STRADLEY RONON

Stradley Ronon Stevens & Young, LLP
2005 Market Street
Suite 2600
Philadelphia, PA 19103
Telephone 215.564.8000
Fax 215.564.8120
www.stradley.com

Andrew S. Levine
Partner
alevine@stradley.com
215.564.8073

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Via E-mail
DNRECHearingComments@delaware.gov
Lisa A. Vest
Hearing Officer
DNREC
89 Kings Highway
Dover, DE 19901

Re: Comments of PhilaPort to Docket #2020-MULTI-0024, Applications of Diamond State Port Corporation's Proposed Development a New Container Port on the Former Chemours Property, 4600 Hay Road, Edgemoor, DE

INTRODUCTION:

These comments are filed on behalf of the Philadelphia Regional Port Authority ("PhilaPort"), which was established pursuant to Philadelphia Regional Port Authority Act of 1989 and is an independent agency of the Commonwealth of Pennsylvania. The comments pertain to the application filings of the Diamond State Port Corporation ("DSPC" or the "Applicant") with respect to a Subaqueous Lands Permit and Water Quality Certificate, a Notice of Intent To Implement Corrective Action and Post-Closure Care, and a Notice of Federal Consistency Certification Submission (collectively, the "Applications"). The DSPC has made these filings in connection with its intended development of the Edgemoor Development Project ("EDP") located at or about 4600 Hay Road, Edgemoor, DE, and is the site of the former DuPont Edgemoor Facility (recently transferred to Chemours Corporation), and is filed with the Delaware Department of Natural Resources and Environmental Control ("DNREC") as Docket #2020-MULTI-0024.

In review of the overall application packages reviewed in connection with Docket #2020-MULTI-0024, PhilaPort was struck by the dismissive overall tone of the studies with respect to any environmental impacts to wildlife and aquatic species. Studies appear haphazardly prepared and appear often to collect samples at times experts would and

should know fall outside the established timeframes for many of the most endangered species in the region. Environmental risk assessment studies do not follow known and well-established guidance from the United States Environmental Protection Agency ("USEPA"), sediment analyses fail to account for suspended solids and their known impacts to aquatic species, and data analyses fail to use the appropriate methodologies. For example, it is no wonder that the studies do not identify any subaqueous vegetative species: the samples were collected beyond the established time windows for such investigations. While the Applicant attempted to collect samples during the correct timeframes, that data is excluded.

One of the most disturbing aspects of the Applicant's submissions is the misleading Navigation Study that would create the illusion of safe transport to and from the proposed port, with no demonstration of how a vessel would actually turn in the turning basin. This proposed project raises the distinct prospect that a massive Post-Panamax vessel could lose steam in the middle of a turn, blocking the entire Main Navigation Channel. That contingency is simply not addressed by the Applicant who notes that additional safety studies are necessary to demonstrate the efficacy of the proposed turning basin, one of the key elements of the proposed port. If the purpose of enclosing such a report was to demonstrate the safe use of the turning basin, it achieves no such demonstration. Such an incomplete work product cannot be used to support such a massive development project.

Another gross deficiency in the Applications concerns the lack of any demonstration that there are any Confined Disposal Facilities with sufficient capacity to house the initial project dredging or the massive annual maintenance dredging. The Applicant appears to be requesting authorization for the use of the Wilmington Harbor South CDF, which has no meaningful remaining capacity, but at other parts of the application package appears to explore other CDFs, which not surprisingly also have no room for the Applicant's dredge. The Applicant at best clearly demonstrates that massive investment is needed to bring any of the referenced CDFs to a condition ready to accept the initial dredge. With respect to the annual maintenance dredging, there is almost no hope of sufficient CDF capacity, and thus the Applicant proposes to deploy shoaling fans on an unprecedented scale with no useful supporting data on the fate and transport of the sediment continually spewed into the water column of the Delaware River. There is no substantive study on whether these fans can create harmful noise for endangered species, how contaminated sediment may leach into the water column, the impacts of increased turbidity, or even whether the technology can work under these conditions.

In short, the Applicant provides what can be at best described as a rough draft application package. Typically, DNREC holds applicants to a much more vigorous standard of substantive responses to permitting requirements. PhilaPort expects that DNREC will recognize the numerous deficiencies in the Applications and reject these

Applications accordingly. Below please find PhilaPort's comments with respect to the Applications.

1. National Marine Fisheries Service ("NMFS") Scoping Letter

On February 28, 2019 the NMFS raised serious concerns about the proposed Edgemoor Development Project ("EDP"), and in particular points out that the Cherry Island Flats is adjacent to the development and represents an important area for striped bass as a resting, spawning, nursery and foraging area. There appears to be little or no follow up on this issue in Environmental Assessment ("EA") application which centers its analysis on shortnose sturgeon. Although the proposed site is a declared critical habitat for Atlantic Sturgeon and shortnose sturgeon, only the latter is analyzed, and the Applicant fails to follow through with respect to other Species of Concern, including Catadromous American Eels, the population of which appears decimating in the region. The comments of the NMFS, which appear to raise serious questions with respect to the proximity of the EDP to critical habitats stands in stark contrast to the Applicant's bold and apparently inaccurate statements that its project will not adversely impact any such populations. Therefore, the Applicant's approach to and treatment of these Species of Concerns should be carefully analyzed by both the NMFS and DNREC given what appears to be a pre-existing predilection by the Applicant to categorically minimize impacts to local species.

The NMFS Scoping Letter is curiously devoid of any reference to shoaling fans. Given the fact that these fans, if deployed, will substantial alter conditions in and around the site of the EDP, NMFS review of the proposed array and impact of these structures would be critical. Page two of the NMFS letter discusses the need for continuous maintenance dredging, which in other portions of the Applicant's submission are to be addressed by an array of 13 shoaling fans to eliminate or significantly reduce the need for annual maintenance dredging. As discussed below, the shoaling fans raise a number of technical questions with respect to the suspension of sediments in the water column and/or the movement of sediments across the riverbed. Further, even without the knowledge of the shoaling fans, the NMFS finds on page 18 of its letter:

> Continuous impacts to substrate and turbidity plumes [referring to scour from ships and propellers] are expected to decrease the value [for sturgeon] that habitat within the berth, approach channel and adjacent river channel have for conservation…[NMFS] believe[s] the development of the access channel and berth will result in the permanent loss and degradation of sturgeon habitat in a reach of the Delaware River that provides important habitat.

Any potential for the increase in turbidity and/or movement of sediments must be robustly reviewed by the NMFS, especially given the Applicant's extensive documentation of contaminated sediments.

Thus, the NMFS makes clear that the scope of the Applicant's review of Species of Concern must address specifically not only the Atlantic and shortnose sturgeon species, but with respect to striped bass, eel and other local populations that appear to be adversely impacted by the proposed EDP. These impacts must be analyzed in connection with both ongoing maintenance dredging required for the EDP, and with respect to the shoaling fans which in theory are proposed to displace the need for annual maintenance dredging but may exacerbate the presence of suspended and/or blowing sediments, and result in significant changes to the substrate.

2. EPA Scoping Letter

The EPA points out that the EDP will require that the Applicant fill approximately 5.3 acres of Waters of the United States to allow for construction of the pier. The EPA requires that the Applicant address the steps it took to minimize the amount of fill and how the loss of the Waters will be mitigated. The EA does nothing to address these issues, and as stated in various submissions by the Applicant, it does not believe any wetlands or waters will require mitigation. This is in direct contrast to EPA demands, and the requirements associated with a Section 404 Clean Water Act permit application (which is curiously absent from the suite of Applicant filings).

EPA also emphasizes the need for the Applicant to better describe how annual maintenance dredging will be conducted and funded. The Applicant states the USACE will be asked to fund and complete the annual dredging, but EPA requires that the EA must discuss the options available in the event funding from the USACE is not available, a distinct possibility. Apparently, based on other filings the Applicant intends to manage the annual dredging requirements by relying upon the shoaling fans to either greatly reduce or eliminate the need for such work, but again it is apparent that EPA had no information regarding this novel technology. It is essential that the Applicant present all data regarding the shoaling fans to both EPA and the NMFS to determine the extent to which their respective impressions regarding the EDP have been modified.

3. DSPC Federal Signed Application and Public Notification

a. Sections 22-23, and Environmental Questionnaire

The Permit Application notes that 5.5 acres of Waters of the U.S. (Open Waters) will be filled. As a result, the Public Notification for the permit is incomplete in that it does not note that 5.5 acres of Waters of the U.S. will be permanently impacted by filling. The intertidal and subtidal shallows located behind the proposed pier bulkhead are noted on the Permit Drawings as being present and filled as part of the EDP, but the Public Notice makes no mention of them. Consequently, the EA never identifies their value and

their loss. Not surprisingly, there is no mitigation that is proposed for these areas as required as the Applicant appears to ignore this acreage. Additionally, the Applicant materially fails to mention how many acres of Waters of the U.S. will be temporarily impacted by construction of the new harbor facility, and with that a discussion of proposed mitigation measures.

b. Part III – Consideration of a Dredging Proposal

i. Section A

The Application specifies that the dredge will be disposed in only one CDF: Wilmington Harbor South ("WHS"), which is nearly at capacity. Although other CDFs may be referenced and evaluated in Appendix 6 of the EA, this Application makes clear that only WHS is contemplated for any use. Further, as discussed in the EA, WHS lacks adequate capacity for this designated use for construction let alone annual maintenance dredging.

ii. Section B

The sparse response is wholly inadequate in that it incorporates by reference Appendix 6 of the EA, which it then purports to qualify as a "comprehensive plan for disposal sites." Appendix 6 contains no such comprehensive disposal plan, nor does the discussion in that Appendix broach the issue of dredge accumulation over time. The Appendix also fails to address the dwindling number of viable CDFs. The "Dredge Material Disposal Plan" presented in Appendix 6 is nothing but a feasibility evaluation that presents conceptual plans for disposal, not a careful evaluation of how existing capacity at WHS (the only CDF the Application references) can handle the deluge of dredged material from either the initial dredge or annual maintenance dredging.

iii. Section D, 4.0

Appendix 6 contains a very limited discussion of the compactability and settling rates of dredged material. The "Dredge Material Disposal Plan" only references bulking and shrinkage factors and does not explain how the bulking and shrinking factors were derived. Appendix 6 fails to comply with USACE EM 1110-2-5027 ("Confined Disposal of Dredge Material"), which would require a more comprehensive evaluation of settling rates, as well as material settlement and consolidation, with supporting calculations to demonstrate both the initial capacity and long-term capacity of the proposed disposal site.

iv. Section E, 5.0

This Section discusses environmental monitoring during the dredging operations including discharge and sediment transport. The Applicant proposes to monitor solely for total suspended solids, which does not adequately address the question posed. A more comprehensive plan must be submitted for monitoring and prevention of dumping of dredge material during sediment transport to the disposal site. At a minimum, site

specific Best Management Practices should be listed, and may include modified production rates, equipment inspections, pipeline discharge controls, and independent inspectors.

v. Section G

The Application requests information on maintenance dredging, requesting information on frequency and quantity. The Applicant references its responses from Appendix 6 stating: "EATD Appendix 6, accounts for ongoing, yearly maintenance dredge volume of 500,000 cubic yards." A review of the aforementioned Appendix to the EA indicates there is no mention at all of annual maintenance dredging associated with the EDP.

The Application further states that annual maintenance dredging is addressed in the body of the EA itself. The first reference is to Section 4.1.2.2, which does not reference any specific quantity of maintenance dredge materials. This Section emphasizes instead that the need for such annual dredging will be mitigated by the use of "shoaling prevention fans," a concept not mentioned in the Application:

> A potential indirect impact associated with implementation of the project is an increased demand of drying and storage facilities for sediments associated with maintenance dredging of sediments from the berth and access channel. The project is minimizing this potential indirect adverse impact through the installation of a system of shoaling prevention fans.

Section 4.1.5.2 contains a passing reference to the need for maintenance dredging, again with no reference to the amount or nature of the material. This Section does acknowledge that the construction of the wharf as part of the EDP will impact tidal flow, and will thereby increase the need for maintenance dredging (and associated CDF disposal capacity), with no discussion of whether there is any means by which to modify the wharf design to minimize such an impact:

> The forecast change in currents has the potential to increase sedimentation within the project site, which would necessitate maintenance dredging and a corresponding increase in the demand for dredged material dewatering and storage.

Lastly, the Application indicates maintenance dredging is addressed at Section 4.2.3, which at most references that the Application is contemplating the use of shoaling fans but does nothing to put this in the context of the quantity or characteristics of the dredged material.

4. Individual Permit Application Checklist

In the Plan Completeness section, the Applicant has indicated that "Location of any shellfish beds in close proximity to the area of impact" is not applicable. According to the DSPC Federal Signed Application, Environmental Questionnaire, Part IV, the project would fill 5.5 acres between the bulkhead and mean high water. This area currently contains intertidal and subtidal habitat, according to the EA. However, the EA does not evaluate the location or confirm absence of potential shellfish beds within the intertidal and subtidal area of impact. Any shellfish beds in close proximity to the area of impact should be shown on the plans.

5. EA Form

a. Section 3.2 (Harbor Dredging and Dredged Material Disposal Plan)

Section 3.2 appears to incorporate by reference Appendix 6 to the EA, "Dredged Material Disposal Feasibility Evaluation." The Evaluation concludes that there is sufficient capacity in the existing Delaware confined disposal facility sites ("CDFs") to accommodate the annual maintenance dredging. However, while the EA appears to make this conclusion, the aforementioned Evaluation makes no mention of yearly maintenance dredging for the EDP. Curiously the Evaluation details the use of several of the proximate CDFs for annual dredging in connection with other projects but makes no attempt to conclude that these existing CDFs have sufficient capacity to contain the annually dredged material. Section 3.2 also makes it clear that the Applicant expects that "… the CDFs utilized for the maintenance dredging would be the responsibility of the Operations Section of the … USACE…" That is, the Applicant expects that the taxpayers will cover their costs of annual maintenance dredging and disposal.

As discussed further below, the Evaluation discusses the very limited capacity available in Reedy Point North, and no realistic capacity at Reedy Point South unless material is removed to create additional air space or the dike elevations are substantially heightened. With respect to Wilmington Harbor South Disposal Area, dredged material can only be accommodated if the USACE elevates the dikes, indicating no current uncommitted capacity. Wilmington Harbor North is ruled out as a disposal site as it is closed.

The Evaluation nonetheless concludes that there is adequate capacity for interring the volume of material associated with dredging activities. The three CDFs that remain open for operations would nevertheless require substantial modifications to create new capacity for any significant quantity of EDP-related dredge. In short, the Evaluation actually concludes that at present unless the USACE takes action to create new capacity, there is no room for the immense quantity of annual dredge material that the Applicant foresees in this initial planning document.

b. Section 4.1.4 Site Hydrogeology

The EA does not adequately address how known contaminated groundwater at the former Chemours property will be managed or monitored as part of the EDP. Previous RCRA groundwater assessment referenced did not take into consideration the removal of 3 million cubic yards of material along the shoreline. The proposed dredging has the potential to expose previously confined zones of contaminated groundwater that may result in new preferential pathways for groundwater discharge to the Delaware River. The EA should demonstrate how contaminated groundwater will not degrade the surface water quality of the Delaware River in accordance with the State's Surface Water Quality Standards (7 Del. Admin. Code §7401).

c. Section 4.1.6 Sediment and Water Quality

This section does not consider the potential contamination of the Delaware River through the discharge of contaminated groundwater from the former Chemours site. As dredging activities take place along the shoreline, the process could create new pathways for groundwater discharge into the river.

d. Section 4.2.7 Project Site

As a general observation, the Application does not acknowledge or discuss that the construction of the new pier will create a shelf that will shade significant areas of aquatic habitat and will affect the ability of the area to repopulate with benthic invertebrate communities after initial dredging. This oversight may be a function of the EA's conclusion that:

> While construction of the proposed Edgemoor container port will result in the removal of substrate, no [subaqueous vegetation] or habitat of value was identified at the project site during the Assessment of Habitat and Benthic Resources.

However, the EA fails to consider intertidal/subtidal shallows along almost the entire face of the Edgemoor site as being valuable habitat. Intertidal and subtidal shallow areas are critical areas used by a variety of avian species as well as marine invertebrates. These areas are considered as Estuarine Intertidal and Subtidal wetlands and must be evaluated for purposes of impacts to these environments. Interestingly, in Section 4.2.1.1 (Dredging Area) the Applicant describes this area as "estuarine subtidal and intertidal habitat."

6. <u>EA Appendix 6 (Dredge Material Disposal Plan)</u>

The Dredge Material Disposal Plan put forth by the Applicant does nothing to provide assurance of disposal capacity, and does nothing to give the public any sense that the Applicant has a cohesive or cogent plan for handling an immense quantity of dredge material, much of which is contaminated by hazardous substances associated with prior Dupont operations at the Edgemoor Plant. The basis of capacity and use of all CDFs is on assumptions based on photos and diagrams, rather than directly consulting with the

owner of the CDFs, which could have provided detailed and reliable information rather than the speculative construct presented by the Applicant. Given the critical link that the CDFs provide to both the initial and maintenance dredging operations, capacity and access must be documented and assured before any permit can be granted in connection with this Application. It is also important to note that while this Exhibit discusses four CDFs, the Application itself references only WHS as the chosen disposal site.

The current proposed plan in this Exhibit fills the WHS CDF beyond current capacity, but there is also no accounting for known additional contributions to this CDF from maintenance of the Main Navigation Channel, which are completely authorized and permitted. Further, although references to annual maintenance dredging for the EDP remain murky in the Application, there appears to be no reference to how WHS will handle the load from 500,000 cubic yards of annual maintenance dredging, assuming the experimental shoaling fans do not operate as speculated by the Applicant.

The dredge is known to contain significant concentrations of hazardous substances, including PCBs and dioxin, as documented by the Applicant. The proposed Plan does not detail whether or not the proposed CDF is designed to handle these contaminants within the sediments or how the effluent from the CDFs will be treated to comply with Clean Water Act discharge standards. Further, given the history of the adjacent upland property (the former Chemours Edge Moor facility) and array of contaminants in the sediments, the lack of any testing form PFOSs and PFAS compounds appears to be a material omission in the study. Given that PFAS chemicals are regulated hazardous substances under Delaware's Hazardous Substance Cleanup Act of 2015, the Applicant should evaluate the presence of such compounds in order to adequately characterize the sediments it will be discharging into the Delaware River.

a. Section I

The preferred alternative for disposal at an existing CDF assumes permission would be granted under Section 217 of the Water Resource Development Act of 1996. Section 217(b)(1)(A) states:

> [The USACE] may permit the use of any dredged material disposal facility under the jurisdiction of, or managed by, the Secretary by a non-Federal interest if the Secretary determines that such use will not reduce the availability of the facility for project purposes…

As established in Section VI of Appendix 6, construction dredging would effectively fill the existing capacity. That is, the Applicant has established at the outset that there is no capacity available at WHS for its dredge material without substantial modification and vertical expansion of that CDF, which is neither planned nor funded at this time. Further, it is unlikely that such a vertical expansion is viable given the height constraints of the Water Resources Development Act.

Thus, the Applicant's Dredged Material Disposal Plan establishes and documents the lack of capacity for the removed dredge material, and there is no attempt to reconcile whatever limited capacity remains with ongoing obligations in connection with the Main Navigation Channel, which is already using the WHS CDF, and will be doing so (as previously permitted) for the foreseeable future. Consequently, the Applicant has failed to establish that its use of the WHS (or possibly other CDFs) "will not reduce the availability of the … [CDF] for … [Federal] … project purposes" given that its dredge would consume all available capacity for the ongoing maintenance of the Main Navigation Channel.

b. Section II

The Applicant appears to propose Reedy Point North and South Disposal Areas for use in connection with its dredging, but these too require substantial expansions and modifications.[1] Aside from the fact that no requests for use and/or approval for use have been granted by the USACE, current capacity is not feasible without significant alterations to the North Disposal Area requiring investigation, permitting, and design. Proposed alterations are based on assumptions with little physical investigation, and at best the Applicant speculates that a 12' vertical expansion "could be configured" at the facility to accommodate the Applicant's needs. This is pure speculation at this time as no planning or permitting to further such an expansion has been filed or modeled.

The Applicant acknowledges that Reedy Point South has limited access and the USACE has to continually remove materials within the CDF to accommodate new loads. Consequently, no capacity can be guaranteed at this facility.

The Applicant explores use of WHS for disposal. Once again, its analysis confirms that the facility lacks the capacity to accommodate the EDP's dredging requirements. The Capacity Analysis concludes that the CDF would require at least a 29' vertical expansion to meet the project's needs, a change that is neither budgeted nor currently pending before the USACE (and would like exceed height restrictions under the WRDA). Again, the Applicant's dredging burdens can only be alleviated by major modifications to existing CDFs, none of which have adequate capacity or pending plans for such modifications.

c. Section V

The Applicant presents data conveniently indicating that the dredged material from the EDP will dewater and shrink substantially, which aids its analysis of future capacity needs. However, there is no justification for the bulking and shrinkage factors

[1] The Application would appear to apply only to WHS. It is not clear is these references to Reedy Point North and South are for the purposes of ruling these facilities as ineligible for dredge disposal purposes, but there is a conflict between the Appendix and the Application in this regard, and only WHS should be considered as provided by the Application itself.

that are used to make these calculations. The volume estimates presented in tables 3,4,5, and 6 assume the bulked dredged slurry volume placed within the CDF will shrink back to the in-situ volume (or slightly above for clays) between dredging cycles. This is an aggressive assumption without supporting site specific data and technical justification and appears to be calibrated to achieve a desired outcome. How will this project maintain water quality standards at the CDF while managing capacity between dredging cycles based on the standards established under "Evaluating Environmental Effects of Dredged Material Management Alternatives?" See, EPA842-B-92-0008 (Revised 2004).

7. Essential Fish Habitat Assessment

The Applicant is highly dismissive of any impacts it will be causing as a result of the EDP. For example, in Section 4.2.1.2 (Critical Habitat), the Applicant acknowledges:

> The project site contains some of the elements of PBF 2 (soft substrate for juvenile foraging…). While dredging will disturb the soft substrate and impact benthic organisms, the impacts will be temporary and de minimus. Further, the benthic organisms identified within the dredge area or construction area are common, widely distributed, and can easily be found in adjacent areas of the rivers.

Because the EDP proposes to permanently remove the upper strata within the proposed dredge area, it is inaccurate to state that the impacts on soft substrate would be temporary or de minimus. The project proposes to permanently remove the upper strata which forms the current channel bottom within the proposed dredge area, exposing the lower stratum. The current and future proposed strata differ in terms of chemical composition, grain size, total organic carbon, and other physical and chemical parameters. The report fails to discuss and quantify short-term or long-term changes to the benthic community composition resulting from a drastic change in substrate physiochemistry. The project proponent has not provided sufficient evidence to conclude whether or not there is a *de minimus* impact. Additionally, the Assessment has also failed to describe how any changes in the benthic community composition would affect survival, growth, reproduction, and other sublethal endpoints of higher tropic level predators that rely on the benthic community for food, including protected species such as Atlantic sturgeon. The text does not sufficiently assess impacts to Critical habitats for Atlantic sturgeon, which are designated under National Marine Fisheries Services. 50 CFR Part 226; 82 Fed. Reg. 39160 (Aug.17, 2017).

The Applicant further acknowledges that:

> Suspension of sediment during dredging may result in a temporary reduction in dissolved oxygen concentrations although this condition will be minimal and localized.

Remarkably, the Applicant offers no scientific support or modeling for its calculation of dissolved oxygen impacts in this critical habitat. The Applicant does not describe mitigation techniques such as turbidity curtains, or any other mechanism, to minimize and localize the impacts it knows it will cause. Further, this suspension of sediments, and its resultant reduction in available oxygen for wildlife is never discussed in connection with the proposed shoaling fans, which by design continually pump sediment into the water column. This could create a longer-term oxygen-depleting condition that the Applicant chooses not to address despite its reliance on these shoaling fans to compensate for its proven lack of CDF capacity for the dredged material. For example, the suspension of these sediments could impact parameters beyond just dissolved oxygen to include pH and turbidity, which in turn could impact chemical solubility and toxicity. Considering the sheer volume of material that would be disturbed by these fans, this constitutes a material and misleading omission on one of the most critical aspects for review of the EDP. In short, it is likely that the impacts due to the reduction in dissolved oxygen could prove highly detrimental or organisms in and around the EDP.

In Section 7.1 the Applicant exacerbated the confusion regarding impacts to Species of Concern when it conducted the fish sampling (beach seine sampling) event on July 29, 2019. Given the importance of determining the species typically present, and analyzing the possible impacts to shortnose sturgeon, it appears dubious that the Applicant chose a sampling date known to occur outside the fall and winter time frames during which shortnose sturgeon would be expected to be present at and around the EDP site. Table 4-1 of the Applicant's Biological Assessment identifies this window of time for the sturgeon. Since the EDP involves permanent alteration (deep dredging to remove two strata) and regular, ongoing disturbance (shoal fan operation) of the river bottom in and near the project area, multiple sampling events throughout the year would be needed to accurately characterize the species that utilize the area.

Further, the Applicant's methodology for characterizing sub-aqueous vegetation ("SAV) in Section 7.1.4 is deceptive. The analysis relies on data from an October 22, 2018 SAV search, which was intentionally conducted outside the NMFS June 1 through October 15 time frame specified by NMFS for such surveys. The Applicant notes that a second effort to search for SAV was performed on August 1, 2019 and October 11, 2019, inside of the appropriate time window. However, only the 2018 SAV survey report is included in the EFH Report. The 2019 SAV survey report(s) should also be included for completeness, but in any case, the October 22, 2018 data should be excluded, indicating that the Applicant has submitted no information in its Application characterizing the SAV attributes of the project area.

Section 8 details many of the impacts associated with the EDP's construction process. The Applicant identifies the removal of substrate by dredging as a potential adverse effect but ignores any discussion of such impact on a continuing basis by use of

the shoaling fans, which will create a continuous condition in which the substrate is removed. Further while noise associated with pile driving is discussed, there is no analysis of the continuous noise created by the shoaling fans.

Further Sections 8.1.4 and 8.1.5 state that shoaling fans do not increase turbidity and instead create a horizontal flow of water to inhibit settling. This in in direct contradiction of Section 6.1 of the Biological Assessment, which states: "[E]ach fan within the group would be operated sequentially, in coordination with the tide, stirring the water column…" It appears questionable that a horizontal flow of water could be maintained while cycling shoaling fan operation and operating this novel configuration in a high-energy system such as the EDP. The shoal fans would be expected to stir the water column, as stated in the Biological Assessment, which could increase turbidity, for example by propagating eddies into the river bottom, or alter existing density gradients. The Applicant should revisit this analysis to accurately depict how shoaling fans are expected to operate, and there must be consistency in such information among the various reports incorporated into the Application. This constitutes a material deviation in how the fans operate and supports the proposition that the Applicant is proposing a novel technology that has little track record for performance under the conditions established at the EDP, and that it does not fully understand.

Lastly, the Report concludes that there are a number of environmental benefits derived from the EDP. The Applicant highlights the benefit of the shoaling fans by stating:

> The potential installation of shoaling fans to manage sedimentation within the berth area is intended to reduce the frequency of maintenance dredging. The reduction in disturbance frequency may promote colonization of beneficial benthic organisms in the newly exposed and cleaner river bottom in place of the pollution tolerant and invasive species currently found that the project site.

This conclusion is the first time the Applicant characterizes the wildlife in the EDP area as constituting "invasive" species. The complete analysis of determining which among the various organisms found in and around the EDP site are invasive in nature appears to be missing from the Report, and thus the conclusion is completely unsupported by data. Secondly, there is an implicit admission in this discussion that the annual maintenance dredging process, if shoaling fans fail technically, appears likely to increase the presence of invasive species. The Applicant does not attempt to reconcile this discrepancy, but it once again demonstrates that the EDP appears wholly reliant upon the implementation of shoaling fans to increase the purported benefits of the project, and to reduce the quantity of annual dredging in the hope that it will be sufficiently reduced to fit within the limited capacity of WHS.

8. Biological Assessment ("BA")

As an overall observation, the BA discusses shoaling fans in various portions, but does not cohesively examine their potential impact. In particular there is no hydrodynamic modeling, which should be performed to determine the full extent of impacts in order to account for the forces of the shoaling fans, especially given the unprecedented scale of this deployment. Further, the goal of the fans is to reduce the amount of sedimentation within the EDP thereby reducing the port's maintenance dredging while potentially causing increased maintenance dredging of the Main Navigation Channel or burdening other as yet unidentified property with over 500,000 cubic yards of sediment annually. The Applicant appears to have no concern regarding the fate and transport of the sediment spewed by the shoaling fans, and further fails to provide a single reliable technical study in support of the efficacy of this technology. At most the Applicant cites to manufacturer-conducted studies and marketing materials in support of much smaller deployments of this technology. The Applicant undertook no steps to observe how these fans function at currently operating sites, nor is any data from these sites provided to support any technical conclusions regarding the fans' performance, or the impacts of the downstream deposition of materials.

In addition, the planned dredging will significantly reduce the habitat of species dependent on tidal flat habitat (i.e., birds and benthic organisms). The Applicant failed to perform any detailed analysis to determine the full extent of impacts.

a. Impacts of Dredged Material

In Section 4.2.4, the Applicant notes that the current spawning location(s) of Atlantic sturgeon in the Delaware River have not been identified and acoustic tracking data suggest that spawning areas may be approximately 7-19 km upriver of the EDP.. The section also notes that Atlantic sturgeon spawning areas are typically characterized by moderate to fast current velocities and hard substrates. There are locations much closer to the Edgemoor site that fit descriptions of sturgeon spawning sites, such as Cherry Island Flats. If current spawning locations are not known, it is not possible to know whether they would be near the Edgemoor site. If data strongly point to spawning areas upriver of the site, the evaluation needs to show that all effects (visibility, noise, temperature, etc.) of the project construction and operation would not impact the sturgeon's ability to migrate to its spawning locations. The Applicant should conduct further study to determine whether or not spawning may occur in the short distance between Claymont, De and the EDP location in order to better assess the potential impacts of dredging on spawning grounds, as well as the presence of additional spawning grounds.

Section 6.1.1 (Risk of Entrainment of Sturgeon) references opinions that "the noise and turbidity associated with an operating dredge may elicit an avoidance response that would further reduce the vulnerability of the juvenile sturgeon to entrainment".

However, the section also concludes that it is "unlikely that the operation of the dredge would affect the movement or other behaviors of juvenile and adult sturgeon in the adjacent river." The bases for these two opinions, on entrainment and behavioral impact, are incompatible. If operating a dredge would elicit an avoidance response in sturgeon, the Applicant must evaluate whether this would be considered a behavioral impact to be evaluated under the Endangered Species Act.

The BA describes the interaction between the sturgeon and suspending sediments generated during dredging operations in Section 6.1.2. This Section states that there is relatively little literature on the effects of suspended sediments on sturgeon, but later concludes that it is unlikely that suspended sediment resulting from dredging for the project would have a significant effect on sturgeon. While the conclusion is strongly stated, it is clear there is little or no technical support for this dismissive conclusion, and no attempt to demonstrate that what little scientific literature is available on this topic pertains to the conditions at the EDP. There is also no discussion of mitigation techniques the Applicant could deploy to mitigate the presence of suspended sediments by using sedimentation curtains, fish exclusion barriers, or other techniques constituting best management practices. Without BMPs in place for both limiting the impact of dredging and keeping sturgeon away from the work site, there are no controls keeping sturgeon from being harmed and/or killed as a direct result of dredging operations.

In Table 6-3, the modeled concentrations of PCBs within mixing zone for stratum A is well above the chronic stream qualify objectives ("SQO") for PCBs and closer to the order of the acute SQO for PCBs. The modeled concentration of copper within the mixing zone for stratum A is also approaching the acute SQO for copper. The provided rationale for use of chronic SQOs as the threshold for this project includes the shifting of the plume and that sturgeon would be anticipated to move out of the plume. Given the length of dredging periods proposed and the low precision typical of plume models, the chronic SQOs are potentially a more appropriate threshold to use. Additionally, this section does not discuss species other than sturgeon that may be affected by contaminants, including benthic prey species consumed by sturgeon which could create a bioaccumulative impact.

Similarly, in Section 6.1.4 which considers impacts to benthic prey communities, the Applicant characterizes the dredging impact as temporary. However, the proposed project would permanently change the nature of the river bottom from a primarily silty and sandy environment to a primarily clayey environment. The section does not discuss the predicted impact of this change on benthic prey communities. That is, the BA acknowledges that there will be a change to the nature of the benthic community upon which the shortnose sturgeon rely for survival, but does not characterize how it will change, or even examine whether the new population will provide a reliable food source for other species.

b. Effects of Shoaling Fans (Section 6.1.6)

Given the importance of shoaling fans to the alleged reduction of annual dredging requirements, the discussion of this novel technology is short, vague and conclusory. This section does not address the potential for underwater sound or pressure waves from shoaling fans to affect biological species. As aforementioned, the Applicant discusses the potential impact of sound and pressure waves associated with the pile driving activities, which are more acute in nature. The shoaling fans may create chronic and sporadic conditions that may impact proximate species, but the Applicant fails to address this aspect of its proposed novel technology. The particles cannot remain suspended forever.

Additionally, the section cites that shoaling fans do not increase turbidity but does not provide a physical basis for this conclusion:

> field studies have shown that shoaling fans do not increase turbidity, but simply keep sediment suspended in the water column…and therefore, water quality will not be negatively affected."

This passage references SedCon Technologies, 2019 which is a white paper prepared by another port authority on behalf of SedCon, which manufactures the shoaling fans. There appears to be no peer-reviewed scientific literature or other impartial study that can corroborate SedCon's finding. Additional field studies should be provided, or pilot studies conducted to support the statement that water quality would not be negatively affected. For example, this Section does not discuss the effects of extended sediment suspension on sturgeon food sources (e.g., mussels), or whether clouding the water impacts fish foraging success given diminished visibility. Another important unanswered question relates to the impact of the fans on benthic habitat, particularly considering that sturgeon are benthic invertivores and this is in an area designated as critical habitat.

The Applicant has an obligation to provide a robust demonstration that these devices are well understood, and their impacts are both discernable and measurable. Given the fans' rotation to send the water current with the prevailing tide, is there a potential for sensitive species upstream and downstream but outside of the Action Area to be impacted? The Applicant has documented that there are sensitive sea turtles and whales downstream of the site (EA Section 4.2.3 Threatened & Endangered), but there is no data modeling any impact from the fans, or demonstrating its predicted rate, velocity, and/or direction of discharge.

The Applicant states: "Shoaling prevention fans do not increase turbidity, but allow sediment to stay suspended in the water column rather than settling on the river bottom." It is hard to reconcile how large quantities of sediment suspended in the water column have no potential to cause turbidity without a careful demonstration of the concentration of discharge and how quickly it may settle out of the water column. In

short, the Applicant states that it will need to conduct as much as 500,000 cubic yards of annual maintenance dredging. That material either gets placed in a CDF or blown through the water via shoaling fans. The Applicant has failed to account for how this quantity of material can be accommodated at or near the EDP without having any potential adverse impact on endangered and threatened species.

9. Appendix 20 (Sediment and Surface Water Quality Assessment)

a. General Overview

The sediment quality assessment focused predominately on near-surface sediments that could be recovered using vibracore sampling techniques. Stratum C was only evaluated from 5 test borings collected in 2016. Of the total estimated dredge volume, the near surface sediments represent a small portion of the total dredge volume. The Applicant assumes the elevated metals concentrations detected in Stratum C are naturally occurring, but no reference site data has been provided for justification. Additional environmental sampling should be performed to adequately determine potential contamination of the entire proposed dredge cut. Furthermore, the "Sediment and Surface Water Quality Assessment" did not adhere to the Delaware Statewide Dredging Policy Framework or the Inland Testing Manual (USEPA/USACE 1998). The Dredging Policy Framework outlines the required steps and methods for evaluating and reporting the environmental effects of dredging projects in a tiered approach. For example, it is assumed this is a Tier 1 evaluation, but it is not explicitly stated.

b. Section VI.a (Sediment Transport and Deposition)

The Applicant states that the EDP is located in the turbidity maximum of the Delaware River Estuary, the portion that mixes the saltwater and freshwater. Consequently, the sediment in the vicinity of the EDP becomes a "fluidized mud." Because of the unique characteristics of the sediments in this immediate area, the Applicant must perform treatability testing to determine how this sediment will react when placed within a CDF. Sediments with this nature and fine sediments in general with specific gravities similar to that of the surrounding water typically will not settle without addition of polymer/flocculants to increase particle size and settling velocity. If polymers and/or flocculants are necessary, effluent water from the CDF may become subject to pre-treatment standards prior to discharge. Moreover, the Applicant must analyze whether the controls currently in place at WHS (or other possibly proposed CDFs) are sufficient to prevent the release of such fine grains of sediment.

c. Section XII (Data Assessment)

The Applicant notes that anticipated dredged materials have been impacted to varying degrees by an array of contaminants including PAHs, PCBs, and Metals. CDFs are typically not built or suited for contaminated dredge material. Additional analysis for suitability of disposal including additional characterization at a denser sample frequency

should be performed to adequately characterize the anticipated dredge material. The samples collected are suitable for initial characterization. However, given the results, the ~20 samples collected are not suitable to adequately characterize over 3.3 million cubic yards of sediment given that typical disposal characterization for contaminated and impacted sites require 1 sample per 2000 tons.

The purpose of the Assessment as stated within the report itself is to assess ecological risks from substances found in sediments, soil, and surface water associated with the proposed project. Yet, the ecological risk assessment (ERA) did not follow standard guidance recognized by state and federal agencies, most notably the USEPA's "Ecological Risk Assessment Guidance for Superfund" ("ERAGS"). EPA 540-R-97-006, OSWER 9285.7-25, PB97-963211, June 1997. The ERA failed to describe the environmental setting, establish that data were suitable for use in an ecological risk assessment, provide an ecological conceptual site model, identify assessment and measure endpoints, explain how or why certain ecological screening benchmarks were selected, and provide an uncertainty assessment quantifying how risks might be underestimated. These elements of the risk assessment are critical to evaluating risks to the environment and understanding if there are data gaps that can be addressed to reduce uncertainty. Without following the proper USEPA framework, the ecological risk assessment is incomplete.

The ERA included mercury in the AVS SEM evaluation (Section XII). The acid volatile sulfide/simultaneously extracted metals (AVS SEM) evaluation was not performed in accordance with USEPA guidance "Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Metal Mixtures (Cadmium, Copper, Lead, Nickel, Silver, and Zinc), EPA-600-R-02-011." As noted in the title, the AVS SEM evaluation does not include mercury. As stated in Section 4.1 of the USEPA guidance document: "[a]dditional research is required…to derive an ESB for other metals such as *mercury*" (emphasis added). There is no basis for excluding mercury as a contaminant of ecological concern (COPEC) based on AVS-SEM. In the absence of mercury chemical speciation data, when comparing mercury to ecological sediment screening values, standards based on methyl mercury should be used, especially considering site-specific TOC values. USEPA Region 4 and Los Alamos National Laboratories are examples of two widely accepted sources of ecological sediment screening benchmarks for methyl mercury sediment screening values protective of both benthic invertebrates and wildlife.

The ERAGS ERA guidance requires that analyte detection limits be compared to ecological screening values. Samples with detection limits that are higher than screening benchmarks are not suitable for use in ecological risk assessment. Data with reporting limits higher than screening levels should not be used as a basis for eliminating analytes as COPECs. This data usability evaluation must be performed before the ERA can be completed. The ERA further states that NOAA SQuiRt tables were used as sources of

ecological benchmarks. NOAA stopped updating SQuiRT tables in 2008, and these should not be used as a source for screening benchmarks. Risks should be rescreened using benchmarks from sources that are more up to date.

Available ecological screening benchmarks for sediment are largely based on laboratory studies that measured adverse effects to benthic species and are not protective of wildlife. Any conclusions about negligible risks to wildlife are invalid if based on sediment screening benchmarks alone, which is the Applicant's approach. The ERA should evaluate risks to birds and mammals using food chain models.

PAHs in sediment are additive or cumulative with respect to effects to benthic invertebrates. The ERA assessed sediment PAHs individually. In Section XII, The ERA should assess cumulative effects of PAHs as described in "Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: Procedures for the Determination of the Freely Dissolved Interstitial Water Concentrations of Nonionic Organics EPA/600/R-02/012."

The ERA (Section XII) found that concentrations of certain metals in stratum C were above sediment screening benchmarks. Under ERAGS ERA guidance, the ERA should proceed to a baseline ecological risk assessment. Risks to and from contaminants of potential ecological concern should be assessed using toxicity tests.

d. Table 1.6

Considering that stratum C will become the new channel bottom, five sediment analytical chemistry samples (Table 1.6) is insufficient to characterize future conditions especially factoring the size of the dredge area. A significantly larger and more robust sediment analytical sampling program that characterizes the zone of biological activity and that accounts for bioturbation and scouring zones needs to be executed in order to demonstrate that dredging will not expose receptors to harmful concentrations of chemicals.

e. Section XIV

Evaluation of CDF Effluent Water Quality uses a particle density of 2.65 g/cm^3, Effluent analysis should be recalculated using actual site data. Silts and clays are typically much lighter and less dense than the bases of this calculation. As referenced in Section VI.a, sediment within this area, specially stratum A have been described as a "fluidized mud" which will take significantly longer to settle unless combined with flocculating agents. Again, if flocculating agents are appropriate, then additional water quality studies of CDF effluent is required to rule out the need for pretreatment.

10. Navigation Study

While the Navigation Study examines berthing using the turning basin and ship passing scenarios in its simulations, it does not discuss the appropriateness of the turning

basin relative to its location in the center of the main navigation channel and whether the USCG or the USACE have approved the placement of the turning basin at that location. There is no indication of how ships can pass if a turning is occurring, nor is there any indication of what would happen in the event the ship lost steam during a turn, blocking essentially all of the Main Navigation Channel.

The Navigation Study notes that the simulation does not consider the impact of berthed ships on the pier's fendering system from swells from passing vessels. A Passing Vessel study that examines this phenomenon should be conducted. It is anticipated that when Post-Panamax ships begin transiting the navigational channel, large swells with the potential to impact pier infrastructure through displacement of berthed vessels will be very likely. The Study indicates that "Berthing procedures, tug power, and emergency procedures would be developed in future simulation studies." It is important to examine how tug boats can maneuver Post-Panamax vessels at times of high winds and tide, and in the event a vessel loses steam during a turn. There is no indication such studies have been conducted, and thus the Navigation Study is wholly inadequate to comprehensively address design and safety issues associated with this proposed turning basin.

11. Economic Impact Study

This Study purports to examine the current economic factors associated with the Port of Wilmington's operation using the IMPLAN model to forecast direct and indirect jobs and revenues associated with the operation and expansion of the Port. The Study has very limited value and establishes that neither the Port nor the DSPC has the resources to adequately expand capacity.

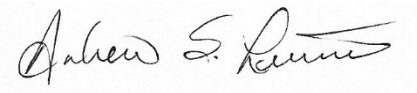
Any future meaningful economic study should carefully evaluate the extent to which volume anticipated at the EDP constitutes new business with respect to all of the Delaware River ports, or whether any of the revenue to be derived at the EDP constitutes parasitizing existing business upriver. The distinction will be critical in analyzing the extent to which the EDP adds revenue and value to the regional economy or whether it is taking business from the upriver ports, which will be material to the cost benefit analysis to be undertaken in connection with the regulatory evaluation of the EDP. Only new business should be counted toward the benefits analysis for the EDP, and all jobs and related indirect benefit data must relate solely to new business, as the existing regional business is already accounted for in the approvals associated with the upriver ports.

CONCLUSION:

PhilaPort notes that the Applications are incomplete and rely on incomplete studies and assessments. For all of the above-stated reasons, DNREC should reject these applications and require that the Applicant provide complete application packages that reflect a robust investigatory process with respect to environmental conditions, endangered species, dredge handling and disposal, and safe vessel turning procedures. Kindly contact

the undersigned with any questions you may have and thank you for the opportunity to participate in this proceeding.

Best regards,



Andrew S. Levine
Partner