TCEQ DOCKET NO. 2025-0114-IWD

APPLICATION BY THE CITY OF CORPUS CHRISTI FOR TPDES PERMIT NO. WQ0005289000	**§ § § § § § §**	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

HILLCREST RESIDENTS ASSOCIATION'S REPLY TO RESPONSES TO HEARING REQUESTS

TO THE HONORABLE MEMBERS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY:

Hillcrest Residents Association ("HRA") hereby submits this Reply to the Applicant City of Corpus Christi's ("Applicant" or "City"), the Executive Director's ("ED"), and the Office of Public Interest Counsel's ("OPIC") Responses to Hearing Requests regarding the Application by the City of Corpus Christi for Texas Pollution Discharge Elimination System ("TPDES") Permit No. WQ0005289000. HRA respectfully submits the following:

I. Introduction

The City of Corpus Christi's proposed Inner Harbor Desalination Plant would be located in the historic Hillcrest neighborhood along Corpus Christi's refinery row, blocks from Hillcrest residents' homes. This permit would authorize the discharge of over 50 million gallons per day ("MGD") of hypersaline water treatment waste into the Inner Harbor Ship Channel, which connects to Corpus Christi Bay. The neighborhood group HRA has filed extensive comments and expert reports raising deficiencies with this draft permit and the City's application. HRA requested a contested case hearing on this discharge permit to ensure that the desalination plant is protective of the health, safety, and welfare of Hillcrest residents and protective of the water quality and aquatic life in the Inner Harbor and Corpus Christi Bay.

HRA met all the requirements for requesting a contested case hearing by a group or association, including identifying at least one member in its comments that would have standing to request a hearing in their own right. 30 Tex. Admin. Code § 55.205(b).[1] HRA members' close proximity to the Plant coupled with their regular and long-term use of areas threatened by the discharge's predicted harmful impacts underscores their affected person status. OPIC correctly

[1] The ED does not dispute that HRA met three of the four requirements for associations seeking to be affected persons – HRA submitted timely comments and a hearing request, the interests the group seeks to protect are germane to its purpose, and participation by individual members is not required. *Id.* § 55.205(b)(1), (3), (4). ED Response to Hearing Requests, at 5 (Feb. 14, 2025) (hereinafter "ED Response").

concluded that HRA and other individual hearing requestors met the standards for affected person status and this matter should be referred to the State Office of Administrative Hearings ("SOAH"). [2] The ED and the City incorrectly concluded that none of HRA's nine identified members would have standing to request a hearing in their own right.[3] The ED's and the City's recommendations for affected person status here do not comply with the applicable legal principles, are contrary to TCEQ's past affected person determinations, and fail to explain their bases for recommending denial based on the facts in this record. HRA respectfully urges the Commissioners to grant HRA a contested case hearing as recommended by OPIC and not follow the ED and City's recommendations.

II. Legal Standard for Determining Affected Person Status

An affected person is one who has a "personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the administrative hearing. An interest common to members of the general public does not qualify as a personal justiciable interest." Tex. Water Code 5.115(a); *see also* 30 Tex. Admin. Code § 55.203(a). In determining whether a person is an affected person, TCEQ must consider the mandatory factors in 30 Tex. Admin. Code § 55.203(c), and may consider the discretionary factors in § 55.203(d).

Texas's Attorney General has explained that TCEQ's determination of whether someone is an affected person is governed by the same standards as govern Article III standing in federal courts:

> The criteria regarding determination of affected persons in the TCEQ's rules comport with the standing requirements in Article III of the United States Constitution for judicial review under the state statutes applicable to federal permit programs being implemented by the TCEQ, including the TPDES program. There is no material difference between the TCEQ's standards and the standards the federal courts apply when deciding judicial standing, which are based on the United States Supreme Court decision in *Lujan v. Defenders of Wildlife, et al.*, 504 U.S. 555 (1992).

Statement of Legal Authority to Regulate Oil and Gas Discharges under the Texas Pollutant Discharge Elimination System Program, Texas Attorney General Ken Paxton, at 12 (September 18, 2020).

In *Lujan*, the United States Supreme Court established that standing involves three elements: (1) an injury in fact, which is a concrete and particularized invasion of a legally protected interest that is actual or imminent, not conjectural or hypothetical; (2) a fairly traceable causal connection between the injury and the conduct complained of; and (3) it must be likely as opposed to speculative that the asserted injury will be redressed by a favorable decision. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561 (1992).

---

[2] OPIC Response to Hearing Requests, at 9–10 (Feb. 14, 2025) (hereinafter "OPIC Response").
[3] *See* ED Response, at 5–9; City of Corpus Christi Response to Hearing Requests at 6–22 (Feb. 13, 2025) (hereinafter "City Response").

Moreover, TCEQ's legal interpretation from the Attorney General of the discretionary affected person factors is that "TCEQ does not consider discretionary factors in 30 Tex. Admin. Code § 55.203(d) that may not be consistent with the determination of Article III standing, *such as the merits of the underlying permit application*, in evaluating whether a hearing requester is an affected person." Texas Attorney General, Statement of Legal Authority to Regulate Oil and Gas Discharged Under the Texas Pollutant Discharge Elimination System Program 12 (Sept. 2020) (emphasis added).

III. Facts about Likely Harms from Water Quality Impacts in the Record Supporting HRA's Hearing Request

The following facts in the record support HRA's hearing request by demonstrating likely impacts to HRA members' recreational, aesthetic, fishing, economic, property, and health interests and a reasonable relationship between the regulated activity and the interests claimed:

- The City's CORMIX near-field modeling predicts a high-density salinity plume, approximately 2 m thick and 200 m wide, will form from the discharge and persist near the bottom of the Inner Harbor, extending into the far-field.[4]
- This persistent vertical salinity gradient will inhibit replenishment of dissolved oxygen to bottom waters, creating hypoxia and "dead" zones along the bottom of the Inner Harbor and into Corpus Christi Bay, and possibly Nueces Bay.[5]
- Dr. Kristin Nielsen opined in a recent report regarding similar discharges directly into the Inner Harbor that a high density plume similar to that modeled by the City could "have incredibly important implications for ecosystems beyond the immediate vicinity of the outfall, as stratification of water with different densities leads to the formation of **hypoxic zones that may extend for miles and are lethal to aquatic biota of all kinds.**"[6]
- Red tides have increased in frequency and longevity in Texas in recent decades.[7]
- Salinity is "positively correlated with red tide occurrence" and increases in "long-term salinity" could be a "major factor" in the evident increases in long-term algal bloom (red tide) frequencies in Texas.[8]
- Mass fish kills in the Inner Harbor have been associated with red tide.[9]

---

[4] Dr. Scott Socolofsky Report, Summary of my initial opinions regarding CORMIX salinity modeling for the Inner Harbor Desalination Plant Draft TPDES permit, at 3 (Apr. 17, 2024) (citing Figures 12 and 20 of the City's initial modeling report (Inner Harbor CORMIX Modeling Technical Memorandum prepared by Ernest To and dated July 26, 2021)) (attached as Exhibit M to HRA's Contested Case Hearing Request 01/21/2025) (hereinafter the "Socolofsky Report").

[5] *See* Dr. Ben R. Hodges, Development of a "dead zone" from the proposed Inner Harbor desalination outfall (Apr. 16, 2024) (attached as Exhibit 16 to HRA's Comments 04/18/2024) (hereinafter "Hodges Report").

[6] Dr. Kristen Nielsen, Memorandum re Corpus Christi Polymers LLC, Renewal of TPDES Permit No. WQ0005019000 (Jul. 8, 2024) (emphasis added) (attached as Exhibit D to HRA's Contested Case Hearing Request 01/21/2025).

[7] *Id.*

[8] HRA's Comments, at 6–7 (citing Exhibit 4, Tominack, et al., "An assessment of trends in the frequency and duration of Karenia brevis red tide blooms on the South Texas coast (western Gulf of Mexico), Nat'l Libr. of Med (Sept. 18, 2020)).

[9] *Id*. (citing Exhibit 8, Texas Parks & Wildlife Dep't, Archived Status Reports 2009–2010).

- The City did not conduct far-field modeling to evaluate salinity impacts and gradients beyond the near-field and thus has not demonstrated that its discharges will comply with applicable water quality and antidegradation requirements.[10] Far-field modeling was conducted for other TCEQ wastewater discharge permits, including the Port of Corpus Christi's Harbor Island desalination plant.[11] The City's design build firm has also recommended detailed hydrodynamic far-field modeling to ensure that all permit requirements will be met.[12]
- The Port of Corpus Christi conducted far-field modeling that included the Inner Harbor discharge and demonstrated significant and persistent increases in salinity at levels that could be harmful to aquatic life from the Inner Harbor site extending about six miles into Corpus Christi Bay.[13] However, this modeling was limited – for example, it did not address salinity gradients, only overall salinity increases from the proposed discharges.[14] Nevertheless, even this limited modeling indicated that harmful impacts extending into the Bay, from the City's proposed discharge, cannot be ruled out.
- Some of the City's modeled inputs were incorrect or skewed, and thus salinity impacts are likely underestimated in the City's near-field modeling.[15] For example, the City never modeled its daily maximum permitted flow of 62 MGD.[16]

IV. HRA is an Affected Person because Several of its Members Would Have Standing in their Own Right Based on their Personal Justiciable Interests

a. Recreational Interests and Fishing Interests

HRA has established affected person status because its members regularly fish and boat in impacted waters, ranging from just under a mile to 1.92 miles downstream from the discharge. Their recreational and fishing interests will be impacted by the proposed discharge in a manner not common to the general public due to the proximity of their activities to the discharge, and the high frequency of the activities that they conduct in downstream waters

---

[10] *See* Socolofsky Report, at 2–5 (explaining that City only conducted one-dimensional modeling, despite TCEQ's acknowledgment of far-field effects from the discharge).
[11] *See* HRA's Contested Case Hearing Request, at 4, 8 (attached as Exhibit J, POCC, Desalination Brine Discharge Modeling – Corpus Christi Bay System (Oct. 21, 2019)).
[12] HRA's Contested Case Hearing Request, at 4 (citing Exhibit I, Kiewit, Inner Harbor Plant Technical Proposal (Sept. 2024)).
[13] *See* HRA's Contested Case Hearing Request, at 4, 8 (attached as Exhibit J, POCC, Desalination Brine Discharge Modeling – Corpus Christi Bay System (Oct. 21, 2019)); *see id*. at 8 (attached as Exhibit F, Texas Parks and Wildlife Department, Marine Seawater Desalination Diversion and Discharge Study Zones (2018) (explaining that the modeled increase surpasses the 2 ppt limit recommended by the Texas Parks and Wildlife Department and commonly required for desalination facilities in the U.S. and around the world)).
[14] *Id.* at 3.
[15] HRA's Contested Case Hearing Request, at 6–8.
[16] *Compare* City of Corpus Christi Inner Harbor Desalination Plant TPDES Updated Application (WQ0005289000) (posted February 21, 2024) (hereinafter "Updated App.") at 200, *with* Updated App., at 127–8 (showing CORMIX modeling results for discharges ranging from 20 to 51.47 MGD); *see also* HRA's Contested Case Hearing Request, at 8.

Neither the City nor the ED dispute that a recreational interest in fishing may give rise to a personal justiciable interest, sufficient to satisfy the affected person definition. This makes sense, since both the ED and the Commission have recognized that a recreational interest in fishing can be adequate to confer affected person status and because the right to fish is a legal right enshrined in the Texas Constitution. For example, in the Corix wastewater discharge permit matter (Permit No. WQ13977001), the ED recommended granting a hearing to a member of a group based on his recreational fishing interests on public land over a mile downstream from a significantly smaller wastewater discharge.

In Corix, the ED applied federal standing requirements from the U.S. Supreme Court's decision in *Laidlaw*, explaining that "a plaintiff adequately alleged injury in fact when they demonstrated that they use the affected area and are persons for whom the aesthetic and recreational values of the area would be lessened."[17] *Laidlaw* involved standing with respect to a National Pollutant Discharge Elimination System ("NPDES") permit, much like the immediate case involves the question of whether HRA has standing with respect to the TPDES permit sought by the City. In *Laidlaw*, the Plaintiffs alleged that a member wanted to fish and picnic 3 to 15 miles downstream from the facility as he had as a child, but would not do so out of concern for the discharges at issue in the case. *Id*. at 182–83.

i. *The City's proposed discharge will likely harm areas where HRA members regularly exercise their legal right to fish*.

Both the City and the ED claim that the locations where HRA members engage in recreational fishing and boating are too far from the proposed discharge to be impacted.[18] Neither, however, explains what distance is sufficiently close to the discharge to satisfy their arbitrary distance criteria. And the ED and the City offer no meaningful analysis—and point to nothing in the record—to support their conclusory arguments about the distance of likely impacts from this permit. Nor do they dispute the factual representations in HRA's hearing requests or the expert opinions that support HRA members' concerns about likely impacts to their recreational interests (*see* Section III, *supra*).

The requisite analysis, here, is not one that can be accomplished via a one-size-fits-all distance limit. To the extent the City or the ED apply a one-mile distance "rule" from the facility or discharge point to determine whether hearing requestors are affected persons, such an unwritten rule is arbitrary and cannot substitute for the required injury-in-fact and traceability analysis that must be tied to the specific harms from this permit. Applicants often refer to the "quintessential one mile test," which is unsupported in Texas law, as a reason to urge TCEQ to deny hearing requests by community members who live further than one mile or have

---

[17] ED Response, Permit No. WQ13977001 (Corix Permit), at 6 (citing *Friends of the Earth, Inc. v. Laidlaw Environmental Services*, 528 U.S. 167, 182 (2000), attached as **Exhibit 7**; *see also* TCEQ Commission, Recording of decision on Permit No. WQ13977001 (Corix Permit), at 33:00 (Feb. 7, 2024), https://www.youtube.com/watch?v=5QkgWwHJA6A.

[18] *See* City Response, at 12, 14*;* ED Response, at 7–8.

recreational or economic interests that are not tied to a property interest.[19] For example, the City here repeatedly references a "one mile" distance in its discussions about the interests of several HRA members without further explanation.[20] The ED also attaches a map to its response that includes a line showing a one mile "discharge route" extending from the discharge point into the Inner Harbor Ship Channel without any explanation of the basis for this distance compared to the evidence in the record about the distance of water quality impacts.[21]

Instead, the Commission must engage in a case-by-case traceability analysis—as the ED and the Commission did in the Corix matter for recreational fishing interests, and as the ED recently did for a hearing requestor's economic and fishing interests in its Response to Hearing Requests for the Union Carbide water quality permit matter (*see* Section IV.c., *infra*). In Corix, the hearing requestor, Mr. Martin was concerned that the proposed 0.51 MGD discharge might cause the decline of fish populations in waters more than a mile downstream of the discharge in a public area, which he feared would lessen the recreational value of that area, in turn negatively impacting his fishing activities.[22] The ED agreed and emphasized that Mr. Martin had shown that he used the public area, and that the recreational value of the area "*might*" be lessened by the permitted activity.[23]

Applying the correct standard to the facts of this discharge and HRA's hearing requests demonstrates that the City's proposed discharge is likely to cause or contribute to the types of harm to recreational interests that HRA's members raised. For instance, evidence offered by the hearing requestors (which has not been controverted by the City or the ED) indicates harm to fish populations from the proposed discharge will likely occur at the locations where HRA members recreate, including HRA members' favorite fishing spots at the canal near Whataburger Field, the mouth of the Inner Harbor, offshore from the Art Museum of South Texas, and at the seawall.[24]

As discussed in Section III, *supra*, record evidence shows that the persistent salinity gradient and overall higher ambient salinity levels associated with the proposed discharge will have potentially lethal and widespread impacts to aquatic life within the Inner Harbor, extending to Corpus Christi Bay, and potentially into Nueces Bay as well. These impacts that extend for miles into Corpus Christi Bay will lessen the recreational value of downstream waters where HRA members have regularly recreated for decades and adversely impact their ability to catch fish.

---

[19] Dylan Baddour, *The "1-mile rule": Texas' unwritten, arbitrary policy protects big polluters from citizen complaints*, Texas Tribune (July 30, 2023) (noting that a permit applicant Max Midstream's response to hearing requests "cited what it characterized as the "quintessential one-mile test" by Texas' environmental regulator, the Texas Commission on Environmental Quality, to claim that the groups and citizens involved had no right to bring forth a challenge because they lived more than one mile from the Seahawk Oil Terminal."), https://www.texastribune.org/2023/07/30/texas-tceq-1-mile-rule-pollution-citizen-complaints/, attached as **Exhibit 8**.

[20] *See e.g.,* City Response, at 12, 14 (rejecting requestors' claimed interests on the basis that they do not live or recreate "within a mile of Outfall 001").

[21] ED Response, at 27.

[22] ED Response, Permit No. WQ13977001(Corix Permit), at 6, attached as **Exhibit 7.**

[23] *Id*. (emphasis added).

[24] *See* HRA Comments, Figure 2, at 8 (mapping "Approximate Locations of Selected HRA Members' Recreational and Economic Activities in Proximity to the Inner Harbor Discharge and Plant").

For example, Tommy Joe Rodgers has been fishing just under one mile from the proposed discharge for at least 23 years.[25] Mr. Rodgers has already noticed a steep decline in fish populations in the canal, which he believes results from increased pollution upstream.[26] Mr. Rodgers estimates that his fishing yields have declined by about 35–45% in the last decade, and he fears that the red tides, hypoxia, and "dead zones" that are likely to occur from the desalination plant's high salinity discharges would impact his ability to catch fish in the downstream waters where he enjoys recreating.[27] He catches and eats a variety of fish and aquatic life but particularly enjoys the saline-sensitive Red Drum species.[28]

Figure 1.[29] HRA member Tommy Joe Rodgers in his backyard, at 2222 Kennedy Avenue, Corpus Christi, Texas, presenting one of the fish that he caught from the canal near Whataburger field.

---

[25] S*ee* HRA Comments, at 10; *see also* Declaration of Tommy Joe Rodgers (Feb. 28, 2025), attached as **Exhibit 1**.
[26] Declaration of Tommy Joe Rodgers, at 1 (Feb. 28, 2025), attached as **Exhibit 1**.
[27] *Id*.
[28] *See* HRA Comments, at 10. High salinity caused by brine during developmental stages of the Red Drum life cycle can also reduce their hatch success and larval survival, potentially affecting their long-term populations in the Gulf. *See* Ackerly et al., Short-term Salinity Stress During Early Development Impacts the Growth and Survival of Red Drum (Sciaenops ocellatus), Estuaries and Coasts, Vol. 46, 541–550 (November 23, 2022) (attached as Exhibit 12, to HRA's Comments 04/18/2024).
[29] Declaration of Tommy Joe Rodgers, at 1, 3 (Feb. 28, 2025), attached as **Exhibit 1**.

Furthermore, as discussed in HRA's comments and hearing request and shown in the Table below, other HRA members also recreate within the areas likely to be impacted by the proposed discharges, yet the ED did not acknowledge these locations in the maps or table of hearing requestors in its Response.[30]

Table 1. Distance Between Fishing and Boating Recreational Interests and Discharge Point

Requestor + Name	**Location of specified interest/activity**	**Approx. distance between activity/interest and outfall/discharge point***
13. Renior Lamarcus Knox, Sr.	Fishing spot off the canal near Whataburger Field	5,274 ft (just under 1 mile)
	Fishing and boating offshore near art museum	1.6 miles
25. Daniel Pena	Fishing at the seawall, near the Art Museum	1.91 miles
21. Carrie Robertson Meyer	Kayaking around USS Lexington	1.92 miles
	Kayaking offshore near Harbor Bridge	1.58 mi
29. Tommy Joe Rodgers	Fishing spot off the canal near Whataburger Field	5,274 ft (just under 1 mile)

*Distances were measured by requestors using Google Maps distance measurement function, from starting point 27.814111, -97.419638, based on the City's description of the outfall location and HRA members descriptions of their recreational activities.[31]

ii. HRA members' recreational interests in public spaces are not common to the general public.

The ED does not offer any explanation about why harm to HRA members' recreational interests are indistinguishable from impacts to the general public.[32] In fact, in some instances, the ED does not even go so far as to claim that the harm alleged is common to the general public, merely asserting without any explanation that "[b]ecause of the issues raised," the person did not demonstrate standing.[33] In member Daniel Pena's case, the ED dismissed his fishing interest on

[30] *See* ED Response, Attachment B.
[31] *See* Updated App., at 22 (describing outfall Latitude Between 27. 814 and 27. 8145, Longitude Between -97. 4195 and -97. 418).
[32] *See* ED Response, at 6–8.
[33] *See* ED Response, at 8.

the basis that discharges will be directly into the Inner Harbor which is not publicly accessible.[34] This conclusion ignores the evidence submitted by the City and HRA predicting that the discharge will form a hyper saline plume extending into the far-field,[35] and that the associated harmful impacts will extend downstream into publicly accessible waters.[36] The City argues that the locations where HRA members recreate are enjoyed by the general public, and thus, the claimed recreational interests are insufficient to confer standing.[37]

Texas law and this Commission's past decisions demonstrate that there is no legal support for the ED and City's argument. Echoing the U.S. Supreme Court, the Texas Supreme Court has affirmed that, "[t]o deny standing to persons who are in fact injured simply because many others are also injured, would mean that the most injurious and widespread Government actions could be questioned by nobody . . . where a harm is concrete, though widely shared, the Court has found injury in fact." *Andrade v. NAACP of Austin*, 345 S.W.3d 1, 7–8 (Tex. 2010) (quoting *United States v. Students Challenging Regulatory Agency Procedures*, 412 U.S. 669, 686–688 (1973) and *FEC v. Akins*, 524 U.S. 11, 24 (1998)). More recently in 2022, the Texas Supreme Court reiterated that harm that is shared among many does not make it a "generalized grievance" that cannot confer standing; a generalized grievance is one that is "of an abstract and indefinite nature." *Abbott v. Mexican American Legislative Caucus*, 647 S.W.3d 681, 693 (Tex. 2022) (citing *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 575 (1992)). Moreover, harm to a plaintiff's recreational and aesthetic interests is particularized when the plaintiff "repeatedly visit[s] a specific site [and] has imminent plans to do so again." *S. Utah Wilderness All. v. Palma*, 707 F.3d 1143, 1156 (10th Cir. 2013); *see also Sierra Club v. EPA*, 939 F.3d 649, 664–65 (5th Cir. 2019) (holding that a plaintiff who regularly visited national parks and had plans to visit in the future had a particularized interest for standing).

Consistent with this law, the ED's and the Commission's analysis in the Corix matter reveals that a person may be considered an affected person, based on their recreational fishing interests, at a location that is accessible to the general public. For the Corix permit, the ED concluded that the requestor would be "impacted in a manner not common to the general public by his frequent use of the receiving waters, dating back 50 years."[38] The Commissioners agreed, with Chairman Niermann stating he found standing on the basis that the requestor's "concerns are distinguishable in regularity and particularity from members of the general public" and the proposed discharge's potential adverse impacts "to the fish population [] is an interest protected by the laws under which this application is considered."[39]

---

[34] ED Response, at 7–8.
[35] *See* Socolofsky Report, at 3.
[36] *See* POCC, Desalination Brine Discharge Modeling – Corpus Christi Bay System (Oct. 21, 2019) (attached as Exhibit J to HRA's Contested Case Hearing Request, at 4, 8) (showing increases in salinity at levels that could be harmful to aquatic life from the Inner Harbor site extending about six miles into Corpus Christi Bay).
[37] *See* City Response, at 8–24.
[38] ED Response, Permit No. WQ13977001(Corix Permit), at 6, attached as **Exhibit 7**.
[39] Commission, Recording of decision on Permit No. WQ13977001 (Corix Permit), at 33:00 (Feb. 7, 2024) https://www.youtube.com/watch?v=5QkgWwHJA6A.

Here, consistent with the analysis in Corix, Mr. Rodgers' recreational interests can be distinguished from those of the general public both by the longevity and regularity with which he fishes, and the particular area where he fishes.[40] Mr. Rodgers has fished about one mile from the proposed discharge for 23 years, and at least once weekly for the past five years, more frequently than Mr. Martin in Corix who fished about 2–3 times monthly.[41] In contrast to the 0.51 MGD discharge proposed in Corix, the final phase daily maximum flow of 62 MGD here is ***121 times greater***. Unlike the river where Mr. Martin fished in Corix, the Inner Harbor is a dead-end channel, with low mixing energy that increases the likelihood of density stratification and associated hypoxia.[42] Like Mr. Martin in Corix, Mr. Rodgers has shown that he uses the area regularly, that the recreational value of that area will likely be lessened by the permitted activity, such that he stands to be impacted in a manner not common to the general public.

Avid fisherman and HRA member, Mr. Renior Lamarcus Knox, has also fished in the area approximately one mile downstream of the discharge for decades, maintains a fishing license, and fishes about 2–3 times per month.[43] Mr. Knox is particularly concerned that the increased salinity levels and predicted "dead zones" associated with the proposed discharge will lessen the recreational value of the area and negatively impact his fishing yields. He is also concerned about the likelihood of increased occurrences of red tide resulting from the proposed discharge and expressed that red tides already negatively impact his fishing activities. His concerns over how the discharges will impact his fishing activities are exacerbated by the slow turnover rates and low mixing energy in the Inner Harbor and the connected canal where he catches bait fish.

Both Mr. Knox and Mr. Rodgers have established even stronger grounds for standing when compared to the Plaintiffs in *Laidlaw*. The member identified in *Laidlaw* and discussed above alleged that he lived half a mile from the facility, that he occasionally drove to the receiving river, that it looked and smelled polluted, and that he *would like* to fish, camp, swim, and picnic in the area of the receiving river between 3 to 15 miles downstream from the facility as he had as a child, but would not do so out of concern for the discharges at issue in the case. Much like the Plaintiff in *Laidlaw*, Mr. Knox and Mr. Rodgers live 0.36 and 0.5 miles respectively, from the facility. Both regularly use the receiving waters at an even closer proximity to the proposed discharge than in *Laidlaw*. Moreover, in contrast to the aspirational nature of the recreational activities at issue in *Laidlaw*, Mr. Knox and Mr. Rodgers have established decades of frequent and consistent use in waters approximately one mile from the proposed discharge. Finally, Mr. Knox and Mr. Rodgers have expressed concerns regarding their ability to catch fish resulting from the proposed discharge's potentially lethal impacts to aquatic life.

HRA has satisfied its burden to demonstrate it is an affected person, as its members' recreational interests are similar to or stronger than the interests raised in the Corix permit and *Laidlaw*. Mr. Knox and Mr. Rodgers have established (1) an injury to their recreational fishing

[40] *See* Declaration of Tommy Joe Rodgers (Feb. 28, 2025), attached as **Exhibit 1**.
[41] *See id*. at 1; *see also* HRA Comments, at 10.
[42] *See* Dr. Hodges Report, at 1, 4.
[43] *See* HRA Comments, at 10–12.

interests from a degradation of water quality and lower fishing yields, (2) a direct connection between the predicted harms to fish and aquatic life and the "dead zones" predicted to form from the proposed discharge, and (3) that their concerns as to the potential impact of the proposed discharge will be redressed by participation in a contested case hearing on the City's Application and the draft permit. Such a proceeding will allow a determination of whether the draft permit is sufficiently protective of the recreational and aquatic life uses of the downstream waters, including at the canal described above and at the mouth of the Inner Harbor where Mr. Rodgers and Mr. Knox both frequently fish.

b. Economic interests

The ED only cursorily addressed HRA member Mrs. Carrie Meyer's economic interests, while entirely ignoring other economic interests alleged by HRA members, such as Mr. Rodgers' economic interests in subsistence fishing. The ED dismissed Mrs. Meyer's economic interest due to the distance of her home from the outfall, and on the vague basis that the "issues raised" do not demonstrate standing—without further explanation.[44] The ED's recommendation here lacks support from the record and is inconsistent with the ED's recent recommendation in another water discharge permit.

The ED recently recommended affected persons status in the Union Carbide/Dow ("UCC") case (Permit No. WQ0000447000) under a comparable factual scenario and yet failed to apply the same standards to HRA members' economic and fishing interests. In UCC, a member of San Antonio Bay Estuarine Waterkeeper, Mr. Miller, owns a seafood business with two locations, the nearest of which is located over 2 miles from where the ED identified that the "discharge route" entered the bay from the barge canal, and about 9 miles from the facility's nearest discharge point.[45] Mr. Miller was concerned that the proposed daily maximum discharge of 42 MGD of effluent would negatively impact aquatic life in the designated oyster waters where his fleet of boats fishes.[46]

The ED explained that Mr. Miller's economic interest was unique "because of the proximity [of] his business [] *to where the discharge route enters the bays*" and went on to recommend affected person status for the group that Mr. Miller belongs to.[47] The ED further opined that that the 2.1 mile proximity of Mr. Miller's business to the area where the discharge route enters the bays "highlights that a reasonable relationship exists between the interests

[44] See e.g., ED's Response, at 7–8.
[45] ED Response to Hearing Requests, Permit No. WQ0000447000 (Union Carbide Company/Dow Permit), at 17 (showing discharge point about 7 miles upstream from the point where the discharge route enters the bay), attached as **Exhibit 6**.
[46] Notably, in UCC, the ED also emphasized that the downstream waters where Mr. Miller's fleet fished were "designated Oyster Waters." *Id.* at 10. Here, Corpus Christi Bay is also designated "Oyster Waters" and must be maintained to satisfy antidegradation requirements. *See* Texas, Integrated Report 303(d) List (Category 5) 2024; *see* 30 Tex. Admin. Code § 307.5.
[47] ED Response to Hearing Requests, Permit No. WQ0000447000 (Union Carbide Company/Dow Permit), at 10 (emphasis added), attached as **Exhibit 6**.

claimed and the activity regulated and increases the likelihood that Mr. Miller will be affected in a way not common to the public."[48]

By contrast, here, the ED failed to discuss or even determine the distances between HRA members' economic and fishing interests in relation to the outfall or discharge route. The ED also failed to acknowledge that HRA raised likely harms to aquatic life and fishing in areas near the Inner Harbor and Corpus Christi Bay from the permit, where HRA members have economic interests.

The "discharge route" the ED mapped in UCC comprised of the Barge Canal that the discharge would flow through to get to the Bays and was about 7 miles. In contrast, the discharge route the ED mapped here (shown by a teal line on the ED's map attached to its Response to Hearing Requests) is inexplicably only one mile and stops short within the Inner Harbor before reaching Corpus Christi Bay.[49] Notably, the proposed maximum daily discharge of 62 MGD here is about 67% greater than the 42 MGD proposed in UCC, but the ED's "discharge route" here is only about one tenth of the length of that mapped by the ED in UCC.[50] The stark contrast in discharge volumes and discharge route lengths underscores the arbitrary nature of the ED's approach here. There is no evidence in the record to support the conclusion that the discharge from this facility will inexplicably stop or disappear one mile downstream from the outfall. On the contrary, HRA has submitted evidence showing that the discharge, modeled salinity plume, and the associated harmful impacts will likely extend about six miles into Corpus Christi Bay (*see* Section III, *supra*).

Similar to Mr. Miller in the UCC case, HRA members Mr. Rodgers and Mrs. Meyer have demonstrated that a "reasonable relationship" exists between their economic and fishing interests and the proposed discharge, based on likely adverse impacts at the locations of their subsistence fishing and business activities. HRA members have made substantially similar showings to Mr. Miller in UCC regarding likely particularized impacts to their economic interests based on their proximity to the discharge route, and thus HRA should also be granted affected person status here.

i. Mr. Rodgers' Economic Interests from Subsistence fishing

The predicted red tides, "dead zones," and other lethal impacts to aquatic life associated with the Inner Harbor discharge will adversely impact Mr. Rodgers' ability to catch fish at his favorite spots. Mr. Rodgers is a subsistence fisherman who relies on the fish he catches for food, which he would otherwise be forced to buy.[51] Thus, adverse impacts to Mr. Rodgers' fishing activities also constitute adverse economic impacts.

---

[48] *Id*.
[49] *Compare* ED Response to Hearing Requests, Permit No. WQ0000447000 (Union Carbide Company/Dow Permit), at 17, attached as **Exhibit 6**, *with* ED Response, at 27.
[50] *See id.*
[51] Declaration of Tommy Joe Rodgers, at 1 (Feb. 28, 2025), attached as **Exhibit 1**.

Mr. Rodgers fishes on a weekly basis within one mile from the discharge point.[52] When compared to Mr. Miller's fleet of boats in UCC, Mr. Rodgers' fishing activities and associated economic interest take place in much closer proximity to both the discharge, and the point where the discharge is predicted to enter the bay.[53] Moreover, Mr. Rodgers has established that he stands to suffer economic impacts as his fishing yields will likely decline from impacts associated with the proposed discharge, forcing him to buy fish he would otherwise catch.[54]

ii. Mrs. Meyer's Economic Impacts from Harms to Kayaking Business

The predicted red tides, "dead zones", and other lethal impacts to aquatic life associated with the Inner Harbor discharge will adversely impact Mrs. Meyer's economic interests in running her kayak tour business in waters downstream from the discharge. Mrs. Meyer's kayaking tour business activities are reliant on fish, wildlife, and the overall ecology of Corpus Christi Bay, all of which stand to be negatively impacted by the discharge.[55] Kayakers can suffer from respiratory irritation and other problems during red tide. People who frequent Mrs. Meyer's kayak tour business may understandably find the impacts to their health, and to wildlife resulting from dead zones and red tides too great to allow for continued recreational use of the areas where Mrs. Meyer offers tours, including at the USS Lexington and near North Beach.

Like Mr. Miller in UCC, Mrs. Meyer also raised issues demonstrating the "reasonable relationship" between the proposed discharges' negative impacts on fish, and other aquatic life and the likely adverse impacts to her kayaking business. However, in contrast to the ED's consideration of distance in UCC, the ED rejected Mrs. Meyer's personal justiciable interests "[b]ecause of her [home's] distance from the proposed facility and outfall[.]"[56] Inconsistent with UCC, the ED did not consider the distance between her business activities and "where the discharge route enters the bay" or the discharge point itself.[57]

Compared to Mr. Miller, Mrs. Meyer's business activities are in closer proximity to the discharge and to the area where the discharge route enters the bay. In UCC, the ED found that Mr. Miller's business was located 2.1 miles from where the "discharge route enters the bays."[58] Here, Mrs. Meyer conducts her business activities less than two miles from the discharge point, and less than 0.5 miles from the mouth of the Inner Harbor where the "discharge route" is

---

[52] *Id*.; *see* ED Response, at 27 (showing proposed discharge point and route); *see also* HRA's Comments, at 8 (mapping proximity between the discharge point and some of HRA members' activities).
[53] *Compare* Declaration of Tommy Joe Rodgers, at 1–2 (Feb. 28, 2025), attached as **Exhibit 1**, *with* ED Response to Hearing Requests, Permit No. WQ0000447000 (Union Carbide Company/Dow Permit), at 17, attached as **Exhibit 6**.
[54] Declaration of Tommy Joe Rodgers, at 1 (Feb. 28, 2025), attached as **Exhibit 1**.
[55] *See* HRA Comments, at 12.
[56] *Id*. The ED stated that Mrs. Meyer "resides approximately 2.6 miles upstream of the outfall." ED Response, at 7. This is incorrect. Mrs. Meyer's address is just one block from Corpus Christi Bay and downstream from the discharge point. *See id*. at 28–9 (showing Carrie Meyer on ED's map and corresponding appendix of requestors' addresses).
[57] *See* ED Response, at 7.
[58] ED Response to Hearing Requests, Permit No. WQ0000447000 (Union Carbide Company/Dow Permit), at 10, attached as **Exhibit 6**.

predicted to enter Corpus Christi Bay. Like Mr. Miller in the UCC permit case, Mrs. Meyer has clearly established that she will be affected in a way not common to the public from likely impacts of the discharge that threaten her economic interest and thus should be granted affected person status.

c. Property Interests

HRA members' use and enjoyment of their properties will likely be impacted by the degradation of water quality and nuisance conditions resulting from the proposed discharge and from the facility in their neighborhood. Despite these likely impacts supported by record evidence, the ED's conclusions suggest that HRA members' property interests in close proximity to the facility are not enough to confer affected person status.[59]

Neither the ED nor the City assert that property interests cannot give rise to valid personal justiciable interests for standing purposes. Instead, the ED rejected HRA members' property interest claims on the basis that (1) the issues are outside its jurisdiction, and (2) the requestor would not be impacted in a manner different from the general public. The ED's only specific explanation or analysis regarding members' property interest was provided in response to Daniel Pena, wherein the ED cited to the "type of facility, and the discharge location" as reasons for denying standing.[60]

The ED explained that Daniel Pena would not have standing based on his property interests "[b]ecause the proposed facility is a desalination facility there will not be any odor generating units" and that "the discharge of the treated effluent will be discharged directly to Corpus Christi Inner Harbor, which is not publicly accessible."[61] The ED then determined that because of the type of facility and the discharge location, Mr. Pena would not have standing in his own right. Notably, the ED did not provide record support for the assertions underlying its conclusion, as nothing in the record indicates that the facility would not cause foul odors, or that harmful impacts would not extend beyond the discharge point. For its part, the City asserted no HRA member established a reasonable relationship between the property interests claimed, and the regulated activity.[62]

Here, Mr. Pena and other HRA members raised concerns not only regarding foul odors and noise directly from the facility and the undisclosed hazardous materials stored on site, but also regarding odors and respiratory impacts from brine discharges and the predicted increase in occurrences of red tide. For example, Mr. Pena raised concerns regarding potential odors "from the facility's brine discharges into the ship channel," which both the ED and the City ignored.[63] The Texas Surface Water Quality Standards include criteria that surface waters must meet,

---

[59] See ED Response, at 6–8.
[60] *Id*. at 8.
[61] *Id*. at 7–8. Notably, the ED's response suggests that odor generating units on site at a facility could give rise to affected persons status, which in turn indicates that harms caused by the facility here may be subject to TCEQ's jurisdiction.
[62] *See* City Response, at 8–17.
[63] *See* HRA Comments, at 14.

including aesthetic parameters which establish that "[c]oncentrations of taste and odor producing substances must not interfere with the production of potable water by reasonable water treatment methods, …[or] result in offensive odors arising from the waters[.]" 30 Tex. Admin. Code § 307.4.b. Despite these stringent surface water requirements, the ED's response to Mr. Pena focuses on impacts from the facility to the exclusion of impacts resulting from the discharge, including from odors and other harms associated with red tide.

i. Impacts to use and enjoyment of property resulting from water quality degradation

Salinity increases from the discharge are likely to increase the occurrence and duration of red tides, and associated impacts, which could adversely impact HRA members' use and enjoyment of their property. Red tides in the Corpus Christi Bay area occur when a strain of algae called K. brevis proliferates beyond levels that aquatic life can withstand.[64] Specifically, this type of harmful algal bloom poisons fish and other marine life through the toxin ichthyotoxic dinoflagellate.

Human health is also compromised when red tides occur. Even without consuming fish impacted by red tide, humans can also be exposed to these toxins when they become air borne, or "aerosolized."[65] People who breathe in aerosolized red tide toxins can experience "respiratory irritation, bronchial constriction, coughing and burning sensation in the eyes, nose and throat."[66] Less frequent reported symptoms from aerosolized red tide include pulmonary distress, dizziness, tunnel vision and skin rashes.[67] Notably, studies have shown that aerosolized red tide toxins can travel for *at least* one mile from the shore, and that this distance can be highly variable and dependent upon environmental conditions such as wind speed and direction.[68] Scientist have even found the aerosolized toxins 3 miles away from impacted waters, and have explained that, the "stronger the wind the more [aerosolized toxins] will go inland[.]"[69]

HRA members' use and enjoyment of their property will likely be impacted by increased occurrences of red tide resulting from the proposed discharges, and from harms associated with aerosolized red tide toxins that could travel 1–3 miles from the discharge. In its response, the ED

---

[64] *See* Tominack, et al., "An assessment of trends in the frequency and duration of Karenia brevis red tide blooms on the South Texas coast (western Gulf of Mexico), Nat'l Libr. of Med (Sept. 18, 2020) (attached as Exhibit 4, to HRA's Comments 04/18/2024).

[65] Frank Alcock, An Assessment of Florida Red Tide, at 12, Mote Marine Laboratory (2007), attached as **Exhibit 2**.

[66] *Id*.

[67] *Id*.; *see also* Kirkpatrick, B., et al, Literature review of Florida red tide: implications for human health effects, Harmful Algae 3:99-115 (2004), attached as **Exhibit 3**; Harte Research Institute, TM 2.4 – Red Tide Report, at 2 (Sept. 11, 2024) (attached as Exhibit 7, to HRA's Comments 04/18/2024); Texas Health and Human Services, Harmful Algal Blooms-Seafood and Aquatic Life (attached as Exhibit 13, to HRA's Comments 04/18/2024).

[68] Frank Alcock, An Assessment of Florida Red Tide, at 12, Mote Marine Laboratory (2007), attached as **Exhibit 2**.

[69] Jake Peterson, How Far Can Red Ride Toxins Travel by Air, ABC Action News (Oct. 8, 2018), attached as **Exhibit 4**.

identified at least 8 HRA members who live within 0.5–1 mile of the facility.[70] Most of these members also live within less than a mile of the discharge point. Several of these members, like Mr. Lamarcus Knox, Mr. Daniel Pena, and Ms. Maddie Chapman enjoy outdoor activities at their homes and around their neighborhood. For example, Ms. Maddie Chapman and Mr. Knox expressed that they enjoy gardening outside their homes on a regular basis. Similarly, Mr. Pena noted he loves to barbecue in his yard with his family. The potential harm from airborne red tide could extend at least one mile beyond the Inner Harbor, threatening to adversely impact HRA members' use and enjoyment of their properties. This threat of harm to the use and enjoyment of their properties establishes a personal justiciable interest that is not common to members of the general public who do not live within Hillcrest, such that HRA members have standing in their own right to request a hearing.

ii. Impacts to use and enjoyment of property from noises, odors, and undisclosed chemicals and pollutants

The ED erroneously contends that all impacts related to the facility are outside of TCEQ's jurisdiction. Smells, loud noises, chemicals, and sludge from the Inner Harbor water treatment facility may all cause nuisance conditions in the area surrounding the facility. TCEQ has authority over sludge handling and disposal, as evidenced by draft permit condition 6, establishing the requirements for sludge disposal and management.[71] Yet the City has not been required to disclose the pollutant constituents of its sludge which it intends to discharge into the Inner Harbor. The City has also indicated that it intends to store chemicals onsite but has not disclosed the full list of chemicals or their quantities. Given this lack of information, HRA members have been denied the opportunity to gauge the full scope of potential nuisance conditions associated with the water treatment at the facility and from its discharges.

Here, treatment chemicals, sludge, and pollutants could result in offensive odors, and/or otherwise interfere with the production of potable water, in violation of applicable Surface Water Quality Standards. *See* 30 Tex. Admin. Code § 307.4.b. Given the City's failure to disclose the constituents of the sludge it intends to discharge, it is unclear whether the draft permit contains sufficient requirements to ensure that no offensive odors or other impairments will result from the discharge.

Mr. Lamarcus Knox is concerned that in addition to impacts from discharged sludge, the transport of chemicals to, and sludge trucks from, the facility will increase the likelihood of accidents, leaks, and spills of undisclosed chemicals and sludge in and around the facility.[72] In turn, the increased risk will inhibit his recreational activities and enjoyment of his property. Mr. Knox is particularly concerned that his frequent runs around the community and gardening activities at his home will be negatively impacted by the transportation of chemicals and sludge with unknown constituents around the neighborhood.

[70] *See* ED Response, at 29.
[71] *See* Updated App., at 234.
[72] *See* HRA Comments, at 10–11.

Like many HRA members, Mr. Norman Johnson also lives within a mile of the facility and the Inner Harbor.[73] However, Mr. Johnson is uniquely situated as he owns property *within* and adjacent to the facility footprint that he regularly visits and is on TCEQ's "affected landowner" list for this permit.[74] Mr. Johnson fears that the gargantuan facility encompassing his property, and the associated proposed discharge would interfere with his use and enjoyment of his property. Mr. Johnson fears likely impacts, including potential leaks and accidents associated with the undisclosed chemicals stored on site and the sludge transported through the neighborhood, in addition to the impacts associated with increased occurrences of red tide discussed above.

The ED has failed to require specific operational requirements to ensure that the health, safety and use of property of HRA members, including Mr. Knox and Mr. Johnson, will not be adversely impacted by the potential mishandling of the dangerous chemicals, including cleaning agents, which will be kept at the facility and by the sludge that will be produced at the facility. The City must be required to provide information regarding the full list of chemicals and pollutants in its sludge and its proposed discharge, to allow HRA members and the public to determine the full scope of potential nuisance and health and safety conditions that they face from the facility and proposed discharge.

Finally, if this permit is granted, the water treatment facility the City proposes to build would add a large new industrial facility in what is currently a "buffer zone" between residents in the Hillcrest neighborhood and surrounding refineries and storage tanks. Hillcrest residents, including Monna Lytle have expressed concerns regarding the increased risk from accidents and explosions from locating this facility in the buffer zone. The undisclosed and potentially hazardous chemicals that the City intends to store onsite and its power station will be adjacent to an industrial area with a history of explosions, releases of toxic chemicals, fires, flaring, and other concerns which exacerbate risks from the facility.[75]

The proposed facility would be one of the largest seawater desalination facilities in the United States. The figures below illustrate the City's drawings of the Inner Harbor facility as well as the scale of the only two existing seawater desalination facilities of comparable scale in operation in the country, neither of which is located in a residential neighborhood.

---

[73] *See* HRA Comments, at 8–9.
[74] *See* Updated App., at 49–52 (#4 on the Cross-Referenced Landowner List).
[75] *See* Title VI Complaint Letter from Hillcrest Residents Ass'n and Citizens All. for Fairness and Progress to U.S. Dep't of Hous. & Urb. Dev., Env't Prot. Agency, and Dep't of Just., at 14 (Oct. 26, 2022) (attached as Exhibit 1, to HRA's Comments 04/18/2024); *see also* Beeler, The Effect of Local Planning Actions on Environmental Injustice: Corpus Christi's Refinery Row Neighborhoods (2015), attached as **Exhibit 5**.

Figure 2 (above) Illustrative rendering of the Inner Harbor desalination facility among nearby homes.[76] **Figure 3** (left) Tampa Bay Seawater Desalination Plant (25 MGD capacity),[77] and **Figure 4** (right) the Claude "Bud" Lewis Carlsbad Desalination Plant while under construction (50 MGD).[78]

d. Health Interests

As discussed in more detail above in Section IV.c.i (regarding impacts to property interests resulting from water quality degradation), HRA members will likely suffer adverse health impacts resulting directly from the discharge into the Inner Harbor and from operation of the proposed facility.

Here, again, neither the ED nor the City argues that a person's health fails to give rise to a personal justiciable interest for purposes of determining affected person status. Nor could they.

---

[76] Texas Public Radio, Corpus Christi grapples with community debate over ocean desalination, https://www.tpr.org/environment/2024-03-30/corpus-christi-grapples-with-community-debate-over-ocean-desalination.

[77] Wharton-Smith, Inc. Construction Group, Tampa Bay Seawater Desalination Facility, https://whartonsmith.com/portfolio-items/tampa-bay-seawater-desalination-facility/#.

[78] Jim Robins, Desalination, https://e360.yale.edu/features/as-water-scarcity-increases-desalination-plants-are-on-the-rise.

The very purpose of the Texas Surface Water Quality Standards in Chapter 307 is to "maintain the quality of water in the state consistent with public health and enjoyment, propagation and protection of terrestrial and aquatic life, ..." 30 Tex. Admin. Code § 307.1. Accordingly, the ED lists among the issues that should be referred—if this permit application is referred to SOAH for a hearing—the following:

- Whether the Executive Director appropriately considered the impact of the increase in salinity on the receiving water, the aquatic environment, and the adjacent neighborhood;
- Whether the draft permit is adequately protective of *human health*, safety, and aquatic life in accordance with applicable TCEQ rules; and
- Whether the proposed facility will negatively impact *human health*.[79]

The ED concluded that HRA's members are not affected in a manner not common to the general public, but she does not offer an analysis or otherwise explain why HRA members' health concerns fail to demonstrate a personal justiciable interest. The City argues that because HRA members do not live or recreate near the proposed discharge or along the Inner Harbor, their interests and potential harm to those interests are indistinguishable from those of the general public.

Neither the City nor the ED engage with the factual representations and the expert opinions offered by HRA in support of their claim that their members' health is likely to be impacted by the proposed discharge—in a manner that is different from the general public. To be sure, the general public does not reside less than one mile from the proposed desalination facility, as Mr. Rodgers and Mr. Knox do. The general public does not regularly catch and consume fish from the waterways near their home and only a short distance from the proposed discharge, as Mr. Knox and Mr. Rodgers do. And so, the general public is not exposed to the potential harms and health impacts resulting from the proposed discharge in the same manner and to the same extent as Mr. Rodgers and Mr. Knox are.

More specifically, the increased salinity and predicted hypoxia threaten to increase instances of red tide in the Inner Harbor and Corpus Christi Bay. Notably, these impacts pose a lethal threat to HRA members who fish recreationally and for subsistence from the consumption of impacted fish, including Mr. Lamarcus Knox, Mr. TJ Rodgers, and others. Additionally, as discussed above, aerosolized red tide toxins can travel 1–3 miles from the impacted waters, leading to a spate of likely adverse health impacts, including respiratory problems and burning in the eyes, nose, and throat, to HRA members who live within a mile or more of the impacted waters (see Section IV.c.i., *supra*). As noted above, at least 8 HRA members live between 0.5–1 mile of the facility and all HRA members identified in comments live within less than 3 miles of the proposed discharge, such that they could be subjected to adverse health impacts resulting from the discharge and associated red tides in a manner that is not common to the general public.

[79] ED's Response, at 20, Issues 4, 5, and 7 (emphasis added).

V. Disputed Issues that should be Referred to SOAH

HRA urges the Commission to refer all of the issues raised in its Hearing Request.[80] Alternatively, HRA supports referring Issues 1–8 as recommended in OPIC's Response to Hearing Requests.[81]

If the Commission instead decides to refer the issues the ED recommends, we note that the ED's list in the conclusion of its Response to Hearing Requests is not complete because it does not include all of the issues the ED itself recommended referring to SOAH earlier in its Response.[82] The full list of issues the ED recommends referring should include the following 5 issues:

1. Whether the Executive Director appropriately considered the impact of the increase in salinity on the receiving water, the aquatic environment, and the adjacent neighborhood.
2. Whether the draft permit is adequately protective of human health, safety, and aquatic life in accordance with applicable TCEQ rules.
3. Whether the proposed facility will negatively impact human health.
4. Whether the application is true, accurate and complete.
5. Whether the draft permit includes all necessary requirements.

VI. Conclusion

HRA should be granted a hearing because it has at least one member with personal justiciable interests not common to the general public, based on likely adverse impacts to their health, economic, aesthetic, recreational, and property interests. Members of HRA live, own property, and recreate in close proximity to the proposed Inner Harbor Desalination Plant and will be impacted by the Plant and its discharges into the ship channel, which flows into Corpus Christi Bay. HRA members' interests are not common to the general public due to their close proximity to the Plant and their regular and long-term use of areas that will be impacted by the discharge.

[Signature Block on Next Page]

[80] *See* HRA's Contested Case Hearing Request, at 11.
[81] OPIC Response, at 17–18, 28.
[82] *Compare* ED Response at 22, *with id.* at 20–21.

Respectfully submitted,

/s/ Erin Gaines
Erin Gaines
Texas Bar No. 24093462
Earthjustice
845 Texas Avenue, Suite 200
Houston, Texas 77002
512-720-5354
egaines@earthjustice.org

Marisa Perales
Texas Bar No. 24002750
Perales, Allmon & Ice, P.C.
1206 San Antonio Street
Austin, TX 78701
512-469-6000
marisa@txenvirolaw.com

Zora Djenohan
Louisiana Bar No. 398565
Earthjustice
900 Camp Street, Unit 303
New Orleans, LA 70130
zdjenohan@earthjustice.org

Attorneys for Hillcrest Residents Association

Filed with the following: Exhibits 1–8

CERTIFICATE OF SERVICE

I hereby certify that on March 3, 2025, Hillcrest Residents' Association's Reply to Responses to Hearing Requests was filed with the Chief Clerk of the TCEQ and a copy was served to all persons listed on the attached mailing list via electronic mail or by deposit in the U.S. Mail.

/s/ Erin Gaines

Erin Gaines

MAILING LIST
CITY OF CORPUS CHRISTI TCEQ
DOCKET NO. 2025-0114-IWD

FOR THE APPLICANT
via electronic mail:

Rebecca Huerta, City Secretary
City of Corpus Christi
P.O. Box 9277
Corpus Christi, Texas 78469
citysecretary@cctexas.com

Steve Ramos, Water Resources Manager
City of Corpus Christi
2726 Holly Road
Corpus Christi, Texas 78416
estebanr2@cctexas.com

Katie Leatherwood, P.G.
Freese and Nichols, Inc.
4055 International Plaza, Suite 200 Fort Worth, Texas 76109
katie.leatherwood@freese.com

FOR THE EXECUTIVE DIRECTOR
via electronic mail:

Kathy Humphreys, Staff Attorney Texas Commission on Environmental Quality
Environmental Law Division MC-173 P.O. Box 13087
Austin, Texas 78711-3087
Tel: 512/239-0600 Fax: 512/239-0606
kathy.humphreys@tceq.texas.gov

Thomas Starr, Technical Staff
Texas Commission on Environmental Quality
Water Quality Division MC-148
P.O. Box 13087
Austin, Texas 78711-3087
Tel: 512/239-4570 Fax: 512/239-4430
thomas.starr@tceq.texas.gov

Ryan Vise, Director
Texas Commission on Environmental Quality
External Relations Division
Public Education Program MC-108
P.O. Box 13087
Austin, Texas 78711-3087
Tel: 512/239-4000 Fax: 512/239-5678
pep@tceq.texas.gov

OFFICE OF PUBLIC INTEREST COUNSEL:
via electronic mail:

Garrett T. Arthur, Public Interest Counsel
Texas Commission on Environmental Quality
Office of Public Interest Counsel, MC-103
P.O. Box 13087
Austin, Texas 78711-3087
garrett.arthur@tceq.texas.gov

FOR ALTERNATIVE DISPUTE RESOLUTION
via electronic mail:

Kyle Lucas, Attorney
Texas Commission on Environmental Quality
Alternative Dispute Resolution MC-222 P.O. Box 13087
Austin, Texas 78711-3087
Tel: 512/239-0687 Fax: 512/239-4015
kyle.lucas@tceq.texas.gov

FOR THE CHIEF CLERK
via eFiling:

Docket Clerk
Texas Commission on Environmental Quality
Office of Chief Clerk MC-105
P.O. Box 13087
Austin, Texas 78711-3087
Tel: 512/239-3300 Fax: 512/239-3311 https://www14.tceq.texas.gov/epic/eFiling/

INDEX OF EXHIBITS

Exhibit No.	Description
1	Declaration of HRA Member Tommy Joe Rodgers (Feb. 28, 2025)
2	Frank Alcock, An Assessment of Florida Red Tide (2007)
3	Kirkpatrick, B., et al, Literature review of Florida red tide: implications for human health effects, Harmful Algae 3:99-115 (2004)
4	Jake Peterson, How Far Can Red Ride Toxins Travel by Air (Oct. 8, 2018)
5	Beeler, The Effect of Local Planning Actions on Environmental Injustice: Corpus Christi's Refinery Row Neighborhoods (2015)
6	Executive Director's Response to Hearing Requests, TPDES Permit No. WQ0000447000 (Union Carbide Company/Dow Permit)
7	Executive Director's Response to Hearing Requests, Permit No. WQ0013977001 (Corix Permit)
8	Dylan Baddour, *The "1-mile rule": Texas' unwritten, arbitrary policy protects big polluters from citizen complaints*, Texas Tribune (July 30, 2023)

EXHIBIT 1

TCEQ DOCKET NO. 2025-0114-IWD

STATE OF TEXAS

COUNTY OF NUECES

DECLARATION OF TOMMY JOE RODGERS

1. My name is Tommy Joe ("TJ") Rodgers. I am over 18 years of age, of sound mind, and fully competent to make this declaration. I have personal knowledge of the facts herein and they are all true and correct.
2. I am a member of the Hillcrest Residents Association.
3. I reside at 2222 Kennedy Avenue, Corpus Christi, Texas.
4. I'm a retired seaman and have been fishing in the canal that forks off of the ship channel near Whataburger Field for at least 23 years.
5. I usually fish near the area where E Port avenue crosses over the canal, which, by my calculation, is a little less than a mile downstream of the proposed discharge.
6. I maintain a fishing license and fish at least once a week, sometimes more as the weather permits.
7. I fish and eat my catch, and intend to continue this routine, so long as a healthy fish population remains in that location.
8. I estimate that the fish population in this area have already decreased by 35-45% in the last decade, based on my own decreased fishing yields.
9. My quality of life and ability to enjoy fishing in this areawould be greatly reduced by the proposed Inner Harbor desalination discharge and its harms to the fish population.
10. I'm worried that I won't be able to catch as many fish or continue fishing in this area if the desalination plant is built because it could cause dead zones and red tides. If that happens, I would have to buy other food to eat which would cost me more money and make it harder for me economically.
11. The following series of photos show my friends and I fishing, barbecuing, and showing off the fish that we caught.
12. The photos were taken between February and March of 2024.
13. The first photo was taken by my friend Shawn Jackson. It shows me in my backyard, at 2222 Kennedy Avenue, Corpus Christi, Texas, presenting one of the fish that I caught from the the canal near Whataburger field.
14. I took all of the other photos.
15. All of the fish shown in the photos were caught from the canal near Whataburger field.


Navigation Blvd
Coast Guard
Main Turning Basin
1,000.00 ft
3,000.00 ft
Eslabon Terminal
W Broadway St
Measure distance
Click on the map to add to your path
Total distance: 5,273.51 ft (1.61 km)
= Approximate location of fishing activities.

My Name is Tommy Joe Rodgers, my date of birth is October 28, 1956, and my address is 2222 Kennedy Avenue, Corpus Christi, Texas and I declare under penalty of perjury that the foregoing is true and correct.

Executed in Nueces, State of Texas, on 2/28/2025.

Signed by:
Tommy Joe Rodgers
4799148A609241E...

Tommy Joe Rodgers

EXHIBIT 2

AN ASSESSMENT OF FLORIDA RED TIDE:

Causes, Consequences and Management Strategies

Frank Alcock, Ph.D.
Assistant Professor of Political Science
New College of Florida

Director, Marine Policy Institute at Mote Marine Laboratory

TECHNICAL REPORT #1190

August 2007

MOTE MARINE LABORATORY

1600 Ken Thompson Parkway • Sarasota, FL 34236 • (941)388-4441 • www.mote.org

Consequences: Impacts to Marine Life and Human Health

Karenia brevis, the organism responsible for Florida red tide blooms, produces a powerful collection of neurotoxins called brevetoxins. The release of these brevetoxins during a bloom can have substantial impacts on marine life that include massive fish kills and significant mortality events for birds and marine mammals. Large fish kills can occasionally generate hypoxic, or oxygen deficient, zones that amplify the impacts on a broader spectrum of marine life (FWRI 2007, NOAA 2006). The extent to which red tides affect populations of ecologically and economically important fisheries over time and space is poorly known. Human health impacts usually take the form of neurotoxic shellfish poisoning (NSP) and respiratory irritation. Adverse impacts might also result from long-term exposure to brevetoxins but research on the chronic effects of Florida red tide is in its infancy.

©William Abraham at Mount Sinai Miami Beach

The two pictures shown above are of a patient's lungs before and after a brevenal treatment. The picture on the right reveals more yellow, orange and red areas. These areas reflect better lung function than the corresponding white areas in the picture on the left. Brevenal is natural antagonist to brevetoxins produced by *K. brevis* cells. It was discovered in 2004 and is being evaluated as a possible treatment for cystic fibrosis, a debilitating lung disorder.

Brevetoxins

More than 30 years of research on the toxicity of *K. brevis* has resulted in an increasingly complex picture (Fleming et al. 2005; Baden et al. 2005). Until 1981, only one specific brevetoxin had been identified and scientists thought the lethality of a given red tide bloom was directly related to its cell and toxin concentrations. Since then, a number of additional brevetoxins produced by *K. brevis* have been identified and characterized.

Brevetoxins typically affect organisms by opening up the sodium channels of nerve cell membranes and causing the nerve cells to depolarize. This leads to disruptions of muscle function and subsequent respiratory and cardiac distress. Different brevetoxins and their derivatives can vary in their potency, especially when they are modified in a laboratory setting or metabolized by other species in nature. Certain structural features of these derivatives appear to have distinct physiological consequences on neuronal, pulmonary and enzymatic regulatory systems of organisms (Baden et al. 2005). Scientists also recently discovered that *K. brevis* produces brevenal, a natural antagonist that counteracts the effects of the brevetoxin.

It is not known whether the specific combinations of different brevetoxins and the balance between brevetoxins and brevenal in a specific *K. brevis* cell reflect different stages of the cell's life cycle, environmental conditions or both.

The important point is that the toxicity of a given *K. brevis* cell can vary, as can the amount and combination of toxins it releases in its environment. Once released, the potential effects of the brevetoxins can evolve as marine life metabolizes them.

Impacts to Marine Life

Marine life is exposed to brevetoxins by eating them, breathing them or touching them. The toxins can also pass through cell membranes, including the blood-brain barrier and skin tissue (Kemppainen et al. 1991; Apland et al. 1993). Different forms of marine life vary in their reaction to the toxins.

Fish kills are both an early warning sign for humans and a sad hallmark of red tide blooms. Fish kills of up to 100 tons of fish per day have been estimated during active red tides. Fish are exposed to brevetoxins by swimming through blooms and ingesting forms of marine life that have become contaminated with toxins. They are thought to be killed through lack of muscle coordination and paralysis, convulsions and respiratory failure (Kirkpatrick et al. 2004).

Little research has been conducted on the effects that red tide has on specific fish communities. Smith (1975; 1979) documented the decimation and subsequent re-colonization of an offshore reef fish community in the Gulf of Mexico following a single red tide event in 1971. This event appeared to have caused a hypoxic "dead zone" offshore of Tampa Bay and Sarasota and Manatee counties, similar to the dead zone that occurred during the summer of 2005. Smith estimated that 80-90% of the reef fishes were killed by the red tide and that all the species that disappeared from the reefs re-colonized the area within a year. However, Smith believed that several years may be required to re-establish the community to its former structure in terms of relative abundance of each species. Because Smith's work was narrowly focused and targeted only one reef fish community and a single red tide event, much remains to be learned about the ecological effects of red tide on economically and ecologically important fisheries.

Fish mortality often results from acute exposure but many species appear to withstand lower levels of exposure over time and accumulate toxins in their organs. Until recently, it was unclear whether lower trophic species could accumulate and transfer brevetoxins to higher trophic species but a number of mortality events involving manatees and dolphins have confirmed that this can happen. There are, in fact, a variety of potential vectors through which brevetoxins can work their way through the food web. Acute and chronic mortality events are both possible, and significant time lags have been known to occur between the presence of a red tide bloom and a mortality event later linked to a bloom.

Red tide events have been implicated in manatee deaths dating back to 1962 (Steidinger et al. 1998). The most severe episode occurred in 1996 when 149 manatees were killed by brevetoxin exposure. There was no significant lag time that year between the dissipation of the red tide and the last manatee death. Subsequent lung pathologies revealed that the brevetoxins were inhaled (Bossart et al. 1998). The respiratory tract, liver, kidneys and brains of the manatees were primary targets of the brevetoxins and the effects were thought to be chronic rather than acute (Kirkpatrick et al. 2004).

During a 1982 event there was a lag of approximately three weeks between the dilution of *K. brevis* cell concentrations below levels that should be lethal to manatees and the last manatee death. Necropsies revealed tunicates (a filter-feeding organism that can accumulate toxins) in the manatee stomachs (O'Shea et al. 1991). A 2002 red tide event killed 34 manatees and necropsies suggested that brevetoxin adhering to the surface of seagrass that was eaten by the manatees was the likely vector. In 2004, 107 bottlenose dolphin deaths were reported weeks after a red tide dissipated. A subsequent investigation linked the dolphin mortality event to menhaden (a plankton eating fish) that had accumulated brevetoxins in their organs (Flewelling et al. 2005). Toxic seagrass was again thought to be the primary culprit in the most recent manatee mortality event that also saw another lag between the dissipation of red tide and 27 manatee deaths (Spinner 2007). Considered together, these mortality deaths reveal a number of potential pathways for brevetoxins to work their way through a food web over the period of a month.

Filter feeding shellfish (clams, oysters and mussels) concentrate the brevetoxins and can cause neurotoxic shellfish poisoning (NSP) in humans. Florida's Department of Agriculture and Consumer Services has a very conservative safety protocol that closes shellfish harvesting areas when red tide cell counts exceed 5,000 cells per liter (fish mortalities are rare below 100,000 cells per liter). A shellfish harvesting area is not reopened until cell counts drop below 5,000 *K. brevis* cells per liter and bioassay tests confirm the shellfish are not toxic. This can take an additional two to six weeks after red tide is gone from a harvest area. To date, there have been no reported cases of NSP attributed to commercially produced shellfish in the presence of a red tide bloom (FDACS 2002).

Impacts to Human Health

Humans can be exposed to brevetoxins through ingestion of contaminated seafood. Brevetoxins are tasteless, odorless and heat and acid stable. They cannot be easily detected nor removed by food preparation procedures (Baden et al 1997; Kirkpatrick 2004). To date, shellfish are the primary vector, or pathway, for human brevetoxin exposure. Shellfish reported to be associated with neurotoxic shellfish poisoning (NSP) when contaminated with brevetoxins include oysters, clams, scallops and other filter feeders. Thankfully, NSP is considered one of the milder forms of paralytic shellfish poisoning with no known fatalities. Typical NSP symptoms include gastrointestinal symptoms (nausea, diarrhea, and abdominal pain) accompanied by occasional neurological symptoms (headache, vertigo, incoordination). In severe cases respiratory failure has been reported (Kirkpatrick et al. 2004).

Importantly, there have been no reported cases of NSP in Florida resulting from ingestion of commercially harvested shellfish. The Florida Department of Agriculture and Consumer Services maintains a very cautious protocol with respect to closing shellfish fisheries and allowing shellfish products on the market.

To date, all known cases of NSP that have been linked to the brevetoxins from a red tide bloom have involved illegal recreational harvesting activity. There have not been any reported cases of brevetoxin exposure in humans that resulted from ingestion of finfish species. However, the 2004 dolphin mortality event discussed above suggests that some fish species can accumulate brevetoxins in their abdominal organs. Accordingly, recreational fishers should only eat the fillets of fish caught in the vicinity of a red tide bloom and avoid eating any fish that appears to behave unnaturally.

Humans can also be exposed to brevetoxins through inhalation. *K. brevis* cells are fragile organisms that are easily broken open by wave action along the beach. When this happens, the brevetoxins are released and can become aerosolized. When a red tide bloom is near the shoreline, the aerosol of contaminated sea spray will contain toxins that can be carried inland with the prevailing winds. Studies to date show the toxins can travel at least a mile (1.6 km) inland from the shore, and the distance is highly variable and dependent upon environmental conditions, such as wind speed and direction (Kirkpatrick et al. in prep). Inhalation of aerosolized brevetoxins causes respiratory irritation, bronchial constriction, coughing and a burning sensation in the eyes, nose and throat. Less frequent reported symptoms include pulmonary distress, dizziness, tunnel vision and skin rashes (Kirkpatrick et al. 2004). In animal models, many of the respiratory symptoms are greatly reduced by administering common medicines like antihistamines, inhaled steroids, bronchodilators or anticholinergics before exposure. Bronchodilators will reverse most respiratory symptoms after exposure (Abraham et al. 2005).

Scientists from Mote Marine Laboratory perform human health studies to determine the effects of red tide on the human population.

Asthmatics and other segments of the population with chronic respiratory ailments are especially sensitive to brevetoxins. A series of studies have shown that when people with chronic respiratory problems are exposed to red tide blooms, a greater proportion demonstrate symptoms than those without chronic respiratory ailments (Singer et al. 1998; Abraham and Baden 2001; Fleming et al. 2005, Fleming et al, 2007). The most severe symptoms appear to occur in those with the most serious underlying respiratory ailments (Fleming et al. 2005; Fleming et al. 2007). Symptoms also tend to persist longer in these populations than in persons without any underlying respiratory conditions (Kirkpatrick et al. 2007).

Whether inhalation can result in additional neurological or immunological problems is one of the focal points of future research on the health effects of red tide. Laboratory studies of manatees and other animals suggest that these are possibilities, particularly if exposure to red tide is chronic (Benson et al. 1999; Fleming et al. 2001). A recent study of emergency room visits to a Sarasota hospital during the months of September through December in 2001 and 2002 is noteworthy. A large red tide bloom affected the area during Fall 2001 but not 2002. Although the overall number of emergency room visits did not significantly change from one year to the other, there were some suggestive findings. When separated by ZIP code, coastal residents had a 54% increase in emergency room visits during the red tide year with 31%, 44%, 56% and 64% increases in pneumonia, asthma, bronchitis and upper airway disease, respectively (Kirkpatrick et al. 2006). Although the study's findings are limited by its short duration and lack of data on a number of factors that could contribute to the observed variation, it will compel researchers to further investigate the potential for chronic impacts.

Consequences: Economic Impacts

Florida red tides impose significant economic costs in localized areas but the cumulative impacts for an entire coastal region affected by a bloom are difficult to calculate. Estimates of economic impacts are highly inconsistent and heavily dependent upon the assumptions of the analyst. Given the likelihood of displaced economic activity, economists need to better understand how consumers respond to red tide events before they can provide accurate impact assessments. Better data on tourist and recreational activity in the presence of red tide events will be critical for these assessments.

Variation in Estimates

Based upon a subset of HAB outbreaks from 1987-2000, Hoagland and Scatasta (2006) offer an estimate of $82 million for the total economic costs of all HABs that affect the entire United States. The Hoagland and Scatasta study uses the same methodology as Hoagland et al. (2002) and Anderson et al. (2000) which had previously estimated average annual economic losses between 1987 and 1992 at $50 million. With respect to the most recent figure of $82 million, the authors estimate that recreation and tourism impacts amount to an average of $4 million year. Compare this with an estimate by the public relations director of the St. Petersburg/Clearwater Visitors and Area Convention Bureau of $240 million in potential losses for the Tampa region from the 2005 Florida red tide bloom (Moore 2006; NOAA 2007).

So, one economic assessment suggests that the sum total of all economic impacts to the tourism sector across the country averages around $4 million a year, while another claim estimates the economic impacts to be $240 million in a single metropolitan area. The reason for the remarkable variation lies in the different assumptions and methodologies employed in different instances. The authors of the nationwide studies adopted a conservative set of assumptions and focused on a wide range of data sources while the estimate from the St. Petersburg/Clearwater Visitors and Area Convention Bureau results from a simple extrapolation.

Part of the difficulty with calculating economic impacts results from the fact that much of the economic activity affected by a red tide bloom is displaced rather than lost. A family that refrains from eating at a waterfront restaurant when a bloom is active may instead eat at another restaurant further inland. The waterfront restaurant loses some revenue as a result of this decision but the inland restaurant gains a comparable amount. The net impact on the broader community of which the family is a part is probably negligible. If a family changes their vacation plans as a result of a red tide bloom, traveling to Orlando instead of Tampa, then Tampa loses revenue but not the state of Florida. If a family chooses to travel to California instead of Florida because of red tide, then the state of Florida loses revenue but not the country as a whole. The counterintuitive result is that the broader the regional scope of analysis, the less significant some types of economic impacts may appear. Generally speaking, the diversified nature of the U.S. economy mitigates many of types of adverse economic impacts from natural hazards.

With the $240 million estimate cited by the St. Petersburg/Clearwater Visitors and Area Convention Bureau, the public relations director noted that Fort DeSoto beach visitors had increased 6% in 2005 before a red tide bloom began affecting the area. At the end of the year beach visits were only up 2% for the year. Inferring that the red tide bloom resulted in a 4% reduction in beach visitors, the director projected a 4% loss onto the entire metropolitan tourist industry – $6 billion in annual revenues – to arrive at the $240 million figure (Moore 2006). Given the nature of displaced economic activity, this type of extrapolation can be misleading.

National Estimates of Harmful Algal Bloom Impacts

Anderson et al. (2000; see also Hoagland et al. 2002) define economic impacts "to mean lost gross revenues in the relevant product or factor markets, expenditures for environmental monitoring and management or other costs that would not have been incurred in the absence of HABs." They focused on four types of costs: 1) public health; 2) commercial fisheries; 3) recreation and tourism and 4) monitoring and management costs. The authors based their analysis on a survey of experts from different coastal states and a literature review. Some additional data sources were consulted when possible. Public health costs accounted for the largest portion of nationwide HAB impacts (45%), followed by commercial fisheries losses (37%). Recreation/tourism losses (14%) and monitoring and mitigation costs (4%) accounted for the smallest portions. These figures did not include economic multiplier effects, which attempt to account for a ripple effect that occurs when economic losses in one segment of the economy affect the level of activity in others. Ripple effects are highly sensitive to local market structure and the authors of the national estimates decided to forgo using a single economic multiplier and/or calculating separate multipliers for each localized HAB event (Anderson et al. 2000).

The national HAB study authors highlight the fact that their estimates are conservative and they discuss a number of data and methodological challenges. Valid, reliable data that could be compared across cases were difficult to obtain. Few states

have conducted economic assessments of HAB impacts or collected data that could be used to generate reliable estimates. Where data were available, extrapolations were often made to compensate for incomplete or underreported measurements. For instance, the authors used a rule of thumb of multiplying the number of reported shellfish poisoning cases by ten to account for the significant underreporting of cases (Hoagland et al. 2002). With respect to commercial fisheries, the authors expressed their desire to obtain measures of lost consumer and producer surpluses in relevant markets due to shifts in supply and demand curves. Most HAB impact studies instead measure and report changes in the gross value of sales, which often fail to accurately reflect welfare changes. Anderson et al. (2000) and Hoagland et al. (2002) also discuss the relevance of the "malleability" of capital and labor or the costs of switching these factors to their next best alternative activity. The less malleable productive factors are the less capable a given economy will be in mitigating the economic losses that result from a red tide bloom.

Florida's economy relies more heavily on its tourism and recreation sectors than other areas of the United States that are affected by harmful algal blooms. The economic losses associated with Florida red tides can climb into the millions of dollars and have an especially significant impact on beach communities.

Estimates of Florida Red Tide Impacts

While the national HAB assessments provide a useful template for analyzing the economic impacts of a variety of HABs, the economic losses associated with Florida red tides are likely to manifest differently from those in other regions. Public health costs, which account for the largest share of impacts in the national assessment, are closely tied to shellfish poisonings. Cases of neurotoxic shellfish poisoning (NSP) from Florida red tide are rarer, sporadic and less severe than other forms of shellfish poisonings around the country. Public health costs therefore represent a much smaller portion of economic costs associated with red tide blooms in assessments done to date. If stronger evidence were to link red tide exposure to chronic respiratory and/or immune system problems, then estimates of public health costs would increase substantially.

Commercial fishery losses associated with *K. brevis* can be significant but are usually localized. Martin (1987) estimates that a 1986 *K. brevis* bloom along the coast of Texas caused the loss of $2 million in oyster production (Martin factored in a multiplier in estimating the total economic impacts to be near $6 million). During the 2002-03 HAB season, the Florida shellfish aquaculture and oyster industries lost $6 million in dockside sales and up to 20% of planted clams (NOAA 2004).

Only a couple of estimates of cleanup costs have been provided in the literature. Habas and Gilbert (1975) estimated the cleanup costs for an extreme 1971 event to be approximately $800,000. Hoagland et al. (2002) cite a personal communication with Sarasota County officials stating that cleanup costs for the county average around $63,000 per year. The authors use this citation as a basis for estimating an annual average of $170,000 in cumulative costs across all Florida counties during a red tide bloom.

Monitoring costs in Southwest Florida are difficult to precisely calculate because monitoring activity is funded as part of an overall research agenda. Red tide research funding has been inconsistent until the turn of the century. For the past five years, it has averaged more than $1 million per year (Heil 2007).

Unlike some of the other regions of the U.S. that have been subjected to HABs, Florida's greatest economic concern lies with its tourism and recreational sectors. Florida's coastal economies generated $402 billion in 2003, or 77% of the state's total economy (Kildow 2006). Tourism generated $63 billion in 2005, with $8.3 billion generated in the recreational fishing sector alone (Hauserman 2006). Nationwide, Florida ranks No. 1 among destinations for Americans who swim, fish, dive and otherwise enjoy the state's many beaches, coastal wetlands and shores. We should thus expect that Florida's economic vulnerability to impacts in the tourism and recreational sectors to be higher than that of other regions. The $240 million estimate of Tampa area losses from the 2005 red tide event may be excessive, but the conservative averages in the national HAB assessments are likely too low.

There have only been a few studies focused on recreation and tourism impacts from Florida red tide. Habas and Gilbert

(1975) estimated the economic damage to the Southwest Florida tourism industry from a 1971 red tide bloom to be approximately $20 million ($95 million in 2006 dollars), with the most significant effects occurring in the hotel, restaurant, amusement and retail sectors. Although outside of Florida, Tester et al. (1988) estimated the recreation and tourism effects from a 1987 *K. brevis* bloom to be $29 million across four coastal counties in North Carolina (the bloom was transported to the East Coast by the Gulf Stream). Hoagland et al. (2002) suggest that some of these losses were likely offset by positive effects in other counties as tourists redirected their vacation activity elsewhere.

Adams et al. (2000) used a time series analysis to measure recreational and tourism impacts to Sarasota and Manatee counties from recent red tide blooms. The study showed a negative impact on beach attendance but no statistically significant economic impacts to the business community. The authors once again speculated that this could have been due to displacement of economic activity to other areas of the county. In a subsequent study (Larkin and Adams 2006), the authors employ a similar method to look at the impacts of red tide on business activity in two smaller ZIP code areas (Fort Walton Beach and Destin). With a more localized scope, the authors were able to find evidence of a 29% to 35% decline in average monthly revenues for restaurant and lodging businesses during months of red tide incidence. These losses amounted to $2.8 million to $3.7 million a month – significant sums for the waterfront business community.

Another potential impact for waterfront businesses and residential communities lies in property values. Anderson et al. (2000) opted against including property values as a type of economic impact in their national study due to the difficulty of calculating these impacts. Waterfront real estate values can be affected by a variety of factors and attributing variation in these values to red tide blooms can be problematic. But the possibility remains that an intense bloom and/or recurring blooms could depress the demand for real estate and adversely impact property values over both the short and long term. Local government revenues derived from property taxes could also be affected.

An important observation from the above discussion is the need for better understanding market behavior before, during, and after the presence of a red tide bloom. Adams et al. (2002) provided some preliminary insights along these lines through a telephone survey of 1,006 individuals living in Manatee and Sarasota Counties. The survey collected demographic data, gauged public awareness and knowledge of Florida red tide and asked questions about the effects of red tide on behavior. The results suggested that recreational activities were significantly affected, but in different ways. Fishing, beach and water activities were the most heavily affected activities and more likely to be postponed rather than redirected. Restaurant, lodging and other forms of retail patronage were less affected. Restaurant patronage was redirected more often than it was delayed but the other forms of patronage were more often postponed. The results suggest that a significant portion of recreational and tourist activity may be redirected but a significant portion might also be postponed indefinitely or lost.

The above photo shows residential homes on North Manasota Key along Lemon Bay. The substantial property values along Southwest Florida's coastline are linked to the natural beauty of the area. Recurring red tides are a potential threat to these property values.

TCEQ DOCKET NO. 2025-0114-IWD

APPLICATION BY THE CITY OF CORPUS CHRISTI FOR TPDES PERMIT NO. WQ0005289000	**§ § § § § § §**	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

HILLCREST RESIDENTS ASSOCIATION'S REPLY TO RESPONSES TO HEARING REQUESTS

EXHIBITS 3-6

EXHIBIT 3

Published in final edited form as:
Harmful Algae. 2004 April 1; 3(2): 99–115. doi:10.1016/j.hal.2003.08.005.

Literature Review of Florida Red Tide: Implications for Human Health Effects

Barbara Kirkpatrick[1], **Lora E. Fleming**[2], **Dominick Squicciarini**[2], **Lorrie C. Backer**[3], **Richard Clark**[4], **William Abraham**[2], **Janet Benson**[5], **Yung Sung Cheng**[5], **David Johnson**[4], **Richard Pierce**[1], **Julia Zaias**[2], **Gregory D. Bossart**[2], and **Daniel G. Baden**[6]

[1]Mote Marine Laboratory, 1600 Ken Thompson Parkway, Sarasota, FL, 34236

[2]NIEHS Marine and Freshwater Biomedical Sciences Center, University of Miami, 4600 Rickenbacker Causeway, Miami, FL, 33149

[3]National Center for Environmental Health, Centers for Disease Control and Prevention, 1600 Clifton Rd NE, Atlanta, Georgia, 30333

[4]Florida Department of Health, 4052 Bald Cypress Way, Tallahassee, FL, 32399

[5]Lovelace Respiratory Institute, 2425 Ridgecrest, SE Albuquerque, NM, 87108

[6]Center for Marine Science, University of North Carolina, 5600 Marvin K. Moss Lane, Wilmington, NC, 28409

Abstract

Florida red tides are a natural phenomenon caused by dense aggregations of single cell or several species of unicellular organisms. Patches of discolored water, dead or dying fish, and respiratory irritants in the air often characterize these algal blooms. In humans, two distinct clinical entities, depending on the route of exposure, are associated with exposure to the Florida red tide toxins (particularly the brevetoxins). With the ingestion of brevetoxin-contaminated shellfish, neurotoxic shellfish poisoning (NSP) presents as a milder gastroenteritis with neurologic symptoms compared with other marine toxin diseases such as paralytic shellfish poisoning (PSP) or ciguatera fish poisoning. With the inhalation of the aerosolized red tide toxins (especially the brevetoxins) from the sea spray, respiratory irritation and possibly other health effects are reported in both humans and other mammals (Baden 1995, Fleming 1998a, Fleming 1998b, Fleming 1999a, Bossart 1998, Asai 1982, Eastaugh 1989, Pierce 1986, Music 1973, Temple 1995, Anderson 1994).

This paper reviews the literature on the known and possible human health effects of exposure to the Florida red tides and their toxins. The review includes discussion of the red tide organisms and their toxins, as well as the effects of these toxins on both wild and laboratory animals as they relate to possible human health effects and exposures.

Keywords

Florida red tide; red tide; neurotoxic shellfish poisoning; NSP; brevetoxins; harmful algal bloom; HAB; Karenia brevis; shellfish poisoning; respiratory irritation; marine toxin diseases

Telephone (941) 388-4441 Ext. 226, Fax (941) 388-4312, bkirkpat@mote.org, Author/proofs address: Mote Marine Laboratory, 1600 Ken Thompson Parkway, Sarasota, FL, 34236.

Background

Toxic red tides have been observed in Florida since the 1840s. Since that time, multiple episodes with significant fish kills, as well as cases of NSP have been reported from the Gulf of Mexico (including the east coast of Mexico), the east coast of Florida, and up to the North Carolina coast; toxic blooms occur almost annually on the west coast of Florida. Recently, these and other red tides appear to be increasing in incidence, duration and geographic spread (Viviani 1992, Smayda 1990, Van Dolah 2000, Tester 1991, Tester 1997). Anthropogenic influences (such as nutrient run-off inducing red tide blooms and the transport of dinoflagellate cysts in ballast water of ships have been suggested as possible causes. However, these red tides in Florida occurred even before significant pollution and development by human populations: during 1844–1971, red tides and their sequellae were noted along the west coast of Florida at least 24 times before the major industrial and agricultural development of that area. Alternative explanations (such as the effects of changing ocean temperatures, currents and weather patterns associated with global warming, as well as atmospheric transport of Sahara dust) are being investigated (Tester 1997, Tester 1991, Viviani 1992, Tibbetts 1998, Morris 1991, Ishida 1996, Anderson 1994, Sierra Beltran 1998, Cortes Altamirano 1995, Tommasi 1983, Epstein 1994, NRC 1999, Epstein 1998, Steidinger 1972, Kin Chung 1991, Smayda 1990, Walsh 2001).

Recent prolonged red tides in the Gulf of Mexico have been associated with significant environmental, human health, and economic impacts. Beaches in Texas and shellfish beds from Florida to Mexico have been closed. Significant die-offs of fish, endangered manatees, and double-crested cormorants, as well as reported adverse human health effects, have resulted annually secondary to the red tide toxin exposure along the coastline of the Gulf of Mexico (Bossart 1998, Hopkins 1997, Kreuder 1998, Trainer 1999).

Organisms

The dinoflagellates are ancient, single-celled, eukaryotic organisms that can exist in benthic, parasitic, symbiotic, and free-living forms; ocean currents can transport the latter easily. Many of the dinoflagellates include in their life cycle at least one resting form or cyst. The cysts may serve as the seeds for the red tides because they are the renewal of the motile phase of the dinoflagellate when the environmental conditions are appropriate; the motile forms create the blooms and the natural toxins (Anderson 1994, de M Sampayo 1997, Baden 1995, Baden 1983).

The classic causative organism of Florida red tides is Karenia brevis (formerly known as Gymnodinium breve and Ptychodiscus brevis). K. brevis is a dinoflagellate restricted to the Gulf of Mexico and the Caribbean, but has been carried by ocean currents around Florida and up the east coast of the United States as far as North Carolina. Other species producing the same or similar toxins occur throughout the world, particularly in New Zealand (Ishida 1996, MacLean 1979, Hermes 1984 Chang 1998, Temple 1995, Morohashi 1999, Anderson 1994, Anderson 1994, Sierra Beltran 1998, Cortes Altamirano 1995, Tommasi 1983, Horstman 1991, Khan 1997, Steidinger 1983). K. brevis usually blooms in the late summer and autumn, almost every year off the west coast of Florida, causing massive fish and bird kills.

The K. brevis organism is relatively fragile because it is unarmored. Therefore, particularly in wave action along beaches, the organism is easily broken open, releasing the toxins. During an active in-shore red tide, the aerosol of contaminated salt spray will contain the toxins and organism fragments, both in the droplets and attached to salt particles; these can be carried inland depending on wind and other environmental conditions (Pierce 1990,

Pierce 1989, Sakamoto 1987, Music 1973, Backer submitted, Pierce 1986, Horstman 1991, ILO 1984).

Toxins

Associated with these algal bloom episodes of K. brevis, a variety of phytoplankton-related natural toxins have been identified. There are reportedly hemolytic components and even cardiotoxic anti-cholinesterase phosphorus-containing compounds (Mazumder 1997), however the most important group is the neurotoxic brevetoxins (Ptychodiscus brevis toxin, i.e., PbTx). As a group, the brevetoxins are lipid soluble, cyclic polyethers with molecular weights around 900. Over 9 different brevetoxins have been isolated in sea water blooms and K. brevis cultures, as well as multiple analogs and derivatives from the metabolism of shellfish and other organisms (Morohashi 1999, Baden and Trainer 1993, Baden 1995, Mazumder 1997, Mattei 1999, Pierce and Kirkpatrick, 2001). In red tides, the major brevetoxin produced by concentration is PbTx-2, as well as lesser amounts of PbTx-1 and PbTx-3 (Baden 1989, Pierce et al., 1992).

As with many of the known marine toxins, the brevetoxins are tasteless, odorless, and heat and acid stable. These toxins cannot be easily detected, nor removed by food preparation procedures (Baden 1982a, Baden 1993, Baden 1995, Sakamoto 1987).

These brevetoxins are depolarizing substances that open voltage gated sodium (Na+) ion channels in cell membranes, leading to uncontrolled Na+ influx into the cell (Baden 1983, Purkerson 1999). This alters the membrane properties of excitable cell types in ways that enhance the inward flow of Na+ ions into the cell; this current can be blocked by external application of tetrodotoxin, a Na+ ion channel blocker (Gallagher 1980, Baden 1983, Halstead 1988, Poli 1986, Viviani 1992, Trainer 1991, Jeglitsch 1998). Recent work by Purkerson et al. (1999) and others using electrophysiology studies of single sodium channel of rat central nervous system cells suggest that PBTx-3 may cause hyper excitability as well as inhibitory effects in the intact brain (Apland 1993, Templeton 1989a, Templeton 1989b). As a consequence of their lipid solubility, these toxins are expected to easily pass through cell membranes including the blood brain barrier, as well as buccal mucosa and skin (Mehta 1991, Kemppainen 1991, Apland 1993).

The massive fish kills associated with Florida red tides result from the neurotoxin exposure, with possible contribution of the hemolytic fraction. In particular, PbTx-3 is believed to be responsible for the respiratory irritation associated with toxin inhalation (Baden 1982a, Baden 1982b). The brevetoxins ionically depolarize nerve cells and lead to the characteristic disruptions of respiratory and cardiac function known as neurotoxic shellfish poisoning (NSP). When Borison et al. (1985) and Koley et al. (1995) studied brevetoxin in cats, they concluded that brevetoxin exerts its major toxic effects on circulation and respiration through reflex and central actions, largely sparing peripheral motor mechanisms. These toxins are also directly cardiotoxic and hepatotoxic in various in vitro and in vivo systems (Templeton 1989a, Templeton 1989b, Rodriguez Rodriguez 1996, Bossart 1998, Rodgers 1984).

The respiratory problems associated with the inhalation of aerosolized Florida red tide toxins are believed to result from the opening of sodium channels of nerve cell membranes by the brevetoxins (Baden 1982a, Baden 1993, Asai 1982, Borison 1980, Franz 1989, Baden 1989). These effects can be blocked by atropine (muscarinic blocker) as well as tetrodotoxin (sodium channel blocker), but not by the interruption of vagal nerve stimulation or by diaphragm dissection in experimental animals (Baden 1982a, Gallagher 1980, Asai 1982, Trainer 1991, Baden 1989, Tsai 1991, Watanabe 1988). In isolated canine tracheal smooth muscle, neostigmine, an acetylcholinesterase inhibitor, potentiated the brevetoxin-induced

contraction; mepyramine, phentolamine, methysergide, and chlorisondamine did not effect the contraction (Asai 1982). In isolated human bronchial smooth muscle, Shimoda et al. (1988) found similar results as well as attenuation by verapamil (calcium and sodium channel blocker). Therefore, brevetoxin produces contraction of the lower airway smooth muscle by stimulation of the cholinergic nerve fiber sodium channels with acetylcholine release. However, additional pathways may be important for brevetoxin's physiologic effects. For example, in the rat vas deferens, Sakamoto et al. (1985) found that brevetoxin stimulated sodium channels on adrenergic nerve fibers, releasing norepinephrine from the nerve endings.

In addition, there appears to be a role for mast cells in the brevetoxin-associated respiratory effects. Watanabe et al. (1988) noted that brevetoxin can combine with a separate site on the h gates of the sodium channel, causing the release of neurotransmitters from autonomic nerve endings. In particular, this can release acetylcholine, leading to smooth tracheal muscle contraction, as well as massive mast cell degranulation. The mast cell contribution to the adverse airway effects of brevetoxin is supported by studies in a sheep model of asthma. In this model, aerosolized brevetoxin causes bronchoconstriction that can be blocked by the mast cell stabilizing agent cromolyn and the histamine H1 antagonist chlorpheniramine (Singer 1998). Thus, in addition to the direct neural component, brevetoxin appears to induce the release of histamine from mast cells and the combination of these actions results in adverse airway effects. Furthermore, because brevetoxin exposure by the respiratory route results in systemic distribution of brevetoxin, the initial bronchoconstriction may only be part of the overall consequences associated with toxin inhalation, including the central nervous system (Benson 1999, Apland 1993).

Computer modeling suggests that brevetoxin is a possible enzymatic binding inhibitor of cysteine cathepsins. Cathepsins are powerful lysosomal proteinases and epitope presenting enzymes, found within cytosol or lysosomes of macrophages cells, lymphoid tissues and other cells (Bossart 1998, Sudarsanam 1992). Bossart et al. (1998) postulated that the effects of aerosolized brevetoxins may be chronic not just acute. These chronic effects would begin with the initial phagocytosis by macrophages, inhibition of cathepsins, and apoptosis of these cells, followed by the phagocytosis of the debris by new macrophages, ultimately resulting in chronic neurointoxication, hemolytic anemia, and/or immunologic compromise.

Brevetoxins undergo biotransformation in rodents and fish (Poli 1990a, Poli 1990b, Kennedy 1992). In fish, the brevetoxins induce both cytochrome P4501A, and glutathione S transferase with a variety of pathways for metabolism (Washburn 1996, Washburn 1994). On the basis of evaluations of PbTx-3 on the sodium channels of rat sensory neurons, Jeglitsch et al. (1998) suggested that PbTx-3 metabolites may be more potent than PbTx-3 parent compound in affecting sodium channels. Work by Poli et al. (2000) evaluating metabolites in both the urine of three persons suffering from NSP and from the contaminated shellfish supported this conclusion; the authors suggested that these toxic metabolites from both the shellfish and the humans may be an additional cause of NSP and should be taken into account during regulatory testing.

Animals

The major seafoods contaminated by brevetoxins are shellfish, although no definitive evidence exists of any health effects to the shellfish, with possible exception of scallops (Cummins 1971, Sakamoto 1987, Steidinger 1972, Summerson 1990, Ellis 1985).

Fish, birds, and mammals are susceptible to the brevetoxins. In the mosquito fish (Bambusia affinis) bioassay, the LD50 is reported at 0.011 μg/L (0.005–0.023) while with Japanese madaka (Oryzias latipes) the LC50 was reported to be 0.015–25 μg/ml (Bossart 1998,

Forrester 1977, Geraci 1989, O'Shea 1991, Laverty 1993, Trainer 1999, Anderson 1994, Sierra Beltran 1998, Cortes Altamirano 1995, Ellis 1985, ILO 1984, Poli 1988). Fish kills associated with these red tides have been estimated up to 100 tons of fish per day during an active red tide. The fish are killed apparently through lack of muscle coordination and paralysis, convulsions, and death by respiratory failure. In the toadfish model, Kennedy et al. (1992) found that radiolabeled PbTx-3 was rapidly distributed within 1 hour of intravenous administration (40.2% muscle, 18.5% intestine, and 12.4% liver); after 96 hours, levels in the liver remained constant, but those in bile, kidney, and skin increased, with a variety of metabolites detected. Birds die acutely with neurologic and hematologic effects.

With respect to mammals, the mouse LD50 is 0.170 mg/kg body weight (0.15–0.27) intraperitoneally, 0.094 mg/kg body weight intravenously and 0.520 mg/kg body weight orally (Baden 1983, Baden 1995, ILO 1984). Franz and LeClaire (1989) reported respiratory failure in less than 30 minutes in guinea pigs exposed intravenously to 0.016 ng/kg PbTx-3. With intravenous administration of PbTx-3 in rats, Poli et al. (1990a, 1990b) found that approximately 90% was cleared within 1 minute from the circulation. Furthermore, radiolabeling distributed to the skeletal muscle (70%), liver (19%), and intestine (8%) with little activity found in the heart, kidneys, lungs, spleen, testes, or brain. Elimination over a 24-hour period was primarily through the feces. The parent compound was present in the skeletal muscle, but several metabolites of PbTx-3 excreted in the bile were found in the feces. Cattet and Geraci (1993) orally administered sublethal doses (18.6 μg/kg) of PbTx-3 in rats, and found wide distribution to all organs, with the highest concentrations in the liver up to 8 days after exposure. Ingested PbTx-3 was eliminated approximately equally in urine and feces.

To evaluate brevetoxin toxicokinetics from acute exposure up to 7 days, Benson et al. (1999) exposed 12-week-old male F344/Crl BR rats to a single exposure of 6.6 μg/kg PbTx-3 through intratracheal instillation. More than 80% of the PbTx-3 was rapidly cleared from the lung and distributed by the blood throughout the body, particularly the skeletal muscle, intestines, and liver with low but constant amounts present in blood, brain, and fat. Approximately 20% of the toxin was retained in the lung, liver, and kidneys for up to 7 days. The majority of the PbTx-3 was excreted within 48 hours after exposure, with twice as much excreted in the feces than in the urine. The authors concluded that potential health effects associated with inhaled brevetoxins may extend beyond the reportedly transient respiratory irritation reported by humans exposed to Florida red tide brevetoxin aerosol.

Wells et al. (1984) reported increased airway resistance in six unanaethestized female Hartley guinea pigs when brevetoxin was inhaled as an aerosol or applied to the nares as nose drops, compared with cross over exposure to methacholine with and without pretreatment with atropine. Furthermore, the authors reported that the animals were significantly less responsive to brevetoxin with pretreatment by atropine or by diphenhydramine, although no observable effects on the sneezing, drooling, and defecation of the animals with pretreatment. In the unanaesthestized asthmatic sheep, picogram doses of PbTx-3 can cause a significant and rapid increase in respiratory resistance (200 to 300× baseline); as noted above, this brevetoxin-induced bronchospasm can be effectively blocked by the mast cell stabilizing agent cromolyn and the histamine H1 antagonist chlorpheniramine (Singer 1998). Thus in the lung, brevetoxin appears to be a potent respiratory toxin involving both cholinergic and histamine-related mechanisms.

Multiple die-offs of marine mammals have been reported in association with Florida red tide and brevetoxins (Geraci 1989, O'Shea 1991, Bossart 1998). In 1996, a prolonged Florida red tide in the Gulf of Mexico resulted in the documented deaths of 149 endangered Florida manatees (Bossart 1998, Trainer 1999). The brevetoxin exposure of the manatees appears to

have been prolonged inhalation of the red tide toxin aerosol and/or ingestion of contaminated seawater over several weeks. This manatee die-off investigation revealed severe catarrhal rhinitis, pulmonary hemorrhage and edema, and non-suppurative leptomeningitis, as well as possible chronic hemolytic anemia with multiorgan hemosiderosis and evidence of neurotoxicity (particularly cerebellar) in the dead manatees. Therefore, the respiratory tract, liver, kidneys, and brains of the manatees were primary brevetoxin targets, and the brevetoxin exposures and effects were believed to be chronic rather than acute. PbTx-3 and its metabolites were identified by a immunohistochemical stain using a polyclonal primary antibody to brevetoxin to be stored in the lung and other organs in alveolar macrophages and in the brain within lymphocytes and microglial cells. Immunohistochemical staining with interleukin-1-beta converting enzyme showed positive staining with a cellular trophism similar to the brevetoxin antibody staining, suggesting that brevetoxin may initiate apoptosis and/or release inflammatory mediators that culminate in fatal toxic shock. Additional studies demonstrated that brevetoxin binds to isolated nerve preparations from manatee brain with a similar affinity as that reported for terrestrial mammals (Trainer 1999), as well as causing significant liver damage in in vitro mouse liver studies (Rodriguez Rodriguez 1996).

Humans

The two known forms of red tide toxins-associated clinical entities in humans first characterized in Florida are an acute gastroenteritis with neurologic symptoms after ingestion of contaminated shellfish (i.e. NSP) and an apparently reversible upper respiratory syndrome after the inhalation of the aerosols of the dinoflagellate and their toxins (i.e., aerosolized red tide toxins respiratory irritation) (Asai 1982, Baden 1995, Fleming 1999b, Fleming 1998a, Fleming 1998b, Morris 1991, Music 1973, Fleming 2001, Baden 1982b, Poli 2000, Music 1973).

Ingestion of brevetoxin

Neurotoxic shellfish poisoning can be viewed clinically as a milder form of paralytic shellfish poisoning (PSP) or ciguatera fish poisoning. In human cases of NSP, the brevetoxin concentrations present in contaminated clams have been reported to be 30–118 Mouse Units (MU)/100 g (78–120 μg/mg). Poli et al. (2000) reported on the measurement of brevetoxin in urine from three persons who suffered from severe NSP after eating contaminated shellfish from Florida; the urine brevetoxin levels ranged from 42–117 ng/ml by RIA analysis on admission to the emergency department. As a comparison, in PSP fatal paralysis can occur with as little as 1 mg of saxitoxin, while picogram levels of ciguatoxin in ciguatera fish poisoning have been reported to make adult humans severely ill. The shellfish reported to be associated with NSP when contaminated with brevetoxin include oysters, clams, coquinas, and other filter feeders (Keynes 1979, Baden 1995, ILO 1984, Hughes 1976, ILO 1984, Poli 2000).

NSP typically causes gastrointestinal symptoms of nausea, diarrhea, and abdominal pain, as well as the neurologic symptoms primarily consisting of paresthesias similar to those seen with ciguatera fish poisoning (including reports of circumoral parathesiae and hot/cold temperature reversal), beginning within minutes to 3 hours after ingestion. Cerebellar symptoms such as vertigo and incoordination also reportedly occur. In severe cases, bradycardia, headache, dilated pupils, convulsions, and the subsequent need for respiratory support have been reported. Death from NSP (rather than from PSP or ciguatera) is rare. Reportedly, symptoms resolve within a few days after exposure, however, no studies have been reported evaluating possible chronic health effects after acute NSP (Morse 1977, Sakamoto 1987, Baden 1995, Fleming 1995, Fleming 2001, Morris 1991, McFarren 1965,

Viviani 1992, Hughes 1976, Noble 1990, Martin 1996, Music 1973, Hopkins 1997, ILO 1984, Rheinstein 1993, Dembert 1981).

Morris et al. (1991) reported on an outbreak of NSP secondary to a red tide of K. brevis (then known as P. brevis) in October 1987 along the North Carolina coast. Ultimately, over 48 persons were diagnosed with NSP following consumption of cooked and raw oysters at 20 different meals. Acutely, 23% of the cases reported gastrointestinal and 39% reported neurologic symptoms. These symptoms were described as having a rapid onset (median incubation of 3 hours), mild, and of short duration (maximum malaise and vertigo up to 72 hours with median duration of 17 hours). Ultimately, 94% had multiple symptoms, and 71% had more than one neurologic symptom. Although no deaths or respiratory distress occurred, one woman was admitted to the intensive care unit because of severe neurologic symptoms. The illness attack rate increased significantly in association with the number of oysters eaten. Of note, 56% of the cases occurred before the first closure of affected shellfish waters to harvesting in early November; North Carolina had no red tide monitoring program at that time.

Inhalation of aerosolized brevetoxin

Few reports have been published about human exposure and health effects associated with exposure to aerosolized red tide toxins in humans. The exposure usually occurs on or near beaches with an active red tide bloom. Onshore winds and breaking surf result in the release of the toxins into the water and into the onshore aerosol (Pierce 1986, 1989, 1990, 2001, Sakamoto 1987, Music 1973, Backer submitted, Horstman 1991, ILO 1984). After initial reports in Florida and Texas, Woodcock (1948) reported respiratory irritation during a severe red tide on the west coast of Florida in 1947. When seawater containing the red tide organisms was sprayed as an aerosol into the nose and throat of volunteers, coughing and a burning sensation similar to that experienced on the beaches were reported (Woodcock, 1948). Pierce et al. (1990, 1989) simulated the red tide toxin aerosol in the laboratory by bubbling air through seawater cultures of lysed K. brevis cells; they recorded toxin enrichment in the aerosol of 5 to 50 times the concentration of original concentrations in the seawater. Collection of marine aerosol along the Gulf coast of Florida and the North Carolina Atlantic coast during natural red tide blooms showed that the aerosolized toxins were the same as those in the water and as those resulting from the K. brevis culture experiments (Pierce et al. 1989, 1990).

Inhalation of aerosolized red tide toxins reportedly results in conjunctival irritation, copious catarrhal exudates, rhinorrhea, nonproductive cough, and bronchoconstriction (Music 1973, Asai 1982, Asai 1984, Franz 1989, Eastaugh 1989, Pierce 1986, Temple 1995, Sakamoto 1987, Baden 1982b, Davis 1994, Ahles 1974, Hughes 1976, Tommasi 1983, Hopkins 1997, ILO 1984, Dembert 1981, Cummins 1971). Some people also report other symptoms such as dizziness, tunnel vision, and skin rashes. In the normal population, the irritation and bronchoconstriction are usually rapidly reversible by leaving the beach area or entering an air-conditioned area (Steidinger 1984, Baden 1983).

However, people with asthma are apparently particularly susceptible; Asai et al. (1982) found that 80% of 15 asthmatic patients exposed to red tide aerosol at the beach complained of asthma attacks. Further studies by the same investigators (Watanabe 1988) using human bronchial smooth muscle tissue from 12 non-asthmatic persons, all with a smoking history, showed similar results to canine smooth muscle studies: brevetoxins caused contraction with a threshold of 0.1 μg/ml with peak response at 12.0 μg/ml (EC50=1.24 μg/ml); this response was blocked by verapamil, atropine and tetrodotoxin, and it was potentiated by neostigmine. The possibility of susceptibility of asthmatics to the brevetoxins is corroborated by recent investigations with an asthmatic sheep model evaluating the exposure of aerosolized red tide

toxins discussed above (Singer 1998). Furthermore, there are anecdotal reports of prolonged pulmonary symptoms even after exposure has ceased, especially in susceptible populations such as the elderly or people with chronic lung disease.

Reportedly, aerosolized red tide toxins respiratory irritation is associated only with significant Florida red tide blooms (including significant fish kills with dead fish on the beaches) within a few feet of the breaking surf of an active bloom. However, exposure to aerosolized red tide toxins can cause respiratory irritation, even in non-asthmatics and without obvious fish kills or high dinoflagellate cell counts in the seawater within a few feet of the seashore (K Steidinger, Florida Department of Environmental Protection, verbal communication). This may be due to the concentration of the brevetoxins in the aerosol of sea spray generated by waves hitting the shore during a red tide (Pierce 1990, Pierce 1989, Music 1973, Cummins 1971). How far inshore this red tide toxins aerosol will travel, especially given strong offshore winds during a red tide bloom, is not known.

Cummins et al. (1971) sampled water and bivalves during a red tide along the west coast of Florida in September 1967. In addition to identifying K. brevis in the water samples and showing toxicity in the mouse bioassay with shellfish samples, the investigators reported burning of the eyes and respiratory irritation during the course of sampling. These symptoms increased as investigators approached the surf zone and were associated with organisms in the water. The investigators reported similar symptoms when they received an inadvertent inhalation exposure from an aerosol of K. brevis organism cultures being aerated in the laboratory during oyster intoxication studies.

Music (1973) reported on a November 1972 K. brevis red tide on the east coast of Florida, after currents and weather patterns had carried an existing red tide from the usual epicenter of west coast of Florida. This red tide coupled with strong easterly onshore winds resulted in multiple reports of symptoms to the Palm Beach Health Department; the reports came from people on the beach (swimmers, workers, lifeguards), as well as from persons living on or near the beach throughout Palm Beach County. Symptoms reported included acute eye and nose irritation (e.g., profuse watery eyes, copious rhinorrhea with burning of the eyes and nose), non-productive cough, and respiratory distress similar to that associated with the Florida west coast red tide. The symptoms were described as having a sudden onset, i.e., occurring as soon as people got near the beach areas or were exposed to the onshore winds in their homes. The symptoms reportedly resolved upon leaving the beach or wind exposure, although less rapidly for those who were exposed for a longer time. Exposure to air-conditioning in homes or cars seemed to improve the symptoms more rapidly. Persons on boats or long piers not exposed to breaking surf with onshore winds did not report any symptoms. All reports of symptoms stopped when the winds changed direction.

Hopkins et al. (1997) briefly reported on a prolonged Florida red tide with confirmed K. brevis identification along the west coast of Florida from December 1995 through May 1996. The Lee County Health Department conducted a mailed survey of 1100 residents and long-term visitors in areas adjacent to beaches. There were 416 (39%) responses, with most respondents reported symptoms (although the authors point out that response to the survey encouraged report from symptomatic persons). Eye and respiratory irritation were associated with the amount of time spent at the beach, but more serious conditions (i.e., bronchitis, pneumonia, and various neurologic problems) were not. Six persons were hospitalized for illnesses they attributed to red tide exposure (although no definite diagnoses by physicians were reported).

Kirkpatrick et al. (submitted) conducted a similar pilot study in 1999 using scientists on K. brevis red tide research cruises as volunteer study subjects. Air and water samples were

analyzed for brevetoxins and personal interviews and pulmonary function tests were conducted daily. On one day of the research cruise when seas and winds were higher than on other days and cell counts were up to 8 million cells/L, two scientists reported shortness of breath and/or difficulty taking a deep breath. At that same time, both had a decrease in pulmonary function. Although the pulmonary function decrease was not clinically significant, it is worth noting because neither scientist had any history of lung disease, both were young (30 years old), and neither were smokers.

In a pilot study of aerosolized red tide, Backer et al (submitted) measured the levels of brevetoxins in air and water samples and conducted personal interviews and pulmonary function tests on people before and after visiting Florida beaches during K. brevis red tide events. One hundred twenty-nine people participated in the study, which was conducted during two separate red tide events in the west and east coasts of Florida. During these episodes, K. brevis and brevetoxins were measured in the seawater, as well as brevetoxins in environmental and personal air sampling. Exposure was categorized into three levels: little or no exposure, moderate exposure, and high exposure. Lower respiratory symptoms (e.g., wheezing) were reported by 8% of unexposed, 11% of moderately exposed, and 28% of highly exposed people. A detectable inflammatory response to the inhaled toxins was observed in over 33% of the people examined after they visited the beach. During the moderate and high exposure study periods, people were exposed to up to 36 ng/m^3 or 80 ng/m^3, respectively, of brevetoxin in the air. If an average adult breathes in about 25 liters of air per minute for light exercise, then the authors estimated that people visiting the beaches during the pilot study inhaled between 54 to 120 ng brevetoxin each hour, or an inhaled dose of between 0.77 to 1.71 ng/kg (assuming an average weight of 70 kg) each hour. No clinically significant changes occurred in pulmonary function test results; however, the study population was small. The authors plan to further investigate the human health impact of inhaled brevetoxins in future epidemiologic studies.

Red tide events in the Gulf of Mexico are usually reported from along the western coast of Florida and can occur nearly annually (Kusek et al., 1999). Red tides along the Texas coast are much less frequent (Villareal et al., 2001). Cheng et al. (submitted) reported a red tide episode in the Gulf of Mexico near Corpus Christi, Texas, in October 2000. At Marine Science Institute (MSI) and Texas State Aquarium (TSA), airborne brevetoxin concentrations between 1.6 ng/m^{-3} to 6.7 ng/m^{-3} were reported, along with a few reports of upper respiratory symptoms (throat irritation, nasal irritation, and itchy skin) and no reports of lower respiratory symptoms. Although the number of workers was too small for statistical analysis, the reported symptoms were consistent with no/low exposure at the MSI and detectable exposures at the TSA. This suggests that at lower environmental concentrations of about 2 ng/m^{-3} to 7 ng/m^{-3}, exposure to brevetoxin could result in upper respiratory symptoms. This lower level of airborne brevetoxin concentrations could be detected because of a more sensitive LC/MS technique. The brevetoxin particle size distribution with the impactor samplers, the first time that particle size of brevetoxin was reported. The MMAD was between 7 μm to 9 μm (a range of 3 μm to 20 μm), a relatively large size for inhaled ambient particles. Fine particles below 2.5 μm were not detected. Inhaled particles of this size would be deposited in the upper respiratory tract (nasal, oral, and pharyngeal area) (ICRP, 1994; Yeh et al., 1996), and subsequent respiratory irritation could result from the presence of the particles themselves or from toxins associated with the particles. Inhaled particles also deposited on the face and exposed skin causing the skin to itch.

Whether the inhalation of aerosolized brevetoxins can result in other systemic health effects (such as affecting the neurologic or immunologic systems) and in chronic effects is not known The manatee evidence and other laboratory animal studies suggest that this

EXHIBIT 4

How far can red tide toxins travel by air?

Residents living miles from beach can get sick

Red tide is still lingering near both coasts of Florida. Scientists with Mote Marine are researching how far the bloom's toxins c

showed the blooms toxins can travel about three miles, making some people sick.

“Coughing constantly, you feel like there is something in your throat,” said Sarasota resident Donna Zook.

Mote Scientists are placing a dozen air testing machines throughout Bradenton and Sarasota. Scientists are going to see if the bloom’s toxins can travel further than they currently suspect.

“The stronger the wind the more it will go inland,” said Dr. Richard Pierce.

Pierce said they will study the air locations for about a week. Mote Scientists are working with the Department of Health on the project.

Zook is hoping the bloom will dissipate soon.

EXHIBIT 5

The Report Committee for Melissa Morgan Beeler
Certifies that this is the approved version of the following report:

The Effect of Local Planning Actions on Environmental Injustice: Corpus Christi's Refinery Row Neighborhoods

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor:

Elizabeth Mueller

Rachael Rawlins

The Effect of Local Planning Actions on Environmental Injustice: Corpus Christi's Refinery Row Neighborhoods

by

Melissa Morgan Beeler, B.S.

Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Science in Community and Regional Planning

The University of Texas at Austin

May 2015

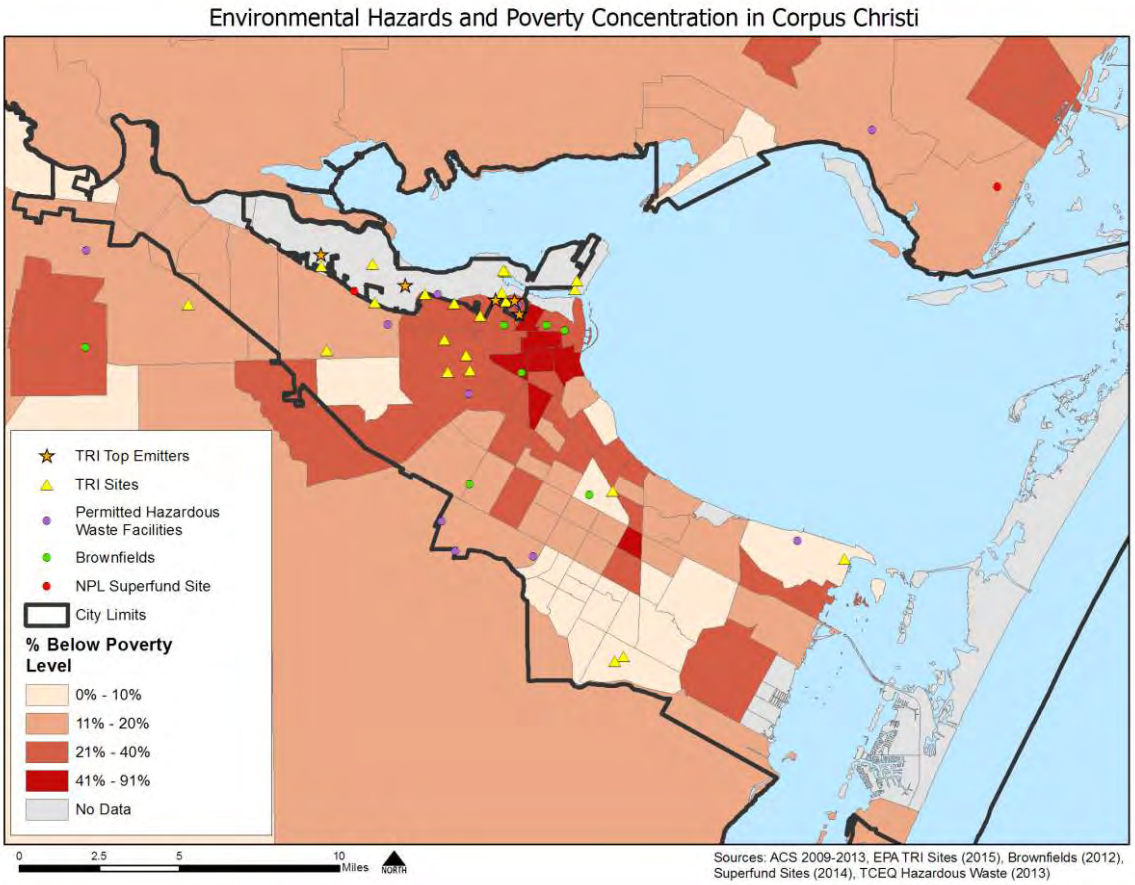


Figure 5. Proximity of environmental hazards to poverty concentrations.

Like communities around the nation, minority residents near Refinery Row have experienced public and mental health impacts due to their proximity to environmental hazards. At least as early as the 1970s, Corpus Christi has had numerous isolated events of explosions and fires at industrial facilities involving a natural gas station, oil refinery, and tank farm, often resulting in nearby residential evacuations (Corpus Christi Caller Times, 1978). Refinery fires, chemical spills, and tank explosions sometimes require dozens of homes to be evacuated (Averyt, 1992; Huff, 1993). Although direct injuries and deaths from industrial accidents have been relegated to workers at the scene (Corpus Christi Caller Times, 1981; Carrico, 1982; Harrill, 1989; Averyt, 1992; Baird, 2008), residents often

experience considerable worry and stress, sometimes likening a pipeline explosion to a plane crash or bomb explosion (Meighan, 1992). Some industrial facilities, such as Flint Hills East Plant next to Hillcrest, send automated calls to nearby residents to warn and update them about an accident. However, some residents do not always receive the call (Kelley, 2009).

In recent years, Hillcrest residents have been studied to determine impacts to their health due to their proximity to industrial activity. When CITGO was convicted in 2007 of violating the Clean Air Act by operating tanks without proper emission control devices, the Department of Justice ordered the courts to identify potential victims of the violations (United States v. CITGO Petro. Corp, 2014). Hillcrest organized to collect evidence of their health impacts. A 2008 study conducted by Texas A&M Health Science Center detected benzene in blood samples of Hillcrest residents (Texas Commission on Environmental Quality, 2012). This finding spurred a study by TCEQ in 2010 to test soil and groundwater for harmful chemicals in the neighborhood. However, the study found only pollution below screening levels for human health (Texas Commission on Environmental Quality, 2012). Although hundreds of individuals submitted statements to be declared victims and reported vomiting, dizziness and shortness of breath, the court declared the neighborhood was unable to show a causal connection between their claims and CITGO's offense.

Other neighborhoods have also showed evidence of contamination. In 1996, the Dona Park neighborhood tested positive for cadmium and lead contamination in the soil and residents experienced higher-than-average cancer rates (Center for Public Integrity, 2012). The Housing Authority found a future public housing site contaminated with petroleum hydrocarbons in Washington Coles in 2009 (Meyers, 2011).

The data above show that environmental hazards in Corpus Christi are correlated more with higher poverty and minority status than low poverty and non-minority status. However, previous environmental justice studies urge going beyond present-day demographic analysis to understand how these problems manifested (Boone & Modarres, 1999). The following sections explore whether planning and zoning actions taken by the City of Corpus Christi contributed to present-day environmental justice problems on the north side.

EXHIBIT 6

C. Whether SABEW complied with the conditions of 30 TAC §§ 55.205(b)(1) and (3) in relation to its hearing requests.

The two basic or preliminary conditions for associational standing, found at §§ 55.205(b)(1) and (3), require that SABEW must have filed timely comments on the application, and the interests that SABEW seek to protect are germane to its purpose.

On May 10, 2024, and during the comment period, SABEW filed comments and a hearing request in the same document. This fact and the information below, from SABEW's hearing requests, highlights that SABEW made timely comments on the application in compliance with 30 TAC § 55.205(b)(1).

SABEW, a non-profit organization and a member of Waterkeeper Alliance, a global movement of more than 350 Waterkeeper Organizations and Affiliates, focusing citizen action on issues like pollution possibly impacting waterways, filed numerous hearing requests and attachments during the comment period, containing comments on the application related to protecting water quality and preventing pollution.

Further, SABEW defines its mission as promoting the preservation of local wetlands and waterways for commercial and sport fishing and other recreational uses, proactively protecting Lavaca, Matagorda and San Antonio Bays by identify violations of the Clean Water Act and promoting cleanup and recovery efforts for the regional waterways and bays. The information above, from SABEW's hearing requests, details that SABEW made comments on the application that relate to the interests it seeks to protect, and which are germane to its purpose according to 30 TAC § 55.205(b)(3).

The ED recommends finding that the hearing requests of SABEW substantially complied with both 30 TAC §§ 55.205(1) and (3).

D. Whether SABEW complied with the conditions of 30 TAC §§ 55.205(b)(2) and (4) in relation to its hearing requests.

The two most central conditions for associational standing, found at §§ 55.205(b)(2) and (4), require SABEW to identify one member of the group or association that would otherwise have standing to request a hearing in their own right, and that neither the claim asserted, nor the relief requested requires the participation of the member at the contested case hearing.

SABEW identified three of its members for associational standing purposes; however, only one member must meet the requirements for associational standing for the group or association to be granted standing. Therefore, for brevity, the ED is providing only the analysis of the member, Mr. Curtis Miller, who complies with the requirements for associational standing. The ED first analyzes Mr. Miller's affectedness as if Mr. Miller had submitted the hearing request himself.

(1) Whether the hearing request of Curtis Miller complied with the requirements of 30 TAC §§ 55.201(c) & (d).

Mr. Miller filed a timely, written hearing request that provided the requisite contact information, supplied an address for the ED to map, raised relevant and material issues that form the basis of his hearing request in timely comments not withdrawn before the ED's RTC was filed, and requested a hearing.

Mr. Miller's hearing request complied with 30 TAC §§ 55.201(c), and (d) because it effectively identified a personal justiciable interest in a written explanation plainly describing why Mr. Miller believes he will be affected by the application differently

than the public. Mr. Miller stated in his hearing request that he is a commercial fisherman and has owned his seafood business (Miller's Seafood) since the mid-1960s, he owns five commercial fishing boats that dock and unload at Miller's Seafood's Seadrift location, and he has recently expanded his business to include a fresh seafood market in Port Lavaca. Mr. Miller's hearing request detailed that he has expanded from its Seadrift location to include a fresh seafood market in Port Lavaca but is concerned about plastic discharges from the Seadrift facility, toxins in oysters and shrimp, and water quality in general, as there has been a decline in oyster and shrimp populations in the San Antonio and Matagorda Bays. Mr. Miller worries that the increased discharges of plastic from the Seadrift facility will hurt the populations of fish, shrimp, and oysters that he provides and sells at both of Miller's Seafood locations. Mr. Miller's hearing request claims that plastics and other harmful pollutants may be discharged by the Seadrift facility into the waters he fishes for his business, which is an issue relevant and material to a decision on the application, and are issues addressed by the law under which the application is being considered.

The ED recommends finding that Curtis Miller's hearing request substantially complied with 30 TAC §§ 55.201(c) and 55.201(d).

(2) Whether Curtis Miller is an Affected Person under 30 TAC § 55.203.

Mr. Miller's hearing request raised relevant and material fact issues because of proximity to where the discharge route for the Seadrift facility's Outfall Nos. 1, 2, 4, 5, 6, 7, 8, 9, 10, and 12 enter San Antonio, Hynes, and Guadalupe Bays/Mission Lake in Segment No. 2462 of the Bays & Estuaries, which are designated as Oyster Waters by the Texas Surface Water Quality Standards. The GIS map prepared by the ED's staff locates Mr. Millers' Seadrift location of Miller's Seafood Co. 2.1 miles from where the Seadrift Facility's discharge route enters the bays referenced above. Given the volume of discharge from the outfalls utilizing the single discharge route, and the designated Oyster Waters where Mr. Miller obtains his products to sell through his business, the issue Mr. Miller raised related to increased discharges of plastic from the Seadrift facility negatively impacting the populations of fish, shrimp, and oysters where he fishes, is an issue addressed in the draft permit and is an economic interest unique to him because of the proximity his business is to where the discharge route enters the bays. This highlights that a reasonable relationship exists between the interests claimed and the activity regulated and increases the likelihood that Mr. Miller will be affected in a way not common to the public.

The ED recommends that the Commission find that Curtis Miller is an Affected Person under 30 TAC § 55.203.

The ED, having determined that a member that SABEW identified in its hearing requests would otherwise have standing to request a hearing in his own right, finds that SABEW complied with the conditions of 30 TAC § 55.205(b)(2).

Regarding the conditions of 30 TAC § 55.205(b)(4), SABEW's hearing requests allude to the fact that it often works with commercial fishermen, shrimpers and oystermen who fish in the bays referenced above to preserve and protect the bays by identifying violations of the Clean Water Act. In addition, neither the claim asserted, nor the relief requested requires the participation of Mr. Miller at the contested case hearing, and the ED finds that SABEW complied with the conditions of 30 TAC § 55.205(b)(4).

The ED recommends that the Commission find that SABEW met all the conditions for Associational Standing and is entitled to have its hearing requests granted pursuant to 30 TAC § 55.205(b).

VIII. ISSUES RAISED IN REFERABLE HEARING REQUESTS:

The following issues were raised in SABEW's comments that were included in the hearing requests that were filed on the application during the comment period and therefore, can be said to have been timely comments on the application.

1. **Whether the information from the application justifies the increased volumes of discharges in the draft permit.**

This is a fact issue, and if it's proven that this issue is factually accurate or relevant, this issue would be significant and material to a decision on the application.

The ED concludes this issue is relevant and material, and if this case is referred to SOAH, the ED recommends the Commission refer this issue.

2. **Whether the Applicant's compliance history indicates that the Applicant is unable to comply with the terms of the draft permit.**

This is a fact issue, and if it's proven that this issue is factually accurate or relevant, this issue would be significant and material to a decision on the application.

The ED concludes this issue is relevant and material, and if this case is referred to SOAH, the ED recommends the Commission refer this issue.

3. **Whether plastics discharged by the Seadrift facility will cause a violation of the Texas Surface Water Quality Standards and will negatively impact water quality, human health, and the environment.**

This is a fact issue, and if it's proven that this issue is factually accurate or relevant, this issue would be significant and material to a decision on the application.

The ED concludes this issue is relevant and material, and if this case is referred to SOAH, the ED recommends the Commission refer this issue.

4. **Whether the application is incomplete and whether that incompleteness renders the draft permit deficient.**

This is a fact issue, and if it's proven that this issue is factually accurate or relevant, this issue would be significant and material to a decision on the application.

The ED concludes this issue is relevant and material, and if this case is referred to SOAH, the ED recommends the Commission refer this issue.

5. **Whether the draft permit contains adequate provisions to limit the discharge of plastics in according to the TSWQS found in 30 TAC Ch. 307 of the TCEQ's rules.**

This is a fact issue, and if it's proven that this issue is factually accurate or relevant, this issue would be significant and material to a decision on the application.

The ED concludes this issue is relevant and material, and if this case is referred to SOAH, the ED recommends the Commission refer this issue.

Dow - Union Carbide Corp. GIS Map

WQ0000447000

Map Requested by TCEQ Office of Legal Services
for Commissioners' Agenda

Protecting Texas by Reducing and Preventing Pollution

Texas Commission on Environmental Quality
GIS Team (Mail Code 197)
P.O. Box 13087
Austin, Texas 78711-3087
Date: 1/21/2025
CRF: 0116825
Cartographer: JStalsby

N

- Facility
- Wastewater Outfalls
- Discharge Route
- 0.5 Mile Radius
- 1 Mile Radius
- 1.5 Mile Radius

Requestor Name	Nearest Feature	Distance
Diane Wilson	Outfall 004	10.7 miles
Mauricio Blanco	Outfall 016	9.6 miles
Curtis Miller – Miller's Seafood Co.	discharge route	2.1 miles
John Daniel-1	Outfall 016	3.2 miles
John Daniel-2	Outfall 016	3.07 miles

0 1.5 3 Miles

Source: The location of the facility was provided by the TCEQ Office of Legal Services (OLS). OLS obtained the site location information from the applicant and the requestor information from the requestor.

This map was generated by the Information Resources Division of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the Information Resource Division at (512) 239-0800.

TCEQ DOCKET NO. 2025-0114-IWD

APPLICATION BY THE CITY OF CORPUS CHRISTI FOR TPDES PERMIT NO. WQ0005289000	**§ § § § § § §**	**BEFORE THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY**

HILLCREST RESIDENTS ASSOCIATION'S REPLY TO RESPONSES TO HEARING REQUESTS

EXHIBITS 7-8

EXHIBIT 7

D. Referral to the State Office of Administrative Hearings

"When the Commission grants a request for a contested case hearing, the commission shall issue an order specifying the number and scope of the issues to be referred to SOAH for a hearing." 30 TAC § 50.115(b). The Commission may not refer an issue to SOAH for a contested case hearing unless the Commission determines that the issue:

> involves a disputed question of fact or a mixed question of law and fact;
>
> was raised during the public comment period by an affected person whose hearing request is granted; and
>
> is relevant and material to the decision on the application.

30 TAC § 50.115(c).

V. Analysis of Hearing Requests

The Executive Director has analyzed the hearing request to determine whether it complies with Commission rules, if the requestor qualifies as an affected person, what issues may be referred for a contested case hearing, and what is the appropriate length of the hearing.

A. Whether the Hearing Requests Complied with Section 55.201(c) and (d).

Chapman Ambrose and Eric Allmon on behalf of Environmental Stewardship submitted timely hearing requests. Mr. Ambrose and Environmental Stewardship included their name, address, and telephone number in their hearing request. Additionally, the Requestors identified personal justiciable interests affected by the application, stating that they have recreational interests near the facility.

The Executive Director concludes that Chapman Ambrose and Environmental Stewardship submitted hearing requests that comply with 30 TAC § 55.201(c) and (d).

B. Whether the Requestors Meets the Affected Person Requirements.

1. Environmental Stewardship

Environmental Stewardship (ES) submitted timely comments and a hearing request on Corix's application, which stated that the organization strives to protect the use and quality of the Colorado River as an affiliate of the Waterkeeper Alliance. In addition to the requirements in 30 TAC § 55.201 and 30 TAC § 55.203, a request for a contested case hearing by a group or association on an application filed on or after September 1, 2015 must meet the requirements in 30 TAC § 55.205(b). 30 TAC § 55.205(b) requires that the organization identify one or more members of the group or association would otherwise have standing to request a hearing in their own right.

In its hearing request, ES identified member Richard Martin, who lives approximately 10 miles from the facility, and whose residence is not listed on the affected landowners list. However, ES claims Mr. Martin is affected based on his recreational interests because Mr. Martin fishes approximately two or three times per month at a location approximately 1 mile downstream from the discharge

point. In the hearing request, it's noted that Mr. Martin has noticed a decline in the fish population over the last fifty years and is concerned that the proposed discharge will contain contaminants that will result in further decline of fish populations in the area, which he believes will adversely affect his ability to catch fish. Mr. Martin is also concerned that the discharge will result in further impairment of the abundance and diversity of aquatic life in downstream waters. In its hearing request, ES raised the following issues: water quality, human health, nuisance odor, regionalization, application completeness, public notice, the Applicant's compliance history, whether the location meets location standards, and erosion.

One of the mandatory factors that TCEQ considers in evaluating whether a hearing requester is an affected person under 30 TAC 55.203(c)(5) is the likely impact of the regulated activity on the impacted natural resource by the person. Thus, a recreational interest that can be distinguished from an interest common to the general public and may establish that the Requester is an affected person. To establish standing, Lujan v. Defenders of Wildlife, 504 U.S. 555 (1992), defines the following elements: (1) an injury in fact that is concrete and actual or imminent, and (2) a causal connection between the injury and the conduct complained of, the injury has to be "fairly traceable" to the challenged action of the defendant, and (3) it must be likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision. The United States Supreme Court applied the Lujan test to recreational standing in Friends of the Earth, Inc. v. Laidlaw Environmental Servs, 528 U.S. 555 (2000). In Laidlaw, a plaintiff adequately alleged injury in fact when they demonstrated that they use the affected area and are persons for whom the aesthetic and recreational values of the area would be lessened.

Mr. Martin satisfies the requirements for standing based on his recreational interests as set forth in Lujan and Laidlaw. ES has demonstrated that Mr. Martin meets the Lujan requirements for standing. Mr. Martin has habitually fished approximately 1 mile downstream from the discharge for 50 years and has concerns about the proposed discharge's effect on his use of downstream waters for fishing. Further, ES has shown that Mr. Martin uses the area, and the recreational value of the area might be lessened by the permitted activity. ES has demonstrated that Mr. Martin is impacted in a manner not common to the general public by his frequent use of the receiving waters, dating back 50 years. Thus, he is affected in a manner not common to members of the general public and is an affected person.

The Executive Director recommends the Commission find that Environmental Stewardship is an affected person.

2. Chapman Ambrose

According to the information provided by Chapman Ambrose, his residence is 3.36 miles from the facility. Mr. Ambrose is not listed on the downstream affected landowners list provided by the Applicant with the application. Mr. Ambrose raised issues including the downstream effect of the discharge on residents and businesses, the cumulative impact of multiple discharges along this river segment, the lack of recent river testing, and the Applicant's compliance history. The basis of Mr. Ambrose's affectedness claim is his recreational interest, specifically that his child attends a summer camp at the McKinney Roughs Park which surrounds the

facility. While recreational interest can be used to demonstrate a personal justiciable interest under 30 TAC § 55.203, the request must specifically demonstrate how the Requestor's recreational interests will be impacted by the facility or wastewater discharge in a manner not common to the general public.

The request submitted by Mr. Ambrose does not demonstrate the correlation between the proposed wastewater discharge and Mr. Ambrose's claimed recreational interest. As noted in his hearing request, Mr. Ambrose's recreational interest is in the McKinney Roughs Park generally, which spans 1,140 acres. Thus, it does not identify a justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application or show how he is affected in a manner not common to the general public.

The Executive Director recommends the Commission find that Chapman Ambrose is not an affected person.

C. Whether Issues Raised Are Referable to SOAH for a Contested Case.

The following issues were raised during the public comment period:

1. **Whether the draft permit is protective of water quality including surface water and groundwater in accordance with the Texas Surface Water Quality Standards. (RTC Response Nos. 3-5)**

The issue involves a disputed question of mixed fact and law, was raised during the comment period, was not withdrawn, and is relevant and material to the issuance of the draft permit. If it can be shown the draft permit does not provide sufficient controls to protect water quality, that information would be relevant and material to a decision on the application. The Executive Director recommends referring this issue to SOAH.

2. **Whether the draft permit is protective of human health and residents in the immediate vicinity of the facility and the immediate discharge route. (RTC Response No. 6).**

The issue involves a disputed question of mixed fact and law, was raised during the comment period, was not withdrawn, and is relevant and material to the issuance of the draft permit. If it can be shown the draft permit does not provide sufficient controls to protect human health, that information would be relevant and material to a decision on the application. The Executive Director recommends referring this issue to SOAH.

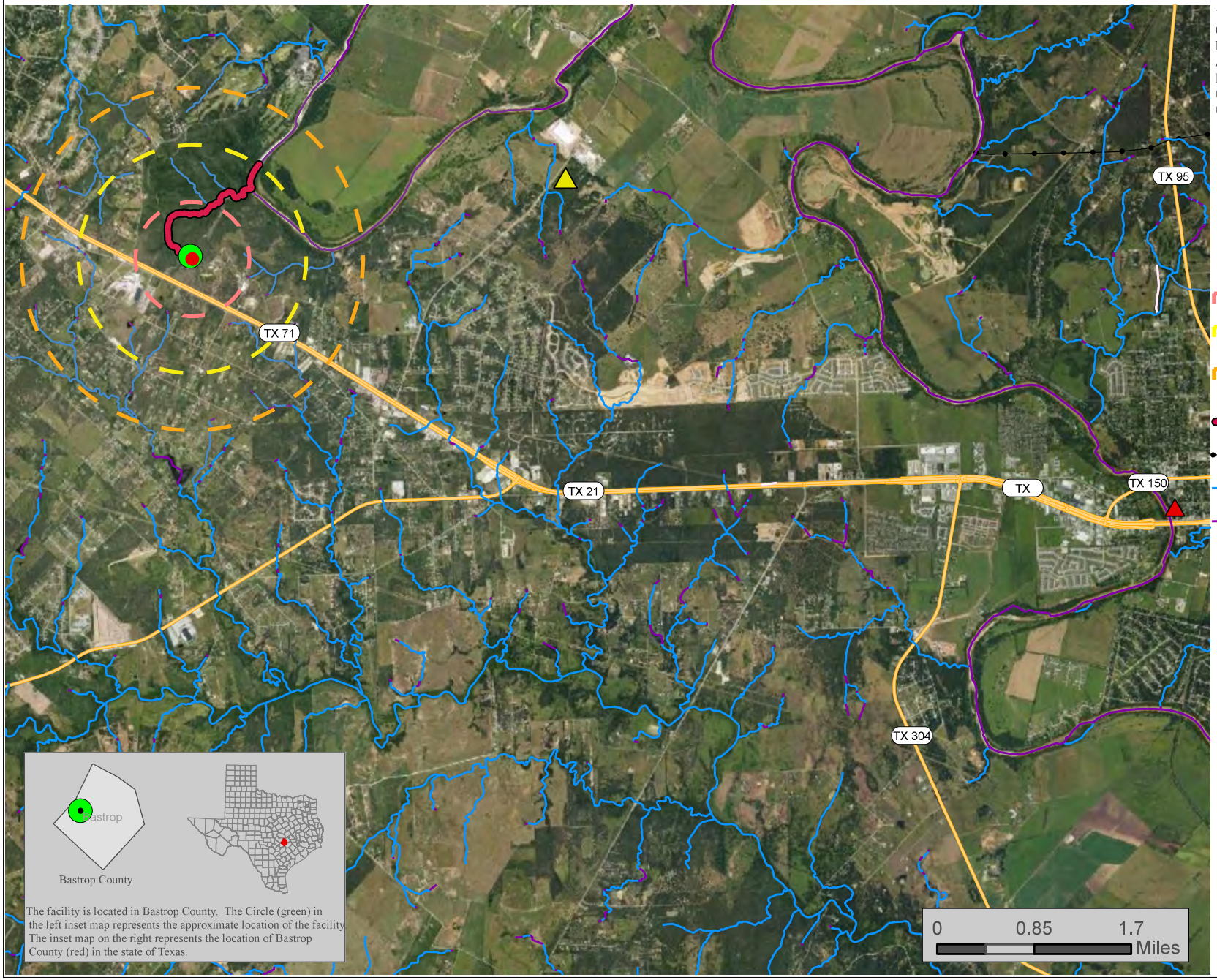
3. **Whether the draft permit should be denied or altered in consideration of the need for the facility in accordance with Texas Water Code § 26.0282, Consideration of Need and Regional Treatment Options. (RTC Response No. 13).**

The issue involves a disputed question of fact and law, was raised during the comment period, was not withdrawn, and is relevant and material to the issuance of the draft permit. If it can be shown the draft permit does not comply with Texas Water Code § 26.0282, that information would be relevant and material to a

Corix Utilities Texas, Inc.

Map Requested by TCEQ Office of Legal Services
for Commissioners' Agenda

Protecting Texas by Reducing and Preventing Pollution



The facility is located in Bastrop County. The Circle (green) in the left inset map represents the approximate location of the facility. The inset map on the right represents the location of Bastrop County (red) in the state of Texas.

Texas Commission on Environmental Quality
GIS Team (Mail Code 197)
P.O. Box 13087
Austin, Texas 78711-3087

Date: 10/31/2023
CRF 0094329
Cartographer: MAttoh

N

- FacilityPoint
- Outfall 001
- Chapman Ambrose
- Richard Martin (Environmental Stewardship)
- 0.5 Mile from Facility Point
- 1 Mile from Facility Point
- 1.5 Miles from Facility Point
- DischargeRoute
- Pipeline
- Stream/River
- Artificial Path

Distance From Facility Point to:
Chapman Ambrose
3.36 Miles

Richard Martin
(Environmental Stewardship)
8.90 Miles

Source: The location of the facility was provided by the TCEQ Office of Legal Services (OLS). OLS obtained the site location information from the applicant and the requestor information from the requestor.

EXHIBIT 8

The "1-mile rule": Texas' unwritten, arbitrary policy protects big polluters from citizen complaints

> It's not found anywhere in state law or the Texas Commission on Environmental Quality's rules, but for years the agency has denied citizens the ability to challenge air pollution permits because they live more than a mile away.

BY DYLAN BADDOUR, **INSIDE CLIMATE NEWS** JULY 30, 2023 4 AM CENTRAL **SHARE**

PORT LAVACA — On a rugged stretch of the Gulf Coast in Texas, environmental groups called foul in 2020 when an oil company sought pollution permits to expand its export terminal beside Lavaca Bay.

Led by a coalition of local shrimpers and oystermen, the groups produced an analysis alleging that the company, Max Midstream, underrepresented expected emissions in order to avoid a more rigorous permitting process and stricter pollution control requirements.

In its response, Max Midstream did not respond to those allegations. Instead, it cited what it characterized as the "quintessential one-mile test" by Texas' environmental regulator, the Texas Commission on Environmental Quality, to claim that the groups and citizens involved had no right to bring forth a challenge because they lived more than 1 mile from the Seahawk Oil Terminal.

"The well-established Commission precedent has been repeated again and again," the lawyers wrote. "Based on the quintessential one-mile test relied upon by the Commission for decades, none of the Hearing Requests can be granted."

The TCEQ agreed, rejecting all hearing requests and issued the permit as initially proposed.

But the agency says the 1-mile test cited by the company's lawyers doesn't exist.

“The Commission has never adopted a one-mile policy,” said TCEQ spokesperson Laura Lopez. “Instead, the Commission applies all factors set out in statute and rules.”

Indeed, the test is not codified in Texas law or TCEQ rules. Yet it appears consistently in TCEQ opinions going back at least 13 years as a means to restrict public challenges to air pollution permits. It has been cited repeatedly by industry lawyers and denounced by environmental advocates.

“This practice is arbitrary and unlawful,” said Erin Gaines, an Austin-based senior attorney with the nonprofit Earthjustice. “TCEQ’s practices prevent people from having a meaningful voice in the permitting process for polluting facilities in their community.”

U.S. law requires that states provide citizens with the opportunity to challenge pollution permits in federal court. The rules regarding who may bring forth challenges are laid out in Article III of the U.S. Constitution, which doesn’t say anything about a distance limit.

Dozens of Texas environmental groups have argued in petitions before the U.S. Environmental Protection Agency that TCEQ unlawfully restricts access to judicial review, including through the 1-mile rule, and litigants in the Max Midstream case have now challenged the use of the 1-mile rule in federal court and are awaiting a hearing set for this fall.

The TCEQ, which is responsible for implementing federal pollution laws in Texas, issued its blanket denial that the rule exists despite a list of more than 15 cases compiled by Inside Climate News that centered on the 1-mile standard. In some, it was explicitly cited by TCEQ itself, or by industry lawyers. In others, the 1-mile standard is depicted on maps produced by the TCEQ. In each case, the distance standard is the main or the only justification offered for granting or denying citizens’ hearing requests.

Last year the nonprofit Earthjustice reviewed 460 requests for air permit hearings between 2016 and 2021. It found that while requests from citizens living within 1 mile of a facility comprised 12% of the requests, they comprised 83% of the requests the agency granted; almost all of the remaining 17% of granted requests came from people who lived only slightly farther than 1 mile away.

“TCEQ’s actions speak for themselves,” Gaines said. “TCEQ routinely denies hearing requests from members of the public unless they own property within one mile of a facility.”

The 1-mile standard

Texans who wish to challenge TCEQ permit decisions must file a request with the agency. Its executive director reviews those requests and recommends whether or not the agency's three commissioners, all appointed by the Republican governor of Texas, should grant them.

To do that, the executive director assesses whether the challengers qualify as "affected persons" with legal standing to bring forth complaints. Texas' administrative code considers an "affected person" anyone who will be "affected by the application" in a way that is not "common to members of the general public."

When formulating recommendations, the TCEQ's Lopez said, the executive director "considers many factors, only one of which relates to the location of the facility."

However, a review of the agency's recommendations shows that the distance standard is regularly the only factor used to recommend rejection of hearing requests.

It appears in writing as far back as 2010, when 36 people challenged a permit renewal for a gas processing plant in northeast Texas, mostly complaining about odorous hydrogen sulfide gas coming from the facility's flares.

"The Executive Director has generally determined that hearing requestors who reside greater than one mile from the facility are not likely to be impacted differently than any other member of the general public," wrote the executive director at the time, Mark Vickery, who is now a lobbyist for the Texas Association of Manufacturers. "For this permit application, the Executive Director's staff has determined that no requestors are located within one mile of the proposed facility."

The permit renewal in question was not eligible for a hearing anyway, Vickery wrote, because it posed no changes from its original form.

His recommendation: none of the requestors should be recognized as affected persons. The TCEQ commissioners agreed.

"All requests for a contested case hearing are hereby DENIED," wrote then-TCEQ Chair Bryan Shaw, who is now a lobbyist for the Texas Oil and Gas Association.

"Rule of thumb"

By 2014, the rule was well known among lawyers for industrial developers. That year, 16 members of the Danevang Lutheran Church in rural Wharton County requested a hearing over plans to build a gas-fired power plant in their tiny town.

In written arguments to the TCEQ, lawyers for the plant developer, Indeck Wharton, wrote, "A key factor the Commission frequently uses as guidance on the distance issue is the one-mile 'rule of thumb.'"

"While it is not an immutable rule, the Commission frequently uses it as a guide," the lawyers wrote. "It is not found in any statute, regulation or guidance document. Instead, it is founded in common sense and experience."

TCEQ's executive director at the time, Zak Covar, then invoked the 1-mile limit.

"Although the church is within one mile of the proposed facility, the request does not claim that any person resides at the church," Covar wrote before the commissioners denied the church members' request for a hearing and issued the permit as proposed.

In 2017, the TCEQ received 16 hearing requests — including from local residents, a Texas A&M University chemist and the Bryan Independent School District — over plans by Saint-Gobain Ceramics and Plastic Inc., to build a facility in Bryan.

"Because distance from the facility is key to the issue of whether there is a likely impact … the ED has identified an area of approximately one mile from the plant on the provided map," wrote the executive director at the time, Richard Hyde.

Only Jane Long Intermediate School sat within the 1-mile radius. So TCEQ denied 15 hearing requests and granted the school district's. Later, the school district withdrew its hearing request, citing a settlement agreement with Saint-Gobain, and TCEQ approved the permit application.

Two years later, when Annova LNG applied for permits to build a gas compressor and terminal on the Rio Grande delta, the nearby city of South Padre Island requested a hearing.

"The City stated that it is located more than one mile from the proposed terminal," wrote the executive director at the time, Toby Baker. "Given the distance of the City from the proposed terminal, the ED recommends that the Commission find that the City is not an affected person."

The commission agreed. Hearings were denied and a permit was issued.

Also in 2019, 36 residents requested hearings over permits for a concrete plant in Midlothian. The nearest of them, Sarah Ingram, lived 1.2 miles away and expressed concern about the health of her children when protesting the pollution permit.

"As none of the requestors reside within one mile of the plant's emission point, they are not expected to experience any impacts different than those experienced by the general public," Baker wrote.

Commissioners denied all requests and granted the permit as proposed.

In 2020, the nonprofit Lone Star Legal Aid filed a hearing request on behalf of Port Arthur resident John Beard over a developer's plans to build an LNG export terminal.

According to the request, Beard regularly spends time on Pleasure Island, an 18-mile long recreational area in Port Arthur that runs as close as 900 feet from the proposed terminal site, in his capacity as the chair of the Pleasure Island Advisory Board.

In evaluating the request, the TCEQ only considered Beard's home address, 4 miles away.

"Beard is not an affected person in his own right because he is located almost 4 miles from the facility," wrote Baker, the executive director.

Lone Star Legal Aid filed an 11-page response, claiming "sites like Port Arthur LNG require the commission to consider a larger impact area than merely a mile," and that "there are no distance restrictions imposed by law on who may be considered an affected person."

TCEQ referred the question to the State Office of Administrative Hearings, where an administrative law judge agreed with Lone Star Legal Aid, writing, "the Applicant's own data indicated that operation of the Proposed Facility will result in increased levels of [nitrogen oxides] and [fine particulate matter] at Mr. Beard's residence."

The administrative judge declared Beard an "affected person" and ordered a hearing over the pollution permit, which was held in February 2022. A second administrative judge also agreed with some of Lone Star Legal Aid's complaints and recommended that the TCEQ require Port Arthur LNG to use better pollution control technology that would lower emissions of nitrogen oxides and carbon monoxide from the facility's eight gas compressor turbines.

But the commissioners rejected most of the judges' recommendations, calling them "economically unreasonable," and approved the permit.

Meanwhile, TCEQ has granted hearing requests for requestors who live within a mile. In 2015, a group called Citizens Alliance for Fairness and Progress in Corpus Christi requested a hearing over air pollution permits for a planned expansion at a Citgo Refinery, and identified group members living a few blocks from the refinery.

Five years later, the executive director recommended granting the request "because the Alliance identifies as members residents [sic] that reside within one mile of the proposed facility." Citgo withdrew its application before a hearing was held.

Legal complaints

The country's landmark environmental laws, the Clean Air and Clean Water acts, require states to provide opportunities for citizens to challenge pollution permits in court, a process known as judicial review, so a judge may evaluate if permits are consistent with federal standards.

Texas law provides such opportunities in its health and safety code, which reads: "A person affected by a ruling, order, decision, or other act of the [TCEQ]… may appeal the action by filing a petition in a district court."

But multiple petitions to the EPA have alleged that Texas courts will only take up pollution permit complaints if the plaintiff has already been through a "contested case hearing" in administrative courts run by the state. Thus, by denying complainants' requests for contested case hearings, often citing the 1-mile standard, the TCEQ controls their access to the courts.

"Participation in the contested case hearing process is a prerequisite to seeking judicial review of a TCEQ permitting decision," reads one 38-page petition filed with the EPA in 2021 by 22 Texas environmental groups, focused on TCEQ's water pollution management. "This empowers the TCEQ full discretion to deny any person the right of judicial review."

Where federal law is concerned, requirements for access to judicial review are laid out in Article III of the U.S. Constitution. When states are charged with enforcing federal law, they may not impose limits beyond what the Constitution says, according to Gaines, the environmental attorney with Earthjustice in Texas.

In another 61-page petition filed last year with the EPA over TCEQ's air pollution management, 11 Texas environmental groups said the contested case hearing process is absent from the sweeping pollution management plans that Texas, like all states, must submit to the EPA for approval.

That process, the petition says, includes "an arbitrary presumption that only those who own property or live within 1 mile of a proposed new or modified source are affected persons entitled to participate in a contested case hearing."

"While not codified anywhere, this 'rule of thumb' is used regardless [of] how large the source is, the character of the emissions, the size of a facility's stacks, or local meteorological

conditions," the petition said.

For that petition, an Earthjustice analysis showed that TCEQ granted only 12% of hearing requests between 2016 and 2021 — virtually all of them from people who lived within a mile or just slightly further from the applicant's location.

Early this year, the EPA responded to the 2021 petition and said it was "informally investigating the allegations."

"If proven to be true, the allegations outlined in the Petition are concerning," Charles Maguire, the EPA deputy regional administrator, wrote in January.

The EPA can revoke a state's authority to implement federal environmental law if the state regulator does not meet program requirements, Maguire wrote, including "failure to comply with the public participation requirements."

A spokesperson for EPA Region 6, Jennah Durant, told Inside Climate News, "Because both petitions are still under review, EPA cannot provide further details at this time."Durant declined requests for interviews with Region 6 administrator Earthea Nance and did not respond to questions about why only informal investigations were launched.

"If states start to deviate too much from national expectations about good implementation enforcement, which includes access to judicial review, the EPA can disapprove of the state's plan," said Cary Coglianese, director of the Penn Program on Regulation at the University of Pennsylvania. "It's not a threat that's used often and it can't be used lightly."

The case of Max Midstream

Diane Wilson filed her first hearing request with the TCEQ in 1989. Since then, she's filed over a hundred more, she guesses. Only twice has she been recognized as an affected person, in 1998 and 2015.

"You ask any activist out there, any grassroots person, and they will tell you the same thing about TCEQ," she said. "They're in a big love affair with industry."

Wilson, who leads an organization called San Antonio Bay Estuarine Waterkeeper, filed a challenge with the TCEQ when Max Midstream sought its permit to discharge airborne toxins including "hazardous air pollutants" such as hydrogen sulfide, carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds and fine particulate matter, all known by the EPA to cause cancer and other serious health impacts.

Her organization, together with the Environmental Integrity Project and Texas Rio Grande Legal Aid, obtained data from Max Midstream's permit application for the Seahawk Oil Terminal, analyzed it and concluded that the company underrepresented expected emissions in order to avoid a more rigorous review process for larger pollution sources.

That was when lawyers for Max Midstream cited the 1-mile rule.

“Based on consistent Commission precedent,” the lawyers wrote. “Only a property owner with an interest within one mile or slightly farther could possibly qualify for a contested case hearing.”

“It’s crazy they say that,” said Wilson, 75, as she sat in a bayside park in Port Lavaca. She pointed across the water to the sprawling Formosa Plastics Corp. A plant that stood prominently on the horizon, some 7 miles away — farther than Max Midstream. “I have been here and watched releases from that plant come clear across the bay. It’s like a fog come in.”

She submitted to the TCEQ analysis from Ranajit Sahu, a private environmental consultant in California who previously managed air quality programs and has a Ph.D. from the California Institute of Technology. He testified that harmful health impacts from the terminal could extend up to 5 miles away.

She also pointed to a 2009 study, led by a researcher at Texas A&M University and published in the journal Ecotoxicology, which linked clusters of genetic damage among cows in Calhoun County to industrial emissions up to 15 kilometers (9.3 miles) away. The largest cluster identified was 7 kilometers (4.3 miles) from the industrial facilities.

Nevertheless, in a 2022 opinion, Baker, the TCEQ executive director, sided with Max Midstream. Although Wilson had stated that she regularly spent time near the site of the proposed facility, her home was 16 miles away in the town of Seadrift.

Baker wrote: “Given the distance of Ms. Wilson’s residence relative to the location of the terminal, her health and safety would not be impacted in a manner different from the general public. Therefore, the ED recommends that the commission find that Diane Wilson is not an affected person.”

The director used the same reasoning to recommend rejection of hearing requests from five residents in Port Lavaca, about 4 miles across the water from the Seahawk terminal — a complex of huge storage tanks, marine loading docks and a pump station to move oil through a 100-mile pipeline.

They included Mauricio Blanco, a 51-year-old shrimper who said he spends nine hours per day on the water close to the proposed facility, even though he lives 6 miles away.

Also included: Curtis Miller, 61, owner of Miller's Seafood, a national wholesaler of shrimp, fish and oysters started by his uncle in the 1960s, with its headquarters on the bayside in Port Lavaca.

In official comments, he told the TCEQ he would be harmed economically by increased air emissions because carbon dioxide from the terminal will contribute to acidification of bay waters, harming the oyster population he depends on.

Baker acknowledged Miller's economic concerns, but concluded that "based on his location relative to the terminal, Mr. Miller's health and safety would not be impacted in a manner different from the general public."

Miller, a stout seaman covered in sunspots, said, "I don't know what they base that on. I think we could be strongly affected here 4 or 5 miles away."

From the docks at Port Lavaca, he pointed across the water at the Seahawk Terminal, the tallest feature on the horizon, looming large to the northeast.

"Does that look far away to you?" he said.

Then he pointed at a U.S. flag that was flapping to the southwest, directly from the plant to where he stood.

"Look which way the wind is blowing," he said. "That's our prevailing summer wind."

In April 2022, the TCEQ commissioners agreed with the executive director and denied all hearing requests.

It issued Max Midstream a permit authorizing 61 different emissions points to release up to eight different air contaminants at a collective rate of hundreds of pounds per hour.

"Emissions from this facility must not cause or contribute to 'air pollution' as defined in Texas Health and Safety Code," the permit said.

In June 2022, Wilson sued the TCEQ in federal court, alleging that it "acted arbitrarily and unreasonably in determining that Plaintiffs did not qualify as affected persons" based solely on distance.

"There are no distance restrictions imposed by law for this type of permit," reads a legal brief Wilson filed for the case in July 2023.

She claimed TCEQ issued a pollution permit that was not compliant with state and federal law and asked the court to overturn it. A first hearing in the case is set for November.

Disclosure: Texas A&M University has been a financial supporter of The Texas Tribune, a nonprofit, nonpartisan news organization that is funded in part by donations from members, foundations and corporate sponsors. Financial supporters play no role in the Tribune's journalism. Find a complete list of them here.
