



# State Office of Administrative Hearings

Kristofer S. Monson  
Chief Administrative Law Judge

February 5, 2021

Mary Smith  
General Counsel  
Texas Commission on Environmental Quality  
12100 Park 35 Circle, Bldg. F, Room 4225  
Austin TX 78753

Re: **SOAH Docket No. 582-20-1895; TCEQ Docket No. 2019-1156-IWD**

Dear Ms. Smith:

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 February 25, 2021. Any replies to exceptions or briefs must be filed in the same manner no later than March 8, 2021.

This matter has been designated **TCEQ Docket No. 2019-1156-IWD; SOAH Docket No. 582-20-1895**. 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,

Rebecca S. Smith  
Administrative Law Judge

Cassandra Quinn  
Administrative Law Judge

Enclosures  
cc: Mailing List

**SOAH DOCKET NO. 582-20-1895  
TCEQ DOCKET NO. 2019-1156-IWD**

**APPLICATION OF PORT OF CORPUS § BEFORE THE STATE OFFICE  
CHRISTI AUTHORITY OF NUECES §  
COUNTY FOR TPDES PERMIT NO. § OF  
WQ00052530001 §  
§ ADMINISTRATIVE HEARINGS**

**TABLE OF CONTENTS**

<b>I. PROCEDURAL HISTORY .....</b>	<b>1</b>
<b>II. BURDEN OF PROOF .....</b>	<b>3</b>
<b>III. REFERRED ISSUES .....</b>	<b>4</b>
<b>IV. DISCUSSION AND ANALYSIS.....</b>	<b>5</b>
<b>A. Background and Applicable Law.....</b>	<b>6</b>
1. Description of the Proposed Facility and Discharge.....	6
2. Texas Surface Water Quality Standards (TSWQS) .....	6
3. Legal Standard for Evaluating Impacts to Aquatic Organisms .....	8
4. Characteristics of the Outfall Location.....	10
5. Modeling Performed .....	14
6. Draft Permit Requirements .....	15
7. Diffuser Design .....	16
8. Alleged Bias of PAC’s Witnesses .....	19
<b>B. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality, including utilizing accurate inputs. (Issue G).....</b>	<b>22</b>
1. Regulations Applicable to the Modeling .....	22
2. Suitability of the CORMIX Model .....	23
3. Accuracy of Modeling Inputs.....	25
a. Channel Bathymetry.....	25
b. Ambient Velocity of the Receiving Waters .....	26
c. Source Water .....	28
d. Effluent Flow at Lower Production Levels.....	29
4. ALJs’ Analysis.....	29

<b>C.</b>	<b>Whether the Executive Director’s antidegradation review was accurate. (Issue H).....</b>	<b>33</b>
1.	Parties’ Arguments .....	34
2.	ALJs’ Analysis.....	39
<b>D.</b>	<b>Whether the proposed discharge will adversely impact: the marine environment, aquatic life, and wildlife, including birds and endangered or threatened species, spawning eggs, or larval migration. (Issue A).....</b>	<b>43</b>
1.	TPWD/GLO Desalination Study .....	43
2.	Effect of Increased Salinity .....	44
a.	Protestants’ Arguments.....	44
b.	OPIC, Audubon and Pro Se Group’s Arguments .....	50
c.	Port Authority’s Arguments .....	50
d.	ED’s Arguments .....	55
3.	Lack of Numerical Criteria for Salinity.....	56
4.	Copper and Other Constituents of the Discharge.....	58
5.	Threatened and Endangered Species .....	61
6.	ALJs’ Analysis.....	62
<b>E.</b>	<b>Whether the proposed discharge will adversely impact the health of the requesters and their families, including whether fish and other seafood will be safe for human consumption. (Issue B).....</b>	<b>69</b>
<b>F.</b>	<b>Whether the proposed discharge will adversely impact recreational activities, commercial fishing, or fisheries in Corpus Christi Bay and the ship channel. (Issue C) .....</b>	<b>70</b>
<b>G.</b>	<b>Whether the Application, and representations contained therein, are complete and accurate. (Issue D) .....</b>	<b>73</b>
1.	Diffuser Design .....	74
2.	Owner/Operator of Facility .....	75
3.	Facility Location.....	76
4.	Outfall Location .....	76
5.	Channel Depth at Outfall Location .....	78
<b>H.</b>	<b>Whether the Applicant substantially complied with applicable public notice requirements. (Issue E) .....</b>	<b>78</b>
<b>I.</b>	<b>Whether the draft permit is consistent with the Texas Coastal Management Program’s goals and policies. (Issue F).....</b>	<b>80</b>
<b>J.</b>	<b>Whether the draft permit includes all appropriate and necessary requirements. (Issue I) .....</b>	<b>82</b>

**V. ADMINISTRATIVE RECORD ..... 84**

**VI. TRANSCRIPT COSTS ..... 85**

**VII. CONCLUSION ..... 86**

**SOAH DOCKET NO. 582-20-1895  
TCEQ DOCKET NO. 2019-1156-IWD**

<b>APPLICATION OF PORT OF CORPUS</b>	<b>§</b>	<b>BEFORE THE STATE OFFICE</b>
<b>CHRISTI AUTHORITY OF NUECES</b>	<b>§</b>	
<b>COUNTY FOR TPDES PERMIT NO.</b>	<b>§</b>	<b>OF</b>
<b>WQ00052530001</b>	<b>§</b>	
	<b>§</b>	<b>ADMINISTRATIVE HEARINGS</b>

**PROPOSAL FOR DECISION**

The Port of Corpus Christi Authority of Nueces County (Applicant or Port Authority) filed an application (Application) with the Texas Commission on Environmental Quality (TCEQ or Commission) for new Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ00052530001. The Port Authority seeks the permit to discharge treated effluent from a proposed marine seawater desalination plant to be located in Nueces County, which would be the first such plant in the State of Texas. The Executive Director (ED) of the Commission recommends granting the Application and issuing the draft permit he prepared.

For reasons set out below, the Administrative Law Judges (ALJs) conclude that the evidentiary record does not support issuance of the draft permit. Accordingly, the ALJs recommend that the TCEQ deny the Application.

**I. PROCEDURAL HISTORY**

The Port Authority's Application was received by the TCEQ on March 7, 2018, and declared administratively complete on June 26, 2018. The ED completed technical review of the Application and prepared an initial draft permit.

The Notice of Receipt and Intent to Obtain a Water Quality Permit (NORI) was published on July 25, 2018, in the *Aransas Pass Progress, Ingleside Index, and Corpus Christi Caller-Times*. The NORI was also published on July 26, 2018 in the *Port Aransas South Jetty*. The Notice of Application and Preliminary Decision (NAPD) was published on November 21, 2018, in the *Aransas Pass Progress and Ingleside Index*. The NAPD was also published on

November 22, 2018, in the *Port Aransas South Jetty and Corpus Christi Caller-Times*. A public meeting was held on April 8, 2019, at the Port Aransas Civic Center in Port Aransas, Texas, and the public comment period ended at the close of the meeting on that date.

The Commission granted requests for a contested case hearing at an open meeting on November 6, 2019, and referred this matter to the State Office of Administrative Hearings (SOAH) on November 21, 2019.<sup>1</sup> The Commission established a six-month deadline from the date of the preliminary hearing for the proposal for decision (PFD) and referred nine issues, which are set out in Section III below.

The preliminary hearing was initially scheduled to be held in Port Aransas, Texas, on March 24, 2020, but due to the COVID-19 pandemic, it was rescheduled and held on July 9, 2020, via Zoom videoconference. At the preliminary hearing, the ALJs determined that SOAH had jurisdiction, named parties, and set the procedural schedule.<sup>2</sup> In addition, various objections were raised to the admission of the administrative record (discussed in Section V below); however, the ALJs overruled the objections at the preliminary hearing and admitted the administrative record (Exhibits AR-1 through AR-8) for all purposes.<sup>3</sup>

Before the hearing on the merits, various named parties withdrew. The remaining parties are: the Port Authority; ED; TCEQ's Office of Public Interest Counsel (OPIC); Audubon Texas (Audubon); Port Aransas Conservancy (PAC); the following individuals represented by counsel: James Harrison King, Tammy King, Edward Steves, and Sam Steves (collectively, represented protestants); the following aligned individuals representing themselves: Stacey Bartlett, Jo Ellen Krueger, Sarah Searight, and Lisa Turcotte (collectively, pro se group);<sup>4</sup> and

---

<sup>1</sup> Ex. AR-2 (TCEQ Interim Order).

<sup>2</sup> SOAH Order No. 5 (July 15, 2020).

<sup>3</sup> *Id.*; see also 30 Tex. Admin. Code § 80.127(h) ("The ALJ shall admit the administrative record into evidence for all purposes.").

<sup>4</sup> The individuals in the pro se group were aligned with Ms. Turcotte designated as their representative, and non-party Cathy Fulton acting on their behalf at the hearing. The pro se group's closing arguments include additional evidence that was not prefiled or presented at the hearing as required. Because this information is not in the evidentiary record, it is not considered or discussed in the PFD.

Cara Denney, Aldo Dyer, and Mark Grosse. All parties participated at the hearing, except for Ms. Denney, Mr. Dyer, and Mr. Grosse. The represented protestants joined in PAC's closing arguments, and therefore, are referred to collectively with PAC as "Protestants."

The hearing on the merits convened via Zoom videoconference on November 4, 2020, and concluded on November 10, 2020. The record initially closed on December 7, 2020, after the parties submitted their final closing arguments, but was reopened for the parties to submit proposed findings of fact and conclusions of law. The record closed again on January 12, 2021.

## II. BURDEN OF PROOF

The Application was filed after September 1, 2015, and the TCEQ referred it under Texas Water Code § 5.556, which governs referral of environmental permitting cases to SOAH based on a request for a contested case hearing.<sup>5</sup> Therefore, this case is subject to Texas Government Code § 2003.047(i-1)-(i-3),<sup>6</sup> which provides:

- (i-1) In a contested case regarding a permit application referred under Section 5.556 . . . [of the] Water Code, the filing with [SOAH] of the application, the draft permit prepared by the executive director of the commission, the preliminary decision issued by the executive director, and other sufficient supporting documentation in the administrative record of the permit application establishes a prima facie demonstration that:
  - (1) the draft permit meets all state and federal legal and technical requirements; and
  - (2) a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property.
- (i-2) A party may rebut a demonstration under Subsection (i-1) by presenting evidence that:

---

<sup>5</sup> Tex. Water Code §§ 5.551(a), .556.

<sup>6</sup> Acts 2015, 84th Leg., R.S., ch. 116 (S.B. 709), §§ 1 and 5, eff. Sept. 1, 2015.

- (1) relates to . . . an issue included in a list submitted under Subsection (e) in connection with a matter referred under Section 5.556, Water Code; and
  - (2) demonstrates that one or more provisions in the draft permit violate a specifically applicable state or federal requirement.
- (i-3) If in accordance with Subsection (i-2) a party rebuts a presumption established under Subsection (i-1), the applicant and the executive director may present additional evidence to support the draft permit.

Although this law creates a presumption, sets up a method for rebutting that presumption, and shifts the burden of production on that rebuttal, it does not change the underlying burden of proof. Accordingly, the burden of proof remains with the Applicant to establish by a preponderance of the evidence that the Application would not violate applicable requirements and that a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property.<sup>7</sup>

In this case, the Application, draft permit, and other materials listed in Texas Government Code § 2003.047(i-1) (collectively, the prima facie demonstration) were offered and admitted into the record at the preliminary hearing.<sup>8</sup>

### III. REFERRED ISSUES

The TCEQ referred the following issues to SOAH for a contested case hearing:

- A. Whether the proposed discharge will adversely impact: the marine environment, aquatic life, and wildlife, including birds and endangered or threatened species, spawning eggs, or larval migration;
- B. Whether the proposed discharge will adversely impact the health of the requesters and their families, including whether fish and other seafood will be safe for human consumption;

---

<sup>7</sup> 30 Tex. Admin. Code § 80.17(a), (c).

<sup>8</sup> Exs. AR-1 through AR-8. At the hearing on the merits, a portion of Ex. AR-8 (Tab F pages ED-0035 to ED-0047) was substituted without objection. Tr. Vol. 5 at 246.

- C. Whether the proposed discharge will adversely impact recreational activities, commercial fishing, or fisheries in Corpus Christi Bay and the ship channel;
- D. Whether the Application, and representations contained therein, are complete and accurate;
- E. Whether the Applicant substantially complied with applicable public notice requirements;
- F. Whether the draft permit is consistent with the Texas Coastal Management Program's goals and policies;
- G. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality, including utilizing accurate inputs;
- H. Whether the Executive Director's antidegradation review was accurate; and
- I. Whether the draft permit includes all appropriate and necessary requirements.

Each of these issues are discussed in detail below, along with the allocation of transcription costs and Protestants' arguments that the administrative record should not be considered for "all purposes."

#### IV. DISCUSSION AND ANALYSIS

Several of the issues referred by the Commission inquire about the proposed discharge's impact on the environment and human health. These issues rely on a common set of law and facts, which are discussed first. Thereafter, each issue referred by the Commission is addressed separately. The issues related to the ED's modeling and antidegradation review (Issues G and H) have implications for the other issues related to the environment and human health, so they are taken up first, with the remaining issues following in the order laid out in the Commission's interim order.

**A. Background and Applicable Law**

**1. Description of the Proposed Facility and Discharge**

The Port Authority seeks a wastewater discharge permit for a proposed marine seawater desalination plant (the Facility) to be located on Harbor Island in Nueces County, Texas. The Facility will pump seawater from the Gulf of Mexico and use reverse osmosis to produce potable water. The draft permit prepared by the ED would authorize the discharge of treated effluent from the Facility, consisting primarily of the concentrated brine resulting from the desalination process. The draft permit specifies daily maximum and daily average flow limits of 110 million gallons per day (MGD) and 95.6 MGD, respectively. The treated effluent would be discharged via a pipeline into the Corpus Christi Ship Channel approximately 300 feet off Harbor Island's shoreline. The discharge site is identified as Outfall 001. The Port Authority plans to use a diffuser at the discharge site to enhance mixing of the treated effluent with the ambient water.

**2. Texas Surface Water Quality Standards (TSWQS)**

The Facility's proposed discharge is subject to the Texas Surface Water Quality Standards (TSWQS) found in title 30, chapter 307 of the Texas Administrative Code (TAC). The TSWQS identify appropriate uses for the state's surface waters (e.g., aquatic life, recreation, and public water supply), and establish narrative and numerical water quality standards to protect those uses. The TCEQ has standard procedures for implementing the TSWQS, referred to as the Implementation Procedures (IPs), which are approved by the U.S. Environmental Protection Agency (EPA).<sup>9</sup> The TSWQS and IPs are used to set permit limits for wastewater discharges and other activities that may have an effect on water quality.<sup>10</sup>

To assess the potential water quality impact of a proposed discharge, the TSWQS establish "mixing zones" in the receiving water body, which are defined areas contiguous to the permitted

---

<sup>9</sup> 30 Tex. Admin. Code § 307.2(e); Ex. ED-MW-3 ("Procedures to Implement the Texas Surface Water Quality Standards (RG-194)").

<sup>10</sup> Ex. APP-RP-1 at 4.

discharge where the effluent mixes with the receiving waters.<sup>11</sup> Acute toxicity to aquatic organisms is not allowed in a mixing zone, and chronic toxicity to aquatic organisms is not allowed beyond a mixing zone.<sup>12</sup> There are three applicable mixing zones, listed here from smallest to largest and in order of their proximity to the discharge: the zone of initial dilution (ZID),<sup>13</sup> aquatic life mixing zone, and human health mixing zone. The ED conducts modeling, as discussed further below, to determine the percentage of effluent (the “effluent percentage” or “critical dilution”) that is predicted to occur at the edge of each regulatory mixing zone. For toxic substances where adequate toxicity information is available, the TSWQS establish numerical water quality standards for acute and chronic toxicity that apply at the mixing zone boundaries.

The main constituent of concern in this case is salinity.<sup>14</sup> The Facility’s discharge will consist primarily of the concentrated salts that remain after the desalination process. With regard to salinity, the TSWQS provide that “[c]oncentrations and the relative ratios of dissolved minerals such as chloride, sulfate, and total dissolved solids must be maintained such that existing, designated, presumed, and attainable uses are not impaired.”<sup>15</sup> The TSWQS do not provide specific numeric criteria for salinity for Texas estuaries, but require careful consideration and that aquatic life uses be supported:

Salinity gradients in estuaries must be maintained to support  
attainable estuarine dependent aquatic life uses. Numerical salinity

---

<sup>11</sup> 30 Tex. Admin. Code § 307.3(a)(40).

<sup>12</sup> *Id.* Acute toxicity is defined as “[t]oxicity that exerts a stimulus severe enough to rapidly induce an effect. The duration of exposure applicable to acute toxicity is typically 96 hours or less. Tests of total toxicity normally use lethality as the measure of acute impacts. (Direct thermal impacts are excluded from definitions of toxicity.)” 30 Tex. Admin. Code § 307.3(a)(1). Chronic toxicity is defined as “[t]oxicity that continues for a long-term period after exposure to toxic substances. Chronic exposure produces sub-lethal effects, such as growth impairment and reduced reproductive success, but it may also produce lethality. The duration of exposure applicable to the most common chronic toxicity test is seven days or more.” 30 Tex. Admin. Code § 307.3(a)(12).

<sup>13</sup> 30 Tex. Admin. Code § 307.3(a)(87) (defining the ZID as “[t]he small area at the immediate point of a permitted discharge where initial dilution with receiving waters occurs and that may not meet certain criteria applicable to the receiving water”).

<sup>14</sup> Salinity is defined as “[t]he total dissolved solids in water after all carbonates have been converted to oxides, all bromide and iodide have been replaced by chloride, and all organic matter has been oxidized. For most purposes, salinity is considered equivalent to total dissolved salt content. Salinity is usually expressed in parts per thousand.” 30 Tex. Admin. Code § 307.3(a)(55).

<sup>15</sup> 30 Tex. Admin. Code § 307.4(g)(1).

criteria for Texas estuaries have not been established because of the high natural variability of salinity in estuarine systems, and because long-term studies by state agencies to assess estuarine salinities are still ongoing. Absence of numerical criteria must not preclude evaluations and regulatory actions based on estuarine salinity, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.<sup>16</sup>

The TSWQS also generally provide that “surface waters must not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life.”<sup>17</sup> In addition, the TSWQS require that “[w]ater in the state must be maintained to preclude adverse effects on aquatic life.”<sup>18</sup>

The TSWQS also require that proposed wastewater discharges undergo an antidegradation review, which is designed to ensure that standards for protecting existing uses and water quality are met.<sup>19</sup> The antidegradation review process for TPDES permits is described in the IPs.<sup>20</sup>

### **3. Legal Standard for Evaluating Impacts to Aquatic Organisms**

The parties agree that the TSWQS apply in this case, but disagree about what legal standard applies when evaluating impacts on aquatic organisms. Protestants and OPIC contend that, as provided in 30 TAC §§ 307.6(c)(6) and 307.8(b)(2), there “must be *no lethality* to aquatic organisms that move through a ZID.”<sup>21</sup> As further support, Protestants cite to testimony from PAC witness Dr. Andrew Esbaugh, ED witness Dr. Mary Anne Wallace, and Port Authority witness Dr. Lial Tischler confirming that the TCEQ’s rules prohibit any lethality within the ZID.<sup>22</sup>

---

<sup>16</sup> 30 Tex. Admin. Code § 307.4(g)(3).

<sup>17</sup> 30 Tex. Admin. Code § 307.4(d).

<sup>18</sup> 30 Tex. Admin. Code § 307.6(b)(4).

<sup>19</sup> 30 Tex. Admin. Code § 307.5.

<sup>20</sup> 30 Tex. Admin. Code § 307.5(c)(1)(A); *see also* Ex. ED-MW-3 at 55-69.

<sup>21</sup> Emphasis added.

<sup>22</sup> Tr. Vol. 3 at 57 (Esbaugh); Tr. Vol. 5 at 171, 178 (Wallace); Tr. Vol. 5 at 245 (Tischler).

However, the Port Authority and ED assert that Protestants are relying on the wrong standard.<sup>23</sup> Instead, they contend that the applicable rule is 30 TAC § 307.6(e)(1), which states that “there must be no *significant* lethality to aquatic organisms that move through a ZID.”<sup>24</sup> They state that Protestants’ reliance on 30 TAC § 307.6(c)(6) is misplaced because subsection (c) is titled “[s]pecific numerical aquatic life criteria,” and the TCEQ’s rules do not contain any numerical criteria for salinity. Thus, this subsection does not apply. They further contend that 30 TAC § 307.8(b)(2) also does not apply because it refers back to the “[n]umerical acute aquatic life criteria for toxic materials” and “preclusion of total acute toxicity” established under 30 TAC § 307.6. The correct standard, according to the Port Authority and ED, is the “no significant lethality” standard found in 30 TAC § 307.6(e)(1), which governs “preclusion of total acute toxicity.”

The ALJs disagree with the Port Authority and ED that the “no significant lethality” standard in 30 TAC § 307.6(e)(1) applies here. Subsection (e) is titled “[t]otal toxicity,” a defined term meaning: “Toxicity as determined by exposing aquatic organisms to samples or dilutions of instream water or treated effluent. Also referred to as whole effluent toxicity or biomonitoring.”<sup>25</sup> Subsection (e), therefore, provides standards related to toxicity testing of effluent. Notably, Subsection (e)(1) cited by the Port Authority and ED specifically refers to “[t]otal (whole-effluent) toxicity of permitted discharges, *as determined from biomonitoring of effluent samples at appropriate dilutions.*”<sup>26</sup> The tie to testing is further supported by the IPs, which state that “significant lethality” is demonstrated “if there is a statistically significant difference in survival at the critical dilution when compared to the control.”<sup>27</sup>

---

<sup>23</sup> The Port Authority’s and ED’s contention that the “no lethality” standard does not apply arose for the first time in their replies to closing arguments. As a result, no other party had an opportunity to respond.

<sup>24</sup> Emphasis added.

<sup>25</sup> 30 Tex. Admin. Code § 307.3(a)(78).

<sup>26</sup> Emphasis added.

<sup>27</sup> Ex. ED-MW-3 at 107.

Instead, the ALJs conclude that the applicable standard is provided in 30 TAC § 307.8(b)(2), which states that:

Numerical acute aquatic life criteria for toxic materials and preclusion of total acute toxicity as established in §307.6 of this title are applicable in mixing zones. Acute criteria and acute total toxicity levels may be exceeded in small zones of initial dilution (ZIDs) at discharge points of permitted discharges, but there must be no lethality to aquatic organisms that move through a ZID.

This language is found in the TCEQ's rule addressing application of the TSWQS, and while it provides that the acute criteria and acute total toxicity levels established in 30 TAC § 307.6 may be exceeded in the ZID, it further establishes that there must be no lethality to aquatic organisms moving through the ZID. The ALJs also note that all of the witnesses who testified on this issue, including those of the ED and Port Authority, agreed that the standard is no lethality.

#### **4. Characteristics of the Outfall Location**

The Application shows the Facility on the southeastern tip of Harbor Island, an island situated between the Texas coast and the barrier islands of San Jose Island and Mustang Island. Harbor Island is located at the mouth of the Aransas Pass inlet, which separates the two barrier islands and connects the Gulf of Mexico to Texas's bays and estuaries. As stated above, the proposed Facility would discharge its treated effluent via a pipeline into the Corpus Christi Ship Channel approximately 300 feet off Harbor Island's shoreline. The outfall would be located to the south of Harbor Island near the confluence of the Corpus Christi Ship Channel, Lydia Ann Channel, and Aransas Pass inlet.

The receiving waters are subject to tidal influence, and the discharge will flow either into the Gulf of Mexico via Aransas Pass or through the Corpus Christi Ship Channel toward Corpus Christi Bay.<sup>28</sup> At the outfall location, the channel is approximately 385 meters wide.<sup>29</sup> The

---

<sup>28</sup> Ex. AR-4 at S-App. 000037.

<sup>29</sup> Ex. ED-MW-1 at 7.

Application provides that the channel depth at the outfall location is 63 feet,<sup>30</sup> but due to the presence of a natural eddy in that area, the channel is actually deeper.

The proposed discharge is to Segment 2481 (Corpus Christi Bay) of the Texas classified surface water segments.<sup>31</sup> The designated uses for Segment 2481 are primary contact recreation, exceptional aquatic life use, and oyster waters.<sup>32</sup>

Protestants emphasize the sensitivity of the location where the proposed discharge would occur, noting that “the location is the problem, more than desalination itself.”<sup>33</sup> The proposed outfall would be located near the Aransas Pass tidal inlet, one of five major coastal passes connecting the Gulf of Mexico with Texas’s bays and estuaries.<sup>34</sup> According to PAC witness Dr. Brad Erisman, Aransas Pass is the only tidal inlet in the area, with the next closest ones being Packery Channel more than 20 miles to the south (described as “a very small channel”) and the channel at Port O’Connor over 80 miles to the north.<sup>35</sup> Dr. Erisman testified that this means Aransas Pass is the main source of productivity (e.g., spawning, migrating, and feeding) and connectivity with the Gulf of Mexico for all the fish and invertebrate populations in the entire region.<sup>36</sup> Accordingly, he opined that the Port Authority “has chosen perhaps the most ecologically sensitive aquatic area on the Texas coast to seek to discharge brine into,”<sup>37</sup> and further described

---

<sup>30</sup> *Id.*

<sup>31</sup> Ex. ED-MW-1 at 10.

<sup>32</sup> Ex. ED-MW-1 at 24 (citing 30 Tex. Admin. Code § 307.10(1)).

<sup>33</sup> PAC Closing Argument at 20.

<sup>34</sup> Ex. PAC-7 at 13.

<sup>35</sup> Ex. PAC-1 at 8-9. Similarly, PAC witness Dr. Stunz testified that the nearest major tidal inlets are approximately 60 miles to the north and 80 miles to the south. Ex. PAC-6 at 10.

<sup>36</sup> Ex. PAC-1 at 9.

<sup>37</sup> Ex. PAC-1 at 16.

it as “the worst possible location for such a facility.”<sup>38</sup> PAC witnesses Dr. Esbaugh and Dr. Gregory Stunz described it similarly.<sup>39</sup>

PAC’s witnesses testified regarding the importance of the Gulf-bay connection created by the Aransas Pass inlet for certain “estuarine-dependent” marine species. As described by Mr. Scott Holt, the life cycle of these species is generally as follows:

While details differ among species, the process goes something like this: the adults mostly live permanently in offshore, typically coastal, ocean waters; they spawn in these offshore waters and the eggs and early larvae drift for days or weeks in coastal currents; the larvae eventually arrive at the coast and many are ultimately drawn into tidal inlets that connect the ocean with the estuary. Some of those larvae drawn into the inlet on the flood tide are carried into the estuary to suitable habitat where they remain to develop into juveniles and sub-adults. This development into the sub-adult stage takes one or more years before they return to the ocean as maturing adults.<sup>40</sup>

Estuarine-dependent marine species include fish and shellfish (i.e., shrimp and crabs).<sup>41</sup> Dr. Stunz testified that because the inlet compounds and magnifies the marine life abundance, the impacts are disproportionately greater than what would occur in other areas with less densities and concentrations of marine life.<sup>42</sup>

Dr. Stunz and Mr. Holt testified that moving the discharge outside of the tidal inlet into the Gulf of Mexico would resolve many of their concerns.<sup>43</sup> There are two key reasons for the

---

<sup>38</sup> Ex. PAC-1 at 6.

<sup>39</sup> Ex. PAC-5 at 7 (“[The area where the [Port Authority] seeks to discharge effluent is one of the worst places that could have been chosen on the Texas coast for such an activity.”); Ex. PAC-6 at 8 (“If I had to choose the worst location on the Texas coast, from an ecological perspective, to place a desalination plant, I would choose Harbor Island in the Aransas Pass inlet.”).

<sup>40</sup> Ex. PAC-4 at 9-10; *see also* Ex. PAC-6 at 10-12.

<sup>41</sup> In particular, these species include members of the Drum Family like Red Drum, Atlantic Croaker, Silver Perch, Gulf Whiting, Black Drum, and Star Drum, and other species such as Southern Flounder, Stripped and White Mullet, Gulf Menhaden, White and Brown Shrimp, and Blue Crabs. Ex. PAC-4 at 11.

<sup>42</sup> Ex. PAC-6 at 16.

<sup>43</sup> Ex. PAC-6 at 16; Tr. Vol. 3 at 16-18.

difference, Mr. Holt testified: (1) the density of organisms is not as concentrated in the Gulf, and (2) the larvae in the Gulf are not likely to survive.<sup>44</sup> In contrast, he testified, “the larvae that are coming into the inlet are sort of the winners, you know, they’re the ones that have actually managed to be picked up in the tidal current and brought into the estuary. They have a chance to actually get to the nursery ground.”<sup>45</sup> In addition, Dr. Stunz, who had previously been hired by the City of Corpus Christi to perform a siting analysis for a desalination plant, noted that the Harbor Island area was not given serious consideration because there are very feasible alternatives that would have much less impact.<sup>46</sup>

Protestants also note that Harbor Island is located within the Redfish Bay State Scientific Area,<sup>47</sup> which contains a unique and fragile environment, including seagrass beds, oyster reefs, marshes, and mangroves, and provides feeding and nursery habitat for shrimp, crabs, gamefish, waterfowl, shorebirds, and turtles.<sup>48</sup> In addition, the proposed discharge would be located in an area designated by the federal Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as “essential fish habitat” for red drum (redfish) and shrimp.<sup>49</sup> Essential fish habitat is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity.”<sup>50</sup>

Additionally, Audubon witness Scott Moorhead testified that Audubon leases three tracts of land from the General Land Office in the vicinity of the proposed outfall for the purposes of providing and maintaining habitat for migratory and resident birds.<sup>51</sup> Two of the leases are on Harbor Island’s south and northeastern ends with terms through 2037 and 2051, respectively, and

---

<sup>44</sup> Tr. Vol. 3 at 16-18; Ex. PAC-4 at 11 (“There is no evidence of successful development of these types of larvae in the open ocean – they are ‘estuarine dependent.’”).

<sup>45</sup> Tr. Vol. 3 at 17.

<sup>46</sup> Ex. PAC-6 at 7-8.

<sup>47</sup> Ex. PAC-27 (map of Redfish Bay State Scientific Area); Tr. Vol. 5 at 107.

<sup>48</sup> Ex. PAC-37.

<sup>49</sup> PAC Closing Argument at 5; Ex. PAC-1 at 8-9.

<sup>50</sup> 16 U.S.C. § 1802(10).

<sup>51</sup> Ex. Audubon-1 at 3.

one lease is closer to shore in Redfish Bay.<sup>52</sup> The leases currently support Osprey, Roseate Spoonbill, Great Blue Heron, Great Egret, Brown Pelican, American White Pelican, Royal Tern, Ring-billed Gull, Long-billed Dowitcher, and other associated species.<sup>53</sup>

## 5. Modeling Performed

For TPDES permit applications with a diffuser at the outfall, such as this one, the ED uses the Cornell Mixing Zone (CORMIX) model to predict effluent percentages at the edges of the regulatory mixing zones.<sup>54</sup> The effluent percentage is determined based on where the model predicts the effluent plume intersects the edge of each regulatory mixing zone. The ED uses the highest predicted effluent percentages to set limits in the permit.<sup>55</sup>

ED witness Katie Cunningham, an aquatic scientist/hydrologist, performed the CORMIX modeling in this case. In running the model, Ms. Cunningham relied on information provided in the Application, as well as default inputs provided in TCEQ's guidance manual titled "Mixing Analyses Using CORMIX" (CORMIX SOPs).<sup>56</sup>

The ED acknowledges that an error in the CORMIX modeling was discovered after this case was referred to SOAH.<sup>57</sup> In the initial review, Ms. Cunningham incorrectly evaluated the location at which the effluent plume intersects the boundary of the ZID. Due to the rectangular shape of the ZID, the location at which the model predicts the plume to intersect the ZID boundary must be verified in the x and y directions. The model predicts that the plume will intersect the ZID boundary in the y direction first, but the initial analysis only considered the x direction. After correcting for the error, the predicted effluent percentage at the edge of the ZID increased from

---

<sup>52</sup> Ex. Audubon-1 at AUD 101.

<sup>53</sup> Ex. Audubon-1 at 3.

<sup>54</sup> Ex. ED-KC-1 at 5.

<sup>55</sup> Ex. ED-KC-1 at 8.

<sup>56</sup> Ex. ED-KC-1 at 5-6; Ex. AR-4 at S-App. 000371-000375.

<sup>57</sup> ED Closing Argument at 12; *see also* Ex. ED-KC-1 at 11.

1.95% to 18.4%.<sup>58</sup> To capture this change, Ms. Cunningham issued a revised memo on June 10, 2020, recommending that the draft permit require the Port Authority to maintain the diffuser at Outfall 001 to achieve a maximum dilution of 18.4% effluent at the edge of the ZID.<sup>59</sup>

As corrected, the ED's CORMIX modeling predicts effluent percentages of 18.4% at the ZID boundary, 1.34% at the aquatic life mixing zone boundary, and 1.20% at the human health mixing zone boundary.<sup>60</sup> The appropriateness and accuracy of the ED's CORMIX modeling is further discussed in Section IV.B. below.

In addition to the CORMIX modeling, the Port Authority also modeled the proposed discharge in 2018 using the SUNTANS model.<sup>61</sup> The goal of the modeling was to determine whether the discharge would result in the formation of a high-salinity water layer along the channel bottom, or would result in an overall or accumulating increase in salinity throughout portions of the Corpus Christi Bay system.<sup>62</sup> Based on the modeling, Port Authority witness Dr. Jordan Furnans concluded that the desalination brine discharge increases computed salinity by 0-1 parts per thousand (ppt) in the vicinity of the discharge and throughout the Corpus Christi Bay system, with daily tidal fluctuations continuously mixing the discharge so that stratification is never persistent.<sup>63</sup>

## **6. Draft Permit Requirements**

The draft permit prepared by the ED includes daily monitoring requirements for total suspended solids, total dissolved solids, chloride, and sulfate; and effluent limitations for flow and

---

<sup>58</sup> Ex. ED-KC-1 at 11.

<sup>59</sup> Ex. AR-8 at ED-0050 – ED-0051.

<sup>60</sup> Ex. AR-8 at ED-0058.

<sup>61</sup> SUNTANS is an acronym for the Stanford Unstructured Nonhydrostatic Terrain-Following Adaptive Navier-Stokes Simulator. Ex. APP-JF-1 at 8.

<sup>62</sup> Ex. APP-JF-1 at 4-5.

<sup>63</sup> Ex. APP-JF-1 at 6.

pH.<sup>64</sup> However, because the Facility has not been constructed or commenced discharge yet, the ED did not have analytical data for the actual effluent to be discharged and, therefore, was unable to determine the reasonable potential of the effluent to cause toxicity on the receiving water.<sup>65</sup> To address this lack of data, Other Requirement No. 8 was added to the draft permit requiring sampling and analysis of the effluent upon commencement of discharge. Based on a review of the data, the permit may be reopened to incorporate additional effluent limitations or monitoring requirements, if needed.<sup>66</sup>

As stated above, based on the ED's corrected modeling results, the draft permit also includes a requirement that the Port Authority maintain the diffuser at Outfall 001 to achieve a maximum dilution of 18.4% effluent at the edge of the ZID.<sup>67</sup>

In addition, in response to concerns raised during the public comment phase of this proceeding, the ED added requirements to the draft permit obligating the Port Authority to: (1) study and report on the ambient water velocity at the outfall location,<sup>68</sup> and (2) conduct whole effluent toxicity (WET) testing on the effluent during the first year of the discharge, in particular, a 24-hour test every six months and a 48-hour test on a quarterly basis.<sup>69</sup>

## 7. Diffuser Design

In addressing several of the Commission's referred issues, the parties raise questions about whether the diffuser design contained in the Application can meet the draft permit limits, and thus,

---

<sup>64</sup> Ex. ED-SG-1 at 8.

<sup>65</sup> *Id.*

<sup>66</sup> *Id.*

<sup>67</sup> Ex. AR-8 at ED-0014 (Other Requirement No. 4).

<sup>68</sup> Ex. AR-8 at ED-0015 (Other Requirement No. 9 states that "During the term of the permit, the permittee shall complete a study of ambient water velocity and submit a report to the TCEQ Water Quality Assessment Section (MC-150) summarizing measured ambient water velocity at the location of Outfall 001. The report must include results of measurements of speed and direction of the tidal current collected at the depth of the proposed/installed diffuser barrel. The measurements shall capture velocities encompassing a complete tidal cycle and be collected during a period in which maximum tidal amplitude typically occurs.").

<sup>69</sup> Ex. AR-8 at ED-0019 – ED-0025.

is the actual design that will be used. Their evidence and arguments are laid out here, but the merits are addressed below in connection with each referred issue to which the diffuser design is relevant.

Protestants and OPIC assert that the diffuser design in the Application cannot meet the draft permit limits, and there is a “new diffuser design.” In support, they point to additional CORMIX modeling performed by Port Authority witness Dr. Tischler using a revised diffuser design.<sup>70</sup> Specifically, Dr. Tischler made two changes: (1) he reduced the diameter of the ports from 2 feet to 0.83 feet, and (2) he changed the angle of the ports so they point toward the surface to a greater degree.<sup>71</sup> These changes increase the velocity of the discharge from 1.5 meters/second (m/s) to 27 m/s, or about twenty times faster, and aim the initial jet of effluent closer to the surface to provide maximum dilution before it falls to the bottom of the channel.<sup>72</sup> In his prefiled testimony, Dr. Tischler described the reason for the additional modeling:

Because the tidal currents at this discharge location have a wide range, from 0.05 m/s to 1.0 m/s, the original diffuser design is affected, resulting in an increased effluent concentration, especially close to the diffuser, at current velocities exceeding 0.40 m/s. However, minor adjustments to the design of the diffuser can ensure that mixing efficiency is acceptable through the entire range [of] ambient current velocities, thereby eliminating the concern about a very small, higher concentration portion of the effluent plume.<sup>73</sup>

When cross-examined about whether the revised diffuser design is necessary to meet the draft permit limits, Dr. Tischler testified as follows:

Q: Do you have any opinion on whether the revised -- in your expert opinion, of course, do you have any expert opinion on whether the revised diffuser design is necessary to meet permit requirements?

A: Yes.

Q: What is that opinion?

---

<sup>70</sup> Tr. Vol. 3 at 218.

<sup>71</sup> Tr. Vol. 3 at 219-22.

<sup>72</sup> *Id.*

<sup>73</sup> Ex. APP-LT-1 at 34.

- A: They may have difficulty meeting the 18.5 [sic]<sup>74</sup> percent in the ZID, unless they make revisions to the design.
- Q: What do you mean by “difficulty,” sir?
- A: They may not meet it.
- Q: So just black and white, they won’t be able to meet it; is that your testimony, sir?
- A: Under the conditions of high flow rates, the modeling would suggest that they couldn’t meet it.<sup>75</sup>

Protestants questioned the ED’s witnesses about Dr. Tischler’s testimony at the hearing. ED witness Ms. Cunningham testified that if the Port Authority changes the diffuser design “at all,” then it would need to be re-reviewed by TCEQ.<sup>76</sup> Similarly, ED witness and permit coordinator Shannon Gibson testified that if the Port Authority validates that the diffuser design in the Application cannot meet the draft permit limits, then it needs to provide that information to TCEQ as promptly as possible.<sup>77</sup> If that had occurred before this case was referred to SOAH, Ms. Gibson testified that the ED’s staff would have reviewed the information to determine whether it necessitates changes to the draft permit.<sup>78</sup> Protestants assert that the new diffuser design and new modeling have not been evaluated by the ED as required.

The Port Authority disagrees that there is a new diffuser design and asserts that Dr. Tischler’s testimony has been taken out of context. In particular, the Port Authority points out that, in responding to PAC’s experts’ opinions, Dr. Tischler assumed some of their hypothetical

---

<sup>74</sup> This reference appears to be an inadvertent misstatement, as the draft permit limit at the ZID boundary is 18.4%. *See* Ex. AR-8 at ED-0058.

<sup>75</sup> Tr. Vol. 3 at 264-65.

<sup>76</sup> Tr. Vol. 6 at 109; *see also* Ex. ED-KC-1 at 22 (“If changes are made to the diffuser design that result in different effluent percentages and/or mixing zone dimensions than what were used to develop this permit, then a permit amendment would be required.”).

<sup>77</sup> Tr. Vol. 5 at 104.

<sup>78</sup> Tr. Vol. 5 at 104-05.

ambient tidal velocities.<sup>79</sup> When viewed in context, his testimony quoted above provides that, *if such hypothetical ambient tidal velocities are used*, then the existing diffuser in the Application might have difficulty meeting the permit limits at the edge of the ZID.<sup>80</sup> However, the Port Authority notes that the diffuser was not designed to meet hypothetical ambient velocities but to comply with the TCEQ's CORMIX SOPs, which assume an ambient tidal velocity of 0.05 m/s. Dr. Tischler testified that the ED's diffuser review was consistent with the IPs and CORMIX SOPs,<sup>81</sup> and notably, PAC witness Joseph Trungale also testified that the ED complied with the CORMIX SOPs.<sup>82</sup> Moreover, the Port Authority points out that Dr. Tischler denied that the Port Authority had plans to submit a different diffuser design,<sup>83</sup> and therefore, the questioning regarding such a hypothetical future request is irrelevant.

The ED states that whether the design of the diffuser can meet the requirements in the draft permit was not a referred issue and should not be considered.<sup>84</sup> According to the ED, if the Port Authority is unable to meet the effluent limits in its permit, it may be subject to an enforcement action.

## **8. Alleged Bias of PAC's Witnesses**

Finally, before taking up the Commission's referred issues, the ALJs address the Port Authority's arguments that the opinions of certain PAC witnesses should be disregarded due to their alleged bias.

Specifically, the Port Authority alleges that PAC witnesses Dr. Erisman, Dr. Stunz, and Mr. Holt are not credible because they are biased against the Port Authority and industrial

---

<sup>79</sup> Tr. Vol. 3 at 258-59.

<sup>80</sup> Port Authority Reply at 21-22.

<sup>81</sup> Ex. APP-LT-1 at 29.

<sup>82</sup> Tr. Vol. 2 at 115.

<sup>83</sup> Tr. Vol. 3 at 259.

<sup>84</sup> ED Reply at 3-4.

development of Harbor Island.<sup>85</sup> In support, the Port Authority points to emails from Dr. Erisman and Dr. Stunz in response to a July 30, 2019 email from a PAC representative seeking scientists who agree with PAC's positions, and would be willing to become PAC members and help with comments to the TCEQ. Dr. Erisman responded that "[a]s a homeowner and resident of Port Aransas, I am against the industrialization of our local waters and thus support PAC."<sup>86</sup> Dr. Stunz stated that he "echo[ed]" Dr. Erisman's comments and that, while joining PAC as a private citizen was not an issue, he was "not sure if that would put us in a conflict of interest position rather than an independent resource you can use."<sup>87</sup> Dr. Stunz further stated that "we'll need to be cautious about maintaining our scientific independence as 'honest brokers' and unbiased providers of data. So, direct advocating could blur that distinction."<sup>88</sup> As to Mr. Holt, the Port Authority points to a July 2018 email he sent regarding the Facility, stating that "I probably should not say it out loud, but I too, am biased in my opinion about this facility. If nothing else, I just don't want the damn thing built here."<sup>89</sup>

The Port Authority further highlights a statement in Dr. Erisman's email that his main goal right now as a scientist involves scrambling to get funding to complete baseline assessments that should be conducted before further industrialization on the Corpus Christi Ship Channel.<sup>90</sup> From this statement, the Port Authority concludes that his "opinions are a thinly veiled attempt to gain financially by being retained to conduct additional studies if the Draft Permit is denied."<sup>91</sup>

Protestants respond that there is no evidence that PAC's witnesses possess any bias against the Port Authority as an organization.<sup>92</sup> Moreover, they emphasize that each PAC witness made

---

<sup>85</sup> Port Authority Closing Argument at 23-26, 28; Port Authority Reply at 9-12. The Port Authority also argues that these witnesses lack sufficient expertise and data to support their opinions. These concerns are weighed below in considering their testimonies.

<sup>86</sup> Ex. APP-2.

<sup>87</sup> Ex. APP-3.

<sup>88</sup> *Id.*

<sup>89</sup> Tr. Vol. 2 at 257.

<sup>90</sup> Ex. APP-2; Tr. Vol. 4 at 70.

<sup>91</sup> Port Authority Closing Argument at 24.

<sup>92</sup> PAC Reply at 9.

clear that they object to the Facility not because of bias, but because of the potential damage the discharge will cause from an ecological standpoint. In particular, Protestants note that Dr. Stunz and Mr. Holt testified that they are not opposed to desalination in general, but instead object to the discharge location selected by the Port Authority.<sup>93</sup> In addition, the fact that these witnesses live in the community should not prevent their testimony from being given weight; instead, according to Protestants, there is no better, more probative evidence than testimony from experienced marine biology and ecology researchers who have lived and worked in this location for decades. Finally, in response to the Port Authority's allegation that Dr. Erisman is seeking financial gain, Protestants note that his curriculum vitae includes five pages of grants and that the Port Authority must be unaware that vast sums of grant money are spent every year to research the effects of ecological disasters.<sup>94</sup>

The ALJs are not persuaded that the alleged bias of PAC's witnesses effects the credibility of their analyses. When their statements are reviewed in their entirety, they indicate concerns with the potential ecological impact of the proposed discharge. For instance, while Dr. Erisman's email notes that he is against industrialization of the local waters, it goes on to explain the basis of his concern as follows:

[A]s an objective scientist I cannot make the goal of any of my research to resist/advocate anything other than to provide robust, objective information that allows policy-makers and managers to make informed decisions based on the best available scientific information. As a scientist, my concern is that many of these development projects are moving forward hastily without this necessary scientific information to make an informed decision. That is, we lack the necessary baseline information related to the physical, biological, and socio-economic dynamics of the Aransas Ship Channel to assess the types and magnitude of impacts these activities may generate both in the short and long-term. As a scientist, I assert that such information must be acquired, synthesized, and discussed among all stakeholders before any decisions are made in order to ensure so that any decisions related to the development are done so in an informed manner.<sup>95</sup>

---

<sup>93</sup> PAC-6 at 24; Tr. Vol. 3 at 17.

<sup>94</sup> PAC Closing Argument at 10 n.20.

<sup>95</sup> Ex. APP-2.

This is the same email that Dr. Stunz “echo[ed]” in his reply email.<sup>96</sup> The ALJs also disagree that Dr. Erisman’s email indicates a motive to gain financially from denial of the draft permit. Furthermore, Dr. Stunz and Mr. Holt specifically testified that moving the outfall location to the Gulf of Mexico would resolve most of their concerns, which is not consistent with a bias against the Facility in general.

**B. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality, including utilizing accurate inputs. (Issue G)**

The accuracy of the modeling performed by the ED (Issue G) has implications for several issues referred by the Commission, including Issues A, B, C, D, and H, and therefore, is discussed first. Protestants and OPIC raise two concerns with respect to the modeling: (1) the CORMIX model is not appropriate for use in this case due to characteristics of the outfall location, and (2) the ED used inaccurate inputs that render the modeling unreliable. The Port Authority and ED assert that the CORMIX modeling performed by the ED complies with all requirements in the TCEQ’s IPs and CORMIX SOPs.

**1. Regulations Applicable to the Modeling**

As an initial matter, Protestants assert that there is no legal requirement that an applicant for a TPDES permit perform modeling of their proposed effluent.<sup>97</sup> They acknowledge that TCEQ has guidance for using the CORMIX model, but point out that there is no rule requiring its use. According to Protestants, the ED has evaluated the potential impacts of discharge permits without using the CORMIX model in the past, and is not required to use a model that does not fit. Furthermore, Protestants note that the Commission has rules that require applicants to provide accurate and complete information when reasonably requested by the ED.<sup>98</sup> They argue that these requirements, along with the TSWQS, are intended to ensure that wastewater discharges will be

---

<sup>96</sup> Ex. APP-3.

<sup>97</sup> PAC Closing Argument at 42.

<sup>98</sup> See 30 Tex. Admin. Code §§ 305.45(a)(8)(C), 305.48(a)(3).

protective of the state's water quality and marine environment, and cannot be satisfied with improper or unreliable modeling.

In response, the Port Authority notes that PAC witness Mr. Trungale, who conducted the CORMIX modeling for Protestants, admitted that the ED and Port Authority complied with TCEQ's CORMIX SOPs.<sup>99</sup> In addition, the rules that Protestants cite require an applicant to provide additional information *when requested* by the ED, and Protestants did not show that the ED requested anything that was not provided. In fact, according to the Port Authority, testimony from the ED's staff confirms that the Application provided complete and accurate information.

## 2. Suitability of the CORMIX Model

Protestants argue that the characteristics of the outfall location prevent the CORMIX model from making accurate predictions, and therefore, it is inappropriate to use the model in this case. In particular, they contend that the CORMIX model is not capable of modeling salinity plumes when the channel floor slopes upward, as it does here, because the model must be run with a zero or downward slope.<sup>100</sup> Protestants emphasize the significance of this limitation of the CORMIX model in this case because the ED's modeling shows that, after exiting the diffuser, the effluent plume falls quickly to the bottom of the channel,<sup>101</sup> which is a 90-foot hole that slopes upward. When the plume drops into the hole, Protestants contend it remains trapped there with upward sloping sides.

According to Protestants, using the CORMIX model is also inappropriate in this case because the model requires a steady-state condition with the flow of the receiving waters moving in a straight line. However, the discharge in this case would be located near an eddy with a more circular flow, which can recirculate the high salinity effluent. Protestants assert that this recirculation may result in increased effluent concentrations near the diffuser arrays.

---

<sup>99</sup> Port Authority Reply at 23; Tr. Vol. 2 at 132.

<sup>100</sup> Ex. PAC-2 at 14; Tr. Vol. 6 at 78.

<sup>101</sup> Ex. PAC-2 JT-2.

The ED does not dispute that the CORMIX model can only be run with a flat or downward slope and that it is not capable of simulating an eddy.<sup>102</sup> However, the ED contends that the inputs used result in a more conservative analysis because the eddy and deeper water column enhance mixing.<sup>103</sup> The ED also responds that the CORMIX model is the only model that TCEQ uses to predict effluent percentages when the applicant is using a diffuser.<sup>104</sup> To address concerns raised during the comment period about the steady-state function of the CORMIX model, the ED also added Other Requirement No. 9 to the draft permit, which requires the permittee to complete a study of ambient water velocity at the outfall location.<sup>105</sup>

The Port Authority notes that hydrodynamic modeling, such as CORMIX, does not require an exact replication of the existing conditions to provide meaningful results.<sup>106</sup> Port Authority witness Dr. Tischler explained that hydrodynamic modeling necessarily requires reducing the complexity of the physical environment, such as a bay or estuary, in order to apply a computer model to it, a process referred to as schematization.<sup>107</sup> Dr. Tischler further testified that there is no other modeling program better suited for modeling the discharge from the Facility and the diffuser design.<sup>108</sup> In addition, PAC witness Mr. Bruce Wiland could not identify any other modeling program that would be appropriate to use in this case, nor any model approved by EPA for such purposes.<sup>109</sup>

Additionally, the Port Authority asserts that concerns about the negatively buoyant discharge plume collecting within the hole defies the hydrodynamics that created the hole. Dr. Tischler testified that the hole, commonly known as a “scour hole,” was created by the velocity of the current at the bottom of the channel that is caused by the bend in the channel and the nearby

---

<sup>102</sup> ED Reply at 15; Tr. Vol. 6 at 77-78.

<sup>103</sup> ED Reply at 15.

<sup>104</sup> ED Closing Argument at 12 (citing Ex. ED-KC-1 at 5).

<sup>105</sup> Ex. AR-8 at ED-0015.

<sup>106</sup> Port Authority Closing Argument at 51 (citing Ex. APP-LT-1 at 38).

<sup>107</sup> Ex. APP-LT-1 at 38.

<sup>108</sup> Ex. APP-LT-1 at 46.

<sup>109</sup> Tr. Vol. 2 at 201, 209-11.

intersection with the Lydia Ann Channel and Aransas Pass.<sup>110</sup> The bottom velocity, which is high enough to prevent the sedimentation of high-density particles (i.e., sand and silt) in the area, would mix and disperse the effluent plume with the overlying ambient water more thoroughly than the CORMIX model predicts.<sup>111</sup>

### **3. Accuracy of Modeling Inputs**

#### **a. Channel Bathymetry**

Protestants and OPIC contend that the ED's CORMIX modeling used inaccurate inputs for the channel bathymetry at the outfall location. Bathymetry refers to the depth, shape, and contours of the floor of the receiving waters, including whether there are slopes, pitches, and holes.<sup>112</sup> The Application identified the channel depth at the outfall location as 63 feet,<sup>113</sup> but the U.S. Army Corps of Engineers, which conducts hydrographic surveys of the Corpus Christi Ship Channel, has shown since at least 2011 a 90-foot hole at that location.<sup>114</sup> However, the ED modeled the discharge as if it would be located over a 63-foot channel floor with a 4% bottom slope downward and away from the outfall.

Protestants note that changing the bottom depth changes the predicted mixing conditions, even above 63 feet.<sup>115</sup> They point out that ED witness Ms. Cunningham testified that if she had known the bottom of the channel was 90 feet, she would have done additional modeling using that depth.<sup>116</sup> In addition, Protestants assert that the presence of an eddy at the outfall location cannot be presumed to create adequate mixing, and that any claim that it does is a suggestion that the model is not needed. OPIC also points out that the diffuser height in the Application is identified

---

<sup>110</sup> Ex. APP-LT-1 at 33, 39.

<sup>111</sup> Ex. APP-LT-1 at 33, 39.

<sup>112</sup> Tr. Vol. 2 at 89.

<sup>113</sup> See Ex. AR-4 at S-App. 000357.

<sup>114</sup> Ex. PAC-3 at 16.

<sup>115</sup> PAC Closing Argument at 46.

<sup>116</sup> Tr. Vol. 6 at 75.

as 12.6 feet above the channel floor and that, assuming a channel depth of 63 feet, Ms. Cunningham used 50.4 feet as the diffuser height.<sup>117</sup>

The Port Authority and ED do not dispute that the channel depth at the outfall location is closer to 90 feet and that the ED's modeling used a depth of 63 feet. Instead, they contend that using the shallower depth in the modeling produces a more conservative result.<sup>118</sup> The ED notes that Ms. Cunningham testified that the modeling shows the effluent plume will sink until it contacts the bottom of the channel and that the additional 30 feet of depth the effluent would travel would provide greater opportunity for mixing with the ambient water.<sup>119</sup> The Port Authority addresses the bathymetry concerns in its discussion of why the CORMIX model is appropriate for use in this case. Those arguments are set out above and not repeated here.

#### **b. Ambient Velocity of the Receiving Waters**

The Application did not include site-specific velocity data for the outfall location. When site-specific data is not provided, the TCEQ's CORMIX SOPs state that the modeler should "assume a small velocity."<sup>120</sup> In this case, the ED ran the CORMIX model using a default ambient water velocity of 0.05 m/s for the receiving waters.<sup>121</sup> ED witness Ms. Cunningham testified that this value is intended to be a conservative input since, at higher velocities, the water body should be more turbulent and therefore increase mixing.<sup>122</sup>

---

<sup>117</sup> OPIC Closing Argument at 21.

<sup>118</sup> Port Authority Closing Argument at 44; ED Reply at 15.

<sup>119</sup> Tr. Vol. 6 at 18; *see also* Ex. APP-LT-1 at 48 ("Assigning a bottom depth that is less than the true depth has the effect of reducing the calculated dilution in the plume because CORMIX predicts that dilution in the plume slows once the bottom is encountered (i.e., there is no underlying water to dilute the descending plume). Thus, if the bottom depth assigned in the model is less than the actual model depth, the model will predict lower dilution factors (higher percent effluent) than will actually occur.").

<sup>120</sup> Ex. AR-4 at S-App. 000371.

<sup>121</sup> Ex. ED-KC-1 at 7.

<sup>122</sup> Ex. ED-KC-1 at 13.

Protestants and OPIC contend that the ED's modeling failed to use accurate velocity data for the Aransas Pass inlet because the assumed 0.05 m/s velocity is incorrect 95% of the time.<sup>123</sup> Data from the National Oceanic and Atmospheric Administration (NOAA) indicates that velocities in the channel exceed 0.25 m/s about 73% of the time and exceed 0.41 m/s about 68% of the time.<sup>124</sup> Using velocity data of 0.25 m/s to 0.41 m/s, which Protestants contend is more reliable but still conservative, PAC witness Mr. Trungale calculated that the effluent concentration will range from 60% to 70% at the ZID boundary, and from 20% to 30% at the aquatic mixing zone boundary. These values are much higher than the draft permit's effluent percentages at those boundaries of 18.4% and 1.34%, respectively. Protestants and OPIC also criticize the ED's modeling for assuming a constant velocity in the same direction, as it does not accurately represent the tidal nature of the receiving waters.

The Port Authority and ED support Ms. Cunningham's use of 0.05 m/s ambient velocity because it is consistent with the CORMIX SOPs.<sup>125</sup> The Port Authority notes that PAC witness Mr. Trungale admitted that the TCEQ followed the CORMIX SOPs and that actual ambient velocity data is not required prior to permitting.<sup>126</sup> In essence, according to the Port Authority, Protestants seek to impose unwritten modeling requirements that are different from the TCEQ's CORMIX SOPs, and a contested case is not the proper forum to challenge an agency's standards and procedures.

Additionally, the Port Authority and ED point out that Other Requirement No. 9 was added to the draft permit to require the Port Authority to conduct a study and report on ambient water velocity at the outfall location. Ms. Cunningham testified that the data from this study will be used in future reviews of the diffuser.<sup>127</sup>

---

<sup>123</sup> Ex. PAC-2 at 16 (“Velocities in the channel appear to be at or below 0.05 m/s at this site about 5% of the time.”).

<sup>124</sup> Ex. PAC-2 at 16.

<sup>125</sup> Port Authority Closing Argument at 48; ED Closing Argument at 13-14.

<sup>126</sup> Tr. Vol. 2 at 114-15.

<sup>127</sup> Ex. ED-KC-1 at 13.

**c. Source Water**

At the time the ED performed the CORMIX modeling, the Facility's intake was proposed to be located in a channel adjacent to Harbor Island, but was later moved to the Gulf of Mexico.<sup>128</sup> The salinity and temperature of the source water at the intake location are used to determine the effluent densities input into the model.<sup>129</sup> In performing the modeling, the ED relied on the Application, which provided temperature and salinity values measured at Surface Water Quality Monitoring (SWQM) Station 16492 in the Lydia Ann Channel.<sup>130</sup>

Protestants and OPIC contend that the modeling failed to use accurate inputs for the source water because it was not updated after the intake location changed to use water quality data from the Gulf of Mexico. Based on data from SWQM Station 13468 in the Gulf of Mexico, PAC witness Mr. Trungale testified that the water in the Gulf of Mexico has a saline content closer to 30.3 ppt, not the 22.9 ppt that was used in the CORMIX modeling.<sup>131</sup> This change affects the effluent density, and consequently, the percentage of effluent at the mixing zones.<sup>132</sup>

The Port Authority responds that the salinity is essentially the same between the channel and Gulf of Mexico locations, so the change in intake location is not expected to change the results of the analysis.<sup>133</sup> Port Authority witness Randy Palachek testified that the relevant data from the Gulf of Mexico and Lydia Ann Channel shows no statistically significant difference for modeling purposes.<sup>134</sup> The Port Authority also argues that focusing on the intake water is unwarranted because the TCEQ sets permit limits based on sampling the discharge, which is determined when there is an actual discharge.<sup>135</sup>

---

<sup>128</sup> Ex. ED-KC-1 at 16.

<sup>129</sup> *Id.*

<sup>130</sup> Ex. AR-4 at S-App. 000352.

<sup>131</sup> Ex. PAC-2 at 18.

<sup>132</sup> *Id.*

<sup>133</sup> Port Authority Closing Argument at 45.

<sup>134</sup> Ex. APP-RP-1 at 18-19; Ex. APP-RP-8; Tr. Vol. 4 at 13-14.

<sup>135</sup> Tr. Vol. 5 at 16-17.

**d. Effluent Flow at Lower Production Levels**

The ED modeled the proposed discharge using the maximum daily average flow rate of 95.6 MGD requested in the Application.<sup>136</sup> However, because lower flow rates were not modeled, Protestants and OPIC argue that the modeling fails to address the possibility that the Port Authority may initially operate the Facility at less than full capacity.<sup>137</sup> At discharge flow rates less than 57 MGD, the effluent percentage at the ZID boundary exceeds the 18.4% limit in the draft permit.<sup>138</sup> In response, the Port Authority notes that the Facility must meet the requirement of 18.4% effluent at the ZID boundary. Port Authority witness Dr. Tischler testified that if the Facility operates at levels that produce less effluent, it is as simple as closing some of the diffuser ports to achieve mixing consistent with the draft permit requirements.<sup>139</sup>

**4. ALJs' Analysis**

The TCEQ's rules do not expressly require modeling of wastewater discharges, but pursuant to its rules, the Commission has adopted the IPs, which establish methods and protocols approved by both the Commission and EPA for implementing the TSWQS. The IPs specifically provide for the use of the CORMIX model when a diffuser will be used, and the TCEQ has developed the CORMIX SOPs to provide guidance on how to run the model. Accordingly, in addressing this referred issue, the ALJs consider whether the modeling performed in this case complies with the TCEQ's IPs and CORMIX SOPs. In addition, to fully address the Commission's referred issue, the ALJs also consider whether the modeling "ensure[s] the draft permit is protective of water quality, including utilizing accurate inputs."

Protestants raise concerns about whether the Port Authority complied with 30 TAC §§ 305.45(a)(8)(C) and 305.48(a)(3), which require an applicant to provide additional information

---

<sup>136</sup> Ex. ED-KC-1 at 14.

<sup>137</sup> PAC Closing Argument at 50; OPIC Closing Argument at 24-25.

<sup>138</sup> Ex. PAC-2 at 16 (citing AR-4 at S-App. 000365, Table 10).

<sup>139</sup> Ex. APP-LT-1 at 36-37.

as reasonably requested by the ED. However, as pointed out by the Port Authority, there is no evidence that the ED requested any information from the Applicant that was not provided. Accordingly, the ALJs conclude that the Port Authority complied with 30 TAC §§ 305.45(a)(8)(C) and 305.48(a)(3).

The ALJs are also not persuaded that using the CORMIX model in this case is per se inappropriate. Protestants identified certain limitations of the CORMIX model, including its inability to model an upward sloping floor or to account for the presence of an eddy. However, as Dr. Tischler testified, all hydrodynamic modeling requires some amount of “schematization” to reduce the complexity of the physical environment. He further testified that the primary purpose for which CORMIX was developed was to model discharges and design diffusers.<sup>140</sup> And his testimony is supported by the CORMIX SOPs, which state that “[t]he model most commonly used to design diffusers and evaluate mixing near outfalls is CORMIX.”<sup>141</sup> Notably, PAC’s witnesses did not identify any modeling program that would be more appropriate to use in this case.

While the CORMIX model is not a perfect representation of actual conditions, the results of the model are only as reliable as the accuracy of its inputs, with recognition of its limitations. In this case, there is really no dispute that the inputs into the CORMIX model for channel bathymetry are not accurate. The evidence is conclusive that the depth of the channel at the outfall location is close to 90 feet, but the modeling used an input of 63 feet. Given this inaccuracy, it is also not clear whether the modeling used the correct depth for the diffuser because its location was identified in reference to the channel bottom, i.e., 12.6 feet above it. Additionally, the channel bottom slopes upward from the point of discharge, but the CORMIX model is not capable of modeling an upward slope, and the modeling in this case assumed a 4% *downward* slope.

Ms. Cunningham testified that “[t]he local depth, or the depth at the discharge point, is an important model input because it is a variable that influences near-field mixing.”<sup>142</sup> She further

---

<sup>140</sup> Ex. APP-LT-1 at 45.

<sup>141</sup> Ex. AR-4 at S-App. 000371.

<sup>142</sup> Ex. ED-KC-1 at 12.

testified that if she had known the channel depth was 90 feet, she would have run the model with that depth. Given the importance of the channel depth to the modeling results, using an incorrect value calls into question their reliability. The ALJs are also not persuaded that the deeper water column and presence of an eddy ensure that the results are more conservative. Changing the bottom depth changes the predicted mixing conditions, even above 63 feet. In addition, while the parties do not dispute that there is an eddy at the outfall location, the record does not contain any information regarding its exact location, size, shape, velocities, or period of time over which it was formed. Given the lack of information, it is speculation to assume that the undefined eddy will enhance mixing and prevent re-entrainment of the effluent. Accordingly, the ALJs conclude that the channel depth and slope used in the modeling are materially inaccurate and do not produce modeling results that ensure that the draft permit is protective of water quality.

As to ambient velocity, the evidence establishes that the ED followed the CORMIX SOPs in using a default ambient velocity of 0.05 m/s for the receiving waters. In the absence of site-specific velocity data in the Application, using that default value is intended to be conservative, based on the assumption that mixing will be greater at higher velocities.<sup>143</sup> However, the evidence in this case does not support that assumption. Mr. Trungale's modeling showed that using higher velocities ranging from 0.25 m/s to 0.41 m/s showed significantly worse mixing, with effluent concentrations between 60% and 70% at the ZID boundary. Moreover, data from NOAA indicates that these higher velocities are more likely to be present in the channel.<sup>144</sup> Dr. Tischler confirmed that tidal currents at the discharge location have a wide range, from 0.05 m/s to 1.0 m/s.<sup>145</sup> Thus, the use of 0.05 m/s for the ambient velocity is not conservative and not representative of actual conditions. As Ms. Cunningham testified, the ED uses the highest effluent percentages predicted by the CORMIX model to set limits in the permit.<sup>146</sup> Running the model with higher ambient velocity values results in higher effluent percentages at the ZID and mixing zone boundaries, and thus, would require a reconsideration of the draft permit limits.

---

<sup>143</sup> Ex. ED-KC-1 at 13; Tr. Vol. 6 at 35-36.

<sup>144</sup> Ex. PAC-2 at 16.

<sup>145</sup> Ex. APP-LT-1 at 34.

<sup>146</sup> Ex. ED-KC-1 at 8.

Based on the evidence and argument, the ALJs conclude that the ED's use of a 0.05 m/s default ambient velocity followed the CORMIX SOPs, but is not accurate, as the velocities in the channel exceed that amount 95% of the time. If the ED's assumption that it was more conservative to use a lower velocity in the modeling had been correct, then this inaccuracy would not be material, but that is not the case here. As a result, the use of an inaccurate ambient velocity in the modeling does not ensure that the draft permit is protective of water quality. The ALJs also find that the issue is not cured by the draft permit's requirement that the Applicant perform a study of ambient velocity *after* issuance of the permit.<sup>147</sup>

Protestants also raise issues with the source water data used in the modeling. However, based on Mr. Palachek's testimony that there is not a statistically significant difference between the relevant measurements in the Gulf of Mexico and Lydia Ann Channel, the ALJs conclude that the source water data used in the modeling was not inaccurate.

With respect to the effluent flow used in the modeling, the parties do not dispute that the TCEQ used the maximum daily average flow rate of 95.6 MGD requested in the Application. Rather, the issue is that the Facility may initially operate at lower flow rates that result in poorer mixing. However, the ALJs believe that Dr. Tischler adequately addressed this concern. He noted that this issue is typically dealt with in the final design phase of a new facility and can be addressed by closing ports on the diffuser to maintain the same port exit velocity at the lower flow rate.<sup>148</sup> Accordingly, the ALJs conclude that the flow rate used in the modeling was not inaccurate.

For the reasons discussed above, the ALJs conclude that the Port Authority has not met its burden to show that the modeling complies with applicable regulations to ensure the draft permit is protective of water quality, including utilizing accurate inputs.

---

<sup>147</sup> See Ex. AR-8 at ED-0014.

<sup>148</sup> Ex. APP-LT-1 at 36-37.

**C. Whether the Executive Director’s antidegradation review was accurate. (Issue H)**

The Commission’s antidegradation policy is set out in 30 TAC § 307.5(b). In this case, Tier 1 and Tier 2 antidegradation reviews are required due to the exceptional aquatic life use designation at the outfall location.<sup>149</sup> Tier 1 requires that “[e]xisting uses and water quality sufficient to protect those existing uses must be maintained.”<sup>150</sup> Tier 2 is more stringent and generally prohibits the lowering of water quality by more than a de minimis amount, as follows:

No activities subject to regulatory action that would cause degradation of waters that exceed fishable/swimmable quality are allowed unless it can be shown to the commission’s satisfaction that the lowering of water quality is necessary for important economic or social development. Degradation is defined as a lowering of water quality by more than a de minimis extent, but not to the extent that an existing use is impaired. Water quality sufficient to protect existing uses must be maintained.<sup>151</sup>

The antidegradation review for the Application was performed by ED witness and aquatic scientist Dr. Wallace. For both the Tier 1 and 2 reviews, Dr. Wallace concluded that the designated uses of primary contact recreation, exceptional aquatic life use, and oyster waters that apply to Segment 2481 (Corpus Christi Bay) will not be impaired. She based her conclusion primarily on the requirement in the draft permit that the effluent be discharged via a diffuser designed to achieve a salinity increase of less than 1.0 ppt at the edge of the mixing zone as compared to ambient salinity.<sup>152</sup> As part of Dr. Wallace’s Tier 2 review, she noted that despite the designation as oyster

---

<sup>149</sup> Ex. ED-MW-1 at 15.

<sup>150</sup> 30 Tex. Admin. Code § 307.5(b)(1).

<sup>151</sup> 30 Tex. Admin. Code § 307.5(b)(2).

<sup>152</sup> Ex. ED-MW-1 at 16-19. As part of her review, Dr. Wallace also concluded that the proposed discharge: (1) would not contribute to known water quality impairments of Corpus Christi beaches because they are over ten miles away, and (2) would not impact the piping plover, a threatened aquatic-dependent species found in Segment 2481, because the Facility is not a petroleum facility. *Id.* at 14-15. The finding regarding beaches was not challenged and is not discussed further. Audubon raises issues related to the endangered species review; however, these issues are addressed below in discussion of Issue A, which includes consideration of the adverse impacts to endangered or threatened species.

waters, there are no known oyster beds near the outfall location.<sup>153</sup> Dr. Wallace's antidegradation determination is memorialized in her memorandum dated August 20, 2018.<sup>154</sup>

## 1. Parties' Arguments

The Port Authority and ED maintain that Dr. Wallace's antidegradation review was accurate and complies with all applicable requirements in the TSWQS. Protestants and OPIC disagree, contending that the ED's antidegradation review was not based on sound science and accurate data, and is contrary to the evidence showing that additional salinity is likely to cause adverse effects to aquatic life.

First, Protestants contend that Dr. Wallace's antidegradation review was not based on sound science. In particular, they point to Dr. Wallace's deposition in which she testified that:

[S]ometimes you can have hard data and actually run some spreadsheet numbers or models and—and really look at it from an empirical point of view. But for the most part, an antideg review on a new facility is a feeling, and my feeling with its location in this dynamic environment that it was going to be okay, that this amount of hypersaline water being discharged from this facility would not degrade the environment beyond de minimis.<sup>155</sup>

Dr. Wallace also noted that the lack of information made her “very uncomfortable” doing an antidegradation review for a new facility, along with “the size of the discharge, the nature of the discharge, [and] the location of the discharge” in this case.<sup>156</sup> She further testified that “[i]t's hard to do antidegradation on a new facility because it's kind of like trying to look into a gazing ball and predict the future.”<sup>157</sup>

---

<sup>153</sup> Ex. ED-MW-1 at 19.

<sup>154</sup> Ex. AR-8 at ED-0072.

<sup>155</sup> Ex. PAC-16 at 34.

<sup>156</sup> Tr. Vol. 5 at 186.

<sup>157</sup> Ex. PAC-16 at 30; *see also* Tr. Vol. 5 at 186.

In addition, because a Tier 2 review considers whether the existing water quality will be lowered, Protestants point out that it necessarily requires knowledge of the baseline water quality condition, which is determined based on “[t]he highest water quality sustained since November 28, 1975.”<sup>158</sup> Protestants allege that this comparison was not done, citing Dr. Wallace’s deposition testimony that she did not think degradation was measured against 1975 conditions, and her direct testimony that she did not do an independent review of the 1975 conditions.<sup>159</sup> According to Protestants, such statements are not cured by her later assertion that the TSWQS and IPs incorporate the 1975 standards. Additionally, Dr. Wallace testified that she did not have enough time to review the Application to determine whether there was more than a de minimis change.<sup>160</sup> Therefore, Protestants assert that Dr. Wallace did not complete the first step in a Tier 2 antidegradation review as required.

Protestants also criticize the pH screening that Dr. Wallace conducted as part of her review. They point out that for the pH part of her analysis, Dr. Wallace used a salinity concentration of 31.81 practical salinity units (psu) (a measurement equivalent to ppt),<sup>161</sup> which she stated she got by “just playing with numbers and not thinking about the long-range ramifications of the spreadsheet.... So, like, quite honestly, you know—probably that salinity should be higher.”<sup>162</sup> With regard to her pH screening, Dr. Wallace also noted that when she selected a salinity input of 18 psu, she was in a hurry; that she usually uses 0.4 psu, so 18 psu was high; but that when she usually uses 0.4 psu for salinity, she was “thinking about a freshwater discharge because usually our effluents are freshwater. So there’s my mistake right there.”<sup>163</sup>

Protestants also note that Dr. Wallace did not have an opinion on the range of salinity that would support attainable estuarine-dependent aquatic life uses,<sup>164</sup> did not know how the 90-foot

---

<sup>158</sup> See 30 Tex. Admin. Code § 307.5(c)(2)(B).

<sup>159</sup> Ex. PAC-16 at 37-38; Ex. ED-MW-1 at 21.

<sup>160</sup> Tr. Vol. 5 at 185.

<sup>161</sup> Ex. ED-SG-3 at 69 n.4.

<sup>162</sup> Ex. PAC-16 at 18; *see also* Tr. Vol. 5 at 154-55; Ex. AR-8 at ED-0047.

<sup>163</sup> Tr. Vol. 5 at 156, 158.

<sup>164</sup> Tr. Vol. 5 at 162-63.

hole beneath the diffuser would impact her analysis,<sup>165</sup> and was unconcerned about possible death in the ZID because she believed there was an adequate zone of passage for marine organisms.<sup>166</sup> Given all of these factors, Protestants argue that the evidence does not reflect a scientist using best professional judgment.<sup>167</sup> In addition, even though the Port Authority and ED contend Dr. Wallace complied with TCEQ's checklist of procedures for an antidegradation review, following the checklist does not assure compliance with the substantive standards.<sup>168</sup>

OPIC raises similar concerns and further notes that, at Dr. Wallace's deposition, she stated there would be no more than a de minimis impact on the receiving waters by considering tidal exchange, wind events, and ship traffic.<sup>169</sup> However, at the hearing, she testified that ship traffic did not inform her antidegradation review,<sup>170</sup> and she did not review any data on wind in the channel, but instead relied on her experience living and working there.<sup>171</sup>

Protestants and OPIC further contend that Dr. Wallace's antidegradation review relied on inaccurate modeling information. As discussed above, after this case was referred to SOAH, ED witness Ms. Cunningham discovered an error in her initial interpretation of the CORMIX modeling, which resulted in an increase in the effluent percentage at the ZID boundary from 1.95% to 18.4%. Dr. Wallace's antidegradation review was based on Ms. Cunningham's initial memorandum issued in 2018 that contained the error, and the antidegradation review was not updated to reflect the correction.<sup>172</sup>

---

<sup>165</sup> Ex. PAC-16 at 29; Tr. Vol. 5 at 175.

<sup>166</sup> Tr. Vol. 5 at 166-67.

<sup>167</sup> PAC Closing Argument at 55.

<sup>168</sup> PAC Reply at 18-19 (citing *Save Our Springs Alliance, Inc. v. Tex. Comm'n on Env't'l Quality*, No. D-1-GN-19-003030 (345th Dist. Ct. Travis County, Tex. Oct. 29, 2020)).

<sup>169</sup> Ex. PAC-16 at 33.

<sup>170</sup> Tr. Vol. 5 at 195.

<sup>171</sup> Tr. Vol. 5 at 192-94.

<sup>172</sup> Tr. Vol. 6 at 99-100.

Furthermore, even if Dr. Wallace had relied on the updated modeling, Protestants assert that the modeling does not provide a reliable prediction of the effluent percentages at the mixing zones. Based on PAC witness Mr. Trungale's modeling runs, using more accurate velocity inputs in the CORMIX model shows up to 70% of the effluent remaining at the ZID boundary, not 18.4% as provided in Ms. Cunningham's analysis.<sup>173</sup> Protestants and OPIC also point out that the modeling conducted by the ED was based on a diffuser design that Port Authority witness Dr. Tischler testified cannot meet the permit requirements.

In contrast to Dr. Wallace's antidegradation review, Protestants highlight PAC witness Dr. Esbaugh's analysis, which they state demonstrates a more thorough and scientific approach to evaluating the impact of salinity on aquatic life. They note that Dr. Esbaugh assessed the existing salinity conditions in the Aransas Pass inlet and used more accurate salinity concentrations for the intake water.<sup>174</sup> He also determined that the natural salinity in the channel is close to the physiological tolerance of the most sensitive species (red drum), and that any increase in salinity would jeopardize aquatic life.<sup>175</sup> OPIC points out that Dr. Wallace stated she had no basis to disagree with Dr. Esbaugh that baseline salinity in the channel is already at the physiological tolerance of some species some of the time.<sup>176</sup> She also agreed that if a system were on the edge of collapse, then adding 1.34% of effluent at the edge of the mixing zone, as authorized by the draft permit, could be the tipping point.<sup>177</sup>

The Port Authority and ED both respond to Protestants' and OPIC's focus on the particular words Dr. Wallace used to describe her review, with the Port Authority describing it as "elevating form over substance."<sup>178</sup> The ED states that Dr. Wallace spoke colloquially during her deposition and cross-examination, using conversational terms instead of legal or scientific terms, but that this

---

<sup>173</sup> Ex. PAC-2 at 16.

<sup>174</sup> PAC Closing Argument at 57-58.

<sup>175</sup> Ex. PAC-5 at 11.

<sup>176</sup> Tr. Vol. 5 at 205.

<sup>177</sup> *Id.*

<sup>178</sup> Port Authority Reply at 25.

does not diminish the quality of her antidegradation review, or imply she took shortcuts.<sup>179</sup> The ED also emphasizes Dr. Wallace's credentials as a biologist who has been employed at the TCEQ since 2009, and as an aquatic scientist since 2015. In addition, the Port Authority points out that, while Dr. Wallace admitted she feels in a hurry when doing her work, she testified that she "thought very long and hard about every single step" of her permit review and worked harder on this one than most.<sup>180</sup> Dr. Wallace also explained that she was uncomfortable with antidegradation reviews for new facilities because, as she stated, "I hold myself to an impossible standard."<sup>181</sup>

As to the antidegradation review itself, the Port Authority and ED point to Dr. Wallace's prefiled testimony, which explains each step of her analysis.<sup>182</sup> They emphasize that Dr. Wallace testified that her antidegradation review complied with TCEQ's guidelines and all applicable state and federal statutes and regulations.<sup>183</sup> The ED further asserts that Protestants did not prove that Dr. Wallace's review violated any applicable state or federal requirement.

Dr. Wallace's work was also reviewed by two TCEQ staff members, including her immediate supervisor, and they both agreed with her analysis.<sup>184</sup> In addition, Port Authority witness Dr. Tischler affirmed that Dr. Wallace's antidegradation review properly addressed the impact of the proposed discharge by evaluating compliance with both Tier 1 and Tier 2.<sup>185</sup> Dr. Tischler further noted that Dr. Wallace's antidegradation memorandum provides that Tier 2 may be revisited if new information is received. In particular, he pointed out that the ED can revisit Tier 2 after the Port Authority conducts the effluent sampling required by Other Requirement No. 7 in the draft permit.<sup>186</sup>

---

<sup>179</sup> ED Reply at 6.

<sup>180</sup> Tr. Vol. 5 at 157.

<sup>181</sup> Tr. Vol. 5 at 187.

<sup>182</sup> Ex. ED-MW-1 at 13-15.

<sup>183</sup> See Ex. ED-MW-1 at 10, 25.

<sup>184</sup> Ex. ED-MW-1 at 11.

<sup>185</sup> Ex. APP-LT-1 at 32.

<sup>186</sup> *Id.*

The Port Authority and ED also assert that it was not necessary for Dr. Wallace to update the antidegradation review after the ED's CORMIX modeling analysis was corrected. Dr. Wallace's antidegradation review was based on the effluent percentage at the *mixing zone* boundary, which unlike the effluent percentage at the ZID boundary, was not impacted by the correction.<sup>187</sup> As to consideration of the 1975 baseline conditions, the Port Authority and ED point to Dr. Wallace's testimony that the TSWQS and IPs incorporate the 1975 conditions, and thus, were considered.<sup>188</sup> And with respect to the pH screening, the Port Authority contends that, even if Dr. Wallace had used the maximum potential salinity concentration for the effluent as Protestants suggest, it does not significantly alter the outcome.<sup>189</sup>

## 2. ALJs' Analysis

Dr. Wallace appears to have followed each step required by the TCEQ's IPs for antidegradation reviews.<sup>190</sup> However, following the procedures is not sufficient on its own to ensure that the proposed discharge complies with the substantive antidegradation standards. The Commission's referred issue requires a determination of whether the antidegradation review was "accurate," not simply whether it followed TCEQ's procedures. Protestants' and OPIC's arguments implicate whether the ED's antidegradation review meets the substantive standards, in particular whether Segment 2481's designation of "exceptional aquatic life use" will be maintained and whether water quality will not be lowered by more than a de minimis amount.

In concluding that the proposed discharge satisfies the Tier 1 and 2 antidegradation standards, Dr. Wallace relied on the draft permit's diffuser requirement, which she testified is designed to achieve a salinity increase of less than 1.0 ppt at the mixing zone boundary.<sup>191</sup> However, the draft permit's diffuser requirement provides an effluent limit at the ZID boundary,

---

<sup>187</sup> Tr. Vol. 6 at 99.

<sup>188</sup> Ex. ED-MW-1 at 21.

<sup>189</sup> Port Authority Reply at 26.

<sup>190</sup> Ex. ED-MW-1 at 13-15.

<sup>191</sup> Ex. ED-MW-1 at 18-19.

not the mixing zone boundary.<sup>192</sup> Thus, Dr. Wallace's conclusion appears to be based on the CORMIX modeling results for the diffuser design rather than the requirements in the draft permit.

As to the CORMIX modeling, the ED discovered an error that resulted in an increase of the effluent percentage at the ZID boundary, but did not affect the effluent percentage at the mixing zone boundary, which was the value Dr. Wallace relied on for her antidegradation review. Similarly, there was testimony that the current diffuser design cannot meet the effluent limit at the ZID boundary, but it did not address the limit at the mixing zone boundary. Therefore, the ALJs conclude that the corrected modeling and alleged diffuser design changes would not have impacted Dr. Wallace's conclusions.

However, the issue is whether Dr. Wallace's analysis ensures that the Tier 1 and 2 standards are met. To determine that an increase of 1% at the edge of the mixing zone should be within acceptable salinity tolerances for spotted seatrout, Atlantic croaker, and red drum, Dr. Wallace relied on a 1989 report titled "Salinity Requirements for Reproduction and Larval Development of Several Important Fishes in Texas Estuaries, Final Report."<sup>193</sup> However, she did not cite to any particular finding in the report to support her conclusion, and the report summary indicates that salinity extremes can be problematic for reproduction and larval development of these species.<sup>194</sup> In addition, Dr. Wallace agreed that adding 1.34% of effluent at the edge of the mixing zone (as predicted by the CORMIX modeling) could be the tipping point if a system were on the edge of collapse. Thus, it is not sufficient to merely point out that the predicted increase in salinity is relatively small.

---

<sup>192</sup> Ex. AR-8 at ED-0014.

<sup>193</sup> Ex. ED-MW-1 at 17.

<sup>194</sup> Ex. ED-MW-9 at 6 ("Salinity extremes significantly impaired all phases of reproduction and larval development examined in spotted seatrout, Atlantic croaker and red drum, from the beginning of oocyte growth to several weeks post-hatching of the larvae. Several stages of the reproductive and early life history cycles of these sciaenid fishes were particularly susceptible to salinity stress.").

The TSWQS also require that salinity gradients in estuaries must be maintained to support attainable estuarine-dependent aquatic life uses.<sup>195</sup> Yet, Dr. Wallace did not have an opinion on the range of salinity that would support such uses.<sup>196</sup> The record also does not indicate that Dr. Wallace considered the Aransas Pass inlet's key role in the life cycle of estuarine-dependent species for the Corpus Christi Bay system. As such, the ALJs conclude that Dr. Wallace's review failed to provide the "careful consideration" required by the TSWQS.<sup>197</sup>

In addition, by looking only at concentrations at the mixing zone boundary, Dr. Wallace's review ignores any potential impacts within the ZID and mixing zones, even though the TSWQS require "no lethality to aquatic organisms that move through a ZID."<sup>198</sup> The IPs provide a general guideline for antidegradation reviews that: "New discharges that use less than 10% of the existing assimilative capacity of the water body *at the edge of the mixing zone* are usually not considered to constitute potential degradation as long as the aquatic ecosystem in the area is not unusually sensitive to the pollutant of concern."<sup>199</sup> However, while this guideline references the assimilative capacity at the edge of the mixing zone, it does not preclude consideration of impacts within the ZID and mixing zone when appropriate. Notably, it provides an exception to the general rule when the aquatic ecosystem is unusually sensitive to the pollutant of concern. In such circumstances, potential adverse impacts within the ZID and mixing zones, such as lethality, could have cascading effects that impact the water body's designated use and quality. Moreover, Dr. Wallace testified that she did not know the existing assimilative capacity of the receiving water body.<sup>200</sup>

Dr. Wallace's testimony also makes clear that her antidegradation review was constrained by a lack of data because the Application is for a new discharge and that she had a limited amount of time for her review. On cross-examination, she agreed that she did not have enough time to

---

<sup>195</sup> 30 Tex. Admin. Code § 307.4(g)(3).

<sup>196</sup> Tr. Vol. 5 at 162-63.

<sup>197</sup> See 30 Tex. Admin. Code § 307.4(g)(3).

<sup>198</sup> 30 Tex. Admin. Code § 307.8(b)(2).

<sup>199</sup> Ex. ED-MW-3 at 64.

<sup>200</sup> Tr. Vol. 5 at 232.

determine whether there was more than a de minimis change to water quality as required by Tier 2.<sup>201</sup>

However, the ALJs are not persuaded that Dr. Wallace failed to consider the baseline 1975 conditions of the receiving waters as part of her Tier 2 analysis. Dr. Wallace did not independently evaluate the 1975 conditions, but testified that they are incorporated into the TSWQS and IPs that she performed her review under. The IPs support her contention, stating that “[b]aseline conditions are estimated from existing conditions, as indicated by the latest edition of the Texas Water Quality Inventory or other available information, unless there is information indicating that degradation in ambient water quality has occurred in the receiving waters since November 28, 1975.”<sup>202</sup> Protestants assert that the TCEQ was on notice that conditions have changed due to a comment submitted during the public comment phase of this proceeding that “freshwater inflows have been significantly altered by agricultural development.”<sup>203</sup> However, this single comment is not a sufficient basis to conclude that the receiving waters at the discharge site have been degraded.

As to Dr. Wallace’s pH screening, she admitted that certain inputs for salinity should have been higher. However, Protestants and OPIC did not explain how Dr. Wallace’s error would impact the antidegradation review. In contrast, the Port Authority points out that even if Dr. Wallace had used the maximum potential salinity concentration for the effluent, it would not significantly alter the outcome. Accordingly, the ALJs conclude that the greater weight of the evidence supports that, despite the acknowledged errors, Dr. Wallace’s inputs to the pH screening did not materially affect the antidegradation review.

After considering the evidence and arguments, the ALJs conclude that Protestants and OPIC rebutted the prima facie demonstration, and the greater weight of evidence does not support Dr. Wallace’s conclusion that the proposed discharge will maintain existing uses and not lower

---

<sup>201</sup> Tr. Vol. 5 at 185.

<sup>202</sup> Ex. ED-MW-3 at 63.

<sup>203</sup> Ex. ED-KC-6 at 48, comment 62.

water quality by more than a de minimis amount. Accordingly, the Port Authority has not met its burden of proof to show that the ED's antidegradation review was accurate.

**D. Whether the proposed discharge will adversely impact: the marine environment, aquatic life, and wildlife, including birds and endangered or threatened species, spawning eggs, or larval migration. (Issue A)**

The Port Authority and ED maintain that the draft permit is protective of the marine environment, aquatic life, and wildlife. Protestants, OPIC, Audubon, and the pro se group disagree.

On this issue, PAC offered the testimony of four witnesses with expertise in the fields of marine biology, ecology, wildlife, and fisheries science: Dr. Erisman, Mr. Holt, Dr. Esbaugh, and Dr. Stunz. Based on their testimony, Protestants, OPIC, Audubon, and the pro se group contend that the proposed outfall location is not appropriate for a desalination-related discharge; that salinity and other possible constituents of the discharge, including copper, may adversely affect aquatic life; and that the additional modeling performed by the Port Authority shows the discharge cannot meet the draft permit limits.

**1. TPWD/GLO Desalination Study**

Protestants allege that the Facility is proposed for an area that the Texas Parks and Wildlife Department (TPWD) and Texas General Land Office (GLO) have excluded from being appropriate for desalination facilities. In support, they point to a 2018 report prepared by TPWD and GLO titled "Marine Seawater Desalination Diversion and Discharge Zones Study" (the Desalination Study).<sup>204</sup> The purpose of the Desalination Study was "to identify zones in the Gulf of Mexico that are appropriate for the diversion of marine seawater and for the discharge of marine seawater desalination waste while taking into account the need to protect marine organisms."<sup>205</sup> The discharge zones identified in the Desalination Study exclude the five major passes that connect

---

<sup>204</sup> Ex. PAC-7.

<sup>205</sup> Ex. PAC-7 at 2.

the Gulf of Mexico with Texas's bays and estuaries, including Aransas Pass.<sup>206</sup> Thus, the proposed discharge is located in an area that the Desalination Study excludes for desalination activities.

The Port Authority and ED point out that the Desalination Study only applies to expedited permits under Texas Water Code chapter 18. The Application in this case was filed under Texas Water Code chapter 26, and therefore, the limitations in the study do not apply. They note that the Desalination Study states that “[a] person has the option to submit an application under [Texas Water Code] Chapter 11 or 26 to seek a permit to divert or discharge in a bay or estuary.”<sup>207</sup> The Port Authority also adds that Mr. Palachek testified that the permitting process in this case considered all of the factors identified in the Desalination Study for discharges.<sup>208</sup>

Protestants do not dispute that the Desalination Study was prepared to address expedited permits, but contend that the substantive requirements for the two types of permits are the same, and thus, it is a “distinction without a difference.”<sup>209</sup>

## **2. Effect of Increased Salinity**

The bulk of the parties' evidence and argument focuses on the effect of increased salinity on aquatic life. Their arguments are set out here by party.

### **a. Protestants' Arguments**

Protestants contend that high salinity or saline imbalances can be fatal to aquatic life. According to PAC witness Dr. Esbaugh, water inherently moves to higher concentrations of salt.<sup>210</sup> When a fish encounters higher salinity water, the water inside the fish moves outside of its

---

<sup>206</sup> Ex. PAC-7 at 13.

<sup>207</sup> Ex. PAC-7 at 6.

<sup>208</sup> Ex. APP-RP-1 at 24-25.

<sup>209</sup> PAC Closing Argument at 6 (citing Tr. Vol. 5 at 99-100).

<sup>210</sup> Tr. Vol. 3 at 39.

body, effectively dehydrating it.<sup>211</sup> The speed at which this occurs, Dr. Esbaugh testified, is impacted by the organism's surface-area-to-volume ratio—the smaller an animal is, the higher its surface area is to the volume inside of its body, and the faster it will lose water.<sup>212</sup>

PAC's witnesses focused primarily on salinity's impact on the very young, planktonic life stages of fish, generally referred to as larvae. Larval stages are not tolerant of a range of salinities, particularly abrupt changes in conditions, such as might be expected when encountering a brine discharge.<sup>213</sup> According to Mr. Holt, the "issue here is the very high concentration of [salt] in a small place."<sup>214</sup> Both Dr. Esbaugh and Mr. Holt testified that high salinity water essentially sucks the water out of larvae.<sup>215</sup> Dr. Esbaugh further testified that early life stages are so sensitive to salinity that when his group transports fish embryos from TPWD to his lab, they use the organisms' own water because "when salinities aren't matched, embryos can sink or swell with water sometimes or they can blow up... We see major drops in our survival [rate] when we didn't match salinity."<sup>216</sup>

All four of PAC's witnesses on this issue testified that the Aransas Pass tidal inlet is the main conduit in the area for larvae to travel from the Gulf of Mexico to their nursery grounds within the estuaries. Larvae are essentially planktonic, without the ability to swim, and as such, they are entirely dependent on the tidal currents to move them from the Gulf of Mexico to the nursery grounds.<sup>217</sup> Because the mixing zones for the proposed discharge occupy a substantial portion of the Aransas Pass tidal inlet and larvae do not have the ability to travel around them, Dr. Stunz testified that billions of larvae must travel through the mixing zones.<sup>218</sup> When larvae are

---

<sup>211</sup> *Id.*

<sup>212</sup> *Id.*

<sup>213</sup> Ex. PAC-4 at 9; Ex. PAC-6 at 14.

<sup>214</sup> Tr. Vol. 3 at 19.

<sup>215</sup> Tr. Vol. 3 at 39 ("So when you're looking at impacts on larval fish, it's all about the water getting sucked out of the animal and the animal not having enough time or ability to counteract it by drinking water, processing that water, and excreting salt."); Ex. PAC-4 at 12.

<sup>216</sup> Tr. Vol. 3 at 53-55.

<sup>217</sup> Ex. PAC-4 at 10-11.

<sup>218</sup> Ex. PAC-6 at 13.

pushed by the tidal currents through Aransas Pass and into the brine discharge plume, they will instantaneously go from an ambient salinity level into a hypersaline condition, which can have drastic negative effects.<sup>219</sup> PAC's witnesses testified that the discharge of brine into the Aransas Pass tidal inlet in the volumes proposed in the draft permit will result in a significant increase in the mortality of larvae.<sup>220</sup> According to Dr. Stunz, even with conservative calculations, the elevated salinity has the potential to result in mortality for millions of larvae.<sup>221</sup>

Protestants argue that the potential harm from increased salinity begs the question of what salinity levels would be safe for aquatic life. The TCEQ's rules do not set a numerical standard for salinity,<sup>222</sup> but Dr. Esbaugh testified that he used EPA's species sensitivity standard and TCEQ's IPs to derive a "no-effect concentration" for salinity.<sup>223</sup> Based on his review of eight acute lethality data sets across seven species, Dr. Esbaugh concluded that the acute salinity exposure for red drum, the most sensitive species analyzed, is 37.4 ppt.<sup>224</sup> He further testified that, based on a five-year data set of salinity measurements in the shipping channel, the natural salinity exceeds 37 ppt 10 percent of the time and, thus, is already close to the physiological tolerance of the most sensitive species.<sup>225</sup> In addition, salinity peaks in late summer and early fall, which coincides with the spawning season of red drum.<sup>226</sup> Based on Dr. Esbaugh's analysis, Protestants allege that any discharges that result in total salinity of 37.4 ppt or higher will not be protective of aquatic life.<sup>227</sup> Further, Protestants note that even though there is a scientifically accepted process for determining the no-effect concentration of salinity on various species, the Port Authority's experts did not attempt to calculate one.

---

<sup>219</sup> Ex. PAC-6 at 14.

<sup>220</sup> Ex. PAC-4 at 7, 20; Ex. PAC-5 at 6; Ex. PAC-6 at 14.

<sup>221</sup> Ex. PAC-6 at 14.

<sup>222</sup> 30 Tex. Admin. Code § 307.4(g)(3).

<sup>223</sup> Ex. PAC-5 at 11; Tr. Vol. 3 at 58-59.

<sup>224</sup> Ex. PAC-5 at 11.

<sup>225</sup> Ex. PAC-5 at 9; Tr. Vol. 3 at 49.

<sup>226</sup> Ex. PAC-5 at 9.

<sup>227</sup> PAC Closing Argument at 17.

To be protective of aquatic life, Protestants contend that it is imperative to consider the highest levels of salinity that organisms will be exposed to, which requires accurately considering the ambient salinity in the receiving waters and the salinity of the intake water that will be concentrated in the effluent. Protestants allege that the Port Authority has underestimated both values. For the ambient salinity of the receiving waters, Dr. Esbaugh evaluated the five-year data set for salinity in the shipping channel and determined that the median salinity value is 32.5 ppt, which by definition means half of the data points exceed that amount under natural conditions.<sup>228</sup> At the high end, salinity is above 40 ppt, which is consistent with Port Authority witness Dr. Tischler's assumptions regarding ambient channel salinities.<sup>229</sup> For the intake waters pumped from the Gulf of Mexico, Dr. Esbaugh testified that the expected average salinity will be in the range of 32 to 35 ppt.<sup>230</sup> With an intake salinity of 35 ppt, the effluent discharge would have a salinity level as high as 58.5 ppt.<sup>231</sup>

Protestants assert that the Port Authority and ED witnesses acknowledge the potential for adverse effects to aquatic life. Specifically, Port Authority witness Dr. Tischler acknowledged that some larvae will pass through the ZID and mixing zone, and when asked about the potential for lethality, he stated, “[i]f there was an absolute number, I’m not going to make a statement that zero are affected.”<sup>232</sup> He further testified that he considers populations of fish, rather than individuals, and that the “vast majority” of larvae, juvenile fish and adults will have an adequate zone of passage.<sup>233</sup> Similarly, ED witness Dr. Wallace agreed that there could be hypersaline water in the ZID that would be harmful to aquatic organisms,<sup>234</sup> but she was “unconcerned” about possible death in the ZID “because there is adequate zone of passage.”<sup>235</sup> However, Protestants emphasize

---

<sup>228</sup> Ex. PAC-5 at 11-12.

<sup>229</sup> Ex. APP-LT-9 at Col. 3.

<sup>230</sup> Ex. PAC-5 at 11.

<sup>231</sup> Ex. PAC-5 at 11.

<sup>232</sup> Tr. Vol. 3 at 244-45.

<sup>233</sup> Tr. Vol. 3 at 244.

<sup>234</sup> Tr. Vol. 5 at 147-48.

<sup>235</sup> Tr. Vol. 5 at 166-67.

that the legal standard under the TSWQS is no lethality in the ZID, not the presence of a zone of passage.

According to Protestants, concerns about lethality in the ZID are not allayed by the Port Authority's evidence (discussed in detail below) that the proposed discharge will increase salinity in the Corpus Christi Ship Channel at most by 1% and that the volume of the discharge is only 0.5% of the daily tidal exchange flow in the channel. The effluent will be discharged at one point (i.e., the diffuser), and at that point, the impact will be much greater than 1%. Protestants also contend that the Port Authority and its experts have not attempted to connect their calculations of the 1% salinity increase and 0.5% tidal volume to the conclusion that there will be no harm to aquatic life. They point out that Port Authority witness Dr. Furnans is not an expert in biology, ecology, or the movement of early life stages of marine species.<sup>236</sup> Mr. Palachek did not calculate a no-effects concentration for any species regarding their physiological tolerance for salinity, nor did he know such concentration for red drum, spotted seatrout, sheepshead, or southern flounder.<sup>237</sup> And Dr. Tischler is not a biologist and was only generally familiar with how larvae move through the Aransas Pass tidal inlet, but agreed it was likely some larvae would pass through the ZID.<sup>238</sup>

According to Protestants, the Port Authority recognized the potential harm to fish larvae from the intake pipe and acted to relocate it from the channel to the Gulf of Mexico, but failed to do the same for the outfall.<sup>239</sup> In particular, they point to an email from Sarah Garza, the Port Authority's director of environmental planning and compliance, to ED permit coordinator Ms. Gibson, stating:

[T]he Port staff have concluded that there is not enough available information at this time to quantify the cumulative effects of a desalination intake structure in the Corpus Christi Ship Channel (Ship Channel) at Harbor Island. Specifically,

---

<sup>236</sup> Tr. Vol. 3 at 146-47.

<sup>237</sup> Tr. Vol. 4 at 15-17.

<sup>238</sup> Tr. Vol. 3 at 213-15.

<sup>239</sup> PAC Closing Argument at 15.

predictive modeling to evaluate direct impacts to larval fish – which use the Ship Channel in high numbers at different times of the year to reach habitats in the bay system – cannot be completed within a time frame that would inform the permitting process to support the permitting process. The Port has concluded that the environmentally conservative approach to desalination at Harbor Island is to locate the intake structure offshore in the Gulf of Mexico.<sup>240</sup>

PAC witness Mr. Holt testified that the same reasoning applies to the discharge.<sup>241</sup>

Protestants also note that larvae represent an ecologically important food base that would be unavailable for other marine life if their migration were impaired, which could create a ripple effect.<sup>242</sup> Even birds could be affected, as Dr. Stunz testified that the crabs, shrimp, and fish in the Aransas Pass tidal inlet provide an important food supply for birds.<sup>243</sup> In addition, he testified that higher salinities are associated with higher occurrence of harmful algae blooms, such as red tide, which is harmful to aquatic life and kills fish.<sup>244</sup>

In addition to killing larvae and other aquatic life, Protestants allege that high salinity will impact migration and spawning. Dr. Erisman testified that the change in salinity in the Aransas Pass inlet “can disrupt the spawning migrations through the channel.”<sup>245</sup> According to Dr. Erisman, the effluent can lead to two concerning effects: (1) increased mortality of fish, and (2) diminished reproduction of fish.<sup>246</sup> Female fish tend to stay along the channel bottom as they develop their eggs in preparation for spawning, and a hypersaline layer along the bottom could disrupt egg development, egg production, and courtship and spawning activity.<sup>247</sup> Hypersalinity could lead to fewer eggs, which then die at a much higher rate than usual.<sup>248</sup> Moreover, Dr. Erisman testified

---

<sup>240</sup> Ex. AR-8 at ED-0063.

<sup>241</sup> Ex. PAC-4 at 8.

<sup>242</sup> PAC Closing Argument at 16.

<sup>243</sup> Tr. Vol. 3 at 75-76.

<sup>244</sup> Tr. Vol. 3 at 132-33.

<sup>245</sup> Ex. PAC-1 at 12.

<sup>246</sup> Ex. PAC-1 at 12.

<sup>247</sup> Ex. PAC-1 at 11-12.

<sup>248</sup> Ex. PAC-1 at 12.

that if the area is degraded, fish will not simply go elsewhere to spawn, but instead, will “spawn less (or not at all), reduce their feeding, and ultimately reduce the carrying capacity of local fish populations.”<sup>249</sup>

Protestants also state the draft permit’s requirement that the Port Authority conduct WET testing does not ensure the discharge will be protective of the environment. They contend that it is impossible to declare the discharge will be protective of the environment if one has not yet done any testing to demonstrate it does not harm the environment. Moreover, the WET testing does not include testing of salinity impacts on larval stages of fish.<sup>250</sup>

**b. OPIC, Audubon and Pro Se Group’s Arguments**

OPIC, Audubon, and the pro se group rely on evidence presented by PAC’s witnesses to raise similar concerns to those addressed above.

**c. Port Authority’s Arguments**

In response, the Port Authority points to the analyses prepared by its witnesses showing that the impact of the proposed discharge is minimal. First, the results of the SUNTANS modeling performed by Dr. Furnans indicate that vertical mixing of the water column near the proposed outfall location is sufficient to prevent the formation of a persistent high-salinity water layer along the channel bottom.<sup>251</sup> In addition, due to the hydrodynamics near the outfall location, bottom salinity values increase at most between 0 and 1 ppt and do not accumulate.<sup>252</sup> Dr. Furnans also conducted a salt mass balance, which analyzed the total mass of salt that the proposed discharge would release into the Corpus Christi Ship Channel and compared it to the total mass of salt that flows in and out of the channel under ambient conditions.<sup>253</sup> From that analysis, Dr. Furnans

---

<sup>249</sup> Ex. PAC-1 at 11.

<sup>250</sup> Tr. Vol. 5 at 206-07.

<sup>251</sup> Ex. APP-JF-1 at 7.

<sup>252</sup> Ex. APP-JF-1 at 7.

<sup>253</sup> Ex. APP-JF-1 at 21.

concluded that, even under the most extreme conditions, the proposed discharge will increase the mass of total salt in the channel by less than 1%, and under most conditions, the increase is much less than 1%.<sup>254</sup>

In addition, Port Authority witness Dr. Tischler calculated the 24-hour tidal exchange flow rate for the Corpus Christi Ship Channel and compared it to the proposed maximum daily average flow rate of 96 MGD for the proposed discharge. He found that the flow from the discharge is 0.5% of the daily flow through the channel.<sup>255</sup> In addition, according to Dr. Tischler, less than 1% of the cross-sectional area of the channel is affected more than minimally under all conditions of effluent and ambient densities and currents.<sup>256</sup> Therefore, there is an adequate zone of passage for migrating aquatic life.<sup>257</sup>

The Port Authority also notes that the outfall location has naturally variable ambient salinity. Port Authority witness Mr. Palachek testified that ambient salinity near the outfall location ranges from 18 to 39 ppt.<sup>258</sup> As a result, he concluded that aquatic organisms in the vicinity are normally exposed to wide salinity variation during the course of a year and the de minimis salinity increases from the Facility will have no effect on them.<sup>259</sup>

The Port Authority also points out that the draft permit requires WET testing in the first six months of the discharge, which will use exposure times and effluent percentages that are multiples of what any living organism would be exposed to in the ambient environment.<sup>260</sup> If the discharge fails the WET testing, the TCEQ can impose additional permit restrictions.

---

<sup>254</sup> Ex. APP-JF-1 at 23; Ex. APP-JF-14.

<sup>255</sup> Ex. APP-LT-1 at 29-30.

<sup>256</sup> Ex. APP-LT-1 at 39.

<sup>257</sup> *Id.*

<sup>258</sup> Ex. APP-RP-1 at 28-29; Ex. APP-RP-6.

<sup>259</sup> Ex. APP-RP-1 at 29.

<sup>260</sup> Port Authority Closing Argument at 17-18 (citing Ex. AR-8 at ED-0019 – ED-0022).

As to Dr. Esbaugh's calculated 37.4-ppt no-effect concentration for salinity, the Port Authority responds that it is improperly calculated. Mr. Palachek testified that Dr. Esbaugh failed to follow proper EPA protocol, used the wrong data, and inappropriately mixed data sets. In particular, Mr. Palachek stated that the analysis did not include short-term data (i.e., 24-hour LC50 data), and that Dr. Esbaugh mixed lethality data with sublethal growth and other types of sublethal effects.<sup>261</sup> According to Mr. Palachek, EPA protocol requires the calculation of separate acute and chronic values, and does not allow mixing of this data. In addition, Dr. Esbaugh had not calculated a predictive no-effect concentration prior to this case.<sup>262</sup> The Port Authority also criticizes Dr. Esbaugh's implication that the ambient salinity in the Corpus Christi Ship Channel is already hazardous to fish 10% of the time, or over one month per year.

Further, even assuming Dr. Esbaugh's analysis was correct for the sake of argument, the Port Authority contends his opinion does not mean any fish species will be harmed from the proposed discharge. Dr. Esbaugh did not offer an opinion that the proposed discharge will increase the salinity in the ship channel above 37.4 ppt,<sup>263</sup> nor did he testify that any species of fish or marine life would be subjected to lethal effects from exposure to the proposed discharge.<sup>264</sup>

The Port Authority also more broadly criticizes PAC's witnesses' lack of expertise and data to support their opinions. For each witness, the Port Authority points to the following deficiencies in their analyses:

- Dr. Erisman is not an expert in hydrodynamic modeling;<sup>265</sup> did not have familiarity with the TSWQS prior to this case;<sup>266</sup> and was not familiar with all aspects of the Application, draft permit, or WET testing required by the draft permit.<sup>267</sup> He also did not calculate the increase in salinity that the proposed discharge will cause in

---

<sup>261</sup> Tr. Vol. 4 at 14-15.

<sup>262</sup> Tr. Vol. 3 at 62.

<sup>263</sup> Tr. Vol. 3 at 45-46.

<sup>264</sup> Tr. Vol. 3 at 52-53.

<sup>265</sup> Tr. Vol. 2 at 66-67.

<sup>266</sup> Tr. Vol. 2 at 67.

<sup>267</sup> *Id.*

the Corpus Christi Ship Channel,<sup>268</sup> and did not know the percentage chance that the effluent will harm fish and other species in the channel.<sup>269</sup> In addition, he did not know whether he would still have the opinion that the effluent will pose a risk to fish in the Corpus Christi Ship Channel if the TSWQS are met.<sup>270</sup> Dr. Erisman also did not offer an opinion regarding whether the outfall would violate the salinity standards found in 30 TAC § 307.4.<sup>271</sup>

- Mr. Holt is not a modeling expert, not a toxicologist, and not familiar with the WET testing in the draft permit.<sup>272</sup> He also did not have information to estimate how large an effect the proposed discharge will have on commercial fishing.<sup>273</sup> In addition, he did not have an opinion as to either the absolute level of salinity or the percentage above that level of salinity that any larval species will be exposed to at the edges of the ZID or mixing zones.<sup>274</sup> Mr. Holt also did not have an opinion on whether the proposed discharge would cause an exceedance of the TSWQS.<sup>275</sup>
- Dr. Esbaugh is not a TPDES permitting expert and does not have experience modeling discharges from desalination facilities.<sup>276</sup> He did not have an opinion on the overall increase in salinity caused by the proposed discharge, but testified that he would need to know that information before he could determine its effects on any species.<sup>277</sup> Before this case, Dr. Esbaugh had not calculated a no-effects concentration for salinity, and he could not testify that the proposed discharge would increase the salinity in the Corpus Christi Ship Channel above his calculated no-effects concentration.<sup>278</sup> Dr. Esbaugh did not identify a specific Texas regulation that the draft permit violated.<sup>279</sup> In addition, he did not have an opinion

---

<sup>268</sup> Tr. Vol. 2 at 67-68.

<sup>269</sup> Tr. Vol. 2 at 68.

<sup>270</sup> Tr. Vol. 2 at 69.

<sup>271</sup> *Id.*

<sup>272</sup> Tr. Vol. 2 at 257, 260.

<sup>273</sup> Tr. Vol. 2 at 258.

<sup>274</sup> Tr. Vol. 2 at 259-60.

<sup>275</sup> Tr. Vol. 2 at 262.

<sup>276</sup> Tr. Vol. 3 at 44.

<sup>277</sup> Tr. Vol. 3 at 45-46.

<sup>278</sup> Tr. Vol. 3 at 62-63.

<sup>279</sup> Tr. Vol. 3 at 42.

on the amount of time larval fish would need to be exposed to the proposed discharge to have lethal effects.<sup>280</sup>

- Dr. Stunz agreed that it is impossible to predict what exposure any species will have for what period of time and what increase of salinity would result from the proposed discharge.<sup>281</sup> He also could not predict whether an increase in salinity will occur in the Corpus Christi Ship Channel beyond the mixing zone.<sup>282</sup> In addition, he did not know whether there will be any harm to aquatic species or the environment because the Application does not provide him with sufficient information to form that opinion.<sup>283</sup> Dr. Stunz also had not calculated the amount of time that any fish at any level of development would be within the mixing zone, and was not familiar with the TCEQ's definition of a mixing zone.<sup>284</sup> He also did not have information about the physical size of the effluent plume that would be caused by the proposed discharge.<sup>285</sup>

Based on their testimonies, the Port Authority notes that PAC's witnesses have not determined how much the proposed discharge will increase salinity in the Corpus Christi Ship Channel, nor whether the unknown increase in salinity will cause harm to aquatic life. Without that information, the Port Authority asserts that their testimony is speculation and should be given no weight. In addition, PAC's witnesses did not address Dr. Furnans's salt mass balance and Dr. Tischler's tidal velocity calculations.<sup>286</sup> Finally, none of PAC's witnesses testified that the draft permit violates the TSWQS or other applicable state or federal requirements, and thus, according to the Port Authority, their testimony is not sufficient to overcome the prima facie demonstration.

---

<sup>280</sup> Tr. Vol. 3 at 52-54.

<sup>281</sup> Tr. Vol. 3 at 83-84.

<sup>282</sup> Tr. Vol. 3 at 83.

<sup>283</sup> Tr. Vol. 3 at 83-84.

<sup>284</sup> Tr. Vol. 3 at 84-85.

<sup>285</sup> Tr. Vol. 3 at 85-86.

<sup>286</sup> Port Authority Reply at 13.

**d. ED's Arguments**

The ED contends that Dr. Wallace's antidegradation review demonstrates that the proposed discharge will not adversely impact the marine environment, aquatic life, and wildlife.<sup>287</sup> As discussed above, Dr. Wallace testified that, as part of her antidegradation review, she considered the impact of the increase in salinity at the mixing zone boundary and concluded that the zone of passage should be protective of exceptional aquatic life use.<sup>288</sup> In addition, while Dr. Wallace did not perform studies on larvae in Corpus Christi Bay or the estuaries,<sup>289</sup> TCEQ's rules do not require surveys, monitoring, or research regarding larval activities.<sup>290</sup> The ED contends that, while Protestants made various suggestions regarding studies and other potential locations for the outfall, they have not pointed to a statute or rule that the Application or draft permit did not comply with, as required to rebut the prima facie demonstration.<sup>291</sup>

The ED further notes that WET testing would normally not be required in a permit like this one, but the Port Authority voluntarily accepted WET testing, which is incorporated into the draft permit. If the Port Authority has WET testing failures, a WET limit would be added to the permit.<sup>292</sup>

In addition, the ED responds to Protestants' claims that Dr. Wallace erroneously used a "zone of passage" standard. The ED points out that the IPs state that mixing zone size and shape may be varied in individual permits to account for differences in several factors, including "zone of passage concerns."<sup>293</sup>

---

<sup>287</sup> ED Closing Argument at 5.

<sup>288</sup> Ex. ED-MW-1 at 18-19.

<sup>289</sup> Tr. Vol. 5 at 148.

<sup>290</sup> Ex. ED-MW-1 at 5.

<sup>291</sup> See Tex. Gov't Code § 2003.047(i-2).

<sup>292</sup> Tr. Vol. 5 at 207.

<sup>293</sup> Ex. ED-MW-3 at 70.

### 3. Lack of Numerical Criteria for Salinity

Because the Facility would be the first marine seawater desalination facility in Texas and the TSWQS do not provide numerical criteria for salinity, Protestants assert that the ED's standard process for evaluating discharges does not assure protection of the environment or compliance with applicable laws.<sup>294</sup> Without numeric criteria, there is no number that can be used to determine what limits are needed to protect marine species from salinity, as there are for metals, organic chemicals, and most constituents from industrial facilities.

Protestants point out that when the ED discovered the error in interpreting the CORMIX modeling results, the ED responded by raising the draft permit's effluent percentage limit at the ZID boundary from 1.95% to 18.4%.<sup>295</sup> With this change, the draft permit became more stringent for pollutants that have numeric criteria,<sup>296</sup> but less stringent for brine. The amount of brine allowed at the edge of the ZID increased by nearly ten times. Protestants argue that if the revised modeling results had shown the proposed discharge could only meet 50% effluent at the ZID boundary, then TCEQ could have set the limit at 50% rather than 18.4%. Without numeric criteria, Protestants contend that the ED had no basis to decide how much salinity is too much and did not perform the "careful consideration" required by the TSWQS.

Citing the Application, Protestants contend that the Port Authority and ED initially assumed the effluent percentage at the ZID boundary would be 2.5% or less,<sup>297</sup> and the initial TCEQ modeling predicted (incorrectly) 1.95% effluent at the ZID boundary, which met the target. When the ED discovered that the discharge could not meet that standard, the ED did not determine that 18.4% was safe, but rather, "moved the goalposts to accommodate what the modeling showed would occur."<sup>298</sup> Protestants further note that the 18.4% effluent limit at the ZID boundary was

---

<sup>294</sup> PAC Reply at 2.

<sup>295</sup> PAC Reply at 3, 28-29.

<sup>296</sup> See Tr. Vol. 5 at 83.

<sup>297</sup> Ex. AR-4 at S-App. 000339.

<sup>298</sup> PAC Reply at 28.

not the amount originally evaluated by the ED, or presented to TPWD and the public for comment. They assert that the change to the draft permit constitutes a major amendment without public notice, and sufficiently rebutted the prima facie case established by the administrative record initially filed by TCEQ.<sup>299</sup>

In addition to contending that the limits in the draft permit are not protective of the marine environment and aquatic life, Protestants also assert that the diffuser design contained in the Application and modeled by the ED cannot even meet those limits. Their arguments on this issue are set out above and not repeated here.

Protestants also argue that the Port Authority and ED either do not know, or did not consider, the information needed to properly evaluate the potential impacts of the proposed permit. As Dr. Stunz testified, “I cannot understand how the [ED] can on one hand claim that the permit will be protective of the marine environment and aquatic life and on the other hand claim that the effluent and its effect on water quality has not yet been analyzed.”<sup>300</sup> Protestants point out that the ED’s review lacks information regarding the impact of salinity on aquatic life, the quantity of aquatic life in the water, or the number of organisms that will pass through the ZID. Dr. Wallace also could not offer any opinion on what range of salinity is necessary to support marine life in the area<sup>301</sup> and had no basis to dispute that at least 10% of the time, salinity in the channel is already at the upper physiological limit of some species.<sup>302</sup>

The Port Authority alleges that Protestants are really putting on trial the State’s rules, processes, and regulatory standards for issuing permits.<sup>303</sup>

---

<sup>299</sup> PAC Reply at 4.

<sup>300</sup> Ex. PAC-6 at 22.

<sup>301</sup> Tr. Vol. 5 at 162-63.

<sup>302</sup> Tr. Vol. 5 at 151-52.

<sup>303</sup> Port Authority Closing Argument at 3.

Similarly, the ED contends that Protestants seek denial of the Application “because more studies could be done, more information could have been included in the application, a different model could have been used, and the permit could have more stringent limits.”<sup>304</sup> Yet, the standard is not whether more could be done, but whether the effluent limits and other requirements in the draft permit comply with all applicable statutory and regulatory requirements, a standard the ED contends is met here. The draft permit also requires an ambient water velocity study and WET testing,<sup>305</sup> neither of which are required by TCEQ’s rules.

#### **4. Copper and Other Constituents of the Discharge**

Another concern raised by Protestants and the pro se group is the lack of information on constituents other than salinity in the proposed discharge, particularly copper.<sup>306</sup> Protestants note that the TSWQS establish more stringent limits for copper in saltwater environments that are designated as oyster waters, as they are here.<sup>307</sup> Dr. Stunz testified that copper exposure can have serious negative effects on aquatic life, and he is concerned “that copper exposure, when combined and coupled with exposure to hypersaline conditions, will have significantly worse effects on aquatic life than either copper exposure or saline exposure would have by themselves.”<sup>308</sup>

The Port Authority did not provide data on the level of copper expected in its effluent.<sup>309</sup> PAC witness Mr. Wiland testified that there is limited information on the concentration of dissolved copper near the proposed intake and discharge.<sup>310</sup> He found no copper data from the Gulf of Mexico station at Port Aransas near where the intake is proposed to be located, but data from the Lydia Ann Channel station indicated a range of 0.83 micrograms per liter ( $\mu\text{g/L}$ ) to

---

<sup>304</sup> ED Closing Argument at 4.

<sup>305</sup> Ex. AR-8 at ED-0015, ED-0019 – ED-0025.

<sup>306</sup> During the public comment period, TPWD raised similar concerns. Ex. ED-SG-3 at 54-55.

<sup>307</sup> See 30 Tex. Admin. Code § 307.6(c)(1), Table 1, n. 1.

<sup>308</sup> Ex. PAC-6 at 21.

<sup>309</sup> Tr. Vol. 5 at 47, 227-28.

<sup>310</sup> Ex. PAC-3 at 18.

12 µg/L of dissolved copper.<sup>311</sup> The high end of the range would exceed the acute dissolved copper criterion for Corpus Christi Bay of 3.6 µg/L.<sup>312</sup> Based on this information, he opined that there should have been an assessment of the potential for concentrating of copper in the effluent.

Additionally, Protestants criticize Port Authority witness Mr. Palachek's contention that the Gulf of Mexico intake waters would have no more than 2 µg/L of dissolved copper because he relied solely on a 1994 study that did not examine Gulf of Mexico waters. Instead, the study looked at six estuaries on the Texas Gulf Coast, and its sampling sites ranged from the mouths of rivers to an estuary segment that "approached" the Gulf of Mexico. Moreover, even at 2 µg/L of copper, the effluent at 50% desalination efficiency would result in at least 4 µg/L of copper and, therefore, exceed the 3.6 µg/L limit.

Protestants also contend that ED witness Dr. Wallace testified that her antidegradation finding required a determination that copper did not exceed 3.6 µg/L, but she did not know that information.<sup>313</sup> Dr. Wallace also testified that she did not consider whether there would be a copper plume, nor did she pay any special attention to copper impacts on oyster spat<sup>314</sup> because she thought they would have an adequate zone of passage around the mixing zones.<sup>315</sup> Thus, Protestants allege that the ED did not do a real evaluation of the potential harm from the copper that will be in the effluent and did not properly determine the impact of such effluent on oyster waters.

Aside from copper, Protestants and the pro se group also note that the Port Authority has not been required to identify the specific chemicals that will be used in the desalination process that will be present in the discharge, and these chemicals may also cause harm.<sup>316</sup> Protestants assert

---

<sup>311</sup> Ex. PAC-3 at 18.

<sup>312</sup> 30 Tex. Admin. Code § 307.6(c)(1), Table 1, n. 1.

<sup>313</sup> Tr. Vol. 5 at 217.

<sup>314</sup> "Oyster spat" refers to oyster larvae permanently attached to a surface.

<sup>315</sup> Tr. Vol. 5 at 217-18, 226-27.

<sup>316</sup> PAC Closing Argument at 17; Pro Se Group Closing Argument at 6.

that the only reason that information is not available is that the Port Authority chose not to identify the chemicals it will use in the desalination process prior to seeking the discharge permit, even though the information could have been developed in advance.<sup>317</sup>

The ED's permit writer Ms. Gibson testified that the draft permit does not include discharge limits for the various constituents, including copper, because the Facility has not been constructed or commenced discharge, and the Application did not contain analytical data that could be screened against the effluent limitations in the TCEQ's rules.<sup>318</sup> To address this issue, Other Requirement No. 8 was added to the draft permit to require sampling and analysis of the effluent upon commencement of discharge. Ms. Gibson testified that, based on a review of the data, the permit may be reopened to incorporate additional effluent limitations or monitoring requirements, if needed.<sup>319</sup>

Similarly, the Port Authority emphasizes that TCEQ does not look at the intake water to determine permit limits, but instead, reviews the results of sampling of the effluent itself, which is performed when there is an actual discharge.<sup>320</sup> The Port Authority notes that the draft permit requires that the effluent be sampled and analyzed for 77 different chemicals of concern, including copper, and the results reported to determine whether any constituents require permit limits.<sup>321</sup> OPIC confirms that sampling and analysis of the effluent upon commencement of discharge is a common practice for facilities that have not commenced discharge at the time of the application.<sup>322</sup>

The Port Authority also addresses the specific issues that Protestants raise regarding copper. First, the Port Authority maintains that PAC witness Mr. Wiland has misinterpreted the dissolved copper readings from the Lydia Ann Channel station. According to Port Authority

---

<sup>317</sup> PAC Reply at 29-30.

<sup>318</sup> Ex. ED-SG-1 at 21.

<sup>319</sup> Ex. ED-SG-1 at 21.

<sup>320</sup> Port Authority Reply at 5 (citing Tr. Vol. 5 at 16-18).

<sup>321</sup> Ex. AR-8 at ED-0014 – ED-0018.

<sup>322</sup> OPIC Closing Argument at 31.

witness Mr. Palachek, the only detection of copper reported for the Lydia Ann Channel station was 0.83 µg/L, and the four other entries were all non-detect, as shown by the less-than (<) symbol preceding 12 µg/L.<sup>323</sup> The lower reading is also consistent with concentrations of dissolved copper from other samples in Segment 2471 (which includes the Lydia Ann Channel station), which report dissolved copper levels ranging from 0.64 µg/L to 1.47 µg/L.<sup>324</sup> Thus, the evidence does not support that copper levels were as high as 12 µg/L in Lydia Ann Channel.

The Port Authority also alleges that Protestants' analysis of the 1994 study that Mr. Palachek relied on misapplies the TCEQ's standards for dissolved copper concentrations. As stated above, assuming the highest concentration of copper found in the study of 2 µg/L, the dissolved concentration in the discharge would be at most 4 µg/L. According to the Port Authority, Protestants incorrectly compare this amount to the acute criterion for dissolved copper of 3.6 µg/L applicable to oyster waters.<sup>325</sup> That limit applies *outside of the mixing zone*, not to the level in the discharge before any dilution.<sup>326</sup> The correct comparison, according to the Port Authority, is to the screening limit for dissolved copper found in the draft permit, which is 39.2 µg/L,<sup>327</sup> and is almost ten times the 4 µg/L worst case that might be anticipated in the undiluted effluent from the Facility.<sup>328</sup> As a result, the Port Authority asserts that all of the data regarding the expected levels of copper in the discharge indicates that it will not pose a risk to the environment.

## 5. Threatened and Endangered Species

Dr. Wallace conducted an endangered species review and concluded that the piping plover, a threatened aquatic-dependent species found in Segment 2481, would not be impacted because

---

<sup>323</sup> Ex. APP-RP-1 at 37-38; Ex. APP-RP-16.

<sup>324</sup> Ex. APP-RP-16.

<sup>325</sup> The Port Authority also points out that, while Segment 2481 is designated as oyster waters, there are no actual oyster beds in the ZID or mixing zones. *See* Tr. Vol. 5 at 171.

<sup>326</sup> 30 Tex. Admin. Code § 307.6(c)(1), Table 1, n. 1.

<sup>327</sup> Ex. AR-8 at ED-0042.

<sup>328</sup> Ex. APP-RP-1 at 36-37.

the Facility is not a petroleum facility.<sup>329</sup> Audubon raises concerns with this conclusion as it appears to derive from the fact that, because the Facility is not a petroleum facility, an EPA review is not required. Thus, the conclusion is not based on a scientific determination of no impact. However, Audubon did not present evidence on this topic and did not cross-examine Dr. Wallace at the hearing. Accordingly, evidence was not presented on this topic to rebut the prima facie demonstration.

## 6. ALJs' Analysis

The sensitivity of the proposed discharge location is essentially undisputed. PAC offered the testimony of four experts in the fields of marine biology, ecology, wildlife, and fisheries science, all of whom study the Corpus Christi Bay system. They each testified as to the importance of the Aransas Pass tidal inlet for the life cycle of aquatic organisms for the entire ecosystem, and in particular, emphasized the concentration of marine life in the Aransas Pass inlet because it is the only connection between the Gulf of Mexico and Texas's bays and estuaries for many miles to the north and south. Due to the inlet's key role for estuarine-dependent species in the area, the potential impacts of the discharge on aquatic life are magnified, and the organisms cannot simply go elsewhere.

The sensitivity of the area is further confirmed by the area's location within the Redfish Bay State Scientific Area, its designation as essential fish habitat for red drum and shrimp under the Magnuson-Stevens Act,<sup>330</sup> and its exclusion from sites designated for desalination discharges by the TPWD/GLO Desalination Study. While the Application in this case was submitted under Texas Water Code chapter 26, and therefore, the Desalination Study does not expressly apply, the study's conclusions bolster Protestants' contention that the proposed discharge site is a sensitive

---

<sup>329</sup> Ex. ED-MW-1 at 10-11.

<sup>330</sup> Protestants' closing arguments do not contend that the Magnuson-Stevens Act applies to the TPDES permitting process. The ALJs consider it only for the purpose it was raised, which was to show that the discharge location is designated as essential fish habitat.

location. In addition, ED witness Ms. Gibson confirmed that the substantive requirements for the two permitting frameworks are the same.<sup>331</sup>

The Port Authority points out that the discharge location was not an issue referred by the Commission.<sup>332</sup> However, the characteristics of the location are relevant to analyzing the potential impacts to the environment and human health. As Dr. Stunz and Mr. Holt testified, moving the discharge location to the Gulf of Mexico would generally resolve their concerns because the concentration of aquatic life there is not as great.

The evidence also establishes that high salinity or saline imbalances can be fatal to aquatic life, particularly early life stages. PAC's witnesses testified persuasively that fish larvae and embryos are sensitive to even small changes in salinity (e.g., the need to use the organisms' own water when transporting them). In addition, ED witness Dr. Wallace agreed that hypersaline water can be fatal to larvae.<sup>333</sup> Notably, the Commission's referred issue specifically requires consideration of adverse impacts to spawning eggs and larval migration.

Given that salinity changes can be fatal to aquatic life, the issue is whether the draft permit is nevertheless protective. The TCEQ has not established numerical criteria for salinity that the proposed Facility's effluent concentrations can be screened against,<sup>334</sup> but the TSWQS provide that the absence of numerical criteria for salinity does not preclude evaluations and regulatory actions.<sup>335</sup> Yet, the TSWQS also state that salinity gradients in estuaries must be maintained to support attainable estuarine-dependent aquatic life uses, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.<sup>336</sup> As discussed above in

---

<sup>331</sup> Tr. Vol. 5 at 99-100.

<sup>332</sup> Port Authority Reply at 3.

<sup>333</sup> Tr. Vol. 5 at 147-48.

<sup>334</sup> Ex. ED-MW-1 at 19.

<sup>335</sup> 30 Tex. Admin. Code § 307.4(g)(3).

<sup>336</sup> *Id.*

connection with Issue H, the ALJs conclude that the ED's antidegradation review was not sufficient to demonstrate that this standard was met.

PAC's four witnesses on this issue admittedly are not experts in TCEQ permitting or the TSWQS. However, their expertise goes directly to substantive requirements that the permitting process and TSWQS are designed to address, including the existing and attainable uses of the receiving waters, potential impacts on aquatic life, and potential impacts of salinity on estuarine-dependent aquatic life uses. Their work is also focused on studying the specific ecosystem at issue here. Accordingly, the ALJs find their testimony on the potential impacts to aquatic life compelling.

The Port Authority highlights that these witnesses did not quantify the potential impacts they identified. However, PAC's witnesses generally testified that the Application did not provide sufficient information from which they could make such quantifications. Moreover, their testimony was clear that the Aransas Pass tidal inlet is essential to estuarine-dependent species; that, consequently, aquatic life is concentrated in the channel; that fish larvae and embryos are particularly sensitive to changes in salinity; and that some aquatic organisms, including those in sensitive early life stages, will pass through the ZID and mixing zone and, thus, come into contact with the undiluted effluent, resulting in adverse impacts to aquatic life. Even without specific quantifications, the ALJs conclude that their testimony was sufficient to rebut the prima facie demonstration.

The Port Authority's evidence establishes that the proposed discharge will increase salinity in the Corpus Christi Ship Channel at most by 1% and that the volume of the discharge is only 0.5% of the daily tidal exchange flow in the channel. The Port Authority and ED also showed that there is a zone of passage for aquatic organisms around the ZID and mixing zones. However, the ALJs find that this evidence is not sufficient to demonstrate that aquatic life will not be adversely impacted. While the increase in salinity over the entire channel may be small, aquatic organisms will be exposed to effluent concentrations greater than 1% in the ZID and mixing zones. In

addition, even small increases in salinity may have adverse effects, particularly if the ambient salinity is already at the physiological limit for some species.<sup>337</sup>

The existence of a zone of passage also does not ensure protection of aquatic life given that the earliest life stages, including embryos and larvae, lack the ability to swim and, therefore, cannot avoid the ZID and mixing zones. Dr. Wallace and Dr. Tischler both acknowledged that larvae will enter the ZID, and neither could rule out adverse impacts there.<sup>338</sup> While Mr. Palachek testified that the flow of the discharge will push organisms out of the ZID and mixing zone,<sup>339</sup> there was no analysis of the number of organisms that might be affected, the amount of time they might be exposed, or the length of exposure time that would be safe. Moreover, under the TSWQS, it is not sufficient that organisms have a zone of passage. As discussed above, the TSWQS also require that there be no lethality to organisms that move through a ZID.

The record is lacking as to what level of salinity would be protective of aquatic life. The ambient salinity in the Corpus Christi Ship Channel naturally fluctuates between 18 ppt and 39 ppt,<sup>340</sup> which according to the Port Authority, means that a 1% increase cannot have an adverse effect. However, at the discharge point, the salinity could be as high as 58.5 ppt according to Dr. Esbaugh,<sup>341</sup> and up to 78.5 ppt based on modeling by Dr. Tischler.<sup>342</sup> When Dr. Esbaugh was asked about the effect of a larval fish encountering 58.5 ppt of salinity, he testified that it would “[p]robably kill it, but, again, it depends on how long the exposure scenario is... But if you were to do it, 58.5 [ppt] is really, really high for a larval fish to tolerate.”<sup>343</sup>

---

<sup>337</sup> See Tr. Vol. 5 at 205 (testimony of Dr. Wallace that if a system is on the edge of collapse, then 1.34% effluent at the mixing zone boundary could be the tipping point).

<sup>338</sup> Tr. Vol. 5 at 147-48 (Wallace); Tr. Vol. 3 at 244-45 (Tischler).

<sup>339</sup> Ex. APP-RP-1 at 21.

<sup>340</sup> Ex. APP-RP-1 at 28-29; Ex. APP-RP-6.

<sup>341</sup> Ex. PAC-5 at 11.

<sup>342</sup> Ex. APP-LT-9 at Col. 5.

<sup>343</sup> Tr. Vol. 3 at 53.

Dr. Esbaugh calculated a no-effects concentration for salinity of 37.4 ppt and testified that salinities in the channel already exceed that amount approximately 10% of the time. However, Dr. Esbaugh had not previously calculated a no-effects concentration for salinity<sup>344</sup> and Mr. Palachek identified errors in Dr. Esbaugh's calculation that call into question its accuracy. While Dr. Wallace testified that she had no basis to dispute Dr. Esbaugh's calculation, the ALJs do not interpret her testimony as agreeing with it. The record also does not support the implication that the existing conditions in the channel are hazardous to aquatic life 10% of the time. Accordingly, the ALJs do not find Dr. Esbaugh's calculation to be reliable and assign no weight to it. Yet, as Protestants point out, there is an accepted method for calculating a no-effects concentration, and no other witness did so. Thus, the record does not contain a reliable no-effects concentration for salinity.

To address salinity (and other constituents) in the effluent, the draft permit imposes three requirements: (1) the diffuser at the outfall must be maintained to achieve a maximum dilution of 18.4% effluent at the edge of the ZID; (2) sampling and analysis of the effluent must be conducted within 60 days after the initial discharge; and (3) WET testing must be performed on the effluent.<sup>345</sup>

The record establishes that the 18.4% effluent limit at the ZID boundary was not set based on what is protective of aquatic life. The ED's initial analysis concluded that the discharge would result in 1.95% effluent at the ZID boundary, but that was based on an error in interpreting the CORMIX modeling results. The ED's error was discovered after this case was referred to SOAH, and the ED simply revised the limit in the draft permit to allow 18.4% effluent at the ZID boundary.<sup>346</sup> The increase makes the permit more stringent for pollutants with numeric criteria (because complying with a set limit may be more difficult when there is more effluent), but less stringent for salinity, which does not have numeric criteria (i.e., an increase is simply an increase).

---

<sup>344</sup> Tr. Vol. 3 at 62.

<sup>345</sup> Ex. AR-8 at ED-0014 – ED-0015, ED-0019 – ED-0025.

<sup>346</sup> The ALJs do not accept PAC's unsupported suggestion in its reply that the amendment itself rebutted the prima facie demonstration.

Notably, the Application anticipated that the diffuser would be designed to achieve 2.5% or less effluent at the ZID boundary.<sup>347</sup> It is not clear how 2.5% was selected, but it indicates that an effluent concentration at the ZID boundary significantly lower than 18.4% was expected. In addition, for the reasons discussed above, the ALJs do not find that the ED's CORMIX modeling, which was used to calculate the 18.4% limit, produces reliable predictions of the effluent concentrations at the ZID and mixing zone boundaries.

Additionally, Dr. Tischler's testimony indicates that the diffuser design proposed in the Application cannot meet the 18.4% limit at the ZID boundary. Dr. Tischler's testimony assumed higher ambient velocities in the receiving waters than the default 0.05 m/s used in the ED's modeling; however, as discussed above in connection with the modeling, the higher ambient velocities are more representative of actual conditions in the channel and produce more conservative modeling results. The Port Authority has not amended its Application to revise the diffuser design, and therefore, the ALJs consider the existing design in evaluating the impacts. The evidence shows that the existing diffuser design cannot comply with the draft permit limit, a factor that weighs against finding the proposed discharge will not have adverse impacts.

The Port Authority and ED also presented evidence that, for new facilities, TCEQ's practice is to wait until after there is a discharge to establish permit limits for pollutants. ED witness Ms. Gibson explained that, because the proposed Facility has not yet been constructed, no analytical data was provided in the Application, and therefore, screening against water-quality based effluent limitations could not be accomplished.<sup>348</sup> To address this issue, the draft permit requires the Port Authority to conduct effluent sampling upon discharge and submit the data to TCEQ, which can reopen the permit and include additional effluent limits or monitoring, if needed. However, a key issue in this case is that the TSWQS do not contain numeric criteria for salinity. As a result, effluent testing does not address the concerns about salinity. Furthermore, even if there were numeric criteria for salinity, given the discharge location's pivotal role in the life cycle of

---

<sup>347</sup> Ex. AR-4 at S-App. 000339.

<sup>348</sup> Ex. ED-SG-1 at 20.

estuarine-dependent species and the sensitivity of early life stages to salinity changes, waiting to identify significant problems until after the discharge commences is not sufficient.

The draft permit also requires the Port Authority to conduct WET testing during the first year of the discharge. However, this requirement also applies after the discharge commences and is not sufficient for the same reason. In addition, the draft permit does not require testing of salinity impacts on larval stages of fish,<sup>349</sup> which is the primary aquatic life concern raised by PAC's witnesses.

As to copper, the greater weight of the evidence does not indicate that adverse impacts are likely. PAC witness Mr. Wiland's contention that dissolved copper levels in the Lydia Ann Channel are as high as 12 µg/L is a misinterpretation of the measurements, which Mr. Palachek testified are actually non-detect levels as indicated by the less-than (<) symbol.<sup>350</sup> In addition, the 3.6 µg/L acute dissolved copper criterion referenced by Protestants applies outside of the mixing zones, and the evidence does not support that the diluted effluent will likely exceed that level. In addition, because the TSWQS contain numeric criteria for copper, the effluent testing required in the draft permit can be used to screen whether there are actual exceedances.

Protestants and the pro se group also raised concerns about other potential constituents of the discharge, noting that the Application did not identify the specific chemicals that will be used at the Facility. However, the Application included information on the types of chemicals that will be used,<sup>351</sup> and Protestants and the pro se group did not present evidence regarding any specific constituent of concern. Accordingly, the ALJs conclude that they have not rebutted the prima facie demonstration as to other potential constituents of the discharge.

Finally, the Commission's referred issue also references impacts to birds and endangered or threatened species. While there was a reference at the hearing by Dr. Stunz that effects to aquatic

---

<sup>349</sup> Tr. Vol. 5 at 206-07.

<sup>350</sup> Ex. APP-RP-1 at 37-38; Ex. APP-RP-16.

<sup>351</sup> Ex. AR-4 at S-App. 000336-38.

life could have ripple effects that impact birds, the ALJs conclude this statement is not sufficient to rebut the prima facie demonstration. In addition, as discussed above, rebuttal evidence was not presented regarding endangered or threatened species.

Accordingly, after considering the evidence and argument, the ALJs conclude that the Port Authority has not met its burden to prove that the proposed discharge will not adversely impact the marine environment, aquatic life, and wildlife, including spawning eggs and larval migration. However, as to birds and endangered or threatened species, the ALJs conclude that the Port Authority met its burden to show that the proposed discharge would not have adverse impacts.

**E. Whether the proposed discharge will adversely impact the health of the requesters and their families, including whether fish and other seafood will be safe for human consumption. (Issue B)**

Protestants allege that “there is almost no evidence in the record to conclude the proposed discharge will not adversely impact requesters or their families.”<sup>352</sup> They argue that the evidence provided by ED witness Dr. Wallace is circular because she concludes that (1) the TSWQS require state waters to be maintained to preclude adverse toxic effects on aquatic life, terrestrial life, livestock, and domestic animals; and (2) the ED has determined that the draft permit complies with the TSWQS, and therefore, the designated uses will be maintained and protected. Protestants also note that Port Authority witness Dr. Tischler stated that if the proposed discharge is in compliance with the draft permit, then it will not adversely affect human consumption of fish and other seafood.<sup>353</sup> However, Protestants point out that Dr. Tischler testified that he does not believe the Port Authority can comply with the draft permit with the facilities proposed in the Application.<sup>354</sup>

In response, the Port Authority, ED, and OPIC each point out that Protestants did not present evidence on this issue, and therefore, failed to rebut the prima facie demonstration. The Port Authority also notes that because the outfall will be located at least 50 feet below the water

---

<sup>352</sup> PAC Closing Argument at 24.

<sup>353</sup> Ex. APP-LT-1 at 23.

<sup>354</sup> Tr. Vol. 3 at 264-65.

surface, humans will not be directly exposed to the discharge, and even if they were, there is no showing that the increased salinity would have an adverse impact.

As stated above, the filing of the TCEQ administrative record with SOAH establishes a prima facie demonstration that: (1) the draft permit meets all state and federal legal and technical requirements; and (2) a permit, if issued consistent with the draft permit, would protect human health and safety, the environment, and physical property.<sup>355</sup> To rebut this presumption, a party must present evidence that demonstrates that one or more provisions in the draft permit violate a specifically applicable state or federal requirement.<sup>356</sup> Protestants have not identified any evidence they presented on this issue. Further, while Protestants raise concerns regarding the discharge's effect on aquatic life, they have not shown that those effects translate into adverse impacts to the health of the requesters or their families. For example, they have not shown that increased salinity affects the safety of seafood for human consumption. Therefore, Protestants have not rebutted the prima facie demonstration on this issue.

Accordingly, the ALJs conclude that the record supports a finding that the proposed discharge will not adversely impact the health of the requesters and their families.

**F. Whether the proposed discharge will adversely impact recreational activities, commercial fishing, or fisheries in Corpus Christi Bay and the ship channel. (Issue C)**

All of the parties directly addressing this issue rely in part on their analyses presented under Issue A.<sup>357</sup> As Protestants note, this issue is directly tied to Issue A because the impact on aquatic life will impact the fish populations in the region, which in turn impact activities, whether commercial or recreational, that depend on fish populations.<sup>358</sup> The ALJs agree, and incorporate the discussion and analysis of Issue A in addressing this issue.

---

<sup>355</sup> Tex. Gov't Code § 2003.047(i-1); *see also* 30 Tex. Admin. Code § 80.117(c).

<sup>356</sup> Tex. Gov't Code § 2003.047(i-2).

<sup>357</sup> Port Authority Closing Argument at 30; ED Closing Argument at 7; PAC Closing Argument at 25; OPIC Closing Argument at 16-17.

<sup>358</sup> PAC Closing Argument at 25.

With respect to this issue, Protestants emphasize Dr. Erisman’s testimony that “[t]he Aransas Pass tidal inlet is the most important multispecies, spawning site for the most economically valuable sportfishes in the region.”<sup>359</sup> He further testified that the productivity of local populations of sportfishes (red drum, spotted seatrout, sheepshead, black drum, and southern flounder) “are directly linked to, and dependent upon, the reproductive activity that occurs at this inlet.”<sup>360</sup> In addition, Dr. Stunz testified that the fisheries in the Corpus Christi Bay, Aransas Pass tidal inlet, and Texas Gulf of Mexico support a multi-billion-dollar commercial fishing industry (e.g., finfish, crab, and shrimp), provide a livelihood for many residents in the area, and offer recreation opportunities (e.g., fishing) for many local residents and visitors to the region.<sup>361</sup>

In addition, as stated above, Aransas Pass is the primary connection between the Gulf of Mexico and Texas’s bays and estuaries for many miles both north and south, and is the main source of productivity for spawning, migrating, and feeding.<sup>362</sup> Therefore, fish populations and fisheries are highly dependent on the maintenance of this key area for their development and survival.<sup>363</sup> The area is also designated as essential fish habitat under the federal Magnuson-Stevens Act because its protection is necessary to maintain productive fisheries and rebuild depleted stocks.<sup>364</sup>

Protestants state that if the discharge impacts marine life as PAC’s experts anticipate, the consequences for people who enjoy or rely on the regional fisheries would be devastating. Dr. Erisman testified that the draft permit will “disrupt fish reproduction in the area to such a degree that significantly diminished fish populations in and around Corpus Christi Bay and the ship channel will adversely impact fishing and fisheries in the region.”<sup>365</sup> In addition, Dr. Stunz opined that the adverse effects to fish populations will cause catastrophic damage to both the

---

<sup>359</sup> Ex. PAC-1 at 6.

<sup>360</sup> Ex. PAC-1 at 7.

<sup>361</sup> Ex. PAC-6 at 23.

<sup>362</sup> Ex. PAC-1 at 9.

<sup>363</sup> *Id.*

<sup>364</sup> Ex. PAC-1 at 9; *see also* 16 U.S.C. §§ 1801-1891d.

<sup>365</sup> Ex. PAC-1 at 5.

commercial and recreational fishing industries, with commensurate economic devastation.<sup>366</sup> Dr. Esbaugh and Mr. Holt testified similarly.<sup>367</sup> Protestants also add that, if the draft permit is issued, the amount of larvae killed could essentially negate the fish-stocking efforts of the TPWD, which spends approximately \$3.7 million annually to stock 20 million fish along the Texas coast.<sup>368</sup>

In response, the Port Authority points to its evidence and arguments presented in connection with Issue A that the proposed discharge complies with the TSWQS and will have only a de minimis effect on the Corpus Christi Ship Channel. In particular, the Port Authority relies on Dr. Furnans's salt mass balance showing that the total increase of salt in the channel would be less than 1% under the worst conditions,<sup>369</sup> and Dr. Tischler's testimony that the proposed discharge amounts to 0.5% of the total tidal volume in the channel.<sup>370</sup> The Port Authority asserts that if the proposed discharge will not have an adverse effect on the marine environment and complies with the TSWQS, then it cannot have an adverse effect on recreational activities, commercial fishing or fisheries.<sup>371</sup> The Port Authority also notes that the proposed discharge will be located at least 50 feet below the water surface and, therefore, will not interfere with boating or other surface water uses of the channel. In addition, the draft permit imposes testing, monitoring, and reporting requirements that are designed to be protective of marine life, including fisheries. The Port Authority also repeats its assertions that PAC's witnesses are not credible and contends they provided scant evidence regarding the effect of the proposed discharge on recreational activities.

The ED points to the testimony of Dr. Wallace that she considered the potential impact of the proposed discharge on recreational activities, commercial fishing and fisheries in Corpus Christi Bay and the ship channel as part of her antidegradation review (discussed in Section IV.C.

---

<sup>366</sup> Ex. PAC-6 at 23.

<sup>367</sup> Ex. PAC-5 at 12-13; Ex. PAC-4 at 20.

<sup>368</sup> Tr. Vol. 3 at 72-73, 120-21.

<sup>369</sup> Ex. APP-JF-1 at 23.

<sup>370</sup> Ex. APP-LT-1 at 29.

<sup>371</sup> Port Authority Closing Argument at 30.

above). Based on her review, the ED concludes that the existing uses of primary contact recreation, exceptional aquatic life use, and oyster waters will be maintained, and water quality will not be degraded. In addition, while the ED acknowledges that Protestants offered testimony regarding the potential negative impact of the proposed discharge on fisheries, which would also negatively impact recreational and commercial fishing, the ED contends they did not demonstrate that the draft permit does not comply with the applicable statutory and regulatory requirements governing the proposed discharge.<sup>372</sup>

The ALJs conclude that the concerns raised by Protestants regarding adverse impacts to aquatic life directly affect whether the proposed discharge will adversely impact recreational activities (e.g., fishing), commercial fishing, and fisheries. The evidence shows that disruption of fish reproduction ultimately results in reduced populations of adult fish, and therefore, impacts fishing and fisheries. The extent of the impact has not been quantified, but sufficient evidence has been presented to rebut the prima facie demonstration, and the ALJs conclude that the Port Authority's additional evidence is not sufficient on this issue.

Accordingly, the ALJs conclude that the Port Authority has not met its burden to prove that the proposed discharge will not adversely impact recreational activities, commercial fishing, or fisheries in Corpus Christi Bay and the ship channel.

**G. Whether the Application, and representations contained therein, are complete and accurate. (Issue D)**

In their closing arguments, Protestants raise concerns with the completeness and accuracy of the following representations in the Application: (1) design of the diffuser, (2) identification of the owner/operator of the Facility, (3) location of the Facility, (4) location of the outfall, and (5) the channel depth at the outfall location.<sup>373</sup>

---

<sup>372</sup> ED Closing Argument at 7.

<sup>373</sup> Protestants also allege inaccuracies in the Application related to the modeling inputs, which are addressed above in connection with the modeling.

## 1. Diffuser Design

As discussed above, Port Authority witness Dr. Tischler testified that, under conditions of high flow rates, the diffuser design provided in the Application would have difficulty meeting the draft permit limits.<sup>374</sup> According to Protestants, Dr. Tischler's testimony indicates that the Application is not accurate or complete, or both.<sup>375</sup> They state that when this case was referred to SOAH, the Port Authority and ED contended that the Application sufficiently demonstrated that the draft permit requirements could be met by the proposed facilities, but Dr. Tischler's testimony shows this contention is incorrect.

The Port Authority maintains that the diffuser design contained in the Application has not changed.<sup>376</sup>

The ED points out that if the Port Authority is unable to meet the effluent limits in its permit it may be subject to an enforcement action.<sup>377</sup> Additionally, ED witness Ms. Cunningham testified that if the Port Authority requests a change to the diffuser design that would result in different effluent percentages and/or mixing zone dimensions, then the Port Authority would be required to submit an application for a major amendment.<sup>378</sup>

The ALJs conclude that the Port Authority has met its burden to show that the diffuser design contained in the Application is accurate. While Dr. Tischler's testimony implicates whether the proposed diffuser design can meet the draft permit limits (as discussed in connection with Issue A above), he denied that the Port Authority had plans to submit a different diffuser design.<sup>379</sup> The Port Authority's closing arguments also represent that the diffuser design has not changed. If

---

<sup>374</sup> Tr. Vol. 3 at 264-65.

<sup>375</sup> PAC Closing Argument at 29.

<sup>376</sup> Port Authority Reply at 4, 22.

<sup>377</sup> ED Reply at 3-4.

<sup>378</sup> Ex. ED-KC-1 at 22.

<sup>379</sup> Tr. Vol. 3 at 259.

the Port Authority subsequently changes the diffuser design, the ED has testified that a major amendment to the permit would be required.

## 2. Owner/Operator of Facility

Protestants and the pro se group argue that the Application incorrectly represents that the Port Authority will own and operate the Facility.<sup>380</sup> Protestants and the pro se group point to statements by the Port Authority's representatives indicating that the organization does not intend to own and operate the Facility. The Port Authority's chairman stated in an open meeting that "we are not going to own, operate, or build a desalination plant."<sup>381</sup> In addition, Sarah Garza, the Port Authority's identified corporate representative, testified at her deposition that the organization's commissioners and chief executive officer have stated that the Port Authority does not intend to own and operate the Facility.<sup>382</sup>

The Port Authority responds that it presently intends to be the owner and operator of the Facility.<sup>383</sup> It acknowledges that there have been discussions with other parties about potentially operating the facility, but no agreement has been reached.<sup>384</sup> The Port Authority represents that if it reaches an agreement with another entity to own or operate the Facility, it will request an amendment to the permit, as authorized by the TCEQ's rules.<sup>385</sup>

Based on the Port Authority's representations that it presently intends to own and operate the Facility, and the lack of evidence of an agreement with another entity to own or operate the Facility, the ALJs conclude that the Application accurately identifies the owner and operator. If a different owner or operator materializes, an amendment would be required to transfer the permit.<sup>386</sup>

---

<sup>380</sup> PAC Closing Argument at 30-33; Pro Se Group Closing Argument at 5.

<sup>381</sup> Ex. PAC-24 at 4.

<sup>382</sup> Ex. PAC-18 at 4-7.

<sup>383</sup> Port Authority Closing Argument at 34 (citing PAC-18 at 10); Port Authority Reply at 32-33.

<sup>384</sup> Ex. PAC-18 at 10, 26-27.

<sup>385</sup> 30 Tex. Admin. Code § 305.64 (addressing transfer of permits).

<sup>386</sup> 30 Tex. Admin. Code § 305.64.

### 3. Facility Location

Protestants contend that the location of the Facility provided in the Application is inaccurate because it is the same location for which Lone Star Ports, LLC (LSP) has proposed a marine terminal.<sup>387</sup> In support, Protestants compare aerial maps of the two proposed projects and conclude that the desalination discharge pipe proposed in this case overlaps with a ship berth proposed by LSP.<sup>388</sup> Protestants argue that this inconsistency renders the Application inaccurate or at least warrants a remand to address it.

The Port Authority acknowledges that the maps show the two facilities are planned for the same tract of land, but disagrees that there is an irreconcilable conflict.<sup>389</sup> Moreover, it notes that the permit in this case is for a wastewater discharge and Protestants have not cited any notice or other requirement that would be implicated if the location of the Facility was moved slightly to accommodate LSP's plans.

Based on the evidence presented, the ALJs conclude that the Facility location identified in the Application is accurate. All of the evidence presented in this case indicates that the Facility will be located on the southeastern tip of Harbor Island. While the LSP project is planned for the same tract of land, Protestants have not shown that there is an irreconcilable conflict that affects the Application in this case.

### 4. Outfall Location

Protestants point out that the Application contains inconsistent information regarding the outfall location.<sup>390</sup> They note that the Application includes two different sets of latitude and

---

<sup>387</sup> PAC Closing Argument at 33-34.

<sup>388</sup> Compare Ex. AR-4 at S-App. 000038 with Ex. PAC-42.

<sup>389</sup> Port Authority Reply at 33-34.

<sup>390</sup> PAC Closing Argument at 36-37.

longitude coordinates, one of which the Port Authority states is accurate,<sup>391</sup> and the other that places the outfall in the Gulf of Mexico.<sup>392</sup> Protestants also identify figures within the Application showing the outfall and diffuser at different locations.<sup>393</sup> In particular, they point to page 343 of the Application, which includes a figure titled “approximate diffuser location” that has an arrow pointing to the middle of the Corpus Christi Ship Channel, presumably indicating the diffuser location at the end of the arrow.<sup>394</sup>

The Port Authority does not dispute that the Application contains typographical errors regarding the outfall location, but contends that considering the Application as a whole, there is no legitimate confusion as to the location of the outflow.<sup>395</sup> In response to Protestants’ concerns about the figure on page 343 of the Application, the Port Authority explains that the arrow is simply pointing the wrong direction. Additionally, Dr. Tischler testified that the map at page 357 of the Application includes a scale and notation identifying the discharge as 300 feet from shore, making it clear that the discharge is not in the center of the ship channel where the arrow points.<sup>396</sup> The Port Authority also notes that the Application correctly identifies the location of the outfall on other maps<sup>397</sup> and by latitude and longitude.<sup>398</sup> The ED agrees with the Port Authority and notes that the errors did not impact the ED’s review.<sup>399</sup>

Based on the evidence presented, there does not appear to be a legitimate dispute regarding the outfall location. The location is correctly identified throughout the Application, and as stated above, the minor errors did not impact the ED’s review. PAC’s witness Mr. Wiland also confirmed

---

<sup>391</sup> Ex. AR-4 at S-App. 000258; Ex. PAC-18 at 31.

<sup>392</sup> Ex. AR-4 at S-App. 000217.

<sup>393</sup> *See, e.g.*, Ex. AR-4 at S-App. 246, S-App. 000386.

<sup>394</sup> Ex. AR-4 at S-App 000343.

<sup>395</sup> Port Authority Closing Argument at 34-35.

<sup>396</sup> Ex. APP-LT-1 at 47.

<sup>397</sup> Ex. AR-4 at S-App. 232, S-App. 246.

<sup>398</sup> Ex. AR-4 at S-App. 258.

<sup>399</sup> ED Reply at 10.

that the outfall location is accurately portrayed in multiple places in the Application.<sup>400</sup> Accordingly, the ALJs conclude that, despite the few typographical errors, the Application as a whole accurately identifies the outfall location.

## **5. Channel Depth at Outfall Location**

Protestants and OPIC contend that the Application inaccurately identifies the channel depth at the outfall location as 63 feet, when the actual depth is closer to 90 feet. The channel depth is an input to the CORMIX model, so this issue is discussed above in connection with Issue G. For the reasons discussed there, the ALJs conclude that the channel depth provided in the Application is not accurate.

## **H. Whether the Applicant substantially complied with applicable public notice requirements. (Issue E)**

The TCEQ's public notice requirements are set out in 30 TAC chapter 39. To comply with the notice requirements, the TCEQ's chief clerk must mail notice to landowners named on the application map or supplemental map (or on a sheet attached to one of those maps), and to people who filed public comment or hearing requests.<sup>401</sup> Notice must also be published in the newspaper with the largest circulation in the county in which the facility is proposed to be located or if it is proposed to be located within a municipality, in any newspaper of general circulation in the municipality, as well as in a newspaper of general circulation in a county affected by the discharge.<sup>402</sup> An applicant must also make a copy of the application available for review and copying at a public place in the county where the facility is proposed to be located.<sup>403</sup>

---

<sup>400</sup> Tr. Vol. 2 at 218-26.

<sup>401</sup> 30 Tex. Admin. Code § 39.413(1), (14).

<sup>402</sup> 30 Tex. Admin. Code §§ 39.405(f)(1), .551(c)(1).

<sup>403</sup> 30 Tex. Admin. Code § 39.405(g).

The evidence established that notice of the Application was published in the *Corpus Christi Caller-Times*, the *Port Aransas South Jetty*, and the *Aransas Pass Progress*.<sup>404</sup> Copies of the Application were placed in La Retama Central Library, Sinton Public Library, Ed and Hazel Richmond Public Library, and the Port Aransas City Hall.

Both the pro se group and the Protestants challenge notice. The pro se group argues that the notice was inadequate because it was published in “a regional paper no one buys.”<sup>405</sup> The pro se group also contends that placing a copy of the Application at La Retama Library in Corpus Christi was insufficient to provide notice and argues that the Application should have been placed at a library in Port Aransas or in the Port Aransas City Hall.<sup>406</sup>

For their part, Protestants argue that the Application’s alleged change in outfall, or alternatively, the confusion over where the outfall would be, affected who should have received mailed notice. They do not argue that notice was otherwise improper.

The ALJs note, however, that Protestants presented no evidence that someone entitled to receive notice did not receive it or that notice was mailed based on the map with the misplaced arrow. Accordingly, the Protestants did not rebut the prima facie demonstration on notice.<sup>407</sup> The ALJs also determine that the Application was placed in one of the locations the pro se group contend it should have been placed—the Port Aransas City Hall. The other challenges to notice raised by the pro se group do not suggest that the Port Authority failed to comply with the relevant rules. Instead, the challenges appear to be to the rules themselves. Such challenges are outside of SOAH’s jurisdiction, however.

---

<sup>404</sup> Ex. AR-6.

<sup>405</sup> Pro Se Group Closing Argument at 13.

<sup>406</sup> Pro Se Group Closing Argument at 13.

<sup>407</sup> To the extent that the Protestants’ notice challenge is an argument that the Application insufficiently describes the outfall location, that issue is discussed in Section G. 5, above.

What is more, as both OPIC and the ED argue, the pro se group and Protestants lack standing to challenge other people's possible lack of notice.<sup>408</sup> The ALJs agree with OPIC and the ED that, even apart from the merits, Protestants may not challenge someone else's notice. As Protestants and the pro se group have not challenged their own notice, the ALJs conclude that they have not rebutted the Port Authority's prima facie demonstration.

**I. Whether the draft permit is consistent with the Texas Coastal Management Program's goals and policies. (Issue F)**

Applications for wastewater discharge permits within the boundary of the Texas Coastal Management Program (Program) must demonstrate consistency with the Program's goals and policies.<sup>409</sup> The ED must review those applications for consistency with the Program's goals and policies and must provide a brief summary of this analysis in the draft permit.<sup>410</sup> The ED may refer certain actions to the Coastal Coordination Council for review for consistency with the Program's goals and policies. The actions that may be referred include applications for new industrial wastewater discharge permits seeking to do one of the following: 1) discharge effluent subject to EPA's categorical limits into a priority segment; 2) discharge effluent subject to categorical limits that increase mass loading of pollutants into priority segments; or 3) change the point of discharge from outside into a priority segment.<sup>411</sup> The priority segments are set out in Appendix B to 30 TAC § 281.48.

In this case, the consistency determination was performed by ED witness Ms. Gibson.<sup>412</sup> To make this determination, she completed a worksheet used to determine industrial wastewater discharge permits' consistency with the Program.<sup>413</sup> The first section of this worksheet consists of three questions to establish if a proposed discharge is above or below the relevant threshold. If the

---

<sup>408</sup> *McDaniel v. Tex. Nat. Res. Conservation Comm'n*, 982 S.W.2d 650, 654 (Tex. App.—Austin 1998, pet. denied).

<sup>409</sup> 30 Tex. Admin. Code § 281.45(a)(2)(H). *See generally* 30 Tex. Admin. Code Chapter 281, Subchapter 2.

<sup>410</sup> 30 Tex. Admin. Code § 281.43(b).

<sup>411</sup> 30 Tex. Admin. Code § 281.46(2)(C)-(D).

<sup>412</sup> Ex. ED-SG-1 at 16.

<sup>413</sup> Ex. ED-SG-8.

answer to the three questions is “no,” then the discharge is considered to be above the threshold and thus consistent with the Program’s goals and policies. The three questions in the worksheet track the categories of applications that may be referred for a determination set out above.

To answer any of the questions “yes,” the discharge must be into a priority segment, the list of which is set out in Appendix B to the worksheet.<sup>414</sup> The segment where the proposed discharge will be located, Segment 2481, is not included in Appendix B’s list of priority segments. Accordingly, Ms. Gibson answered all three questions “no,” which led to her conclusion that the Application was consistent with the goals and policies of the Program.

In their briefing, Protestants argue that the Port Authority cannot be said to have established consistency with the Program’s goals and policies because Ms. Gibson lacks the appropriate expertise, because the Application was incomplete, and because the original interpretation of the CORMIX model was incorrect. Protestants do not cite to specific rules addressing the Program, nor do they contend that the ED’s statement was incomplete. Finally, they do not contend that discharge will be into a priority segment.

OPIC and the ED contend that the draft permit is consistent with the Program’s goals and policies. They both point to Ms. Gibson’s completion of the worksheet as satisfying this requirement.

The ALJs conclude the draft permit is consistent with the Program’s goals and policies. In performing her evaluation, Ms. Gibson appropriately used the ED’s worksheet, which is set up to follow the rule’s requirements for the types of applications that trigger additional analysis. Protestants do not address the specific items used to determine compliance with the Program. Nor do they suggest that there is an underlying problem with the worksheet or that the discharge is into a priority segment. Protestants’ arguments are not sufficient to rebut the prima facie demonstration on this issue.

---

<sup>414</sup> The priority segments in Appendix B to the worksheet are the same as the priority segments set out in Appendix B of 30 Tex. Admin. Code § 281.48.

**J. Whether the draft permit includes all appropriate and necessary requirements. (Issue I)**

Protestants assert that the draft permit does not include all appropriate and necessary requirements, but that it is impossible to determine such requirements here because, based on Dr. Tischler's testimony,<sup>415</sup> the Port Authority will not be able to meet the draft permit requirements using the proposed diffuser design.<sup>416</sup> Thus, the diffuser design that will be used is not known. If the diffuser design in the Application is used, Protestants state that the draft permit's maximum effluent percentage of 18.4% at the edge of the ZID must be revised. Protestants further note that, in many cases, revisions to permit limits or additional monitoring provisions can alleviate concerns raised during the contested case hearing process, but in this case, the draft permit cannot be salvaged.<sup>417</sup> In particular, they contend that the ED presented little evidence on Issues A, B, and C; the Application contains representations that are not accurate (Issue D); the CORMIX modeling should not be used here and the modeling that was performed used inaccurate inputs (Issue G); and the antidegradation review was based on unverified assumptions and inaccurate modeling data (Issue H).

OPIC also contends that the draft permit does not include all appropriate and necessary requirements. Based on testimony from PAC witness Mr. Wiland,<sup>418</sup> OPIC concludes that there is ambiguity in the description of the configuration of the diffuser relative to the boundary of the ZID, and if the diffuser barrel is located along the boundary of the ZID, effluent could move behind the diffuser at concentrations that violate the draft permit. OPIC also notes that Other Requirement

---

<sup>415</sup> Tr. Vol. 3 at 264-65.

<sup>416</sup> PAC Closing Argument at 59-60.

<sup>417</sup> In its reply to closing arguments, PAC alleges that the draft permit lacks certain required elements. However, these issues were not raised in its closing arguments, and therefore, the other parties did not have an opportunity to respond. Accordingly, such issues are not considered here. *See* Tex. Gov't Code § 2001.051 ("In a contested case, each party is entitled to an opportunity... to respond and to present evidence and argument on each issue involved in the case").

<sup>418</sup> Ex. PAC-3 at 26-27.

No. 9 requires the Port Authority to complete a study of ambient velocity, but does not include a deadline for completing the study.<sup>419</sup> OPIC recommends adding a deadline of no later than six months following commencement of the discharge. In addition, OPIC notes that the pH screening in the ED's statement of basis/technical summary used inaccurate inputs,<sup>420</sup> and thus, it is not clear that the limits contained in the draft permit are accurate. Finally, because the Facility is initially expected to operate at less than the maximum daily average permitted flow of 95.6 MGD, OPIC recommends requiring a minimum flow rate in the draft permit to ensure that the required effluent percentages can be met.

The Port Authority and ED maintain that the draft permit includes all appropriate and necessary requirements. Both contend that Protestants have not shown that the draft permit violates an applicable state or federal requirement. The ED also responds to OPIC's argument about the pH screening, noting that Ms. Gibson testified that minimum and maximum pH limits were developed based on the requirements in the TSWQS.<sup>421</sup>

The ALJs conclude that the draft permit does not include all appropriate and necessary requirements. As discussed in other sections of the PFD, the Port Authority has failed to meet its burden of proof to show that the CORMIX modeling is reliable and used accurate inputs, that the ED's antidegradation review was accurate, and that the proposed discharge will not adversely affect the marine environment, aquatic life, wildlife, recreational activities, commercial fishing, and fisheries. Further, given the scope of the problems and the lack of information in the record, the ALJs do not have sufficient information to recommend specific changes to the draft permit that would remedy the defects.

---

<sup>419</sup> See Ex. AR-8 at ED-0015.

<sup>420</sup> Tr. Vol. 5 at 233-34, 236.

<sup>421</sup> See 30 Tex. Admin. Code §§ 307.4(m), 307.7(b)(4)(B).

## V. ADMINISTRATIVE RECORD

Throughout the hearing process, Protestants have objected to the admission of the administrative record into evidence for all purposes. According to Protestants, the administrative record contains hearsay statements, opinions that conflicted with representations in the Application, and improper opinions of people who are not qualified as expert witnesses. They reurge this argument in their Closing Argument, contending that “[w]hen there is a conflict with Texas Government Code § 2003.047, the Texas Rules of Evidence will govern.”<sup>422</sup>

The ALJs previously overruled this objection, and see no basis to rule differently at this time. As set out earlier, the structure of SB 709 provides that the administrative record is used in just the way Protestants allege is improper. The filing of the administrative record with SOAH creates the prima facie demonstration that the draft permit complies with all relevant rules and statutes and is protective of human health and safety, the environment, and physical property. Protestants may then present evidence rebutting that demonstration. This structure requires that the administrative record be admitted for its substance, regardless of any hearsay or otherwise inadmissible statement. This reading is also required by the TCEQ’s rule about evidence at contested case hearings, which provides “[t]he ALJ shall admit the administrative record into evidence for all purposes.”<sup>423</sup> The ALJs will not strike the administrative record, or portions of the administrative record from evidence, nor will the ALJs limit the purpose for which it is admitted.

---

<sup>422</sup> Protestants Closing Argument at 60.

<sup>423</sup> 30 Tex. Admin. Code § 80.127(h).

## VI. TRANSCRIPT COSTS

The Port Authority incurred reporting and transcription costs in the amount of \$17,861.26 for the November 2, 2020 prehearing conference and hearing on the merits on November 4-6 and 9-10, 2020.<sup>424</sup> The Port Authority argues that Protestants should bear 100% of the transcript costs.<sup>425</sup> Protestants disagree, contending that the Port Authority should bear 100% of the costs, and alternatively, that Protestants should bear no more than half of the costs, but only if the draft permit is denied as they request. Neither the ED nor OPIC may be assessed transcript costs.

The Commission's rules require consideration of the following factors in assessing transcription costs:

- (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;
- (F) in rate proceedings, the extent to which the expense of the rate proceeding is included in the utility's allowable expenses; and
- (G) any other factor which is relevant to a just and reasonable assessment of costs.<sup>426</sup>

Protestants do not dispute that factors A, B, and C generally weigh equally among the Port Authority and Protestants, as each requested a copy of the transcript, each has the ability to pay, and each participated actively in the hearing. Neither party contends that factors E, F, and G

---

<sup>424</sup> See Port Authority Closing Argument at 65 & Att. A.

<sup>425</sup> No party asserts that costs should be allocated to Audubon, the pro se group, Ms. Denney, Mr. Dyer, or Mr. Grosse.

<sup>426</sup> 30 Tex. Admin. Code § 80.23(d).

are relevant to the analysis in this case. Thus, factor D regarding relative benefit is the primary distinguishing factor.

Protestants contend that the Port Authority and ED benefited from this proceeding because Protestants caught an error in the modeling. The benefit to Protestants, they argue, depends on whether the draft permit is granted or denied. If the permit is granted, they assert that the Port Authority should bear all costs, but if it is denied, then Protestants should bear no more than half of the costs. The ALJs disagree that factor D turns on whether the permit is granted or denied, and conclude that the Port Authority and Protestants benefitted equally from having a transcript.

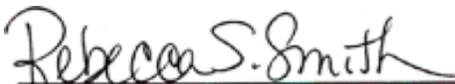
Therefore, after considering the relevant factors, the ALJs recommend that the transcript costs be divided equally between the Port Authority and Protestants, with each responsible for \$8,930.63.

## VII. CONCLUSION

In conclusion, the ALJs determine that the evidentiary record does not support issuance of the draft permit, and therefore, recommend that the Application be denied. The ALJs further recommend that the Commission adopt all Findings of Fact and Conclusions of Law in the Proposed Order on these issues. The ALJs recommend that the Commission not adopt the parties' proposed Findings of Fact and Conclusions of Law that the ALJs did not include in the Proposed Order, based on the reasoning set out in the Proposal for Decision.<sup>427</sup>

**SIGNED February 5, 2021.**

  
CASSANDRA QUINN  
ADMINISTRATIVE LAW JUDGE  
STATE OFFICE OF ADMINISTRATIVE HEARINGS

  
REBECCA S. SMITH  
ADMINISTRATIVE LAW JUDGE  
STATE OFFICE OF ADMINISTRATIVE HEARINGS

<sup>427</sup> 30 Tex. Admin. Code § 80.252(d).



## **TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

**AN ORDER  
DENYING THE APPLICATION OF  
PORT OF CORPUS CHRISTI AUTHORITY OF NUECES COUNTY FOR  
TPDES PERMIT NO. WQ00052530001;  
TCEQ DOCKET NO. 2019-1156-IWD;  
SOAH DOCKET NO. 582-20-1895**

On \_\_\_\_\_, the Texas Commission on Environmental Quality (TCEQ or Commission) considered the application of the Port of Corpus Christi Authority of Nueces County for a new Texas Pollutant Discharge Elimination System Permit in Nueces County, Texas. A Proposal for Decision (PFD) was issued by Rebecca S. Smith and Cassandra Quinn, Administrative Law Judges with the State Office of Administrative Hearings, and considered by the Commission.

After considering the PFD, the Commission makes the following findings of fact and conclusions of law.

## I. FINDINGS OF FACT

### **Background**

1. The Port of Corpus Christi Authority of Nueces County (Applicant or Port Authority) filed an application (Application) for a new Texas Pollutant Discharge Elimination System (TPDES) permit with TCEQ on March 7, 2018.
2. The Application requests authorization to discharge treated effluent into the Corpus Christi Ship Channel in Nueces County, Texas.
3. TCEQ's Executive Director (ED) declared the Application administratively complete on June 26, 2018.
4. The ED completed the technical review of the Application and prepared a draft permit (Draft Permit).

### **Notice and Jurisdiction**

5. The Notice of Receipt of Application and Intent to Obtain Water Quality Permit (NORI) was published on July 25, 2018, in the *Aransas Pass Progress*, *Ingleside Index*, and *Corpus Christi Caller-Times*. The NORI was also published on July 26, 2018 in the *Port Aransas South Jetty*.
6. The Notice Application and Preliminary Decision (NAPD) was published on November 21, 2018, in the *Aransas Pass Progress* and *Ingleside Index*. The NAPD was also published on November 22, 2018 in the *Port Aransas South Jetty* and *Corpus Christi Caller-Times*.
7. Copies of the Application were placed in La Retama Central Library, Sinton Public Library, Ed and Hazel Richmond Public Library, and the Port Aransas City Hall.
8. A public meeting was held on April 8, 2019, at the Port Aransas Civic Center in Port Aransas, Texas.
9. The public comment period ended at the close of the public meeting.
10. TCEQ received public comments on the Application, and the ED prepared a Response to Comments, which was filed with the Chief Clerk on July 3, 2019.
11. On November 21, 2019, the Commission issued an interim order granting certain hearing requests, referring certain hearing requests to the State Office of Administrative Hearings (SOAH) for an affectedness determination, and denying certain hearing requests and requests for reconsideration, and referring the Application to SOAH for a contested evidentiary hearing on the following nine issues:

- A. Whether the proposed discharge will adversely impact: the marine environment, aquatic life, and wildlife, including birds and endangered or threatened species, spawning eggs, or larval migration;
- B. Whether the proposed discharge will adversely impact the health of the requesters and their families, including whether fish and other seafood will be safe for human consumption;
- C. Whether the proposed discharge will adversely impact recreational activities, commercial fishing, or fisheries in Corpus Christi Bay and the ship channel;
- D. Whether the Application, and representations contained therein, are complete and accurate;
- E. Whether the Applicant substantially complied with applicable public notice requirements;
- F. Whether the draft permit is consistent with the Texas Coastal Management Program's goals and policies;
- G. Whether the modeling complies with applicable regulations to ensure the draft permit is protective of water quality, including utilizing accurate inputs;
- H. Whether the Executive Director's antidegradation review was accurate; and
- I. Whether the draft permit includes all appropriate and necessary requirements.

### **Proceedings at SOAH**

- 12. The preliminary hearing was initially scheduled to be held in Port Aransas, Texas, on March 24, 2020, but due to the COVID-19 pandemic, was rescheduled and set to convene via Zoom videoconference.
- 13. Notice of the rescheduled preliminary hearing was mailed by TCEQ on May 28, 2020, and published by the Port Authority in the *Aransas Pass Progress* and *Corpus Christi Caller-Times* on June 3, 2020, and the *Port Aransas South Jetty* on June 4, 2020.
- 14. The preliminary hearing was held before Administrative Law Judges (ALJs) Rebecca S. Smith and Cassandra Quinn on July 9, 2020, via Zoom videoconference.
- 15. At the preliminary hearing, the ALJs determined that SOAH had jurisdiction, named parties, and admitted the administrative record into evidence for all purposes.
- 16. Before the evidentiary hearing, various named parties withdrew. The remaining parties are:

the Port Authority; ED; TCEQ's Office of Public Interest Counsel (OPIC); Audubon Texas; Port Aransas Conservancy (PAC); the following individuals represented by counsel: James Harrison King, Tammy King, Edward Steves, and Sam Steves (collectively, represented protestants); and the following individuals representing themselves: Stacey Bartlett, Jo Ellen Krueger, Sarah Searight, Lisa Turcotte, Cara Denney, Aldo Dyer, and Mark Grosse.

17. The evidentiary hearing convened on November 4-6 and 9-10, 2020, via Zoom videoconference, with ALJs Rebecca S. Smith and Cassandra Quinn presiding. All parties participated at the hearing except for Ms. Denney, Mr. Dyer, and Mr. Grosse. The record closed on January 12, 2021, after the parties submitted written closing arguments and proposed findings of fact and conclusions of law.

### **Description of Proposed Facility and Discharge**

18. The Port Authority seeks a wastewater discharge permit for a proposed marine seawater desalination plant (the Facility) to be located on Harbor Island in Nueces County, Texas.
19. Harbor Island is situated between the Texas coast and the barrier islands of San Jose Island and Mustang Island, at the mouth of the Aransas Pass inlet, which connects the Gulf of Mexico to Texas's bays and estuaries.
20. The Facility will pump seawater from the Gulf of Mexico and use reverse osmosis to produce potable water.
21. The proposed discharge is for treated effluent from the Facility, consisting primarily of the concentrated brine resulting from the desalination process.
22. If the Draft Permit is issued, the treated effluent will be discharged into the Corpus Christi Ship Channel approximately 300 feet off Harbor Island's shoreline. The outfall location is near the confluence of the Corpus Christi Ship Channel, Lydia Ann Channel, and Aransas Pass inlet.
23. The proposed discharge is to Segment 2481 (Corpus Christi Bay) of the Texas classified surface water segments.
24. The designated uses for Segment 2481 are primary contact recreation, exceptional aquatic life use, and oyster waters.
25. The Port Authority plans to use a diffuser at the discharge site to enhance mixing of the treated effluent with the ambient water.

### **Texas Surface Water Quality Standards (TSWQS)**

26. The TSWQS were developed to protect surface water quality in regards to human health, aquatic life, terrestrial life, and the environment.

27. The TSWQS designate uses for the state's surface waters, and establish narrative and numerical water quality standards to protect those uses.
28. The TCEQ has adopted standard procedures to implement the TSWQS, which are approved by the U.S. Environmental Protection Agency (EPA) and set forth in "Procedures to Implement the Texas Surface Water Quality Standards (RG 194)" (IPs).
29. The TSWQS and IPs are used to set permit limits for wastewater discharges.
30. The TSWQS establish "mixing zones" in the receiving water body, which are defined areas contiguous to the permitted discharge where the effluent mixes with the receiving waters. Acute toxicity to aquatic organisms is not allowed in a mixing zone, and chronic toxicity to aquatic organisms is not allowed beyond a mixing zone.
31. There are three applicable mixing zones: the zone of initial dilution (ZID), aquatic life mixing zone, and human health mixing zone.
32. For toxic substances where adequate toxicity information is available, the TSWQS establish numerical water quality standards for acute and chronic toxicity that apply at the mixing zone boundaries.
33. The TSWQS do not contain numerical criteria for salinity. However, concentrations and the relative ratios of dissolved minerals such as chloride, sulfate, and total dissolved solids must be maintained such that existing, designated, presumed, and attainable uses are not impaired.
34. Under the TSWQS, salinity gradients in estuaries must be maintained to support attainable estuarine-dependent aquatic life uses, and careful consideration must be given to all activities that may detrimentally affect salinity gradients.

### **Draft Permit Requirements**

35. The Draft Permit specifies daily maximum and daily average flow limits of 110 million gallons per day (MGD) and 95.6 MGD, respectively.
36. The Draft Permit initially included a requirement that the diffuser at the outfall be maintained to achieve a maximum effluent percentage of 1.95% at the ZID boundary, but after the ED discovered an error in interpreting the modeling results, the ED increased the maximum effluent percentage limit at the ZID boundary to 18.4%.
37. With this change, the Draft Permit became more stringent for pollutants that have numeric criteria, but less stringent for brine.
38. No analytical data regarding the effluent was provided in the Application because the Facility has not yet been constructed or begun discharging, and consequently, screening against the water-quality-based effluent limits in the TSWQS could not be accomplished.
39. The Draft Permit includes the following requirements:

- a. The effluent must be monitored daily for total suspended solids, total dissolved solids, chloride, and sulfate.
- b. The effluent's pH must be not less than 6.0 standard units (SU) and not more than 9.0 SU.
- c. The Port Authority must conduct effluent sampling within 60 days of the initial discharge and submit the analytical data to TCEQ for screening against the water-quality-based effluent limits in the TSWQS.
- d. The Port Authority must complete a study of ambient water velocity at the outfall location and report the results to the TCEQ.
- e. The Port Authority must conduct whole effluent toxicity (WET) testing on the effluent during the first year of the discharge, with a 24-hour test every six months and a 48-hour test on a quarterly basis. The 24-hour test requires the test species to be submerged in 100% effluent from the Facility for 24 hours, and the 48-hour test requires the test species to be submerged in varying concentrations of effluent for 48 hours.

### **Modeling Analysis**

40. The Cornell Mixing Zone (CORMIX) model is the most commonly used model to design diffusers and evaluate mixing near outfalls.
41. The TCEQ's IPs provide for the use of the CORMIX model when a diffuser will be used, and the TCEQ has developed a guidance manual for running the model titled "Mixing Analyses Using CORMIX" (CORMIX SOPs).
42. Use of the CORMIX model was appropriate in this case.
43. The ED uses the CORMIX model to predict the percentage of effluent present at the edge of each regulatory mixing zone, and then sets permit limits based on the highest predicted effluent percentages.
44. In running the model, the ED relied on information provided in the Application and the CORMIX SOPs.
45. After this case was referred to SOAH, the ED discovered an error in interpreting the modeling results, which resulted in an increase of the predicted effluent percentage at the ZID boundary from 1.95% to 18.4%.
46. As corrected, the ED's CORMIX modeling predicts effluent percentages of 18.4% at the ZID boundary, 1.34% at the aquatic life mixing zone boundary, and 1.20% at the human health mixing zone boundary.

47. The depth of the water body at the discharge point is an important model input because it is a variable that influences near-field mixing.
48. The depth of the channel at the outfall location is close to 90 feet, but the modeling used an input of 63 feet.
49. The channel bottom slopes upward from the point of discharge, but the CORMIX model is not capable of modeling an upward slope, and the modeling in this case assumed a 4% *downward* slope.
50. The ED's modeling used inaccurate inputs for the channel depth and bottom slope at the outfall location.
51. The deeper water column and presence of an eddy at the outfall location do not ensure that mixing will be better than the model predicts and that effluent will not be re-entrained.
52. In the absence of site-specific velocity data in the Application, the CORMIX SOPs advise using a small velocity, which is intended to be conservative based on the assumption that mixing will be greater at higher velocities.
53. The ED followed the CORMIX SOPs in running the model with a default ambient velocity of 0.05 meters per second (m/s) for the receiving waters.
54. Velocities in the channel are at or below 0.05 m/s about 5% of the time, exceed 0.25 m/s about 73% of the time, and exceed 0.41 m/s about 68% of the time.
55. Running the CORMIX model with velocity data of 0.25 m/s to 0.41 m/s, results in effluent percentages from 60% to 70% at the ZID boundary, and 20% to 30% at the aquatic life mixing zone boundary.
56. Under the circumstances of this case, using a default ambient velocity of 0.05 m/s does not produce more conservative results and is materially inaccurate.
57. The use of an inaccurate ambient velocity is not resolved by the Draft Permit's requirement that the Port Authority perform a study of ambient velocity after issuance of the permit.
58. The Facility's intake was initially proposed to be located in a channel adjacent to Harbor Island, and the ED's modeling used temperature and salinity values measured in the Lydia Ann Channel.
59. The intake location was later moved to the Gulf of Mexico, but the modeling was not updated to use data from the new location.
60. Because the relevant data from the Gulf of Mexico and Lydia Ann Channel does not show a statistically significant difference for modeling purposes, the source water data used in the modeling was not inaccurate.

61. The ED modeled the proposed discharge using the maximum daily average flow rate of 95.6 MGD requested in the Application.
62. The Facility may initially operate at lower flow rates that result in poorer mixing, but this issue can be addressed by closing ports on the diffuser to maintain the same port exit velocity at the lower flow rate.
63. The effluent flow rate used in the modeling is not inaccurate.
64. Because the ED's CORMIX modeling used materially inaccurate inputs, the predictions of effluent concentrations at the ZID and mixing zone boundaries are not reliable.
65. The ED's modeling is not sufficient to ensure the Draft Permit is protective of water quality.

### **Antidegradation Requirements**

66. An antidegradation review is designed to ensure that a proposed discharge does not impair the uses or degrade the water quality of the receiving waters.
67. Tier 1 and Tier 2 antidegradation reviews are required due to the exceptional aquatic life use designation at the outfall location.
68. Following the TCEQ's procedural requirements for an antidegradation review is not sufficient on its own to ensure that the proposed discharge complies with the substantive antidegradation standards.
69. The ED's antidegradation review did not consider the Aransas Pass inlet's key role in the life cycle of estuarine-dependent species for the Corpus Christi Bay system, the range of salinity that would support estuarine-dependent aquatic life uses, the existing assimilative capacity of the receiving water body for salinity, or whether there would be lethality to aquatic organisms that move through the ZID.
70. By looking only at effluent concentrations at the mixing zone boundary, the ED's antidegradation review ignores potential impacts within the ZID and mixing zones.
71. The ED's antidegradation review was constrained by a lack of data because the Application is for a new discharge and a limited amount of time to conduct the review, including insufficient time to determine whether there was more than a de minimis change to water quality as required by Tier 2.
72. The existence of a zone of passage for aquatic life around the mixing zone and the use of a diffuser designed to increase salinity less than 1.0 parts per thousand (ppt) at the mixing zone boundary do not ensure that the designated uses and water quality of Segment 2481 (Corpus Christi Bay) will not be impaired.

73. The ED's antidegradation review relied on the predicted effluent percentage at the mixing zone boundary, and thus, was not affected by the ED's correction of the effluent percentage at the ZID boundary. Therefore, the ED was not required to update the antidegradation review after the error was corrected.
74. The ED's Tier 2 antidegradation review appropriately considered the baseline conditions of the receiving waters because the baseline conditions are estimated from existing conditions, and there was no information indicating that degradation in ambient water quality has occurred in the receiving waters since November 28, 1975.
75. The inputs to the ED's pH screening contained errors, but they did not materially affect the antidegradation review.
76. No demonstration was made that degradation of water quality in the water body receiving the desalination effluent is necessary for important economic or social development.
77. The ED's antidegradation review does not demonstrate that the proposed discharge will maintain existing uses and not lower water quality by more than a de minimis amount.

#### **Impact on the Marine Environment, Aquatic Life, and Wildlife**

78. Aransas Pass is one of five major coastal passes connecting the Gulf of Mexico with Texas's bays and estuaries. The next closest inlets are Packery Channel, a very small channel over 20 miles to the south, and the channel at Port O'Connor over 80 miles to the north.
79. Aransas Pass is the main source of productivity (e.g., spawning, migrating, and feeding) and connectivity with the Gulf of Mexico for all the fish and invertebrate populations in the entire region.
80. The Gulf-bay connection created by the Aransas Pass inlet is necessary for the life cycle of certain estuarine-dependent marine species. The adults of these species typically live and spawn offshore, and their eggs and larvae drift in coastal currents until a portion of them arrive at the coast and are drawn into the inlet. From there, some of the larvae are carried on the flood tide into the estuary where they can develop into juveniles and sub-adults, before eventually returning to the ocean as mature adults.
81. Because the inlet compounds and magnifies the marine life abundance, the impact of the proposed discharge will be disproportionately greater than what would occur in other areas with less densities and concentrations of marine life.
82. The discharge location is within the Redfish Bay State Scientific Area and is designated as essential fish habitat for red drum (redfish) and shrimp under the Magnuson-Stevens Fishery Conservation and Management Act.

83. The Texas Parks and Wildlife Department and Texas General Land Office prepared a 2018 report that identifies zones in the Gulf of Mexico that are appropriate for the discharge of marine seawater desalination waste while taking into account the need to protect marine organisms (the Desalination Study).
84. The proposed discharge is located in an area that the Desalination Study does not identify for desalination activities. The Desalination Study does not preclude desalination activities in areas that have not been identified, but the exclusion of the proposed discharge site supports that it is a sensitive location.
85. High salinity or saline imbalances can be fatal to aquatic life, particularly early life stages, such as embryos and larvae.
86. There is a zone of passage for aquatic organisms around the ZID and mixing zones. However, early life stages of aquatic species cannot swim around the effluent plume and will enter the ZID and mixing zones, and thus, come into contact with the undiluted effluent.
87. While levels of salinity rise and fall, they do so over time, allowing time for acclimation by aquatic species that protects them.
88. Early life stages of aquatic species will be adversely affected by the sudden changes in salinity that will be associated with the proposed discharge.
89. The proposed discharge will likely result in loss of life and other adverse effects on early life stages of fin and shellfish, including their larvae, in the ZID.
90. If the area is degraded, fish will not go elsewhere to spawn, but instead will spawn less (or not at all), reduce their feeding, and ultimately reduce the carrying capacity of local fish populations.
91. The ambient salinity in the Corpus Christi Ship Channel naturally fluctuates between 18 ppt and 39 ppt.
92. The proposed discharge will result in salinity levels at the outfall as high as 78.5 ppt.
93. The record does not include a reliable no-effects concentration for salinity.
94. The proposed discharge will increase salinity in the Corpus Christi Ship Channel at most by 1%, and the volume of the discharge is only 0.5% of the daily tidal exchange flow in the channel.
95. While the increase in salinity over the entire channel may be small, aquatic organisms will be exposed to effluent concentrations greater than 1% in the ZID and mixing zones.

96. Small increases in salinity can have adverse effects if the ambient salinity is already at the physiological limit for some species, or if a system is on the edge of collapse.
97. The Application specified that the diffuser would be designed to achieve 2.5% or less effluent at the ZID boundary.
98. The Draft Permit's establishment of a maximum effluent percentage of 18.4% at the ZID boundary was not set based on what is protective of aquatic life.
99. The diffuser design proposed in the Application cannot meet the 18.4% limit at the ZID boundary.
100. Because the TSWQS do not contain numeric criteria for salinity, the Draft Permit's requirement to test the effluent after the discharge commences and screen it against the TSWQS's water-quality-based effluent limits does not address the concerns about salinity.
101. Given the discharge location's pivotal role in the life cycle of estuarine-dependent species and the sensitivity of early life stages to salinity changes, waiting to identify the extent of salinity's adverse impacts until after the discharge commences is not sufficient.
102. The Draft Permit does not require testing of salinity impacts on larval stages of fish.
103. The careful consideration required for evaluating the impacts of a discharge of salinity was not performed.
104. The proposed discharge is unlikely to exceed the 3.6 micrograms per liter acute dissolved copper criterion that applies outside of the mixing zones.
105. Because the TSWQS contain numeric criteria for copper, the effluent testing required in the Draft Permit can be used to screen whether there are exceedances for copper.
106. The Draft Permit adequately addresses the potential presence and impact of copper in the effluent.
107. The ED conducted an endangered species review and concluded that the piping plover, a threatened aquatic-dependent species found in Segment 2481, would not be impacted because the Facility is not a petroleum facility. No party presented evidence challenging this conclusion.
108. The proposed discharge will adversely impact the marine environment, aquatic life, and wildlife, including spawning eggs and larval migration.
109. The proposed discharge will not adversely impact birds and endangered or threatened species.

### **Impact on Recreational Activities, Commercial Fishing, and Fisheries**

110. The Aransas Pass tidal inlet is a multi-species spawning site for the most economically valuable sportfishes in the region.
111. The productivity of local populations of sportfishes, including red drum, spotted seatrout, sheepshead, black drum and southern flounder, is directly linked to, and dependent upon, the reproductive activity that occurs in the Aransas Pass inlet.
112. The fisheries in the Corpus Christi Bay, Aransas Pass inlet, and Texas Gulf of Mexico support a multi-billion-dollar commercial fishing industry for finfish, crab, and shrimp.
113. The adverse impacts to the marine environment and aquatic life, including early life stages, is likely to disrupt fish reproduction in the area to such a degree that it will result in diminished fish populations in and around Corpus Christi Bay.
114. The adverse effects to fish populations will damage recreational and commercial fishing industries.
115. The proposed discharge will adversely impact recreational activities, commercial fishing, and fisheries in Corpus Christi Bay and the ship channel.

### **Impact on Human Health**

116. No party presented evidence challenging whether the proposed discharge will adversely impact the health of the requesters and their families, including whether fish and other seafood will be safe for human consumption.
117. The proposed discharge will be located at least 50 feet below the water surface, so humans will not be directly exposed to the discharge.
118. The proposed discharge will not adversely impact the health of the requestors or their families.

### **Accuracy and Completeness of the Application**

119. The Application correctly identified the Port Authority as the owner and operator of the Facility, and the locations of the proposed Facility and outfall.
120. The Application incorrectly identified the depth of the channel at the outfall location.

### **Notice Requirements**

121. Notice was properly mailed and published, and a copy of the Application was made available at appropriate public locations. The location of the outfall determines the owners of properties that are required to be identified in the Application as affected landowners.

122. Protestants have not challenged their own notice.

### **Texas Coastal Management Program**

123. The ED appropriately reviewed the Application for consistency with the Texas Coastal Management Program's goals and policies.

### **Transcription Costs**

124. The total cost for recording and transcribing the prehearing conference and hearing on the merits was \$17,861.26, which has been paid by the Port Authority.

125. The transcript was required by SOAH's rules.

126. No party asserts that transcript costs should be allocated to Audubon or the self-represented protestants.

127. Transcript costs cannot be assessed against the ED and OPIC because they are statutory parties who are precluded from appealing the decision of the Commission.

128. The Port Authority, PAC, and represented protestants fully participated in the hearing.

129. The Port Authority, PAC, and represented protestants have the financial ability to cover the costs associated with the transcript.

130. The Port Authority, PAC, and represented protestants benefitted equally from having a transcript.

131. It is reasonable and appropriate for PAC and represented protestants to reimburse the Port Authority \$8,930.63 for transcript costs.

## **II. CONCLUSIONS OF LAW**

1. The Commission has jurisdiction over water quality and the issuance of TPDES permits. Tex. Water Code §§ 5.013, 26.003, 26.011, 26.027, and 26.028.

2. The Application was referred to SOAH under Texas Water Code § 5.556.

3. SOAH has jurisdiction to conduct a hearing and prepare a proposal for decision in contested cases referred by the Commission under Texas Government Code § 2003.047.

4. Notice of the Application and the hearing were properly provided to the public and to all parties. Tex. Water Code §§ 5.115, 26.022, 26.028; Tex. Gov't Code §§ 2001.051-.052; 30 Tex. Admin. Code ch. 39.

5. The Application is subject to Texas Government Code § 2003.047(i-1)-(i-3).

6. The filing of the Application, the Draft Permit, the preliminary decisions issued by the ED, and other supporting documentation in the administrative record of the Application established a prima facie case that: (i) the Draft Permit meets all state and federal legal and technical requirements; and (ii) the permit, if issued consistent with the Draft Permit, would protect human health and safety, the environment, and physical property. Tex. Gov't Code § 2003.047(i-1).
7. A party may rebut the prima facie demonstration by presenting evidence that: (1) relates to an issue directly referred; and (2) demonstrates that one or more provisions in the Draft Permit violates a specifically applicable state or federal requirement. Tex. Gov't Code § 2003.047(i-2); 30 Tex. Admin. Code §§ 80.17(c)(2), .117(c)(3).
8. Applicant retains the burden of proof on the issues regarding the sufficiency of the Application and compliance with the necessary statutory and regulatory requirements. 30 Tex. Admin. Code § 80.17(a).
9. The administrative record is admitted into evidence for all purposes. 30 Tex. Admin. Code § 80.127(h).
10. There must be no lethality to aquatic organisms that move through a ZID. 30 Tex. Admin. Code § 307.8(b)(2).
11. Water in the state must be maintained to preclude adverse toxic effects on aquatic life. 30 Tex. Admin. Code § 307.6(b)(4).
12. Surface waters must not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life. 30 Tex. Admin. Code § 307.4(d).
13. Salinity gradients in estuaries must be maintained to support attainable estuarine-dependent aquatic life uses. 30 Tex. Admin. Code § 307.4(g)(3).
14. An attainable use is a use that can be reasonably achieved by a water body in accordance with its physical, biological, and chemical characteristics whether it is currently meeting that use or not. 30 Tex. Admin. Code § 307.3(a)(4).
15. Careful consideration must be given to all activities that may detrimentally affect salinity gradients. 30 Tex. Admin. Code § 307.4(g)(3).
16. The Desalination Study does not preclude the submission of an application under Texas Water Code Chapter 26 to seek a permit to divert or discharge in a bay or estuary.
17. The Port Authority complied with 30 Texas Administrative Code §§ 305.45(a)(8)(C) and 305.48(a)(3), which require an applicant to provide additional information as reasonably requested by the ED.
18. The highest water quality sustained since November 28, 1975, defines baseline conditions for determinations of degradation. 30 Tex. Admin. Code § 307.5(c)(2)(B).

19. The ED's antidegradation review does not ensure compliance with the Tier 1 and Tier 2 antidegradation standards. 30 Tex. Admin. Code § 307.5(b).
20. The ED's modeling analysis of the proposed discharge is not sufficient to ensure the Draft Permit is protective of water quality.
21. The Draft Permit is not protective of water quality and the uses of the receiving waters under the applicable TSWQS. 30 Tex. Admin. Code ch. 307.
22. The Draft Permit does not include all appropriate and necessary requirements to protect the marine environment, aquatic life, wildlife, recreational activities, commercial fishing, and fisheries.
23. The Draft Permit contains sufficient provisions to protect the health of the requesters and their families.
24. The Draft Permit is consistent with the Texas Coastal Management Program's goals and policies. 30 Tex. Admin. Code ch. 281, subch. B.
25. The Port Authority substantially complied with all applicable notice requirements. 30 Tex. Admin. Code ch. 39.
26. 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. Tex. Water Code §§ 5.275, .356; 30 Tex. Admin. Code § 80.23(d)(2).
27. 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; and any other factor which is relevant to a just and reasonable assessment of the costs. 30 Tex. Admin. Code § 80.23(d)(1).
28. Considering the factors in 30 Texas Administrative Code § 80.23(d)(1), a reasonable assessment of hearing transcript costs against parties to the contested case proceeding is that the Port Authority, PAC, and represented protestants should split the costs evenly, with PAC and represented protestants reimbursing the Port Authority \$8,930.63.

**NOW, THEREFORE, BE IT ORDERED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, IN ACCORDANCE WITH THESE FINDINGS OF FACT AND CONCLUSIONS OF LAW, THAT:**

1. The application of the Port of Corpus Christi Authority of Nueces County for Texas Pollutant Discharge Elimination System Permit No. WQ00052530001 is denied.
2. PAC and represented protestants shall pay \$8,930.63 of the transcription costs, with the Port Authority paying the remainder.

3. All other motions, requests for entry of specific Findings of Fact or Conclusions of Law, and any other requests for general or specific relief, if not expressly granted herein, are hereby denied.
4. The effective date of this Order is the date the Order is final, as provided by Texas Government Code § 2001.144 and 30 Texas Administrative Code § 80.273.
5. TCEQ's Chief Clerk shall forward a copy of this Order to all parties.
6. If any provision, sentence, clause, or phrase of this Order is for any reason held to be invalid, the invalidity of any provision shall not affect the validity of the remaining portions of this Order.

**ISSUED:**

**TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

---

**Jon Niermann, Chairman For the Commission**