's argument, Section 361.089(g) of the Texas Health and Safety Code did not require 130EP to disclose GGH in the Application. Instead, Section 361.089(g) defines the terms "permit holder" and "applicant" for purposes of Section 361.089, which pertains, in part, to reasons the TCEQ can deny an original or renewal permit. Such reasons include unsatisfactory compliance history, false or misleading statements made in the application, or indebtedness to the state. In making these determinations, the TCEQ may consider the compliance history, statements, and indebtedness of an applicant or permit holder's members, officers, or majority stock owners if the partner or member owns 20% of the permit holder or applicant and at least 20% of another business that operates a solid waste management facility. This statute does not require any disclosures by an applicant such as 130EP; it simply provides the TCEQ with certain authority regarding permit denials.

Contrary to Protestants' and the County's position, 30 TAC § 330.59(f) does not compel a demonstration of competency by 130EP in the Application. Instead, it simply calls for information regarding other solid waste sites 130EP has owned or operated or in which the owner or operator has a direct financial interest; the names of the principals and supervisors of 130EP's organization with previous affiliations with other organizations engaged in solid waste activities; landfilling and earthmoving experience; other pertinent experience or licenses possessed by key personnel; and the number and size of equipment for facility operation. There is no language in the rule stating the Application must contain information that proves 130EP is competent to construct and operate the Facility.

Moreover, 30 TAC § 330.59(f) does not require 130EP to have owned or operated any other solid waste sites, or that its current principals and supervisors have certain experience with solid waste activities, or any particular type or amount of equipment to run the Facility. Although the rule does instruct the ED to require a licensed solid waste facility supervisor be employed before commencing facility operations, it does not require the Application to show that

[53] *See* Tex. Bus. Org. Code § 101.106(b).

such an operator is employed by 130EP before a permit is issued. 130EP represents in the Application that it will employ a licensed solid waste facility supervisor prior to commencement of operations.[54] Although Protestants contend that the TCEQ should not give weight to this "promise," the Draft Permit and, if issued, the final permit for the Facility, transform this representation into a permit condition that must be followed, at the risk of enforcement action for a permit violation.[55]

The rule regarding evidence of competency also does not obligate 130EP to disclose its ownership by GGH, GGH's ownership of other related companies that also operate in the MSW industry, or the other solid waste sites owned and operated by GGH's subsidiaries. The subsections of 30 TAC § 330.59(f) requiring lists of other solid waste sites apply explicitly and solely to those owned or operated by the owner and operator (in Texas) and those in which the owner and operator have a direct financial interest (anywhere else). There is no evidence that anyone other than 130EP owns or will own the Facility or part of the Facility, or that anyone other than 130EP will be responsible for operating the Facility. Therefore, based on the definitions of owner and operator set forth in the MSW rules, 130EP is the owner and operator.[56] There is no evidence that 130EP has a direct financial interest in any other solid waste site, and the evidence is clear that 130EP does not and has not owned or operated any other solid waste site in Texas. 130EP did not need to list any of the solid waste sites associated with GGH or its subsidiaries to meet the requirements of 30 TAC § 330.59(f).

Although the Application does not specifically state that Mr. Kaufmann is the president and manager of GGH or an officer in several of the GGH subsidiaries involved in solid waste management, it does state generally that he has been involved in MSW landfill permitting and developing, and specifically mentions his time as an executive and manager with BFI. Section 330.59(f)(4) of 30 TAC chapter 330 is unclear as to the detail required concerning "previous affiliations with other organizations engaged in solid waste activities." 130EP could certainly have been more forthcoming by clearly identifying the companies with which

[54] 130EP-1 at 51.

[55] ED-SO-8 at 43.

[56] 30 TAC § 330.3(101)-(102).

Mr. Kaufmann has been associated other than BFI. However, the Application met the basic requirements of the rule requiring disclosure of Mr. Kaufmann's previous affiliations with organizations involved in solid waste activities. Moreover, although additional details regarding Mr. Allen's and Mr. Owing's role with 130EP could have been provided, they were not necessary under the rules.

The Application met the requirement in the rule concerning evidence of competency pertaining to inclusion of the number and size of each type of equipment for operation of the Facility. 130EP counsel's comment in objecting to questioning at the hearing in which he stated that there is no trash compactor for the Facility is not a judicial admission that the Application falsely sets forth the equipment that will be dedicated to the Facility. It appears that the question to which 130EP's counsel objected was not referring to the same type of compactor listed in the Application.

Finally, there are no specific rules that require affirmative action on the part of 130EP with respect to compliance history. Further, there is no requirement that the ED consider the compliance history of an applicant's owners, supervisors, principals, parent companies, or affiliates. The Texas Water Code requires the TCEQ to develop standards for evaluating, classifying and using compliance history and mandates certain components of such history.[57] The TCEQ is required to use the compliance history in decisions pertaining to issuance or denial of a permit.[58] The TCEQ promulgated rules in 30 TAC chapter 60 pursuant to these statutory directives, and 130EP provided the information required by that chapter. Nothing further is required of 130EP.

C. Transportation and Traffic

TCEQ rules require an owner or operator of a proposed MSW landfill facility to take the following actions regarding transportation:

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[57] Tex. Water Code §§ 5.753-.754.

[58] Tex. Water Code § 5.754(e).

(1) provide data on the availability and adequacy of roads that the owner or operator will use to access the site;

(2) provide data on the volume of vehicular traffic on access roads within one mile of the proposed facility, both existing and expected, during the expected life of the proposed facility;

(3) project the volume of traffic expected to be generated by the facility on the access roads within one mile of the proposed facility; [and]

(4) submit documentation of coordination of all designs of proposed public roadway improvements such as turning lanes, storage lanes, etc., associated with site entrances with the agency exercising maintenance responsibility of the public roadway involved. In addition, an owner or operator shall submit documentation of coordination with the Texas Department of Transportation (TxDOT) for traffic and location restrictions . . . .[59]

1. 130EP

The Facility is located adjacent to SH 130 and US 183 in Caldwell County, Texas. 130EP proposes to construct an entrance from the northbound frontage lanes of US 183 and construct an access road that will cross the Hunter Tract to connect the Facility to US 183. TxDOT is the entity responsible for the maintenance of US 183. 130EP prepared a Traffic Impact Analysis (TIA) and submitted it to TxDOT for a permit authorizing construction and connection of the access road to the northbound frontage road of US 183.[60] TxDOT approved the TIA on November 25, 2014,[61] and in February 2015, 130EP submitted its application to TxDOT for a driveway permit. On March 16, 2016, TxDOT issued the permit and authorized 130EP to construct a driveway with a deceleration lane on the northbound frontage road of US 183, 1,540 feet north of the US 183 intersection with FM 1185.[62]

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[59] 30 TAC § 330.61(i).

[60] 130EP Denholm-1 at 2; 130EP Parker-1 at 6-7; 130EP Parker-6.

[61] 130EP Parker-1 at 7; 130EP Parker-4.

[62] 130EP Parker-1 at 7; 130EP Parker-5.

130EP included the TIA submitted to TxDOT as part of its Application[63] and asserts that it has met the TCEQ's transportation rule. John P. Denholm, III, P.E., P.T.O.E.,[64] performed the TIA and testified at the hearing. Mr. Denholm stated that as part of TxDOT's review of the application for the driveway permit, TxDOT would consider issues related to structural integrity of the public roadways and the entrance road.[65] According to Mr. Denholm, the deceleration lane is the only roadway improvement necessary to accommodate the traffic expected to be generated by the Facility.[66] He also stated that the proposed location of the entrance to the access road at US 183 will provide adequate sight distance for exiting vehicles.[67]

The TIA also addressed the existing and expected volume of traffic within one mile of the Facility during its life.[68] Vehicles traveling to and from the Facility will consist of waste route collection trucks, waste transfer trucks, small waste load vehicles, recycling trucks, miscellaneous trucks, and passenger cars. The TIA projected that the number of vehicles traveling to and from the Facility on a daily basis would increase each year from the time the Facility begins operations (Year 1) until the time the Landfill reaches its capacity (estimated to be Year 44).[69] Based on the types of vehicle, the TIA projects that the following number of vehicles will travel to and from the Facility on a daily basis in Year 1 and Year 44:[70]

Type of Vehicle	Year 1	Year 44
Waste route collection trucks	110	216
Waste transfer trucks	15	29
Small waste load vehicles	25	49
Recycling trucks	40	78

[63] 130EP-1 at 160-196.

[64] P.T.O.E stands for Professional Traffic Operations Engineer. 130EP Denholm-2 at 2.

[65] Tr. at 291-292.

[66] 130EP Denholm-1 at 2; 130EP-1 at 189-190; 130EP Parker-4; 130EP Parker-6.

[67] 130EP Denholm-1 at 2; 130EP-1 at 191-192.

[68] 130EP-1 at 168-188, 195-196.

[69] 130EP-1 at 195-196; 130EP-3 at 52-54.

[70] 130EP-1 at 195-196.

Type of Vehicle	Year 1	Year 44
Miscellaneous trucks	4	8
Passenger cars	40	79
Total	**234**	**459**

The TIA also projects the total vehicular traffic volumes on roads within one mile of the proposed Facility during the expected life of the proposed Facility.[71] According to the TIA, the Facility will contribute 3.5% of the total traffic on US 183 in the area of the Site.[72] Mr. Denholm opined that the existing roadway infrastructure, including northbound US 183, has adequate capacity to accommodate the traffic generated by the Facility.[73]

2. The County and Protestants

According to the County and Protestants, 130EP's traffic analysis is insufficient for several reasons.[74] Protestants contend that 130EP failed to assess the availability and adequacy of the access road from US 183 to the Permit Boundary. Protestants point out that this portion of the access road will cross private property from the point it leaves US 183, the public road, to the point where it enters the Facility at the Permit Boundary. Therefore, Protestants argue that it is conceivable this access road could be changed or used by future development, in addition to Landfill traffic. However, Mr. Denholm did not consider the availability or adequacy of this private road[75] even though the TCEQ's rules do not limit the required analysis to only public roadways. According to Protestants and the County, because the TIA "wholly ignored" the access road,[76] neither the TIA nor Mr. Denholm considered the access road's structural integrity,

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[71] 130EP-1 at 183-185.

[72] 130EP-1 at 193.

[73] 130EP Denholm-1 at 2.

[74] The County joined the arguments made by Protestants. County Closing at 6.

[75] Tr. at 246.

[76] Protestants Closing at 15.

design, or projected traffic volumes. Protestants note that this roadway will cross private property for roughly one mile.[77]

Protestants further argue that the failure to include the entire length of the access road within the Permit Boundary creates enforcement problems and that the TCEQ's enforcement authority outside of the Permit Boundary is unclear. In addition, according to Protestants, the record does not contain information to show that future owners of the property outside of the Permit Boundary on which the access road is located will have an obligation to continue to allow 130EP to use the road or maintain the roadway.

Protestants also argue that 130EP only considered two intersections in its TIA: (1) FM 1185 and US 183 to the south of the Facility entrance; and (2) Schuelke Road and US 183 to the north. Protestants argue that because a large length of the access road is outside the Permit Boundary, the road could be connected to FM 1185 to the south or Homannville Trail to the east and northeast. However, Mr. Denholm did not consider either of those two intersections in his analysis, nor did he consider the intersection of FM 1185 and US 183 in the event the access road was connected to FM 1185 instead of US 183. Additionally, Mr. Denholm did not consider whether these two small roads could adequately handle the traffic volume generated by the Facility, as Protestants contend he should have as part of the TIA.

The TIA is also deficient, according to Protestants, because the analysis did not adequately consider the dangerousness of the FM 1185 and US 183 intersection, even though all of the Facility traffic must move through this intersection. Protestants allege that fatal crashes have occurred at the intersection, but Mr. Denholm did not consider those fatalities to be a relevant concern.[78]

In addition, Mr. Denholm did not adequately consider the location of the northbound entrance ramp onto SH 130 in his analysis, according to Protestants. Heavy vehicles coming from the Facility must come to a stop, turn onto US 183 from the access road, and cross two

[77] 130EP-1 at 141.

[78] Protestants Closing at 18 (citing Tr. at 243).

lanes of traffic to enter northbound SH 130. Protestants state that this route will create a dangerous conflicting traffic pattern between trucks and passenger vehicles, yet Mr. Denholm did not consider this intersection in his analysis.

For these reasons, Protestants dispute the adequacy of the TIA and the sufficiency of the Draft Permit and assert that the evidentiary record supports denial of the Application. In the alternative, Protestants recommend that the Draft Permit be amended to include the entirety of the access road within the Permit Boundary.

3. OPIC

OPIC also recommends that the Permit Boundary be expanded to include the access road.[79] According to OPIC, doing so would provide the TCEQ with clearer enforcement authority over the entire access road, as 130EP's witness Kenneth J. Welch testified.[80] OPIC therefore recommends that the Draft Permit be modified to include the entire access road from US 183 to the current Permit Boundary.

4. The ED

According to ED witness Steven Odil, P.E., the Application contains the information required by 30 TAC § 330.61(i).[81] Mr. Denholm testified that US 183 is a suitable road for the predicted amount of traffic generated by the Facility and that the location of the entrance on US 183 will provide adequate site distance to the south.[82] The ED notes that when Mr. Denholm was questioned regarding the intersection of FM 1185 and US 183, he stated that it is generally a "low to medium volume intersection [and it is] not heavy enough yet to warrant traffic signals."[83]

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[79] OPIC Closing at 2, 16.

[80] Tr. at 1213.

[81] 130EP-1 at 98, 155-196.

[82] 130EP Denholm-1 at 2.

[83] Tr. at 283.

In addition, when evaluating MSW permit applications, the ED defers to TxDOT for recommendations on roadway improvements,[84] and coordination with TxDOT is required under 30 TAC § 330.61(i)(4). In this case, 130EP provided the TCEQ with the documentation it submitted to TxDOT, including the TIA's recommendation to include a 660-foot deceleration lane.[85] The ED points out that TxDOT approved the TIA and did not require an acceleration lane for traffic leaving the Facility and turning northbound onto US 183.[86]

5. The ALJs' Analysis

The ALJs conclude that 130EP has met the requirements of 30 TAC § 330.61(i). The Application includes data on the availability and adequacy of the roads, the volume of vehicular traffic on access roads within one mile of the Facility, the projected volume of traffic expected to be generated by the Facility, and documentation of coordination of the design of the proposed public roadway improvements with TxDOT.[87] Furthermore, there is no evidence in the record contradicting Mr. Denholm's opinion or the adequacy of his analysis.

The position taken by the County and Protestants that the TIA is deficient because Mr. Denholm did not consider other intersections, given that the access road could be moved to either Homannville Trail or FM 1185, is unconvincing. The Draft Permit provides that the Application materials are incorporated into the permit,[88] and 130EP designated the route of the access road in its Application.[89] Therefore, any change in the location of the access road will require a permit amendment and presumably another demonstration regarding transportation requirements under 30 TAC § 330.61(i).

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[84] ED-SO-9 at 13-14.

[85] 130EP-1 at 155-196; 130EP Parker-6 at 2.

[86] 130EP Parker-6 at 2.

[87] 130EP -1 at 155-196; 130EP Parker-3; 130EP Parker-4; 130EP Parker-5; 130EP Parker-6.

[88] ED-SO-8 at 43.

[89] 130EP-1 at 141.

The ALJs also disagree with Protestants that Mr. Denholm should have considered the on-ramp to SH 130 that northbound vehicles from the Facility will use. 130EP submitted its TIA to TxDOT, the agency with responsibility over this public road. TxDOT considered and approved the TIA and issued a permit for a driveway to access US 183.[90] Although TxDOT required a deceleration lane for traffic turning onto the access road, TxDOT did not require an acceleration lane for traffic turning onto northbound US 183. The ALJs conclude that 130EP properly coordinated with TxDOT, the agency with responsibility for the highway, as required by the applicable rule.

However, the ALJs do agree with Protestants, OPIC, and the County that the entire length of the access road should be included within the Permit Boundary. Under the heading "Facilities Authorized," the Draft Permit states:

> All waste disposal activities authorized by this permit are to be confined to the Type I landfill which *shall include* security fencing, a gatehouse, scales, *a paved entrance road,* all-weather access roads, soil stockpiles, landfill gas monitoring and collection system, leachate collection system, groundwater monitoring system, liner system, solid waste disposal area, and other improvements.[91]

Except for the length of the access road from US 183 to the Facility entrance gate, all of the above facilities authorized by the Draft Permit are within the current Permit Boundary.[92] 130EP has not provided a reason to justify this inconsistent coverage of the Draft Permit, other than to argue that other permits have excluded access roads from permit boundaries.[93] However, in this particular case, the access road is the only authorized facility outside of the Permit Boundary, even though the Draft Permit requires 130EP to maintain the access road.[94] Given that the access road is on private property and listed as an authorized facility with specified duties that 130EP must perform in regard to it, the ALJs recommend expanding the Permit Boundary to include the entire access road within the Permit Boundary, from the entrance on US 183 to the

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[90] 130EP Parker-4; 130EP Parker-5; 130EP Parker-6.

[91] ED-SO-8 at 38 (emphasis added).

[92] 130EP-1 at 131, 141; 130EP-5 at 25.

[93] 130EP Response at 17-18.

[94] ED-SO-8 at 45 (permittee must "retain the right of entry onto the site until the end of the post-closure care period as required by 30 TAC § 330.67(b).").

entrance into the Facility. Furthermore, the TCEQ's enforcement authority for the projected 44-year life of the Facility will be clarified and unquestionable if the entire length of the access road that crosses private property is included within the Permit Boundary.

D. Geology and Soils

As part of its Application, 130EP was required to submit a geology report prepared and signed by a qualified groundwater scientist that contains the information set forth in 30 TAC § 330.63(e). Generally, the report must discuss the geology and soils of the Site.[95] Specifically, the rule mandates that 130EP provide in the report, among other things:

- a description of the regional geology in the area;
- a description of the geologic process active in the vicinity of the proposed facility, including identification of faults and subsidence;
- the results of investigations of subsurface conditions through soil borings; and
- a description of the geotechnical properties of the subsurface soil as determined through geotechnical testing.[96]

As part of identifying faults and subsidence, TCEQ rules require identification of and data concerning faults pursuant to 30 TAC § 330.555; identification of and data concerning any seismic impact zones in accordance with 30 TAC § 330.557; and identification of and data concerning any unstable areas in accordance with 30 TAC § 330.559.[97]

The TCEQ also requires 130EP to perform an investigation of the subsurface conditions at the Site and provide a description of the borings that must be drilled to test the soil and groundwater.[98] The applicable rule has specific requirements for the logs for the borings, which

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[95] 30 TAC § 330.61(j)(1).

[96] 30 TAC § 330.63(e)(1)-(5). The discussion and analysis of the Geology Report's description of the regional aquifers in the vicinity of the proposed facility required by 30 TAC § 330.63(e)(3), and the groundwater data required by 30 TAC § 330.63(5), are set forth in Section III.E. Hydrogeology, below.

[97] 30 TAC § 330.61(j)(2)-(4).

[98] 30 TAC § 330.63(e)(4).

should "include a detailed description of materials encountered including any discontinuities such as fractures, fissures, slickensides, lenses, or seams." The rule further states that "the boring plan, including locations and depths of all proposed borings, shall be approved by the [ED] prior to initiation of the work."[99] There are specific requirements in the rule regarding the required number and depths of the borings and the procedures for drilling the borings, and 130EP must provide a narrative from the field investigator setting forth interpretations of the subsurface stratigraphy based on the investigation results.[100]

Further, 130EP was required to perform geotechnical testing on the subsurface soil materials and provide specific test results and data, along with a discussion and conclusion regarding the suitability of the soils for their intended uses. The rule specifies the types of tests and procedures that must be performed.[101] Specifically, soil characteristics must be determined via lab testing on (a) at least one sample from each soil layer or stratum that will form the bottom and side of the proposed excavation and (b) from those that are less than 30 feet below the lowest elevation of the proposed excavation.[102]

1. Summary of Disputed Issues

130EP submitted a Geology Report prepared by Biggs & Mathews Environmental, Inc. (BME) with the Application.[103] The Geology Report was intended by 130EP to meet the requirements of 30 TAC § 330.63(e). BME conducted the subsurface investigation and evaluation at the Site that formed the primary basis for the Geology Report's findings and conclusions.

The Geology Report was the source of numerous and significant disputes between the parties, and primarily between 130EP and Protestants. Protestants take issue with the report's

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[99] 30 TAC § 330.63(e)(4).

[100] 30 TAC § 330.63(e)(4)(A)-(H).

[101] 30 TAC § 330.63(e)(5).

[102] 30 TAC § 330.63(e)(5)(A).

[103] 130EP-4.

factual representations, analyses, and conclusions for many reasons. They contend that because BME discarded soil samples and field logs, the characterization of the subsurface characteristics at the Site cannot be tested and is therefore unreliable and insufficient evidence of actual conditions. According to Protestants, for those same reasons and several others, BME failed to adhere to professional standards in its investigation, including proper quality control procedures, and therefore the Geology Report fails to meet the requirements of the applicable rules. Moreover, Protestants maintain that there are inconsistencies and conflicts between the boring logs provided as part of the Geology Report and testimony from BME principals regarding the details of the investigation, rendering the Geology Report unreliable. Protestants further take issue with the methodology used by the consultants in sampling and testing the soil from the Site. They contend that 130EP violated TCEQ rules when BME initiated the subsurface investigation prior to obtaining approval from the ED for the boring plan. According to Protestants, 130EP submitted false information in the Geology Report by not following the plans approved by the ED for the soil borings and knowingly misrepresenting certain information regarding the subsurface investigation.

130EP defends BME's methodology and processes used in the subsurface investigation at the Site, contending that all required procedures were implemented and thus the resulting conclusions are valid and reliable. According to 130EP, because Protestants were allowed to do their own field work at the Site, they had an opportunity to test BME's conclusions regarding the subsurface characteristics and were therefore not prejudiced by the disposal of field logs and soil samples. Finally, 130EP disputes Protestants' claims as to the accuracy of information provided to the ED and offers explanations for the perceived misrepresentations.

According to Protestants, significant discrepancies between the results of the original boring work done by BME in 2013 and subsequent subsurface investigations done by BME and Protestants in 2016 raise doubts regarding the accuracy of the subsurface characterizations in the Geology Report. Protestants take issue with 130EP's description of the regional geology, arguing that it misrepresents the presence of certain types of materials indicating the location of different geologic units and an aquifer under the Landfill footprint. Also, Protestants' experts contend that the subsurface characterization set forth in the Geology Report is incomplete and

inaccurate both in its description of the soil materials found and the potential pathways for migration of leachate from the Landfill. According to Protestants' experts, and based on both their analysis of BME's subsurface investigations and their own soil sampling and testing, the Geology Report's classification of the subsurface soils are improper. Further, Protestants claim that BME inappropriately downplayed the existence of more porous materials as well as secondary features under the Site, such as fractures, fissures, and a possible fault, all of which allow for groundwater movement.

Again, 130EP stands by BME's analyses of the both the regional geology and the subsurface materials from the Site that were sampled and tested, arguing that BME's extensive experience in conducting this type of work and evaluation rendered the Geology Report's conclusions sufficiently reliable. Further, 130EP asserts that while the narrative descriptions of the soil materials found at the Site focused on the overall findings and the predominant materials found, the boring logs provided with the Geology Report provided the details that Protestants contend were improperly withheld. 130EP maintains that the samples were properly and accurately described in the Geology Report, and that the report does indicate the presence of some material that is more porous and some fractures in the subsurface. According to 130EP, Protestants deliberately sampled soil at the Site in an attempt to find anomalies and outliers instead of in an effort to accurately characterize the overall subsurface conditions. Nevertheless, 130EP takes the position that all of the subsurface investigation work performed, including the borings done by Protestants, consistently revealed essentially the same geological conditions in the subsurface at the Site and affirmed that the soils had the necessary characteristics for use as material for the liners of the Landfill.

Given the extensive and numerous criticisms of the Geology Report proffered by Protestants, the ALJs endeavor in this PFD to provide a thorough description of the subsurface investigations performed at the Site both by BME and Protestants. The PFD therefore explains in great detail the process and procedures that the evidence indicates were followed in sampling the subsurface materials, testing the samples both in the field and in the laboratory, and analyzing the samples and test results to reach conclusions regarding the character of the subsurface materials at the Site. After carefully reviewing the substantial and voluminous

evidence presented on these issues, the ALJs find that 130EP failed to obtain pre-approval from the ED as to BME's boring plan, in violation of 30 TAC § 330.63(e)(4). Otherwise, the ALJs conclude that the Geology Report meets all other applicable requirements of 30 TAC § 330.63(e)(4) and that the arguments and criticisms of BME's subsurface investigation and resulting conclusions were ultimately unpersuasive.

2. 130EP

The Geology Report was prepared and signed by Gregory W. Adams, P.E., and John Michael Snyder, P.G.[104] It was technically complete October 28, 2014, revised in March 2015, and supplemented in May 2016.[105]

Mr. Snyder obtained a Master of Science degree in Geology from the University of Texas at Arlington in 1977 and completed post-graduate hydrogeology work at Oklahoma State University in 1990. His is a registered Professional Geoscientist in the State of Texas and a Certified Professional Geologist by the American Institute of Professional Geologists, with specialties in Environmental Geology, Hydrogeology, and Petroleum Geology. He has practiced as a professional geoscientist for over 40 years in Texas and has become familiar with the geology and groundwater in Texas during this time. In his practice, Mr. Snyder is responsible for performing subsurface characterizations of geology and groundwater, primarily on MSW landfill projects, and has worked on over 100 such projects in his career.[106]

Mr. Adams is a Senior Engineer and Principal at BME and specializes in geotechnical engineering, solid waste engineering, and construction management. He has been with BME for 17 years. He holds a Bachelor of Science degree in Civil Engineering from the University of Texas at Arlington and has taken graduate-level courses in groundwater hydrology and waste management at the University of Tennessee. During his career since earning his degree in 1987, Mr. Adams has worked as a soil quality assurance technician, a driller's helper, a staff engineer,

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[104] 130EP-4 at 6.

[105] 130EP-6 at 41; 130EP-7 at 3.

[106] 130EP Snyder-1 at 4-9.

a geotechnical engineer, a construction superintendent, and a solid waste design and permitting engineer. He is a registered professional engineer in both Texas and Oklahoma. He has worked as a consulting engineer for numerous municipal solid waste permits in Texas and Oklahoma.[107]

130EP contends that the Geology Report includes information required by the applicable rule concerning geology and soils. According to 130EP, the report includes: (a) sources and references; (b) sections of the Geologic Map of Texas, the Bureau of Economic Geology (BEG) Geologic Atlas of Texas, and maps from the United States Geological Survey (USGS) Geologic Database of Texas; (c) a description of the generalized stratigraphic column in the Site area, including explanations of the age, lithology, thickness, depth, geometry, hydraulic conductivity, and depositional history of each geologic unit; (d) a regional stratigraphic cross-section; (e) a description of the active geologic processes in the vicinity of the Site, including faults and subsidence; (f) a description of the subsurface investigation performed by BME with the required details concerning borings and sampling, including boring logs, maps, and tables; (g) a narrative from Mr. Snyder concerning his interpretation of the subsurface stratigraphy based on BME's investigation; and (h) cross-sections depicting the generalized strata in the subsurface at the Site prepared from borings and piezometers.[108]

a. Regional Geology

According to the Geology Report, the Site is located in the regional physiographic subdivision known as the Blackland Prairie, which is underlain by deposits of the Midway and Wilcox Groups of the Paleocene and Eocene ages and sediments from the Navarro and Eagle Ford Groups of the Cretaceous age. These deposits and sediments consist primarily of fine-grained materials from ancient oceans. According to the Geologic Atlas Sheets of Texas, there is also a narrow deposit of the Leona Formation, an alluvial terrace, running northwest to southeast along the Plum Creek Valley. The stratigraphic positions of the groups, including depths and lithology, are included in the report, along with a generalized regional geologic cross-section.

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[107] 130EP Adams-1 at 4-5.

[108] 130EP-4 at 11-18, 22, 33-34, 37-222; 130EP-6 at 34, 45-52; 130EP-7; *see* 30 TAC § 330.63(e)(1)-(2), (4).

The Geology Report states that although the Texas Geologic Map shows the Leona Formation outcropping on the Site, the Site is actually located on an outcrop of the Midway, based on field investigations indicating only discontinuous remnant pebbles and cobbles indicative of an alluvial terrace in the top two to six feet of the weathered Midway. Mr. Snyder testified that he was told no site-specific geologic mapping or on-the-ground geological investigation was used by the BEG or the USGS in mapping geologic formations at the Site.[109] According to the report, the terrace deposit has eroded and settled into the upper clays, no continuous strata of cobbles, pebbles, or gravels were observed, and no sand was observed. Mr. Snyder testified that none of the material observed at the Site was consistent with descriptions or photographs of Leona Formation material found in the Texas Water Development Board (TWDB) report on Caldwell County groundwater resources.[110] The report indicates that the Midway in the area consists primarily of dense, silty, fat clay, which is between 400 and 600 feet thick beneath the Site, according to literature. Below the Midway are several hundred feet of low permeability clays, marls, and limestones from the Navarro, Taylor, Eagle Ford, and Austin Formations.[111]

According to the Geology Report and the May 2016 supplement, and based on the Geologic Map of Texas onto which the Permit Boundary and Landfill footprint were imposed, the contact between the Midway and the overlying Wilcox is east of the Site. Mr. Snyder testified that the initial borings done by BME on the Hunter Tract showed more silt in the subsurface east of the Landfill footprint than beneath the Landfill footprint, which was indicative of moving closer to the Wilcox.[112] The May 2016 supplement states that digitized mapping from the BEG Geologic Atlas of Texas and the USGS Geologic Database of Texas shows the surface outcrop of the Wilcox extending into the southeastern portion of the Permit Boundary by approximately 150 to 515 feet, but more than 400 feet southeast of the Landfill footprint. The May 2016 supplement contends that the BEG and USGS mapping is done on a regional basis

[109] Tr. at 405-406.

[110] 130EP Snyder-1 at 25; 130EP Snyder-4 at 30-33.

[111] 130EP-4 at 11-12, 22, 37-39; 130EP-7 at 5.

[112] Tr. at 410-411.

without site-specific data, and that the samples taken from borings at the southeastern portion of the Site provided no evidence of Wilcox material present within the Permit Boundary.[113]

b. Faults and Subsidence

Mr. Snyder performed a fault study pursuant to criteria in the TCEQ rule that includes specific requirements for location of an MSW landfill within 200 feet of a fault that has had displacement in Holocene time.[114] As part of his study, Mr. Snyder reviewed aerial photographs, geologic literature, and maps of the area around the Site; made a site visit; and examined the subsurface boring data. He found no unusual scarps, unusual relief, or topographic breaks within 200 feet of the Site; no structural influence of streams course; no vertical subsidence on any outcrops; or any other evidence of faulting.[115] Mr. Snyder identified the two primary fault zones in central Texas, both of which moved well before the Holocene time, and testified that there is no known active faulting in the Holocene Epoch in the area near the Site and no mapped faults of any age located within 200 feet of the Site.[116] The Geology Report sets forth the details of Mr. Snyder's work to determine the absence of such faults.[117]

The Geology Report also discusses BME's evaluation of potential unstable areas at the Site, which was based on (a) observations of soil samples and lab test results that did not indicate the presence of soft clay or loose sand; (b) settlement and heave analyses showing that the Landfill components will not undergo detrimental differential settlement; (c) the slope stability analyses showing the Landfill components will be stable;[118] (d) the lack of evidence of mass movements of natural formations or earthen materials at or near the Site; and (e) the lack of evidence of karst terrain at the Site, in the soil samples or in the geologic maps. According to the

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[113] 130EP-4 at 11; 130EP-7 at 7-8.

[114] 130EP Snyder-1 at 16; *see* 30 TAC § 330.555(a).

[115] 130EP Snyder-1 at 16-17.

[116] 130EP Snyder-1 at 17.

[117] 130EP-4 at 13-14.

[118] The slope stability analysis is discussed in further detail in Section III.H., Waste Management Unit Design, below.

report, the evaluation indicated that the Site is not located in an unstable area as defined by TCEQ rules.[119]

Finally, the Geology Report includes documentation depicting the Site on the seismic impact zone map for Texas according to the USGS.[120] According to this figure, the Site is not located within a seismic impact zone as defined by TCEQ rules.[121]

c. Subsurface Investigation and Characterization

The Geology Report recounts the background details and results of 130EP's investigation of the subsurface at the Site.[122] In early 2013, BME had two soil borings drilled on the Site to approximately 100 feet below ground surface (bgs). Mr. Snyder had these borings drilled to obtain preliminary information about the soil and groundwater under the Site. According to Mr. Snyder, these borings showed clayey soils and revealed no groundwater.[123]

Mr. Snyder then prepared a plan (the Soil Boring Plan) to drill additional borings on the Site. The Soil Boring Plan was reviewed and approved by the TCEQ Municipal Solid Waste Permits Section in October 2013, although the borings had already been drilled by then.[124] When asked why BME proceeded with drilling the borings prior to obtaining approval of the Soil Boring Plan from the ED, Mr. Snyder testified that 130EP asked him to proceed with the work. He stated that this is a common scenario that he has encountered "many times" in the past, where a client requested that he proceed with drilling borings for a subsurface investigation prior to receiving approval of a boring plan from the ED. According to Mr. Snyder, in those other situations, as in this case, the ED ultimately approved the boring plans, even though the work was done prior to approval or even submission of the plans.[125] Mr. Snyder opined that regardless

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[119] 130EP-4 at 15; *see* 30 TAC § 330.559.

[120] 130EP-4 at 164.

[121] 130EP-4 at 15; *see* 30 TAC § 330.557.

[122] 130EP-4 at 19-31, 44-222.

[123] 130EP Snyder-1 at 17.

[124] 130EP-4 at 19, 45-46.

[125] Tr. at 436, 439.

of prior approval, if the borings are appropriately and properly done, the ED will allow an applicant to use them. Therefore, according to Mr. Snyder, the rule requiring prior approval is essentially unenforceable and has not been enforced, because the only remedy could be to require an applicant to redrill a boring for which an appropriate boring already exists.[126]

(1). 2013 Borings and Sampling

BME contracted with Hydrogeologic/Environmental Testing (H/ET) to drill the borings and take soil samples from the borings. In August and September 2013, H/ET drilled 32 soil borings (the 2013 borings) using rotary methods and sampled using Shelby tubes and split spoon samplers. To determine the characteristics of the shallow soil in the Site area, BME also made several shallow trenches, which, according to the Geology Report, revealed the occurrence of pebbles and cobbles within silty fat clay.[127]

The Geology Report contains a detailed description of how the soil borings were sampled and the reasons for using particular sampling methods. Boring logs, as well as laboratory results revealing moisture contents, plasticity indexes, and other geotechnical information obtained from the samples taken, were included in the Geology Report.[128] According to the Geology Report and the May 2016 supplement, Mr. Snyder supervised all drilling operations for the 2013 borings.[129]

Seventeen piezometers were installed next to 15 of the borings, within 30 feet of the corresponding boring. Originally BME intended to perform slug tests in some of the piezometers and expressed that intention in the Soil Boring Plan. According to Mr. Snyder, slug tests are field permeability tests in which a slug, or volume, is injected into the water column inside a piezometer or a well, and the water's response to the slug is measured and used to

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[126] Tr. at 457.

[127] 130EP-4 at 19.

[128] 130EP-4 at 19-20, 51-126 (boring logs), 176-218 (lab tests); 130EP-7 at 9.

[129] 130EP Snyder-1 at 24.

calculate the permeability of the formation.[130] However, Mr. Snyder later made the judgment that there was not enough water column in any of the piezometers to conduct a valid slug test.[131] According to Mr. Snyder, he could not remember if the ED's staff ever asked BME about the slug tests, but he did testify that the staff did not request that BME perform slug tests.[132] 130EP argues that there is no TCEQ rule requiring slug tests be performed as part of the geologic investigation, and that permeability testing was done on several soil samples taken from the Site in accordance with appropriate standards as required by the applicable rule.[133]

According to the Geology Report, based on the 2013 borings, there are three strata of material under the Site: Stratum I, ranging from two to six feet thick and consisting primarily of silty fat clay embedded with "occasional discontinuous" cobbles (larger than about 3 inches), pebbles (between ¼ inch and 3 inches), and gravel (smaller than pebbles);[134] Stratum II, ranging from 30 to 60 feet deep and consisting of weathered silty fat clay that is hard and dense; and Stratum III, consisting of hard, dense, silty fat clay found in all of the 2013 borings at up to 77 feet.[135] Mr. Snyder testified that the primary material found in the 2013 borings is silty fat clay.[136] However, the borings logs in the Geology Report indicate that the material also included small amounts of other materials such as silt, calcareous nodules, shell fragments, gypsum, limonitic, and pyrite.[137] In at least one interval of every boring, BME observed blocky or slightly blocky textures. Blocky texture signifies fine cracks resulting from clay shrinking and swelling during the weathering process.[138] A sample of soil from the Site that Mr. Snyder described as

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[130] Tr. at 441-442.

[131] Tr. at 442-443.

[132] Tr. at 443.

[133] *See* 130EP-4 at 176-177; Tr. at 893-896; *see also* 30 TAC § 330.63(e)(5)(B).

[134] 130EP Snyder-1 at 21. Pebbles or gravel were found within the shallow dark-brown clay in Stratum I at depths up to 10 feet bgs in all but one boring. 130EP-4 at 51-126. Protestants' geologist Michael Rubinov, P.G., testified that he described rock pieces of a size just smaller than one-half inch and larger as "gravel." Tr. at 1566-1567.

[135] 130EP-4 at 22-23.

[136] 130EP Snyder-1 at 21.

[137] 130EP-4 at 51-126.

[138] 130EP-4 at 51-126; Tr. at 2179.

blocky texture was described as an "iron oxide filled fissure" or "a fissure filled by iron oxide" by Protestants' geologist Michael Rubinov, P.G.[139]

The Geology Report indicates that fifteen of the piezometers were installed in Stratum II weathered clay and two were installed in the Stratum III unweathered clay. Based on the data obtained from the piezometers, the report states that groundwater occurs at the interface of Stratum II and Stratum III. Shallow groundwater also occurs due to precipitation. Three of the Stratum II piezometers showed groundwater, and the report includes water level elevation data.[140] Further discussion and analysis of the evidence regarding the hydrogeology at the site is found in the next section of this PFD.

The Geology Report states that Stratum I represents the Leona terrace deposits settling into the weathered Midway clay. In Stratum II, the report states the weathering of the clay is indicated by color and decreases with depth from tan to tan and gray to gray as it transitions to the dark gray clay of Stratum III. In Stratum III, the report indicates that drilling slowed due to the extreme denseness of the clay. According to the report, there was no evidence of fractures in Stratum II or Stratum III, and evidence of slickensides was observed in one boring. Mr. Snyder and Mr. Adams, who personally observed all of the samples from the 2016 borings, both testified that they did not encounter any fractures in such samples.[141] Among other tests, BME performed permeability tests on samples from all three strata and hydraulic conductivity tests on samples from Stratum II and Stratum III.[142]

(2). Protestants' Borings and Sampling

Protestants also drilled borings at the Site in February and March 2016 and sampled and tested soil from those borings to analyze the subsurface conditions. Protestants drilled

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[139] Tr. at 1668-1669, 2180; Protestants Ex. 6-D at 15.

[140] 130EP-4 at 26-28.

[141] Tr. at 378, 804-805.

[142] 130EP-4 at 22-24, 175-218.

10 borings, collected 292 soil samples, and sent 11 of those samples to a lab for testing.[143] According to 130EP, eight of the samples collected by Protestants and sent for lab testing were from borings drilled near the far south end of the Site more than 200 feet outside the Landfill footprint.[144] Three of the 10 non-gravel samples, which were taken by Protestants from intervals of one foot or less, tested as silt with sand, sandstone, and claystone.[145] The other seven tested consistently with classification as either high plasticity, fat clay (CH) or low plasticity, lean clay (CL) under the Unified Soil Classification System (USCS). According to 130EP, out of the 11 samples tested, only the sample classified for sandstone at a 6-inch bgs interval from a boring approximately 200 feet from the Landfill footprint had Atterberg test results indicating that it would not be suitable material for a landfill liner. Mr. Rubinov identified the strata at the Site as (a) the upper zone at a few feet bgs to as much as 11 feet bgs with dark brownish gray silty fat clay to organic soil with gravel (rocks one-half to three-quarters inch and larger) embedded in the soil, (b) a zone of predominantly weathered clay from approximately 11 to 25 feet bgs, and (c) a lower zone of dark greenish gray clay from 25 to 27 feet bgs down.[146]

Based on the results of testing on and descriptions of soil samples from Protestants' borings, 130EP contends that the analysis of the subsurface characteristics at the Site by Protestants and their geologic experts, Mr. Rubinov and Lauren Ross, Ph.D., "shows remarkably close agreement" between 130EP and Protestants.[147] As with the description of blocky textures and fissures, 130EP contends that BME and Protestants' witnesses simply use different nomenclature to describe the same observations.

(3). 2016 Borings and Sampling

In January and April 2016, an additional 11 soil borings (the 2016 borings) were drilled and sampled by BME in the Site area. The May 2016 supplement describes the locations of

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[143] 130EP-40; Protestants Ex. 6-C (summarizing lab test results).

[144] 130EP Response to Closing at 33; *see* Protestants Ex. 6-B.

[145] Protestants Ex. 6-D.

[146] Tr. at 1563-1570.

[147] 130EP Response to Closing at 32.

these 11 borings and the methodology used to drill and sample them and includes boring logs and lab test results.[148]

Circulation of approximately 200 gallons of drilling fluid was lost in one of the 2016 borings (BME-43) at approximately 28-30 feet bgs. Mr. Snyder explained that lost circulation refers to a situation in which the drilling fluid and cuttings from the borehole stop returning to the surface. This happens when the borehole enters a zone in which the drilling fluid flows out of the hole instead of returning to the surface. The zone could be a break or void or an area with more permeability or secondary features into which the fluid could flow.[149] 130EP points out that the boring logs for BME-43 and MP-3 (a boring drilled by Protestants adjacent to BME-43) show secondary features and multiple fractures in the Stratum II material in that area of the Site, which is 300 feet east of the Landfill footprint.[150] Further, 130EP notes that Mr. Rubinov found abundant gypsum fissures, or cracks filled with gypsum, at this location, and that these types of secondary features could have caused the loss of circulation.[151] Dr. Ross also testified about large, extensive, and clustered gypsum deposits from boring MP-3 that, combined with this loss of circulation, indicate a zone of potential leachate migration.[152] According to Mr. Snyder, the ease with which circulation was re-established to complete the boring showed that the porosity of the area where circulation was lost is limited.[153]

According to the May 2016 supplement, the 2016 borings confirmed the presence of Stratum I, II, and III as described in the Geology Report. Again, as with the 2013 borings, silty fat clay was the dominant material found in the 2016 borings.[154] The hard, dark gray, unweathered clay of Stratum III was encountered in all of the 2016 borings at depths from 26 to 56 feet bgs. The 2016 supplement indicates that only discontinuous cobbles, pebbles, and gravel were found embedded in the clay in Stratum I in several borings. Silt was observed as a

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[148] 130EP-7 at 8-9, 29-113 (lab tests and boring logs).

[149] 130EP Snyder-1 at 24.

[150] 130EP-7 at 110-111; Protestants Ex. 6-D at 7-8.

[151] Tr. at 1515-1516.

[152] Protestants Ex. 5 at 35.

[153] 130EP-Snyder at 24.

[154] 130EP-7 at 9-10; 130EP Snyder-1 at 21.

component of the clay and in partings and seams within the clay, and in places there were calcareous nodules, gypsum seams, shell fragments, iron staining, and other indications of weathering. In at least one interval of all of the 2016 borings, blocky or slightly blocky textures were observed.[155] In Stratum II in three borings drilled east of the Landfill footprint, sandy material was found as follows: in a sandy silt seam at 43 feet bgs, silty sand from 24 to 26 feet bgs, and a 5-inch silty sand seam between 8 and 10 feet bgs. The May 2016 supplement states that 19 fractures were observed in samples from the 2016 borings, nine of which were from borings east of the Landfill footprint.

(4). BME Lab Test Results

BME performed lab tests on samples from the 2013 borings including: sieve analysis; Atterberg Limits; grain size distribution; moisture content; dry unit weight; hydraulic conductivity/permeability; consolidation; moisture/density relationship; and triaxial shear strength.[156] The testing was performed on three samples from Stratum I, 45 samples from Stratum II, and 22 samples from Stratum III.[157] Lab testing done on the 2016 borings included: percent passing #200 sieve; Atterberg Limits; grain size distribution; moisture content and unit dry weight; and hydraulic conductivity/permeability. BME had lab testing performed on 81 soil samples from the 2016 borings.[158]

Mr. Adams testified that all tested samples from the 2013 borings classified under the USCS as fat clay.[159] He admitted that a certain sample taken from one of the borings included material classified as lean clay, but testified that the vast majority classified as fat clay. Mr. Adams stated that the random lean clay sample that was borderline fat clay (the liquid limit was 46: fat clay classification requires 50 or greater) is "not noteworthy" and does not change the

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[155] [30EP-7 at 94-113.

[156] [30EP-7 at 9-10, 28-67.

[157] [30EP-4 at 176-218.

[158] [30EP-7 at 28-67.

[159] [30EP Adams-1 at 15.

classification of that entire interval, based on other samples from that boring, other samples from that depth from surrounding borings, and his judgment and experience.[160]

Mr. Adams testified that based on the lab test results on samples from the 2013 borings, the soils on the Site will provide adequate support for the Landfill, and the safety factors for slope failure shown by the results of the shear strength testing exceeded the recommended safety factors for all conditions analyzed.[161] According to Mr. Adams, 138 of the 140 samples on which Atterberg limits testing was performed (which measures liquid limits) met TCEQ requirements for soil used as constructed liners, including the sample within the interval he classified as fat clay that had a liquid limit of 46.[162] The Geology Report indicates that the tests also showed the clayey and silty soils from the site have the proper classification and permeability to be used as compacted soil liner, infiltration layer material, operational and protective cover, and for the upper layer of the final cover system erosion layer.[163]

The May 2016 supplement noted that there was lean clay in one six-foot interval in Stratum II and material classified as silt in one two-foot interval in Stratum II. Other than this lean clay and silt, Mr. Adams testified that the primary material found in all 2016 borings is classified as fat clay.[164] Except for the material in a sandy silt seam found in the boring east of the Landfill footprint, the May 2016 supplement concludes that "all other tested material satisfies TCEQ requirements for compacted soil liner material and would be suitable for that use and for use as landfill cover and general fill material."[165] Mr. Adams stated that other than the sandy silt material, the other tested material would meet TCEQ requirements for compacted soil liner material.[166] Mr. Adams also testified that the American Society of Testing and Materials

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[160] Tr. at 783-784.

[161] 130EP Adams-1 at 15; *see also* 130EP-4 at 24-25, 175-218.

[162] 130EP Adams-1 at 17; 130EP Adams-5; *see* 30 TAC § 330.339(c)(5)(B) (soils used as constructed liners must have verified liquid limits equal to or greater than 30).

[163] 130EP-4 at 26; *see also* Tr. at 730-732 (includes Mr. Adams's description of the necessary liners and their requirements, the tests, and the test results).

[164] 130EP Adams-1 at 15-16.

[165] 130EP-7 at 9-10; 130EP Snyder-1 at 25.

[166] 130EP Adams-1 at 16-17.

(ASTM) standards set forth in the applicable TCEQ rule regarding geotechnical testing of subsurface material were followed by BME in the preparation of the Geology Report and the May 2016 supplement.[167]

d. Fractures

Regarding the fractures observed in samples from the 2016 borings, Mr. Snyder testified that they occurred primarily in the weathered zone and could have been caused by shrinkage and expansion of the weathered clay over time due to periods of rainfall and drought. He stated the fractures were part of a network of secondary features found in the weathered zone. According to Mr. Snyder, these fractures are part of the network of secondary features and primary sedimentary features (silt partings and seams) that allow groundwater movement through Stratum II. He testified that the fractures are often stained with iron resulting from moisture oxidizing the iron content in the clay. Mr. Snyder characterized the fractures observed at the Site as "relatively infrequent" compared with other weathered clay zones at other Texas landfill sites. He stated that fractures were found in only 19 out of 1,422 sample intervals observed and a total of 3,639 feet of borings. Further, the May 2016 supplement states that nine of the fractures were observed in samples from borings that were east of the Landfill footprint. According to Mr. Snyder, the occurrence of fractures in a weathered zone such as Stratum II at the Site is "a bit hit and miss,"[168] and he did not find it unusual that BME found 19 fractures in the 2016 borings and none in the 2013 borings. Because there was only one interval in one boring at which circulation was lost, Mr. Snyder stated that the boring conditions indicated the fractures "are of limited size."[169]

e. Processes and Procedures

According to Mr. Snyder, H/ET's owner Stefan Stamoulis, who personally drilled the borings on 130EP's behalf at the Site, is a licensed water well driller and professional

[167] Tr. at 894-896.

[168] Tr. at 396.

[169] 130EP Snyder-1 at 23-24.

geoscientist in Texas with more than 20 years of experience working with soil and groundwater in Texas, and he has drilled over a thousand soil borings in Texas for sample collection.[170]

Mr. Snyder provided detailed testimony regarding how he performed the field work at the Site in conjunction with Mr. Stamoulis and H/ET. For the borings and sampling at the Site, Mr. Snyder explained how the locations were surveyed and staked; how drilling and sampling methods were determined; the criteria used for determining the depths of the borings, particularly with regard to drilling into hard, unweathered clay; how he and Mr. Stamoulis communicated once the field work commenced; and minor adjustments that may have been made regarding location of the borings.[171] Mr. Snyder testified in detail regarding how the samples were packaged at the Site and transported to the BME office in Mansfield, Texas. He explained that Mr. Stamoulis prepared field logs in which he recorded his observations regarding the borings and descriptions of the samples, including the lithology and the depths from which they were taken. The field logs were also brought back to the BME office. Mr. Snyder stated that Mr. Adams may have examined some samples on site and sent some to the laboratory for testing of geotechnical properties, which is located in the same building as the BME office.[172] Mr. Snyder testified that there is no written chain of custody for the samples.[173] Mr. Adams testified that BME did not adhere to any specific ASTM standards in the preservation of the soil samples collected from the Site.[174]

In addition, Mr. Snyder testified as to how he and Mr. Adams evaluated the soil samples obtained from the borings at the Site. Mr. Snyder and Mr. Adams laid out the samples on the BME conference table one boring at a time for examination. They removed the outer portion of solid core samples that had been smeared during the collection process to observe the material in an undisturbed condition. Some samples were tested for hardness. Some samples were broken or cut so that the insides could be observed. During this examination process Mr. Adams and

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[170] 130EP Snyder-1 at 17-18.

[171] 130EP Snyder-1 at 18-19.

[172] 130EP Snyder-1 at 19; Tr. at 370-374.

[173] Tr. at 372.

[174] Tr. at 769-770, 935-936.

Mr. Snyder "marked up" the field logs with descriptions of the material they observed and took photographs of the samples.[175] They also identified sample material to send to the lab for testing. Once the test results returned, they worked to classify the material in accordance with the USCS and prepare their draft boring logs. The information from the draft boring logs was then entered into a computer program that prepared and printed the boring logs, which were reviewed and revised. Final boring logs were then included in the Geology Report.[176] Mr. Adams testified that he had enough samples from enough locations and enough lab-tested samples to appropriately characterize the soils and prepare the boring logs included in the Geology Report.[177] At some point after the final logs were produced, the field logs prepared by Mr. Stamoulis were destroyed.[178] BME also created logs for the piezometers, which Mr. Snyder based on the logs created for the adjacent and corresponding soil borings. He testified he thought this method, which was based on the intact samples from the soil borings that were observed and lab tested, was better than trying to describe the soil from the piezometer boring based only on the cuttings from that boring.[179]

130EP also defended the methodology used by BME in conducting the subsurface investigations at the Site. Although Protestants' experts Dr. Ross and Scott Courtney, P.G., opined that various standards developed by the ASTM for testing and inspection of soil and rock, field logging, and soil sampling must be employed during a subsurface investigation for an MSW permit, 130EP contends that none of these ASTM standards are actually requirements of the TCEQ's rules. 130EP argues that the ASTM standards do not state or suggest to what persons, circumstances, or situations they apply, much less that they apply to TCEQ MSW permitting. Further, 130EP claims that several of the ASTM standards make clear that they are not requirements for any situation, only standards, and that they are not applicable to all circumstances or intended to replace or represent sound professional judgment or standards of care, and they should not be applied without consideration of a project's unique aspects. Finally,

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[175] 130EP Snyder-1 at 19-20, 22; 130EP Snyder-6 (photographs of samples, one from Stratum I and two each from Stratum II and Stratum III).

[176] 130EP Snyder-1 at 19-20.

[177] Tr. at 894.

[178] Tr. at 374-375.

[179] Tr. at 388-390.

130EP notes that while certain other ASTM standards, such as those pertaining to certain lab tests for the geologic investigation, are incorporated into TCEQ rules, these ASTM standards referred to by Dr. Ross and Mr. Courtney are not incorporated into, or required to be followed by, the applicable TCEQ rules.

3. The County

The County contends that the evidence demonstrates that 130EP failed to properly identify the soils and geology at the Site, provide sufficient data concerning potential faults, or adequately describe the geotechnical properties of the subsurface material. Moreover, the County argues that the Application fails to meet TCEQ requirements due to the generalized and oversimplified descriptions of the subsurface at the Site. The County also agrees with and joins in the arguments set forth by Protestants with respect to the criticisms of the Application's descriptions of the subsurface geology at the Site and the geotechnical properties of the subsurface materials at the Site.

4. Protestants

According to Protestants, the information and data provided in the Geology Report is unreliable and insufficient, and the report fails to conform to professional standards. Protestants contend the Geology Report includes no verifiable evidence to support the assumptions and opinions set forth in the report. Protestants also claim that the data and findings from both the May 2016 supplement and Protestants' subsurface investigation are inconsistent with and contradictory to data provided in the Geology Report. Further, Protestants argue that the May 2016 supplement is untimely because it was not included in the Application and did not undergo technical review by the ED. Therefore, Protestants take the position that the Geology Report, and the testimony of Mr. Snyder and Mr. Adams, are legally insufficient as evidence of the subsurface geology at the Site, and thus the Application fails to comply with 30 TAC § 330.63(e)(4).[180]

[180] Protestants Closing at 19-20; Protestants Response at 26-27.

a. Alleged Defects in 130EP's Geological Description and Investigation

According to Protestants, 130EP failed to comply with TCEQ rules regarding the soil boring plans for both the 2013 and the 2016 borings. It is undisputed that the 2013 borings were drilled in August and September 2013, and the Soil Boring Plan developed by Mr. Snyder was not approved until October 10, 2013. Because TCEQ rules required the Soil Boring Plan to be approved by the ED prior to BME initiating work, Protestants contend that 130EP clearly violated the rule. Protestants also claim that 130EP made misrepresentations to the ED and violated the rule regarding approval of the boring plan by stating in the plan that it would perform slug tests but then failing to do so.

Much of Protestants' criticism of 130EP's subsurface soil investigation stems from inconsistencies they found between the boring logs in the Geology Report and testimony provided by Mr. Snyder and Mr. Adams with regard to the details of the boring work. For example, Protestants argue that while the boring logs indicate that the borings were drilled using wet rotary methods, Mr. Adams and Mr. Snyder testified "otherwise," and some of the boring logs contain notes indicating that no fluid was introduced during drilling. According to Protestants, although Mr. Snyder sealed the Geology Report and boring logs, and the Geology Report indicates that he supervised the drilling operation, Mr. Snyder was only on the Site two or three times during the boring operation, and not the entire day. Moreover, Protestants contend Mr. Snyder did not personally observe the sampling methods used or how the soil was actually removed from the surface, including whether Shelby tubes were bent, whether fluids were used, or whether the driller lost circulation. Therefore, argue Protestants, it is clear why Mr. Snyder would not know what drilling methods were used. Protestants claim that this evidence shows Mr. Snyder did not supervise the drilling operations, as required by TCEQ rules, and was not the field investigator required by the rules to provide interpretations of the subsurface stratigraphy.[181] These facts, contend Protestants, "call into question" the descriptions in the Geology Report of the methodology used for the investigation.[182]

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[181] *See* 30 TAC § 330.63(e)(4)(H).

[182] Protestants Closing at 23-24.

Protestants also attack 130EP's subsurface investigation as "implausibly simplistic" in its results, specifically the description of Stratum II as hard and dense and the classification of all samples from Stratum II as fat clay, as well as the lack of evidence of fracturing and observation of slickensides.[183] According to Protestants, TCEQ rules require much more specificity and detail in the description of the borings than was provided by 130EP in the Geology Report and the boring logs.

Moreover, as they have throughout this proceeding, Protestants note that the field logs created by Mr. Stamoulis and the soil samples from the 2013 borings were discarded and no longer existed prior to the time the ED finished the technical review of the Application. As a result, argue Protestants, 130EP could not refer back to such logs and samples to respond to the ED's NODs regarding the Geology Report, including requests for additional detail regarding observation of secondary features. Moreover, the data necessary to verify the information in the Geology Report no longer exists. Protestants argue that because the field logs and samples from the 2013 borings no longer exist, Mr. Snyder's theories regarding the subsurface geology at the Site cannot be tested and it cannot be determined whether his opinions in that regard are based on reliable information and observations. Therefore, Protestants take the position that Mr. Snyder's opinion testimony is unreliable and legally insufficient evidence.

Protestants also re-urged arguments previously made in motions filed during this proceeding that 130EP and Mr. Snyder knew that Protestants would request the original field logs and soil samples from the 2013 borings, so that by discarding this material, 130EP breached its legal duty to preserve evidence. Protestants contend that the TCEQ rule requiring a permittee to retain records of data used to complete the final application applies to 130EP, such that its failure to retain the original field logs and samples from the 2013 borings was an explicit violation of applicable TCEQ rules.[184]

In addition, Protestants claim that the destruction or disposal of the field logs and samples violated both the Code of Professional Conduct adopted by the Texas Board of Professional

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[183] Protestants Closing at 23.

[184] *See* 30 TAC § 305.47.

Geoscientists (TBPG) and ASTM standards for the conduct of subsurface investigations. Protestants cite to testimony from other witnesses regarding their retention practices with respect to field notes and samples, and an explanation from Plum Creek's witness Feathergail Wilson regarding the importance of keeping field logs and soil samples. Protestants also criticize BME's alleged lack of quality control procedures and chain-of-custody protocols. Dr. Ross testified that based on the destruction or disposal of the field logs and the samples from the 2013 borings, her review of the Application and statements made by Mr. Snyder in testimony, and her knowledge of the quality control (QC)/quality assurance (QA) and record retention standards set forth by the TBPG and the TCEQ and by ATSM standards, BME failed to maintain minimum professional standards with regard to their treatment of the field logs and samples during and after the 2013 subsurface investigation at the Site.[185] Specifically, Dr. Ross opined that BME did not meet minimum QC standards by:

- its lack of standard practice regarding preparation and retention of field notes;
- Mr. Adams's failure to take field notes;
- the disposal of the field logs and samples;
- its lack of written QA procedures for the preparation of boring logs;
- its lack of clear written procedures regarding maintenance, storage, and disposal of soil samples; and
- Mr. Snyder's sealing of the Geology Report without personally observing the sampling or creating the field logs.[186]

Protestants further argue that without their ability to examine and compare Mr. Stamoulis's field logs to the final logs included in the Application, Mr. Snyder's testimony regarding the samples and his description of the soil in the final logs cannot be trusted. Dr. Ross offered testimony regarding the differences between the field logs for borings in the Pintail case prepared by Mr. Stamoulis and the final logs as altered by Mr. Snyder. Specifically, Dr. Ross testified that the final logs in the Pintail matter "overstated" the presence of clay as compared to

[185] Protestants Ex. 5 at 9-15.

[186] Protestants Ex. 5 at 12-15.

the field logs and omitted references to the presence of gravel or silt that were included in the field logs.[187] Protestants contend that only with the discovery of the field logs in the Pintail case was anyone able to know that the final logs had changed the findings of the field logs, and that without the samples in that case, which were also destroyed, it was impossible to know the basis for Mr. Snyder's changes to the soil descriptions as reflected in the final logs.

Protestants also take issue with 130EP producing logs for the piezometer borings that simply mimicked the boring logs for the soil borings that corresponded with the piezometer in its vicinity. In an NOD, the ED specifically requested that 130EP include in the Geology Report boring logs for the piezometers.[188] According to Protestants, the logs provided by 130EP in response reflected observations of soils from the nearby soil borings and not of soils from the piezometer borings. Therefore, argue Protestants, 130EP submitted inaccurate and false information to the ED, who does not verify information in the Application but relies on the veracity and accuracy of that information.[189] Protestants claim that submission of these inaccurate, false, and misleading piezometer logs violated TCEQ rules and is grounds for denial of the Application.[190]

b. Conflicting Evidence of Subsurface Characteristics

Aside from the critique of the methodology and practices employed by BME in preparation of the Geology Report and development of opinion testimony from Mr. Snyder and Mr. Adams, Protestants claim that other evidence in the record renders 130EP's subsurface characterization unreliable. Protestants also argue that the information and data obtained both from the 2016 borings and Protestants' 2016 subsurface investigation contradicts and controverts the descriptions of the subsurface characteristics at the Site set forth in the Geology Report.

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[187] Protestants Ex. 5 at 18-19.

[188] Protestants Ex. 22 at 18.

[189] *See* Tr. at 2001.

[190] *See* 30 TAC § 330.57(d).

(1). Regional Geology

Protestants cite to the USGS Geologic Database of Texas map showing that the Landfill footprint sits atop the Leona Formation, which forms a broad terrace of sand, clay, and gravel up to 50 feet thick.[191] Protestants claim that the USGS Geologic Database of Texas map also shows the Midway Group outcropping under a smaller area of the Landfill footprint than the area indicated by the Geology Report. Further, in contrast with the Geology Report's description of the Midway as fat clay, the USGS Geologic Database of Texas describes the Midway as silty and sandy clay with silt and sand more abundant upward.[192] Dr. Ross testified that 130EP's own evidence, including its wetland and archaeological investigations and photographs of the Site, reveals that there are more pebbles, gravel, and cobbles on the Site and the Landfill footprint than are represented in the Geology Report.[193] Dr. Ross further stated that borings for the Site 21 Dam, drilled within the Site and located just over 1,000 yards from the Facility Boundary, show intervals of clayey sand and clayey gravel. According to Dr. Ross, those cross-sections from the borings show these intervals are correlated among the borings, indicating the presence of continuous strata.[194] Finally, Dr. Ross testified that she observed areas of significant amounts of gravel across the surface during her visit to the Site in August 2015, and she also saw cobble, gravel, and course sand at the surface in trenches dug at the Site in February 2016.[195]

(2). Subsurface Geology

Mr. Rubinov offered testimony regarding opinions he developed concerning the subsurface geology at the Site, including secondary features and potential migration pathways.[196] He has been licensed as a professional geoscientist in Texas since December 2012, and received

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[191] Protestants Ex. 5 at 20; Protestants Ex. 5-I.

[192] Protestants Ex. 5-I.

[193] Protestants Ex. 5 at 23; Protestants Exs. 5-K (Table of Application Wetland Determination Sampling Points Indicating Cobble in the Subsurface and Map), 5-L (Summary of Archeological Shovel Test Descriptions and Map), 5-AB (Applicant's Photograph of Surface Gravel).

[194] Protestants Ex. 5 at 22.

[195] Protestants Ex. 5 at 23; Protestants Exs. 5-M (Ross Photographs of Surface Gravel and Map), 5-Q (Protestants' 2016 Field Investigation).

[196] Protestants Ex. 6 at 5-6.

a Bachelor of Science degree in Environmental Geology from the University of Pittsburgh in 2006. He is currently employed as a hydrogeologist by R. W. Harden and Associates, Inc. He testified as to his experience in logging soil samples, totaling 30,000 feet of sediment, for aquifer exploratory drilling, over-burden lignite coring, and geotechnical coring. According to Mr. Rubinov, he has interpreted subsurface sediment to create geologic logs and cross-section layouts of subsurface geology for groundwater development, mining projects, and waste facilities over the last nine years.[197] He observed the 2016 borings and was involved in Protestants' boring program in February and March 2016. Based on (a) his education, experience and training; (b) his tactile and visual examination of several samples from the 2016 borings and the Protestants' borings; (c) his two visits to the Site; (d) his review of laboratory analysis on soil samples from the Site; and (e) his review of the Application, the May 2016 supplement, USCS memorandum, ASTM standards for soil classification, and relevant geological reports, maps, and data, Mr. Rubinov opined that 130EP's subsurface geology characterization in the Geology Report was inaccurate and fails to properly characterize fluid migration pathways.[198]

Dr. Ross also offered opinions regarding the subsurface geology at the Site. She is an environmental engineer and the owner of Glenrose Engineering, Inc. Her educational background is in civil engineering, and she earned a Ph.D. in civil engineering from the University of Texas in 1993. She is a registered professional engineer in the State of Texas. Dr. Ross testified that she has served as project manager for permit applications for several solid waste facilities in Texas, and she has designed and supervised subsurface investigations for such facilities. She stated that she has experience in measurement of hydraulic conductivity and is an expert in statistical methods for environmental monitoring.[199] She visited the Site once in 2015 and was present for most of 130EP's 2016 boring program in January 2016 and Protestants' subsurface investigation in February and March 2016. Based on (a) her observations while on Site; (b) the results of Protestants' subsurface investigation; (c) her review of the Application and supplemental material provided by 130EP through discovery; and (d) and publicly available

[197] Protestants Ex. 6 at 3-4.

[198] Protestants Ex. 6 at 5-6.

[199] Protestants Ex. 5 at 6-7.

information regarding the regional geology, Dr. Ross opined that the Application failed to adequately characterize subsurface conditions at the Site and the potential for leachate migration and groundwater contamination resulting from operation of the Landfill.[200]

According to Dr. Ross, contrary to the description of the subsurface set forth in 130EP's boring logs as "uniformly composed of high-plasticity clay," geologic mapping shows the subsurface to be highly variable with seams, lenses, and laminae of more permeable material. She also testified that lab test results on three samples from the 2013 borings, taken at 13 and 23 feet bgs, indicate low-plasticity material.[201] Protestants point out that Mr. Adams admitted that the liquid limit test result on one sample taken by BME was not consistent with a fat clay, or CH, classification, but instead would be classified as lean clay, or CL. This sample was the only one from that particular boring that was tested, and even though it classified as lean clay, Mr. Adams classified the entire depth interval of 18 to 52 bgs as fat clay.[202] Protestants claim that Mr. Adams's explanation for his classification was not "plausible."[203]

Concerning the loss of circulation during the drilling of BME-43, Protestants argue that this event, coupled with abundant gypsum features found in boring MP-3 and the difference in the Stratum II-Stratum III interface elevation as reflect in BME-43 and MP-3, shows that there is a fault at this location with preferential pathways for leachate migration. Mr. Rubinov testified that based on this evidence, at this location on the Site, "there may be . . . a fault horizon where there's a significant offset in the materials creating large pour space for that water to move through."[204] Dr. Ross agreed with Mr. Rubinov on this point, testifying that the lost circulation; the large, clustered, and extensive gypsum deposits in these borings; and the difference in elevation of the Stratum II-Stratum III interface indicate a zone of preferential groundwater movement and potential migration pathway.[205] According to Protestants, this preferential

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[200] Protestants Ex. 5 at 7-8.

[201] Protestants Ex. 5 at 25.

[202] Tr. at 780-783.

[203] Protestants Closing at 39.

[204] Tr. at 1516.

[205] Protestants Ex. 5 at 35.

pathway is further evidence that the subsurface characterization presented by 130EP in the Application is inaccurate and unreliable. Protestants take issue with Mr. Snyder's explanation of the loss of circulation, noting that he was not on the Site when it occurred (unlike Mr. Rubinov, who witnessed it first-hand), and claiming that his explanation about limited porosity was unsupported by any evidence or explained methodology.

Protestants take the position that the samples and lab testing from the 2016 borings and the Protestants' own field investigation conducted in 2016, which involved the drilling of borings and sampling of subsurface soil at the Site, contradicted the evidence of the subsurface characteristics set out in the Geology Report. For example, Dr. Ross testified that given the 19 fractures observed in the samples from the 2016 borings, the possibility that no fractures were observed in the samples from the 2013 borings, as reported by the Geology Report and Mr. Snyder, is miniscule.[206] Mr. Rubinov testified that he observed "numerous" secondary features and fractures, including gypsum fissures and iron oxide in the majority of the 2016 borings at different depths, evidence of a possible fault in the subsurface on the Site, and silt seams in every boring drilled by Protestants.[207] Mr. Rubinov and Dr. Ross also testified that observation and analysis of samples from the Protestants' borings and the 2016 borings indicated that the subsurface consists of lean clays, silts, fat clays, clayey sands, gravels mixed with clay, sandstone, and siltstone, in contrast to the characterizations set forth in the boring logs for the 2013 borings.[208] Protestant's evidence shows that of the 57 samples collected from their own borings (11 samples) and from the 2016 borings (46 samples) that were tested by Protestants, 37 classified as fat clay, while 18 classified as lean clay and two classified as silt.[209]

Dr. Ross testified that 130EP's lab test results on the samples from the 2016 borings classified at least four samples as silt and seven samples as low plasticity, while the lab results on Protestants' samples classified two samples as silt and 23 samples as low-plasticity.[210]

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[206] Protestants Ex. 5 at 26.

[207] Protestants Ex. 6 at 19-20.

[208] Protestants Ex. 5 at 25-26; Protestants Ex. 6 at 20; *see also* Protestants Ex. 5-S (Applicant's Borings BME-07, BME-26, BME-27, and BME-32 Compared to Protestants' Geotechnical Results in Nearby Borings).

[209] Protestants Ex. 6-E.

[210] Protestants Ex. 5 at 27.

According to Dr. Ross, there is a very low probability that the difference between 130EP's measurements of liquid limits and percentage passing #200 sieve and those same measurements conducted by Protestants was the result of random variability. Therefore, she opines that 130EP's test results were biased high to indicate more highly plastic samples and thus lower permeability, and that the "clear implication" is that 130EP's test results regarding plasticity were not representative of the entire sample because of the portion of the sample chosen to be tested.[211]

5. ED

The ED argues that the Geology Report included the results of 130EP's subsurface investigation at the Site. According to the ED, the investigation's methodology is described in the report, along with a detailed discussion of the Site's stratigraphy. The Geology Report includes boring logs and geologic cross-sections, as well as information regarding the geotechnical properties of the subsurface material, all of which documents that almost all subsurface material is silty clay and that granular materials are present but not part of a continuous deposit. The ED found that the boring logs, the geologic cross-sections, and the regional geologic map indicate the soils and strata beneath the Landfill footprint are consistent.[212] The ED notes that Mr. Snyder testified he had never seen a site for an MSW landfill with better geology and hydrogeology than the Site, and that the soil to be excavated during construction of the Landfill is predominantly silty fat clay that is well-suited for use as compacted soil liner material.[213]

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[211] Protestants Ex. 5 at 27-29.

[212] ED Closing, "Geology and Soils" section; 130EP-4 at 11-30, 175-218.

[213] 130EP Snyder-1 at 4; Tr. at 335-336.

6. The ALJs' Analysis

The ALJs find that the preponderance of the record evidence proves that the Application meets all but one of the requirements of 30 TAC § 330.63(e)(4) with respect to the content of the Geology Report.[214]

a. Regional Geology

In accordance with 30 TAC § 330.63(e)(1), the Geology Report includes a description of the regional geology of the area where the Site is located, including the appropriate sections of the Geologic Map of Texas, the BEG Geologic Atlas of Texas, and maps from the USGS Geologic Database of Texas.[215] It also includes a regional stratigraphic cross-section and a description of the geologic age, lithology, variations in lithology, thickness, depth, geometry, hydraulic conductivity, and depositional history of each unit based on the available information.[216] The USGS Geologic Database of Texas map does show the Landfill footprint atop the Leona Formation, which it describes as a terrace of sand, clay, and gravel up to 50 feet deep. According to the BEG mapping and the District's witness Mr. Wilson, Leona Formation material is chert pebble or gravel conglomerate, or small silica-based rock more course than sand.[217] The TWDB report on Caldwell County groundwater resources also identifies Leona Formation material as gravel and pebbles, indicating that in most places the gravel is cemented.[218] Significantly, the Geology Report references the Leona Formation and includes it in the General Regional Stratigraphic Column, indicating that its maximum thickness is 40 feet.[219] Further, the boring logs in the Geology Report indicate the presence of rock pieces from one-quarter inch to three inches (pebbles or gravel, depending on the geological nomenclature used) at up to 10 feet in all but one boring drilled by BME. While there may be a

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[214] This section of the PFD does not address the requirements of 30 TAC § 330.63(e)(3), which pertain to the hydrogeology of the Site. That issue is addressed in Section III.E., Hydrogeology, below.

[215] 130EP-4 at 11-12, 37-39.

[216] 130EP-4 at 11-12, 40.

[217] Tr. at 1432-1434.

[218] 130EP Snyder-4 at 30.

[219] 130EP-4 at 12.

legitimate disagreement regarding whether Leona Formation material is located on the Site, the Geology Report clearly includes the Leona Formation and its characteristic pebbles and gravel in the description of the regional geology, stratigraphy, and lithology of the Site, as required by 30 TAC § 330.63(e)(1). Protestants' contention that the Geology Report "underrepresent[s] significant deposits of gravel" is unconvincing and does not render the Application out of compliance with the applicable rule.

b. Geologic Processes

The Geology Report also complies with 30 TAC § 330.63(e)(2) in that it includes a description of the active geologic processes in the vicinity of the facility, including information required by 30 TAC § 330.555 and 30 TAC § 330.559 regarding faults and unstable areas. Mr. Snyder described in detail the fault study and investigation that he conducted and the evidence revealed by the study that he used in reaching his conclusion that no fault near the Site has had displacement in Holocene time. The Geology Report also discusses the details of the study and the criteria used to reach Mr. Snyder's conclusions. Although Mr. Rubinov testified that he observed evidence of a possible fault, with which 130EP takes issue and which is more fully described and analyzed below, there is no evidence in the record to contradict the Geology Report's conclusion under 30 TAC § 330.555 that there is no fault that has had displacement in Holocene time within 200 feet of the Site. Further, the Geology Report discusses the lack of evidence of unstable areas and provides the information required by the applicable rule regarding soil conditions, geologic or geomorphologic features, and human-made features or events in determining that the Site is not unstable as defined by 30 TAC § 330.559. Finally, the evidence clearly shows the Site is not located within a seismic impact zone, as that term is defined by 30 TAC § 330.557. Protestants offered no evidence that this portion of the Geology Report did not meet the requirements of the applicable rules.[220]

[220] Protestants do contest 130EP's slope stability analysis, as discussed more fully in Section III.H., Waste Management Unit Design, below.

c. Subsurface Investigation and Characterization

The Geology Report meets all but one of the requirements of 30 TAC § 330.63(e)(4) and (5)(A)-(B) pertaining to BME's investigation of the subsurface conditions at the Site.[221] The report includes a description of the borings drilled on site to test the soils, including a map of the locations and elevations of the borings. The boring logs in the report include detailed descriptions of materials found in the samples taken from the borings and contained the specific details required. A sufficient number of borings were drilled, and the borings were drilled to the appropriate depths required by the rule. The report discusses the procedures and processes used by BME to drill the borings, and Mr. Snyder and Mr. Adams offered additional competent testimony regarding the details of the process for drilling both the 2013 and the 2016 borings. The boring logs prepared by Mr. Snyder and Mr. Adams that were included in the Geology Report set forth the required information by the rule, as determined through Mr. Snyder's and Mr. Adams's observation and analysis of the soil samples collected. This information included descriptions of each layer of material using the USCS, and the color, degree of compaction, and moisture content. The Geology Report included cross-sections of the generalized strata at the Site, prepared from the information obtained from the borings. The Geology Report included a narrative explaining Mr. Snyder's and Mr. Adams's interpretation of the subsurface stratigraphy as revealed by BME's investigation. Finally, the Geology Report sets forth data describing the geotechnical properties of the subsurface soil materials and BME's conclusions regarding suitability of the soil and strata for the uses for which they are intended.

With respect to BME's disposal of the field notes prepared by Mr. Stamoulis for the 2013 borings and the soil samples taken from those borings, there was no additional evidence adduced at the hearing beyond that which was presented to the ALJs by Protestants with their motion to strike prefiled testimony and for other sanctions against 130EP based on spoliation of evidence. The ALJs convened a prehearing conference and entertained argument from counsel on the motion to strike. After careful and thorough review of the evidence and the law pertaining to spoliation, the ALJs concluded that (a) 130EP had a legal duty to preserve the field logs and

[221] The analysis regarding the Geology Report's compliance with 30 TAC § 330.63(e)(5)(C)-(F) is set forth in Section III.E., Hydrogeology, below.

soil samples and (b) 130EP had breached such duty without reasonable excuse. That ruling has not changed and remains in effect. However, the ALJs also found no remedy was appropriate, given Protestants' own 2016 subsurface investigation and their observation of and taking samples from the 2016 borings. Together, these activities offered Protestants the opportunity both to test the opinions and conclusions reached by BME based on the 2013 borings and soil samples and to develop evidence to contradict the Geology Report's conclusions.[222] That finding and resulting ruling also has not changed. The ALJs further find that the disposal of the field logs and the 2013 samples do not render the findings and conclusions in the Geology Report inaccurate, scientifically unreliable, or legally insufficient. Protestants had the ability to "double-check" the representations made in the Geology Report regarding the subsurface characteristics at the Site by performing their own investigation, collecting their own samples, and obtaining their own lab results.

Moreover, the evidence from Protestants' 2016 subsurface investigation and boring program, along with the evidence from the 2016 borings, lends credence to and generally supports the basic findings and conclusions set forth in the Geology Report regarding the subsurface materials at the Site. While the Geology Report may slightly over-estimate or exaggerate the amount of silty fat clay, or CL, in Stratum II, and although Protestants' soil samples may have contained more lower-plasticity, lean clay than those collected by BME, the preponderance of the evidence shows that the primary material found in almost all borings was highly plastic fat clay, or CH, and that Stratum II is composed primarily of fat clay. Although Protestants' lab testing of its own samples showed primarily lean clay in Stratum II, Protestants were admittedly and purposefully looking to sample material that looked different than material described in the Geology Report. Protestants tested less than 4% of all samples they collected, and Mr. Rubinov testified that he observed lean and fat clays in almost all of the Protestants' 11 borings. Further, Protestants' testing on samples from the 2016 borings showed a majority of the soil classified as fat clay, although less than was shown by BME's lab results. Significantly, for purposes of determining the suitability of the subsurface soil for its intended use, the evidence showed that all but one of the samples tested met TCEQ requirements for use as landfill

[222] Although the May 2016 supplement is identified by 130EP and BME as a "supplement" to the Geology Report, because it was not formally made a part of the Application and did not undergo technical review by the ED, the ALJs are not treating it as part of the Application but as evidence offered by 130EP in support of the Application.

liner material. Additionally, Protestants offer no evidence that the existence of subsurface material other than fat clay changed the overall general conclusions reached by the Geology Report concerning the subsurface characteristics. The preponderance of the evidence indicates that almost all of the in-situ soils at the Site are suitable for use as compacted soil liner, infiltration layer material, operational and protective cover, and for the upper layer of the final cover system erosion layer.

Looking beyond the narrative of the Geology Report and reviewing the boring logs included, BME clearly documented that it found small amounts of material other than fat clay and lean clay in the samples from the 2013 borings. Nevertheless, 30 TAC § 330.63(e)(4) does not set forth the complexity with which an applicant must characterize subsurface soil materials and strata. Therefore, Protestants' argument regarding the "overly simplistic" description of the subsurface set forth in the Geology Report, even if valid, is unavailing. In conclusion, the discrepancies between the characteristics of the soil samples obtained by BME in 2013 and those obtained by BME and Protestants in 2016 do not render the descriptions in the Geology Report of the soil samples and the geotechnical properties of the subsurface materials unreliable, inaccurate, or out of compliance with the rule's requirements.

Protestants take issue with the Geology Report's representation that no fractures were observed in any of the samples taken from the 2013 borings, considering the 2016 borings and Protestants' borings showed several fractures. The ALJs presume that fractures existed in the subsurface material at the Site in 2013, given the findings from the subsequent subsurface investigations and the fact that not every square foot of subsurface material at the Site was sampled in 2013. However, the evidence showed that the frequency of fractures in the subsurface was extremely limited in comparison to the total number of samples taken from the Site. Further, the testimony from Mr. Snyder and Mr. Adams was unequivocal and clear regarding the presence of fractures in the samples from the 2013 borings: there were none. Half of the fractures found in the 2016 borings were found in samples from borings east of the Landfill footprint. Therefore, there is insufficient evidence in the record to indicate that 130EP misrepresented the presence of fractures in its boring logs or elsewhere in the Geology Report. Importantly, the ED's geoscientist who performed the technical review of the Application and

reviewed the May 2016 supplement testified that nothing from the 2016 borings changed his ultimate finding that the Geology Report contains complete and accurate information about the geology at the Site and meets the requirements of 30 TAC § 330.63(e)(4).[223]

The evidence does show the presence of multiple fractures found in the soil samples taken from BME-43, one of the 2016 borings. The loss of circulation experienced when this boring was drilled is further evidence that there was an area of greater permeability in the space where the boring was drilled that allowed the drilling fluid to flow through. It is unclear from the evidence how extensive this area was, or whether it was a larger void or fault as Mr. Rubinov indicated was possible. Dr. Ross did not opine that the evidence proved the existence of a fault in that vicinity, only that there was a zone of potential leachate migration. Mr. Snyder essentially agreed with that testimony, but he testified that the porosity was limited given the ease of establishing re-circulation to complete the boring. Given his involvement with the 2016 soil investigation, it is reasonable to infer that Mr. Snyder obtained this information from Mr. Stamoulis. Moreover, Mr. Rubinov, who witnessed the drilling of BME-43, did not refute Mr. Snyder's statement regarding establishment of re-circulation. Importantly, regardless of whether the zone is characterized as a fault or simply a pocket of greater hydraulic conductivity or of more secondary features, the area where it is located is 200 feet from the Landfill footprint.

Similarly, the ALJs find that 130EP did not submit false information to the ED in the Geology Report and associated boring and piezometer logs that would constitute grounds for denial of the Application. Mr. Adams's explanation as to why he classified a particular depth interval in a boring as fat clay when the only sample from the boring at that depth was classified as lean clay was reasonable given the totality of the evidence. Specifically, the evidence showed that the soil from that interval, whether classified as fat or lean clay, still qualifies under TCEQ rules for use as landfill liner material. Additionally, Mr. Snyder's basis for including lithologic descriptions of the adjacent borings in the piezometer logs he created was also reasonable under the circumstances, given the lack of intact samples and lab test results from the piezometers. Protestants offered no evidence to show that the lithology from the adjacent borings would differ in any meaningful way from the lithology in the piezometers, or that Mr. Snyder's methodology

[223] Tr. at 1992-1993; ED-AA-1 at 11-12.

in creating the piezometer logs was flawed. Further, Mr. Snyder's supervision of the drilling operations, as represented in the Geology Report, did not require his physical presence or observation of every drilled boring or to make the final decision on every single detail involving all borings drilled and all samples taken. Direct, on-site supervision of the field work by the professional geoscientist preparing the Geology Report is not explicitly required by the rules, and Mr. Snyder's working relationship with Mr. Stamoulis and Mr. Adams was sufficient to ensure the field work was done in accordance with established field exploration methods.

As to Protestants' claims that the procedures employed by BME for collecting and maintaining the information and data used to prepare the Geology Report violated relevant rules and professional standards, the preponderance of the evidence shows that BME's methodology did not violate any applicable rule, was adequate for the work performed, and did not result in unreliable findings or conclusions. As an initial matter, some of the TCEQ rules relied upon by Dr. Ross in opining that BME violated applicable rules concerning record retention and QA/QC procedures were rescinded over eight years ago. The TCEQ rule regarding retention of data records by a permittee is not applicable to an applicant such as 130EP.[224] In any event, BME met the requirements of the rule by retaining the final boring logs and detailed descriptions of the samples, which are records of data used to complete the Application.

Regardless of whether BME's protocols for collecting and retaining soil samples at the Site met any ASTM standards, such standards are not the applicable rules here. The applicable requirements regarding borings, sampling, and lab testing are set forth in TCEQ's rules in title 30 of the TAC. While certain provisions of the TAC incorporate ASTM standards as requirements, as with certain required lab testing, the ASTM standards referred to by Dr. Ross are not set forth as requirements in the applicable TCEQ rules pertaining to the subsurface investigation. There is further insufficient evidence to support Protestants' claim that the Application, and specifically the Geology Report, was not prepared in conformance with the Texas Engineering Practice Act and the Texas Geoscience Practice Act. The evidence shows that final boring logs included in the Geology Report were prepared by a qualified professional geoscientist and geotechnical engineer based on personal observations of the samples and lab test

[224] 30 TAC § 305.47.

results from such samples. Protestants cite to no decision by the Texas Board of Professional Geoscientists finding that disposal of field notes and soil samples constitutes a violation of that Board's record-keeping rule, and the ALJs decline to so find here.

However, the evidence clearly shows that 130EP failed to comply with the requirement in 30 TAC § 330.63(e)(4) that the boring plan for BME's subsurface investigation be approved by the ED prior to initiation of work. It is undisputed that BME had already drilled the borings at the Site in August and September 2013 before the ED approved the Soil Boring Plan. However, the evidence shows that there have been situations in the past in which an applicant has drilled borings prior to receiving approval from the ED for the boring plan, and there is no evidence that in any such case did the ED require the applicant to redrill a boring as a result of the failure to obtain pre-approval of the boring plan. Likewise, in this case, the evidence shows that although the ED asked for additional information and clarification from BME regarding the borings drilled and the samples taken from the borings, the ED ultimately did approve the boring plan and did not require BME to redrill any borings.

E. Hydrogeology

An applicant seeking an MSW permit must also include hydrogeological information and data from the Site in its Geology Report. As part of the characterization of the hydrogeology at the Site, 130EP was required to include a description of the regional aquifers in the vicinity based on published and open-file sources that include:

- names and association with geologic units;
- composition;
- hydraulic properties;
- water table or artesian conditions;
- hydraulic connections;
- a regional water-table map or potentiometric surface map;
- estimate of the rate of groundwater flow;

- typical values or range of values for total dissolved solids content of groundwater;
- areas of recharge within five miles; and
- present use of groundwater, including information concerning water wells within one mile of the Site.[225]

130EP was also required to include in the Geology Report data regarding the site-specific groundwater conditions at and near the Site.[226] Such data includes the depth at which groundwater was encountered and records of after-equilibrium measurements in all of its borings; records of water-level measurements in monitoring wells; a tabulation of all relevant groundwater monitoring data from any on-site wells; and identification of the uppermost aquifer beneath the facility and any lower aquifers hydraulically connected to the uppermost aquifer, including groundwater flow direction and rate and information obtained from the hydrogeological investigation of the Site area.[227]

1. 130EP

a. Regional Aquifers

130EP contends that the Geology Report includes the required description of the regional aquifers in the vicinity of the Site.[228] According to the report, the Carrizo-Wilcox and Leona Formations supply groundwater in Caldwell County. The TWDB designates the Carrizo-Wilcox as a major aquifer, but does not designate the Leona as either a major or minor aquifer. The report states that wells completed in the Carrizo-Wilcox east of the Site account for most of the groundwater produced in the northern part of Caldwell County, and that the Leona

[225] 30 TAC § 330.63(e)(3).

[226] 30 TAC § 330.61(k)(1).

[227] 30 TAC § 330.63(e)(5)(C)-(F).

[228] 130EP-4 at 11-12, 16-18, 37-42.

(from which some groundwater is produced) is located several miles south of the Site.[229] As previously discussed, the Application indicates that Leona material is not present on the Site.[230]

According to the Geology Report, the Leona outcrops in a narrow plain in the center of Caldwell County, and its thickness ranges from a few feet at the edges to more than 40 feet in its center. The Leona currently has limited capacity to produce groundwater, yielding small to moderate amounts to domestic wells along Plum Creek near Lockhart; none of these wells are in the vicinity of the Site. Most of the public water supply now comes from the Carrizo-Wilcox.[231]

The Geology Report indicates that the Carrizo-Wilcox is comprised of the aquifer portions of the Wilcox Formation and the Carrizo Formation. The Wilcox crops out east of the Site in a northeasterly belt across Caldwell County, dipping to the southeast at an average of 150 feet per mile and increasing in thickness in the same direction. Meanwhile, the Carrizo occurs east and southeast of the Wilcox outcrop approximately 12 miles southeast of the Site. According to the report, the relevant literature reflects that fresh to slightly saline water is found in the Carrizo Wilcox from approximately 50 feet near the outcrop to 2,800 feet in the southeast corner of the county. The Carrizo-Wilcox yields small to large amounts of groundwater for domestic, public water supply, and irrigation purposes.[232] According to the report, published literature shows no aquifers located beneath the Site.[233]

A table in the Geology Report sets out the composition of the Leona and Carrizo-Wilcox, along with hydraulic properties including their transmissivity, groundwater flow rate, water quality (including total dissolved solids and chlorides), recharge zones, a potentiometric surface map for the Carrizo-Wilcox, the present use of water from the aquifers, and the water wells within one mile.[234] Searching records from the TWDB, the TCEQ, and the District's websites;

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[229] 130EP-4 at 16, 227.

[230] 130EP Snyder-1 at 25; 130EP-4 at 16, 227.

[231] 130EP-4 at 16.

[232] 130EP-4 at 16.

[233] 130EP-4 at 29.

[234] 130EP-4 at 17, 41.

the USGS database; and the TCEQ Water Utility Database, 130EP located five water wells within one mile of the Site (all to the east) and identified those wells on a USGS topographical map.[235] Information regarding depth, completion date, completion aquifer, usage, and latitude-longitude coordinates for the five wells are included in the report.[236]

b. Hydrogeological Characteristics at the Site

Piezometers are used to observe groundwater elevations. They consist of a casing that goes down to a particular depth and a screen at a depth at which groundwater elevation can be observed. To properly measure, the surface location of each piezometer is surveyed, and the top of the casing (where it comes out of the ground) is measured.[237]

As discussed previously, BME installed 17 piezometers at the Site, each within 30 feet of a soil boring as part of its subsurface investigation at the Site.[238] Fifteen of the piezometers were installed in Stratum II weathered clay, and two were installed in Stratum III unweathered clay. Five of the piezometers were installed at depths between 30.5 and 41 feet bgs, well above the Stratum II-Stratum III interface and therefore, according to 130EP, not intended to identify that interface or measure water levels at just above that interface.[239] The Geology Report included the dates the piezometers were installed, along with their depths, surface elevations, top-of-casing elevations, and filter pack and well screen elevations; a detailed schematic of a typical piezometer at the Site; maps of piezometer locations and cross-sections of the piezometers and associated borings; and logs.[240] 130EP contends that the May 2016 supplement included surveyed top-of-casing elevations that differed from the elevations shown in the Application. The Application used target elevations for corresponding borings as the elevations

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[235] 130EP-4 at 17, 42.

[236] 130EP-4 at 18.

[237] Tr. at 2004.

[238] In the Application, the piezometers were represented to each be within 10 feet of a corresponding boring. 130EP-4 at 20. In the May 2016 supplement, 130EP stated that the location of the piezometers are within approximately 30 feet of the corresponding borings. 130EP-7 at 5.

[239] 130EP-4 at 131-143; 130EP Response at 37.

[240] 130EP-4 at 26-27, 50, 127-149, 152-160.

for the piezometers. According to the 2016 May supplement, five piezometers had corrected elevations with a difference greater than one foot. 130EP claims that the differences in elevation are insignificant given the size of the Site, the purpose and scope of the subsurface investigation, and the distance between data points. The May 2016 supplement states that the resulting changes to water levels in the three piezometers that have shown water were only 0.56 feet to 0.76 feet.[241]

According to the Geology Report, groundwater occurs at the interface of Stratum II and lower permeability Stratum III, as well as at shallow depths due to precipitation. BME reported that groundwater was not observed in any boring or piezometer during drilling prior to introduction of drilling fluid, and that groundwater was encountered in only three piezometers (P-1, P-4, and P-32), all with screened intervals at the bottom of Stratum II.[242] Water level readings taken from the piezometers between October 2013 and October 2014 are set forth in the report, and water level readings from October 2013 to May 2016 are included in the May 2016 supplement.[243] According to the water level readings, P-4 has been dry since November 2013, and P-1 has been dry since August 2015. Although P-32 (bottom elevation 477.42 feet) was originally dry, it was found with 5.97 feet of water two weeks after installation and has retained water through May 2016, when it showed 4.27 feet of water.[244] P-32 is located near the south boundary of the Site, approximately 200 feet southeast from the Landfill footprint.[245] According to Dr. Ross, the only groundwater found by Protestants in their borings was in boring MP-1, which is located very near P-32, at approximately the same depth as the water found in P-32, above the dark gray unweathered clay.[246] Mr. Snyder testified that there is an unusual near-absence of groundwater at the Site down to a depth of several hundred feet bgs, and that the Site has less groundwater than any other site he has worked on that is proposed for or used as an MSW landfill.[247]

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[241] 130EP-7 at 5-6, 23-24.

[242] 130EP-4 at 26-27, 155, 158, 160.

[243] 130EP-4 at 28; 130EP-7 at 24.

[244] 130EP-7 at 24.

[245] 130EP Snyder-1 at 27; 130EP-7 at 14.

[246] Tr. at 1397-1399.

[247] 130EP Snyder-1 at 26.

The May 2016 supplement, which included the correction to the top-of-casing elevation, confirms that the groundwater found in piezometer P-1 was encountered between 527.69 feet mean sea level (ft/msl) and 533.58 ft/msl in a screened interval between 528.69 ft/msl and 538.69 ft/msl.[248] The Stratum II-Stratum III interface in the 2013 boring corresponding to P-1 (BME-1) was found at 528.91 ft/msl.[249] In piezometer P-4, groundwater was encountered between 518.92 ft/msl and 519.61 ft/msl in a screened interval between 519.42 ft/msl and 539.42 ft/msl.[250] The Stratum II-Stratum III interface was found at 514.89 ft/msl in the 2013 boring corresponding to P-4 (BME-4), at 527.99 ft/msl in the 2016 boring corresponding to P-4 (BME-4B), and at 532.00 ft/msl at the Protestants' boring in the vicinity of P-4.[251] In piezometer P-32, groundwater was found between 477.42 ft/msl and 483.62 ft/msl in a screened interval between 478.42 ft/msl and 498.42 ft/msl.[252] The Stratum II-Stratum III interface in the 2013 boring corresponding to P-32 (BME-32) was found at 478.12 ft/msl.[253]

The Geology Report states that the water level readings from the piezometers reflect that small amounts of groundwater occur at the Site in Stratum II just above its interface with Stratum III under unconfined, water table conditions. Other than this zone of groundwater, the May 2016 supplement indicates that BME's field investigation showed no aquifers present beneath the Site.[254] The boring logs show weathering in the clay decreasing with depth, and the lack of weathering in Stratum III indicates it serves as a lower confining unit (aquitard) for Stratum II, creating a pathway for groundwater movement at the interface of the two strata.[255] According to the Geology Report, although the groundwater in this zone is insufficient to supply usable quantities for industrial, irrigation, domestic, or livestock use, the volume is sufficient for

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[248] 130EP-7 at 23-24. The Application indicated that the water was encountered between 526.91 ft/msl and 534.14 ft/msl in a screened interval between 527.91 ft/msl and 537.91 ft/msl. *See* 130EP-4 at 27-28.

[249] 130EP-4 at 161.

[250] 130EP-7 at 23-24. The Application indicated that the water was encountered between 511.63 ft/msl and 520.34 ft/msl in a screened interval between 512.13 ft/msl and 532.13 ft/msl. *See* 130EP-4 at 26-27.

[251] 130EP-4 at 161; 130EP-7 at 17; Protestants Ex. 5-U.

[252] 130EP-7 at 23-24. The Application indicated that the water was encountered between 477.12 ft/msl and 484.38 ft/msl in a screened interval between 478.12 ft/msl and 498 ft/msl. *See* 130EP-4 at 26-27.

[253] 130EP-7 at 17.

[254] 130EP-7 at 8.

[255] 130EP-4 at 29.

sampling and analysis in accordance with TCEQ rules. Therefore, according to criteria used by the TCEQ MSW Permits Section for aquifer characterization, this zone is an aquifer and is the uppermost aquifer at the Site under TCEQ rules.[256] Mr. Snyder testified that this zone of groundwater occurrence is the uppermost aquifer at the Site, and that no lower aquifers are hydraulically connected to this zone beneath the Site.[257]

130EP notes that TCEQ rules do not require in-situ permeability testing for analysis of the hydraulic conductivity of the subsurface, but do require laboratory permeability testing. Originally, BME intended to perform slug tests in some of the piezometers, which would measure permeability in the field. However, Mr. Snyder subsequently made the judgment call that there was not enough of a water column in any of the piezometers to conduct a valid slug test.[258] Mr. Adams testified that BME followed the permeability testing set forth in TCEQ rules when it performed lab tests on soil samples from both the 2013 borings and the 2016 borings.[259] According to 130EP, although the rules only require a lab test from one sample from each stratum, BME performed permeability testing on eight Stratum II samples and three Stratum III samples from the 2013 borings and provided the average permeabilities from those tests in the Application.[260] Further, BME performed permeability testing on one sample from Stratum II and two samples from Stratum III from the 2016 borings. Mr. Adams testified that the results from the testing performed on the Stratum II sample from the 2016 borings were consistent with the results on the Stratum II material from the 2013 borings. Further, the test results from the Stratum III samples from the 2016 borings showed a higher permeability than the 2013 borings, but Mr. Adams explained that those results are likely inaccurate given disturbance to the samples during preparation.[261]

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[256] 130EP-4 at 29.

[257] 130EP Snyder-1 at 31.

[258] Tr. at 442-443.

[259] Tr. at 893-896; *see* 30 TAC § 330.63(e)(5).

[260] 130EP Adams-1 at 15; 130EP-4 at 24-25, 175-218.

[261] 130EP Adams-1 at 16.

Mr. Snyder evaluated the direction of groundwater flow at the Site and its velocity. The contour maps included in the Geology Report and the May 2016 supplement (updated to include information from the 2016 borings) both show groundwater flow from the Landfill footprint may occur to the northwest, west, southwest, south, southeast, and east.[262] Mr. Snyder testified that there was insufficient data to prepare a potentiometric surface map because of the limited groundwater at the Site, so he used the structural contour map of the top of Stratum III to evaluate the groundwater gradient.[263] According to Mr. Snyder, in the type of hydrogeologic setting found at the site, the groundwater surface typically mimics the surface topography and the contouring of an unweathered surface such as Stratum III.[264] The Application indicates that the structural contour map does bear a strong resemblance to the surface topography.[265] The evaluation revealed eight separate flowlines representative of the gradient variability throughout the Site, and the gradients were determined for each flowline.[266] The gradients Mr. Snyder estimated from the structural contour map were used in his calculations for groundwater flow velocity, which also used an arithmetic mean from hydraulic conductivity determined from lab testing. The calculated groundwater velocities for each flowline are included in the Geology Report.[267] 130EP contends that the groundwater gradient evaluation in the Application was revised in the May 2016 supplement with respect to the contours for 520 feet and 530 feet bgs in the northern portion of the Site.[268]

2. The County

The County argues that the Application, the testimony of Applicant's witnesses, and the testimony of Dr. Ross, Mr. Rubinov, and Mr. Courtney shows that 130EP failed to properly identify potential groundwater, the uppermost aquifer, and any lower aquifers hydraulically connected beneath the Site. The County further contends that there is evidence in the record that

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[262] 130EP Snyder-1 at 27; 130EP-4 at 161; 130EP-7 at 17.

[263] 130EP Snyder-1 at 27-28; 130EP-4 at 30-31.

[264] 130EP Snyder-1 at 28.

[265] 130EP-4 at 228.

[266] 130EP-4 at 31, 228.

[267] 130EP-4 at 31, 228.

[268] *Compare* 130EP-4 at 222, *with* 130EP-7 at 18.

the Wilcox Formation is present beneath the Site and specifically claims that there have been two wells drilled into the Wilcox Formation near the proposed Site. Further, the County argues that the Application fails to provide adequate information to address concerns regarding the formations under the impoundment area of the Site 21 Reservoir. The County also joins in and adopts all of the arguments made by Protestants concerning hydrogeology issues.

3. The District

The District notes that its geologist, Mr. Wilson, believes that the Wilcox Formation outcrops under the waters impounded at the Site 21 Reservoir. Conceding the impoundment is outside the area sought by 130EP to be permitted, the District nevertheless contends it would be prudent to explore the formations under the impoundment to develop additional information concerning potential impacts of the planned Facility operation. The District further argues that the Carrizo-Wilcox Formation extends to an area south of the Site, based on water production from a formation that water well drillers identified as the Wilcox.

4. Protestants

a. Hydraulic Conductivity

Dr. Ross was critical of 130EP's analysis of the hydraulic conductivity of the subsurface material at the Site and the corresponding discussion in the Application of the potential for leachate migration from the Landfill to nearby aquifers in the event of a liner leak. Protestants cite to Dr. Ross's educational background in civil engineering, her research concerning water movement through saturated soils, and her professional engineering experience in measurement of hydraulic conductivity in arguing that she is the "most highly qualified and most experienced witness" to testify regarding groundwater movement at the Site.[269]

Dr. Ross testified that hydraulic conductivity, a measurement of the subsurface capacity to transmit groundwater, is the best indicator of the potential for leachate migration to aquifers in

[269] Protestants Closing at 43-44; Protestants Ex. 5 at 6-7.

the event of a leak and a key parameter for estimating groundwater velocity and travel times to aquifer receptors.[270] She stated that the hydraulic conductivity measurements set forth in the Application, based on laboratory permeability measurements, were much lower than the values measured in the lab on soil samples from the 2016 borings and Protestants' borings. Dr. Ross testified that lab test results on a sample from one of Protestants' borings revealed that the hydraulic conductivity of some of the material at the Site is approximately 100 times higher than the hydraulic conductivity represented in the Application based on the 2013 borings.[271]

Moreover, according to Dr. Ross, measuring hydraulic conductivity by lab testing is insufficient to accurately reflect actual field conditions because the tests can only be done on cohesive samples, thus biasing lab testing toward more plastic materials with lower hydraulic conductivities. She observed many samples from the 2016 borings and Protestants' borings that were not sufficiently cohesive to allow for permeability testing in the lab. Dr. Ross testified that before lab testing for permeability, gravel and cobbles are removed and the soil is remolded, eliminating natural structures such as root holes, fissures, and fractures, which can significantly contribute to hydraulic conductivity. Based on her determination that the lithology at the Site is complex and consists of incohesive materials, Dr. Ross opined that the lab test results 130EP used to determine hydraulic conductivity do not reliably indicate the range of permeability of the subsurface soils. According to Dr. Ross, in-situ permeability analysis was necessary.[272]

b. Groundwater Model

According to Protestants, (a) inconsistencies in the elevation of the Stratum II-Stratum III interface at boreholes in close proximity to one another, (b) screening of piezometers at elevations above the Stratum II-Stratum III interface, and (c) inconsistencies between measured groundwater elevations and asserted groundwater flow directions all show that 130EP's depiction in the Application of groundwater elevation, flow, and velocity at the Site is unreliable.

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[270] Protestants Ex. 5 at 30.

[271] Protestants Ex. 5 at 32.

[272] Protestants Ex. 5 at 31-32; Protestants Ex. 5-O.

Protestants contend that data from 130EP's piezometers does not support its position that groundwater occurs at the Site at the interface of Strata II and III. Dr. Ross testified that based on her August 2015 measurements, nine of the piezometer bottoms do not reach the interface and are more than a foot above it, and six of those are more than five feet higher than the interface. Therefore, Dr. Ross stated, these piezometers did not measure groundwater at the interface.[273] Protestants also noted that 130EP made changes to the top of the casing elevations for the piezometers during BME's 2016 field work at the Site. According to the ED's witness Arten Avakian, P.G., changes to the top-of-casing elevations would change the subsurface elevation by the same amount. Therefore, if the top-of-casing elevation changes were made to piezometers used to determine the contact point between Strata II and III, it could affect the depth of that point.[274] Further, the elevation of the screen would be corrected by the same amount to accurately reflect the elevation of the top and bottom of the screen interval. Finally, according to Mr. Avakian, if the top-of-casing elevations were wrong, the potentiometric levels were also wrong.[275]

Dr. Ross also testified that the groundwater gradients set forth in the Application are inaccurate. She stated that the boreholes drilled in close proximity to one another showed significant differences in the elevation of the interface between Stratum II and Stratum III, up to 17.11 feet. Such irregularity, according to Dr. Ross, indicates that the smooth 10-foot contour lines presented on 130EP's groundwater gradient figures in the Application and in the May 2016 supplement do not reflect accurate conditions beneath the Site. She stated that the irregularity also indicates that groundwater at the Site flows through fractures and fissures and not uniformly across the interface of the Stratum II and Stratum III.[276]

Dr. Ross described additional inconsistencies in the Application's depiction of groundwater flow at the Site. She testified that the delineation of contours on the top of Stratum III shown in the Application are inconsistent, by approximately 10 feet, with the

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[273] Protestants Ex. 5 at 37.

[274] Tr. at 2004-2005.

[275] Tr. at 2005.

[276] Protestants Ex. 5 at 35-36; 130EP-4 at 222; 130EP-7 at 18.

measured interface between Stratum II and Stratum III at one boring location. Specifically, Dr. Ross states that the 520 ft/msl contour line is very close to BME-1, even though the Stratum II-Stratum III interface at that boring was found at 528.91 ft/msl. She contends, therefore, that the 530 ft/msl contour line should be much closer to BME-1.[277] Dr. Ross also stated that the depiction in the Application of groundwater flow from the center of the Landfill towards its edges is not supported by the piezometer data. Specifically, piezometer P-1, which recorded a high water elevation of 534.14 ft/msl is inconsistent with the absence of water in piezometer P-7, where the Stratum II-Stratum III interface is represented to be 524.95 ft/msl. Protestants argue that groundwater could not flow from P-7 up to P-1.[278]

5. The ED

The ED notes that the Application contains a description of the groundwater at the Site in general terms and describes the hydrogeology at the Site. The ED also cites to Mr. Snyder's testimony that there is very little groundwater present in the silty clays and shales at the Site down to a depth of several hundred feet bgs, and that the Site has less groundwater than any site on which he has previously worked.[279] Mr. Avakian testified that the information provided by 130EP in the Application and the May 2016 supplement complies with TCEQ rules regarding hydrogeology.[280]

6. The ALJs' Analysis

There is no dispute that the Application includes a description of the regional aquifers in the vicinity of the Site, which are identified as the Leona and the Carrizo-Wilcox. This description included these aquifers' associations with geologic units identified at the Site; their composition; their hydraulic properties; their water table or artesian conditions; their hydraulic connections; the available potentiometric surface map for the Carrizo-Wilcox; their estimated

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[277] Protestants Ex. 5 at 36.

[278] Protestants Ex. 5 at 36-37; Protestants Closing at 48.

[279] 130EP Snyder-1 at 26.

[280] ED-AA-1 at 12.

groundwater flow rates; their typical total dissolved solid content values; their areas of recharge; and the present use of their groundwater. The Application also identified the five water wells within one mile of the Site and those wells' location and aquifers.

The Application also includes a discussion regarding the permeability tests that were performed on soil samples from both the 2013 and 2016 borings as required by 30 TAC § 330.63(e)(5)(B). The evidence shows that these tests were performed on undisturbed soil samples in accordance with the rule and the applicable appendices from the United States Army Corps of Engineers (USACE) and ASTM standards. There is no applicable rule requiring 130EP to perform in-situ permeability tests, and the evidence shows that there was not enough water encountered in any of the piezometers to perform such a test. While in-situ permeability testing would have more accurately reflected the hydraulic conductivity of the subsurface material at the Site, it was not possible or required.

The Application included detailed data regarding the depths at which groundwater was encountered. Specifically, water was not encountered during the drilling of any of the 2013 or 2016 borings prior to the introduction of drilling fluid, and groundwater was found in just three out of the 17 piezometers. The cross-sections prepared from the borings that depicted the strata beneath the Site are annotated to show the level at which groundwater was found in the three piezometers (P-1, P-4, and P-32). Further, Protestants' own boring program only found groundwater in one boring, which was very near to P-32, and it was at approximately the same depth.

The preponderance of the evidence shows that the zone of the minimal groundwater occurrence beneath the Site is in Stratum II at or just above its interface with Stratum III, and that this zone is the uppermost aquifer below the Site as identified by the Application and Mr. Snyder. No evidence was offered to indicate that there was any other aquifer beneath the Site, and the evidence showed that no lower aquifers are hydraulically connected to this uppermost aquifer. Although none of the evidence is definitive as to the exact location of the minimal groundwater occurrence below the Site, it was found by both 130EP and Protestants to be just above Stratum III. Although the Stratum II-Stratum III interface was located at different

elevations in borings that were drilled in close proximity to each other, this "irregularity" does not change the location of the groundwater. As with the Application's description of the geological characteristics of the soil, Protestants contend that the surface contour map utilized by Mr. Snyder to estimate groundwater flow directions and velocity is not complex enough given the different elevations at which various borings and piezometers show the Stratum II-Stratum III interface to exist. However, 30 TAC § 330.63(e)(4)(H) does not require any particular level of specificity, and Protestants fail to explain how the alleged simplicity of the surface contour map resulted in an inaccurate determination of the uppermost aquifer.

The preponderance of the evidence also supports the characterization of the groundwater flow and velocity. The evidence showed that the limited hydraulic conductivity of and lack of weathering effects in Stratum III allow it to function as a lower confining unit to the groundwater found in Stratum II and create the pathway for groundwater movement. The differences in elevation of the Stratum II-Stratum III interface result from the topography of the Site, as the evidence shows the shape of the interface strongly resembles the surface topography. Protestants offered no evidence to the contrary with respect to the contouring of the Stratum II-Stratum III interface. Instead, they point to differences in the elevations found in different but nearby borings that, in the scope of the overall hydrology of the Site, are relatively minor and do not alter the groundwater flow directions or velocity in any material way. The revisions to the groundwater gradient evaluation reflected in the May 2016 supplement address Protestants' concerns regarding the relative accuracy of the structural contour map used by Mr. Snyder. Further, Protestants' argument that the direction of groundwater flow reflected by the Application is nonsensical is without merit. The groundwater gradient evaluation does not show groundwater flowing from P-7 in a northwesterly direction toward P-1; instead, it reflects groundwater movement in a westerly or southwesterly direction from P-7.

The evidence provided by 130EP concerning the regional aquifers and the hydrogeological conditions of the subsurface at the Site complies with 30 TAC § 330.63(e)(3) and (5)(C)-(F).

F. Groundwater Monitoring

As part of the Application, 130EP was required to submit a Groundwater Sampling and Analysis Plan in accordance with certain requirements set forth in Subchapter J of chapter 330 in the TCEQ rules governing MSW permitting.[281] Included in the plan must be a delineation of the waste management area, property boundary, proposed point of compliance (vertical surface located no more than 500 feet from the hydraulically downgradient limit of the waste management unit boundary, extending down through the uppermost aquifer), and the proposed location of groundwater monitoring wells. Further, it must include an analysis of the most likely pathway(s) for pollutant migration in the event that the primary barrier liner is penetrated. The analysis should incorporate any groundwater modeling data and results and consider changes in groundwater flow expected to result from facility construction. In addition, 130EP was required to provide detailed plans and an engineering report describing the proposed groundwater monitoring program to meet the requirements of 30 TAC § 330.403.[282]

A certified groundwater scientist must design and certify the groundwater monitoring system, including the number, spacing, and depths of the monitoring wells. The design should be based on technical information specific to the Site, including a thorough characterization of aquifer thickness; groundwater flow rate; groundwater flow direction; effect of construction and operation on flow rate and direction; and thickness, stratigraphy, lithology, and hydraulic characteristics of geologic units and fill materials overlying the uppermost aquifer, the materials of the uppermost aquifer, and materials of the lower confining unit of the uppermost aquifer.[283] There are numerous requirements for the groundwater monitoring program that must be followed and which are designed to ensure the results provide an accurate representation of groundwater quality at the background and point of compliance wells.[284] These requirements include background monitoring wells to allow determination of the quality of background groundwater not affected by leakage; wells installed to allow determination of the quality of groundwater

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[281] 30 TAC § 330.63(f).

[282] 30 TAC § 330.63(f)(1)-(4).

[283] 30 TAC § 330.403(e)(1).

[284] 30 TAC § 330.405.

passing the point of compliance and ensure detection of groundwater contamination in the uppermost aquifer; and well spacing of 600 feet or less unless a site-specific technical demonstration is made.[285]

1. 130EP

130EP contends that, as found by the ED, the Application included a proposed groundwater monitoring system that met the requirements of the applicable rules. 130EP argues that the Application includes a topographical map depicting the waste management area, the property boundary, the proposed point of compliance, and the proposed location of monitoring wells.[286] As part of the Application, 130EP submitted a Groundwater Sampling and Analysis Plan prepared by BME for the Site.[287] Mr. Snyder testified that the plan complies with all applicable regulatory requirements.[288] According to the plan, the Landfill is designed to remain primarily in Stratum II. The plan describes the leachate collection system and sump design that will be incorporated into the excavation of the Landfill. 130EP claims that it included an analysis of the most likely pathways for contaminate migration in the event the primary liner is penetrated.[289] The plan explains that in the event of a leachate release, the contaminants would move downward through the unsaturated portion of Stratum II. If the leachate reached the groundwater just above the interface between Stratum II and Stratum III, the miscible contaminants would be diluted by the groundwater, which moves laterally at the interface of the weathered and unweathered clay.[290] Mr. Snyder stated that the groundwater would move very slowly through the subsurface and much more readily through Stratum II than Stratum III. Further, 130EP points to the design plans and engineering report for the groundwater monitoring program set forth in the Application.[291]

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[285] 30 TAC § 330.403(a).

[286] 130EP-4 at 237.

[287] 130EP-4 at 229-268.

[288] 130EP Snyder-1 at 26.

[289] 130EP-4 at 229-230.

[290] 130EP-4 at 229-230.

[291] 130EP-4 at 224-268.

BME's subsurface investigation at the Site determined that the most likely pathway for contaminate migration is down through the unsaturated portion of Stratum II and then laterally at or near the interface with Stratum III. Further, it found that groundwater would likely flow to the northeast, west, southwest, south, southeast, and east sides of the Site.[292] Based on this analysis and the determination of the direction of groundwater flow, Mr. Snyder designed and certified the groundwater monitoring system to surround the landfill on all downgradient sides (everywhere except a small area at the northeast perimeter) with 26 wells drilled to monitor groundwater at, and up to, 20 feet above the Stratum II-Stratum III interface.[293] According to Mr. Snyder, 25 of the wells will be located downgradient from the Landfill footprint at depths and locations that will allow detection of contamination in the unlikely event groundwater is contaminated by material from the Landfill. All wells will be spaced no more than 600 feet apart. There will be one background monitoring well upgradient from the Landfill footprint on the northeast side.[294] Mr. Snyder testified that the procedures set forth in the Groundwater Sampling and Analysis Plan for sample collection from the wells and the analytical and statistical methods for evaluating the samples will meet the requirements of 30 TAC § 330.405.[295]

130EP asserts that the boring (MP-1) and piezometer (P-32) where groundwater was consistently found are located 200 feet to the southeast of the Landfill footprint, and the water wells completed in the Carrizo-Wilcox nearest to the Site are all more than one-half mile east of the Landfill footprint.[296] It contends that the Wilcox Formation outcrops east of the Site, trends northeast across Caldwell County, and is not hydraulically connected to any formation under the Site.[297] Also, the Carrizo Formation occurs east and southeast of the Wilcox outcrop, approximately 12 miles southeast of the Site.[298] Concerning the southeast area of the Site in the location of MP-1 and P-32, 130EP notes that there will be numerous monitoring wells on the

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[292] 130EP-4 at 229-230.

[293] 130EP-4 at 231-232, 237; 130EP Snyder-1 at 28.

[294] 130EP Snyder-1 at 28; 130EP-4 at 224-268.

[295] 130EP Snyder-1 at 26.

[296] Protestants Exs. 5-T, 5-AD.

[297] 130EP-4 at 229.

[298] 130EP-4 at 16.

east, southeast, and south sides of the Landfill footprint, including one immediately adjacent to the location of MP-1 and P-32.[299]

2. The County

The County argues that the Application, the testimony of Applicant's witnesses, and the testimony of Dr. Ross, Mr. Rubinov, and Mr. Courtney show that 130EP failed to properly identify potential groundwater and the uppermost aquifer and any lower aquifers hydraulically connected beneath the Site. The County further contends that there is evidence in the record that the Wilcox Formation is present beneath the Site, and it specifically claims that there have been two wells drilled into the Wilcox Formation near the proposed Site. Further, the County argues that the Application fails to provide adequate information to address concerns regarding the formations under the impoundment area of the Site 21 Reservoir. The County also joins in and adopts all of the arguments made by Protestants concerning hydrogeology issues.

3. The District

The District takes the position that 130EP's groundwater monitoring program should be required to address water quality in the two water wells drilled in the Wilcox Formation south of FM 1185 in close proximity to the Site.

4. Protestants

In criticizing 130EP's groundwater monitoring system, Protestants again take the position that the site-specific technical information on which Mr. Snyder based his design is inaccurate and unreliable. Therefore, contend Protestants, the Application fails to identify the multiple potential pathways at the Site for leachate migration, rendering the groundwater monitoring system out of compliance with the applicable rule.

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[299] 130EP-4 at 237.

Specifically, Protestants claim that there is a high potential for leachate migration in the southeast corner of the Site near boring MP-1 and piezometer P-32, together with a depositional interface or transition between the Wilcox and Midway formations.[300] Protestants base this claim on the consistent measurement of groundwater in both MP-1 and P-32, combined with the lithology of samples from MP-1 showing clayey silts and cemented sandstone, the types of material Dr. Ross and Mr. Rubinov opined one would find at the transition between the Wilcox and the Midway.[301] Mr. Rubinov testified that it may be difficult to tell between a Midway and Wilcox material in the transition zone, which is evidenced by "interfingering" of silty materials from deltaic deposits on top of marine materials, primarily clays, and the depositional environment changes over time from the marine environment to the delta environment.[302] Mr. Rubinov testified that the rapid transmission of groundwater into MP-1 supports a conclusion that the water was stored in the silty material found in that boring.[303] Finally, Dr. Ross testified that there are numerous wells completed in the Carrizo-Wilcox Aquifer located just east and southeast of the Site, in close proximity to the area near MP-1 and P-32 where potential for leachate migration may be highest.[304] Protestants argue that this potential migration pathway, along with those found by Dr. Ross as existing through Leona sands and gravel, silt or fine laminae of the Wilcox, or silt or sand laminae or fissures and fractures in the Midway group to the Carrizo-Wilcox recharge zone, were not disclosed in the Application or taken into consideration by BME in designing the groundwater monitoring system.[305]

5. The ED

The ED takes the position that, based on Mr. Avakian's technical review of Part II of the Application, the Groundwater Sampling and Analysis Plan and the monitoring system proposed by 130EP meet the requirements of 30 TAC chapter 330.[306] The ED notes that the Application

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[300] Protestants Closing at 51; Tr. at 1518.

[301] Protestants Ex. 5 at 30; Tr. at 1678.

[302] Tr. at 1677-1679.

[303] Tr. at 1679.

[304] Protestants Ex. 5 at 30; Protestants Exs. 5-T, 5-AD.

[305] Protestants Closing at 52-53; Protestants Ex. 5 at 21.

[306] ED-AA-1 at 12; Tr. at 1991-1992.

indicates that no part of the proposed landfill overlies any major or minor aquifer, that groundwater occurs in Stratum II and is contained by Stratum III, and that groundwater would move slowly if contaminated.

6. The ALJs' Analysis

The preponderance of the evidence shows that 130EP's Groundwater Sampling and Analysis Plan, along with the proposed groundwater monitoring system, meets the requirements of 30 TAC §§ 330.63(f) and 330.403. The plan included the required topographical map, an analysis of the most likely pathway(s) for pollutant migration in the event of a liner leak, and detailed plans and an engineering report describing the monitoring program. The evidence showed that the system has a sufficient number of wells at appropriate locations and depths to yield representative samples from the uppermost aquifer, included a background monitoring well and wells installed to allow determination of the quality of groundwater passing the point of compliance and ensure detection of groundwater contamination in the uppermost aquifer. Further, the wells will be spaced no more than 600 feet apart as required. For the reasons more fully set forth in the ALJs' analysis of BME's subsurface investigation in Section III.D., Geology and Soils, and Section III.E., Hydrogeology, above, the preponderance of the evidence shows that the site-specific technical data used by BME in the development of the groundwater monitoring system was sufficiently accurate and reliable.

Addressing Protestants' specific concerns, the evidence does show an area southeast of the Site that could serve as a pathway for leachate migration in the event contamination was to leak out of the liner and move through the groundwater southward along the gradient to that location. This location is 200 feet southeast of the Landfill footprint. The groundwater gradient evaluation included in the Application shows that groundwater would flow in a southerly or easterly direction from the south end of the Landfill, and not toward the area around BME-32. However, the groundwater modeling system calls for several wells to be installed between the Landfill footprint and this area of concern to the Protestants, with one immediately adjacent to BME-32. Therefore, the groundwater monitoring system is adequately designed to detect contamination in the uppermost aquifer at this location.

G. General Facility Design

As part of the Application, 130EP was required to include descriptions and information concerning several aspects of the general design of the facility. These aspects include the following:

- access and control of access to the facility;
- a generalized process design and working plan of the overall facility, including (a) waste flow diagrams; (b) drawings of the phases of waste collection, separation, processing, and disposal of waste; (c) ventilation and odor control measures; (d) general construction details of storage and processing units, ancillary equipment, and slab and subsurface supports for all storage and processing components; (e) location and design details for containment dikes or walls; (f) plans for storage of grease, oil, and sludge; (g) disposition of effluent; and (h) noise pollution control designs for the transfer station;
- facilitation of proper cleaning of the processing facilities, which can be accomplished by (a) controlling surface drainage to prevent surface water runoff onto, into, and off the treatment area; (b) constructing walls and floors of hard-surface materials that can be hosed down and scrubbed; (c) allowing for thorough cleaning with water or steam, and (d) providing adequate floor or sump drains to remove wash water;
- disposal of liquids, including wastewater, to avoid contamination of surface water or groundwater and to comply with TCEQ rules; and
- if necessary, protection of endangered species.[307]

1. 130EP

The Application indicates that access to the Site will be controlled by a perimeter fence installed at the facility boundary and a locked gate at the entrance road. The fence and gate will be constructed with a mix of barbed wire, woven wire, wood, plastic, piping, or other suitable material, and both will inspected monthly. The gate will be locked when the Facility is not accepting waste. According to the Application, the fence and the gate will keep livestock out of

[307] 30 TAC § 330.63(b). The Species Protection Plan addressing endangered or threatened species at the Site is addressed separately in Section III.J., Endangered or Threatened Species, below.

the Site, protect the public from exposure to health and safety hazards, and discourage unauthorized entry and uncontrolled disposal of waste or hazardous materials.[308]

The storage and processing facilities at the Site include the large item storage area, the reusable materials staging area, the citizens' convenience center, the used/scrap tire storage area, the wood waste processing area, the leachate storage facility, and the truck wheel wash.[309] The Application includes a flow diagram and a schematic drawing depicting the storage, processing, and disposal sequences for the types of wastes that will be accepted at the Facility.[310] There are descriptions of odor control measures for the storage and processing facilities included in the Application.[311] Other drawings provided in the Application show the location of the processing and storage facilities near the entrance, as well as the details of the processing and storage facilities, including construction details of slab and subsurface components for each processing facility and engineering design details of the containment dikes or walls.[312] Specifically, the slab and subsurface support for the truck wheel wash includes concrete footings with bars and stirrups, a concrete wall with bars and concrete footing with bars and stirrups for the citizens' convenience center, and a secondary containment slab, tanks foundation, and concrete wall all with bars, and a concrete footing for the leachate storage facility.[313]

Mr. Adams testified that geotechnical evaluations of the sites for the processing and storage facilities would be appropriately conducted closer to the construction phase when the actual final size of the structures and the construction materials to be used are known.[314] According to the Application, grease trap waste, used motor oil, and sludge will not be accepted

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[308] 130EP-2 at 26.

[309] 130EP-2 at 32.

[310] 130EP-2 at 27, 39-40.

[311] 130EP-2 at 28-31; 130EP-5 at 143-144. The Application includes an Odor Management Plan, which is analyzed in further detail in Section III.Q., Odor, below.

[312] 130EP-2 at 27, 41-45.

[313] 130EP-2 at 42-43, 45.

[314] Tr. at 890.

at the Facility.[315] The Application provides a description of the processes for waste disposal at the Facility.[316]

For the large item storage area, citizens' convenience center, and used/scrap tire storage area, large items, MSW from the public, and tires will be transferred into steel roll-off containers or trailers, which will be tarped to prevent rainfall accumulation. The containers and trailers will be cleaned by removing loose material and disposing of it at the working face of the Landfill and then washing down the containers and trailers with water.[317] At the reusable materials staging area, inert and non-inert materials will be stored for future operational use. The non-inert materials will be located in areas with positive drainage away from the stockpiles to prevent surface water runon, while contaminated runoff will be prevented by containment berms.[318] The citizens' convenience center will be constructed of reinforced concrete. Waste spills will be picked up and disposed of at the working face, and the concrete will be washed down with water as needed.[319] Wood waste will be chipped and stockpiled at the wood waste processing area in small piles. The leachate storage facility will include two steel storage tanks enclosed in a reinforced concrete structure. The concrete structure will be periodically cleaned by removing loose material and disposing of it at the working face and then washing it down with water. The truck wheel wash will be constructed of metal and reinforced concrete. Mud from the settling basis will be periodically disposed of at the working face and the concrete surfaces will be washed down with water. All wash water will be treated and disposed of as contaminated water (water that may have come into contact with waste).[320]

According to the Application, the storage and processing facilities will be maintained and operated to manage runon and runoff during the peak discharge from a 25-year, 24-hour storm event to prevent the off-site discharge of waste, including processed and stored materials.[321]

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[315] 130EP-2 at 12-13.

[316] 130EP-2 at 27-31.

[317] 130EP-2 at 32.

[318] 130EP-2 at 32, 44.

[319] 130EP-2 at 32.

[320] 130EP-2 at 32-33.

[321] 130EP-2 at 34.

Controls will be implemented to minimize surface water running on, into, and off of the storage and processing facilities. Contaminated water will be handled in a controlled manner and, if discharge is necessary, pursuant to TCEQ authorization.[322] The Application indicates that the Facility is designed to keep contaminated water separate from uncontaminated surface water runoff, and notes that contaminated water will not be discharged to the surface water management system at the Site. Pursuant to applicable rules, 130EP will notify the TCEQ of its intent to operate pursuant to a general stormwater discharge permit (Permit No. 050000) for industrial activity.

2. The County

The County argues that the testimony of 130EP's witness Tyson L. Traw, P.E., showed that 130EP failed to adequately analyze drainage from the scale house, citizens' convenience center, truck wheel wash, transfer station, maintenance building, and leachate storage facility.

3. The District

The District argues that 130EP's evidence regarding the general design of the proposed facility is "sparse" with respect to stormwater drainage quantity and quality at the storage and processing facilities. For instance, the District claims 130EP did not know the stormwater discharge point locations or number. Therefore, the District argues, it could not effectively evaluate potential impacts of stormwater runoff on the use of its easement for the Site 21 Dam.

Further, the District contends that although 130EP acknowledged that large quantities of water will be needed for construction of facilities at the Site, 130EP did not provide an estimate of the necessary amount until the final day of the hearing. The District claims that the source of this water is uncertain. While Polonia Water Supply Corporation (Polonia WSC) acknowledges that the Site is within its service area and therefore it has an obligation to supply water to the Site, currently there is only a small line supplying the Site for a standard service agreement. The District argues that the evidence showed that a non-standard agreement will be required for the

[322] 130EP-2 at 34; 130EP-3 at 214-420.

water service needed at the Site, that such agreement does not exist, and that there has been no determination that Polonia WSC has the capacity and infrastructure to meet the Site's water needs.

Finally, the District argues that while the SOP calls for the use of soil in controlling potential fires at the Facility, 130EP did not offer any evidence regarding where this soil will come from or how much will be necessary for fire suppression.

Given the uncertainties regarding the effects of stormwater runoff, the supply of water, and the availability of soil for fire suppression, the District requests information regarding 130EP's plans as they develop so that the District can make comments, if necessary, to address potential impacts from the Facility's operations on the use of its easement. The District seeks a mechanism included in the permit requiring 130EP to put the District on notice of any planned changes in operations, design, or waste acceptance.

4. Protestants

According to Protestants, given the topographic relief at the Site, the Application does not provide accurate or complete information pertaining to the foundation design for the leachate storage facility, the scale house,[323] the transfer station, and the citizens' convenience center. Referring to the General Site Plan drawing located in Part I of the Application, Protestants claim the natural ground surface beneath the leachate storage facility varies by roughly ten feet, by roughly six feet beneath the transfer station, and by some unknown distance under the scale house and citizens' convenience center. Mr. Adams agreed that there was variance in the natural topography beneath the transfer station site and leachate storage facility, that he did not know the elevation at which the transfer station would be constructed, that fill could be necessary to make the transfer station site level, and that he did no geotechnical evaluation specific to any of the storage or processing facilities.[324] Protestants claim that details regarding subsurface supports for these facilities were required to be included in the Application. Without those

[323] There are scales in a scale house located at the gatehouse to weigh loads as they enter the facility.

[324] Tr. at 845-847.

details and any geotechnical evaluation, Protestants argue, the Application does not include generalized construction details of slab and subsurface supports of all storage and processing facilities. Protestants emphasize the importance of such details, including the volume of leachate to be stored at the leachate storage facility and its proximity to the 100-year floodplain and an intermittent stream.

5. The ED

The ED takes the position that 30 TAC chapter 330 does not place limitations or restrictions on the design of the Facility and that the TCEQ has no authority to restrict the general design. The ED determined that the Application included sufficient information to comply with the requirements of 30 TAC § 330.63(b) regarding general facility design.

6. The ALJs' Analysis

The Application includes the information and descriptions required by 30 TAC § 330.63(b) regarding the general design of the facility. It addresses access to the facility and describes how the fencing and the gate will control access, and it includes the mandated flow diagrams and schematic drawings of the collection, separation, storage, processing, and disposal of waste received. It also sets forth proposed ventilation and odor control measures, generalized construction details of all the storage and processing units and ancillary equipment, locations and design details for containment dikes and walls, and proposed disposition of effluent from processing operations. Further, no grease, oil, or sludge will be accepted or stored at the Facility. The Application addresses how liquids will be disposed of in order to prevent surface or groundwater contamination, how the processing units will be kept sanitary and clean, and how wastewater will be properly treated and disposed of.

Contrary to Protestants' claim, the Application includes the required construction details of the slab and subsurface supports. The operative word in the rule mandating these details is "generalized." The information provided in the construction drawings in the Application is general and will clearly need clarification and expansion before any of the structures are actually

constructed. However, there is no requirement for geotechnical evaluations of the subsurface at these facilities at this stage, nor for final determinations regarding the specific details of the slabs and subsurface reports. There are general details provided regarding the size of the slabs, the number and size of the rebar and supports, and additional provisions for the subsurface structures. The ED found the drawings and detail provided sufficient to meet the requirements of 30 TAC § 330.63(b), and the ALJs agree.

Regarding the District's concerns about stormwater, the evidence shows that surface water runoff will be prevented at the storage and processing facilities. There will be concrete walls and floors that can be hosed down and scrubbed with water to keep them clean. There are no specific requirements concerning stormwater in 30 TAC § 330.63(b). Likewise, there are no water supply or fire suppression requirements in 30 TAC § 330.63(b). Those issues are more fully addressed elsewhere in this PFD in Section III.P., Site Operating Plan, and Section III.R., Water Supply, respectively. As for the District's request for a permit condition requiring 130EP to provide notice to the District regarding planned changes in operation, design, or waste acceptance at the Facility, the ALJs do not find that such a broad provision is called for under the circumstances. The Application includes sufficient detail regarding how 130EP will handle stormwater discharges pursuant to a general permit, and there is no regulatory requirement to prove, at this stage, that a sufficient supply of water has been confirmed.

H. Waste Management Unit Design

In an application for a Type I MSW landfill permit, an applicant must describe how the facility will be designed for rapid processing and minimal detention of solid waste and provide design features for waste storage units to prevent the creation of nuisances and public health hazards due to odors, fly breeding, or other vectors.[325] The applicant must also design the storage units to control and contain spills and contaminated water from leaving the facility.[326]

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[325] 30 TAC § 330.63(d)(1)(A).

[326] 30 TAC § 330.63(d)(1)(B).

Generally, an applicant must also determine and report to the ED any site-specific conditions that require special design considerations.[327]

For the landfill units, the applicant must include (a) provisions for all-weather operation; (b) the landfill method proposed; (c) the elevation of deepest excavation, maximum elevation of waste, and maximum elevation of final cover; (d) the estimated rate of waste disposition and operating life; (e) cross-sections showing plan profiles across the facility indicating the top of the levee, top of the final cover, maximum elevation of the proposed fill, top of the waste, existing ground, bottom of excavations, side slopes of trenches and fill areas, gas vents or wells, and groundwater monitoring wells; (f) construction and design details of perimeter or toe berms for aboveground waste disposal areas; and (g) a liner quality control plan.[328] In addition, 130EP was required to conduct a slope stability analysis for the Landfill.[329]

1. 130EP

In the Application, 130EP provides details of the storage and transfer units (which include a large item storage area, a reusable materials staging area, the citizens' convenience center, a used tire storage area, a wood waste processing area, the leachate storage facility, and a truck wheel wash), how different types of waste will be received, unloaded, staged, processed, managed and ultimately disposed via these units, and the time frames for these activities.[330] This description addresses protections that will be employed to address spills and runoff, potential for contamination of water, and odor containment. The Application also explains how the construction and maintenance of the Landfill access roads, as well as siting of a disposal area close to such roads, will allow for all-weather operation at the Site.[331]

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[327] 30 TAC § 330.61(a).

[328] 30 TAC § 330.63(d)(4).

[329] 30 TAC § 330.337(e).

[330] 130EP-3 at 10-12.

[331] 130EP-3 at 13.

Further, the Application details that development of the Landfill will combine area-excavation fill with a maximum excavation elevation of 501.9 ft/msl with aerial fill to the proposed maximum elevation of 731 ft/msl for disposed waste and 736 ft/msl for final cover.[332] According to the Application, the total volume available at the Landfill for waste disposal and daily cover will be approximately 33.1 million cubic yards, the Facility will receive waste approximately 5.5 days per week and 286 days per year, and the waste acceptance rate will increase approximately 1.58% for the operating life of the Facility, which is estimated at 44 years.[333] Cross-sections with plan profiles across the Site are provided in the Application, and the profiles depict existing and proposed depths of all fill areas.[334] The cross-sections show the top of the proposed fill, wastes, and final cover; the maximum elevation of the proposed fill; existing ground and bottom of excavations; the side slopes of excavations, gas vents, and groundwater monitoring wells; and initial and static levels of water.[335] The borings, monitoring wells, and gas monitoring probes near the sections are all depicted, and the perimeter berm design is shown.[336]

Finally, the Application includes a Liner Quality Control Plan.[337] 130EP points out that TCEQ rules do not require a soil balance test as part of this plan, and that Protestants cite to no regulatory, industry standard, or other basis for such a requirement. Further, 130EP asserts that its Liner Quality Control Plan sets forth the class of materials required for landfill construction, discusses placement and processing of the liner, and describes the testing and verification procedures for material to be used in the compacted soil liner.[338] According to 130EP, the Liner Quality Control Plan meets the requirements of Subchapter H of 30 TAC chapter 330, as required by 30 TAC § 330.63(d)(4)(G).

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[332] 130EP-3 at 13.

[333] 130EP-3 at 14, 53-54.

[334] 130EP-3 at 27-38.

[335] 130EP-3 at 14, 27-38. As previously discussed, 130EP reported no groundwater found during drilling, but groundwater levels from the piezometers are included in the cross-sections.

[336] 130EP-3 at 14, 27-38.

[337] 130EP-3 at 14, 422-454.

[338] 130EP-3 at 430-431, 433-435.

Mr. Adams performed a slope stability analysis for the Landfill that is included in the Application.[339] He testified that he is familiar with the applicable methodology, standards, and rules pertaining to slope stability at a landfill, based on his 23 years of performing geotechnical evaluations and designing liners and final cover systems at more than 30 landfills.[340]

According to the Application, several analyses were performed on representative sections of the Landfill to estimate the stability of the excavation slope, the liner slope, the interim waste slope, the final waste slope, and the final cover slope. The excavation and liner slope sections represented the subsurface conditions that could be encountered, and the geometry was developed from the proposed excavation and completion plans and from data from borings in the vicinity. Unit weights and strength parameters for the in-situ soils used in the analyses were chosen based on boring log data and lab and field test results, while engineering judgment and test values informed the choice of unit weights and strength parameters for the liner/cover material and solid waste. Excavation, retaining wall, and interim waste slopes were analyzed using total stress parameters for short-term conditions. For long-term conditions of excavation, retaining wall, and final waste slope, effective stress parameters were used.[341]

Mr. Adams used the PCSTABL6 computer program and the Janbu Simplified Method to model the slope stability of the excavation slope and retaining wall and both the interim and final waste slopes. PCSTABL6 is a two-dimensional, limit equilibrium program that uses random techniques to generate potential failure surfaces for determining safety factors. The Janbu Simplified Method assumes that (a) failure occurs by sliding a block of soil on a non-circular slip surface; (b) interslice shear forces are zero, and (c) each slice fails simultaneously. The interim and final waste slopes were tested both for a circular arc failure mode (using solid waste, clay liner, and supporting soil properties) and a sliding block failure mode (using solid waste properties and the geomembrane to geocomposite interface at the floor of the cell). Mr. Adams testified that a circular arc failure occurs when there is a rotation at the top that goes through the waste mass. The plane of failure is essentially a semi-circle. Mr. Adams stated that in the

[339] 130EP-3 at 77-212.

[340] 130EP Adams-1 at 6-7.

[341] 130EP-3 at 65.

"highly unlikely" event a circular arc failure went from within the Landfill and included the toe of the landfill, material at the base of the failure would be forced upwards. However, he testified that the material pushed upward would not generally travel laterally, and it would be highly unlikely that the material could move off-site.[342]

For his slope stability analysis, Mr. Adams used a weight of "60 pounds per cubic feet" for the solid waste, which he stated was a very conservative estimate.[343] He testified that there will be a variance in the weight of the waste that will be placed in the Landfill and that the variance can fluctuate widely within a small distance; however, the mass within a typical lift is relatively consistent. Mr. Adams is not aware of any testing to determine the weight of the waste as it is put into place.[344] He also assumed for purposes of the model that the shear strength of the waste is consistent, although he acknowledged that in reality the shear strength will not be consistent through the waste.[345]

According to the Application, the results of the model indicated that the proposed slopes are stable under the analyzed conditions. The Application includes the results of the analyses with a comparison between the safety factors calculated through PCSTABL6 and the minimum recommended safety factors from the USACE Design and Construction of Levees Manual (Corps manual).[346] The calculated safety factor for a circular arc failure of the final waste cover was 2.1, which was greater than the 1.5 safety factor recommended by the Corps manual and therefore found acceptable by Mr. Adams.[347] Mr. Adams testified that a factor of safety is the force of resistance to a failure divided by the driving downhill force that can cause the failure. To meet a safety factor of 1.5, the resistance force should be 1.5 times greater than any downhill force that can fail the slope. However, failure would actually occur when the downhill force is greater than the resistance.[348] The safety factors are used in part to account for uncertainties

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[342] *See* Tr. at 815, 821-824.

[343] 130EP-3 at 81; Tr. at 838, 840, 842.

[344] Tr. at 838.

[345] Tr. at 839.

[346] 130EP-3 at 65-66, 78.

[347] 130EP-3 at 65, 78.

[348] Tr. at 888-889.

involved in the modeling of slope stability, including other forces and the properties of the materials.[349] Mr. Adams is not aware that the Corps manual indicates that it is intended for use in evaluating landfills, and he did not look at the exact characteristics of the levees the Corps manual addresses.[350] The safety factors Mr. Adams used were the standard safety factors used throughout the industry and those he applies at all other landfills.[351] According to Mr. Adams, the TCEQ has not established any recommended safety factors for slope stability analyses.[352]

Mr. Adams explained that the two-dimensional modeling done by the PCSTABL6 program does not account for the irregular shape of the proposed Landfill, whether a slope is curved or straight, or the fact that forces at the Site will be exerted in three dimensions.[353] He stated that the three-dimensional forces not considered by the model could add more driving weight or more resistance or both, and could make a failure either more or less likely.[354] In addition, Mr. Adams did not factor in the two-foot high swales on the side slopes of the Landfill in his circular arc failure analysis.[355] The model did not include the geometry of the individual side slope swales. He stated that the swales would add weight to and resistance along the arc. According to Mr. Adams, based on his experience modeling such swales in the past, they are insignificant and non-critical surfaces that need not be included in the modeling; in other words, modeling them would not have made a difference.[356] He stated that during a rainfall event, water would flow in the swales, but the pressure the water would exert would be insignificant and negligible based on the scale of the slope and the weight of the waste. It could add some driving force pushing the material down, but it could also add resistance, depending on where it is. Mr. Adams did not add additional weight to the model to represent water in the swales.

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[349] Tr. at 922-924.

[350] Tr. at 816.

[351] Tr. at 824-825.

[352] Tr. at 815.

[353] Tr. at 909, 918-920.

[354] Tr. at 920-921.

[355] *See* 130EP-3 at 48-49 (depicting side slope swales on final cover).

[356] Tr. at 825-826.

Mr. Adams noted that the spacing between such swales is typically 100 feet or less, and he "can't imagine" a failure in one berm influencing the down-slope berm. He does not believe that one berm failure could result in a domino failure effect on the lower berms, and has never observed such a scenario at any of the landfills where he has designed such berms in the last 20 years.[357] However, Mr. Adams testified that a two-dimensional slope stability analysis is always more conservative than a three-dimensional slope stability analysis, because the two-dimensional analysis assumes an infinite length of slope and ignores any resistance force that is provided at the end of the failure.[358] He stated that the two-dimensional models have been used for years and "have a long track record of making very good predictions."[359] 130EP notes that there is no alternative modeling in the record to predict how inclusion of the side slope swales would alter the soil stability analysis.

2. The County and Protestants

The County argues that the Application fails to meet the requirements of the applicable rules by failing to adequately address slope stability, and it further joins and adopts the arguments submitted by Protestants on this issue. Protestants contend that (a) Mr. Adams's use of the two-dimensional model for the slope stability analysis and resulting failure to account for the irregular shape of the Landfill, (b) his failure to consider the side slope swales, and (c) the uncertainty regarding the qualities of the waste used in the analysis render the results of the analysis uncertain. According to Protestants, use of safety factors from the Corps manual does not remedy the uncertainty, especially given the Site's proximity to the floodplain, a high-hazard dam, and nearby residences.

Protestants rely heavily on the testimony of County witness Tracy Bratton, P.E., in their criticism of Mr. Adams's slope stability analysis. Mr. Bratton works for Bowman Consulting Group in Austin and since 2004 has focused primarily on land development in the central Texas region, including analysis of pre-developed and post-developed drainage conditions. He has also

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[357] Tr. at 830, 2162-2163.

[358] Tr. at 2162.

[359] Tr. at 919.

been involved in stormwater management issues in central Texas, including the development of stormwater quality regulations and regional watershed protection plans.[360] Mr. Bratton is the primary author of Caldwell County's Development Ordinance and serves in the role of County Engineer. He has been a professional engineer since June 2002.[361]

Mr. Bratton participated in the preliminary soil stability analysis of a landfill in Houston slated for conversion into a golf course, and he performed a slope stability analysis for a hazardous waste containment cell at a Superfund site.[362] He does not remember or know whether a two-dimensional slope stability model is more conservative than a three-dimensional slope stability model.[363]

Mr. Bratton reviewed the entire Application but focused on the Facility Stormwater Surface Water Drainage Report.[364] However, he opined that the side slope swales (he referred to them as berms) and resulting stormwater channels should have been accounted for in the slope stability analysis. Mr. Bratton testified that the swales, sloped at 2:1, constitute approximately 45% of the Landfill face and total 37 miles of berms and channels at an estimated weight of over 800,000 pounds.[365] He also opined that Mr. Adams's use of a value of two feet for the thickness of the soil cover was inappropriate because that value ignores the additional weight of the berms. Mr. Bratton stated that there was no analysis in the Application as to whether the berms will be subject to a localized slope stability failure. According to Mr. Bratton, slopes exceeding 3:1 "require special consideration in terms of slope stability, establishment of vegetation, and long term maintenance."[366] Further, Mr. Bratton testified that he found no analysis in the Application addressing the potential for the berms to become saturated by stormwater. He stated that saturated soils reduce stability and increase slope failure risk.[367] In summary, Mr. Bratton

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[360] County Ex. 1 at 2-3.

[361] County Ex. 1 at 3.

[362] Tr. at 1879-1880.

[363] Tr. at 1880.

[364] County Ex. 1 at 4.

[365] County Ex. 1 at 18.

[366] County Ex. 1 at 19-20.

[367] County Ex. 1 at 20-21.

opined that the swales should be separately analyzed for stability given their steepness and stormwater flow at, and saturation of, their upstream toe. Should a berm fail during a major flood event, according to Mr. Bratton, the water and soil would cascade down to the next berm, causing it to also fail, and the resulting series of failures could cascade down the Landfill face and take a substantial portion of the cover with it.[368]

Protestants put forth the same arguments as those made in their criticisms of the Geology Report in contending that excavated soils and on-site soils are not fit for use in construction of the compacted soil liner, the protective cover components of the liner system, the infiltration and erosion layers of the final cover system, the operational cover, or for general earthfill. Protestants further claim that 130EP should be required to perform a soil balance test to determine what portion of the in-situ soils is suitable for use as cover or liner material, and that without such a test, the geotechnical evaluation fails to demonstrate that on-site soils can be used as source material for the liner and cover at the Facility. Protestants also argue that given the inconsistency of the in-situ soils at the Site and the presence of material not suitable for construction of the liner, 130EP should be required to include additional testing and verification requirements in its Liner Quality Control Plan.

3. The ED

The ED does not directly address the soil balance test or slope stability issues but argues that the rules do not place limitations on the overall waste management unit design or give the TCEQ authority to restrict the design, or to even consider it when deciding whether to grant the Application. The ED contends that 130EP submitted information regarding the proposed waste management unit design sufficient to comply with 30 TAC § 330.63(d).

4. The ALJs' Analysis

The preponderance of the evidence from the subsurface investigations performed by both BME and Protestants, which included the specific and intensive laboratory analysis required by

[368] County Ex. 1 at 21-22.

30 TAC § 330.63(e)(5), indicates that the vast majority of excavated soils at the Site meet the requirements for use as source materials for the liner and cover.[369] The ALJs do not find that a soil balance test was required or warranted to meet TCEQ rules pertaining to the waste management unit design. There is no such express requirement in the rules or in any applicable standards, nor did any qualified witness take that position. Further, the ALJs find the Liner Quality Control Plan submitted in the Application complies with Subchapter H of 30 TAC chapter 330, and that no further testing or verification is necessary.

Regarding the slope stability analysis, the uncontroverted evidence shows that the two-dimensional model used by Mr. Adams is (a) more conservative than a three-dimensional model, (b) standard in the industry and has been for many years, and (c) successful in adequately predicting potential failures of landfill slopes. In addition, the ALJs find that inclusion of the side slope swales into the model would not have made a significant difference in terms of the calculated safety factors. Mr. Adams has extensive experience in modeling failures of landfill slopes, and Mr. Bratton has very limited experience in soil stability analysis, evidenced by his inability to state whether a two-dimensional model is more conservative than a three-dimensional model. Mr. Bratton's experience lies primarily in stormwater drainage analysis, not slope stability analysis, and he admitted that he focused on drainage issues in this case. Therefore, Mr. Adams's experience and ultimate decision regarding incorporation of the side slope swales into the circular arc failure analysis carries significantly more weight. For the same reasons, the ALJs find that no specific stability analysis was necessary for the side slope swales themselves and that the likelihood of a collapse of the liner due to a breach of one such swale causing a large-scale failure of the Landfill slope is extremely small. Given the conservative nature of the modeling and Mr. Adams's experience in conducting such analyses, the slope stability analysis included in the Application properly evaluates the stability of the Landfill and adequately predicts the failure potential of the excavation slope, liner slope, interim waste slope, final waste slope, and final cover slope.

The Application includes descriptions sufficient to explain how solid waste will be processed at the Facility. Further, it adequately explains how the storage and transfer units at the

[369] *See* ALJs' Analysis in Section III.D., Geology and Soils, above.

Facility will minimize nuisances and public health hazards due to odors, fly breeding, or other vectors, and how the Facility will control and contain spills and prevent contaminated water from leaving the Facility. The Application contains the required information regarding all-weather operation, fill methods, elevations, rate of disposal, operating life, and details regarding perimeter berm, and it includes the required cross-sections with all necessary data. In conclusion, the ALJs find that the waste management unit design information included in the Application meets all applicable requirements of 30 TAC § 330.63(d).

I. Landfill Gas Monitoring

Pursuant to TCEQ rules, landfill gases must be monitored pursuant to a landfill gas management plan that meets the requirements of 30 TAC § 330.371.[370] An application for an MSW landfill permit must include such a plan.[371] The plan must include a description of how landfill gases will be managed and controlled; a description of the proposed system that includes installation procedures and timelines, monitoring procedures, and maintenance procedures; and a backup plan to be used if the main system breaks down or becomes ineffective.[372] As part of the plan, a permanent monitoring network must be installed and, at a minimum, quarterly monitoring is required.[373] The monitoring network design must include monitoring of on-site structures such as buildings, utilities, or areas where potential gas buildup would be of concern.[374]

Implementation of a routine methane monitoring program is also required to ensure that concentrations of methane gas generated by the Facility do not exceed 1.25% by volume in Facility structures and that concentration of methane gas does not exceed 5% by volume in monitoring points, probes, subsurface soils, or other matrices at the Facility Boundary.[375] Soil, hydrogeologic, and hydraulic conditions; locations of Facility structures and the Facility

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[370] 30 TAC § 330.159.

[371] 30 TAC § 330.63(g).

[372] 30 TAC § 330.371(g).

[373] 30 TAC § 330.371(h)(2), (k)(1).

[374] 30 TAC § 330.371(i).

[375] 30 TAC § 330.371(a)-(b).

Boundary; and location of pipelines or utility lines that cross the Facility must all be considered in determining the frequency and type of methane monitoring for the Landfill.[376]

1. 130EP

The Application includes a Landfill Gas Management Plan (LGMP) prepared by 130EP witness J. Heath Parker for landfill gas (LFG) and routine methane monitoring at the Facility.[377] Mr. Parker has managed and participated in the design of LFG collection and control systems for over 50 landfills in ten different states, including Texas.[378] He has also prepared and submitted to the TCEQ original and amended LFG management plans for 20 to 30 landfills, all of which were approved by the agency.[379] Mr. Parker testified that the LGMP complies with all TCEQ regulatory requirements for LFG management.[380] The LGMP calls for 33 permanent LFG monitoring probes to be installed outside the perimeter of the waste fill area near to but inside the Facility Boundary to detect any LFG migration. The probes are scheduled to be installed in stages as waste disposal develops, with some installed prior to waste placement, and the LGMP sets forth the design depths and elevations of each probe. Further, the probes will be no more than 600 feet apart and will be closer together on the northern side of the Site given the nearby residences there. The probes will monitor soil strata above the lowest current or planned elevation of waste within 1,000 feet of each probe.[381]

According to the LGMP, a qualified representative or consultant will monitor the probes on a quarterly basis. If monitoring results indicate LFG migration is occurring or accumulating in Facility structures, the LGMP calls for more frequent monitoring. The LGMP describes the monitoring equipment to be used and states that it will be calibrated and operated pursuant to manufacturer's instructions. The static pressure of each probe will be measured and recorded

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[376] 30 TAC § 330.371(b)(1).

[377] 130EP-5 at 6-40.

[378] 130EP Parker-1 at 3.

[379] Tr. at 210-211.

[380] 130EP Parker-1 at 6.

[381] 130EP-5 at 11, 13, 25-26.

before measuring gas composition. Parameters for each monitoring event include methane concentration, optional oxygen concentration, static pressure, and depth to groundwater. Additional details of the monitoring procedures are provided in the LGMP.[382] After each monitoring event, the integrity of the probes will be inspected, and the inspector will verify for each probe that (a) it is clearly labeled; (b) the protective casing is intact and not bent or excessively corroded; (c) the concrete pad is intact with no evidence of cracking or heaving; (d) the padlock is functional; and (e) the inner casing is intact.[383] As a backup plan, the LGMP indicates that damaged or inoperative probes will be repaired within 30 days or replaced within 60 days of the TCEQ approving a permit amendment for such replacement. An installation report for any replacement probe will be submitted to the TCEQ, and should a monitoring event occur prior to replacement, a portable gas monitor will be used.[384] According to Mr. Parker, the system effectiveness generally does not depend on the spacing of the probes, but the spacing could possibly have some effect. He further testified that if it was somehow determined there was an area at the Site the probes were not covering, then additional probes could be added.[385]

Further, the LGMP states that the gatehouse, the maintenance building, and the transfer station will be equipped with continuous methane monitors that will provide audible alarms if methane concentrations exceed 1.25% methane by volume.[386] These monitors will be calibrated and maintained in accordance with manufacturer's instructions and recommendations and tested using manufacturer's specifications. If a monitor is found damaged or inoperable, it will be repaired within 30 days or replaced within 60 days, and a portable gas indicator will be used until the monitor is repaired or replaced.[387]

In determining the type and frequency of LFG monitoring, Mr. Parker relied upon the geological investigation performed at the Site by BME, specifically the Geology Report, and the

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[382] 130EP-5 at 15, 17.

[383] 130EP-5 at 16.

[384] 130EP-5 at 17.

[385] Tr. at 204-205.

[386] 130EP-5 at 11, 16

[387] 130EP-5 at 16-17.

Drainage Analysis and Design as evidence of the soil, hydrogeologic, and hydraulic conditions at the Site. He also considered the locations of the gatehouse, maintenance building, and transfer station, as well as the Facility Boundary and the Landfill footprint. He determined that there were no utility lines or pipelines crossing the Facility.[388] Mr. Parker determined that the soil conditions reflected in the Geology Report (clay extending to depths well below the proposed waste fill depth, the permeability of such clay, and the absence of secondary features), combined with the distances from the Landfill to Facility structures and the Facility Boundary, indicate a very low probability of subsurface LFG migration to Facility structures or to the Facility Boundary. This determination, according to the LGMP, is not affected by the hydrogeology or hydraulic conditions at the Site. Mr. Parker also opined that the low probability of subsurface LFG migration supports quarterly monitoring, more frequent monitoring required by the ED or at locations where LFG migration has occurred.[389]

Mr. Parker did not consider the Soil Survey Map included in the wetlands portion of the Application in developing the LGMP. The Soil Survey Map indicates gravelly loam inside the Landfill footprint and bordering the Landfill on the north and northeast as well as a "decent bed" of gravelly soil outside the Landfill footprint. However, Mr. Parker testified that he understood from the Soil Survey Map that the gravel at the Site is shallow, and he was told by Mr. Snyder that based on sampling, the gravelly soil was not more than three to five feet deep. Mr. Parker further stated that at such depths LFG would vent to the surface and not travel through the gravelly soil.[390] If there was deep gravelly soil at the Site, Mr. Parker stated that he probably would have placed the probes closer together.[391]

In designing the LGMP, Mr. Parker did not assess the potential for surface water contamination. He testified that LFG can contain constituents, including metals, which could contaminate surface water. Based on a review of maps included in the Application, Mr. Parker testified that there are intermittent streams and parts of the 100-year floodplain between the

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[388] 130EP-5 at 11.

[389] 130EP-5 at 12.

[390] Tr. at 173-175.

[391] Tr. at 176-177.

Landfill and one of the probes. Mr. Parker stated that, theoretically, LFG could reach such streams without being detected by a probe.[392] He also stated that it was theoretically possible for LFG to reach the stormwater detention pond. However, he testified that contamination of the streams by LFG is unlikely; the only likely mechanism of LFG migration from the Landfill is through the drainage geocomposite, which is a shallow migration that does not go far before venting out at the surface.[393] He also testified that he evaluated the hydraulic conditions at the Site in designing the LGMP, but they did not impact the design.[394]

Although noting that there are nine probes that will be placed within the 100-year floodplain at the Site, Mr. Parker testified that surface water will have no effect on those probes because they are sealed with an airtight cap on top. He avoided putting probes in the floodplain if possible, but some probes had to be located in the floodplain to maintain proper spacing, which is 600 feet on most of the Landfill but approximately 300 feet on the north side.

Mr. Parker also oversaw the design of several LFG extraction wells that will be installed at the Landfill as an LFG control system.[395] The wells will be installed as needed as the Landfill develops and waste is disposed to control LFG and meet regulatory requirements. According to Mr. Parker, it will be obvious when the wells will be needed from a regulatory standpoint.[396] The LGMP includes a diagram showing the locations of these wells.[397] He testified that the wells will have gravel around the outside and a perforated pipe. The wells could provide a conduit for downward movement of leachate within the Facility, but Mr. Parker did not see a need to consider the interaction between the wells and the leachate collection system. Mr. Parker stated that the LGMP describes how these wells must be constructed during installation, including design details, the size of the borings, and everything necessary to construct them.[398]

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[392] Tr. at 178-181.

[393] Tr. at 182, 187-188.

[394] Tr. at 177.

[395] Tr. at 189.

[396] Tr. at 192-193.

[397] 130EP-5 at 21, 33.

[398] Tr. at 189-190.

The LGMP includes a drawing setting forth how these extraction wells are to be constructed, as well as details regarding how the wells will be equipped, operated, and maintained.[399]

With respect to the liner design for the Landfill, Mr. Parker explained that gas collection pipes will be installed as the liner is installed.[400] These pipes will sit just above the liner to prevent LFG migration at the Landfill.[401] The LGMP indicates that this system of collection pipes will be operated and maintained pursuant to industry guidelines and practices.[402] Although it is possible for the collection pipes to be fouled by leachate, Mr. Parker testified that it would not have a huge impact because it is a redundant system allowing vacuum from multiple directions.[403] Mr. Parker stated that the collection pipes could potentially be connected to the LFG control system, but the LGMP does not address the design of the collection system.[404] According to Mr. Parker, the LFG collection system is the backup plan for the LFG control system, which is the liner and the soils on top combined with the LFG extraction wells.[405] The collection system has multiple redundant loops, so that if any portion of the system fails, the remainder can bring vacuum back through the other parts of the loop.[406]

The LGMP indicates that the Facility will comply with EPA regulations and new source performance standards, which require testing for non-methane organic chemicals (NMOCs), which can exist in LFG. Federal regulations require operators of landfills of certain size to calculate the potential for NMOC production. However, the LGMP does not require monitoring for NMOCs, nor does it require calculation of potential for NMOC production.[407]

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[399] 130EP-5 at 21, 34.

[400] Tr. at 194.

[401] Tr. at 195.

[402] 130EP-5 at 21.

[403] Tr. at 196.

[404] Tr. at 199-200.

[405] Tr. at 205-206.

[406] Tr. at 206.

[407] Tr. at 207-208.

130EP argues that the soil and hydrogeologic conditions set forth in the Geology Report are sufficiently reliable for Mr. Parker's consideration in determining the type and frequency of LFG monitoring to include in the LGMP. According to 130EP, Mr. Parker was not required to personally examine and analyze the subsurface conditions at the Site, and he appropriately considered the extensive evaluation prepared by Mr. Snyder and BME. Further, 130EP contends that TCEQ rules do not require monitoring of streams or other surface water within the Facility Boundary for contamination by LFG or methane. 130EP also maintains that Mr. Parker did consider the 100-year floodplain in determining location of the probes, and that placement of probes in the floodplain presents no potential problems or issues. 130EP argues that the LGMP includes the required backup plans and that it was not required to address monitoring for NMOCs, especially given that 130EP applied for and received a standard permit from the TCEQ under Subchapter U of 30 TAC chapter 330, which pertains to regulation of NMOC emissions.

2. Protestants

Protestants argue that the LGMP included in the Application fails to meet the requirements of 30 TAC § 330.371 because it does not (a) adequately account for gravel and secondary features at the Site; (b) address potential for LFG contamination of surface water at the Site; (c) contain a complete backup plan; or (d) adequately address potential NMOC emissions. Further, Protestants contend that placement of probes in the 100-year floodplain compromises the LFG monitoring system.

Relying on their previous arguments concerning the reliability and accuracy of BME's subsurface investigation and resulting characterization, Protestants maintain that Mr. Parker's reliance on Mr. Snyder's description of the soil and hydrogeologic conditions at the Site was inappropriate. According to Protestants, Mr. Parker improperly assumed that clay was the only type of soil present at the Site and that there were no secondary features, which Protestants claim is contradicted by the soil samples and lab test results from both the 2016 borings and Protestants' borings. Protestants also argue that Mr. Parker should have considered the gravel on Site when developing the LGMP.

Protestants assert that the hydraulic conditions at the Site create potential for LFG migration to contaminate surface waters within the Facility Boundary without detection by the proposed LFG monitoring system. Protestants thus take issue with Mr. Parker's determination that the hydraulic conditions at the Site had no impact on his design of the LFG monitoring system and his failure to consider the possibility of surface water contamination. According to Protestants, the LFG monitoring network is not designed to detect and prevent such contamination, even though LFG would reach surface waters on Site before it reached any of the probes. Therefore, the LGMP is inadequate because it does not monitor for LFG in nearby surface waters. Protestants call for a special provision in any permit granted to 130EP mandating that surface waters be monitored for LFG contamination, specifically volatile organic compounds and hazardous air pollutants.

Likewise, Protestants maintain that the LGMP fails to meet the requirements of 30 TAC § 330.371(g)(2) because it does not include a sufficient description of installation timelines and procedures, monitoring procedures, and maintenance procedures. Specifically, Protestants argue that there are no installation instructions or details in the LGMP for the 186 gas extraction wells to be drilled within the Landfill footprint, or for the gas collection pipes to be located along the base of the Landfill.

Protestants also take issue with the backup plans for the LFG monitoring and control systems. According to Protestants, it was not enough to simply call for repair or replacement of any damaged or nonfunctional probe; the LGMP should have included a "systematic backup plan" as required by the rule. The probes are only one part of the overall system, and Protestants claim the system could break down or become ineffective for other reasons beyond inoperable probes. One such reason proposed by Protestants is an insufficient radius of influence for the probes based on their designed spacing.

Finally, Protestants contend that the Landfill is subject to the requirements set forth in the Code of Federal Regulations (CFR) for the design and installation of a gas collection system or, alternatively, a calculation demonstrating that the NMOC emission rate will stay below a specified amount. The Application does not call for the installation of a collection system nor

include any calculation of the expected NMOC emission rate; the LGMP only states that a collection system could be required if the emission threshold is exceeded. Protestants seek a special condition in any permit granted to 130EP that would require 130EP to calculate and report the NMOC emission rate from the Landfill pursuant to 40 CFR § 60.752 and, if the rate is 50 megagrams per year or more, require the design and installation of a gas collection and control system.

3. The ED

The ED notes that Mr. Parker testified (a) that he prepared the LGMP and that it meets all TCEQ rules pertaining to landfill gas monitoring, and (b) that if the Landfill is developed and operated as assumed by the LGMP, it will meet all TCEQ rules regarding LFG management. In conclusion, the ED determined that the LGMP meets the requirements of 30 TAC § 330.371.

4. The ALJs' Analysis

For reasons discussed in depth in Section III.D., Geology and Soils, the analysis of and conclusions regarding the soil and hydrogeological conditions at the Site as set forth in the Geology Report are sufficiently reliable, and Mr. Parker's consideration of those conditions in developing the LGMP was reasonable. There is no requirement in the applicable rule that Mr. Parker himself conduct a separate analysis of these conditions. The preponderance of the evidence shows that the 2013 borings revealed no secondary features and that the dominant material in the subsurface was clay, and Mr. Parker considered these conditions in developing the LGMP. Moreover, Mr. Parker did consider the results of the 2016 borings set forth in the May 2016 supplement, and he testified that the fractures observed in the 2016 borings did not necessitate any changes to the LGMP.[408] Given the extent of the subsurface investigation performed by BME, it was reasonable for Mr. Parker to consider the soil and hydrogeological conditions as reflected by such investigation as opposed to the Soil Survey Map. Further, the preponderance of the evidence indicates that the gravelly soil at the Site is relatively shallow, and Mr. Parker cogently explained that the probes would potentially need to be installed closer

[408] Tr. at 211-212.

together only if the gravelly soil were deep. There is no evidence in the record indicating that Mr. Parker's decision regarding spacing of the probes was inappropriate or improper. Mr. Parker properly considered the soil and hydrogeological conditions at the Site in determining the type and frequency of monitoring, as required by 30 TAC § 330.371(b)(1)(A) and (B).

In addition, the preponderance of the evidence shows that Mr. Parker evaluated the hydraulic conditions surrounding the Facility in determining the type and frequency of LFG monitoring, although they did not impact the design of the LGMP. The evidence indicates that the possibility of any LFG contamination of intermittent streams on the Site is slight; regardless, the applicable rule does not require monitoring of on-site surface water for LFG migration. There are two specific limitations on methane concentrations that pertain to monitoring and control of LFG, one that applies to Facility structures and one that applies to monitoring points, probes, subsurface soils, or other matrices at the Facility Boundary.[409] In accordance with this rule, the LGMP calls for methane monitors installed at Facility structures and probes placed at the Facility Boundary.

There is no evidence to support Protestants' argument that placement of some of the probes within the 100-year floodplain, in order to maintain proper spacing, was inappropriate. Although Protestants argue that such placement causes potential problems concerning construction and access and potential unevaluated changes to floodwater flow plans, they offer no evidence to support such vague and speculative allegations. The probes are air and water tight and will not be affected by surface water. Mr. Parker considered the hydraulic conditions surrounding the Facility in determining the type and frequency of LFG monitoring, and his determination, based on the limitations on methane gas levels set forth in the rule and how and where those levels are to be measured, was reasonable. Because the rules do not call for surface water monitoring, and given the low risk of surface water LFG contamination, the ALJs do not recommend a special provision in the Draft Permit requiring 130EP to conduct specific monitoring of surface water on the Site for LFG contamination.

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[409] 30 TAC § 330.371(a)(1)-(2).

The LGMP includes an adequate description of how LFG will be managed and controlled; a description of the proposed system(s), including timelines and procedures for installation, monitoring procedures, and maintenance procedures; and a backup plan to be used if the main system breaks down or becomes ineffective. The specific system proposed by the LGMP is the placement of 33 probes just inside the Facility Boundary around the perimeter, no more than 600 feet apart, but not more than 300 feet apart on the north side, as well as the three continuous monitors installed at the gatehouse, maintenance building, and transfer station. The LGMP also explains how the LFG extraction wells will serve to control LFG at the Site. The applicable rule (30 TAC § 330.371(g)) does not specify any particular level of detail that must be met in the descriptions of these procedures. Protestants' argument regarding lack of installation procedures for the LGF extraction wells is without merit. As Mr. Parker testified, the LGMP includes a description of how the wells are to be constructed. With respect to the gas collection pipes, these are not formally part of the LGMP but only potentially part of the LFG control system. The LFG collection piping system was designed by Mr. Adams.[410] The collection pipes are included in the construction design of the liner, and the details regarding their installation are included in a separate part of the Application.[411]

Likewise, Protestants' position with respect to the backup plan in the LGMP is unavailing. Logically, the plan calls for the repair or replacement of any of the probes or monitors that 130EP discovers are no longer functioning properly. The rule does not require a backup system, only a plan to address a situation in which the system becomes ineffective. The system contemplated by the LGMP becomes ineffective if a probe or monitor is no longer effectively detecting LFG or methane concentrations. Addressing Protestants' hypothetical scenario of the probes having insufficient radiuses of influence, the evidence indicates that likelihood is minimal and that additional probes could be added if necessary. Further, the collection system of pipes included in the liner is the backup plan for the Landfill liner, the soils, and the LFG extraction wells. A backup plan for the LFG collection system is not required by 30 TAC § 330.371(g)(3).

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[410] Tr. at 197-198.

[411] *See* 130EP-3 at 43.

Finally, there is no requirement in 30 TAC § 330.371, or any other rule, that NMOC monitoring or calculations be detailed or set forth in the LGMP. The evidence shows that 130EP applied for and was issued a standard operating permit under Subchapter U of 30 TAC chapter 330 authorizing air emissions from the Facility. The LGMP's silence with respect to NMOCs does not absolve 130EP from complying with its standard permit requirements and any applicable federal regulations regarding NMOCs, but it also does not render the LGMP out of compliance with the applicable rule at issue here. Because there are other regulations in place to address Protestants' concerns regarding NMOC emissions at the Site, the ALJs do not recommend a special condition to the Draft Permit requiring calculation and reporting of NMOC emission rates and design and installation of a gas collection system should the rate equal or exceed 50 megagrams per year.

In conclusion, and consistent with the ED's determination, the Application meets the requirements of the applicable rules regarding the LGMP.

J. Endangered or Threatened Species

Under TCEQ rules, an applicant must address issues regarding endangered species. Section 330.61(n) provides:

> (1) The owner or operator shall consider the impact of a solid waste disposal facility upon endangered or threatened species. The facility and the operation of the facility shall 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.
>
> (2) For landfill applications, the owner or operator shall submit Endangered Species Act compliance demonstrations as required under state and federal laws and determine whether the facility is in the range of endangered or threatened species. If the facility is located in the range of endangered or threatened species, the owner or operator shall have a biological assessment prepared by a qualified biologist in accordance with standard procedures of the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department to determine the effect of the facility on the endangered or threatened species. Where a previous biological assessment has been made for another project in the general vicinity, a copy of that assessment may be submitted for evaluation. The United

> States Fish and Wildlife Service and the Texas Parks and Wildlife Department shall be contacted for locations and specific data relating to endangered and threatened species in Texas.[412]

In addition, 30 TAC § 330.551(a) states that an MSW facility must not destroy or adversely modify critical habitat of endangered or threatened species, or cause or contribute to a taking of either of these two designated species. Section 330.157 further provides that:

> A facility and the operation of the facility must 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. Facilities must be operated in conformance with any endangered or threatened species protection plan required by the commission. The site operating plan should contain criteria for the protection of any identified endangered species.[413]

Russell Marusak, a biologist, conducted a biological assessment for endangered or threatened species on the Hunter Tract.[414] Mr. Marusak contacted the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department (TPWD) for locations and specific data relating to endangered and threatened species. Five threatened or endangered species have the potential to occur within the Hunter Tract: the wood stork, the golden orb, the Texas pimpleback, the Texas horned lizard, and the timber rattlesnake.[415] According to 130EP, "[b]ecause none of these species is federally listed as either threatened or endangered, no critical habitat has been designated for any of [these five species]."[416] The Application indicates that portions of the study area that may provide suitable habitat for the state-listed wood stork, golden orb, and Texas pimpleback are limited to the aquatic habitat in the Site 21 Reservoir, away from areas that will be impacted by development of the Facility.[417] Therefore, 130EP does not expect destruction or adverse modification of those potential habitats to occur.

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[412] 30 TAC § 330.61(n).

[413] 30 TAC § 330.157.

[414] 130EP Marusak-1; 130EP-1 at 681-756.

[415] 130EP-1 at 111.

[416] 130EP-1 at 111.

[417] 130EP-1 at 111.

In addition, the SOP in the Application includes a Species Protection Plan to protect endangered or threatened species that have the potential to occur on the Hunter Tract.[418] After conducting his investigation, Mr. Marusak concluded that the Facility and its operations 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.[419]

Protestants and the County disagree with the sufficiency of Mr. Marusak's assessment. They contend that Mr. Marusak did not conduct his fieldwork in the spring, the time of year during which observance of migratory wildlife is most likely. In addition, Mr. Marusak did not contact nearby neighbors regarding the presence or absence of threatened or endangered species, even though one Protestant testified that he had seen a whooping crane on his property.[420] Mr. Marusak also failed to research whether bald eagles had been sighted or how they interacted with landfills in general. Given these deficiencies, Protestants urge the inclusion of special provisions into the Draft Permit to address the endangered species issue.

The ED takes the position that 130EP has met the TCEQ's rule requirements on this issue. Mr. Marusak is an expert who performed the required assessment on behalf of 130EP. In addition, TPWD made three recommendations regarding vegetation impacts, the Migratory Bird Act, and rare species,[421] and Mr. Marusak testified that 130EP had already implemented the first of TPWD's recommendations by designing the Facility to avoid and preserve most of the existing trees at the Site.[422]

The evidence shows that 130EP's endangered species assessment complies with TCEQ rules. Although Mr. Marusak did not conduct his assessment during the spring or speak with neighbors, neither the County nor Protestants cite to evidence showing that these alleged inadequacies render Mr. Marusak's assessment deficient or non-compliant. Therefore, based on

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[418] 130EP-5 at 179-187.

[419] 130EP-1 at 111, 681-756; 130EP-2 at 35; 130EP-5 at 145, 179-187; 130EP Marusak-1 at 13-14.

[420] Tr. at 1060, 1330, 1340-1341.

[421] 130EP-1 at 683-686.

[422] 130EP Marusak-1 at 11.

the evidence in the record, the ALJs conclude that 130EP has complied with 30 TAC §§ 330.61(n), 330.157, and 330.551. For these reasons, the ALJs do not recommend that the Commission include any special provisions in the Draft Permit concerning endangered species.

K. Wetlands

Pursuant to 30 TAC § 330.61(m)(2) and (3), the Application must contain a wetlands statement that:

> (2) includes a wetlands determination under applicable federal, state, and local laws and discusses wetlands in accordance with § 330.553 of this title (relating to Wetlands). For the purpose of this subsection, demonstration can be made by providing evidence that the facility has a Corps of Engineers permit for the use of any wetlands area; and
>
> (3) identifies wetlands located within the facility boundary.

The TCEQ "Location Restrictions" in 30 TAC § 330.553 provide that:

> (a) Municipal solid waste storage or processing facilities shall not be located in wetlands unless the owner or operator makes each of the demonstrations identified in subsection (b)(1)-(5) of this section.
>
> (b) New municipal solid waste landfill units, lateral expansions, and material recovery operations from a landfill shall not be located in wetlands, unless the owner or operator makes each of the demonstrations identified in paragraphs (1)-(5) of this subsection to the executive director. The owner or operator shall submit the demonstrations with a permit application, a permit major amendment application, or a registration application, as appropriate. The demonstration shall become part of the operating record once approved.
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> (1) Where applicable under Clean Water Act, § 404 or applicable state wetlands laws, the presumption that a practicable alternative to the proposed landfill or recovery operation is available that does not involve wetlands shall be clearly rebutted.
>
> (2) The construction and operation of the municipal solid waste landfill unit or recovery operation shall not:
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> (A) cause or contribute to violations of any applicable state water quality standard;

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

(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

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

(3) The municipal solid waste landfill unit or recovery operation shall not cause or contribute to significant degradation of wetlands. The owner/operator shall demonstrate the integrity of the landfill 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 landfill unit;

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

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

(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

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

(4) To the extent required under 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 acreage and function) by first avoiding impacts to wetlands to the maximum extent practicable as required by paragraph (1) of this subsection, 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 man-made wetlands).

> (5) Sufficient information shall be made available to the [ED] to make a reasonable determination with respect to these demonstrations.

The TCEQ has provided that when used in 30 TAC chapter 330, the term "wetland" is defined as in the Texas Surface Water Quality Standards in 30 TAC chapter 307.[423] That chapter defines "wetland" as:

> An area (including a swamp, marsh, bog, prairie pothole, or similar area) having a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances supports the growth and regeneration of hydrophytic vegetation. The term "hydric soil" means soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation. The term "hydrophytic vegetation" means a plant growing in: water or a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content. The term "wetland" does not include irrigated acreage used as farmland; a man-made wetland of less than one acre; or a man-made wetland where construction or creation commenced on or after August 28, 1989, and that was not constructed with wetland creation as a stated objective, including but not limited to an impoundment made for the purpose of soil and water conservation that has been approved or requested by soil and water conservation districts. If this definition of wetland conflicts with the federal definition in any manner, the federal definition prevails.[424]

Under federal law, the USACE defines "wetlands" as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."[425]

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[423] 30 TAC § 330.3(178).

[424] 30 TAC § 307.3(a)(84).

[425] 33 C.F.R. § 328.3(c)(4).

1. 130EP

According to 130EP, the Application includes a wetlands determination as required by the applicable federal, state, and local laws and sufficiently delineates the wetlands within the Facility Boundary. Mr. Marusak conducted the wetlands investigation and concluded that jurisdictional wetlands were present within the Permit Boundary, but only isolated, non-jurisdictional wetlands were present within the Landfill footprint itself.[426] On June 20, 2014, the USACE approved 130EP's wetlands determination and authorized construction of the access road over stream crossings under USACE Nationwide Permit No. 14.[427]

Regarding the state and federal definitions of "wetland," Mr. Marusak testified that for purposes of his investigation and conclusions, he used the USACE federal definition of "wetlands," which is "nearly identical" to and "potentially more inclusive" than the TCEQ definition.[428] He further stated that the TCEQ definition does not conflict with the federal definition in an MSW permitting situation.[429] 130EP also asserts that the federal definition may be broader than the state definition because the TCEQ excludes from its definition irrigated acreage, man-made wetlands of less than one acre, and man-made wetlands constructed after 1989 that did not have wetlands creation as their objective.[430]

Mr. Marusak determined that there are 20 areas, totaling 1.46 acres in size, of wetlands located within the Facility Boundary.[431] Of those 20 areas, 0.49 acres are jurisdictional wetlands subject to regulation by the USACE, and 12 areas, totaling 0.68 acres, are non-jurisdictional

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[426] 130EP-1 at 672-674. "Jurisdictional" wetlands are those wetland areas over which the federal government, through the USACE in this case, exercises jurisdiction. "Non-jurisdictional" wetlands are those isolated waters not subject to federal regulation under the Clean Water Act § 404. *See generally Solid Waste Agency Northern Cook County v. United States Army Corps of Engineers*, 121 S.Ct. 675 (2001).

[427] 130EP-1 at 199-269; 130EP Marusak-1 at 8-9.

[428] 130EP Marusak-1 at 6-7.

[429] 130EP Marusak-1 at 6-7.

[430] 130EP Response at 59.

[431] 130EP Marusak-1 at 6-7; 130EP-1 at 672-673.

wetlands located within the Landfill footprint.[432] In addition, the wetlands located within the Landfill footprint are man-made wetlands of less than one acre.[433] For those non-jurisdictional wetland areas located within the Landfill footprint, 130EP contends that it made the demonstrations required by the TCEQ location restrictions in 30 TAC § 330.553(b)(1)-(5)[434] and has fully complied with the TCEQ wetlands rules.

2. Protestants

In contrast, Protestants assert that 130EP's wetlands determination was deficient because of its reliance solely on the federal definition of wetlands. According to Protestants, 130EP must not only make a wetlands determination using USACE's definition of wetlands, but it must also make a determination using the state's definition of wetlands found in Texas Water Code § 11.502.[435] The federal definition of wetlands focuses on the presence of hydrophytic vegetation,[436] but the state definition requires an analysis focused on hydric soils.[437] Protestants contend that 130EP's failure to determine whether there was a prevalence of hydric soils at the Site demonstrates that it did not perform a proper investigation under 30 TAC §§ 330.61(m) and 330.553.

Protestants further argue that 130EP did not comply with 30 TAC § 330.553 because it failed to consider the TCEQ's "no-net-loss-of-wetlands" policy. Protestants maintain that 30 TAC § 279.2(b) establishes that the policy of the State of Texas is "to achieve no overall net loss of the existing wetlands resource base with respect to wetlands functions and values . . . ."

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[432] 130EP-1 at 672.

[433] 130EP-1 at 271, 298, 673-674.

[434] 130EP Marusak-1 at 7; 130EP-1 at 675-679.

[435] The TCEQ's regulatory definition of wetlands in 30 TAC § 307.3(84) appears to be very similar, if not identical, to the statutory definition of wetlands in Texas Water Code § 11.502.

[436] 33 C.F.R. § 328.3(c)(4) (Wetlands are those areas sufficiently inundated or saturated to support "a prevalence of vegetation typically adapted for life in saturated soil conditions.").

[437] 30 TAC § 307.3(a)(84) (A wetland is an area with "a predominance of hydric soils" that is sufficiently inundated or saturated to support hydrophytic vegetation.).

3. The ED

The ED contends that 130EP has met the requirements in 30 TAC § 330.61(m) and 330.553. According to the ED, 130EP's wetlands documentation in the Application contained the following reports: (1) Waters of the United States Delineation Report and Wetland Determination and Identification; (2) Summary of Wetlands Determination and Identification for 130EP Facility Boundary Areas; and (3) Wetlands Demonstrations. The ED notes that Mr. Marusak testified that the wetlands documentation in the Application complied with all TCEQ wetlands rules and that development and operation of the Facility, as set out in the Application, would meet TCEQ wetlands rules.[438]

The ED also addresses 130EP's compliance with 30 TAC § 330.553 and asserts that the "TCEQ does not have authority to regulate and protect non-jurisdictional wetlands under MSW rules."[439] Therefore, it is the ED's position that 130EP did not need to make the demonstrations set out in 30 TAC § 330.553(b)(1)-(5).

4. The ALJs' Analysis

The ALJs conclude that 130EP has demonstrated compliance with the MSW application requirements in 30 TAC § 330.61(m) and with the location restrictions in 30 TAC § 330.553(b). Regarding the application requirements, Section 330.61(m)(2) requires an application to "include a wetlands determination *under applicable federal, state,* and local laws . . . . For the purpose of this subsection, demonstration can be made by providing evidence that the facility has a [USACE] permit for the use of any wetlands area."[440] As the ALJs read Section 330.61(m)(2), the TCEQ contemplated that an applicant may demonstrate compliance with both federal and state laws by showing authorization under a federal permit. Therefore, the rule defers to the federal definition used to determine jurisdictional wetlands as a means to make the wetlands determination under federal, state, and local laws. For these reasons, the ALJs do not agree with

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[438] 130EP Marusak-1 at 9.

[439] ED Closing, "Wetlands" section.

[440] 30 TAC § 330.61(m)(2).

Protestants that Mr. Marusak's investigation was deficient because he relied only on the federal definition in his analysis.

The evidence shows that in this case, Mr. Marusak properly performed the wetlands determination using the federal definition and identified the presence of jurisdictional wetlands within the Facility Boundary and only non-jurisdictional wetlands within the Landfill footprint itself.[441] He submitted this information to the USACE,[442] which agreed with and approved of Mr. Marusak's wetlands determination, concluding that Nationwide Permit No. 14 would be the required federal permit needed for the Facility.[443] Therefore, the ALJs conclude that 130EP has shown compliance with 30 TAC § 330.61(m)(2) and (3) by demonstrating authorization under a federal permit for the use of any wetlands at the Site.

The ALJs also conclude that 130EP has shown compliance with the location restrictions in 30 TAC § 330.553(b). This section provides that new landfill units may not be located in wetlands, unless the owner or operator makes the demonstrations required by 30 TAC § 330.553(b)(1)-(5).[444] Because Mr. Marusak determined that wetlands were present within the Landfill footprint, he assessed the factors enumerated in 30 TAC § 330.553(b)(1)-(5).[445] No party disputes Mr. Marusak's assessment and findings regarding factors (1), (2), (3), and (5). Accordingly, the ALJs will address only the Section 330.553(b)(4) factor.

Section 330.553(b)(4) provides that an applicant must make a demonstration regarding no net loss of wetlands "*[t]o the extent required* under Clean Water Act, § 404 or applicable state wetlands laws."[446] The language in Section 330.553(b)(4) does not require an applicant to avoid impacts to wetlands, but rather looks to other rules and statutes for that requirement.

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[441] 130EP-1 at 672-674. The ALJs assume that the wetlands within the Landfill footprint would have been excluded from consideration under the wetland definition in 30 TAC § 307.3(a)(84) because they were man-made and less than one acre in size. 130EP-1 at 271, 298, 673-674.

[442] 130EP-1 at 271-670.

[443] 130EP-1 at 199-269; 130EP Marusak-1 at 7-8; 130EP Marusak-4.

[444] 30 TAC § 330.553(b).

[445] 130EP-1 at 676-679.

[446] 30 TAC § 330.553(b)(4) (emphasis added).

In this case, Clean Water Act § 404 does not apply to the non-jurisdictional wetlands within the Landfill footprint. Regarding applicable state law, Protestants contend that 30 TAC chapter 279 sets out the state's no-net-loss-of-wetlands policy and imposes a duty on 130EP to consider that policy. However, chapter 279 does not apply to the MSW permitting process; the chapter only applies to a TCEQ certification under Clean Water Act § 401[447] that a proposed discharge to water in the state under a federal permit would not violate the Texas Surface Water Quality Standards.[448] There is no language in either chapter 330 or chapter 279 indicating that the chapter 279 policy is applicable to an MSW permit application. Therefore, the ALJs are unpersuaded by Protestants' assertions that 130EP was required to consider the policy enunciated in chapter 279. Accordingly, the ALJs conclude that neither the Clean Water Act § 404 nor any state wetlands laws require 130EP to demonstrate a no net loss of wetlands, and the ALJs find that 130EP submitted all the applicable demonstrations required by 30 TAC § 330.533.

L. Surface Water Drainage

The proposed Permit Boundary will encompass 520 acres out of the 1,229-acre Hunter Tract, which generally slopes to the south. Dry Creek enters the Hunter Tract from the east, crossing the property generally in a northeast to southwest direction. Two unnamed creeks enter the Hunter Tract from the northwest and west, crossing the property in a northwest to southeast direction before coming together to form one unnamed tributary.[449] The Facility would be located in the northern portion of the Hunter Tract between Dry Creek and the unnamed tributary. The Site 21 Reservoir is located at the southern end of the Hunter Tract, and Dry Creek and the unnamed tributary flow into the Site 21 Reservoir.[450]

130EP proposes to use two separate stormwater systems at the Facility. One system will manage uncontaminated stormwater, and the other system will manage stormwater and other

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[447] Clean Water Act § 401 is codified at 33 U.S.C. § 1341.

[448] 30 TAC §§ 279.1, .2(b).

[449] 130EP-2 at 59.

[450] 130EP-2 at 59.

liquids that come into contact with waste.[451] This section of the PFD addresses only the uncontaminated stormwater management system.

130EP proposes to manage stormwater through a system of engineered constructed features and operational controls. This system will collect stormwater that falls within the Facility Boundary and that runs onto the Facility from adjacent properties as either sheet flow or within stream channels.[452]

130EP asserts that its stormwater management system will not adversely alter the existing drainage patterns downstream of the Facility. The County and Protestants dispute 130EP's assertions and claim that its stormwater analysis is deficient because 130EP's expert relied on inappropriate inputs in the hydrology models used to determine whether an adverse alteration will occur. Protestants further contend that even though 130EP's modeling results are unreliable, the results nonetheless show that an adverse alteration will occur at the Permit Boundary and that 130EP is relying on the Site 21 Reservoir to mitigate that adverse alteration.

The TCEQ has adopted rules to address the changes in surface drainage caused by the development of a landfill. Section 330.63(c) provides that an application for an MSW landfill permit must contain information showing that the facility's stormwater system will meet the requirements in Subchapter G of Chapter 330 regarding surface water drainage.[453] To that end, Section 330.63(c) requires an application to contain a facility surface water drainage report that includes the following information:

> (1) Drainage analyses. The owner or operator shall submit the following information and analyses:
>
> (A) drawing(s) showing the drainage areas and drainage calculations;
>
> (B) designs of all drainage facilities within the facility area, including such features as typical cross-sectional areas, ditch grades, flow

[451] 130EP Traw-1 at 6.

[452] 130EP Traw-1 at 6.

[453] 30 TAC § 330.63(c).

rates, water surface elevation, velocities, and flowline elevations along the entire length of the ditch;

(C) sample calculations provided to verify that existing drainage patterns will not be adversely altered;

(D) a description of the hydrologic method and calculations used to estimate peak flow rates and runoff volumes including justification of necessary assumptions:

(i) the 25-year rainfall intensity used for facility design including the source of the data; all other data and necessary input parameters used in conjunction with the selected hydrologic method and their sources should be documented and described;

(ii) hydraulic calculations and designs for sizing the necessary collection, drainage, and/or detention facilities;

(iii) discussion and analyses to demonstrate that existing drainage patterns will not be adversely altered as a result of the proposed landfill development; and

(iv) structural designs of the collection, drainage, and/or storage facilities.[454]

130EP's surface water drainage report is found in Attachment C to Part III of the Application.[455]

Section 330.303 further provides that a facility must be constructed, maintained, and operated to manage the runon and runoff "during the peak discharge of a 25-year rainfall event" and to prevent the discharge of waste.[456] In addition, the surface water drainage in and around a facility must be controlled to minimize surface water from running onto, into, and off of the treatment area.[457]

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[454] 30 TAC § 330.63(c)(1).

[455] 130EP-2 at 47-468.

[456] 30 TAC § 330.303(a).

[457] 30 TAC § 330.303(b).

TCEQ rules also provide that existing drainage patterns "must not be adversely altered" by the development of a landfill.[458] A landfill owner or operator must assess the existing and proposed drainage patterns for areas greater than 200 acres by using:

> Calculations for discharges from areas greater than 200 acres must be computed by using United States Geological Survey/Department of Transportation Federal Highway Administration hydraulic equations compiled by the United States Geological Survey and the TxDOT (TxDOT Administrative Circular 36-86); the Hydrologic Engineering Center-Hydrologic Modeling System [HEC-HMS], Hydraulic Engineering Center-River Modeling System, or legacy computer programs developed through the Hydrologic Engineering Center of the United States Army Corps of Engineers; or equivalent or better methods approved by the executive director.[459]

1. 130EP

Tyson L. Traw, P.E., prepared the drainage analysis for 130EP. In his analysis, he used 12 comparison points (CP) to compare the existing drainage patterns with the patterns that would be created by the Landfill once its drainage system is in place. Eight comparison points, CP1, CP2, CP3, CP4 CP5, CP6, CP7, and CP8, are located along the Permit Boundary. Four comparison points, CP9, CP10, CP11, and CP12, are located on the southern boundary at the most downstream points of the Hunter Tract.[460]

According to Mr. Traw, landfills increase the runoff volume of stormwater after a rainfall because the infiltration of stormwater into the soil is decreased after construction. The development also changes the way stormwater moves across the surface. To avoid adverse downstream impacts from the construction of a landfill, the TCEQ requires that the landfill must not adversely alter existing drainage patterns.[461]

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[458] 30 TAC § 330.305(a).

[459] 30 TAC § 330.305(f)(2).

[460] 130EP-2 at 76, 78.

[461] 130EP Traw-1 at 6.

To meet the TCEQ's requirements, Mr. Traw evaluated existing drainage patterns by analyzing the topography, soil characteristics, precipitation data, maps, and inputs from the HEC-HMS model. He then modeled the shape and size of the Facility, as well as the design of the stormwater drainage system, to determine the post-development drainage patterns.[462]

Mr. Traw prepared maps delineating both the existing and post-development drainage patterns, specifically Attachments C1-A-2 and C1-A-4 to the Application.[463] These maps compare the existing and post-development drainage patterns at specified comparison points along the Permit Boundary. In Attachment C1-A-5, Mr. Traw summarized the changes in peak discharge,[464] volume,[465] and velocity[466] at each comparison point, for both the 25-year storm and the 100-year storm. According to 130EP, the TCEQ only requires that an applicant perform the drainage analysis based on a 25-year, 24-hour storm event.[467]

Mr. Traw prepared the following tables to compare existing drainage patterns to post-development drainage patterns:[468]

130 Environmental Park
Existing/Post-Developed Drainage Analysis Summary

Boundary	Comparison Point	25-Year Peak Discharge (CFS)			100-Year Peak Discharge (CFS)		
		Existing	Post-Developed	Difference	Existing	Post-Developed	Difference
Facility Boundary	CP1	37.9	8.0	-29.9	56.3	11.2	-45.1
	CP2	1214.1	1205.3	-8.8	1789.6	1777.7	-11.9
	CP3	706.2	706.2	0.0	1028.7	1028.7	0.0
	CP4	170.0	170.0	0.0	252.0	252.0	0.0
	CP5	255.5	257.5	2.0	379.5	379.6	0.1
	CP6	2121.3	2033.6	-87.7	3123.5	2976.1	-147.4
	CP7	243.4	141.8	-101.6	359.8	206.8	-153.0

[462] 130EP Traw-1 at 7.

[463] 130EP-2 at 76, 78.

[464] "Peak discharge" or "peak flow rate" is "a measure of how much water would be moving through [a] water course at a given time" or the rate of flow, which is measured in cubic feet per second (cfs). Tr. at 520.

[465] "Volume" is the amount of water produced by a given storm and is measured in acre-feet (ac-ft). Tr at 520.

[466] "Velocity" is how fast water moves through a watercourse and is measured in feet per second (fps). Tr. at 521.

[467] 130EP Response at 65 (citing 30 TAC §§ 330.63(c)(1), (D), .303, .305(b)-(e), ED-SO-1at 23-24).

[468] 130EP-2 at 79. The comparison points on the tables correspond to the comparison points on the maps at 130EP-2 at 76 and 78.

Boundary	Comparison Point	25-Year Peak Discharge (CFS)			100-Year Peak Discharge (CFS)		
		Existing	Post-Developed	Difference	Existing	Post-Developed	Difference
	CP8	372.4	327.2	-45.2	550.5	454.7	-95.8
Property Boundary	CP9	795.7	795.7	0.0	1149.3	1149.3	0.0
	CP10	117.5	117.5	0.0	171.4	171.4	0.0
	CP11	293.6	293.6	0.0	431.5	431.5	0.0
	CP12	230.9	231.0	0.1	974.1	904.4	-69.7

130 Environmental Park
Existing/Post-Developed Volume Summary

Boundary	Comparison Point	25-Year Volume (Ac-ft)			100-Year Volume (Ac-ft)		
		Existing	Post-Developed	Difference	Existing	Post-Developed	Difference
Facility Boundary	CP1	4.3	0.7	-3.6	6.4	0.9	-5.5
	CP2	361.8	358.2	-3.6	537.9	532.4	-5.5
	CP3	201.8	201.8	0.0	296.9	296.9	0.0
	CP4	39.0	39.0	0.0	58.3	58.3	0.0
	CP5	58.5	59.4	0.9	87.3	88.3	1.0
	CP6	659.3	676.0	16.7	977.9	997.2	19.3
	CP7	38.5	61.8	23.3	57.5	88.8	31.3
	CP8	63.8	53.3	-10.5	95.4	77.5	-17.9
Property Boundary	CP9	156.7	156.7	0.0	229.4	229.4	0.0
	CP10	15.4	15.4	0.0	22.8	22.8	0.0
	CP11	53.5	53.5	0.0	79.6	79.6	0.0
	CP12	2524.1	2554.5	30.4	3726.8	3760.5	33.7

130 Environmental Park
Existing/Post-Developed Velocity Summary

Boundary	Comparison Point	25-Year Velocity (fps)			100-Year Velocity (fps)		
		Existing	Post-Developed	Difference	Existing	Post-Developed	Difference
Facility Boundary	CP1	0.6	0.3	-0.3	0.7	0.4	-0.4
	CP2	3.1	3.1	0.0	3.4	3.4	0.0
	CP3	2.7	2.7	0.0	2.9	2.9	0.0
	CP4	3.2	3.2	0.0	3.5	3.5	0.0
	CP5	2.5	2.5	0.0	2.7	2.7	0.0
	CP6	3.9	3.9	0.0	4.3	4.3	0.0
	CP7	2.7	2.3	-0.3	2.9	2.5	-0.4
	CP8	4.8	4.6	-0.2	5.3	5.0	-0.3
Property Boundary	CP9	4.8	4.8	0.0	5.3	5.3	0.0
	CP10	4.0	4.0	0.0	4.4	4.4	0.0
	CP11	4.1	4.1	0.0	4.5	4.5	0.0
	CP12	2.1	2.1	0.0	3.0	2.9	-0.1

As the above tables show, the post-development drainage patterns for the 25-year, 24-hour storm show mostly decreases in peak discharge rates, volumes, and velocities.[469] In terms of volume, only four out of twelve comparison points saw increases in the volume discharged post-development: CP5, CP6, CP7, and CP12.[470] In contrast, CP8 on the Permit Boundary saw a 16.5% decrease in volume.

Comparison points CP5, CP6, and CP7 are located on the Permit Boundary downstream of the Landfill.[471] According to Mr. Traw, for CP5, the peak discharge rate would increase post-development by less than 0.8%, the volume would increase by 1.5%, and velocity would remain unchanged.[472] For CP6, the peak discharge rate would decrease post-development by approximately 4%, the volume would increase by 2.5%, and the velocity would be unchanged. At CP7, the peak discharge would decrease post-development by 42%, the volume would increase by 60.5%, and the velocity would decrease by 14.8%.[473]

Comparison point CP12 is not located on the Permit Boundary but at the southern boundary of the Hunter Tract downstream of the Site 21 Reservoir. According to Mr. Traw, at CP12, the peak discharge would slightly increase post-development by 0.04%, the volume would increase by 1.2%, and the velocity would not change.[474]

130EP takes the position that development of the Landfill will not result in an adverse alteration of the existing drainage patterns either at the Permit Boundary or downstream of the Site 21 Reservoir. Regarding the changes in volume at CP7 and CP8, 130EP notes that these comparison points are located within the 25-year and 100-year floodplains.[475] During the

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[469] The PFD discussion focuses on the 25-year storm event because TCEQ rules require an applicant to address this storm event. 30 TAC §§ 330.63, .303, .305.

[470] 130EP-2 at 79.

[471] 130EP-2 at 76, 78.

[472] Although CP5 is on the Permit Boundary, it is not downstream of the Landfill footprint, as are CP7 and CP8. 130EP-2 at 78. CP5 would be downstream of the citizens' convenience center, the gatehouse, and the scales. 130EP-2 at 40, 78.

[473] 130EP-2 at 69, 79.

[474] 130EP-2 at 68, 79.

[475] 130EP-2 at 260.

25-year and 100-year storm events, water accumulates behind the Site 21 Dam that is used to retard flood flows. Therefore, according to 130EP, both storm events will result in the water surface of the Site 21 Reservoir expanding past the Permit Boundary, and CP7 and CP8 would be located within the reservoir.[476] Therefore, 130EP contends that it is not using the Site 21 Reservoir to mitigate the alterations at CP7 and CP8 because it is not possible to evaluate changes at these two comparison points without considering the reservoir.[477] According to 130EP, CP7 and CP8 will increase the volume to the Site 21 Reservoir by less than 1% of the capacity of the reservoir during the 25-year storm event, and this is an insignificant increase.[478]

2. The County

In contrast, the County argues that 130EP's drainage analysis is flawed and the results of that analysis are invalid. Mr. Bratton, the County Engineer, reviewed the floodplain delineation submitted as part of 130EP's application to the County for a preliminary plat. 130EP initially submitted the same analysis to the County that it had submitted to the TCEQ. During his review of this information, Mr. Bratton determined that the floodplain analysis contained over-simplifications that produced questionable results. He testified that by using inappropriate inputs for shallow concentrated flows and the Manning's Roughness coefficient in its models, 130EP increased the times of concentration and lag time, resulting in underestimation of the peak flow rates and the extent of the 100-year floodplain.[479]

According to Mr. Bratton, 130EP's initial hydrologic modeling improperly used the "shallow concentrated flow" input for channels and streams.[480] Mr. Bratton referenced the Unites States Department of Agriculture Urban Hydrology for Small Watersheds, Technical Release 55 (TR 55) and stated that "open channels are assumed to begin where surveyed cross-section information has been obtained, where channels are visible on aerial photographs, or

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[476] 130EP-2 at 69.

[477] 130EP Reply at 2.

[478] 130EP Reply at 2 (citing ED-SO-1 at 26).

[479] County Ex. 1 at 13.

[480] County Ex. 1 at 7-8.

where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets."[481] He also referenced the NRCS National Engineering Handbook's recommendation that shallow concentrated flows exists for flow depths of 0.1 to 0.5 feet.[482] Mr. Bratton opined that 130EP improperly used shallow concentrated flow lengths of up to 8,945 feet, but "common engineering practices" limit the use of shallow concentrated flow lengths to approximately 1,000 feet or less in the modeling.[483]

In Mr. Bratton's opinion, the use of excessive shallow concentrated flow lengths repeatedly mischaracterized watersheds on the Site as shallow concentrated flow instead of channel flow.[484] The County contends that by mischaracterizing several watersheds as shallow concentrated flow, 130EP's analysis created the assumption that the "velocity of runoff accumulating in a shallow concentrated manner in this watershed will be 1.53 feet per second over a length thousands of feet or that the water depth at its deepest flow would be less than 0.5 feet."[485] In its closing arguments, the County asserts:

> To accept the calculations presented as correct, we would have to accept that in a 100-year storm event in this portion of the watershed that the deepest and fastest flowing portion of the stream draining several hundred acres is flowing at depth of less than 6-inches and a speed approximately two thirds slower than an average walking speed.[486]

Instead, Mr. Bratton opined that the proper length for the shallow concentrated flow inputs into the model should not exceed 1,000 feet, resulting in more channelization and faster velocities.

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[481] County Ex. 1 at 8.

[482] County Ex. 1 at 8, Att. B.

[483] County Ex. 1 at 7-8. Mr. Bratton also testified that an appropriate maximum length for shallow concentrated flows could be between 800 to 1,200 feet. Tr. at 1818.

[484] County Ex. 1 at 7-8; Tr. at 1816-1821.

[485] County Ex. 1 at 9-10.

[486] County Closing at 11, quoting County Ex. 1 at 10. The County misquotes the evidence in its closing argument. At the hearing, Mr. Bratton corrected the above quote. Instead of "a speed approximately *two thirds slower than* an average walking speed," Mr. Bratton changed the italicized testimony to read "a speed approximately *half* an average walking speed." Tr. at 1807 (emphasis added).

Without the faster velocities, according to Mr. Bratton, 130EP's analysis underestimated the extent of the floodplain.[487]

Mr. Bratton also took issue with the Manning's Roughness coefficient used by Mr. Traw in the modeling. Mr. Bratton testified that this roughness coefficient is a parameter used to reflect the roughness of or resistance to water flow in a stream.[488] Mr. Traw used a Manning's Roughness coefficient of 0.065 for certain reaches of the watercourses analyzed. However, in Mr. Bratton's opinion, the analysis should have used a coefficient of 0.045. He testified that the higher the Manning's Roughness coefficient, the greater the resistance and the slower the resulting flow estimated by the analysis. Mr. Bratton stated that a value of 0.045 is appropriate "for small natural streams that are winding, weedy, and include ineffective areas or areas of pooling."[489] He further stated that using a higher value of 0.065, without justification, would result in an assumption that was less protective or conservative.[490]

In Mr. Bratton's opinion, the excessive lengths of shallow concentrated flow and the excessively high Manning's Roughness coefficient resulted in the underestimation of the peak flow in the modeled storm event.[491] Therefore, in his role as County Engineer tasked with reviewing 130EP's preliminary plat application, Mr. Bratton required 130EP to amend its drainage analysis to provide for the inputs he determined were proper. Mr. Traw revised the models and the floodplain analysis and re-submitted them to the County; however, Mr. Traw did not revise the models he had submitted to the TCEQ.[492] In its closing arguments, the County compared the revised analysis submitted to the County with the unrevised analysis submitted to the TCEQ,[493] and argued that the revised analysis shows much higher peak discharge rates than the unrevised analysis, as demonstrated by the following tables:

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[487] County Ex. 1 at 10.

[488] County Ex. 1 at 13.

[489] County Ex. 1 at 13.

[490] County Ex. 1 at 13.

[491] County Ex. 1 at 13.

[492] County Ex. 1 at 8-9.

[493] County Closing at 12-13.

TCEQ Application[494]			Caldwell County Application[495]		
Hydrologic Element	**Drainage Area**	**Peak Discharge**	**Hydrologic Element**	**Drainage Area**	**Peak Discharge**
OS16	0.521	928.4 CFS	DC3	0.51	1164.6 CFS
A5	0.234	550.5 CFS	DC4	0.233	599.1 CFS
OS5	0.527	1149.3 CFS	TF1	0.527	1253.6 CFS

The County argues that changing the Manning's Roughness coefficient and reducing the shallow concentrated flow input to less than 1,000 feet resulted in significant increases in peak discharges, and "the same hydrologic elements consisting of nearly identical drainage areas saw significant increases in peak discharge with the requested revisions."[496]

Because 130EP failed to submit the same corrected analysis to the TCEQ, Mr. Bratton opined that 130EP submitted a flawed drainage analysis to the TCEQ as part of the Application. The County interprets 130EP's actions as evidence that 130EP was "clearly willing to submit one set of information to TCEQ and another set of information to Caldwell County in order to obtain approval from both entities."[497]

3. The District

The District is the owner and operator of the Site 21 Reservoir, the largest flood control facility in the area located on the southern portion of the Hunter Tract downstream of the Facility. The Site 21 Dam is a flood-retarding structure comprised of an embankment and an emergency spillway. The dam was originally designed as a low-hazard dam to protect downstream agricultural lands from flooding,[498] but development downstream from the dam required its re-classification to a high-hazard dam,[499] which is a dam whose failure would cause

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[494] County Exs. 6, 7. The analysis submitted to the TCEQ analyzed a 100-year, 24-hour storm event. County Ex. 6.

[495] County Exs. 8, 9. The analysis submitted to the County analyzed a 100-year, 10-day storm event. County Ex. 8.

[496] County Closing at 13.

[497] County Closing at 14.

[498] District Ex. 1.6 at 54.

[499] NRCS estimated that the minimum number of people at risk of a breach of the Site 21 Dam is 61. In addition, a breach could damage or make impassable five downstream roads. District Ex. 1.6 at 54.

catastrophic damage and loss of life downstream.[500] The Site 21 Dam currently does not meet the dam safety criteria for high-hazard dams to prevent breaching of the spillway and embankment.[501]

Regarding the stormwater and drainage issue, the District's focus is largely on the quality of the stormwater from the Facility entering the Site 21 Reservoir. The District recognizes that the Draft Permit prohibits the discharge of "contaminated water." However, the District maintains that the definition of "contaminated water" does not necessarily encompass pollutants that result from landfill operations outside of active landfill areas. Pursuant to its responsibilities under federal stormwater programs overseen by the NRCS, the District will consider implementing its own surface and groundwater monitoring.

In terms of volume, the District stated that it "learn[ed] at the hearing that there would be an increase in the quantity of water projected for discharge to Site 21 as a result of the landfill's operation."[502] However, the District explained that if the increase causes a problem, it "has remedies available to it under state law governing easement rights."[503]

4. Protestants

In their initial closing arguments, Protestants stated that they agreed with the arguments made by the County and the District, and Protestants made no other arguments on whether the Landfill will adversely alter existing surface drainage or comply with TCEQ rules.[504] However, in their Response to Closing Arguments, the Protestants made arguments that purport to respond to I30EP's and the ED's closing arguments, but in reality were new arguments regarding the alleged insufficiency of the Application based on evidence Protestants presented in their direct

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[500] The term does not reflect the condition of the dam or its structural integrity. Tr. at 1279.

[501] District Ex. 1 at 50.

[502] District Closing at 6.

[503] District Closing at 6.

[504] Protestants Closing at 81.

case.[505] Because the other parties had not had an opportunity to respond to these new arguments, the ALJs allowed the parties to file reply briefs.[506]

In their response, Protestants claim that the ED and 130EP concluded that the changes shown by the Application at comparison points CP7 and CP8 are acceptable because of the "net" impact of those changes on the Site 21 Reservoir downstream.[507] For example, the ED found no adverse alteration from the changes at CP7 and CP8 because the increases in volume represented less than 1% of the capacity of the Site 21 Reservoir downstream of the Permit Boundary.[508] Protestants argue that it is improper to rely on off-site mitigation and that such reliance is contrary to TCEQ precedent requiring no adverse alteration at the permit boundary.

In support of their position, Protestants rely on the TCEQ order denying the application of Juliff Gardens for an MSW landfill permit.[509] In its final order, the TCEQ denied the application for several reasons, including Finding of Fact No. 63, which stated: "Applicant failed to demonstrate that the landfill will not significantly alter natural drainage patterns *at the permit boundaries of the site.*"[510] Protestants argue that a permittee can only control those activities that occur within the Permit Boundary. Therefore, no mechanism exists to ensure that off-site mitigation activities, beyond the TCEQ's regulatory reach, will continue to mitigate the increase in volume in the future. According to Protestants, this is the reason why the ED issued the May 6, 2014 NOD to 130EP, stating:

> While discharge rates at CP7 and CP8 indicate reductions of 42% and 12% respectively between the pre-and post-development conditions, by the time the discharges leave the property boundary, values do not change significantly (no more than 1.2%). It appears that drainage pattern changes are limited to property owned by you; however, the requirement that drainage patterns not be altered at

[505] Protestants Response at 47-51.

[506] *See* Order No. 31 (Dec. 7, 2016).

[507] 130EP-2 at 69; Tr. at 1911.

[508] Tr. at 1911.

[509] *In the Matter of Juliff Gardens, L.L.C., for a Permit to Operate a Type IV Municipal Solid Waste Facility (Permit No. MSW-2282);* TCEQ Docket No. 2001-0117-MSW; SOAH Docket No. 582-02-1595, Order (Oct. 4, 2004).

[510] *Juliff Gardens*, Order at FOF 63 (emphasis added).

> the permit boundary is not met where the alterations are mitigated on off-site property, even if the property is owned by the applicant, without a drainage easement. A drainage easement should be acquired for areas between CP5 through CP8 and CP9 through CP10. Please illustrate drainage easements on appropriate figures and expand the discussion of the comparison of pre- and post-development drainage conditions (Attachment C1, Chapter 7) to reflect the drainage easement and its involvement in the demonstration of no adverse change to drainage.[511]

Protestants further maintain that no TCEQ rule allows for off-site mitigation of drainage impacts, citing Mr. Odil's testimony that "TCEQ rules are primarily focused on the facility which is bounded by the permit boundary."[512]

According to Protestants, the evidence shows that the drainage patterns will be adversely altered at CP7 and CP8, both located at the Permit Boundary.[513] As previously stated, at CP7, the volume will increase from 38.5 ac-ft to 61.8 ac-ft, for a 60.5% increase. At CP8, volume will decrease from 63.8 ac-ft to 53.3 ac-ft, for a 16.5% decrease.[514] Protestants argue that these changes represent significant alterations that 130EP must demonstrate are not adverse. In addition, Protestants assert that Mr. Odil testified that the decrease in volume at CP8 would potentially be adverse except for the mitigation in the downstream reservoir.[515]

Protestants also contend that the Facility will endanger the Site 21 Reservoir because development of the Landfill will change the drainage patterns in ways that will adversely impact the reservoir. Protestants argue that 130EP improperly relied on hearsay statements made by an unidentified TCEQ employee in the Dam Safety Program for the proposition that a 1% increase in volume in the Site 21 Reservoir is insignificant. Furthermore, the Site 21 Dam is a high-hazard dam that "must be protected against a flooding event equaling 75% of the 'probable

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[511] ED-SO-4 at 4. On cross-examination, Mr. Odil stated that he could not recall why he would have a concern about reductions in peak discharge rates because such reductions do not typically cause an adverse alteration. Tr. at 1909-1910.

[512] Tr. at 1901.

[513] 130EP-2 at 76, 78-79.

[514] 130EP-2 at 79.

[515] Tr. at 1911.

maximum flood,'"[516] but Mr. Traw did not consider the probable maximum flood in his analysis.[517]

In their response to the parties' closing arguments, Protestants also take issue with the unit hydrograph used in Mr. Traw's drainage analysis.[518] Protestants claim that 130EP relies on the use of the unit hydrograph method to determine drainage patterns. However, 130EP failed to identify the particular unit hydrograph used in the analysis. According to Protestants, there must be a justification for the unit hydrograph selected to determine whether the unit hydrograph is appropriate considering the characteristics of the watershed analyzed.[519]

In addition, Protestants note that Mr. Traw claimed he had identified the unit hydrograph used in his drainage analyses on pages 85 and 121 of Exhibit 130EP-2.[520] However, those portions of the Application only state that a unit hydrograph method was used, and do not identify the particular hydrograph. Protestants' witness Robert D. Harden, P.E., testified that it was necessary to identify the unit hydrograph and justify its use, two actions 130EP did not take.[521] Protestants take the position that the identification of the unit hydrograph is necessary to determine compliance with 30 TAC § 330.63(c)(1).

5. The ED

The ED reviewed the information submitted by 130EP and concluded that 130EP had demonstrated that the development of the Landfill would not result in adverse alterations to existing drainage patterns.[522] According to ED witness Mr. Odil, the ED looks at changes to drainage patterns at the Permit Boundary.[523] He testified that decreases in peak discharges and

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[516] Protestants Reply at 26 (citing 30 TAC § 299.15(a)(1)(A)).

[517] Tr. at 678-679.

[518] Protestants Response at 50.

[519] Protestants Ex. 9 at 11.

[520] Tr. at 2021-2022.

[521] Protestants Ex. 9 at 10.

[522] ED-SO-1 at 26.

[523] Tr. at 1900.

velocities do not typically create adverse alterations of existing drainage patterns. In addition, an increase in volume is not an adverse alteration if it is discharged at a slower rate and velocity. However, Mr. Odil testified that a decrease in volume could be an adverse alteration because of the potential to reduce downstream water supplies.[524]

Mr. Odil noted that according to the Application, the peak discharges, volumes, and velocities would generally decrease. At CP8, the volume of stormwater discharged at the Permit Boundary went from 63.8 ac-ft to 53.3 ac-ft, for a reduction in volume of 10.5 ac-ft. However, Mr. Odil stated that because the nearby CP7 would see an increase in volume, the decrease in volume at CP8 would be offset by that increase, resulting in no adverse change overall.[525]

In addition, Mr. Odil testified that the increase in volume at CP7 was not an adverse change. At CP7, the volume discharged, post-development, at the Permit Boundary would increase from 38.5 ac-ft to 61.8 ac-ft, for an increase of approximately 60.5%.[526] Although Mr. Odil testified that the increase in volume at CP7 is "significant," he did not consider it to be an adverse alteration of drainage patterns because the increased volume would be discharged at a lower rate and slower velocity.[527] Moreover, Mr. Odil noted that the CP7 increase in volume would be offset somewhat by the decrease in volume at CP8 and mitigated by the Site 21 Reservoir. He also consulted with the TCEQ's Dam Safety Program regarding the overall increase in volume to the Site 21 Reservoir, and that Program informed him that the increase in volume represents 1% of the capacity of the Site 21 Reservoir during a 25-year storm event and would therefore be "insignificant."[528] The Dam Safety Program also indicated that the Site 21 Reservoir and its dam are proposed for rehabilitation, and the land use upstream of the dam would be included in the new hydrology considered in designing the rehabilitation plans.[529]

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[524] Tr. at 1904-1905.

[525] Tr. at 1909.

[526] 130EP-2 at 69, 76, 78-79.

[527] Tr. at 1904-1905.

[528] ED-SO-1 at 26.

[529] ED-SO-1 at 26.

6. The ALJs' Analysis

The ALJs conclude that 130EP sufficiently demonstrated its compliance with 30 TAC §§ 330.63(c)(1), 330.303, and 330.305. The preponderant evidence shows that development of the Facility will not adversely alter existing drainage patterns. In addition, no party challenges the design of the surface water management system in their post-hearing briefs. Therefore, the ALJs will not discuss this issue in this PFD and recommend the Commission adopt the relevant findings of fact and conclusions of law proposed by 130EP on this issue. Accordingly, the ALJs conclude that for the stormwater drainage system, 130EP has demonstrated that its system in Attachment C3 of the Application[530] meets the requirements of 30 TAC §§ 330.63, 330.303, and 330.305.

Attachment C1 of the Application contains the drainage analysis used to determine whether an adverse alteration to the existing drainage patterns would occur.[531] The County compared the hydrologic information submitted to the TCEQ regarding existing drainage patterns[532] with the hydrologic analysis submitted to the County containing the revised Manning's Roughness coefficients and shallow concentrated flow inputs required by Mr. Bratton.[533] A review of County Exhibits 6 and 8 shows that the differences in the peak discharge rates between the information submitted to the TCEQ and submitted to the County are attributable to the different storm events used in the two analyses. For the drainage analysis submitted to the TCEQ in County Exhibit 6, 130EP used a 100-year, *24-hour* storm event. But for the floodplain analysis submitted to the County in County Exhibit 8, 130EP used a 100-year, *10-day* storm event.[534] The use of two different storm events in the two analyses caused the difference in the numbers submitted to the two regulatory agencies.[535]

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[530] 130EP-2 at 447-468.

[531] 130EP-2 at 52-242.

[532] County Ex. 6 (Att. to Application at C1-B-24 found at 130EP-2 at 106-107).

[533] County Ex. 8.

[534] *Compare* County Ex. 6 ("Meteorologic Model 100 yr 24hr (SCS)"), *with* County Ex. 8 ("Meteorologic Model 100 yr 10 day (smoothed)").

[535] Tr. at 664-665.

Furthermore, the ALJs are not convinced that Mr. Traw's Manning's Roughness coefficient and shallow concentrated flow lengths were improper. Regarding the shallow concentrated flow input, the preponderant evidence does not demonstrate that 130EP's use of shallow concentrated flows longer than 1,000 feet was in error. According to TR 55, stormwater moves through a watershed as sheet flow, shallow concentrated flow, open channel flow, or some combination of these three types of flows.[536] To determine what type of flow to use in a model, TR 55 recommends a field inspection,[537] which Mr. Traw conducted. Regarding sheet flows, TR 55 provides that after a maximum of 300 feet, sheet flow usually becomes shallow concentrated flow; however, TR 55 does not specify a maximum length for shallow concentrated flows, as Mr. Bratton advocates.[538] In fact, TR 55 used a shallow concentrated flow of 1,400 feet in one example, which exceeds Mr. Bratton's recommendation of 1,000 feet or less.[539] Likewise, the NRCS National Engineering Handbook does not contain a maximum length for shallow concentrated flow, although it does limit the maximum length for sheet flow to less than 100 feet.[540] The differences in the maximum length for the sheet flow input between TR 55 (maximum of 300 feet) and the National Engineering Handbook (less than 100 feet) indicates to the ALJs that the determination of the appropriate input is discretionary and involves case-by-case judgments by professionals.

Unlike the sheet-flow input, neither TR 55 nor the National Engineering Handbook set a maximum length to be used for the shallow concentrated flow input. Regarding open channel flows, TR 55 provides that open channels should begin where there are surveyed cross-sections, where channels are visible on aerial photographs, or "where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle maps."[541] Mr. Traw testified that TR 55's guidance addresses how to determine assumptions regarding the geometry for a stream.[542] The most accurate characterization of a channel's geometry would come from an

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[536] Protestants Ex. 9-C at 29.

[537] Protestants Ex. 9-C at 29.

[538] Protestants Ex. 9-C at 31; Tr. at 1818.

[539] Protestants Ex. 9-C at 32; County Ex. 1 at 8.

[540] County Ex. 1, Att. B.

[541] Protestants Ex. 9-C at 31.

[542] Tr. at 2125.

actual survey of the channel. In this case, Mr. Traw used the USGS contour map with 10-foot contour intervals and stated:

> [T]here were many places, in my opinion, that I could not estimate the channel geometry in a way accurate enough that would – that would lead me to a more correct estimation of the time of concentration than the already assumed geometry built in the shallow concentrated flow for the Manning's equation.[543]

Mr. Traw further testified that he looked at aerial photography and made several trips to the Hunter Tract, walking the unnamed tributary and Dry Creek in the areas that would be impacted by drainage changes.[544] He made the decision to change from shallow concentrated flow to open channel flow when he "had sufficient topographic data to determine the channel geometry in such a way that [he] could use the methods described in the channel flow description in TR 55."[545] For the off-site areas in the watershed to which he did not have access, Mr. Traw relied on topographic information from the USGS maps, but once Mr. Bratton made him aware of the LIDAR topographic information from the Capital Area Council of Governments (CAPCOG), Mr. Traw used that data as well.[546] When he had the ability to determine the existence of a channel and the geometry and the depth of the channel, Mr. Traw used the channel-flow assumption, typically based on topographic data.[547]

In the ALJs' opinion, Mr. Traw justified his use of the shallow concentrated flow input based on his site visits and use of topographical data.[548] His testimony on the issue was well-reasoned and consistent. In addition, there was very little change in the floodplain map

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[543] Tr. at 2124.

[544] Tr. at 2015.

[545] Tr. at 2020.

[546] Tr. at 2021. Mr. Traw testified that if he had to do his analysis over again from the beginning, he would use the more detailed LIDAR data instead of the USGS data. However, he would not change the Manning's Roughness coefficients or the lengths for the shallow concentrated flow in the model. Tr. at 2017-2018.

[547] Tr. at 2115-2116.

[548] Mr. Traw did not take notes or pictures of his site visits. Tr. at 713. Protestants argue that this lack of documentation renders his opinion not relevant and unreliable. Protestants Reply at 30. The cases cited by Protestants address the admissibility of expert testimony, but Protestants did not object to Mr. Traw's testimony. Furthermore, the cases do not stand for the proposition that an expert's opinion is inadmissible or conclusory because an expert did not take notes or pictures during his investigation.

after he revised the floodplain analysis and maps submitted to the County as required by Mr. Bratton,[549] and both the map submitted to the TCEQ and the map submitted to the County show that the Landfill footprint is located outside of the 100-year floodplain.[550] For these reasons, the ALJs cannot agree with the County and Protestants that Mr. Traw used excessively long lengths for the shallow concentrated flow input in the drainage analysis submitted to the TCEQ.

For these same reasons, the ALJs also cannot conclude that the Manning's Roughness coefficients used by Mr. Traw were erroneous. The County and Protestants cross-examined Mr. Traw extensively on his use of the Manning's Roughness coefficient of 0.065 as indicated in Exhibit 130EP-2 on page 95. However, Mr. Traw repeatedly testified that such Manning's Roughness coefficients were for "Kinematic Wave Routing" purposes only, and that the model would only accept averages of the coefficient for each specified reach.[551] It appears from the evidence that in other areas of his analysis, Mr. Traw was justified in choosing the Manning's Roughness coefficient based on his site visits and aerial photographs.[552]

Mr. Bratton testified that a Manning's Roughness coefficient of 0.045 would have been more appropriate for the watercourses subject to Mr. Traw's analysis because the higher Manning's Roughness coefficient of 0.065 resulted in lower peak flows and a corresponding underestimation of the floodplain.[553] However, using the lower Manning's Roughness coefficient required by Mr. Bratton did not result in significant differences between the floodplain delineation submitted to the TCEQ and the floodplain delineation submitted to the County.[554] Mr. Traw testified that to determine the appropriate Manning's Roughness

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[549] *Compare* 130EP-24, *with* 130EP-25.

[550] Tr. at 702.

[551] Tr. at 2129, 2132-2137.

[552] Tr. at 2129.

[553] County Ex. 1 at 13-17.

[554] *Compare* 130EP-24 (floodplain submitted to TCEQ modified to include landfill footprint), *with* 130EP-25 (floodplain submitted to and approved by the County modified to include the landfill footprint); Tr. at 702-703, 2111.

coefficient for the floodplain, he could primarily rely on aerial photography.[555] However, to determine the proper coefficient for the stream channels, he made several site visits and visually evaluated the channels that would impact his analysis (in addition to his review of aerial photography).[556] After his visual observations, Mr. Traw consulted the "table . . . that describes channel characteristics . . . and [that has] an associated range of roughness coefficients for [each] description."[557] Again, Mr. Traw testified credibly and consistently on the methodology he employed to arrive at the Manning's Roughness coefficients used in his hydrology model. Based on this information, and the absence of any meaningful differences between the floodplain maps submitted to the TCEQ and to the County, the ALJs cannot say that the Manning's Roughness coefficients used by Mr. Traw in the drainage analysis were incorrect.[558]

Mr. Traw further explained why the differences in the Manning's Roughness coefficients and the shallow concentrated flow inputs resulted in "fairly insignificant" differences between the information submitted to the TCEQ and to the County.[559] Regarding the two floodplain delineations, he stated:

> [Y]ou have two parts to the [de]lineated floodplain. You've got to determine the hydrology, so that's the flow rate. And in this case, our downstream boundary condition, which is the flood pool of the Site 21 Reservoir. That becomes very important. So we determined that. And using Mr. Bratton's assumptions, that increases the peak discharge by -- by lowering those roughness coefficients. Now, if I use the same assumption that established that roughness in the hydrology part, and I apply that to my hydraulic model, that means that my channel in my hydraulic model is slicker. It has less friction. So I apply this flow rate that's higher now, but I have less friction in my channel. So then my floodplain is less extensive. Now, really, what happens in this case is those pretty

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[555] Tr. at 2015.

[556] Tr. at 703-704.

[557] Tr. at 2016.

[558] Mr. Bratton testified that a Manning's Roughness coefficient of 0.045 is appropriate for "small natural streams that are winding, weedy, and include ineffective areas or areas of pooling." County Ex. 1 at 13. In its response to the parties' closing arguments, 130EP included the Texas Department of Transportation's (TxDOT) Hydraulic Design Manual as Attachment 2. This manual shows that for "natural streams [s]luggish reaches, weedy, deep pools," the suggested Manning's Roughness coefficients range from 0.050-0.080. 130EP Response, Att. 2 at 4-43. This document was not offered or admitted into the evidentiary record, and the ALJs do not rely on this document in either their analysis or the proposed findings of fact.

[559] Tr. at 666.

> well offset. That's why there's insignificant changes between the floodplain shown in the application and the one on the preliminary plat.[560]

As the ALJs understand the testimony, in using the assumptions required by the County to obtain a preliminary plat, the higher peak discharge rates resulting from the hydrology model were offset by the smoother channels in the hydraulic model, thereby resulting in a less extensive floodplain. Furthermore, no party has directed the ALJs to evidence showing that there are significant differences between the floodplain map submitted to the TCEQ and the floodplain approved by the County. Accordingly, the ALJs cannot conclude that Mr. Traw entered incorrect inputs into the model that rendered the results unreliable.

Regarding Protestants' allegation that 130EP did not identify the unit hydrograph used in the analysis, the Application states: "[t]he rainfall/runoff transformation was performed with the Unit Hydrograph Method. The synthetic unit hydrographs for each watershed used a single peak unit hydrograph model developed by the SCS and described in detail in [TR 55]."[561] According to Mr. Traw, the HEC-HMS model uses the hydrograph described in TR 55, and TR 55 has only one unit hydrograph.[562] In addition, the rainfall distribution used in the model was the SCS 24-hour, Type 3 storm,[563] and Mr. Traw used this rainfall distribution as directed by TR 55.[564]

The ALJs are unclear as to how much more specificity is needed to adequately identify the unit hydrograph used by 130EP, especially in the absence of any regulatory requirement to provide more specificity. The ALJs conclude that 130EP has sufficiently identified the unit hydrograph used in its modeling.

Finding that Mr. Traw's drainage analysis was properly prepared, the ALJs must now determine whether that analysis shows that development of the Facility will result in an adverse alteration of existing drainage patterns. At most comparison points along the Permit Boundary,

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[560] Tr. at 2110-2111.

[561] 130EP-2 at 85, 121.

[562] Tr. at 2021, 2126.

[563] 130EP-2 at 121.

[564] Tr. at 2128.

there will be minimal changes in peak discharge, volume, and velocity during the 25-year, 24-hour storm. At most comparison points, peak discharge rates will be reduced, and velocities will be reduced or unchanged.[565]

The most significant changes along the Permit Boundary occur at CP7 and CP8, with decreases in peak discharge rates of 42% and 12%, respectively. In terms of velocity, there are slight decreases at these two comparison points, as well. As the evidence shows, reductions in peak discharge rates and velocities do not typically result in adverse alterations of existing drainage patterns.[566]

In terms of volume, CP7 will see an increase in volume of 60.5%,[567] characterized as a significant increase by Mr. Odil.[568] However, the increase in volume is accompanied by corresponding decreases in the peak discharge rate and velocity. Therefore, the increase in volume at CP7 would not represent an adverse alteration of the existing drainage pattern because, as both Mr. Odil and Mr. Bratton explained, the increased volume would be released at a slower rate and velocity.[569] Based on the evidence presented, the ALJs conclude that the increase in volume at CP7 with the corresponding reductions in peak flow and velocity does not create an adverse alteration in drainage patterns along the Permit Boundary.

At CP8, development of the Facility will result in a decrease in volume of 16.5%, but this 16.5% reduction in volume at CP8 is not an adverse alteration of the existing drainage patterns at the Permit Boundary. Generally, increases in peak flows and velocities are the main concerns regarding the alteration of drainage patterns. Less volume moving downstream can potentially be an adverse alteration because of the possible reduction in downstream water supplies. However, there is no evidence in the record that the reduction in volume at CP8 would have any

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[565] 130EP-2 at 79.

[566] Tr. at 524, 1859-1860, 1904-1905.

[567] 130EP-2 at 69, 79.

[568] Tr. at 1904.

[569] Tr. at 1860, 1904-1905; 130EP-2 at 79; *see also* 130EP-2 at 69 ("The 25-year storm runoff volume will increase at CP7; however, because the peak discharge rate will be reduced and the runoff volume will be distributed over a longer time period, that increase will not result in an adverse alteration of existing drainage patterns.").

adverse consequences at the Permit Boundary, as there are no water supply needs at that location. Accordingly, the ALJs conclude that a 16.5% reduction in volume at CP8 is not an adverse alteration of drainage patterns at the Permit Boundary.

Nor is the reduction in volume at CP8 an adverse effect on water supplies downstream of the Permit Boundary. Protestants appear to argue that the determination of adverse alteration must look at CP8 in isolation because to do otherwise would allow the Site 21 Reservoir or the increase in volume at CP7 to improperly mitigate the alteration. However, this argument ignores the drainage patterns that are present downstream of the Permit Boundary, and thus proposes an illogical analysis. As 130EP points out in its reply brief, CP7 and CP8 are relatively close to each other on the southern Permit Boundary. CP7 is on a tributary that joins Dry Creek 1,000 feet downstream of the Permit Boundary, and CP8 is on a tributary that joins Dry Creek 350 feet farther downstream.[570] But most importantly, both comparison points are located on the Permit Boundary within both the 25-year and the 100-year floodplains.[571] During the modeled rainfall events, both comparison points would be within the water surface elevation of the Site 21 Reservoir. Therefore, the ALJs conclude that the 16.5% reduction in volume at CP8 will not adversely affect downstream water supplies beyond the Permit Boundary because the 60.5% increase in volume at CP7 will offset that reduction, resulting in an increase in volume of 12.5%.[572]

In their reply brief, Protestants allege that the Facility's alteration of the drainage patterns will adversely impact the Site 21 Reservoir.[573] Protestants assert that because 130EP relied on the dam safety criteria in its response brief, "some analysis of [the probable maximum] flood should be included."[574] Accordingly, Protestants argue that because the Site 21 Dam is a high-hazard dam, it "must be protected against a flooding event equaling 75% of the 'probable

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[570] 130EP Reply at 3; 130EP-2 at 78.

[571] 130EP-2 at 260.

[572] 130EP-2 at 69, 79.

[573] Protestants Reply at 26-27.

[574] Protestants Reply at 26 (citing 130EP Response at 65).

maximum flood'" as required by 30 TAC § 299.15(a)(1)(A).[575] Because Mr. Traw's analysis does not take the probable maximum flood into consideration,[576] Protestants argue that the evidence is insufficient to find no adverse alteration to the Site 21 Reservoir.

Protestants misread 130EP's response brief and the TCEQ's rules. The ALJs were unable to locate in 130EP's post-hearing briefs any reference to the TCEQ's criteria for high-hazard dams. In addition, 30 TAC § 299.15(a)(1)(A) cited by Protestants refers to the criteria for the design of a proposed dam. It has no applicability to this case. Accordingly, the ALJs find that Protestants' argument regarding the probable maximum flood and the TCEQ's dam safety criteria in 30 TAC chapter 299 is without merit.

Furthermore, the evidence shows that development of the Facility will not adversely alter the existing drainage patterns to negatively affect the Site 21 Reservoir. Mr. Odil testified that he consulted with the TCEQ's Dam Safety Program to determine if the increase in volume would adversely impact the Site 21 Reservoir. The Program informed him that the increase in volume represents 1% of the capacity of the Site 21 Reservoir during a 25-year storm event, so the increase would be "insignificant."[577] Protestants object to reliance on this hearsay statement. However, no party objected to this portion of Mr. Odil's testimony, and "[i]nadmissible hearsay admitted without objection may not be denied probative value merely because it is hearsay."[578]

Other evidence also supports Mr. Odil's testimony regarding the impact on the Site 21 Reservoir. The Application states:

> [T]he peak storage volume of the SCS Reservoir Site 21 and peak inflow to the reservoir from Dry Creek exceed 2,300 ac-ft and 3,800 CFS, respectively, during the 25-year storm event. Considering the proposed net changes within the water body of less than 4% decrease in peak discharge rate and less than 1% increase in

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[575] Protestants Reply at 26.

[576] Tr. at 678-679.

[577] ED-SO-1 at 26.

[578] Tex. R. Evid. 802.

> volume, the changes at CP7 and CP8 will not result in adverse alterations of existing drainage patterns.[579]

Based on the evidence in the record, the ALJs conclude that the change in drainage patterns resulting from the Facility and its operations will not adversely affect the Site 21 Reservoir.

Nevertheless, the ED included a special provision in the Draft Permit to address the potential for adverse impacts that may occur downstream of the Permit Boundary on the Hunter Tract. Mr. Odil initially had concerns regarding impacts to drainage downstream of the comparison points along the Permit Boundary and required a drainage easement in his May 4, 2014 NOD.[580] At the hearing, Mr. Odil testified that his NOD asked 130EP to establish an easement from the Permit Boundary to a point of consolidation to show that no development would occur in that area outside of the Permit Boundary.[581] In his subsequent August 1, 2014 NOD, Mr. Odil modified his request and stated:

> *Discharge rates at CP7 and CP8* (on the permit boundary) indicate reductions of 42% and 12% respectively between the pre- and post-development conditions, by the time discharges leave the property boundary, values do not change significantly (no more than 1.2%). It appears that drainage pattern changes are limited to property owned by you; however, the requirement that drainage patterns not be altered at the permit boundary is not met where alterations are mitigated on off-site property. As required under 30 TAC § 330.67, please provide documentation to show that [130EP] owns or controls the property at the CP9 through CP12 discharge points and will continue to maintain control for the life of the facility.[582]

Mr. Odil's comments in these two NODs focused on the "discharge rates" from CP7 and CP8, and not on the changes in volume from those two comparison points. After reading the NOD provisions at the hearing, Mr. Odil could not recall the concern reflected by the NODs, because his concern focused on the net increase in volume from CP7 and CP8 and the effect on the Site

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[579] 130EP-2 at 69.

[580] ED-SO-4 at 4.

[581] Tr. at 1900.

[582] ED-SO-5 at 1-2 (emphasis added).

21 Reservoir, not the reduction in peak discharge rates as stated in the NODs.[583] Nevertheless, to address the lack of an easement downstream of the Permit Boundary, the ED inserted a special provision in the Draft Permit requiring 130EP to obtain final agreement with the local flooding authority.[584] This requirement adds additional protection to interests downstream of the Permit Boundary on the Hunter Tract.

Finally, the District's arguments in its closing brief addressed the quality of water leaving the Facility and entering the Site 21 Reservoir. As the Application provides, the design of the Landfill and the surface water management system is intended to prevent the discharge of solid waste and pollutants.[585] The evidence shows that the Facility will keep surface water separate from contaminated stormwater and take steps to minimize the generation of contaminated water.[586] In addition, the Facility will not discharge contaminated surface water but will collect and store the contaminated water for offsite disposal.[587] Regarding the discharge of stormwater from an industrial activity, 130EP must obtain authorization to discharge uncontaminated stormwater under a general permit issued by the TCEQ (Texas Pollutant Discharge Elimination System General Permit No. 050000).[588]

In sum, the ALJs find that Mr. Traw properly assessed both the 25-year, 24-hour storm event, as required by TCEQ rules, and the 100-year, 24-hour storm event to determine whether development of the Facility would adversely alter existing drainage patterns.[589] The Application shows there would be no adverse alteration of peak discharge, volume, and velocity between the existing and post-development drainage patterns for both the 25-year and the 100-year storm events at the Permit Boundary.[590] Considering the drainage from the Facility as a whole, the evidence also shows that the development will not adversely alter existing drainage patterns

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[583] Tr. at 1908-1909.

[584] Tr. at 1901; *see* ED-SO-8 at 11.

[585] 130EP-2 at 34.

[586] 130EP-2 at 34.

[587] 130EP-3 at 221.

[588] 130EP-1 at 107, 811-812; 130EP-2 at 34.

[589] Tr. at 2011-2012.

[590] 130EP-2 at 68, 79.

downstream of the Permit Boundary. The ALJs conclude that 130EP has demonstrated that the Application complies with 30 TAC §§ 330.63(c)(1), 330.303, and 330.305.

M. Floodplains

The parties' dispute on whether 130EP's compliance with TCEQ floodplain rules focuses on the adequacy and accuracy of 130EP's modeling of the 100-year floodplain at the Site. Given that 130EP's analysis did not consider future upstream development and the fact that the floodplain is near the Landfill footprint and other structures at the Facility, the opposing parties are concerned about the potential for washouts, the Facility's location in an unstable area, the need for levees, and the inability to operate in all weather conditions.

The TCEQ has adopted rules that address the location of a landfill relative to a floodplain. A floodplain consists of "[t]he lowland and relatively flat areas adjoining inland . . . waters . . . that are inundated by the 100-year flood."[591] The rules define a 100-year flood as a "flood that has a 1.0% or greater chance of recurring in any given year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period."[592] According to Mr. Traw, the Federal Emergency Management Agency (FEMA) defines a 100-year floodway as "the channel of a stream or river plus the least area of the adjacent floodplain within which a 100-year flood can pass without increasing the water surface elevation by more than a designated height."[593]

As required by 30 TAC § 330.61(m)(1), an application must include a floodplain statement that "provides data on floodplains in accordance with Chapter 301, Subchapter C of [title 30] (relating to Approval of Levees and Other Improvements)." Section 330.63(c)(2) also requires a surface water drainage report incorporating flood control and analyses that:

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[591] 30 TAC § 330.3(55).

[592] 30 TAC § 330.3(1).

[593] 130EP Traw-1 at 10.

(A) identify whether the site is located within a 100-year floodplain. . . . .;

(B) provide the source of all data for such determination and include a copy of the relevant Federal Emergency Management Agency (FEMA) flood map or the calculations and maps used where a FEMA map is not used. FEMA maps are prima facie evidence of floodplain locations. Information shall also be provided identifying the 100-year flood level and any other special flooding factors (e.g., wave action) that must be considered in designing, constructing, operating, or maintaining the proposed facility to withstand washout from a 100-year flood. The boundaries of the proposed landfill facility should be shown on the floodplain map;

(C) if the site is located within the 100-year floodplain, provide information detailing the specific flooding levels and other events (e.g., design hurricane projected by Corps of Engineers) that impact the flood protection of the facility. Data should be that required by §§ 301.33-301.36 of this title (relating to Preliminary Plans: Data To Be Submitted, Criteria For Approval of Preliminary Plans; Additional Information; Plans To Bear Seal of Engineer). The owner or operator shall include cross-sections or elevations of landfill levees shown tied into contours;

(D) for construction in a floodplain, submit, where applicable:

(i) approval from the governmental entity with jurisdiction under Texas Water Code, § 16.236, as implemented by Chapter 301 of this title (relating to Levee Improvement Districts, District Plans of Reclamation, and Levees and Other Improvements);

(ii) a floodplain development permit from the city, county, or other agency with jurisdiction over the proposed improvements;

(iii) a Conditional Letter of Map Amendment from FEMA; and

(iv) a Corps of Engineers Section 404 Specification of Disposal Sites for Dredged or Fill Material permit for construction of all necessary improvements.[594]

The TCEQ has imposed location restrictions on solid waste management units in relation to a floodplain. TCEQ rule 30 TAC § 330.547 states:

[594] 30 TAC § 330.63(e)(2).

(a) No solid waste disposal operations shall be permitted in areas that are located in a 100-year floodway as defined by the Federal Emergency Management Administration.

(b) New municipal solid waste management units, existing municipal solid waste units, and lateral expansions located in 100-year floodplains shall not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment.

(c) Municipal solid waste storage and processing facilities shall be located outside of the 100-year floodplain unless the owner or operator can demonstrate that the facility is designed and will operate to prevent washout during a 100-year storm event, or obtains a conditional letter of map amendment from the Federal Emergency Management Administration administrator.[595]

1. 130EP

The Application contains both a FEMA map of the Site and a site-specific floodplain study performed by 130EP to delineate the 100-year floodplain. FEMA's Flood Insurance Rate Map (FIRM) of the floodplain indicates the location of Zone A for the 100-year floodplain at the Site and the surrounding area.[596] Although FEMA's 100-year floodplain extends into the Permit Boundary in certain places, the FIRM shows that the Landfill footprint and the limits of the Landfill grading will be outside of FEMA's 100-year floodplain.[597] According to the Application, no waste disposal operation will be located in the 100-year floodway as defined by FEMA, and the MSW storage and processing facilities will likewise be out of the 100-year floodplain.[598]

For the floodplain study of the Site and the surrounding area, Mr. Traw used the HEC-HMS model (the hydrologic analysis) and the HEC-RAS model (the hydraulic analysis) to delineate the 100-year floodplain. As previously stated, Mr. Traw determined that the Landfill

[595] 30 TAC § 330.547.

[596] 130EP-2 at 257.

[597] 130EP-2 at 257.

[598] 130EP-2 at 246.

footprint, the limits of Landfill grading, and the storage and processing units would be outside of the 100-year floodplain at the Facility.[599]

According to 130EP, the Application meets the requirements in 30 TAC § 330.63,[600] and the Facility will be in compliance with the floodplain location restrictions in 30 TAC § 330.547.[601]

2. The County

The County again argues that by using inappropriate inputs of the Manning's Roughness coefficient and shallow concentrated flows, 130EP underestimated the extent of the 100-year floodplain. In addition, the County contends that 130EP's Application does not show compliance with 30 TAC § 330.305 regarding surface drainage, § 330.307 concerning levees, and § 330.547 regarding floodplains.[602]

3. The District

As previously stated, the District is responsible for the Site 21 Reservoir and Dam located downstream of the Facility on the Hunter Tract. Although originally constructed as a low-hazard dam to protect downstream agricultural land, the Site 21 Dam is now a high-hazard dam necessary to protect human life and property. However, the Site 21 Dam does not currently meet the structural requirements for a high-hazard dam.

According to the NRCS, the District holds easements up to 519.3 msl, which is the crest of the Site 21 Dam's existing auxiliary spillway plus 2.0 feet, and the District's current easement extending upstream of the dam corresponds to an elevation greater than the 1,000-year, 24-hour

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[599] 130EP-2 at 259-261; 130EP Traw-1 at 11.

[600] 130EP-1 at 63, 839; 130EP-2 at 244-445.

[601] 130EP Closing at 22 (citing 130EP-1 at 839).

[602] County Response at 10-11.

storm event. However, the NRCS noted that this easement is at an elevation below the top of the dam's elevation.[603]

To bring the Site 21 Dam up to design criteria for a high-hazard dam, NRCS proposed a rehabilitation plan for the dam.[604] One alternative entails the installation of a new principal spillway with a crest elevation of 500 feet and a 42-inch diameter conduit.[605] NRCS also proposed the removal of the current auxiliary spillway and the installation of a 300-foot-wide, roller-compacted, concrete spillway, in addition to raising the dam crest by approximately 3.9 feet.[606] Johnnie Halliburton, the District's executive manager, testified that the rehabilitation of the Site 21 Dam as proposed by NRCS would not increase the floodplain on the Hunter Tract.[607]

The District notes that NRCS has recommended and may impose a requirement that the District obtain easements upstream that correspond to the top of the rehabilitated Site 21 Dam, although NRCS currently recognizes that such action may not be advisable.[608] However, the District participated in the hearing to evaluate the Facility's impacts and make 130EP aware of problems that may occur in the future regarding the Site 21 Reservoir.

4. Protestants

In addition to the floodplain arguments made by the County, Protestants also contend that, contrary to 130EP's assertions, the extent of the current 100-year floodplain is inaccurate, and the evidence does not show whether the Landfill footprint, the waste processing and storage facilities, and the waste disposal operations will be located outside of that floodplain.

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[603] District Ex. 1.6 at 54.

[604] District Ex. 1.6.

[605] The NRCS recorded elevations in "North American Vertical Datum (NAVD88)." District Ex. 1.6 at Engineering Table 3 at 2 of 3. Although Mr. Halliburton refers to elevations in terms of "mean sea level," he relies on the elevations as determine by NRCS. District Ex. 1 at 10. Accordingly, the ALJs presume that elevations in terms of msl correspond to the NRCS's measurement of elevation in terms of NAVD88.

[606] District Ex. 1.6 at Alternatives Table at 3 of 3.

[607] Tr. at 1280.

[608] District Ex. 1.6 at 54.

Furthermore, according to Protestants, 130EP has failed to address compliance with all the TCEQ floodplain requirements.

Protestants maintain that 130EP's delineation of the floodplain is deficient because it failed to consider the impact future upstream development would have on the size of the 100-year floodplain. According to the County's witness Mr. Bratton, development will probably occur upstream of the Landfill, and this upstream development can raise the level of the floodplain near the Landfill.[609] Protestants' witness Mr. Harden also testified that urbanization of the watershed upstream of the Landfill "will increase flood flows in receiving streams directly adjacent [to] the Facility."[610] With the proximity of the 100-year floodplain to the Landfill footprint, Mr. Harden was concerned that "[i]ncreases in flood flow and the associated rise in flood flow elevation and expansion of extents of floodplain/flood flows would further encroach on the Landfill site and represent additional risks to the stability of the storm water pond embankments," and could result in the washout of solid waste.[611]

As a result of the allegedly deficient floodplain analysis, Protestants contend that 130EP has not demonstrated compliance with 30 TAC § 330.547(b) because it did not show that the proposed solid waste management units would not result in the washout of solid waste. Protestants insist that this prohibition against washouts applies regardless of whether or not those units are located within the 100-year floodplain.

Protestants also contend that 130EP has not shown that the Landfill can operate in all types of weather, as required by 30 TAC § 330.63(d)(4)(A). This subsection requires an owner or operator to specify:

> [P]rovisions for all-weather operation, e.g., all-weather road, wet-weather pit, alternative disposal facility, etc., and provisions for all-weather access from publicly owned routes to the disposal facility and from the entrance of the facility to unloading areas used during wet weather. Interior access road locations and the

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[609] Tr. at 1813.

[610] Protestants Ex. 9 at 16-17.

[611] Protestants Ex. 9 at 20.

> type of surfacing shall be indicated on a facility plan. The roads within the facility shall be designed so as to minimize the tracking of mud onto the public access road . . . .[612]

Protestants maintain that the proximity and configuration of the floodplain creates operational problems for all-weather operations that 130EP has not adequately addressed. Protestants note that the 100-year floodplain cuts through the Facility,[613] and trucks and equipment must travel across "a low-water crossing within the 100-year floodplain" to access the waste disposal areas.[614] According to Protestants, "[t]he design of the landfill includes no culvert or any other design measure that would ensure preservation of this access road during periods of significant flooding."[615] In addition, the 100-year floodplain separates the leachate storage tanks from the leachate collection system in the Landfill,[616] and 130EP proposes to transfer leachate to the storage tanks either by trucks or by force main.[617] Protestants argue that if trucks are used, they may not be able to transport leachate if the access road is damaged by flooding.[618] For these reasons, according to Protestants, 130EP has failed to show compliance with 30 TAC § 330.063(d)(4)(A).

Protestants further argue that 130EP has not shown compliance with 30 TAC § 330.559 regarding unstable areas. The TCEQ's rules define an "unstable area" as "a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of a landfill's structural components responsible for preventing releases from the landfill; unstable areas can include poor foundation conditions, areas susceptible to mass

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[612] 30 TAC § 330.63(d)(4)(A).

[613] 130EP Adams-4.

[614] Protestants Response at 53, (citing 130EP Adams-4). Although this exhibit shows the access road crossing the 100-year floodplain, the exhibit does not indicate that the road will have a "low water crossing" as asserted by Protestants.

[615] Protestants Response at 54.

[616] Protestants Response at 53 (citing 130EP Adams-4). To determine the location of the leachate storage tanks in relation to the floodplain, 130EP Adams-4 must be reviewed together with 130EP-2 at 40.

[617] 130EP-2 at 31.

[618] Protestants Ex. 9 at 21.

movement, and karst terrains."[619] Protestants contend that this rule requires 130EP to show that the design of the Landfill ensures that it will not be flooded, including storms larger than the 100-year flood.

Given the unique situation of the Landfill positioned immediately upstream of a high-hazard dam, Protestants contend that human health and the environment are not protected because the Application's floodplain analysis is too narrowly focused on the contours of the 100-year floodplain, which cannot be determined with precision. Dr. Ross testified that this lack of protection is especially apparent given that there is a 50-50 chance of a flood greater than the 100-year flood occurring during the life of and post-closure period for the Landfill.[620] Dr. Ross further testified that NRCS's preliminary proposal to rehabilitate the Site 21 Dam does not take into account the presence of the Landfill and assumes that future development in the dam's watershed will mitigate the impact from stormwater runoff.[621]

5. OPIC

As further discussed in the section of this PFD on land-use compatibility, OPIC argued that the Site's incompatibility issues increase the risk of washouts.[622]

6. The ED

Mr. Odil testified that 130EP proposes to construct the waste disposal unit near to but outside of the floodplain, which reduces the likelihood of flood damage. The ED contends that both FEMA's FIRM and 130EP's delineation of the floodplain illustrate that no solid waste storage, processing, or disposal units will be located within the 100-year floodplain, and TCEQ rules do not require additional demonstrations.[623]

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[619] 30 TAC § 330.559.

[620] Protestants Ex. 5 at 42.

[621] Protestants Ex. 5 at 40.

[622] OPIC Closing at 7-8.

[623] ED-SO-1 at 26-30.

7. The ALJs' Analysis

In the previous section of this PFD on surface water drainage, the ALJs addressed the appropriateness of the Manning's Roughness coefficients and shallow concentrated flow inputs used in 130EP's hydrologic models. The ALJs concluded that 130EP sufficiently supported the use of those inputs, and the ALJs will not restate that discussion here. Furthermore, the evidence shows that after 130EP changed the inputs as required by Mr. Bratton, little or no change resulted in the location of the 100-year floodplain, and the Landfill footprint remained outside that zone.[624]

The ALJs conclude that 130EP's Application complies with 30 TAC §§ 330.61(m)(1) and 330.63(c)(2) and disagree with Protestants' and the County's contention that 130EP's floodplain analysis should have considered future development upstream of the Site. As pointed out by the ED, the TCEQ does not require applicants to model possible future conditions in their floodplain analyses. The TCEQ requires that an application provide a floodplain statement with "data on floodplains in accordance with Chapter 301, Subchapter C of this title (relating to Approval of Levees and Other Improvements) . . . ."[625] As Mr. Odil testified,[626] Chapter 301 focuses on existing conditions by referring to "existing flood conditions"[627] and "existing hydraulic conditions."[628] Mr. Odil also stated that the TCEQ's regulatory guidance document, RG-417, focuses on on-site conditions that may change or be present in the future as a result of a landfill, but the TCEQ does not require an applicant to consider future upstream development in its drainage plans. He testified that if the floodplain expanded in the future, 130EP would have to amend its permit, possibly to reduce the waste footprint or to add levees.[629] For these reasons, the ALJs conclude that 130EP was not required to incorporate into its floodplain modeling the potential for future development upstream of the Site.

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[624] *Compare* 130EP-24, *with* 130EP-25.

[625] 30 TAC § 330.61(m)(1).

[626] ED-SO-1 at 29.

[627] 30 TAC § 301.33(b)(2).

[628] 30 TAC § 301.32.

[629] ED-SO-1 at 29.

Nevertheless, the evidence shows that the determinative factor on the extent of the floodplain in the area is the Site 21 Reservoir and Dam, not future development. According to Mr. Traw, the elevations of the control structures within the reservoir determine the size of the floodplain at this location, not the quantity of water discharged upstream of the Site. Once the auxiliary spillway at the Site 21 Dam is engaged, it has a significant capacity to pass on the additional flows. Mr. Traw characterized the Site 21 Reservoir as "the largest player in terms of defining the floodplain" and the "most significant player in the extents of [the] current floodplain."[630] If upstream development causes an increase in the volume of water, the impact on the size of the floodplain would be small given the capacity of the auxiliary spillway at the Site 21 Dam to pass through those increases.[631]

In addition, Mr. Traw considered the NRCS proposal to bring the Site 21 Dam into compliance with the design criteria for high-hazard dams. One alternative proposed by NRCS would require the installation of a new principal spillway with a crest elevation of 500 feet and a 42-inch diameter conduit at the Site 21 Dam. The current auxiliary spillway would be replaced with a 300-foot-wide, roller-compacted, concrete spillway, and the dam crest would be raised approximately 3.9 feet. Mr. Traw testified that these improvements, if constructed, would tend to decrease the size of the 100-year floodplain at the Site because the new principal spillway would have a greater capacity than the existing spillway and would discharge earlier during the storm event.[632] Furthermore, the 300-foot-wide auxiliary spillway would have a higher capacity than the existing one.[633] Also, Mr. Traw's opinion on the rehabilitated dam's impact on the floodplain was corroborated by Mr. Halliburton, who testified that the improvements proposed by NRCS to strengthen the Site 21 Dam would not increase the floodplain.[634] The final NRCS rehabilitation plan for the Site 21 Dam would also consider the then-existing land use in the watershed, including the Landfill and any other development, at the time the design to

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[630] Tr. at 698-699.

[631] Tr. at 697-699. In addition, both Mr. Traw and Dr. Ross testified that future upstream development is expected to mitigate the stormwater leaving the future development. Tr. at 535-556, 694-699; Protestants Ex. 5 at 40-41.

[632] Dr. Ross also testified that NRCS's proposed improvements to the Site 21 Dam would "provide for a safer dam by beginning water evacuation behind the dam more quickly . . . ." Protestants Ex. 5 at 40.

[633] Tr. at 2023-2024.

[634] Tr. at 1280.

rehabilitate the Site 21 Dam is finalized.[635] Even though NRCS's preliminary rehabilitation plan does not account for the Landfill, the final rehabilitation plan should account for the hydrology existing in the watershed at that time. For these reasons, the ALJs find that 130EP's floodplain analysis is sufficient to meet the TCEQ's requirements in 30 TAC §§ 330.61(m)(1) and 330.63(c)(2).

The ALJs also conclude that 130EP has met the location requirements in 30 TAC § 330.547. Regarding the requirement in Section 330.547(a) that no solid waste disposal operations may occur in the 100-year floodway, FEMA's FIRM indicates that Zone A is present at the Site, but it does not indicate the location of the floodway. Instead, the FIRM represents that no base flood elevations have been determined for areas designated as Zone A.[636] As Mr. Traw testified, FEMA will show the floodway on the applicable FIRM if it has done sufficient modeling.[637] Given the lack of a floodway on the FIRM for the Site, the ALJs conclude that FEMA has not designated the floodway in this area, and thus 130EP has shown compliance with 30 TAC § 330.547(a).

Regarding 30 TAC § 330.547(b) and (c), the parties interpret these provisions differently. Protestants and the County contend that subsection (b) requires that *all* new MSW solid waste management units, regardless of location relative to the floodplain, must not restrict the flow of the 100-year flood, reduce the water storage capacity of the floodplain, or result in the washout of waste.[638] Conversely, the ED argues that these Subsections (b) and (c) do not apply to a facility in which the solid waste management units are outside of the floodplain, asserting:

> Under 30 TAC § 330.547(c), an application must include a demonstration that the facility is designed and will operate to prevent washout during a 100-year storm event *only if* solid waste storage and processing units are located within the

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[635] ED-SO-1 at 26; District Ex. 1 at 20.

[636] 130EP-2 at 257.

[637] 130EP Traw-1 at 10.

[638] Protestants Response at 52; County Response at 10-11.

> 100-year floodplain. Under 30 TAC § 330.547(b), the same requirement applies to waste disposal units.[639]

Because the drawings and maps in the Application demonstrate that no solid waste storage, processing, or disposal units will be in the 100-year floodplain, the ED argues that no further demonstration was required of 130EP under Subsections 330.547(b) and (c).[640]

Regardless of whether 30 TAC § 330.547(b) applies to all new solid waste management units, or just those new units located in the 100-year floodplain, the ALJs conclude that 130EP has met the requirements of Subsections 330.547(b) and (c). The evidence shows that the Landfill, the leachate storage tanks, and the other waste storage and processing units at the Facility will not be located within the 100-year floodplain. Therefore, the ALJs conclude that the solid waste management units at the Facility will not restrict the flow of the 100-year flood, reduce the temporary storage capacity in the floodplain, or result in a washout, in compliance with 30 TAC § 330.547(b) and (c).

The ALJs are also unpersuaded by Protestants' arguments that 130EP has failed to comply with 30 TAC § 330.559 regarding the location of its Landfill unit in an unstable area. There is no evidence that 130EP proposes to locate the Landfill in an unstable area as that term is described in 30 TAC § 330.559. Furthermore, the ALJs conclude that 30 TAC § 330.559 does not apply to flooding issues. The TCEQ addressed the specific threat of floods in 30 TAC §§ 330.307 and 330.547, and Section 330.559 contains no language indicating that it was intended to address flooding.

As for Protestants' concerns regarding 130EP's compliance with 30 TAC § 330.63(d)(4) regarding all-weather operations, the ALJs find no indication that 130EP proposes to use a "low-water crossing"[641] to access the Landfill. Exhibit 130EP Adams-4 is a Landfill Completion Plan showing the 100-year floodplains at the Site as determined by FEMA and 130EP.

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[639] ED Closing, "Floodplains" section (emphasis added); *see* ED-SO-1 at 27.

[640] ED Closing, "Floodplains" section.

[641] Protestants Response at 53.

According to this exhibit, the access road crosses the floodplain of the unnamed tributary on the west side of the Facility in two places within the Permit Boundary,[642] but the exhibit does not indicate that the access road will cross the 100-year floodplain via a "low-water crossing," as alleged by Protestants. Instead, the evidence shows that 130EP will use box culverts to cross the unnamed tributaries, and these culverts are sized to carry both the 25- and 100-year storm events without overtopping the access road.[643] Therefore, the ALJs conclude that 130EP has not proposed to use "low-water crossings" to access the waste management units, and the preponderate evidence shows that 130EP has met the requirements of 30 TAC § 330.63(d)(4) regarding all-weather access to the MSW management units.[644]

The final floodplain issue to address is the County's contention that 30 TAC § 330.307 is applicable to the Facility and requires that 130EP protect the Facility with suitable levees. Section 330.307 provides:

> (a) The facility shall be protected from flooding by suitable levees constructed to provide protection from a 100-year frequency flood . . . .
>
> (b) Flood protection levees must be designed and constructed to prevent the washout of solid waste from the facility.
>
> (1) A freeboard of at least three feet must be provided except in those cases where a greater freeboard is required by the agency having jurisdiction under Texas Water Code, § 16.236.
>
> (2) Such levees must not significantly restrict the flow of a 100-year frequency flood nor significantly reduce the temporary water storage capacity of the 100-year floodplain.[645]

The County argues that 130EP has not proposed to construct the levees required by Section 330.307 and, therefore, the Application is deficient.

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[642] 130EP Adams-4; *see* 130EP-2 at 40 for locations of waste disposal, processing, and storage units.

[643] 130EP-2 at 252. The crossing of the Unnamed Tributary refers to the point where the access road crosses the 100-year floodplain just east of the leachate storage tanks. 130EP-2 at 261.

[644] *See also* the ALJs' Analysis in Section III.H.4., Waste Management Unit Design.

[645] 30 TAC § 330.307.

ED witness Mr. Odil testified that such levees are not required in this case. He contrasted the location requirements for waste storage, processing, and disposal units in 30 TAC § 330.547 with the requirements for a "facility" in 30 TAC § 330.307. Mr. Odil stated that because 130EP's proposed waste units would be located outside of the 100-year floodplain as required by Section 330.547, the levee requirements for a "facility" in Section 330.307 do not apply in this case.[646] And, as Mr. Odil further testified, "levees constructed within the floodplain at facilities without units located within that floodplain would unnecessarily reduce or restrict the floodplain."[647]

The ALJs conclude that Mr. Odil presented a reasonable analysis of the non-applicability of 30 TAC § 330.307(a). Nevertheless, Section 330.307(a) states that a facility must be protected from flooding from a 100-year storm by suitable levees.[648] Therefore, although the ED put forth a reasonable and pragmatic interpretation of Section 330.307(a), the ALJs leave it to the Commission to determine whether that section requires levees for a facility that does not have solid waste management units within a 100-year floodplain.

In conclusion, the ALJs find that 130EP has met the TCEQ's requirements regarding floodplains. The evidence shows that the Application provides sufficient information to show compliance with 30 TAC §§ 330.61(m)(1), 330.63(c)(2) and 330.547.

N. Land-Use Compatibility

The parties opposed to the Application dispute the sufficiency of 130EP's land-use compatibility analysis and assert that the Facility is not compatible with existing land uses. These parties point to 130EP's failure to consider the Site 21 Reservoir and the County's Solid Waste Disposal Ordinance (Disposal Ordinance) in its analysis, insisting that these omissions render the land-use analysis incomplete. They further contend that 130EP failed to properly evaluate growth patterns and traffic in the analysis. Conversely, 130EP and the ED argue that

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[646] ED-SO-1 at 27-28.

[647] ED-SO-1 at 27-28.

[648] 30 TAC § 330.307(a).

130EP submitted all the information that was required by the TCEQ's rules and the analysis was sufficient to demonstrate that the Facility is compatible with the existing land uses.

Chapter 361 of the Texas Health and Safety Code allows the Commission to deny a permit for good cause for reasons pertaining to land use.[649] TCEQ rules require applicants to provide certain information regarding the impact of a proposed MSW facility on surrounding land uses. Specifically, an applicant must submit maps of the facility indicating the locations of water wells; habitable structures within 500 feet of the facility; schools, day-care centers, churches, hospitals, cemeteries, ponds, lakes, and residential, commercial, and recreational areas within one mile of the facility; nearby streams; drainage easements; and airports within six miles of the facility.[650] In addition to this general location map, an applicant must also submit a land-use map that shows "any existing zoning on or surrounding the property" and the "actual uses (e.g., agricultural, industrial, residential, etc.) both within the facility and within one mile of the facility."[651]

Regarding a facility's impact on the surrounding area, 30 TAC § 330.61(h) states that a "primary concern is that the use of any land for a municipal solid waste facility not adversely impact human health or the environment." To that end, Section 330.61(h) requires an applicant to "provide information regarding the likely impacts of the facility on cities, communities, groups of property owners, or individuals by analyzing the compatibility of land use, zoning in the vicinity, community growth patterns, and other factors associated with the public interest."[652] Section 330.61(h) further provides:

> To assist the commission in evaluating the impact of a facility on the surrounding area, an owner or operator shall provide the following:
>
> (1) if available, a published zoning map for the facility and within two miles of the facility for the county or counties in which the facility is or will be

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[649] Tex. Health & Safety Code § 361.089; *Northeast Neighbors Coal. v. Texas Comm'n on Envtl. Quality*, No. 03-11-00277-CV, 2013 WL 1315078 at *8 (Tex. App.—Austin March 28, 2013, pet. denied) (mem. op.).

[650] 30 TAC § 330.61(c).

[651] 30 TAC § 330.61(g).

[652] 30 TAC § 330.61(h).

located. If the site requires approval as a nonconforming use or a special permit from the local government having jurisdiction, a copy of such approval shall be submitted;

(2) information about the character of surrounding land uses within one mile of the proposed facility;

(3) information about growth trends within five miles of the facility with directions of major development;

(4) the proximity to residences and other uses (e.g., schools, churches, cemeteries, historic structures and sites, archaeologically significant sites, sites having exceptional aesthetic quality, etc.) within one mile of the facility. The owner or operator shall provide the approximate number of residences and commercial establishments within one mile of the proposed facility including the distances and directions to the nearest residences and commercial establishments. Population density and proximity to residences and other uses described in this paragraph may be considered for assessment of compatibility;

(5) a description and discussion of all known wells within 500 feet of the proposed facility. Well density may be considered for assessment of compatibility; and

(6) any other information requested by the executive director.[653]

1. 130EP

John Worrall testified on behalf of 130EP regarding land-use matters. In his opinion, the Site is an "excellent" location for the Facility because of its access to a major transportation network, the lack of zoning restrictions, the relatively low population growth rate in the area, the setbacks and buffers proposed which far exceed TCEQ requirements, the 50-foot high vegetative screening berm, and "a visually compatible shape and massing of the landfill itself."[654] For these same reasons, and considering the low population and lack of churches, day-care centers, schools, cemeteries, and sites of exceptional aesthetic quality in the area, Mr. Worrall opined that the Facility will be compatible with surrounding uses.[655]

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[653] 30 TAC § 330.61(h)(1)-(6).

[654] 130EP Worrall-1 at 6, 10.

[655] 130EP Worrall-1 at 10-11.

SH 130 and US 183 run along the western boundary of the Hunter Tract.[656] Given the location of SH 130 and US 183, Mr. Worrall testified that the Facility will have access to a major transportation network without the need to use local roads and impact local properties.[657]

The evidence presented by Mr. Worrall also indicates that 93.1% of the land within one mile of the Site is used for agricultural purposes, the predominant land use in the area.[658] Only 5.3% of the land within one mile of the Site is used for single-family residences, of which there are currently 143, with the closest located approximately 185 and 345 feet west of the Facility Boundary and the Landfill footprint, respectively.[659]

Mr. Worrall estimates that stock tanks and the Site 21 Reservoir make up 1.5% of the land use within one mile of the Site.[660] In addition, only 0.1% of the land near the Facility is used for commercial or industrial purposes,[661] and the nearest business is on US 183, approximately 4,000 feet southwest of the Site and more than 6,500 feet from the Landfill footprint.[662] 130EP asserts that there are no schools, day-care centers, churches, hospitals, cemeteries, recreational areas, or sites having exceptional aesthetic quality within one mile of the Site.[663] According to 130EP, there are five archaeological sites and three historic sites within one mile of the Site, but they are not historically or archaeologically significant sites.[664]

According to Mr. Worrall, the area around the Site is sparsely populated, and the population growth within five miles of the Site was less than 5% between the years 2000 and

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[656] As the ALJs understand the relationship of these two highways, SH 130 is a toll road, and US 183 runs along the frontage road of SH 130 at this location north of Lockhart.

[657] 130EP Worrall-1 at 6, 10-11.

[658] 130EP Worrall-3 at 4, 6.

[659] 130EP Worrall-1 at 10; 130EP Worrall-3 at 4, 6.

[660] 130EP Worrall-3 at 4.

[661] 130EP Worrall-3 at 4.

[662] 130EP Worrall-3 at 6.

[663] 130EP Worrall-3 at 6, 8; 130EP-1 at 119, 150.

[664] 130EP-1 at 806.

2010.[665] The northern part of Lockhart, which is south of the Site, actually lost population during that same time period.[666] Mr. Worrall stated that the growth rate in the area of the Site is relatively low compared to the very high growth rate experienced by the rest of the Metropolitan Statistical Area in which the Facility would be located.[667] According to Mr. Worrall, the highway system is the primary factor that affects growth trends in the area,[668] and he predicted that growth trends would accelerate and continue from the north into the area within a five-mile radius of the Site.[669]

2. The County

The County argues that Mr. Worrall failed to consider many important factors that address the anticipated growth in the area of the Site. For example, Mr. Worrall was unaware of the County's Disposal Ordinance,[670] which the County adopted on December 9, 2013, three months after 130EP filed the Application.[671] The County also contends the Mr. Worrall failed to review any documents related to the County's development ordinance, subdivision regulations, and septic permits issued within one mile of the Site.[672] Nor did Mr. Worrall review any data concerning the growth trends anticipated by the Lockhart Independent School District for nearby Alma Brewer Strawn Elementary and Plum Creek Elementary schools.[673]

The County contends that by failing to consider these important factors, 130EP failed to adequately consider factors indicative of the projected growth for Caldwell County. Therefore, the County argues that 130EP has not demonstrated that it conducted an accurate study and that the Facility is compatible with area land uses.

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[665] 130EP Worrall-1 at 11; 130EP Worrall-3 at 5.

[666] 130EP Worrall-1 at 11; 130EP Worrall-3 at 5.

[667] 130EP Worrall-1 at 11-12.

[668] 130EP Worrall-1 at 12.

[669] 130EP Worrall-1 at 12; *see also* 130EP-1 at 149.

[670] Tr. at 111-112; *see* County Ex. 3.

[671] County Ex. 3 at 4.

[672] Tr. at 112.

[673] Tr. at 120.

3. The District

The current prevailing land use on the Hunter Tract is the Site 21 Reservoir and Dam owned and operated by the District. The District notes that the important purpose of the Site 21 Dam is to retard flood flows for the protection of downstream life and property. As a result of the construction of the Site 21 Dam, the SCS (now the NRCS) and the District entered into a "Watershed Protection Operation and Maintenance Agreement" for the dam.[674] As part of that agreement, the District must operate the structure to ensure that it functions as intended, and the District's easement on the Hunter Tract allows the District to fulfill its duties.[675]

As previously discussed, the District sought party status in this hearing to learn about the potential impacts the Facility may have on the District's easement rights in terms of water quality and water quantity impacts to the Site 21 Reservoir and Dam.[676] However, according to the District, the evidence was insufficient to determine whether the Facility would be compatible with the reservoir and its purpose. Therefore, the District reiterated that it may exercise its remedies arising from its easement rights if the Facility causes a problem for the reservoir.

Another incompatibility issue noted by the District is that debris and pollutants may enter the Site 21 Reservoir as result of the operation of the Facility. Again, the District asserted that little information was gleaned from the evidence in this hearing, but it would address any sedimentation issues as it has done in other cases involving other flood-retarding structures.

4. Protestants

According to Protestants, 130EP has failed to adequately evaluate, verify, or consider the impacts of the Facility on surrounding land uses. Protestants assert that 130EP's land-use

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[674] District Ex. 1 at 7; District Ex. 1.3.

[675] District Ex. 1 at 7; District Ex. 1.1.

[676] District Closing at 5.

investigation was incomplete, failed to consider the unique aspects of the Site, and did not provide sufficient information to make a determination on land-use compatibility.

Protestants argue that 30 TAC § 330.61(h) makes clear that the primary concern of a land-use analysis is to make sure that an MSW facility does "not adversely impact human health or the environment."[677] To address this concern, the TCEQ requires applicants to provide information so that the Commission can make this determination by analyzing a number of factors, including "the compatibility of land use" and "other factors associated with the public interest."[678] Protestants point out that the rule is broadly written and sets out a framework to guide the Commission's decision-making process. Therefore, the list in 30 TAC § 330.63(h) is not an exhaustive list, according to Protestants. Protestants maintain that "an applicant does not satisfy its burden by simply listing the information required by the rule."[679]

Protestants point out that Mr. Worrall only looked at the specific factors set out in Section 330.61(h)(1)(6) and did not consider any site-specific conditions in his analysis. For example, Mr. Worrall did not consider the County's Disposal Ordinance, but acknowledged that the Disposal Ordinance reflected the County's determination of where landfills should be located within its jurisdiction.[680]

Protestants also take issue with Mr. Worrall's opinion that the Site is ideal for a landfill because of the access provided by SH 130 and US 183. Protestants assert that Mr. Worrall was unfamiliar with the purported traffic risks and accidents that have occurred along this stretch of highway.[681] He also did not consider how the presence of a floodplain might impact site access issues, particularly during times of emergency.[682]

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[677] 30 TAC § 330.61(h).

[678] 30 TAC § 330.61(h).

[679] Protestants Closing at 12.

[680] Tr. at 67.

[681] Tr. at 73-74.

[682] Tr. at 77-78.

Another omission from Mr. Worrall's analysis, according to Protestants, is the recent construction of the Alma Brewer Strawn Elementary School in Lytton Springs, less than three miles from the Facility.[683] Mr. Worrall testified that he did not need to consider the new elementary school because it was over one mile from the Site and, therefore, not required by Section 330.61(h) to be considered.[684] However, Mr. Worrall testified that schools are typically built in areas where growth is anticipated.[685]

The greatest and most important omission from 130EP's land-use analysis, according to Protestants, is the failure to consider the Site 21 Reservoir and Dam downstream of the Facility. As Dr. Ross pointed out, the Site 21 Dam is now classified as a high-hazard dam but does not currently meet the design criteria for such a structure.[686] Protestants argue that the cost of bringing the dam into compliance with current design criteria is over $6 million, but the availability of funds for the rehabilitation of the dam is "questionable."[687] Furthermore, Protestants note that the rehabilitation plan for the Site 21 Dam does not consider the presence of the Facility and assumes that future development in the watershed will mitigate stormwater runoff, which fails to address downstream flooding, according to Dr. Ross.[688]

Dr. Ross also expressed concerns with the design of the Landfill and its stormwater drainage system, noting that this would negatively impact the Site 21 Reservoir.[689] Given that the final cover at the Landfill would limit stormwater infiltration, Dr. Ross opines that this would increase the stormwater runoff from the Site beyond current conditions.[690] Dr. Ross also testified that debris from vegetation clearing and construction would likewise negatively impact the Site 21 Reservoir by increasing sedimentation in the reservoir itself.

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[683] Tr. at 90.

[684] Tr. at 90.

[685] Tr. at 90-91.

[686] Protestants Ex. 5 at 38-39.

[687] Protestants Ex. 5 at 40.

[688] Protestants Ex. 5 at 40-41.

[689] Protestants did not make these design arguments in the context of the Facility's design, the location of the floodplains, or the adverse alteration of existing drainage patterns.

[690] Protestants Ex. 5 at 41.

Although the Facility has the potential to adversely impact the Site 21 Reservoir, Protestants contend that 130EP failed to consider such impact in its analysis. Given the unique aspects of the Site and the Landfill design that encroaches on the floodplain, Protestants argue that the Facility is not compatible with the Site 21 Reservoir.

5. OPIC

OPIC urges denial of the Application because the Site's incompatibilities with existing land uses outweigh its benefits. OPIC also maintains that the proposed location increases the risk of nuisance conditions as well as the washout of waste and contamination of water resources.

OPIC notes that to avoid the 100-year floodplain of the Site 21 Reservoir and the District's easement, 130EP placed the Landfill in the northern portion of the Hunter Tract and designed the Landfill in an "amoeba-like" or "organic" shape.[691] OPIC points out that although the Landfill footprint would be just outside of the 100-year floodplain to comply with the TCEQ's floodplain rules, it is so close to the floodplain that washouts could occur if the modeling was in error or in the event of a more significant storm event. In addition, the evidence reflects that the area is prone to regular flooding events from the Hunter Tract, even backing up onto neighboring properties and into water wells. Therefore, OPIC expressed concern about the potential for aquifer contamination. Given the nearness of the Facility to the floodplain and the Site 21 Reservoir, the risk of washout and contamination of water resources is too high, in OPIC's opinion.

OPIC also expressed concerns regarding the adverse impact on surrounding uses as growth in the area continues. According to OPIC, the area within one mile of the Facility has recently experienced robust growth. When 130EP submitted the Application in 2013, 126 residences were located within one mile of the Facility.[692] However, in Mr. Worrall's 2015

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[691] 130EP-1 at 131; 130EP Worrall-1 at 9; Tr. at 24, 80, 85, 87.

[692] 130EP-1 at 148.

update to the land-use analysis, the number of residences within one mile of the Facility has grown to 143, which is a 13.5% increase in just two years.[693] OPIC asserts that the recent growth is greater than the 5% growth predicted by 130EP in its land-use analysis based on census information from 2000 to 2010.[694] OPIC refers to the decision of the Lockhart Independent School District to open the new elementary school less than three miles from the Facility as additional evidence of growth in the area.[695]

In addition to the higher-than-expected growth, OPIC points out that nearby residents would be subject to noise, odor, and dust generated by the Facility and its operation, especially those residents living to the north of the Facility on Homannville Trail.[696] The wind at the Site predominately blows from the south, thereby exacerbating the impact of nuisance odors on these nearby neighbors.[697]

6. The ED

The ED takes the position that 130EP has met the requirements of 30 TAC § 330.61(h). Based on the information included in the Application, the applicable TCEQ rules, and the evidence adduced at hearing, the ED concludes that the Application is sufficient to demonstrate land-use compatibility.

The ED also argues that during technical review, the ED will determine whether an applicant has met the rule requirements and, if necessary, request additional information. However, the ED maintains that there is no provision in the rules that requires "an applicant who voluntarily submits additional information for one part of the land-use analysis to submit additional information for the remaining parts, absent a request."[698] According to the ED, he did

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[693] 130EP-1 at 148; 130EP Worrall-3 at 4; Tr. at 115.

[694] 130EP-1 at 153; Tr. at 113-117.

[695] Protestants Ex. 3 at 5.

[696] 130EP-1 at 152.

[697] 130EP-1 at 118.

[698] ED Closing, "Land Use Compatibility" section.

not request any additional information and "recommends that the inclusion of additional information suggested by the Protestants be denied and the review of the Application be limited to the rule requirements."[699]

7. The ALJs' Analysis

Neither the Texas Health and Safety Code nor the TCEQ's rules define land-use compatibility or provide the ALJs with a specific standard to guide the compatibility determination.[700] However, the court in *Northeast Neighbors Coalition v. Texas Commission on Environmental Quality* indicated that the TCEQ and the ALJs must "balance all compatibility factors" to determine whether the Facility would adversely affect human health or the environment or otherwise be incompatible with surrounding land uses.[701]

Section 330.61(h) of 30 TAC chapter 330 provides a "framework" to assist the decision-maker in assessing land-use compatibility.[702] It requires that an owner or operator must "provide information regarding the likely impacts of the facility . . . by analyzing the compatibility of land use, zoning in the vicinity, community growth patterns, and other factors associated with the public interest."[703]

The ALJs understand 130EP and the ED to argue that an applicant need only submit the information specifically listed in Section 330.61(h)(1)-(6) for an application to meet this rule's requirements. Adoption of this rationale that an applicant need only submit the information listed in Section 330.61(h)(1)-(6) could exclude from consideration important public interest

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[699] ED Closing, "Land Use Compatibility" section.

[700] *Ne. Neighbors Coal.*, 2013 WL 1315078 at *9.

[701] *Ne. Neighbors Coal.*, 2013 WL 1315078 at *12.

[702] *Ne. Neighbors Coal.*, 2013 WL 1315078 at *8, interpreting 30 TAC § 330.53(b)(7), the precursor to Section 330.61(h). *See* 31 Tex. Reg. 2335, 2508 (Mar. 24, 2006) ("The commission repeals § 330.53. Technical Requirements of Part II of the Application . . . [and] moves the requirements of . . . § 330.53(b)(6) – (11) to new § 330.61(f) – (k) . . . .").

[703] 30 TAC § 330.61(h).

factors. The land-use analysis is a "broad and somewhat flexible" mechanism,[704] and imposing such unnecessary rigidity on the interpretation of Section 330.61(h) would undermine the sufficiency of the land-use analysis by allowing a significant factor, unique to a particular site, to escape consideration.

The ALJs conclude that the Facility's potential impacts on the Site 21 Reservoir and Dam should be considered in the land-use compatibility analysis because the dam's purpose (protection of downstream life and property) is associated with the public interest. However, contrary to the arguments of Protestants, the County, and OPIC, 130EP thoroughly addressed potential adverse impacts of the Facility on the Site 21 Reservoir and Dam in the context of its compliance with other TCEQ rules pertaining to surface water drainage and floodplains. As previously stated in this PFD, the ALJs conclude that the Application met the requirements in the TCEQ's rules regarding surface water drainage and floodplains, and that the preponderance of the evidence indicates that development and operation of the Facility will not adversely impact or impair the District's easement rights or its operation of the Site 21 Dam and Reservoir. Specifically, the ALJs find that the Facility will not adversely alter the surface drainage patterns to the Site 21 Reservoir. With respect to any future rehabilitation of the Site 21 Dam, its final design will consider the then-existing upstream land uses, including the Facility should it exist.[705] Importantly, the District, as the entity responsible for the Site 21 Dam and Reservoir, does not argue that the Facility will adversely impact human health or environment or frustrate or interfere with the ability of the Site 21 Dam to protect downstream life and property. Accordingly, the ALJs conclude that in balancing all the relevant factors in 30 TAC § 330.61(h), the Facility is generally compatible with the Site 21 Reservoir and Dam.

The ALJs also conclude that 130EP should have considered the County's Disposal Ordinance in its analysis. As recognized by the Texas Supreme Court, "[w]hile Texas *counties*

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[704] *Browning-Ferris, Inc. v. Texas Dep't of Health*, 625 S.W.2d 764, 768 (Tex. App.—Austin 1981, writ ref'd n.r.e.). In determining whether similar land-use compatibility requirements were unconstitutionally vague, the court upheld the rules and said: "The standards regulating municipal solid waste disposal are doubtless difficult to devise, but if such controls are to be effective, they, of necessity, must be broad and somewhat flexible. If controls are too precise, they will provide easy escape for those who wish to circumvent the law." *Browning-Ferris, Inc.*, 625 S.W.2d at 768.

[705] ED-SO-1 at 26; District Ex. 1 at 20.

generally enjoy fairly limited *zoning authority*, [Texas Health and Safety Code § 364.012] allows a county to prohibit municipal or industrial solid-waste disposal that presents a threat to the public health, safety, and welfare, so long as the county designates an area in which disposal is permissible."[706] Accordingly, the County's Disposal Ordinance is a zoning ordinance that regulates land-use activities in the vicinity of the Facility, and 130EP should have considered the Ordinance as part of the land-use compatibility analysis.[707] The Disposal Ordinance authorizes the disposal of solid waste in one location on property owned by the County and prohibits the disposal of solid waste in all other portions of Caldwell County.[708] However, the evidence does not indicate where the property owned by the County is located relative to the Site. Given that the ALJs cannot determine if solid waste disposal is occurring within the vicinity of the Facility and that the County's Disposal Ordinance is ineffective to prevent 130EP from disposing of solid waste at the Site,[709] the ALJs give this factor little weight in the land-use compatibility analysis.

Regarding the remainder of the factors to consider in the analysis, the ALJs generally agree with Mr. Worrall that, in terms of land use, the Site is a good location for the Landfill. The evidence shows that the Site has access to a major transportation network through SH 130 and US 183, precluding the need to use local roads for access. The vast majority of the surrounding land is used for agricultural purposes. In addition, the area near the Site is sparsely populated, with only 143 residences, five business establishments, and no churches, day-care centers, or schools located within one mile of the Facility.

Nuisance odors are also a factor to consider in the land-use analysis, as argued by OPIC.[710] In this case, 130EP has proposed extensive buffer zones and a screening berm between the Landfill footprint and the nearest neighbors to the north of the Facility that will act to disperse odors from the Facility.

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[706] *Hallco Texas, Inc. v. McMullen County*, 221 S.W.3d 50, 53 (Tex. 2006) (emphasis added).

[707] 30 TAC § 330.61(h), (h)(1).

[708] County Ex. 3 at 3 of 5, 4 of 5.

[709] A county ordinance cannot prohibit the disposal of solid waste in an area in which an application under chapter 361 is pending or has been granted. Tex. Health & Safety Code §§ 363.112(c), 364.012(e).

[710] *See also Browning-Ferris, Inc.*, 625 S.W.2d at 768 (concluding evidence of odor, vectors, fires, and contamination of water resources from an owner's existing landfill supported the conclusion that the owner's new landfill would be an incompatible land use in the area.).

Another factor to consider in the land-use analysis is the growth trends in the area. In the ALJs' opinion, the evidence in this case regarding growth patterns weighs in favor of a finding of compatibility. Mr. Worrall analyzed community growth patterns within five miles of the Facility using census information, data obtained from the Texas State Data Center, and information from CAPCOG. He also used aerial photography and performed his own field inventories, driving through the area and observing "everything within a mile" to determine what changes had taken place.[711] Mr. Worrall found that the area within five miles experienced a 5% growth rate based on census data from 2000 through 2010, although OPIC stressed that the number of residences within a mile of the Site increased by 13.5% from 2013 to 2015. Both percentages are accurate, but neither indicates that the community growth in the vicinity is incompatible with the Facility, because it is still a rural, low-populated area. The ALJs conclude that Mr. Worrall properly assessed the issue of growth in his analysis as required by 30 TAC § 330.61(h), and that this factor weighs in favor of a finding regarding land-use compatibility.

In sum, after weighing all the relevant factors, the ALJs conclude that based on this evidentiary record, the Facility is generally compatible with the land uses on and surrounding the Site and should not have an adverse impact on human health and the environment.

O. Local Regulations/Approvals

The TCEQ requires applicants for MSW landfill permits to obtain all necessary approvals from local governmental entities. Section 330.67(d) of 30 TAC chapter 330 provides:

> It is also the responsibility of an owner or operator to obtain any permits or approvals that may be required by local agencies such as for building construction, discharge of uncontaminated waters into ditches under control of a drainage district, discharge of effluent into a local sanitary sewer system, etc.[712]

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[711] Tr. at 109-111.

[712] 30 TAC § 330.67(d).

In addition, 30 TAC § 330.63(c)(2)(D)(ii) provides that for proposed construction in a floodplain, an application must contain, where applicable, "a floodplain development permit from the city, county, or other agency with jurisdiction over the proposed improvements . . . ."

1. 130EP

130EP acknowledges that given the location of the 100-year floodplain on the Hunter Tract, 130EP would need to construct the access road across a floodplain, which requires a floodplain development permit from the County. However, 130EP did not obtain the needed permit or include it in the Application.

The ED issued two NODs to 130EP dated May 6 and June 27, 2014. In the first NOD, the ED required 130EP "[to demonstrate], [i]n accordance with 30 TAC § 330.63(c)(2)(D)(ii), . . . that the proposed construction has a floodplain development permit from the city, county, or other agency with jurisdiction over the proposed improvements."[713] The second NOD stated that 130EP had responded to this deficiency as follows: "The response indicates that you have begun preliminary platting with Caldwell County, will obtain all local permits and authorizations in accordance with the cited rule."[714]

According to 130EP, once all deficiencies had been resolved except for obtaining the floodplain development permit, the ED decided to use special provisions to address the issue.[715] These provisions provide:

> A. Before physical construction may commence, the permittee must provide the [ED] with a floodplain development permit from the city, county, or other agency with jurisdiction over improvements authorized by this permit.

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[713] ED-SO-4 at 5, Item 20.e.

[714] ED-SO-5 at 2, Item 4; *see* Protestants Ex. 22 at 9.

[715] Tr. at 1983-1984.

B. The facility must implement all roadway improvements specified in Part II, Appendix IIC of the permit application prior to the pre-opening inspection of the facility.[716]

130EP contends that the use of special permit provisions, as the ED included in this case, is not uncommon. According to Mr. Odil, the TCEQ has included special provisions in other permits to address specific concerns with an application, to set out pending requirements or improvements for regional inspectors to track, and to allow coordination with other agencies without impacting the TCEQ's timelines.[717] 130EP maintains that these special provisions proposed by the ED will allow 130EP to obtain the necessary floodplain development permit before construction begins and to implement the roadway improvements before the pre-opening inspection of the Facility.

2. The County

The County argues that the Application is deficient because 130EP failed to obtain the necessary local approvals and include them in the Application. Because it is undisputed that 130EP has not obtained the floodplain development permit from the County for the required access road, the County contends that the Application should be denied for failure to comply with 30 TAC § 330.63(c)(2)(D)(ii).

The County also notes that it has adopted subdivision rules and a development ordinance. However, it has only reviewed 130EP's preliminary plat application for compliance with local regulations, and 130EP has not provided the County with a final plat or application for a commercial development permit for the Facility.[718]

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[716] ED-SO-8 at 45.

[717] Tr. at 1983-1984.

[718] County Ex. 1 at 16.

3. The District

The District reiterates that its rights arise under Texas property law and its easement on the Hunter Tract. As a local governmental entity, the District will have to make an initial determination whether 130EP's activities may impact the exercise of its easement rights stemming from its responsibilities under the Small Watershed Protection Plan and the Texas Dam Safety Act. The District asserts that it does not waive any of the rights or powers conferred by Texas law, and it will fully exercise its rights, if necessary.[719]

4. Protestants

In addition to the arguments made by the County,[720] Protestants also argue that although 130EP has begun the preliminary platting process, this does not equate to obtaining the County's approval to develop in the floodplain. Protestants characterize 130EP's responses to the NODs as "inadequate and disingenuous" and, without citation to the evidentiary record, state that 130EP "simply chose not to attempt to address the ED's NOD, even after multiple requests to do so."[721] Protestants assert that although 130EP indicated to the ED that it had begun the process of obtaining County authorization to construct in a floodplain, it actually never started the process.[722] Protestants argue that the Commission should deny the Application and not reward 130EP's unwillingness to even attempt to address the deficiencies listed in the ED's NODs.

5. The ED

According to the ED, "[a]fter receiving the first NOD, [130EP] began the process of obtaining a floodplain development permit from the local regulating authority, Caldwell County."[723] At the time of the second NOD, 130EP still had not obtained the permit.[724]

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[719] District Closing at 11-12.

[720] Protestants Closing at 81.

[721] Protestants Response at 55.

[722] Protestants Response at 55.

[723] ED Closing, "Local Regulations/Approvals" section.

Subsequently, this was the only remaining deficiency, and the ED determined to include special provisions in the Draft Permit to address the situation.[725] The ED asserts that "[b]ased on the [A]pplication, applicable testimony, and special provisions included in the [Draft Permit], the ED concludes that [130EP] satisfactorily complied with the local regulation and authorization requirements necessary."[726]

6. The ALJs' Analysis

Section 330.63(c)(2)(D)(ii) states that the owner or operator "shall . . . for construction in a floodplain, submit . . . a floodplain development permit from the city, county, or other agency with jurisdiction over the proposed improvements."[727] The evidence is uncontroverted that 130EP does not have the required floodplain development permit from the County. Accordingly, the ALJs conclude that the Application did not comply with 30 TAC § 330.63(c)(2)(D)(ii).

However, the evidence shows that addressing these types of deficiencies through the use of special provisions in the permit is a common practice at the TCEQ. Mr. Odil testified that these special provisions allow for coordination with other governmental entities that may not follow the same timeframes as the TCEQ.[728] He stated that when he comes to the end of the NOD process, he typically consults with his managers to determine whether to keep issuing NODs or to insert a special provision into the Draft Permit to address the situation. This is the process he followed in this case regarding the flood development permit for the Facility.[729]

If the Commission issues the Draft Permit with the special provisions, 130EP will be required to obtain the required floodplain development permit prior to construction.[730] Although not strictly in compliance with the TCEQ's rules, this seems to the ALJs a reasonable

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[724] ED-SO-5 at 2, Item 4.

[725] Tr. at 1983-1984.

[726] ED Closing, "Local Regulations/Approvals" section.

[727] 30 TAC § 330.63(c)(2)(D)(ii).

[728] Tr. at 1983-1984.

[729] Tr. at 1984-1986.

[730] ED-SO-1 at 30.

accommodation that will not cause any harm or threat to the environment, given that construction cannot begin until 130EP obtains the required permit.

Although Protestants assert that 130EP should not be rewarded for its alleged bad behavior in responding to the ED regarding the required permit, 130EP did not represent to the ED that it had started the process to obtain a floodplain development permit. 130EP only stated in response to the NODs that it had begun the preliminary platting process, which the evidence shows to be the case.[731] In addition, the record does not disclose the reasons why 130EP did not obtain a floodplain development permit before or during the ED's technical review process. For these reasons, the ALJs cannot agree with Protestants that 130EP was unwilling to comply with this regulatory requirement. Further, Mr. Bratton testified that 130EP had not requested a floodplain development permit from Caldwell County as required by 30 TAC § 330.63(c)(2)(D)(ii),[732] and the ED was aware of this testimony and still supported the issuance of the Draft Permit with the special provisions.[733] The ALJs agree with the ED that the use of special provisions adequately resolves the issue.

Regarding the County's subdivision rules and development ordinances, 30 TAC § 330.63(c)(2)(D)(ii) only requires the submission of a floodplain development permit with an application; it does not require an applicant to include other types of local authorizations. In addition, 30 TAC § 330.67(d) requires an owner or operator to obtain various local permits, but again, it does not require the submission of those permits with the application. Therefore, the ALJs cannot conclude that the Application was deficient because it did not include all the necessary local approvals that may be applicable to the Facility.

P. Site Operating Plan

A site operating plan providing general operating procedures for facility management of day-to-day operations must be provided in an application for an MSW landfill permit. At a

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[731] Protestants Ex. 22 at 9; Protestants Ex. 23 at 3; Protestants Ex. 24 at 1.

[732] County Ex. 1 at 15-16.

[733] ED Closing, "Local Regulations/Approvals" section.

minimum, the SOP in the Application[734] should describe how the operational standards for the Landfill and the associated MSW storage and processing units, set forth in Subchapters D and E of 30 TAC chapter 330, will be implemented.[735] The SOP must include provisions for site management and the site operating personnel to meet the general and site-specific requirements of Subchapter D and include:

- A description of functions and qualifications for each category of key and supervisory personnel;
- A description of the equipment to be used at the facility and of provisions for back-up equipment;
- A description of the general instructions for operating personnel to follow;
- Identification of applicable training requirements;
- Procedures for detecting and preventing disposal of prohibited waste; and
- General instructions required by Subchapter D.[736]

The SOP must address numerous requirements, procedures, and conditions regarding a myriad of issues pertaining to the operation of a landfill and associated storage and processing facilities.[737] In this case, there is dispute amongst the parties regarding whether the SOP properly and adequately deals with some of these issues. This PFD will only address those particular areas of dispute, as the ALJs find that the SOP meets all other applicable requirements of 30 TAC §§ 330.65(a) and 330.127, and Subchapter D not contested by a party.

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[734] 130EP-5 at 99-187.

[735] 30 TAC § 330.65(a).

[736] 30 TAC § 330.127.

[737] *See, i.e.*, 30 TAC §§ 330.129 (requiring site operating plans to set forth certain details for fire protection), 330.131 (requiring site operating plans to specify provisions for access control), 330.133 (requiring site operating plans to specify maximum size of waste unloading area), 330.139 (requiring site operating plans to specify means for confining windblown waste and litter and litter pickup). While Subchapter D includes several requirements that pertain to the SOP, it also sets forth numerous performance standards for Facility operations that the ALJs do not find are regulatory requirements that must be met by the Application. *See, i.e.*, 30 TAC §§ 330.155 (prohibiting salvaging from interfering with waste disposal and creating public health nuisances). 330.161 (requiring operator to provide notification to ED of discovery of water wells during facility development).

1. Summary of Disputed Issues

130EP and Protestants generally dispute the extent of detail required by the rules for the provisions of the SOP. Protestants contend that a 2002 decision by the Austin Third Court of Appeals mandates that a site operating plan must include "specific, enforceable procedures to govern the daily operation of a specific landfill," and that such procedures "be more detailed than the general rules . . . ."[738] Overall, Protestants argue that the SOP lacks the detail required to comply with the applicable rules. 130EP counters that the court of appeals was interpreting a rule, repealed in 2006, that used different language than the language used in rule applicable to its SOP. The language of the current rule, argues 130EP, requires less detail with respect to operating procedures and only general instructions for site operating personnel concerning operational requirements. 130EP maintains that the SOP does set forth the general instructions and procedures envisioned by 30 TAC § 330.127 for all operational issues that Subchapter D of 30 TAC chapter 330 requires be addressed in a site operating plan.

As to the specific operational issues, Protestants, the District, and the County all take the position that the SOP does not adequately address the issue of the water supply necessary for the operation of the Facility.[739] Further, Protestants and the County contend that the SOP is deficient with respect to its description of how the access road to the Facility will meet the requirements of 30 TAC § 330.153. OPIC and Protestants both argue that 130EP failed to provide any evidence to justify deviation from the standard operating hours set forth in 30 TAC § 330.135(a), and that the TCEQ should not permit 130EP to use alternative daily cover to control odors and windblown waste.[740] Protestants claim that the SOP does not contain provisions for the control of disease vectors and scavenging at the Site and that its provisions concerning visual screening are incomplete, too general, and not enforceable.[741] Finally, Protestants, the District, and the County all maintain that the SOP does not include adequate provisions and procedures for fire

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[738] *BFI Waste Sys. of N. Am., Inc. v. Martinez Envtl. Group*, 93 S.W.3d 570, 579 (Tex. App.–Austin 2002, pet. denied).

[739] The water supply issue is covered separately in Section III.R., Water Supply, below.

[740] The odor issue is covered separately in Section III.Q., Odor, below.

[741] The visual screening issue is covered separately in Section III.S., Buffer Zones and Screening, below.

control and protection at the Site. 130EP and the ED both take the position that the SOP meets all specific requirements of the applicable rules.

2. Access Road and Flooding Concerns

Subchapter D of 30 TAC chapter 330 requires all-weather roads from a Facility to the public roads and within the Facility. Further, mud and debris at the intersection of the public road and the access road must be removed once a day when tracked onto the public road. The SOP must include procedures for the control of mud and debris tracking on the public road.[742] Dust from the access roads cannot be allowed to become a nuisance, and water and necessary equipment to control the dust is required.[743] Finally, the access roads must be kept in a clean and safe condition, with litter and debris removed to the working face on a daily basis, and re-grading frequencies for the roads must be specified in the SOP to minimize depressions, ruts, and potholes.[744]

a. Protestants and the County

Protestants argue that the portion of the access road from the Facility to US 183 that lies beyond the Permit Boundary and traverses a floodplain results in "serious problems" not addressed by the SOP.[745] Specifically, Protestants contend that the SOP fails to set forth operational procedures in the event of a flood, and that it is unclear whether 130EP will ensure the portion of the access road outside the Permit Boundary meets the rule's wet-weather requirements or if the TCEQ could enforce the rule on this portion of the road.

The County expresses concern as to the accessibility of the Site during a disaster or emergency situation. Mr. Bratton testified that during a fire at the Site, depending on its precise location and the wind conditions, emergency personnel may not be able to access the Site at

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[742] 30 TAC § 330.153(a).

[743] 30 TAC § 330.153(b).

[744] 30 TAC § 330.153(c).

[745] Protestants Closing at 86.

all.[746] He also testified that the Application does not provide details for headwalls or erosion protection for culverts, or assurances that the roadway or culverts will be protected from washout during a storm event that exceeds the design storm.[747]

b. 130EP

130EP argues that the Application includes specific access control requirements in the General Facility Design section, as well as details concerning the construction of the access road in the Waste Management Unit Design section.[748] According to 130EP, the SOP need only contain general plans for ensuring the access road is all-weather and properly cleaned of mud and debris. 130EP maintains that the SOP explains how construction of the access road will make it all-weather, as well as inspection schedules and procedures for mud tracking control, and how speed bumps, the truck wheel wash, and grading material will assist in mud control.[749] The SOP also indicates that grading equipment will be used weekly for mud control and to minimize depressions, ruts, and potholes.[750] In addition, 130EP notes that it made an application with TxDOT for a driveway permit for the access road, which included design details and construction standards, as well as culvert and floodplain crossing details and drainage calculations.[751] TxDOT approved 130EP's application for the driveway permit. Based on this evidence, 130EP takes the position that the entire access road has the same design and construction parameters and maintenance requirements regardless of the Permit Boundary and notes that no party challenges any of these aspects as to the portion of the access road within the Permit Boundary. 130EP also argues that TCEQ will have enforcement jurisdiction over the portion of the access road that lies outside the Permit Boundary, and that the requirements of 30 TAC § 330.153 will apply to the entire access road, regardless of the Permit Boundary.

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[746] County Ex. 1 at 16-18.

[747] County Ex. 1 at 17.

[748] 130EP-2 at 26; 130EP-3 at 13, 23.

[749] 130EP-5 at 144-145, 157.

[750] 130EP-5 at 145, 157.

[751] 130EP Parker-5 at 4-55.

c. The ALJs' Analysis

Concerning the access road, the ALJs recommend elsewhere in this PFD that the entirety of the access road from the property entrance at the intersection of US 183 to the Facility be included within the Permit Boundary. The requirements of the Draft Permit and the rules regarding the access road apply to the entirety of the access road, so for consistency and clarity, inclusion of the complete access road within the Permit Boundary is warranted. The SOP does not require detailed instructions regarding procedures to employ concerning the access road in the event of a major storm event. Further, contrary to Protestants' contention, the SOP need not include "precise" methods for ensuring the access road is all-weather and cleared of mud and debris. The SOP describes in general how mud and debris tracking onto public roadways will be controlled and details the regrading frequency for the access road. Therefore, SOP satisfies the requirements of 30 TAC § 330.127 by setting forth, in general terms, how proper maintenance in accordance with 30 TAC § 330.153 will be performed.

3. Operating Hours

The SOP must specify the waste acceptance hours, facility operating hours when materials will be transported on- or off-site, and equipment operation hours. According to the applicable rule, waste acceptance hours may be any time between 7:00 a.m. and 7:00 p.m. Monday through Friday, and material transport and heavy equipment operation must not be conducted between 9:00 p.m. and 5:00 a.m. "unless otherwise approved in the authorization for the facility."[752]

a. Protestants and OPIC

Protestants and OPIC both argue that 130EP made no showing to justify an extension of the standard operating hours set forth in 30 TAC § 330.135(a). They note that 130EP witness Mr. Welch admitted that noise and light from heavy equipment operation could be considered

[752] 30 TAC § 330.135(a)

incompatible with residents living near the Facility.[753] OPIC cites to two other MSW landfill permitting cases heard at SOAH that it contends supports its position that 130EP bears the burden of proving that operating hours for waste acceptance and landfill operations should not be limited to the standard hours set forth in 30 TAC § 330.135(a).[754]

b. 130EP

According to 130EP, the rules do not require an MSW landfill owner or operator to produce evidence to justify 24-hour a day, 7-day a week waste acceptance and site operation hours. Nor, argues 130EP, do the rules set a standard for obtaining approval to expand the standard hours set forth in 30 TAC § 330.135(a). 130EP contends that, despite comments made during the 2004 rulemaking process for 30 TAC § 330.135 arguing that variance from the standard operating hours should only be granted on a showing of good cause, the TCEQ did not include any good-cause standard in the rule. The TCEQ indicated that decisions regarding authorization for operation beyond the hours set out in 30 TAC § 330.135 would be made "on a case-by-case basis considering the potential impact on surrounding communities."[755] 130EP notes that the design for the Facility includes an "effective" buffer zone of at least 325 feet within and adjacent to the Permit Boundary, which exceeds the minimum buffer zone required by TCEQ rules. Given the extensive buffer zones, which it argues will limit impacts from noise, dust, odor, and visibility, and Mr. Worrall's testimony regarding excellent visual screening through the buffer zones and screening berm, 130EP claims that the extended operating hours in the Draft Permit will not result in a nuisance and will be compatible with existing land uses.[756]

130EP further claims that Protestant TJFA seeks to limit the operating hours of the Facility for anti-competitive reasons so as to limit customers that can be served by the Facility.

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[753] Tr. at 1217-1218.

[754] *Application by Post Oak Clean Green, Inc. for a New Type I Municipal Solid Waste Landfill in Guadalupe County, Texas*, Docket No. 582-15-2498, Proposal for Decision at 81 (Sep. 23, 2016); *Application of Waste Management of Texas, Inc. for a Municipal Solid Waste Permit Amendment No. MSW-249-D*, Docket No. 582-08-2186, Supplemental Proposal for Decision at 4 (Jan. 5, 2010).

[755] 29 Tex. Reg. 11070 (Nov. 26, 2004).

[756] *See* 130EP Worrall-1 at 13-14.

TJFA is directly related to Texas Disposal Landfill, Inc. (TDS), according to 130EP, because TJFA's president is employed by TDS, and TDS operates an MSW landfill north of the Site. Additionally, 130EP notes that TJFA has participated in hearings as a protestant against other MSW landfill permit applications filed by other TDS competitors.[757] According to 130EP, the TDS landfill north of the Site is permitted for 24-hour operations, and those operations were authorized under the former rule governing facility operating hours, which was not as liberal as the current rule. 130EP maintains that if the Facility's operating hours are not similarly extended, it will be operating at a distinct competitive disadvantage to TJFA's "relative," TDS.[758]

Without citing to the evidentiary record, 130EP argues that landfill customers include school districts, universities, hospitals, and other large commercial, industrial, municipal, and governmental entities in urban service areas with heavy population and traffic during normal business hours. Early morning collection is required for these customers, according to 130EP, and the Facility will be unable to serve these customers and compete for other such customers unless it can accept waste between 7:00 p.m. and 7:00 a.m. Additionally, 130EP seeks to serve customers to whom weekend disposal is important, including those that work a typical five-day week and are unable to bring waste to the Facility on a weekday. Other businesses are closed on the weekends and benefit from weekend collection, argues 130EP, and those businesses that are open on the weekends generate waste that could cause nuisance odors if not collected on the weekend.

c. The ALJs' Analysis

The ALJs recommend that the Facility be required to adhere to the operating hours set forth in 30 TAC § 330.135, being 7:00 a.m. to 7:00 p.m., Monday through Friday, for waste acceptance and 5:00 a.m. to 9:00 p.m. for material transportation and heavy equipment operation. During the rulemaking process for 30 TAC § 330.135, the TCEQ indicated that these hours had been expanded in response to commenters' requests, and that "[w]aste facility operations outside

[757] Prelim. Hearing Tr. at 30, 33 (Mar. 26, 2015).

[758] 130EP Response at 75.

these hours are more likely to disturb people in residential areas."[759] The TCEQ also maintained that limits on operating hours are reasonable to protect surrounding communities, and that the current rule "provides reasonable restrictions for protecting neighbors from being affected by a facility." Although the rule does not require a showing of good cause to obtain approval of operating hours beyond those set forth in the rule, the TCEQ made clear that a decision on operating hours should involve consideration of potential impacts on nearby communities. It is undisputed that there are residences within very short distances to various portions of the Facility. Further, the evidence is clear that the noise from heavy equipment operation could be incompatible with those residents. Although the Application met the requirements of the rules for screening and buffer zones, this does not eliminate the potential for noise and odors to impact nearby residents.

Although 130EP makes arguments concerning its need for expanded operating hours for business purposes, there is no evidence in the record to support those arguments. Further, there is no evidence of the reasons that the TDS landfill to the north was presumably authorized to operate 24 hours a day, seven days a week. Regardless, TDS's authorization regarding operating hours is not pertinent to consideration of potential impacts to the communities surrounding the Facility. In a previous MSW landfill case, the TCEQ found that an applicant had the burden show that its operating hours were appropriate.[760] Therefore, 130EP had the burden of proof here to show that operating hours beyond those set forth in 30 TAC § 330.135 are appropriate, and 130EP did not meet its burden.

4. Alternative Daily Cover, Windblown Waste, and Vector Control and Scavenging

The SOP indicates that 130EP plans to use alternative daily cover material (ADC) at the Facility in the future. According to the SOP, before ADC is used at the Facility, 130EP will seek specific authorization from the TCEQ. If authorized, the use of ADC will be limited to a

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[759] 29 Tex. Reg. 11069 (Nov. 26, 2004).

[760] *An Order Granting the Application of Waste Management of Texas, Inc. for Type I MSW Permit No. 249D* TCEQ Docket No. 2006-0612-MSW, Order at FoF 210 (Mar. 15, 2010).

24-hour period, after which waste or daily cover will be placed.[761] Otherwise, waste areas will be covered daily with well-compacted clean earthen materials.[762]

Pursuant to the applicable rule, use of ADC may only be allowed by a temporary permit followed by a major amendment or modification. The request for a temporary authorization must include an ADC operating plan that meets various requirements concerning the characteristics of the material and its application at the Facility.[763] Moreover, the SOP must specify the means 130EP will use to control and confine windblown waste and litter at the working face.[764] Finally, the SOP should include provisions for controlling on-site disease vectors through compaction and daily cover, as well as other means if necessary, and measures to prevent scavenging.[765]

a. Protestants and OPIC

Protestants claim that the Landfill will reach heights of up to roughly 170 feet vertically and that at such heights windblown waste and odors will be difficult to manage. According to Protestants, adequate soil will be necessary to cover waste at such heights to reduce odors and windblown waste. Protestants argue that ADC will not adequately control windblown waste, which can interfere with the functionality of the Site 21 Reservoir. Protestants also maintain that the SOP is deficient for failing to indicate the height of the fences it intends to use for windblown waste control. Protestants propose that if the Commission issues a permit, the Commission should require 130EP to apply a minimum of six inches of earthen material as daily cover and specify that 130EP must apply for temporary authorization for ADC and show changed circumstances with notice to residents and an opportunity for a hearing.

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[761] 130EP-5 at 148-149.

[762] 130EP-5 at 147.

[763] 30 TAC § 330.165(d).

[764] 30 TAC § 330.139.

[765] 30 TAC §§ 330.151, .155.

According to Protestants, the SOP also fails to adequately address how 130EP will prevent scavenging and the spread of disease vectors by feral hogs. Protestants cite to testimony from Byron Friedrich, an owner of land located near to the Site who has lived in the area for many years, regarding feral hogs being a "persistent and serious problem in [the] area, capable of doing considerable damage to pasture land overnight."[766] Mr. Friedrich testified that the Landfill will attract the hogs, and that they can work through fences to get to the waste.[767] Based on this testimony, Protestants claim that the proposed fences and gate at the Facility will not adequately control feral hogs that can potentially dig in, bring with them disease vectors, and carry wastes off the property.

OPIC contends that ADC will not be as effective as daily cover in mitigating nuisance odors, which is important given the close proximity of the residences on the north side of the Site. OPIC also maintains that ADC will not effectively control vectors, and points to testimony regarding the feral hog population in the area of the Site and their ability to root through the ground with their snouts.[768] According to OPIC, the Facility could potentially attract feral hogs if the waste is not properly managed, and daily cover will better reduce odors and provide a more substantial barrier to feral hogs than would ADC.

b. 130EP

In response to Protestants' arguments regarding the height of the waste at the Facility and its effect on the usefulness of ADC, 130EP contends that the peak elevation of the Landfill will be over 1,000 feet from the closest property boundary on the north side.[769] There are procedures set forth in the SOP explaining how daily cover will be applied and other methods employed to minimize windblown waste and disease vectors, including litter fences, sizing of the working face, daily inspection and pickup, and pesticides if necessary.[770] Further, 130EP accepts

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[766] Protestants Ex. 2 at 15.

[767] Protestants Ex. 2 at 15.

[768] Tr. at 1330-1331.

[769] 130EP-3 at 25.

[770] 130EP-5 at 139-140, 144, 147-148.

responsibility for protecting the Site from feral hogs. According to 130EP, if it were to obtain temporary authorization to use ADC, and it was ineffective in controlling feral hogs, 130EP would discontinue the use of ADC and revert to daily cover and the other procedures for vector control set out in the SOP. 130EP argues that while feral hogs are found throughout Texas, there is no evidence that they have been a vector or scavenging problem at any other landfill, including those that, according to 130EP, use ADC such as tarps. Finally, 130EP argues that the general methods of disease vector (including feral hogs) control set forth in the SOP – including minimization of the working face size; placement of daily, intermediate, and final cover; and adherence to the ponding water plan – meet the requirements of 30 TAC § 330.151.[771]

c. The ALJs' Analysis

Concerning ADC, it is unnecessary for the ALJs at this time to make any determination or recommendation of whether the Commission should allow the use of ADC at the Facility. The TCEQ prohibits the use of ADC unless 130EP obtains a temporary authorization followed by a major amendment or modification for its use. 130EP confirms its understanding of this prohibition in the SOP and states that it will seek such authorization before any ADC is used at the Facility. The SOP includes adequate provisions for the use of daily cover. The daily cover procedures, other disease vector control methods, and description of access control through fences and the gate included in the SOP meet the requirements of 30 TAC § 330.151.

5. Fire Control and Protection

Pursuant to 30 TAC § 330.129, an MSW landfill owner or operator must maintain a source of earthen material available to extinguish a fire at all times and sufficient to cover any received but uncovered waste by six inches of earthen material. Equipment must be available on site to place the earthen material within one hour of detecting the fire. The SOP must contain calculations demonstrating the adequacy of the earthen material and the availability of equipment capable of transporting the required volume of earthen material. It must also contain a fire protection plan identifying the standards to be used and how personnel will be trained.

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[771] 130EP-5 at 144.

a. Protestants, the District, and the County

Protestants contend that 130EP did not demonstrate that adequate soils exist on the Site for construction of the Landfill, and therefore did not make the required showing in the SOP that the earthen material is adequate for fire protection. The County generally concurs that the SOP does not comply with the rules to show how fire protection requirements will be met. The District argues that the SOP and the Application in general does not provide required information regarding the locations and quantities of soil available on the Site for fire suppression.

b. 130EP

130EP did not address this issue in its post-hearing briefing. However, its SOP includes a Fire Protection Plan setting out the procedures to prevent fires; a description of the earthen material that will be maintained in a stockpile at all times to extinguish a fire; calculations regarding the size of the soil stockpile needed to place a six-inch layer of earthen material on the working face; and the availability of equipment to place earthen material on a fire within an hour of detection.[772]

c. The ALJs' Analysis

The SOP contains sufficient calculations demonstrating the adequacy of earthen material and the equipment for moving such material and complies with the requirements of 30 TAC § 330.129. The preponderance of the evidence shows that there will be sufficient soil available to cover waste not already covered with a six-inch layer of earthen material within an hour of fire detection.

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[772] 130EP-5 at 130-132.

6. The ALJs' Conclusion

The SOP included in the Application meets the requirements of 30 TAC §§ 330.65(a) and 330.127.[773] The Austin Third Court of Appeals opinion cited by Protestants is inapplicable here given that it construed a rule regarding site operating plans that has since been repealed. The current rule (30 TAC § 330.127) requires the SOP to include provisions for managing the Site and for operating personnel to meet general and site-specific requirements of Subchapter D of 30 TAC chapter 330. The SOP includes the mandated provisions, and the level of specificity and detail provided is sufficient to meet the rule's requirements.

Q. Odor

The TCEQ requires the SOP to have an odor management plan that addresses the sources of odors at the particular facility.[774] Such a plan must provide for the identification of wastes that require special attention in this regard, such as septage, grease trap waste, dead animals, and leachate.[775]

1. 130EP

The Odor Management Plan included in the SOP provides for the control of odors through the identification of waste and general instructions on the control of odors.[776] 130EP states that the Application contains ventilation and odor control measures for each storage, processing, and disposal unit.[777] Furthermore, the Landfill will not accept sludge, grease trap

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[773] This finding excludes determination of compliance with odor and water supply requirements, which are analyzed separately in Sections III.Q. and III.R., respectively.

[774] 30 TAC § 330.149.

[775] 30 TAC § 330.149.

[776] 130EP-5 at 143-144.

[777] 130EP2- at 28-31; 130EP-5 at 143-144, 147-151.

waste, and grit trap waste,[778] and the Facility will not recirculate leachate and landfill gas condensate.[779]

130EP presented the testimony of Ms. O'Brien, an odor control specialist. She testified that if the Facility is designed and operated as set out in the Application, and considering the wind patterns, topography, and buffer zones, the Facility should not cause nuisance odors at the Permit Boundary.[780] To this effect, Ms. O'Brien testified that odors from the Landfill will not interfere with nearby landowners' normal use of their properties.[781] According to 130EP, the peak elevation of the waste will be over 1,000 feet from the closest neighboring property. Ms. O'Brien also stated that the constructed vegetative berm could help to disperse the odors on the north side of the Facility.[782] 130EP argues that the plan for the vegetated screening berm included in the design of the Facility will be incorporated by reference into the permit and become a permit condition if approved by the TCEQ.[783]

2. The County

The County contends that 130EP's expert witness, Ms. O'Brien, did not know the height of the Landfill in comparison to the constructed berm and naturally occurring trees. In addition, she stated that berms are ineffective at dispersing odors if the source of the odor is higher than the berm. Therefore, the County argues that the constructed berm would be ineffective at dispersing odors.

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[778] 130EP-5 at 90.

[779] 130EP-5 at 153.

[780] 130EP O'Brien-1 at 4; Tr. at 956-957.

[781] Tr. at 971.

[782] Tr. at 999.

[783] 130EP-3 at 24-25, 29-30, 34; ED Ex. SO-8 at 70.

3. Protestants

Protestants assert that 130EP's Odor Management Plan is inadequate because it does not contain the components required by 30 TAC § 330.149. Although the rule requires an applicant to address "the sources of odor," Protestants contend that the plan only addresses specific sources, when it should have addressed all sources. For example, even though Ms. O'Brien testified that sheetrock and food can produce odors,[784] the Odor Management Plan does not address those sources but only discusses "special wastes." Protestants maintain that the plan is inadequate, especially in light of the height of the Landfill and the proximity of the nearest residences to the north.

4. OPIC

OPIC contends that odor is likely to be an issue at the Facility, given the proximity of the residences on the north boundary of the Site. The nearest residence is only 185 feet from the Permit Boundary and 345 feet from the Landfill footprint.[785] In addition, the prevailing wind is from the south, exacerbating the creation of nuisance odors. The Draft Permit does not require the construction of Mr. Worrall's proposed screening berm, OPIC notes. To address the odor issue, therefore, OPIC recommends that the Facility operate according to the TCEQ's standard schedule and that the Commission not authorize the use of ADC.

5. The ED

The ED concluded that based on the Odor Management Plan included in the Application and Ms. O'Brien's testimony, and considering that the rules do not require a calculation of the degree to which odor is controlled, the Odor Management Plan complies with 30 TAC § 330.149.

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[784] Tr. at 982-983.

[785] Tr. at 39.

6. The ALJs' Analysis

The Odor Management Plan in the SOP adequately addresses the sources of odors at the Facility. It clearly states that odors will be caused by ponded water, decomposition of wastes, leachate, contaminated water, and LFG. Ms. O'Brien testified that as it decomposes, "pretty much anything that's coming in" will contribute to odors at the Facility.[786] The Odor Management Plan also contains general instructions for how the odors or their sources will be controlled. Further, the plan identifies waste requiring special attention. The rule simply does not require the specificity and detail Protestants claim that it does, and as previously mentioned, the Austin Third Court of Appeals opinion cited by Protestants construed a different version of the SOP rule that is no longer in effect. The Odor Management Plan contains sufficient details regarding the sources of odors and general procedures for odor control and therefore meets the requirements of 30 TAC § 330.149. Further, OPIC's concerns are unjustified because, as noted previously, the use of ADC is not being approved at this time, and the ALJs are recommending against 24-hour operations at the Facility.

R. Water Supply

Pursuant to 30 TAC § 330.221, 130EP must make available for firefighting an adequate supply of water under pressure. Additionally, 130EP will need some amount of water based on the necessary cleaning at the storage and processing facilities at the Site as described in the General Facility Design section of the Application.[787] Further, 130EP is required to provide potable water and sanitary facilities for its employees at and visitors to the Site.[788]

1. 130EP

According to the evidence, Polonia Water Supply Corporation (Polonia) confirmed that the Facility is covered by Polonia's certificate of convenience and necessity and that it will

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[786] Tr. at 982-983.

[787] *See* 30 TAC § 330.63(b)(3); 130EP-2 at 32-33.

[788] 30 TAC § 330.249.

service the Facility when the conditions of Polonia's tariff have been met.[789] The SOP indicates that an above-ground storage tank adjacent to the transfer station will contain the supply of water under pressure to be used for firefighting.[790] The SOP also states that either portable or constructed restrooms will be provided, that a private contractor will remove and dispose of any wastewater from these sanitary facilities that is not managed in a permitted on-site sewage facility, and that bottled water will be provided as potable water.[791]

2. The District

The District argues that the source of the water that 130EP estimated will be needed at the Facility is uncertain, regardless of Polonia's commitment to serving the Facility. According to the District, no evidence was presented that Polonia has taken any steps to determine whether it has the capacity and infrastructure that will be necessary to serve the Facility's water needs. According to the District, 130EP needs to show that it has sufficient water supply for initial construction of the Facility and a firm supply of the estimated volume of water needed to operate the Facility from a dependable source.

3. The County

The County contends that the Application does not include sufficient information concerning the source of water for the Facility's needs, such as daily operations, the truck wheel wash, dust control, fire prevention, and landscaping. According to the County, the record is unclear whether Polonia can provide the water that 130EP will need at the Facility. The County cited Mr. Maroney's estimate that the Facility will require approximately 350,000 gallons of water every month.[792] The County notes that there is no evidence in the record that 130EP has applied to Polonia for water service, notified Polonia of its expected water needs at the Facility, or received any approval or notification regarding Polonia's tariff.

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[789] 130EP-48.

[790] 130EP-5 at 133.

[791] 130EP-5 at 159.

[792] Tr. at 2099-2100.

4. Protestants

Protestants assert that, despite the acknowledged water needs at the Facility, 130EP has not shown that an adequate water supply is available to comply with the applicable rules. Protestants note that Polonia has not yet agreed to service the Facility with the volume of water that Mr. Maroney estimated will be necessary for operation, and argue that there is no evidence that Polonia has the capacity to provide such volume. According to Protestants, designating the water storage tank located at the transfer station as the source of water for firefighting is inappropriate, given that 130EP witness Mr. Welch testified that the transfer station may not begin operation until after the Landfill begins operations. Protestants argue that because the water storage tank at the transfer station is intended to be used for the Landfill, if permitted, it should be included within the Permit Boundary. Finally, Protestants contend that use of bottled water as potable water is unreasonable and does not adequately address the need for potable water at the Facility.

5. The ED

The ED concluded that the Application included the information required by 30 TAC § 330.231 pertaining to water supply for firefighting purposes. The ED's witness Mr. Odil testified that the water storage tank at the transfer station identified by 130EP as the source of the water under pressure for firefighting must be built whether the transfer station is built or not.[793] According to Mr. Odil, water will be needed at the Site for firefighting, liner construction, sanitation, and cleaning of the processing areas. He expressed no opinion on whether bottled water is a sufficient source of potable water at a landfill.[794]

6. The ALJs' Analysis

The SOP explains that the water supply tank located at the transfer station will contain adequate amounts of water under pressure for firefighting purposes pursuant to 30 TAC

[793] Tr. at 1928.

[794] Tr. at 1927.

§ 330.221(a). Moreover, the SOP states that bottled water will be provided to employees and guests as potable water, in accordance with 30 TAC § 330.249. The rules applicable to the SOP contain no further requirements regarding water supply, and Protestants, the District, and the County have not cited to any applicable rule requiring the Application to provide information regarding the established source of the estimated volume of water required at the Facility. Therefore, the Application meets all applicable regulatory requirements concerning water supply.

S. Buffer Zones and Screening

The TCEQ has defined a buffer zone as "[a] zone free of [MSW] processing and disposal activities within and adjacent to the facility boundary on property owned or controlled by the owner or operator."[795] For new Type 1 landfills, 30 TAC § 330.543(b)(2)(A) requires a 125-foot buffer zone. In addition, no solid waste unloading, storage, disposal or processing may occur within any easement on the property.[796]

Regarding screening of a facility, the TCEQ's rules provide that "[v]isual screening of deposited waste materials at [an MSW] facility must be provided by the owner or operator for the facility where the [ED] determines that screening is necessary or as required by the permit."[797]

1. 130EP

Regarding buffer zones, 130EP notes that the Site exceeds the TCEQ's 125-foot buffer zone requirement between the Permit Boundary and the Landfill footprint and the waste storage and processing facilities. According to the Application, no unloading, storage, disposal, or processing of waste will occur in the buffer zone or in any rights-of-way or easements at the Facility.[798]

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[795] 30 TAC § 330.3(19).

[796] 30 TAC § 330.543(a).

[797] 30 TAC § 330.175.

[798] 130EP-5 at 140.

In addition to the buffer zones, 130EP has taken additional steps to screen the Facility through the use of existing topography and vegetation. The visual screening of deposited waste will occur as a part of the normal waste deposit and cover placement, and final cover will be used once the Landfill reaches its final contours. 130EP further proposes to construct a vegetated screening berm between the Landfill footprint and the northern property line and the residences to the north.[799] 130EP asserts that overall, the visual screening of the Facility will occur through the use of fencing, constructed berms, topography, naturally-occurring tree lines, and the vegetated landscaping plan that includes the constructed screening berm.[800]

2. Protestants

Protestants argue that the SOP "does not explain how [130EP's] clearing of forested areas and perimeter fencing during the months of June, July, and August would affect visual screening."[801] Therefore, without further explanation, Protestants contend that 130EP's visual screening plan is incomplete.

3. OPIC

OPIC notes that 130EP's proposed facility screening plan indicates that only a portion of the screening berm will be included within the Permit Boundary.[802] However, OPIC recommends that the Permit Boundary be expanded to include the entire screening berm to ensure proper construction, maintenance, and enforcement. OPIC also contends that because 130EP is relying on undisturbed wooded areas outside of the Permit Boundary for visual screening, the Permit Boundary should be expanded to include all the contiguous land, structures, other appurtenances, and improvements used for visual screening.[803]

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[799] 130EP-1 at 143; 130EP Worrall-10.

[800] 130EP-1 at 143; 130EP Worrall-1 at 10-11, 14-15; 130EP Worrall-10.

[801] Protestants Closing at 88 (citing Tr. at 1230).

[802] 130EP-1 at 143.

[803] *See* 30 TAC § 330.3(52) (Facility means "[a]ll contiguous land and structures, other appurtenances, and improvements on the land used for the storage, processing, or disposal of solid waste.").

4. The ED

The ED asserts that 130EP has met the TCEQ's requirements regarding buffer zones in 30 TAC § 330.543. The ED also argues that no further screening is required for the Facility under 30 TAC § 330.175. He notes that the Application included information and a map demonstrating 130EP's proposed screening plan, and Mr. Worrall attached a proposed visual screening berm to his prefiled testimony that is not in the Application.[804] The ED indicates that Mr. Worrall "stated that his proposed berm would be incorporated into the permit."[805]

5. The ALJs' Analysis

The ALJs conclude that 130EP has met the screening and buffer zone requirements in 30 TAC §§ 330.175 and 330.543, respectively. The evidence shows that the Facility will meet and exceed the 125-foot buffer zone requirement and that the Landfill will be sufficiently screened.[806]

In addition, the ALJs agree with OPIC and recommend that the entire vegetated screening berm be included within the Permit Boundary because 130EP proposes to build this structure to separate the Facility from the residences that are close to the Facility and the Landfill on the north side of the Site.[807] However, the ALJs do not agree with OPIC that the Permit Boundary should be expanded to include all of the natural wooded areas occurring on the Hunter Tract beyond the Permit Boundary. Significant areas on the west and east side of the Facility are existing woodlands that 130EP will not disturb.[808] Although 130EP indicates that there are additional wooded areas beyond the Permit Boundary on the Hunter Tract, the ALJs cannot conclude that those areas should be included within the Facility Boundary because those areas are not used for the storage, processing, or disposal of solid waste under 30 TAC § 330.3(52).

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[804] 130EP Worrall-10.

[805] ED Closing, "Screening" section (citing 130EP Worrall-1 at 14).

[806] 130EP-1 at 131 (indicating the smallest buffer zone is 140 feet from Landfill footprint to Permit Boundary); 130EP Worrall-1 at 14-15.

[807] 130EP-1 at 143.

[808] 130EP-1 at 143.

T. Waste Acceptance Plan

As part of the Application, 130EP was required to identify the sources and characteristics of the wastes that it proposed to receive, store, process, or dispose of at the Facility. The Application must also identify parameter limitations of each type of waste to be managed by the Facility.[809] Additionally, 130EP should include a brief description of the general sources and areas contributing waste to the Facility, with an estimate of the population or population equivalent served, as well as an estimated maximum annual waste acceptance rate projected for five years.[810]

1. 130EP

The Application indicates that the types of solid wastes that 130EP intends to receive at the Facility are municipal solid waste, special wastes, and Class 2 and 3 industrial waste. The Application also sets forth limiting parameters for the waste it will accept at the Facility, including concentrations of petroleum hydrocarbons; levels for Class 1 industrial solid waste; and the presence of free liquids, hazardous or radioactive waste, polychlorinated biphenyls, and chlorinated fluorocarbons.[811] Residences and businesses in Caldwell and surrounding counties are identified in the Application as the sources of waste to be received at the Facility.[812] The Application estimates the Facility will serve a population of 470,000 to 922,000 during the life of the Facility. Finally, according to the Application, the estimated rate of waste acceptance at the Facility for the next five years, on an annual basis, is 429,000 tons in Year 1; 435,778 tons in Year 2; 442,663 tons in Year 3; 449,658 tons in Year 4; and 456,762 tons in Year 5.[813]

130EP witness Billy Hobby testified that the waste acceptance rate estimates in the Application are reasonable, based on his experience in the MSW industry since 1990, including

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[809] 30 TAC § 330.61(b)(1).

[810] 30 TAC § 330.61(b)(1)(A), (C).

[811] 130EP-1 at 90.

[812] 130EP-1 at 42.

[813] 130EP-1 at 91.

the development of the market for disposal services; his review of the Application; his general knowledge of the solid waste management industry, and a drive-by at the Facility location.[814] Mr. Hobby stated that he generally keeps up with the MSW industry in Texas and has reviewed TCEQ annual reports on MSW in Texas for the last five years.[815]

130EP emphasizes that the rates of waste acceptance provided in the Application are estimates only, which is what the rule requires. According to Mr. Hobby, 30 TAC § 330.61(b)(1)(C) does not require accurate or precise information regarding the waste acceptance rate. However, he stated that to provide reasonable estimates as directed by the rule, the person estimating has to know the market, the volume of waste generated in the market, and the amount of such waste that can reasonably be expected to be disposed of at a new facility. In other words, Mr. Hobby testified, the estimates have to be justified.[816] He noted that TCEQ rules provide for modification of a permit if the actual acceptance rates are higher than estimated, and that estimated waste acceptance rates are not limiting parameters for a landfill. Mr. Hobby explained the difficulties involved in estimating waste acceptance in the future for a new MSW landfill, stating that it is "nearly impossible" to line up customers with significant waste volumes until the facility is built. He testified that the highly competitive nature of the waste business makes predictions regarding impacts of pricing, proximity, and fuel costs on market share and waste distribution very difficult.[817] 130EP contends that Mr. Hobby is qualified to opine as to the reasonableness of the Application's waste acceptance rate estimates, and that Protestants failed to offer any contradicting evidence regarding potential acceptance rates, despite TJFA's connection to the waste disposal industry through TDS.

2. Protestants

According to Protestants, the waste acceptance rates provided in the Application are unreasonably speculative, and 130EP does not identify the sources of the waste; therefore, the

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[814] 130EP Hobby-1 at 3-5; 130EP Hobby-2.

[815] 130EP Hobby-1 at 5; *see* 130EP Hobby-3 to 130EP Hobby-6.

[816] Tr. at 1793-1794.

[817] 130EP Hobby-1 at 5-6.

Application allegedly fails to meet the rule's requirements on both accounts. Protestants contend that Mr. Maroney, who signed and sealed the portion of the Application containing the waste acceptance rates, failed to conduct a proper investigation into whether the rates were accurate or based on reliable factual assumptions. Further, Protestants take the position that Mr. Hobby relied on no facts or sources in reaching his opinions, but solely upon his experience. They further claim that Mr. Hobby testified that the estimates did not have to be accurate, in violation of the general TCEQ rules requiring all information in the Application to be "accurate and complete."[818] Protestants maintain that there is no way to test the veracity of Mr. Hobby's opinion because he did not explain the basis for his determination that the waste acceptance rate estimates were reasonable. According to Protestants, the estimates are critical because they form the basis for determining traffic impacts, roadway capacity, the expected life of the Facility, necessary equipment, and general operations. Protestants claim that if the estimates are too high, the landfill may operate for a longer time, during which the floodplain may expand or additional development could put further pressure on the Site 21 Dam or impact traffic and compatible use.

3. ED

The ED determined that based on the information provided in the Application concerning sources and characteristics of waste and the waste acceptance rate estimates, coupled with Mr. Hobby's testimony regarding the reasonableness of the estimated rates, the Application meets the requirements of 30 TAC 330.61(b).

4. ALJs' Analysis

The waste acceptance plan in the Application complies with the requirements of 30 TAC § 330.61(b). The plan adequately identifies the sources and characteristics of wastes 130EP proposes to receive at the Facility. The rule does not require 130EP to specifically name its customers; it calls for general categorizations of where the waste will come from (*i.e.* residential, commercial, special wastes, Class 2 or 3 industrial solid waste). The Application provides this information, clearly indicating that the Facility will accept municipal solid waste, specific types

[818] *See* 30 TAC §§ 305.44(b), .59(g).

of special waste (including asbestos-containing materials and empty containers), and Class 2 and 3 industrial solid waste from residences and business in Caldwell and nearby counties. Further, the Application specifies the parameter limitations of each waste type to be managed at the Facility.

Further, Protestants mischaracterize the testimony provided by Mr. Hobby regarding the waste acceptance rate estimates. While he did respond "no" to a question regarding whether MSW rules require the Application to include accurate or precise information on waste acceptance rates at a landfill, his follow-up testimony made it clear that what he believes the rule requires is a reasonable estimated rate. This is a correct reading of the rule. Moreover, in signing the Application, Mr. Maroney was certifying that the information submitted, including the estimated waste acceptance rates, was true, accurate, and complete to the best of his knowledge and belief. As Mr. Hobby noted, the estimate could not be based on unrealistic speculation, but was required to be justified by market conditions. The evidence shows that Mr. Hobby has 20 years' experience in the solid waste disposal industry in Texas, keeps track of the industry through trade publications, and reviewed recent historical trends in the MSW industry. Given his experience and knowledge regarding the MSW market and his review of the Application, he was qualified to render an opinion as to the reasonableness of the estimated waste acceptance rates provided in the Application. The evidence is undisputed that estimates of waste acceptance rates are extremely difficult to make. There is no evidence in the record that shows the estimates in the Application are inaccurate or without justification. Under these circumstances, Mr. Hobby's reliance on his market experience and knowledge as a basis for his opinions on the estimates in the Application was reasonable. The Application properly includes reasonable and justified estimates of waste acceptance rates at the Facility for the first five years of its operation, in compliance with 30 TAC § 330.61(b)(1)(C).

U. Permit Duration

Normally, a permit is issued for the life of a facility, but it may be revoked, amended, or modified for good cause or the failure to meet operational standards.[819] However, if appropriate, a permit may be issued for a specific period of time.[820]

Protestants argue that it is appropriate to limit the duration of any permit issued in this case to five years. According to Protestants, the concerns with the floodplain and the Site 21 Reservoir warrant a five-year term so that the impacts of future development and extreme weather can be addressed if necessary. 130EP responds that those issues have already been addressed in the Application and are speculative at best.

The ALJs agree with 130EP that the evidence does not support a deviation from the normal practice of issuing a permit for the life of the Facility.[821] 130EP has met the TCEQ's requirements regarding the assessment of the floodplain. If conditions at the Site do change in the future, 30 TAC § 330.71(b) allows for the revocation, amendment, or modification of the permit for good cause.

V. Closure Plan, Post-Closure Plan, and Financial Assurance

The parties do not dispute the sufficiency of 130EP's closure or post-closure plans in their closing arguments and responses. Therefore, the ALJs will not discuss these issues and recommend that the Commission adopt the relevant findings of fact and conclusions of law proposed by 130EP on these issues.

The County states in its closing arguments that its financial assurance concerns are addressed in the section of its brief regarding Evidence of Competency.[822] However, a review of

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[819] 30 TAC § 330.71(b).

[820] 30 TAC § 330.71(c).

[821] 30 TAC § 330.71(b)-(c).

[822] County Closing at 20.

the Evidence of Competency section does not identify the County's concerns regarding financial assurance.[823] In its response to closing arguments, the County makes the following argument regarding financial assurance:

> Applicant has offered no financial assurance because it has no assets. As shown in the Applicant's closing argument brief, "130 Environmental Park has not owned or operated a solid waste site in Texas within the last ten years." "130 Environmental Park does not have a direct financial interest in any solid waste site other than the proposed Facility." Further, "[t]here is no compliance information about the Facility at the time the Executive Director developed the compliance history."[824]

TCEQ rules regarding financial assurance are found in chapters 37 and 330 of title 30 of the TAC.[825] The County does not refer to either chapter 330's cost estimate requirements or to chapter 37's financial assurance requirements. Nor does the County explain how 130EP's proposed financial assurance fails to comport with those rules. Without any explanation as to how the Application allegedly fails to meet the TCEQ's requirements regarding financial assurance, the County's argument is unavailing. Accordingly, the ALJs conclude that the evidence shows that 130EP has met the TCEQ's requirements regarding financial assurance in 30 TAC chapters 330 and 37.

W. Changes to Draft Permit

As stated in this PFD, the ALJs make several recommendations regarding changes to the Draft Permit. In the event the Commission finds that 130EP has met the necessary requirements for issuance of a permit, the ALJs recommend the following changes to the Draft Permit:

1. The Permit Boundary should be expanded to include the entire length of the access road from the entrance at US 183 to the entrance of the Facility at the current Permit Boundary.

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[823] *See* County Closing at 3-4

[824] County Response at 14 (citations to 130EP's closing arguments omitted).

[825] 30 TAC chs. 37, 330.

2. The Permit Boundary should be expanded to include the entire screening berm.

3. The operating hours for the Facility should be set at the standard hours provided in 30 TAC § 330.135.

The ALJs recommend that the Commission deny all other requests for changes to the Draft Permit as addressed throughout this PFD.

X. Assessment of Reporting and Transcription Costs

In this case, 130EP arranged and paid for the costs of a court reporter to attend the hearing and prepare a transcript, and as a result incurred $16,725.85 in transcription expenses.[826] TCEQ rules prohibit the assessment of any cost to a statutory party who is precluded by law from appealing any ruling, decision, or other act of the Commission.[827] Therefore, no costs may be assessed against the ED or OPIC. However, the other parties may be assessed a portion of the transcript costs. The factors to be considered in assessing how to allocate costs between the parties include:

(A) the party who requested the transcript;

(B) the financial ability of the party to pay the costs;

(C) the extent to which the party participated in the hearing;

(D) the relative benefits to the various parties of having a transcript;

(E) the budgetary constraints of a state or federal administrative agency participating in the proceeding; [and]

. . .

(G) any other factor which is relevant to a just and reasonable assessment of costs.[828]

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[826] 130EP-60.

[827] 30 TAC § 80.23(d)(2).

[828] 30 TAC § 80.23(d)(1).

130EP calculated the percentage of transcription pages attributable to each party's questioning at the hearing. 130EP notes that all the parties were represented by counsel and presented expert testimony as part of their direct cases, indicating an ability to pay. According to 130EP, 90% of the transcript pages are attributable to questions from 130EP, the District, Protestants, and the County,[829] and recommends that the transcription costs be allocated between those parties based on the following percentages of transcript pages attributable to each party:[830]

130EP	22%	$3,679.69
The District	6%	$1,003.55
The County	20%	$3,345.17
Protestants	52%	$8,697.44

Conversely, Protestants and the County contend that 130EP should bear the entire cost of the transcript because it will financially benefit from the cost if the Commission issues the permit. They argue that the District and the County are governmental entities, and taxpayers will have to bear the burden if transcription costs are assessed against these two parties. Also, EPICC is a citizen-run, non-profit organization made up almost entirely of rural landowners. Protestants further argue that TJFA should bear no transcription costs because it has already had to bear the expense of drilling borings at the Site due to 130EP's destruction of discoverable materials.[831]

Protestants also point out that 130EP chose a direct referral of this case to SOAH. Therefore, it presented 13 witnesses that were subject to cross-examination by the other parties. In contrast, Protestants only presented four expert witnesses, and the District and the County presented one expert each. In addition, according to Protestants, opposing parties made efforts to avoid repetitious questioning and redundant testimony. Therefore, in Protestants' and the County's opinions, 130EP should bear the entire cost of the transcript.[832]

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[829] The remaining 10% of the transcript pages were attributable to the ED and OPIC, according to 130EP. 130EP Closing at 33-34.

[830] 130EP Closing at 33-34.

[831] Protestants Closing at 94-95.

[832] Protestants Response at 66-67; County Response at 15-16.

The ALJs disagree with 130EP that apportioning costs between parties based on the number of transcript pages is an appropriate method of allocating costs. As Protestants point out, 130EP sought a direct referral of this case to SOAH, thereby requiring it to meet its burden of proof on all of the issues presented by the Application. However, the ALJs are cognizant that they gave the parties an opportunity to limit the issues, but the parties could not come to an agreement. Instead, the parties submitted three separate and varied lists of issues, which precluded any way of limiting the issues that 130EP had to prove at hearing.[833]

The ALJs conclude that 130EP, Protestants, the County, and the District have the financial ability to pay the costs because they retained counsel and presented expert testimony. Of these parties, all but the District participated fully in the hearing, with the District limiting its participation to issues related to the Site 21 Reservoir and its easement and not taking a position on whether the Commission should grant the permit. In addition, the District did not use the transcript in its post-hearing briefing. Conversely, 130EP, the County, and Protestants relied on the transcript in their closing arguments, responses, and replies. The ALJs also recognize that because 130EP destroyed discoverable materials, Protestants incurred additional expenses in conducting its own subsurface investigation at the Site. Considering all of these factors, the ALJs recommend that 130EP pay 50% of the transcript costs, and the County and Protestants each pay 25% of the costs, and conclude that such apportionment is fair and reasonable based on the factors set forth in 30 TAC § 80.23(d)(1).[834]

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[833] Order No. 3 (Aug. 26, 2015).

[834] Although a party, Mr. Pesl did not participate in the hearing, and the ALJs recommend that none of the transcription costs be assessed against Mr. Pesl.

IV. SUMMARY

As stated in this PFD, the ALJs conclude that 130EP has met the objective requirements of the applicable TCEQ rules and recommend that the Commission issue the Draft Permit, modified as set forth above. The ALJs noted several deficiencies in the Application, but leave it to the Commission to decide whether those deficiencies warrant a denial of the Application.

SIGNED February 17, 2016.

CASEY A. BELL
ADMINISTRATIVE LAW JUDGE
STATE OFFICE OF ADMINISTRATIVE HEARINGS

KERRIE JO QUALTROUGH
ADMINISTRATIVE LAW JUDGE
STATE OFFICE OF ADMINISTRATIVE HEARINGS

AN ORDER
GRANTING THE APPLICATION BY
130EP, L.L.C., FOR A
NEW TYPE I MUNICIPAL SOLID WASTE LANDFILL IN
CALDWELL COUNTY, TEXAS;
TCEQ Docket No. 2015-0069-MSW;
SOAH Docket No. 582-15-2082

On _____, the Texas Commission on Environmental Quality (Commission or TCEQ) considered an application by 130EP, L.L.C. (130EP) for a new Type I Municipal Solid Waste Landfill in Caldwell County, Texas. A proposal for decision (PFD) was presented by Administrative Law Judges (ALJs) Casey A. Bell and Kerrie Jo Qualtrough with the State Office of Administrative Hearings (SOAH), who conducted an evidentiary hearing concerning the application on August 15-26, 2016, in Austin, Texas.

After considering the ALJs' PFD, the Commission adopts the following findings of fact and conclusions of law:

I. FINDINGS OF FACT

Background

1. 130EP filed Application No. 2383 (the Application) for a permit to construct and operate the 130EP Landfill (Facility).
2. The Facility will be a new Type I municipal solid waste landfill facility located in Caldwell County, Texas.

3. The land on which the Facility will be constructed and operated (Site, Permit Boundary, or Facility Boundary) consists of 519.746 acres located in northern Caldwell County, approximately 0.6 miles east of State Highway 130 (SH 130) and US Highway 183 (US 183) and 0.7 miles north of FM 1185, more than two miles north of the city limits of Lockhart, Texas.

4. The Site is part of a 1,229.076-acre tract of land (Hunter Tract) owned by Cathy Moore Hunter.

5. The Facility will include a municipal solid waste landfill unit (Landfill), with a waste management unit boundary (Landfill footprint) of approximately 202 acres, a large item storage area, a reusable materials staging area, a citizens' convenience center, a used/scrap tire storage area, a wood waste processing area, a leachate storage facility, and a truck wheel wash.

6. The 130EP Transfer Station is a Type V municipal solid waste transfer station authorized by TCEQ Registration No. 40269 (issued by TCEQ on February 5, 2015) with a facility boundary consisting of the same 519.746 acres as the Site.

7. 130EP filed the registration application for the 130EP Transfer Station with the TCEQ on September 4, 2013.

Procedural History

8. 130EP filed Parts I and II of the Application on September 4, 2013, which the Executive Director (ED) of the TCEQ declared administratively complete on September 27, 2014.

9. 130EP filed Parts III and IV of the Application on February 18, 2014, and the ED declared those parts administratively complete on February 28, 2014.

10. The Notice of Receipt of Application for Land Use Compatibility Determination for a Municipal Solid Waste Permit for Parts I and II of the Application was published on October 24, 2013, in the *Austin American-Statesman* in Travis County, Texas, and in the *Caldwell County Guardian*, the *Lockhart Post-Register*, and in Spanish in *El Mundo*, in Caldwell County, Texas. The Notice of Receipt of Application and Intent to Obtain Municipal Solid Waste Permit was published on April 17, 2014, in those same newspapers.

11. On June 12, 2014, the ED held a public meeting in Lockhart, Texas, regarding the Application. Notice of that meeting was published on May 22, May 29, and June 5, 2014, in the *Caldwell County Guardian* and the *Lockhart Post-Register*.

12. The ED determined that the Application was technically complete on October 28, 2014.

13. The Notice of Application and Preliminary Decision was published on December 4, 2014, in the *Caldwell County Guardian*, the *Lockhart Post-Register*, and in Spanish in *El Mundo*.

14. The ED held a second public meeting on January 8, 2015, in Lockhart, and notice of that meeting was published on December 18, December 25, 2014, and January 1, 2015, in the *Lockhart Post-Register*.

15. The public comment period for the Application ended on January 8, 2015.

16. On January 16, 2015, 130EP requested that the Application be referred to SOAH for a contested case hearing.

17. The ED prepared a draft permit (Draft Permit), a technical summary of the Application, and a compliance history report.

18. The TCEQ's Chief Clerk referred the Application directly to SOAH for a hearing on whether the Application complies with all applicable statutory and regulatory requirements.

19. On February 4, 2015, the TCEQ issued a Notice of Hearing regarding the Application, which was published on February 19, 2015, in the *Lockhart Post-Register* and the *Caldwell County Guardian* and mailed to the required persons on February 23, 2015.

20. On March 26, 2015, SOAH ALJs Casey A. Bell and Sharon Cloninger held a preliminary hearing in Lockhart, Texas. The ALJs found that notice had been properly given and that SOAH had jurisdiction over this matter. The ALJs further admitted the following persons and entities as parties to the contested case hearing: Environmental Protection in the Interest of Caldwell County (EPICC), TJFA, L.P. (TJFA), Caldwell County (County), Plum Creek Conservation District (District), James Abshier, Claudia and Robert Brown, Ann and Troyce Collier, Byron Friedrich, the King Family Trust, Brenda Martin, Frank Sughrue, Bill and Pam Young, and Joe Colley. Ben Pesl was also admitted as a party but did not participate in the contested case hearing.

21. On April 9, 2015, the ED filed his Amended Response to Public Comments (RTC) addressing the comments submitted to the TCEQ regarding the Application. During preparation of the RTC, the ED requested additional information, and 130EP supplemented the Application on March 17, 2015, in response.

22. The parties conducted discovery during 2015 and 2016. As a result of a discovery dispute, Protestants sought leave to enter the Site to conduct geophysical probes of 130EP's piezometers; drill up to 15 borings on the Site; perform in-situ testing of the soils at the Site, including tests of hydraulic conductivity; and collect samples to be tested at a lab. The ALJs allowed these parties to conduct discovery on the Hunter Tract, which they did during February and March 2016. In addition, 130EP conducted additional investigations, including soil borings and laboratory testing of collected soil samples. 130EP subsequently submitted the additional information to the ED as its May 2016 supplement to the Application.

23. On July 26, 2016, Protestants filed a motion seeking to strike certain portions of 130EP's prefiled testimony. The basis of Protestants' motion was 130EP's alleged spoliation, or destruction, of discoverable material regarding its geologic interpretation and

characterization of the subsurface at the Site. On August 3, 2016, 130EP responded to Protestants' motion and disagreed with their assertions. However, an affidavit of John Michael Snyder, P.G.m confirmed that 130EP had destroyed boring samples and field logs pursuant to its consultant's retention policy and need for storage space.

24. On August 11, 2016, the ALJs issued Order No. 26, finding that 130EP had a duty to reasonably preserve discoverable material. 130EP breached its duty because it knew or should have known that there was a substantial chance that a contested case hearing on the Application would take place and that documents in its possession or control would be material and relevant to the hearing. By destroying the field logs and soil samples, 130EP precluded Protestants from conducting full discovery.

25. The ALJs overruled Protestants' motion to strike and admitted 130EP's prefiled evidence. The ALJs determined that striking 130EP's prefiled testimony was not appropriate because any remedy must be proportionate to the prejudice suffered by Protestants due to the destruction of the discoverable material. Because Protestants conducted an investigation at the Site outside of the discovery period as a result of their prior spoliation assertions, no other action was necessary to remedy the prejudice caused by 130EP's destruction of discoverable material.

26. On August 15-26, 2016, ALJs Bell and Kerrie Jo Qualtrough convened the evidentiary hearing at SOAH in Austin, Texas. The parties filed closing arguments on October 24, 2016, and responses to those closing arguments on November 28, 2016.

27. To accommodate a full discussion of the issues, the ALJs allowed the parties to submit reply briefs to respond to new arguments raised in Protestants' response to closing arguments. The parties submitted reply briefs on December 22, 2016, and the evidentiary record closed on that date.

Sufficiency of Property Rights

28. The current owner of the Site is Cathy Moore Hunter, a natural person.

29. 130EP entered into an agreement with Ms. Hunter for the purchase of the Hunter Tract. Prior to the development and operation of the Facility, 130EP will purchase the Hunter Tract, including the Site, from Ms. Hunter.

30. 130EP will own and operate the Facility.

31. The Application includes an affidavit executed by Ms. Hunter acknowledging: (1) the State of Texas may hold the property owner of record either jointly or severally responsible for the operation, maintenance, and closure and post-closure care of the Facility; (2) the owner of the Site has a responsibility to file in the deed records of Caldwell County an affidavit to the public advising that the Site 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 30 Texas Administrative Code (TAC) § 330.19; and (3) the Facility owner or operator and the State of Texas shall

have access to the Site during the active life and post-closure care period after closure of the Facility for the purpose of inspection and maintenance.

32. The Application includes a boundary metes and bounds description of the Site and a drawing of that description, signed and sealed by a registered professional land surveyor.

33. The identifying reference of the current ownership record for the Site is Volume 533, Page 637 in the Official Public Records of Real Property of Caldwell County, Texas.

34. The District owns an easement on the Hunter Tract for the use and operation of the Site 21 Reservoir and Dam owned and operated by the District.

35. The Site 21 Reservoir and Dam are used for flood control to protect human life and property downstream.

36. The Application does not include the District's ownership of the easement on the Hunter Tract on the landowners list in the Application.

37. The District had actual notice of the Application and participated in the contested case hearing.

38. No solid waste unloading, storage, disposal, or processing operations shall occur within any easement, buffer zone, or right-of-way that crosses the Site.

Legal Authority, Evidence of Competency, and Compliance History

39. 130EP is a Georgia limited liability company that filed an application for registration with the Texas Secretary of State on August 20, 2013.

40. The Texas Secretary of State certified that 130EP is in existence in Texas.

41. Green Group Holding, L.L.C. is the sole member of 130EP, but it has no separate ownership interest in the Facility, the Site, or the Hunter Tract.

42. The Application accurately reflects that 130EP has not owned or operated a solid waste site in Texas within the last 10 years.

43. The Application accurately reflects that 130EP does not have a direct financial interest in any solid waste site other than the Facility.

44. The Application includes the names of the principals and supervisors of 130EP's organization, together with previous affiliations with other organizations engaged in solid waste activities.

45. The Application contains the number and size of each type of equipment 130EP will dedicate to Facility operations.

46. In a Compliance History Report prepared on October 3, 2014, the ED evaluated the compliance history of the Facility and classified the Facility and 130EP.

47. There was no compliance information regarding the Facility at the time the ED developed the October 3, 2014 Compliance History Report.

48. The compliance history classification for 130EP and the Facility is designated as "unclassified."

Transportation, Traffic, and Airports

49. All vehicles traveling to and from the Facility will use northbound US 183 north of its intersection with FM 1185 and the access road for the Facility.

50. The access road for the Facility will extend from the east side of US 183 north of its intersection with FM 1185, across privately-owned property for roughly a mile, through the Facility entrance gate at the Permit Boundary, and continue past the scale house and scales, the citizens' convenience center, and the truck wheel wash.

51. Roadways within one mile of the Facility that will be used for entering or leaving the Facility are shown on general locations maps in Part II of the Application: US 183, SH 130, and the grade-separated intersections of FM 1185 and Schuelke Road with US 183, all of which are hard-surfaced paved roads with asphalt pavement; and the access road for the Facility, which will be 40-feet wide and use the same section of asphalt pavement as US 183.

52. 130EP prepared a Traffic Impact Analysis (TIA) and submitted it on May 5, 2014, to the Texas Department of Transportation (TxDOT), the governmental entity with responsibility over SH 130 and US 183.

53. TxDOT approved the TIA on November 25, 2014.

54. The TIA included the volumes of background vehicular traffic on access roads within one mile of the proposed Facility, both existing and expected, during the life of the proposed Facility.

55. Reasonable projections of the volume of traffic expected to be generated by the Facility on the access roads within one mile of the Facility were set out in the TIA.

56. Vehicles traveling to and from the Facility and will consist of waste route collection trucks, waste transfer trucks, small waste load vehicles, recycling trucks, miscellaneous trucks, and passenger cars.

57. The number of vehicles traveling to and from the Facility on a daily basis is projected to increase each year from the time the Facility begins operations in Year 1 until the time the Landfill reaches capacity, estimated to be Year 44.

58. The projected numbers of each type of vehicle traveling to and from the Facility on a daily basis in Year1/Year 44 are: waste route collection trucks (110/216), waste transfer trucks (15/29), small waste load vehicles (25/49), recycling trucks (40/78), miscellaneous trucks (4/8) and passenger cars (40/79). The total projected number of vehicles traveling to and from the Facility on a daily basis is 234 in Year 1 and 459 in Year 44.

59. The Facility will contribute approximately 3.5% of the total traffic on US 183 in the area of the Site.

60. The existing roadway infrastructure, including northbound US 183, has adequate capacity to accommodate the traffic generated by the Facility.

61. On March 16, 2016, TxDOT issued a driveway permit authorizing the construction of the access road for the Facility and connection to northbound US 183.

62. As part of its review and consideration of the driveway permit request for the access road for the Facility, TxDOT considered issues related to structural integrity of the public roadways and the access road.

63. TxDOT's driveway permit authorized 130EP to construct a driveway with a deceleration lane on northbound US 183, 1,540 feet north of the US 183 intersection with FM 1185. TxDOT did not require an acceleration lane for traffic turning onto northbound US 183.

64. 130EP properly coordinated with TxDOT regarding traffic and location restrictions.

65. The proposed location of the Facility access road will provide adequate sight distance for vehicles exiting the Facility and turning onto US 183.

66. The roads to access the Facility will be available and adequate.

67. The access road from US 183 to the Permit Boundary crosses private property but is not included within the Permit Boundary in the Draft Permit.

68. The Draft Permit lists all of the "Facilities Authorized" by the permit, including the access road. All authorized facilities are within the Permit Boundary, except for the entire length of the access road.

69. 130EP has not justified why the entire length of the access road is not included within the Permit Boundary, even though it is a facility authorized by the permit.

70. The entire length of the access road from US 183 should be included within the Permit Boundary.

71. The Application includes documentation of coordination with the Federal Aviation Administration for compliance with airport location restrictions.

72. There is no airport within a six-mile radius of the Site.

Geology and Soils

73. The Geology Report was prepared, signed, and sealed by John Michael Snyder, P.G., a qualified groundwater scientist with Biggs and Mathews Environmental, Inc. (BME).

74. The Geology Report identifies sources and references for the information included within it.

75. The Geology Report includes a description of the regional geology in the area of the Site, along with appropriate portions of published map series, including the Geologic Map of Texas, the Bureau of Economic Geologic Atlas of Texas, and mapping from the United States Geological Survey Geologic Database of Texas.

76. The Geology Report includes a description of the generalized stratigraphic column in the area of the Site, with specific information on each geologic unit.

77. The Geology Report includes a regional stratigraphic cross-section.

78. The Geology Report includes a description of the geologic processes active in the vicinity of the Site, including information about faulting and subsidence.

79. The Geology Report includes the results of investigations of subsurface conditions at the proposed location of the Landfill.

80. The Geology Report describes 32 borings drilled on the Site on behalf of 130EP in 2013 (the 2013 borings) and 11 borings drilled on the Site in 2016 (the 2016 borings) during boring programs supervised by Mr. Snyder to investigate, characterize, and test soils and to characterize groundwater (collectively referred to as the Soil Borings).

81. Seventeen additional borings were drilled and completed as piezometers to investigate and measure levels of groundwater at the Site.

82. The Soil Borings were drilled to depths of up to 130 feet below ground surface (bgs) using established field exploration methods, including rotary drilling with drilling fluid introduced when the material became too hard to drill dry.

83. All of the Soil Borings were at least five feet deeper than the elevation of the deepest excavation proposed for the Landfill. Eighteen of the 2013 borings and four of the 2016 borings were drilled to a depth at least 30 feet below the deepest excavation planned at the Landfill.

84. Samples were collected from the Soil Borings using Shelby tubes and split spoons and, in several borings where the presence of occasional cobbles and pebbles in the shallow subsurface clay prevented pushing tubes, samples at depths of one to seven feet bgs were collected from auger cuttings.

85. The number and locations of the Soil Borings were sufficient to establish subsurface stratigraphy, to obtain adequate samples for soil testing, and to determine geotechnical properties of the soils and rocks beneath the Facility.

86. The Geology Report includes boring logs, maps, and tables that provide detailed information for all of the 2013 borings and the piezometers.

87. The boring logs in the Geology Report contain all of the information required by 30 TAC § 330.64(e)(4).

88. The Geology Report includes narrative discussions describing Mr. Snyder's interpretations of the subsurface stratigraphy based upon the field investigation work BME conducted at the Site.

89. The boring logs included in the Geology Report were prepared by a qualified professional geoscientist (Mr. Snyder) and geotechnical engineer (Gregory W. Adams, P.E.) based on their personal observations of the samples and lab test results from such samples.

90. The Geology Report includes cross-sections, prepared using the Soil Borings and piezometers, depicting the generalized strata in the subsurface at the Site.

91. Regional stratigraphy includes geologic units of the Cretaceous Gulf Series Navarro Group, the Paleocene Midway and Eocene Wilcox Groups and Quaternary deposits of the Leona Formation.

92. The regional stratigraphic column in the Geology Report includes the Leona Formation, and the boring logs in the Geology shows the characteristic pebbles and gravel found in samples from all but one of the 43 borings drilled by BME.

93. The Site is located on an outcrop of the Midway Group. The Midway in the area consists primarily of dense, silty, fat clay (high plasticity inorganic clay) and, based on published literature, is between 400 and 600 feet thick beneath the Site.

94. Beneath the Midway there are several hundred feet of low permeability clays, marls, and limestones of the Navarro, Taylor, Eagle Ford, and Austin formations.

95. Mr. Snyder conducted a fault study of the Site based on the criteria in 30 TAC § 330.555, which found no evidence of faulting.

96. The area of the Site is not experiencing withdrawal of crude oil, natural gas, sulfur, or significant amounts of groundwater.

97. The area of the Site is not subject to differential subsidence, and there is no evidence of subsidence in the area.

98. Locations of known (mapped) faults within several miles of the Site are shown on the portions of regional geology maps included in the Geology Report and are all located more than 200 feet from the proposed landfill waste management unit boundary.

99. The faults located in the area of the Site are documented to have last moved 5 to 56 million years ago, well before the Holocene Epoch (the most recent 11,700 years).

100. There is no fault within 200 feet of the Site that has had displacement during the Holocene Epoch.

101. The logs of the Soil Borings and laboratory data from soil samples did not indicate the presence of poor foundation conditions such as soft clay or loose sand beneath the

Landfill. The hand penetrometer values and unit dry weight results indicate that the subsurface clays are hard.

102. The settlement and heave analyses presented in the Application show that the Landfill components will not undergo detrimental differential settlement.

103. Evidence of mass movement of natural formations of earthen material on or in the vicinity of the Site was not observed at the Site, in the Soil Borings, or on geologic maps.

104. Evidence of karst terrain was not observed at the Site, in the Soil Borings, or on geologic maps of the area.

105. The Site is not located in a seismic impact zone and is not unstable, as those terms are defined by 30 TAC §§ 330.557 and 330.559, respectively.

106. Silty, fat, highly plastic clay was the dominant material encountered in all of the Soil Borings.

107. Based upon the investigation work conducted at the Site, the subsurface stratigraphy consists of three strata (beginning at the surface and continuing downward): Stratum I is up to 10 feet thick and consists primarily of brown to tan, silty fat clay with occasional discontinuous occurrence of small rock pieces, including cobbles (larger than about three inches), pebbles (between about one-quarter inch and three inches) and some gravel (smaller than pebbles). Stratum II ranges in thickness from about 30 to 60 feet and consists of weathered silty fat clay. Stratum III consists of hard, dense, dark gray silty fat clay, up to 77 feet of which was encountered in the Soil Borings.

108. The Geology Report includes laboratory report data describing the characteristics and geotechnical properties of soil samples from Stratum I, Stratum II, and Stratum III based on geotechnical tests performed in accordance with industry practice and recognized procedures, including permeability, sieve analysis, Atterberg limits, and moisture content.

109. The Geology Report includes discussion with conclusions about the suitability of the soils and strata for the uses for which they are intended. The vast majority of the soils at the Site will be suitable for use in construction and operation of the proposed Facility.

110. The May 2016 supplement to the Application presents information from the 2016 borings that is relatively consistent with the information obtained from borings drilled during the original subsurface investigation in 2013.

111. The May 2016 supplement includes minor revisions to several 2013 boring and piezometer locations and elevations and several tables and drawings.

112. BME's methodology in drilling the Soil Borings, sampling the soil, analyzing the samples and maintaining this information did not violate any TCEQ rule, was adequate for the work performed, and did not result in unreliable or inaccurate findings or conclusions.

113. The findings and conclusions set forth in the Geology Report, including the descriptions of the soil samples and geotechnical properties of the subsurface materials at the Site, are sufficiently complete, accurate, and reliable.

114. 130EP did not submit false information in the Geology Report.

115. Protestants conducted a subsurface investigation at the Site in 2016 that involved drilling 10 borings, taking 292 soil samples from those borings, and lab testing 11 of those soil samples.

116. The soil samples obtained by Protestants in 2016 and the results from testing on 11 of those samples generally support the basic findings and conclusions set forth in the Geology Report regarding the subsurface characteristics at the Site.

117. 130EP completed the 2013 borings before the plan for those borings prepared by Mr. Snyder was approved by the ED.

Hydrogeology

118. The Geology Report includes a description of the regional aquifers in the vicinity of the Site, the Carrizo-Wilcox and Leona formations, and included: those aquifers' associations with geologic units identified at the Site; their composition; their hydraulic properties; their water table or artesian conditions; their hydraulic connections; the available potentiometric surface map for the Carrizo-Wilcox; their estimated groundwater flow rates; their typical total dissolved solid content values; their areas of recharge; and the present use of their groundwater.

119. The Application also identified the five water wells within one mile of the Site and those wells' location and aquifers.

120. The Wilcox Formation outcrops east of the Site and in a northeast trending belt across Caldwell County. The Carrizo Formation occurs east and southeast of the outcrop of the Wilcox, approximately 12 miles southeast of the Site. The aquifer portions of these two formations are collectively known as the Carrizo-Wilcox.

121. The Carrizo-Wilcox is characterized by the Texas Water Development Board (TWDB) as a major aquifer.

122. Most groundwater produced in northern Caldwell County is from wells completed in the Carrizo-Wilcox Formation, located east of the Site.

123. The primary outcrop of the Leona Formation, from which some groundwater is produced, is located several miles south of the Site.

124. The Leona Formation is not characterized by the TWDB as either a major or minor aquifer.

125. Published literature shows no aquifers located beneath the Site.

126. There is very little groundwater present in the geologic formations at the Site, down to a depth of several hundred feet bgs.

127. Groundwater was not encountered during drilling in any of the Soil Borings prior to the introduction of drilling fluid.

128. Water level readings were taken in each of the 17 piezometers every month from October 2013 until May 2016. Water has been observed in only three of the 17 piezometers, all screened at the interface between Stratum II and Stratum III; one of those has been dry since November 2013, and another one has been dry since August 2015.

129. The Application included detailed data regarding the depths at which groundwater was encountered in the three piezometers.

130. Groundwater was only encountered in one of the borings drilled by Protestants, and it was found at a depth similar to the depth at which water was found in a nearby piezometer.

131. Laboratory permeability tests were performed on undisturbed soil samples from the Soil Borings in accordance with 30 TAC § 330.63(e)(5)(B), the applicable appendices from the United States Army Corps of Engineers (USACE), and applicable American Society of Testing and Materials standards.

132. There was not enough water encountered in any of the 17 piezometers to perform in-situ permeability testing.

133. Small amounts of groundwater occur at the Site in Stratum II at or just above its interface with Stratum III, and this zone is the uppermost aquifer below the Site as identified by the Application. There is no other aquifer beneath the Site, and no lower aquifers are hydraulically connected to the uppermost aquifer, as stated in the Application.

134. Groundwater at the Site does not occur in sufficient amounts at the Site to supply usable quantities to wells that could support industrial, irrigation, domestic, or livestock use.

135. The volume of water observed in the piezometers was sufficient for sampling and analysis in accordance with TCEQ Municipal Solid Waste rules.

136. The zone of groundwater occurrence on the Site satisfies the criteria used by the TCEQ Municipal Solid Waste Permits Section for characterization as an aquifer.

137. The zone of groundwater occurrence at the Site is not characterized as a major or minor aquifer by the TWDB, and there are no known wells completed in this zone within one mile of the Site.

138. The limited hydraulic conductivity of and lack of weathering effects in Stratum III result in its functioning as an aquitard or lower confining unit to the groundwater in Stratum II, thus creating a pathway for groundwater to move at the interface of Stratum II and Stratum III.

139. The differences in elevation of the Stratum II-Stratum III interface result from the topography of the Site, as the shape of the interface strongly resembles the surface topography.

140. Groundwater flow from the landfill footprint area may occur to the northwest, west, southwest, south, southeast, and east, as set forth in the Application.

141. The Application identifies the rates of groundwater flow at the Site.

Groundwater Monitoring

142. Any groundwater at the Site will move through the subsurface very slowly.

143. Groundwater at the Site could move more readily in Stratum II than in Stratum III.

144. In the event any contaminants were to migrate out of the Landfill and enter groundwater at the Site, the groundwater could move slowly downward and outward from the Landfill in Stratum II material above Stratum III.

145. A groundwater monitoring system for the Facility was designed by Mr. Snyder and is described in the Groundwater Sampling and Analysis Plan included in the Application.

146. The Groundwater Sampling and Analysis Plan includes a topographical map, an analysis of the most likely pathway(s) for pollutant migration in the event of a liner leak, and detailed plans and an engineering report describing the monitoring program.

147. The point of compliance groundwater monitoring system for the Facility will include 25 groundwater monitoring wells located downgradient from the Landfill footprint, around the northwest, west, southwest, south, southeast, and east perimeter of the Landfill, and spaced no more than 600 feet apart.

148. The groundwater monitoring system for the Facility will include one groundwater monitoring well located upgradient from (northeast of) the Landfill footprint.

149. The groundwater monitoring wells will be constructed with well screens (perforated portion of the pipe in the well where water can enter the well to be collected for laboratory analysis) starting at the Stratum II/Stratum III interface and extending upward for 20 feet.

150. The downgradient monitoring wells will be located at depths and locations to allow for the detection of contaminants in the uppermost aquifer.

151. The monitoring system has a sufficient number of wells at appropriate locations and depths to yield representative samples from the uppermost aquifer and includes a background monitoring well and wells installed to allow determination of the quality of groundwater passing the point of compliance and to ensure detection of groundwater contamination in the uppermost aquifer.

152. The groundwater gradient evaluation included in the Application shows that groundwater would flow in a southerly or easterly direction from the south end of the Landfill, and not toward the area 200 feet southeast of the Landfill footprint that could physically serve as a pathway for leachate migration.

153. The groundwater modeling system calls for several wells to be installed between the Landfill footprint and the area 200 feet southeast of the Landfill footprint that could physically serve as a pathway for leachate migration.

154. The groundwater monitoring system is adequately designed to detect contamination in the uppermost aquifer.

155. The site-specific technical data used by Mr. Snyder in the development of the groundwater monitoring system was sufficiently accurate and reliable.

General Facility Design

156. Access to the Facility will be controlled by a perimeter fence consisting of barbed wire, woven wire, wooden fencing, plastic fencing, pipe fencing, or other suitable material located along the Facility Boundary, and a locking gate at the Site entrance.

157. The gate will be constructed of suitable fencing materials and will be locked when the Landfill is not accepting waste.

158. The Application describes how the fencing and gate at the Facility should prevent the entry of livestock, protect the public from exposure to potential health and safety hazards, and discourage unauthorized entry or uncontrolled disposal of solid waste or prohibited materials.

159. The Application contains a generalized process design and working plan of the Facility.

160. The Application contains flow diagrams indicating the storage, processing, and disposal sequences for the various types of wastes received at the Facility.

161. The Application contains schematic view drawings showing the various phases of collection, separation, processing, and disposal for the types of wastes to be received at the Facility.

162. The Application contains ventilation and odor control measures for each storage, separation, processing, and disposal unit at the Facility.

163. The Application contains generalized construction details of all storage and processing units, including slabs and subsurface supports, and locations and engineering design details of all containment dikes or walls.

164. The Application includes general details provided regarding the size of the slabs, the number and size of the rebar and supports, and additional provisions for the subsurface structures.

165. Grease, oil, and sludge will not be accepted or stored at the Facility.

166. The Application describes how all liquids resulting from the operation of solid waste processing facilities will be disposed of.

167. Processing facilities at the Site will be designed to facilitate proper cleaning by controlling surface drainage in the vicinity of the Facility to prevent surface water runoff onto, into, and off of the treatment area, and including walls and floors of masonry, concrete, or other hard-surfaced materials in operating areas.

168. The surface water drainage design will manage runon and runoff during the peak discharge from the 25-year, 24-hour storm event to minimize surface water running onto, into, and off of waste processing and storage areas and prevent the off-site discharge of waste and feedstock material.

169. The Facility has been designed to keep contaminated surface water (water that may have come into contact with waste) separated from uncontaminated stormwater runoff.

170. Contaminated water will not be discharged to the surface water management system to be constructed at the Site.

171. The Application indicates that all contaminated water, including surface or groundwater that becomes contaminated, will be managed in a controlled manner and handled, stored, treated, and disposed of in accordance with 30 TAC § 330.207.

172. Prior to commencing operations at the Facility, 130EP will submit a notice of intent to operate pursuant to a general stormwater discharge permit (Texas Pollutant Discharge Elimination System (TPDES) General Permit No. 050000).

Waste Management Unit Design

173. The Application describes how the Facility is designed for rapid processing and minimum detention of solid waste, and states that solid waste capable of creating health hazards or nuisances will be stored indoors, transferred, or processed promptly, and not allowed to cause nuisances or health hazards.

174. The Application provides design features for the waste storage units that will prevent the creation of nuisances and public health hazards due to odors, fly breeding, or harborage of other vectors.

175. The Application adequately explains how storage and transfer units at the Facility are designed to control and contain spills and contaminated water from leaving the Facility.

176. The Facility will have all-weather access from US 183, a publically-owned road.

177. The Facility will have all-weather access from the entrance of the Facility to unloading areas used during wet weather.

178. The Facility access road will be constructed of crushed stone, gravel, concrete rubble, masonry rubble, wood chips, or other similar materials to provide access to the disposal area during all weather conditions.

179. Tracking of mud onto public roads will be minimized by the all-weather surfaces of the Facility access road and the entrance road and a truck wheel wash.

180. The development method for the Landfill will be a combination of area-excavation fill followed by aerial fill to the Landfill completion height.

181. The elevation of deepest excavation will be 501.9 feet mean sea level (ft/msl).

182. The maximum elevation of final cover will be 736 ft/msl.

183. The maximum elevation of disposed waste will be 731.5 ft/msl.

184. The total volume available for waste disposal will be approximately 33.1 million cubic yards (waste and daily cover), which will provide an estimated 44 years of Site life.

185. The Application contains calculations and assumptions for the waste volume, rate of deposition, and Site life estimate.

186. The Application contains a sufficient number of landfill unit cross-sections consisting of plan profiles across the Facility that accurately depict the proposed depths of all fill areas within the Facility.

187. The landfill unit cross-sections show boring logs obtained from the soils report on the profiles.

188. Construction and design details of compacted perimeter or toe berms are included on the fill cross-sections.

189. The Application contains a properly-prepared liner quality control plan.

190. The vast majority of the excavated soils at the Site meet the requirements for use as source materials for the Landfill liner and cover.

191. No soil balance test was required or warranted to meet regulatory requirements regarding the waste management unit design.

192. The two-dimensional model used by Mr. Adams for his slope stability analysis is more conservative than a three-dimensional model; further, it is the standard in the industry and has been for many years, and it is successful in adequately predicting potential failures of landfill slopes.

193. Inclusion of the side slope swales into the slope stability model would not have made a significant difference in terms of the calculated safety factors.

194. No specific stability analysis was necessary for the side slope swales themselves, and the the likelihood of a collapse of the liner due to a breach of one such swale causing a large-scale failure of the Landfill slope is extremely small.

195. The soil stability analysis included in the Application properly evaluates the stability of the Landfill and adequately predicts the failure potential of the excavation slope, liner slope, interim waste slope, final waste slope, and final cover slope.

Landfill Gas Monitoring

196. The Application includes a landfill gas management plan (LGMP), developed by J. Heath Parker, as required by 30 TAC § 330.63(g).

197. Mr. Parker has managed and participated in the design of landfill gas collection and control systems for over 50 landfills in ten different states, including Texas, and has prepared and submitted to TCEQ original and amended landfill gas management plans for 20 to 30 landfills, all of which were approved.

198. The LGMP describes the mechanisms to be employed at the Facility for quarterly monitoring of landfill gas, including sufficient information regarding the time lines and procedures for installation and a sufficient description of monitoring and maintenance procedures.

199. The LGMP includes a perimeter methane monitoring system consisting of 33 permanent monitoring probes outside the Landfill footprint and inside the Facility Boundary to detect any landfill gas migration.

200. The probes are designed to monitor soil strata above the lowest current or planned elevation of waste within 1,000 feet of the probe.

201. The monitoring probes will be no more than 600 feet apart and will be closer together (300 feet apart) on the northern side of the Facility given the nearby residences there.

202. The probes are air and water tight and will not be affected by surface water.

203. Placement of some of the probes within the 100-year floodplain, in order to keep proper spacing, was appropriate.

204. The LGMP includes provisions for three continuous methane monitors to be located in the gatehouse, the maintenance building, and the transfer station.

205. The methane monitors will provide audible alarms if methane concentrations exceed 1.25% methane by volume.

206. There are no underground utility lines or easements that enter or exit the Facility boundary.

207. The LGMP includes procedures and standards for methane monitoring.

208. Soil conditions, hydrogeologic and hydraulic conditions surrounding the Facility, the location of Facility structures and property boundaries, and the provisions of 30 TAC § 330.371 were considered in determining the type and frequency of methane monitoring.

209. The LGMP describes the actions that the Facility must take if methane levels are detected in excess of the prescribed limits.

210. The LGMP includes a back-up plan to be used if any installed monitoring probes or continuous monitoring devices become unusable or inoperative.

211. The LGMP provides for including applicable documentation, including monitoring records for landfill gas monitoring probes, in the site operating record.

212. Mr. Parker's consideration of the soil and hydrogeological conditions at the Site as described in the Geology Report in developing the LGMP was reasonable.

213. Mr. Parker evaluated the hydraulic conditions surrounding the Facility in determining the type and frequency of landfill gas monitoring, although they did not impact the design of the LGMP.

214. The possibility of any landfill gas contamination of intermittent streams on the Site is slight.

Endangered or Threatened Species

215. The Application contains an evaluation of endangered or threatened species for the Hunter Tract.

216. 130EP contacted the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department for locations and specific data relating to endangered and threatened species.

217. Five threatened or endangered species have the potential to occur within the Hunter Tract: the wood stork, the golden orb, the Texas pimpleback, the Texas horned lizard, and the timber rattlesnake.

218. The wood stork, the golden orb, the Texas pimpleback, the Texas horned lizard, and the timber rattlesnake are not federally-listed threatened or endangered species, and no critical habitat has been designated for those species.

219. Portions of the study area that may provide suitable habitat for the state-listed wood stork, golden orb, and Texas pimpleback are limited to the aquatic habitat in the Site 21 Reservoir. This potential aquatic habitat is away from the area that would be impacted by development of the Facility. Therefore, destruction or adverse modification of those potential habitats is not expected to occur.

220. The Site Operating Plan in the Application includes a species protection plan that provides criteria for the protection of endangered or threatened species that have the potential to occur within the Hunter Tract.

221. The Facility and its 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.

Wetlands

222. The Application includes a wetlands determination under applicable federal, state, and local laws and identifies wetlands located within the Facility Boundary.

223. The USACE issued a June 20, 2014 letter approving 130EP's wetlands jurisdictional determination and authorizing construction of the roadway crossings of streams associated with the access road for the Facility pursuant to Nationwide Permit No. 14.

224. The federal definition of "wetlands" in 33 C.F.R. § 328.3(c)(4) is "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

225. The applicable state definition of "wetland" is nearly identical to the federal definition, but the state definition does not include man-made wetlands of less than one acre.

226. The state definition of "wetland" does not conflict with the federal definition in a municipal solid waste permitting situation.

227. There are 20 areas, totaling 1.46 acres in size, of jurisdictional wetlands located within the Facility Boundary.

228. There are 12 areas, totaling 0.68 acres in size, of non-jurisdictional wetlands located within the Landfill footprint, each of which is a man-made wetland of less than one acre.

229. There are no wetlands located within the Landfill footprint that meet the state's definition of wetland.

230. The Landfill will not be located in wetlands that meet the state's definition of wetland.

231. No municipal solid waste storage or processing facilities at the Facility will be located in wetlands.

232. There is no requirement applicable to the Facility under Clean Water Act § 404 or state wetlands laws to rebut the presumption that a practicable alternative to the Landfill is available that does not involve wetlands.

233. The construction and operation of the Landfill will not cause or contribute to violations of any applicable state water quality standard.

234. The construction and operation of the Landfill will not violate any applicable toxic effluent standard or prohibition under the Clean Water Act § 307.

235. The construction and operation of the Landfill will not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat.

236. The construction and operation of the Landfill will not violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.

237. The Landfill will not cause or contribute to a significant degradation of wetlands as wetlands are defined under either federal or state law.

238. The Application demonstrates the integrity of the Landfill and its ability to protect ecological resources.

Surface Water and Drainage

239. The Application includes a map showing wells, springs, and surface water bodies within one mile of the Site.

240. The Site is located in the San Marcos River drainage basin.

241. An unnamed tributary to Dry Creek traverses the Hunter Tract in a northwest to southeast direction.

242. Dry Creek traverses the Hunter Tract in a northeast to southwest direction.

243. The Site 21 Dam located on Dry Creek approximately 3,000 feet south of the Site is operated and maintained by the District to impound water in the Site 21 Reservoir.

244. An unnamed tributary to Dry Creek enters the Site 21 Reservoir south of the Site.

245. Dry Creek exits the Site 21 Reservoir to the south and enters Plum Creek approximately six miles south of the Site. Plum Creek flows generally in a northwest to southeast direction, and enters the San Marcos River approximately 23 miles downstream from the Site.

246. Surface topography of the Site area generally slopes to the south toward Dry Creek or its unnamed tributaries and ultimately to the Site 21 Reservoir.

247. Large portions of the Hunter Tract are within the 100-year floodplain.

248. Surface water from the Landfill footprint area flows to the south into the Site 21 Reservoir, either via the unnamed tributary or Dry Creek.

249. The Application includes a facility surface water drainage report with facility surface water drainage design information, narrative discussion, drawings, and calculations.

250. The surface water drainage design report includes analyses of the existing conditions, post-development conditions, and design of the surface water management system including final cover drainage facilities, drainage swales, downchutes, perimeter drainage channels, detention and sedimentation ponds, and outlet structures, and also includes an erosion and sediment control plan for all phases of Facility development.

251. The surface water drainage design report includes drawings showing the off-site and on-site drainage areas, in both the existing (prior to Facility development) and post-developed (after Facility development) conditions.

252. The surface water drainage design report includes calculations and designs of surface water collection, drainage, and detention facilities to manage the water volume resulting from a 24-hour, 25-year storm event.

253. All uncontaminated surface water from the Landfill footprint area will be routed through the Facility detention and sedimentation ponds before entering Dry Creek or its tributary.

254. Surface water entering the Facility Boundary from the north will be conveyed around the Landfill footprint and will exit the Facility Boundary on the south.

255. The Facility runon control system will prevent flow onto the active portion of the Landfill and treatment areas during the peak discharge from at least a 25-year rainfall event.

256. The Facility runoff management system from the active portion of the Landfill is designed to collect and control at least the water volume resulting from a 25-year, 24-hour storm.

257. The surface water drainage design will manage runon and runoff during the peak discharge from the 25-year, 24-hour storm event to minimize surface water running onto, into, and off of waste processing and storage areas and prevent the off-site discharge of waste and feedstock material, including processed or stored materials.

258. The surface water drainage design report includes a description of the methods and calculations used to estimate peak flow rates and runoff volumes: USACE HEC-HMS computer program, the Rational Method, the Universal Soil Loss Equation, and TxDOT's Hydraulic Design Manual, October 2011.

259. The modeling inputs regarding shallow concentrated flow lengths and Manning's Roughness coefficients were reasonable and appropriate.

260. The surface water drainage design report includes drainage analyses, including 25-year peak discharge, volume, and velocity, for both existing and post-developed conditions.

261. The surface water drainage design report includes a comparison of existing and post-developed conditions regarding peak discharge, volume, and velocity.

262. The post-development stormwater discharge points are consistent with the existing site configuration.

263. Development of the Facility will not adversely alter peak flow rates, velocities, or runoff volumes at the Permit Boundary or downstream of the Permit Boundary.

264. Existing drainage patterns will not be adversely altered by development of the Facility.

265. The top surfaces and external embankment slopes of the Landfill are designed to minimize erosion and soil loss during all phases of landfill operation, closure, and post-closure care.

266. Estimated peak velocities for top surfaces and external embankment slopes will be less than the permissible non-erodible velocities under similar conditions.

267. Potential soil loss will not exceed the permissible soil loss for comparable soil-slope lengths and soil-cover conditions.

268. The surface water protection and erosion control practices will provide long-term, low maintenance geotechnical stability to the final cover.

269. The Facility has been designed to keep contaminated surface water (water that may have come into contact with waste) separated from uncontaminated stormwater runoff. Contaminated water will not be discharged to the surface water management system to be constructed at the Site.

270. Because all contaminated water will be managed in a controlled manner, groundwater will be protected.

271. Surface or groundwater that has become contaminated by contact with the working face of the Landfill or with leachate will be properly handled, stored, treated, and disposed of.

272. The design and operation of the Facility–including the Landfill, waste processing and storage facilities, and the surface water management system–will prevent the discharge of solid waste, pollutants, dredged or fill material, and nonpoint source pollution.

Floodplains

273. The Application includes the portion of the relevant Federal Emergency Management Agency (FEMA) floodplain map (Map Number 48055C1025E; effective date: June 19, 2012) that encompasses the Site and surrounding area.

274. The FEMA Flood Insurance Rate Map (FIRM) in the Application shows (as Zone A) the 100-year floodplain in the area of the Site.

275. 130EP added the Facility Boundary, the Hunter Tract, the proposed Landfill footprint, and the limits of landfill grading to the FEMA FIRM in the Application.

276. The FEMA FIRM in the Application shows that the 100-year floodplain extends onto portions of the Site, but the Landfill footprint is outside the 100-year floodplain.

277. The Application includes a detailed flood study of the Site and surrounding area.

278. The methods employed in the detailed flood study, including the use of USACE HEC-HMS and HEC-RAS computer programs (used in the hydrologic and hydraulic analyses, respectively), are reasonable and appropriate.

279. The detailed flood study determined the 100-year floodplain water surface elevations and the extent of the 100-year floodplain at the Site and in the area around it for existing and post-developed conditions.

280. The detailed flood study shows that the Landfill footprint will be outside the 100-year floodplain.

281. The detailed flood study shows that waste processing and/or storage units at the Facility will not be located in a 100-year floodplain.

282. A "high-hazard" dam is one where a dam failure would cause catastrophic damage and loss of life downstream of the dam. The term does not reflect the condition of the dam or its structural integrity.

283. The Site 21 Dam is a high-hazard dam and would be downstream of the Landfill if the Facility is constructed.

284. The Site 21 Dam does not currently meet the dam safety criteria for high-hazard dams to prevent breaching of the spillway and embankment.

285. To bring the Site 21 Dam up to the design criteria for a high-hazard dam, the Natural Resources Conservation Service (NRCS) proposed a rehabilitation plan for the dam. One rehabilitation alternative would entail the installation of a new principal spillway with a crest elevation of 500 feet and a 42-inch diameter conduit at the Site 21 Dam. The current auxiliary spillway would be replaced with a 300-foot-wide, roller-compacted, concrete spillway, and the dam crest would be raised approximately 3.9 feet. This alternative as proposed by NRCS would not increase the floodplain on the Hunter Tract.

286. Waste disposal operations at the Facility will not be located in a 100-year floodway.

287. The Landfill will not be located in a 100-year floodplain.

288. Waste processing and/or storage units at the Facility will not be located in a 100-year floodplain.

289. The proposed municipal solid waste management units at the Facility will not be located in a 100-year floodplain.

Land-Use Compatibility

290. The Application includes a map showing the Facility Boundary and actual uses within the Site and within one mile, including the location of residences, commercial establishments, ponds and lakes, and roads serving the Facility.

291. The Application includes maps showing the locations of drainage, pipeline, and utility easements within the Site.

292. 130EP updated the land-use map as of September 2015.

293. Within one mile of the Site, 4,083 acres (93.1%) are open and agricultural use land, which is the predominant land use within one mile.

294. Within one mile of the Site, 65 acres (1.5%) are comprised of stock tanks and the Site 21 Reservoir.

295. Within one mile of the Site, 234 acres (5.3%) are used as single-family residences. There are 143 residences located within one mile of the Site.

296. The nearest residence is approximately 185 feet west of the Facility Boundary and approximately 345 feet west of the Landfill footprint.

297. Within one mile of the Site, five acres (0.1%) are used for commercial/industrial purposes, and five commercial establishments are located within one mile of the Site.

298. The nearest business establishment is approximately 4,000 feet southwest of the Site and more than 6,500 feet from the Landfill footprint.

299. There are no schools, day-care centers, churches, hospitals, cemeteries, recreational areas, or sites having exceptional aesthetic quality within one mile of the Site.

300. Within one mile of the Site, there are five archaeological sites and three historic sites. There are no historically significant sites or archaeologically significant sites within one mile of the Site.

301. There are no water wells within 500 feet of the Site.

302. There are three dry hole oil/gas wells within 500 feet of the Site, one of which is located within the Permit Boundary but approximately 1,800 feet from the Landfill footprint.

303. Within five miles of the Site, population growth from 2000 to 2010 was less than 5%, except to the south, where northern Lockhart lost population, based on United States census data.

304. Within one mile of the Site, the number of residences has increased from 126 residences to 143 residences from 2013 to 2015, based on a review of aerial photography and field inventories.

305. The presence of SH 130 is the primary factor influencing growth trends in the area of the Site.

306. Growth trends will continue from the north into the area within a five-mile radius of the Site.

307. The area within one mile of the Site is sparsely populated.

308. The Facility will have access to a major transportation network without the need to use local roads or impact local properties.

309. The growth rate in the vicinity of the Site is relatively low compared to the very high growth rate of the Metropolitan Statistical Area in which the Facility is located.

310. The Facility will have setbacks and buffer zones that exceed TCEQ standards.

311. Visibility of the Facility from off-site will be limited by existing topography, naturally-occurring tree lines and the vegetated landscaping plan for the Facility that includes a screening berm.

312. The Site 21 Reservoir is the predominant current land use on the Hunter Tract.

313. The District is responsible for the operation of the Site 21 Dam to ensure that it functions as intended. The District's easement on the Hunter Tract allows the District to fulfill its duties.

314. The purpose of the Site 21 Reservoir and Dam is to retard flood flows for the protection of downstream life and property.

315. The final design of any future rehabilitation of the Site 21 Dam to bring it into compliance with high-hazard dam safety criteria will consider the then-existing upstream land uses, including the Facility if it exists.

316. On December 9, 2013, the Caldwell County Commissioners Court adopted the Caldwell County Solid Waste Disposal Ordinance (Disposal Ordinance). The Disposal Ordinance authorizes the disposal of solid waste in one location on property owned by the County and prohibits the disposal of solid waste in all other portions of Caldwell County.

317. The County adopted its Disposal Ordinance three months after 130EP filed its Application on September 4, 2013.

318. The Disposal Ordinance is a zoning ordinance that regulates land-use activities in the vicinity of the proposed Landfill.

319. Evidence in the record does not indicate where the Disposal Ordinance allows solid waste to be disposed of within the County, relative to the location of the Facility.

320. Considering all relevant factors, the Facility will not adversely impact human health and the environment and will be compatible with surrounding land uses.

Local Regulations/Approvals

321. The Capital Area Council of Governments (CAPCOG) and the TCEQ have adopted a regional solid waste management plan (Regional Plan) that covers 10 counties in central Texas, including Caldwell County.

322. The Application includes documentation that Parts I and II of the Application were submitted for review to CAPCOG for compliance with the Regional Plan.

323. CAPCOG conducted a conformance review of the Application and determined that it is in conformance with the CAPCOG Regional Plan.

324. The Application and the Facility are in conformance with the Regional Plan.

325. When the County adopted the Disposal Ordinance, the Application for the 130EP Landfill permit was pending at the TCEQ.

326. When the County adopted the Disposal Ordinance, the County sought to prohibit the processing or disposal of municipal or industrial solid waste in an area of the County for which an application for a permit or other authorization under Texas Health and Safety Code ch. 361 had been filed with and was pending before the TCEQ.

327. The County's Disposal Ordinance does not prevent the TCEQ from granting the Application and issuing the permit.

328. Portions of the access road will cross the 100-year floodplain.

329. 130EP has not obtained the required floodplain development permit from the County and did not submit the floodplain development permit with its Application.

330. The Draft Permit contains special provisions to address this deficiency. The use of special provisions in the permit matter is a common practice at the TCEQ to address similar types of deficiencies involving approvals from other governmental entities.

Site Operating Plan

331. Part IV of the Application is the Site Operating Plan for the Facility.

332. The Site Operating Plan for the Facility includes provisions for site management and operating personnel.

333. The Site Operating Plan includes a description of functions and qualifications for each category of key and supervisory personnel.

334. The Site Operating Plan includes a description of the equipment to be used at the Facility and provisions for back-up equipment.

335. The Site Operating Plan includes a description of general instructions for operating personnel to follow.

336. The Site Operating Plan identifies the applicable training requirements that will be followed.

337. The Site Operating Plan includes procedures for the detection and prevention of the disposal of prohibited wastes at the Facility, including: procedures to control the receipt of prohibited waste; records of all inspections of incoming waste; training for appropriate personnel regarding recognition of prohibited waste; and notification to the ED of any incident of disposal of regulated hazardous waste or polychlorinated biphenyls at the Landfill and provisions for remediating such incident.

338. The Site Operating Plan describes the personnel training programs for the Facility, including a description of all minimum training requirements based on subject matter.

339. The Site Operating Plan includes provisions related to training employees, including training for record keeping, license requirements, detection, prevention of disposal of prohibited waste, fire protection and response, site inspection, site safety, site access, and maintenance.

340. The Site Operating Plan includes the minimum number, size, type, and function, of the equipment to be utilized at the Facility based on the estimated waste acceptance rate.

341. The Site Operating Plan indicates that backup equipment will be provided from contractors or local rental companies in the event of a breakdown or maintenance to avoid interruption of waste services.

342. The Site Operating Plan provides procedures, including a screening program, for the detection and prevention of the disposal of prohibited wastes.

343. The Site Operating Plan's detection and prevention program includes training for Site personnel to know in detail what the prohibited wastes are, how to perform a random inspection, how to control site access, and what procedures are required in the event of identification of prohibited wastes.

344. The Site Operating Plan provides adequate controls for screening of prohibited wastes.

345. The Site Operating Plan contains general and specific instructions for site operations and site safety.

346. The Site Operating Plan contains calculations demonstrating the adequacy of the earthen material and showing that the type and amount of equipment listed in the Site Operating Plan will be able to transport the volume of earth required to cover the active working face with a minimum six-inch soil layer from the earthen material stockpile within one hour of detecting a fire.

347. There will be sufficient soil available at the Site to ensure that waste is covered with a six-inch layer of earthen material within an hour of fire detection.

348. The Site Operating Plan contains a fire protection plan that identifies the fire protection standards to be used at the Facility and how personnel are trained.

349. The Site Operating Plan contains adequate provisions for control of access, including an inspection and maintenance schedule, notification to the TCEQ's regional office of a breach, provisions for temporary and permanent repairs, and notification to the TCEQ's regional office of completion of a permanent access control breach repair.

350. The Site Operating Plan identifies the maximum size of the area at the Facility for unloading solid waste, which is 0.5 acres with a maximum width of approximately 200 feet, and the number and types of unloading areas at the Facility.

351. The Site Operating Plan explains the general methods and frequencies for disease vector control, which include minimizing the size of the active working face; placing daily, intermediate, and final cover; adhering to the ponded water plan; the use of other approved methods when needed; following the detailed procedures described in the Site Operating Plan; and applying pesticides should daily operations not control vectors.

352. The Site Operating Plan specifies the all-weather surface entrance, access, and internal roads; speed bumps along the main access roads between the fill areas and the gatehouse; weekly grading; the truck wheel wash station; and daily removal and pickup as methods for minimizing the tracking of mud and associated debris onto public roads.

353. The Site Operating Plan specifies that grading equipment will be used weekly to control mud and to minimize depressions, ruts, and potholes.

354. The Site Operating Plan specifies that incoming waste will be spread in layers and thoroughly compacted by repeated passes of a landfill compactor weighing in excess of 40,000 pounds.

355. The Site Operating Plan describes the daily cover that will be used at least once every 24 hours at the Facility as a means to control disease vectors, fire, odor, windblown litter and scavenging.

356. The Site Operating Plan describes how intermediate cover of soils and/or vegetative growth, or other suitable erosion control mechanisms, will be used at the Facility for all areas that will receive additional waste but may be inactive for more than 180 days.

357. The Site Operating Plan explains that alternative daily cover may be used only after the same has been proposed to and authorized by the TCEQ.

358. The Site Operating Plan describes the final cover for the Landfill, including an explanation of the components of the final cover, slope range and drainage control, with reference to Part III of the Application, Attachment H - Closure Plan; Attachment D8 - Final Cover Quality Control Plan.

359. The Site Operating Plan addresses erosion of cover and explains procedures for repairs in the event of cover erosion.

360. The Site Operating Plan contains a ponding prevention plan that identifies techniques to be used at the Facility to prevent the ponding of water over waste, an inspection schedule to identify potential ponding sites, corrective actions to remove ponded water, and general instructions to manage water that has been in contact with waste.

361. 130EP will not recirculate leachate or landfill gas condensate.

362. The Site Operating Plan describes operations for storage areas for large items and white goods within the waste disposal footprint or near the citizens' convenience center.

363. The Site Operating Plan describes operations for a reusable materials staging area.

364. The Site Operating Plan describes operation of a citizens' convenience center at the Facility.

365. The Site Operating Plan describes how containers located in the citizens' convenience center will be managed and provides a description of waste stream processing in the center.

366. The Site Operating Plan describes how the Facility will manage scrap tires and a description of scrap tire processing.

367. The Site Operating Plan describes operations for scrap tires to be accepted from the public or from community clean-up efforts and stored in containers or trailers prior to shipment off-site.

368. The Site Operating Plan describes operations for a wood waste processing area.

369. The Site Operating Plan describes operations for a leachate and landfill gas condensate facility.

370. The Site Operating Plan describes operations for a truck wheel wash station.

371. The provisions set forth in the Site Operating Plan are sufficiently specific and detailed.

372. There are residences within very short distances to various portions of the Facility.

373. Noise from heavy equipment operation and other operations at the Facility could be incompatible with nearby residents.

374. The screening and buffer zones at the Facility do not eliminate the potential for noise and odors to impact nearby residents.

375. 130EP did not show that the operating hours set forth in the Draft Permit are appropriate.

376. The following operating hours are appropriate for the Facility: 7:00 a.m. to 7:00 p.m. Monday through Friday, and material transport and heavy equipment operation must not be conducted between 9:00 p.m. and 5:00 a.m.

Odor

377. The Site Operating Plan in the Application includes an odor management plan that identifies ponded water, decomposed waste, leachate, contaminated water, and landfill gas as sources of odors at the Facility.

378. The odor management plan includes general instructions for the control of odors or sources of odors at the Facility.

379. The odor management plan discusses wastes that require special attention due to potential odors.

380. The Application contains ventilation and odor control measures for each storage, separation, processing, and disposal unit.

Water Supply

381. The Site Operating Plan identifies the source of available water under pressure for fire-fighting purposes at the Facility.

382. The Site Operating Plan indicates that potable water will be provided for all employees and visitors through the use of bottled water at/near the scale house and/or maintenance building.

Buffer Zones and Screening

383. Buffer zones between the Facility Boundary and the Landfill footprint and between the Facility Boundary and waste storage or processing units will exceed the TCEQ-required minimum of 125 feet.

384. No solid waste unloading, storage, disposal, or processing operations will occur within any buffer zone or right-of-way that crosses the Site, including the 125-foot buffer zone of the Landfill.

385. The buffer zones will provide for safe passage of fire-fighting and other emergency vehicles.

386. Buffer zones will be marked with yellow markers (posts extending at least six feet above the ground surface) placed along each buffer zone boundary at all corners and between corners at intervals of 300 feet.

387. The inundation area of the District's easement for the Site 21 Reservoir extends onto the Site in the south and southeast but does not extend to any area to be used for waste unloading, storage, processing, or disposal.

388. No solid waste unloading, storage, disposal, or processing operations will occur within any easement, buffer zone, or right-of-way that crosses the Site.

389. Existing topography and vegetation will provide natural screening of deposited waste.

390. Visual screening of deposited waste will be provided as part of normal waste disposal and cover placement operations and sequence of development.

391. Final cover will be placed as the Landfill reaches final contours.

392. As the Facility is developed, the visual effects of the disposal activities will be minimized through the use of screening provided by fencing, constructed berms, planted vegetation, and natural vegetation located within the buffer zone.

393. Visibility of the Facility will be limited by existing topography, naturally occurring tree lines, and the vegetated landscaping plan for the Facility (including an effective screening berm).

394. The entire screening berm 130EP will construct on the northern boundary of the Facility should be included within the Permit Boundary.

Waste Acceptance Plan

395. Solid wastes to be accepted at the Facility include municipal solid waste, special wastes, and Class 2 and 3 industrial wastes.

396. Limiting parameters for waste to be accepted at the Facility are included in the Application.

397. Waste contributed to the Facility is expected to come from residences and businesses in Caldwell County and surrounding Texas counties.

398. The Facility will serve an estimated population equivalent of approximately 470,000 persons to 922,000 persons during the life of the Facility.

399. The estimated maximum annual waste acceptance rate for the Facility projected for five years is as follows: Year 1 - 429,000 tons; Year 2 - 435,778 tons; Year 3 - 442,663 tons; Year 4 - 449,658 tons; Year 5 - 456,762 tons.

400. The plan adequately identifies the sources and characteristics of wastes 130EP proposes to receive at the Facility.

401. The estimates of waste acceptance rates at the Facility, which are extremely difficult to make, are reasonable and justified.

Permit Duration

402. The projected life of the 130EP Landfill facility is 44 years.

403. It is appropriate for the permit for the 130EP Landfill facility to be issued for the life of the Facility.

Closure Plan, Post-Closure Plan, and Financial Assurance

404. The Application includes a closure plan for the Facility in Part III, Attachment H.

405. The closure plan includes drawings showing the final constructed contour of the entire Landfill, including internal drainage and side slopes, accommodation of surface drainage entering and departing the completed fill area, and areas subject to flooding due to a 100-year frequency flood.

406. The estimated largest area requiring final cover during the active life of the Landfill is approximately 75 acres.

407. The estimated maximum inventory of waste and operational cover at the Facility during its life is approximately 33.1 million cubic yards, which is the total volume of the Landfill.

408. The closure plan specifies the procedures for closure of any portion or all of the Landfill.

409. The closure plan includes a description of the steps that will be undertaken to close the Landfill, a schedule for final closure, a description of the final cover system, and the methods used to install the final cover.

410. The final cover system will consist of an infiltration layer, a flexible membrane cover, a drainage layer on side slopes, a cushion layer on top slopes, and an erosion control layer.

411. The infiltration layer will be a minimum of 18 inches of compacted soil with a coefficient of permeability less than or equal to 1×10^{-5} cm/sec.

412. The estimated cost of hiring a third party to close the largest area of the Landfill requiring final closure at any time during its active life is $10,121,410.

413. The Application includes, in Part III Attachment I, a post-closure plan addressing the ongoing monitoring and maintenance activities that will be conducted at the Site for 30 years following closure.

414. The estimated cost of hiring a third party to conduct post-closure care activities in accordance with the post-closure plan is $6,794,348.

415. The Application includes a cost estimate for closure of the Facility.

416. The Application includes a cost estimate for post-closure care of the Facility.

417. 130EP will submit a copy of the documentation required to demonstrate financial assurance as specified in 30 TAC ch. 37, subch. R at least 60 days prior to the initial receipt of waste at the Facility.

Assessment of Reporting and Transcription Costs

418. Pursuant to Order No. 1, 130EP arranged for and paid a court reporter to report and transcribe the hearing on the merits and to deliver the original and one copy of the transcript to each of the ALJs and two copies to the TCEQ's Chief Clerk, including electronic copies on disc in text format.

419. The cost of reporting, preparing, and delivering the transcripts delivered to the ALJs and the TCEQ Chief Clerk was $16,725.85.

420. 130EP, the County, Protestants, the ED, and the Office of Public Interest Counsel (OPIC) all participated in the contested case hearing and benefitted from having a transcript for use in preparing written closing arguments and responses.

421. 130EP, the District, the County, and Protestants were each represented by private attorneys in connection with the contested case hearing.

422. 130EP, Protestants, the County, and the District have the ability to pay costs.

423. 130EP, Protestants, and the County participated fully in the hearing. Mr. Pesl did not participate in the hearing.

424. The District limited its participation to issues related to the Site 21 Reservoir and its easement and did not cite to the transcript in its post-hearing briefing. The District did not take a position on whether the Commission should grant the permit.

425. Protestants incurred additional expenses because 130EP breached its duty and destroyed discoverable materials.

426. In the contested case hearing, 130EP, the District, the County, and Protestants presented direct case testimony and exhibits and cross-examined witnesses presented by other parties to the hearing.

427. 130EP should pay 50% of the transcript costs, $8,362.93, and the County and Protestants each pay 25% of the costs, $4,181.47 each.

II. CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the disposal of municipal solid waste and the authority to issue a permit under Texas Health and Safety Code § 361.061.

2. Notice was provided in accordance with Texas Health and Safety Code §§ 361.0665 and 361.081, Texas Government Code §§ 2001.051 and 2001.052, and 30 TAC §§ 39.405 and 39.501.

3. SOAH has jurisdiction to conduct a hearing and to prepare a PFD in contested cases referred by TCEQ under Texas Government Code § 2003.047.

4. 130EP submitted an administratively and technically complete permit application, as required by Texas Health and Safety Code §§ 361.066 and 361.068, which demonstrated that it will comply with all relevant aspects of the requirements provided in 30 TAC §§ 330.57 and 330.63.

5. The Application was processed and the proceedings described in this Order were conducted in accordance with applicable law, specifically Texas Health and Safety Code ch. 361, subch. C; Texas Government Code ch. 2001; 1 TAC ch. 155; and 30 TAC ch. 80.

6. 130EP has the burden of proof on the issues regarding the sufficiency of the Application and compliance with the necessary statutory and regulatory requirements. 30 TAC § 80.17(a).

7. 130EP's Application had the following deficiencies:

   a. The Application failed to list the District's easement on the Hunter Tract, as required by 30 TAC §§ 281.5(6) and 330.59.

   b. 130EP did not obtain approval from the ED of its boring plan for the subsurface investigation of the Site prior to initiating work, as required by 30 TAC § 330.63(4).

   c. 130EP did not obtain a floodplain development permit from the County, as required by 30 TAC § 330.63(c)(2)(D)(ii).

8. 130EP did not meet its burden to prove that its requested operating hours beyond those specified in 30 TAC § 330.135 are appropriate.

9. Other than the deficiencies in the Application and the failure to prove that expanded operating hours would be appropriate, 130EP met its burden on all other issues.

10. The Facility will not adversely affect the health, welfare, or physical property of the people or the environment if constructed and operated in accordance with Texas Health and Safety Code ch. 361, 30 TAC ch. 330, and the permit issued by this Order.

11. The Draft Permit No. MSW-2383, as prepared by the ED and as amended by this Order, includes all matters required by law.

12. The approval of the Application and issuance of Permit No. MSW-2383 will not violate the policies of the State of Texas, as set forth in Texas Health and Safety Code § 361.002(a), to safeguard the health, welfare, and physical property of the people of Texas, and to protect the environment by controlling the management of solid waste.

13. Except for the failure to include information regarding the District's ownership of an easement on the Hunter Tract, the Application complied with 30 TAC §§ 281.5 and 330.59.

14. The Application includes sufficient information and demonstrates compliance with the TCEQ's requirements regarding property rights in 30 TAC § 330.67.

15. 130EP provided the information required under the TCEQ's rules to demonstrate evidence of competency under 30 TAC § 330.59(f).

16. 130EP's compliance history ranking was properly classified as "unclassified" under 30 TAC ch. 60.

17. 130EP met the requirements of 30 TAC § 330.61(h).

18. The Facility will be compatible with surrounding land uses.

19. 130EP met the requirements of 30 TAC § 330.61(i) regarding transportation and traffic.

20. The roads used to access the Facility will be available and adequate. 30 TAC § 330.61(i).

21. The entire length of the access road should be included within the Permit Boundary to ensure consistency with and enforceability of the permit's requirements.

22. 130EP is not proposing to locate a new municipal solid waste landfill or lateral expansion within five miles of an airport serving turbojet or piston-type aircraft, as confirmed in correspondence with the Federal Aviation Administration and in compliance with 30 TAC §§ 330.61(i)(5) and 330.545.

23. Other than 130EP's failure to obtain ED approval of its boring plan, the Geology Report in the Application meets the requirements in 30 TAC § 330.63(e).

24. The Application complies with the hydrogeology requirements in 30 TAC § 330.63(e).

25. The Application complies with the groundwater protection requirements in 30 TAC §§ 330.63(f)(4) and 330.403 through 330.407.

26. The groundwater sampling and analysis plan meets the requirements in 30 TAC §§ 330.63(f) and 330.403 through 330.407.

27. 130EP's proposed groundwater monitoring system will adequately monitor the groundwater beneath the Facility and protect human health and the environment in compliance with 30 TAC §§ 330.63(f)(4) and 330.403 through 330.407.

28. The Application complies with the general facility design requirements in 30 TAC § 330.63(b).

29. The Application complies with the waste management unit design requirements in 30 TAC § 330.63(d).

30. The Application complies with the soils and liner quality control plan requirements in 30 TAC §§ 330.63(d)(4)(G) and 330.339.

31. The Application complies with the landfill gas management plan requirements in 30 TAC § 330.63(g) and addresses all the requirements in 30 TAC § 330.371.

32. The Application complies with the endangered and threatened species requirements in 30 TAC §§ 330.61(n), 330.157, and 330.551.

33. The Application complies with the applicable federal, state, and local laws regarding wetlands as required by 30 TAC § 330.61(m).

34. There is no requirement applicable to the Facility under Clean Water Act § 404 or state wetlands laws requiring 130EP to achieve or attempt to achieve no net loss of wetlands.

35. The Application demonstrates that the Facility will comply with the location restrictions in 30 TAC § 330.553.

36. Development of the Facility will not adversely alter existing drainage patterns. 130EP has sufficiently demonstrated its compliance with 30 TAC §§ 330.63(c)(1), 330.303, and 330.305.

37. The Application complies with the stormwater drainage system requirements of 30 TAC §§ 330.63, 330.303, and 330.305.

38. The Application demonstrates how the Facility will comply with the TPDES program under the federal Clean Water Act § 402, as amended, as required by 30 TAC § 330.61(k)(3).

39. Except for 130EP's failure to obtain and include the floodplain development permit from the County in its Application, the Application complies with the floodplain requirements in 30 TAC §§ 330.61(m), 330.63(c)(2), and 330.547.

40. Solid waste management activities at the Facility will conform with the applicable regional solid waste management plan, pursuant to Texas Health and Safety Code § 363.066.

41. The existence of the County's Disposal Ordinance does not prevent TCEQ from granting the Application and issuing the permit pursuant to Texas Health and Safety Code §§ 363.112(d) and 364.012(f).

42. Except for the deviation from the TCEQ's standard operating hours, 130EP has shown that it will comply with the operational prohibitions and requirements in 30 TAC §§ 330.15 and 330.121 through 330.249.

43. The methods specified in the Site Operating Plan comply with the municipal solid waste rules to prevent the creation of any nuisance, as defined by 30 TAC § 330.3(95).

44. 130EP has provided sufficiently detailed information regarding the operational methods to be utilized at the Facility when using daily cover and its preventative effect on vectors, fires, odors, windblown waste and litter, and scavenging, as required by 30 TAC § 330.165(a).

45. The methods specified in the Site Operating Plan for the control of windblown waste and litter comply with 30 TAC §§ 330.127 and 330.139.

46. The waste acceptance hours in 30 TAC § 330.135 are appropriate for the Facility.

47. 130EP's odor management plan contains sufficient details regarding the sources of odors and general procedures for odor control and meets the requirements of 30 TAC § 330.149.

48. The Application includes adequate information regarding 130EP's proposed water supply in compliance with 30 TAC §§ 330.221(a) and 330.249.

49. The Site Operating Plan in Part IV of the Application is designed to make the Facility protective of human health, welfare, property, and the environment. Tex. Health & Safety Code ch. 361.

50. The Application demonstrates that the Facility will comply with the buffer zone and screening requirements in 30 TAC §§ 330.141 and 330.543.

51. Except as set out in Conclusion of Law No. 7 regarding 130EP's omission of the District's easement, Part I of the Application meets the requirements of 30 TAC §§ 281.5, 305.45, 305.57(c)(l), and 305.59.

52. Part II of the Application complies with the applicable rules in 30 TAC §§ 305.45, 330.61, 330.57(c)(2), 305.61, and 330.543 through 330.563.

53. Except as set out in Conclusion of Law No. 7 regarding the lack of ED approval of the boring plan and the omission of a floodplain development permit, Part III of the Application complies with the applicable rules in 30 TAC §§ 330.63, 330.171, 330.303

through 330.307, 330.331, 330.333, 330.371, 330.401 through 330.421, 330.457, 330.465, and 330.503 through 330.507.

54. Except for the deviation from the TCEQ's standard operating hours, Part IV of the Application, the Site Operating Plan, meets the requirements of 30 TAC §§ 330.57(c)(4), 330.65, and 330.121 through 330.249.

55. 130EP has demonstrated compliance with the location restrictions set forth in 30 TAC §§ 330.543 through 330.563.

56. 130EP has submitted information regarding closure and post-closure that demonstrates compliance with the requirements of 30 TAC §§ 330.63(h), (i), (j); 330.457; 330.461 through 330.465; and 330.503 through 330.507.

57. Pursuant to the authority of, and in accordance with, applicable laws and regulations, the requested permit should be issued for the life of the Facility. 30 TAC § 330.71.

58. No transcript costs may be assessed against the ED or OPIC because the TCEQ's rules prohibit the assessment of any cost to a statutory party who is precluded by law from appealing any ruling, decision, or other act of the Commission. 30 TAC § 80.23(d)(2).

59. Factors to be considered in assessing transcript costs include: the party who requested the transcript; the financial ability of the party to pay the costs; the extent to which the party participated in the hearing; the relative benefits to the various parties of having a transcript; the budgetary constraints of a state or federal administrative agency participating in the proceeding; and any other factor which is relevant to a just and reasonable assessment of the costs. 30 TAC § 80.23(d)(1).

60. Considering the factors in 30 TAC § 80.23(d)(1), a reasonable assessment of hearing transcript costs against parties to the contested case proceeding is: 50% of the cost to 130EP, 25% of the cost to Protestants, and 25% of the cost to the County.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY THAT:

1. 130EP's Application is granted and the Municipal Solid Waste Landfill Type I permit is hereby issued to 130EP, as set out in the attached Draft Permit with the following modifications:

    a. Within 30 days of the date of this Order, 130EP shall submit to the ED a revised Permit Boundary that includes the entire length of the access road from US 183 to the entrance of the Facility at the current Permit Boundary and the entire screening berm.

b. Waste acceptance hours may be any time between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and transportation of materials and heavy equipment operation must not be conducted between the hours of 9:00 p.m. to 5:00 a.m., unless otherwise approved. Operating hours for other activities do not require specific approval.

2. The County and Protestants must each pay $4,181.47 of the transcription costs.

3. 130EP must pay $8,362.93 of the transcription costs.

4. The effective date of this Order is the date the Order is final.

5. All other motions, requests for entry of specific findings of fact or conclusions of law, and any other requests for general or specific relief not expressly granted herein, are hereby denied for want of merit.

6. If any provision, sentence, clause, or phrase of this Order is for any reason held to be invalid, the invalidity of any portion shall not affect the validity of the remaining portions of the Order.

7. The Chief Clerk of the Texas Commission on Environmental Quality shall forward a copy of this Order to the parties.

Issue Date:

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Bryan W. Shaw, Ph.D., P.E., Chairman
For the Commission