**SOAH DOCKET NO. 582-20-1895**

**TCEQ DOCKET NO. 2019-1156-IWD**

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| **IN THE MATTER OF THE APPLICATION OF PORT OF CORPUS CHRISTI AUTHORITY OF NUECES COUNTY FOR TPDES PERMIT NO. WQ0005253000** | **§ § § § §** | **BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS** |

# CLOSING ARGUMENTS OF JAMES KING, TAMMY KING, SAM STEVES AND EDWARD STEVES

## I. INTRODUCTION

James and Tammy King, Sam Steves and Edward Steves, (Protestants) support the positions and arguments of the Port Aransas Conservancy (PAC). They also provide these additional arguments based on their own concerns with the significance of this proceeding for the coasts of Texas and beyond Texas, including:

**This case will clearly set important precedent under Texas law.** There are no other large seawater desalination facilities permitted in Texas, and only a few in other parts of the country. However, there are already other seawater desalination facilities proposed for the Corpus Christi Bay System. There will likely be one proposed for the Texas Coast. And there is an ongoing debate over the proper regulatory approach to assure that any concentrated brine discharges from seawater desalination do not cause short or long-term harm to marine environments. The decision here can affect the entire Texas coast.

**EPA application of federal law, here, is also an import step in the protection of coastal resources in Texas and beyond.** Texas is authorized to issue the federal wastewater discharge permits under an agreement with EPA. That agency has rarely stepped in to express concern with the Texas process. It has done so, here. That clearly means this case is important, not only in Texas, but throughout the country. While EPA, given its narrow focus on discharges from seawater desalination facilities, is not imposing a new or significant burden on the permitting in Texas, the ED is strongly resisting

positions of the EPA that could also help protect the Corpus Christi Bay System and other coastal waters. The ED appears to simply be taking the historic Texas position to dismiss the oversight role of the federal government for a federal program, and not accept the interpretation of regulations by the federal agencies that developed those regulations. This lack of deference to federal oversight both undermines the consistency and predictability of brine discharge permitting along all U.S. coasts and invites states to rush to the bottom of the marine species protection ladder.

**While TCEQ largely lacks the expertise needed to know how to protect marine species from the impacts of discharge-induced salinity changes, the ED is ignoring the recommendations of Texas agencies with such expertise and which were directed by the Legislature to provide research and recommendations on regulation of desalination discharges.** Without experts on desalination discharges and their impacts (both Dr. Wallace and Mr. Schaefer are aquatic, not marine, biologists) or regulations with numeric standards for assessing these impacts, the ED is showing a willingness to set an important precedent needed to protect sensitive habitat with decisions that are contrary to the recommendations of its sister agencies, the Texas Parks and Wildlife Department (TPWD) and the General Land Office (GLO), agencies charged with protection of coastal environments.

**The Port of Corpus Christi Authority has completely failed, after being given two chances, to provide an application adequate for setting the needed precedent to guide future permitting.** The Port's approach to its applications also raises serious concerns with the TCEQ enforcement of its own rules that require development of applications for discharge permits by qualified persons, persons who are "competent and experienced in the field to which the application relates and thoroughly familiar with the operation or project for which the application is made."[1] Moreover, the ED's reliance on facts in Port's application, in both the initial and current proceedings, when the ED staff knew the facts were wrong, is a matter that should not be ignored.

[1] 30 TAC §305.45 (a) (8).

Because of these concerns, Protestants supplement the arguments of PAC as follows.

## II. SUMMARY OF THE ARGUMENT

As Protestants explained in their written prehearing statement, the Port has done it again.

- It has failed to provide the site specific information it told the Commission it would obtain and that is needed for proper modeling and evaluation of the discharge (Issue D);

- It has failed to provide, in its application, accurate inputs for the CORMIX (near field) modeling needed to assure that the draft permit is protective of water quality and the marine environment. By using the data in the application, the ED was not able to produce conservative mixing predictions needed to protect marine species. Moreover, the Port's SUNTANS (far field) modeling does not provide reasonable predictions of bottom saline plumes that also cause adverse impacts on marine species. (Issue G); and

- It has failed to propose a diffuser design and location that will assure protection of water quality and marine species. (Issues A and C).

As a result, the ED was again unable

- to complete a proper anti-degradation review, or;
- develop a draft permit with the necessary requirements to ensure protection of water quality and the marine environment.

## III. ARGUMENT

### A. Impacts to the Marine Environment and Sports Fisheries (Issues A and C)

The Port has failed to demonstrate that the proposed discharge will not adversely impact the marine environmental or marine species.

PAC's closing argument discusses in detail this failure with full explanation of the range of adverse impacts. But there is also a clear standard that, if established here, would protect the Corpus Christi Bay System and possibly other Texas bay systems.

Both GLO and TPWD have recommended that TCEQ adopt standards for discharges from seawater desalination facilities. That standard is used internationally and in other parts of the country.

This standard is recommended in both the GLO - TWPD joint report to the Texas Legislature in 2017[2] and in TPWD's specific comments on this application. [3]

These agencies recommended a standard for such discharges be set at lesser of 2 parts per thousand (ppt) or 5 percent salinity increase over ambient conditions. They recommended that this standard be applied at a distance of 100 meters. As Dr. Schlenk's testimony explains, most international standards use such a 2 ppt limit on the increase in salinity to protect marine species.[4] And Dr. Jones, one of the Port's experts, has argued in a similar permitting case, that the 2 ppt standard is actually too high.[5] Finally, another of the Port's experts, Dr. Knott, agreed that the 2 ppt standard was a "sound and scientifically based standard."[6]

The adoption of standards or ones like them would set the bar here, and not at an unreasonable level. The TPWD & GLO recommendations are not strict. The standards would have been met, if the Port had a diffuser at a location that could meet the targets the Port set in its initial application. Those initial-application targets were for percentages of effluent remaining at the mixing zone boundary of 2.5% for the ZID, 1.5% for the ALMZ, and 1.0% for the HHMZ. The TPWD & GLO recommendation would also have been met if the Port had a diffuser that could have met the limits in either the ED's original draft permit or the ED's 2020 revised draft permit.

The ED's response to the TPWD recommendation on the standards assumed less than a 1.0 ppt increase at the ALMZ. Thus, the ED took the position that such a change was not large enough to require a salinity standard.[7] But the ED did not go back and re-evaluate its earlier position on this recommendation by the time it submitted its current draft permit. And by that time, it had the modeling

[2] PAC-7.
[3] PAC-37.
[4] PAC-50R p. 14, l. 9.
[5] PAC-78R p. 10.
[6] Tr. Vol. 4 p. 956 ll. 2-20.
[7] PAC-8 pp. 119-120; ED-SG-1 Remand p. 23.

showing the salinity levels at the ALMZ would be elevated by at least 2.5 ppt.[8] The ED also never asked TPWD for new comments on the amended application.[9]

Here, the ED's modeling shows that the Port's proposed discharge will result in at least a 2.5 ppt increase in salinity concentrations at the aquatic life mixing zones, which is somewhat closer to the discharge the 100-meter distance proposed by GLO and TPWD. And resulting salinity levels in the receiving water range from 68 ppt at the discharge location to 43 ppt as far out as the ALMZ boundary, when the ambient water is already at 40.57 ppt.[10] As was explained in the first hearing for this migratory area of the bay system, abrupt changes in the salinity level create significant stress on redfish larvae and create even more problems when the ambient salinity concentrations are already putting the larvae under stress.[11] Such an abrupt increase in salinity for larvae drawn into the effluent plume, with no time to acclimate, will leave them seriously impacted.

And the ED's modeling results are clearly not conservative. As PAC's experts have demonstrated, the boundary interactions with the bank, the cove sides ("groins") and the slopes of the 95-foot hole all reduce mixing and can affect salinity in very dramatic ways. And the CORMIX model warns that, even if used at suitable sites, the mixing predictions can only be treated as valid to within a 50% range of error. Here, the early life stage species are likely to encounter abrupt salinity changes of 11 ppt and above all the way to 100 meters and 6 ppt and above all the way to the 200 meters from the discharge.[12]

The problem here is not finding a location where the CORMIX model is suitable. Those sites exist.[13] The problem here is the location the Port has selected to put its diffuser and discharge. The site

[8] Tr. Vol 9 p. 2211 l. 16 - p. 2216 l. 22.
[9] Id.
[10] Kings-Steves-21R line 19. Note also line 20 shows the change in salinity can be 7% at the ALMZ, again well over the TPWD and GLO recommended standard.
[11] Id.
[12] PAC-51R SS-5 in native Excel format, l. 89, columns Q and R.
[13] PAC-51R p.15, ll. 17-20.

is not suitable for using the model to determine the mixing performance of the Port's diffuser at the mixing zone boundaries. PAC's closing argument covers that issue well.

The current case is unique with its problematic discharge location and the importance of the area as a migration route for sensitivity of the marine life. Whether the 2 ppt should be the standard for all coastal waters is not clear to Protestants, and they are not proposing this standard be adopted for all such waters in Texas. Here, however, the use of the TPWD and GLO recommended limit has been shown appropriate and if adopted would require denial of the permit.

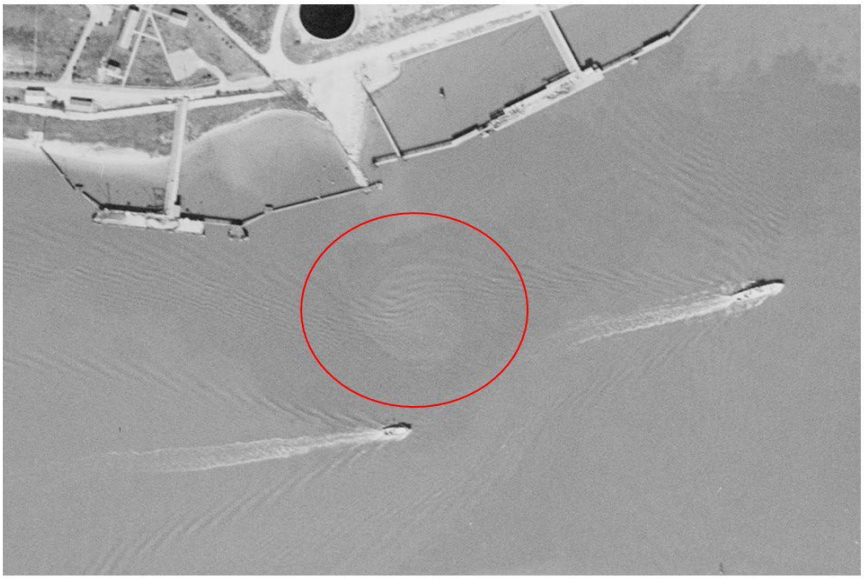
## B. Complete and Accurate Application (Issue D)

Despite the second chance, the Port again has failed to provide the data the ED needs for its modeling and to evaluate the impacts of the discharge. The port failed to provide site specific data the Port committed to obtaining as part of this remand. Protestants support PAC's closing arguments for Issues D.

### 1. What happened to the eddy?

In the initial hearing, the Port claimed that an eddy helped create or "scour" the 90 foot hole and helped ensure the effluent plume was well mixed with the ambient water. Now, the Port relies on a few days of data collection to argue the exact opposite – that there is now no such eddy. The Port attempted unsuccessfully to discount Dr. Socolofsky's testimony that he saw eddies on his site visit and has identified eddies on recent satellite images.[14] The Port also attempts to discredit Dr. Austin's testimony in which he analyzed the Port's own ADCP data to identify the irregular movement of the water near the discharge location as a possible eddy.[15] But by doing so, the Port has created doubts about the validity of data it presented with its application. Finally, the Port would have you believe that the clear picture of a large eddy in the 1956 photograph[16] below is not an eddy.

[14] PAC-51R SS-4.
[15] PAC-44R, p. 23, l. 22 – p. 25, l. 4.
[16] PAC-53R BW-17. This is a blown up section and the eddy can be seen best if this photo is further blown up in size.



A few days of data is all the Port has to rely upon for its new position. But why are the conditions on those days sufficient to support any reversal of the Port's prior position? The Port provides no explanation. It also provides no explanation, backed by anything but conjecture, on how the hole was created, when the hole was created, and whether it is now stable or still expanding and deepening. The side of the hole is the location the Port picked of the diffuser, apparently without even bothering to do any testing of the stability of that location, with, for example, a boring, as Dr. Austin recommended. This is not the level of work TCEQ rules require for an evaluation of the site, and certainly not the level of work the Port promised the Commissioners.

In the spring of 2019 and before the ED had completed its technical review, the Port advised TCEQ that there is an eddy that created the 90-foot hole. The Port produced no information, no pictures, and no studies of the eddy. It provided no information on its size, its location, or its strength.

At the Commissioners' agenda meeting, Counsel for the Port stated:

> Because there was a localized eddy that changes the, the bathymetry at that exact location. And they-in our view, and I-we think **our expert testimony provided this in the record that that eddy and that localized increase in depth enhances the mixing**, and makes, makes existing modeling more conservative. The ALJs disagreed, and they wanted more specific data. **That's**

> **the type of data that we think we can provide** that will show that being deeper, having more current enhances the mixing and provides more protection for marine life and the environment.[17]

However, the Port never completed the work it promised to do. Instead, the Port decided to move the location of the discharge and spend its time developing a new diffuser design. It simply did not take the time to collect that data it promised for its original location and diffuser, including data on the characteristics of the eddy or eddies that clearly exist in the area of the hole.

Even as late as June 24, 2021, Dr. Tischler was including in his memo to Ms. Garza in the amended application a reference to the eddy-created "hole."[18] Only after filing the amended application did the Port decide to claim there is no eddy. The Port knows that the presence of one large eddy or a number of smaller ones creates problems for it. Eddies cannot be evaluated by the CORMIX modeling, but they can reduce the mixing, trapping whatever is in the water in the eddy, larvae, concentrated brine or other chemicals from the discharge, and recirculate what it captures, increasing exposure times for the species caught in the eddy. The testimony of both an expert witness for the ED and one for the Port in the initial hearing conflicts with the Port's creative argument that the eddy improves mixing.[19] That recirculation of the effluent in the plume and whatever is in it can clearly happen in any of the mixing zones, and over the hole.

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[17] PAC-53R, p. 47, emphasis added
[18] Exhibit APP LT-5-R pdf page 3, referenced on AR Tab I, page 248.
[19] James Michalk, testifying for the ED explained:

> Q Are you familiar with eddies?
> A.· I am familiar.··I'm somewhat familiar with eddies.
> Q. Have you been caught in one in a kayak, by any chance?
> A. Yeah, I think I have.
> Q. Okay.··So what happens in an eddy?
> A.· It can keep bringing you back around.
> Exhibit PAC 15, Excerpts from the deposition, page 19 lines 10 – 25

Dr. Jordan Furnans for the Port agreed:

> Q. If there is an eddy, it takes whatever's in the water, swirls it around and around in a circle, correct?
> A. Not necessarily a circle, but, yes, it swirls it around and around. . . . .
> Q. The point being whatever is in that eddy gets caught in that eddy for some period of duration?
> A. Yes.
> Tr. Vol 3 page 158 line 16 – page 159 -19

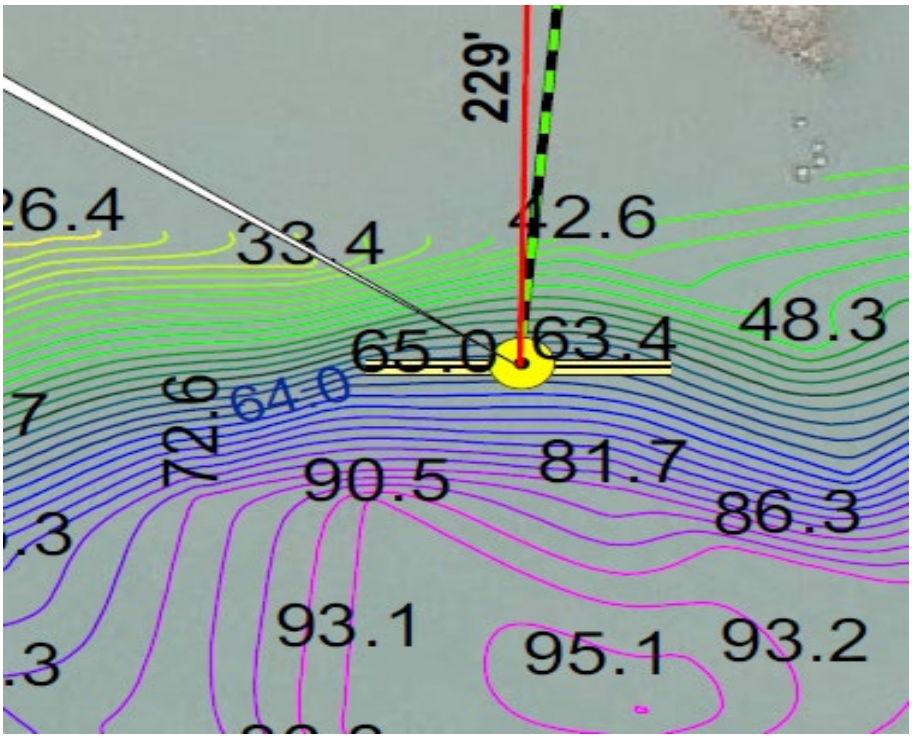
If what Dr. Austin found in the Port's ADCP data is not an eddy, what is it? The data clearly shows the water in the channel, at the point of discharge, changing direction. If such changes are the result of the boat turning, that would mean the data the Port presented for its most important location, at the discharge location, is not valid. But the changing direction of the flow in the channel should not be a result of boat movement. There is nothing in the Port's field notes to suggest that any of the boat turns affected data collection. The ADCP, itself, adjusts data to compensate and continues to collect valid data through turns.

If the data collected at the discharge location is not accurate, again the Port has not met its burden on this issue or provided what it promised the Commission to provide.

**2. <u>What is the impact of changes in velocities across the discharge area?</u>**

Another type of non-uniform flow condition, not a change in direction, but a change in velocity, was identified by Mr. Osting in many of the sets of the Port's ADCP data.[20] And there is a simple reason for it - the underwater arm or side of the cove blocks flow in the channel on incoming tides. This is documented in one of Dr. Socolofsky's photos, PAC-51R SS-2 photos SS 085459 and JT 00277, the second of which is attached at the end of this argument as Attachment 1. That side of the cove can also be seen below in a blow up of Figure 1 from Dr. Tischler's memo to Ms. Garza in the application.[21]

[20] PAC-49R p. 24 l. 20 – p. 29 l. 2.
[21] Section of Figure 1 from the Port's Updated Application, AR-R4 (Tab I) p. 254.




The point of land coming from Harbor Island is in the upper right corner, and the four dots are items such as the sign and cone shown on the attached photograph. The underwater extension of that point of land and underwater obstructions continues well past the discharge location, as can be seen from the contours.

The attached photograph shows how the water is calmed and slows down on the right side of the cove side for an incoming tide. Thus, water to the north of the discharge flows slower than that to the south, a non-uniform flow condition that CORMIX cannot evaluate or consider. The CORMIX model assumes uniform flow, the same velocity and direction on both sides of the discharge, and the same velocity and direction above and below the discharge.

Instead of identifying these non-uniform flow conditions in its application, the Port chose to hide them. And now, the Port argues that any non-uniform flow, be they eddies, changes in flow directions, or changes in flow velocity, can be ignored. Even if that were true, the applicant has the responsibility

under TCEQ rules to provide all of the information it has so the ED and others can decide what is significant or not. It promised the Commissioners it would provide the site specific data it collected.

## C. Accurate Inputs and Proper Modeling (Issue G)

As is addressed by PAC's closing arguments, it is clear that the Port has failed to meet its burden of proof for modeling with the CORMIX and SUNTANS models. Protestants supports PAC's arguments and have no other arguments on this issue now, except to point out the failure of either the Port or the ED to consider the impacts of the bottom plumes that the CORMIX model predicts and that Dr. Jones, Dr. Socolofsky, and Mr. Osting all agree will be created by the Port's discharge. They agree that the CORMIX model provides predictions that are better representations of the bottom plumes in the far field than the Port's SUNTANS modeling provides.

The ED asked about the applicability of the predictions from the SUNTANS modeling in its June request for information from the Port.[22] It did so because it is responsible for evaluating the impacts of the discharge in both the near and far fields under issues A, C and H. Yet, there is no evidence the ED did any evaluation of these impacts of the bottom plumes in the far field predicted by the CORMIX modeling to survive for a kilometer, if not a mile.[23] And some of these plumes will have concentrations at or above 2 ppt over the concentration in the ambient waters. Moreover it is not just the salinity levels. Dr. Esbaugh explained[24] the resulting dissolved oxygen levels in such plumes can adversely affect species on the bottom, mussels, clams, oysters and benthic species.

## D. Proper Antidegradation Review (Issue H)

As is covered by PAC's closing arguments, it is clear that the Port has failed to meet its burden of proof to provide the ED with the data it needed to do a proper review for degradation. As a result, and

[22] AR-R3 (Tab H) p. 13.
[23] Tr. Vol. 1 p. 226 l. 16 – p. 227 l. 15; PAC-51R p. 17 ll. 1-8.
[24] PAC-45R, pp. 14–16.

due to the ED's own practices, no adequate review was done. Protestants have no other arguments on these issues.

**E. Adequacy of the Permit Requirements (Issue I):**

The draft permit does not provide the needed limits and requirements. As PAC's closing arguments make clear, the permit must be denied. It must be denied because of the failure of the Port to meet its burdens on the other 5 issues referred to SOAH for this remand proceeding. But it also must be denied because the permit does not have and cannot have the permit requirements that are needed to assure the permit is protective.

Because of the importance of this first-of-its-kind application, Protestants here want to emphasize that, if any permit were to be issued for a discharge from a seawater desalination facility, the permit should include the list of conditions and limits identified in PAC's closing argument on this issue.

But it is important to note that some of the most important of those limits or requirements were not subject to this hearing. For example, neither the Port nor the ED presented any monitoring plan for the receiving waters. Such a plan is necessary for 1) validating the CORMIX modeling predictions and 2) compliance assurance with the permit terms, such as a 2 ppt limit on the increase in salinity at 100 meters. There is no plan that has been subjected to review and comment by experts at TPWD or EPA or by those engaged of PAC. Such a plan is critical, as is evidenced from the testimony of Dr. Socolofsky, Mr. Osting, Mr. Wiland and even the Port's Dr. Jones[25]

## IV. CONCLUSION

It is important to remember that in the first hearing, Dr. Tischler testified, "Under the condition of high flow rates, the modeling would suggest that they [the Port] couldn't meet it [the 18.4% limit]." Tr. Vol. 3, at 264:20-265:3. In effect, the Port only admitted at the last hearing, under cross examination, what it knew all along - its diffuser design in the original application could not meet the standards in the

[25] PAC-51R p. 33 l. 18 – p. 35 l. 4; PAC-49R p. 28 ll. 7-17; PAC-53R p. 29 l. 13 – p. 30 l. 8; PAC-78R p. 34 (Brine Discharge Analysis Review p. 4).

draft permit. Yet, it did not withdraw its application, take the time to get the data needed for the evaluation, and file a new application with a discharge location and diffuser design that could be approved.

Instead, with the support of the ED, the Port waited until after the PFD was issued and then argued for a second try at meeting its burdens. That has led to an incredible burden on Protestants, PAC and the other parties. In light of the significance of the issues presented, EPA has withdrawn its waiver of review for this, and all other seawater desalination discharge permits in Texas and raised serious concerns that TCEQ must resolve. As noted in EPA's most recent correspondence, if TCEQ issues this permit without addressing EPA's concerns, the permit "will not be a validly issued NPDES permit."

In an effort to get its permit as quickly as possible, the Port agreed to the remand with a time period far too short to allow it to collect the data sufficient for a proper evaluation of the impacts on the marine environment. The Port collected data over just a four day period. It did not have time to review and correct any deficiencies in that data. Even Dr. Tischler was not aware that Parsons was going to claim there is no eddy, when he submitted his June 24, 2021 memo to Ms. Garza contemporaneously with the Port's filing of its amended application.

And now, at the last minute, the Port argues it can change to a new location for the discharge, not one in its application. This is a move similar to its effort to show at the eleventh hour at the last hearing that a different diffuser, not the one in the application, would provide adequate mixing. The Port has never taken the time to do the needed work correctly. And unfortunately, it has not, probably because it is aware that the workload on the ED staff and the staff's inability to check all of the data in the many applications it receives.

The Port has lost all of its credibility. Its efforts in the first hearing to challenge the credibility of the biology experts for PAC did not work. Nor has its efforts here with its absurd attack on the "distorted" figures of PAC's modeling and other engineering experts. In contrast, PAC's experts are not only much

more qualified to evaluate the impacts on marine species and the proper use of models here, they have been completely honest.

The permit application must be denied.

Respectfully submitted,

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## CERTIFICATE OF SERVICE

I hereby certify that, on April 12, 2022, a true and correct copy of the foregoing document has been served on all parties to this case, in accordance with the applicable service procedures.

/s/ Richard Lowerre
Richard Lowerre

**Attachment 1**