Compliance with Delaware River Basin Commission Requirements

at the Dock 2 at the Gibbstown Logistics Center

Delaware River Mile 86, Gloucester County New Jersey

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Executive Summary

Projects reviewed by the Delaware River Basin Commission (DRBC) are required to comply with standards set forth in the Delaware River Basin Compact and the Delaware River Basin Comprehensive Plan, including its Water Code (Code; 18 CFR 410). In this report Schmid & Company identify certain environmental aspects of the Gibbstown Logistics Center Dock 2 application at a major marine terminal being developed on chemically contaminated ground in Gloucester County, New Jersey (Docket No. D-2017-009-2). The review is based on paperwork secured from various agencies by the Delaware Riverkeeper Network through requests for public records of project applications, approvals, and modifications, and the administrative record provided by DRBC for this hearing. The findings and conclusions set forth below are expressed with a reasonable degree of scientific certainty, as supported by the listed references. These findings and conclusions may be subject to modification or supplementation upon review of additional information.

The report concludes that there is significant potential for degradation of significant aquatic resources by implementation of the proposed project as presently described, which cannot reasonably be approved by DRBC in the absence of relevant information concerning Dock 2 plus the intimately related work at Dock 1 and the remaining 371 acres of the marine terminal plus its surroundings. Neither DRBC, other regulatory agencies, nor the public have been informed of the full extent of proposed facilities and the probable environmental consequences of terminal construction and operation as Dock 2 significantly enlarges and intensifies the previous impacts of Dock 1 construction and ongoing marine terminal construction. Available project plans are incomplete and fail to disclose the full details of the Dock 2 project and its impacts, especially in the context of the remainder of the terminal. In consequence, it is not possible to demonstrate that the proposed terminal construction and operation will not violate the Comprehensive Plan and its Water Code, including Zone 4 water quality standards.

In addition, as stated by the National Marine Fisheries Service (NMFS) in its comment letter of 30 May 2019, the construction of the additional Dock 2 wharf was not included in the original evaluation of the terminal project's direct, indirect, individual, and cumulative effects on aquatic resources, but instead it was improperly segregated out from the project's reviews under the National Environmental Policy Act (NEPA) and other laws including the Comprehensive Plan for the Delaware River Basin. Likewise, as pointed out by the US Army Corps of Engineers (Corps) in its 16 July 2019 Public Notice, no consideration has been given to the additional impacts on wetlands associated with construction of a truck bypass and access roadway essential to terminal operations. Without this improved access, Dock 2 could not function, and 2020 Corps approval of Dock 2 was conditional upon all trucks servicing Dock 2 using the bypass (USACE 2020).

Parts of a logistics center to enable the international import and export of goods and export of bulk liquids have received approvals for redevelopment within and adjacent to 1,856 acres of former DuPont land fronting on the Delaware River at approximately River Mile 86. Large parts of the DuPont property were long used for heavy industrial manufacturing of various industrial chemicals, for chemical research, for importing and exporting raw materials and products, and for testing explosives. Numerous discharges of waste materials into water, soil, and air occurred here for more than a century. Many spills were recorded onsite during the most recent decades of now-discontinued chemical manufacturing which terminated in 1995. Some parts of the property known to be contaminated have been undergoing cleanup for decades, including lands within the marine terminal redevelopment site. The site of the proposed marine terminal is a longstanding source of existing pollution of the River. It is not clear that legacy and future pollution has been or will be fully abated here, and the potential exists for resuspension of legacy pollutants by Dock 2 construction and operations with release of these pollutants to the Delaware River. The overall property cleanup is ongoing, incomplete, and the subject of March 2019 litigation against the responsible parties by the State of New Jersey (NJDEP *et al. versus* E.I. DuPont de Nemours & Co., Chemours Co. FC, *et al*.; NJ Superior Court, Gloucester County, Docket GLO-L-000388-19).

The State contends that the full extent of soil and groundwater contamination extending into the marine terminal, as well as into other parts of the former DuPont property, has never been adequately investigated or disclosed. Cleanup activities apparently have been expedited by the responsible parties in some parts of the proposed terminal, and DRBC concluded in Section B on page 5 of its December 2017 Docket No. D-2017-009-1 approval that the Chemours site remediation has been effective. Until the current State of New Jersey litigation is resolved, however, that conclusion appears both unsupported and premature. The DRBC docket for Dock 1 did not identify the legacy chemical contamination at the terminal site connected with Dock 2. This major information gap makes it impossible for the DRBC to conclude that Comprehensive Plan resources will not be compromised as a result of Dock 2 construction and operation.

Considerable fill material is being placed on the terminal property to raise new facilities that will serve Dock 2 above currently expected tidal flood elevations. There is no mention of design to accommodate sea level rise as a result of global warming. DRBC and cooperating agencies have documented the increasing rise of sea levels due to climate change resulting from increasing carbon dioxide in the atmosphere from combustion of fossil fuels (Titus 1986, DRBC 2019). High water levels in the Delaware River are governed by sea level rise, and they threaten low-lying facilities along the River (Kummer 2019). The cumulative effects of Dock 2 construction and operations, which will exacerbate damage already caused by Dock 1 and by the on-land terminal areas serving Dock 2 and Dock 1, on the River's fish, other aquatic life, and wildlife have not been fully evaluated by DRBC or other agencies or disclosed to the public.

When the marine terminal and Dock 1 were reviewed and approved by DRBC in December 2017 (Docket No. D-2017-009-1), Dock 2 was not disclosed as part of the facilities included in the application, nor was its intended use primarily for the export of liquefied natural gas (LNG) and other bulk liquids (e.g. liquefied hazardous gas) by oceangoing tankers mentioned. Detailed plans for the terminal were not submitted to DRBC in the Dock 1 and terminal application prior to that docket approval. Instead, plans were required to be submitted per Section C.1.c. of the December 2017 docket approval. However, to the best of our knowledge, they have never been submitted to the DRBC and have not been provided by the DRBC for review for these proceedings. These missing, detailed plans specifically were described to include "the proposed automobile import area/parking lot; processing facilities; perishables, bulk-liquid, and bulk cargo handling areas; warehouses and associated buildings; stormwater management system (including stormwater outfalls); and associated infrastructure." Absent such plans, it is not possible to ascertain the likelihood of compliance of proposed Dock 2 operations with the Comprehensive Plan or its Water Code. The water quality, fish, and wildlife of the River all are susceptible to what is done or not done to manage the long-term discharges of pollutants that will flow from the terminal which services Dock 2, substantially increasing the impacts of the prior DRBC docket.

The NMFS expressed the same concern regarding water quality impacts from the construction and operation of the terminal in its comment letter to the Corps dated 5 May 2017 (Bullard 2017, page 21). Additionally, how the proposed marine terminal will interact with ongoing remediation of onsite contamination is nowhere clearly analyzed. Furthermore, there is incomplete environmental inventory information and there are unsupported representations in the 2019 Dock 2 waterfront development permit application by Ramboll as well as its supplements. For example, submerged aquatic vegetation was surveyed by the applicant in the Delaware River shallows only for an east-west distance of about 1,600 feet at Dock 2, but the dredging extends about 3,000 feet along the navigation channel. There appears to be significantly more submerged aquatic vegetation of national significance to aquatic life at risk of impact by nearby dredging and ship operations than has been acknowledged or evaluated by DRBC or any other agency. There is no mention of the potential impacts of stormwater discharges on nearby submerged aquatic vegetation or fish in the Ramboll February 2019 compliance statement in its waterfront development permit application.

Protected Uses

The DRBC is chartered to assume jurisdiction over proposed "projects", as defined in the Compact, and to control future pollution and abate existing pollution in the waters of the Basin by industrial or other waste originating within a signatory state, whenever it determines after

investigation and duly noticed public hearing that the effectuation of the comprehensive plan so requires. DRBC has done so to ensure that projects shall not injuriously affect waters of the Basin (Compact Section 5.2; Code 3.1.1). Water Code standards are an integral part of the Comprehensive Plan. When reviewing projects, DRBC must determine whether a project would "substantially impair or conflict with the Comprehensive Plan." (Compact Section 3.8).

The Code states that water uses shall be paramount in determining stream quality objectives which, in turn, shall be the basis for determining effluent quality requirements (3.10.2.A.) for projects reviewed by the DRBC. The actual quality of those effluents must be monitored to assure compliance. The Code further states that the quality of Basin waters shall be maintained in safe and satisfactory condition for wildlife, fish, and other aquatic life (Code 2.200.1; 3.10.2.B.). In Zone 4 of the Delaware River where this project is located, the water uses to be protected include (a) maintenance of resident fish and other aquatic life, (b) passage of anadromous fish including endangered sturgeon that must pass by the project site when traveling between their freshwater spawning beds and the Atlantic Ocean, and (c) wildlife (Code 3.30.4.B.2). Regarding wetlands (Code 2.350.2), DRBC is "to support the preservation and protection of wetlands by (A.) minimizing adverse alterations in the quantity and quality of the underlying soils and natural flow of waters that nourish wetlands; (B.) safeguarding against adverse draining, dredging or filling practices, liquid or solid waste management practices, and siltation; (C.) preventing the excessive addition of pesticides, salts or toxic materials arising from non-point source wastes; and (D.) preventing destructive construction activities generally."

It is normal practice for DRBC to defer to other agencies with expertise in various matters in order to promote regulatory efficiency, when other agencies have already done their analyses of full information provided by applicants concerning potential impacts, including the cumulative impacts, of projects. That information is incomplete for the construction "footprint" and surrounding areas at Dock 2. Moreover, it is obvious that Dock 2 cannot function in the absence of on-land terminal facilities for which plans have not been provided. It is not appropriate for DRBC to abdicate its responsibility to secure compliance with the Comprehensive Plan by failing to review in their entirety the impacts, including cumulative impacts, of docketed projects such as the Gibbstown Logistics Center. Based on our review of the records, DRBC did not have the information necessary to conclude that the project does not conflict with DRBC requirements under the Code and the Comprehensive Plan.

Potential Impacts from Dock 2 Construction and Operation

The applicant states that "the Site is ripe for redevelopment" on page 1 in its February 2019 compliance statement by Ramboll accompanying its 2019 waterfront development permit application. This clearly is not the case, because the extent of chemical contamination at the former DuPont property has not been fully identified, much less remediated, according to the State of New Jersey in its 2019 litigation. Partial remediation efforts are ongoing and not complete.

Submerged Aquatic Vegetation (SAV)

The applicant acknowledged the potential for water pollutants to be generated by on-land operations at the terminal (page 6, Ramboll letter to Corps dated 18 September 2018). The proposed stormwater to be discharged from the site may adversely affect the wild celery vegetation (a submerged aquatic plant also known as eel grass) in riverine wetlands near Dock 2. Most of the marine terminal site also occupies naturally acid-producing soils, according to maps published by the New Jersey Geological Survey. Acid soils tend to release various metals such as aluminum and arsenic into solution, in which form they can poison plants and animals. Such soils require special measures to avoid future water pollution, but no plans to address acid-producing soils in the on-land facilities serving Dock 2 have been presented. Discharges originating in acid-producing soils from the operations at Dock 2 could alter water quality, negatively affecting the SAV beds and the animals that use them.

Nowhere has the applicant sought to document the success of its efforts to date to minimize or monitor adverse impacts during construction of already approved segments of the marine terminal. For example, a test plot of wild celery was planted in September 2018 according to page 5 of Ramboll's February 2019 compliance statement for its waterfront development permit application, but there is no record of survival by the plantings in these presumably contaminated sediments. Given the concerns raised by the major Dock 2 application, it would be prudent for the applicant to demonstrate and document its successful implementation of required measures to minimize and mitigate impacts from the more modest construction now complete at Dock 1 and other on-land work underway to serve the terminal. (At least some of the on-land construction underway appears intended to serve Dock 2, as visible in City of Philadelphia online Pictometry photographs taken during November 2019.) Such a demonstration would be centrally relevant to any cumulative assessment of the Dock 2 project in the context of Dock 1 and Dock 2's operations, including the on-land activities required for the docks.

The expected concentrations of polychlorinated biphenyls (PCBs) and many other legacy organic and inorganic contaminants including metals and polycyclic aromatic hydrocarbons

(PAHs) in future stormwater runoff have not been stated. The terminal site is known to have been contaminated with such pollutants, which are highly toxic in the aquatic ecosystem in very low concentrations. It is not clear that the future exposure of submerged aquatic vegetation and other aquatic life to industrial pollutants can be eliminated here, inasmuch as there are no drawings showing in detail the planned placement of facilities, drains, or structures. Furthermore, the location of pollutants or of stormwater or waste control facilities and how these are to interact are not shown and, to our knowledge, no monitoring of stormwater quality or surface water at the waterfront has clearly been imposed yet at this terminal. There is no way that DRBC can know whether or not its applicable water quality limits as set forth in the Water Code are at present being violated for many chemical parameters during current construction activities or will be violated during future terminal operations.

Many chemicals were present historically in stormwater runoff and in industrial wastewater from this site and were discharged in quantities adequate to contaminate sediments in the Delaware River. For example, sediment PCB and benzo(a)pyrene concentrations in the vicinity of Dock 1 are shown on Ramboll's 2016 drawing labeled "Impacted Silt Area" in the Ramboll 2016 Dredged Material Management Plan. It reported PCB-contaminated sediments to range from 2.7 to 29.5 feet deep within the area to be dredged. The proposed dredging for Dock 1 was expected to encounter 169,000 cubic yards of sediments exceeding PCB and/or PAH limits. Many pollutants bind preferentially with fine-grained materials (silts and clays) rather than larger particles of sand or gravel, and that is where they are found in the nearshore sediments at this site. Here, the highest legacy concentrations of organic and inorganic chemicals in fine-grained substrate materials are nearest the shoreline of the Dock 1 area, as acknowledged on page 14 of Ramboll's letter to the Corps dated 18 September 2017. The December 2017 DRBC approval of Dock 1 included a condition C.1.l. requiring site investigation and a sampling program for future PCBs in stormwater, but no information regarding compliance has been provided for review. The applicant claims (page 7 in Ramboll's letter dated 18 September 2017 to the Corps in response to NMFS comments) that contaminants resuspended in dredged sediments will not exceed background concentrations in the Delaware River, but no monitoring has been required that might confirm this. If the limits in the DRBC Code for toxic chemicals are exceeded, the fish seeking to use key beds of submerged aquatic vegetation may be directly impacted, and the productivity of the wild celery is likely to be reduced in water by turbidity and sediment that exceeds DRBC standards. When the highly productive aquatic vegetation is damaged, habitat quality for juvenile and adult fish will be reduced. Ospreys and endangered bald eagles higher up the food chain that currently use the water in the near vicinity of the site for feeding would, in turn, be harmed. As stated previously, these resources are to be protected according to the DRBC Comprehensive Plan.

Riverine wetlands consisting of beds of wild celery (*Vallisneria americana*) of national significance totaling 3.8 acres have been partially identified by the applicant in the vicinity of the proposed trestle at Dock 2. There is no accurate inventory of submerged aquatic wetlands in the Delaware River, but the applicant has failed to survey all the wild celery beds close to the new dredging for Dock 2 berths. The applicant's submerged aquatic vegetation (SAV) survey stops about 450 feet west of the existing remnant wooden dock structure, while the proposed dredging extends westward for about 1,400 feet farther. It is not clear that the nearshore SAV east of Dock 2 and west of the Dock 1 dredging area was surveyed or whether any vegetation there will be affected by construction dredging or industrial stormwater runoff.

Submerged aquatic vegetation beds are known to outperform other habitats (reefs and marshes) as sites for fish and invertebrates to obtain high density and rapid growth. DRBC Zone 4 of the River surrounding Gibbstown has been shown by many surveys cited by NMFS as utilized at various times of year by great numbers of individuals of many species of fish, both adult and juvenile. Those fish benefit from the aquatic vegetation where they can feed and hide. How close the additional dredging is to come to aquatic beds atop the broad shallows north of Monds Island and west of the Dock 2 trestle is not revealed in the applicant's drawings and survey reports, because the extent of this potentially-damaged, nearby resource of national significance has not been shown to DRBC or other agencies. The turbidity from new dredging for port creation and future maintenance dredging will render the water cloudy and thereby reduce plant growth in the wild celery beds east and west of the terminal berths during the estimated 6 to 8 months of additional dredging needed for Dock 2. These riverine wetlands comprise a vital resource of outstanding biological significance in the Delaware estuary, and a Special Aquatic Site under the Section 404(B)(1) guidelines of the federal Clean Water Act.

Some wild celery (0.06 acre), a wetland resource here of national significance according to NMFS, was displaced entirely by dredging for Dock 1 construction, and more is proposed to be damaged directly at Dock 2. As the NMFS stated in its 15 November 2017 letter, the transplanting of wild celery in the Delaware River is not a routine practice, and it has not been demonstrated as a reliable and predictable mitigative measure. Thus, the City of Philadelphia was required to replant twice as much wild celery as it intended to destroy (ratio 2:1) elsewhere in the Delaware River to compensate in advance for proposed dredging at its Southport project. The replanted wild celery may or may not have survived, but the proposed dredging eventually was abandoned and that port development is on indefinite hold. NMFS prudently recommended that wild celery be replaced at this Gibbstown marine terminal at a ratio of 3:1 to compensate for some of the uncertainty of the proposed mitigation. By proposing to transplant wild celery here at a ratio of only 1:1, however, the applicant clearly has not sought to maximize potential compensation for damage to the submerged aquatic vegetation on and adjacent to its property, where it apparently could seek to expand the wild

celery beds significantly. There has not been any reported monitoring of wild celery transplanting success here for the test area planted in September 2018. Whether all the required transplanting of wild celery has been done, now that construction is complete at Dock 1, is not known. Such information could inform assessment of likely success of proposed mitigation planting for Dock 2.

DRBC cannot rely on other agencies to protect the vital riverine wetlands at Dock 2, vital habitat for submerged aquatic vegetation. NMFS recommended in its letter of 15 November 2017 that dredging approach no closer than 500 feet to the aquatic beds of wild celery during the growing season that ends 31 October and that the nearby aquatic beds plus an offsite reference bed be monitored annually during the growing season for at least five years to identify any degradation of this key resource from terminal operations. No long-term monitoring of wild celery was proposed by the applicant here other than the requisite monitoring of transplanted rootstocks in the small mitigation area between the two docks for five years. No backup plan has been provided, should the transplanted wild celery beds not attain healthy rootstocks at comparable density to those impacted by terminal construction or if adverse impact were occasioned by terminal operations.

Impacts on 2.1 acres of wild celery bed east of Dock 1 were to be monitored during the dredging for Dock 1 after approval of a monitoring plan by the Corps and NMFS. No copy of this plan or reports of results from this monitoring have been provided, and no similar requirements have been imposed for monitoring the larger bed of wild celery to the west of Dock 2. This gap in the protection of submerged aquatic vegetation at the terminal so far should make it impossible for DRBC to approve the Dock 2 project in the absence of conditions requiring additional mitigation and monitoring of submerged aquatic vegetation.

Additional Water Quality Impacts

The applicant proposes initial dredging of 665,000 additional cubic yards of Delaware River sediments to create a 45- to 47-acre basin next to the proposed offshore Dock 2, which is designed to service two oceangoing vessels requiring 40 feet of draft. Dock 2 dredging was approved allowing 1 foot of overdraft to a maximum depth of -43 feet mean lower low water (0 feet MLLW here is 3 feet below the 1988 National Vertical Datum). Dock 2 applications requested 2 feet of overdraft, down to -48 feet MLLW as shown on Corps permit drawings and used that depth to calculate 665,000 cubic yards of spoils. The Corps apparently has not noticed the 5-foot discrepancy in dredging depths authorized by the text versus the drawings in its 2020 approval. Moreover, it is not clear why Dock 2 needed 2 feet of overdraft, when Dock 1 requested only 1 foot of overdraft to -43 feet MLLW in its text and on some of its

drawings (Ramboll 2016; Moffat & Nichol 2016). When Dock 1 construction was authorized to remove 371,000 cubic yards from 27 acres of public land beneath the Delaware River at the terminal over a five-month period, planned Dock 2 dredging and construction were not mentioned. Dock 2 construction will entail nearly double the dredging performed for Dock 1 in both sediment volume and area, significantly prolonging the duration of ecosystem stress caused by suspended sediments through two additional winters. How much reduction in the dissolved oxygen vital for the survival of fish and other aquatic organisms will occur has not been addressed, and DRBC minimum dissolved oxygen requirements for Zone 4 may not be met during the months of proposed dredging.

Maintenance dredging of the berths for Dock 2 (and for Dock 1) is expected to be needed at intervals of about ten years. That dredging will provide recurrent additional stress to the ecosystem---aquatic vegetation, fish, and wildlife---from resuspension of sediments and reduction of dissolved oxygen, as the applicant acknowledged on page 23 of the Ramboll Atlantic and shortnose sturgeon impact assessment report included with its 1 March 2019 applications to NJDEP.

The applicant proposes to employ several methods to reduce the suspension of sediments and generation of turbidity during dredging. However, no measurement of turbidity or total suspended solids or chemical parameters including dissolved oxygen has been required during the mandatory twice weekly monitoring inspections of dredging operations, so DRBC will have no way of knowing whether its established limitations on dissolved oxygen and other regulated parameters as set forth in the Code will be met during the additional months of proposed dredging for Dock 2.

The applicant has not addressed the risk potential for future spills of liquefied natural gas, liquefied hazardous gas, or other cargo into the River and what possible damage such spills might cause to water quality or aquatic life. The 4 April 2019 Corps public notice states that pipelines will extend out to the ship berths atop the pile-supported structures to convey petroleum products and other materials including fire retardants from the shore out to the ships. There is no information concerning the composition of the fire retardants to be used. There is no description or stated prohibition on kinds of fire-retardant chemicals that will be used here, many of which products are known to be highly toxic to aquatic ecosystems and human health. No estimates have been provided of exhausts that may settle on the water and petroleum that may be lost into the water from oceangoing ships or from on-land vehicles. These not-estimated emissions will deposit on water, vegetation and land surfaces, adversely affecting the quality of the receiving waterways. Without further information on these issues, it is not possible to fully evaluate the threat posed to water quality or aquatic biota by Dock 2 operations.

The section of the Delaware River estuary that includes the marine terminal is known to support concentrations of young fish in spring, such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), and hickory shad (*Alosa mediocris*). These are key forage species consumed by sport fish sought by recreational fishers. NMFS describes the area as regionally significant for striped bass (Morone saxatilis; Chiarella 2019), a prime target of recreational fishers. Alewife and blueback herring populations have declined drastically since the 1960s. The applicant acknowledges that water quality will be decreased during dredging operations, but maintains, based on no onsite testing, that the impact will be minor and temporary and not endanger fish or aquatic habitat. Yet the applicant has not offered or been required to plant SAV at 3:1 as recommended by NMFS, (for which there is room to plant onsite) and which, if successful, would help reduce long-term impacts on these tidal riverine aquatic bed wetlands that provide significant nursery areas for more than 50 species of anadromous fish.

There has been no targeted search for threatened or endangered plants on the terminal or adjacent land, although known protected species populations exist in the nearby Delaware River floodplain marshes of Gloucester County. (See End Note.)

The volumes of PCBs and other contaminants to be (1) resuspended and released to the water column and (2) removed entirely from the Delaware River during the dredging for Dock 2 have not been estimated. After dewatering, the dredged spoils are to be deposited outside the waterway at locations consistent with their texture and degree of chemical contamination. In December 2017 DRBC staff estimated the proposed dredging at Dock 1 would remove 700 lbs. of PCBs from the River sediments and securely dispose of this contaminated material. Whether that volume would exceed the volume of PCBs resuspended and added to the water column was not addressed, and no basis was provided for such quantitative estimates. The fine-grained dredged sediments from Dock 1 were to have been stabilized by mixing with 8% or more Portland cement to facilitate handling and to reduce the leaching of contaminants (Special Condition #25 of the NJDEP waterfront development permit approval dated 3 August 2017). No stabilization of sediments dredged from Dock 2 has been proposed.

The applicant's plans also do not call for removing contaminated legacy sediments from the shallows along the Delaware River shoreline at Dock 2. Dock 1 sampling of riverfront shallows showed contaminated legacy sediments are present in the highest local concentrations close to shore. Sediments located at the close riverfront shallows of Dock 2 should be sampled and, if contaminated, should be removed. Presently, contaminated legacy sediments from Dock 2's close shallows are not being removed and apparently will remain indefinitely even if future discharges of pollutants were to be curtailed.

Natural Resource Disturbance and Damage

The shadows cast by the dock and trestle structures are damaging over the long term to the productive subtidal and intertidal shallows extant at the terminal. The proposed shading reduces aquatic productivity and diminishes the energy base of the food chain for microorganisms, plankton, macroinvertebrates, and fish. At Dock 1 about 2 acres of pile-supported platforms are shading the shallows, and about 2 additional acres, mostly of deeper waters farther offshore, are to be shaded at Dock 2. The shading of river waters---particularly shading of shallows---decreases photosynthesis by floating and rooted aquatic plants, and thereby reduces biological productivity. Riverbed substrate has been and is to be replaced by the direct fill represented by piles beneath structures, by new headwalls, and by fill for port facilities at the docks. Fish and other wildlife such as bald eagles and ospreys will be disturbed by the driving of 519 additional steel piles over a period of several months, over and above the nearly 400 steel piles previously driven to construct Dock 1. There is no information in the Dock 2 application evaluating the significance of Dock 1 construction on fish and wildlife as a guide to the likely impacts from the proposed larger Dock 2 construction project.

The marine terminal is bounded by extensive tracts of public lands and nature preserves, including Monds Island (Audubon Society), Chester Island (Audubon Society), and Greenwich Township's Riverfront Park to the west, a Greenwich Township ballfield and Nehaunsey Park along the Nehonsey Brook tributary to Sand Ditch to the southeast, Greenwich Lake Park to the south, and Little Tinicum Island (which contains 200 acres of the William Penn State Forest) to the north. Nonprofit conservation groups may also have conservation easements on former DuPont lands. Many of these tracts are advertised for public use by municipal, county, and state recreational agencies and have long provided natural habitats for wildlife surrounding the marine terminal site. The public open spaces are much used recreationally by hikers, birders, and boaters, for whom the River is to remain suitable according to the Comprehensive Plan. The nearby large open spaces contribute significantly to the ecological value of biological resources at the Dock 2 site, as confirmed by the presence of ospreys and bald eagles not found in more highly developed sections of the metropolitan area. The effects of Dock 2 construction and operations on such surrounding areas, including the risks of product explosions or fires at the marine terminal, have not been evaluated. Residences in Gibbstown abut the entrance road and railway servicing the marine terminal along its south and southeast margin, and their residents are at risk of damage from any terminal products spilled while in route to Dock 2.

During the decades of industrial inactivity at the old DuPont property, a population of raptorial birds including ospreys (fish hawks, *Pandion haliaetus*) and bald eagles (*Haliaeetus leucocephalus*) dependent on Delaware River fish and greatly diminished by human activity nationwide has become established here, as acknowledged in the applicant's documentation

(Ramboll 1 March 2019). The applicant identified eagle nests within 0.6 mile to the east and to the west of the proposed terminal. Four osprey nests were identified onsite, but are not indicated on project drawings. The osprey nests apparently were relocated during the winter of 2016-2017. No locations of new nesting platforms have been shown relative to Dock 2 and the rest of the marine terminal, so DRBC cannot evaluate the likely impairment of habitat from construction and operation of Dock 2 on ospreys. The applicant took credit in its initial application for maintaining a substantial distance between known osprey and eagle nests and its Dock 1 activities. Dock 2 is much closer to the eagle nest(s) on Monds Island than is Dock 1. An osprey nest on an old wood piling only a few feet from the proposed Dock 2 trestle clearly no longer will be used, once construction and operations get underway at Dock 2, but its location is not shown on Dock 2 drawings (Ramboll 2016, Appendix D, page 6 and Figure 2). For Dock 1, osprey poles were to have been set to avoid active areas of the terminal and the vicinity of proposed new gas flare structures (Special Condition #30 of the NJDEP waterfront development permit approval dated 3 August 2017), but the locations of nest poles and flare stacks that will serve proposed operations at Dock 2 are not shown on plans. DRBC is entitled to acknowledge that disturbance of osprey nests during the 1 April-31 August nesting season was prohibited by Special Condition #27 and that construction equipment is not to be operated within 1,000 feet of any active osprey nest during the nesting season per Condition #26. It is not clear from the plans that these requirements will be met during the construction and operation of Dock 2. DRBC cannot rely on the Avian Protection Plan required by the NJDEP waterfront development permit, inasmuch as none has been prepared to our knowledge. This gap must be filled before DRBC can determine that compliance with the Comprehensive Plan requirements for wildlife can be satisfied.

The existing intake structure for river water and its pipeline near the proposed new trestle are not to be removed from Dock 2, although the purpose and quantity of water to be withdrawn from it were nowhere mentioned in the application. Whether River water is to be used for washing tank trucks and rail cars, fire suppression, or for other purposes at the terminal is not clear. The use, treatment, and disposal of water at the terminal for the truck and rail vehicles carrying cargo to Dock 2 appears not to have been addressed by DRBC staff or other agencies.

Overall Impacts on Wetlands

As noted above, the DRBC Comprehensive Plan and its Code mandate the protection of wetland resources. In addition to the riverine aquatic wetland beds, there are additional wetlands proposed for destruction in the course of preparing Dock 2 and other essential supporting facilities at this marine terminal. Not addressed by DRBC are the wetland ecosystems, including regulated transition areas, associated with the terminal or roadways needed to render Dock 2

functional. As the Corps acknowledged in its 16 July 2019 public notice, the roadway improvements being undertaken by Gloucester County Improvement Authority form an integral part of this single and complete marine terminal project at Gibbstown. But for the planned State Route 44 truck bypass project, Dock 2 cannot function. The 2020 Corps permit approval for Dock 2 is conditional upon use of the proposed Route 44 truck bypass by all trucks serving Dock 2. Yet neither the Corps nor DRBC anywhere identifies the extent of wetlands to be damaged by the terminal facility as a whole. The NMFS noted that 14 acres of nontidal wetlands were to be destroyed at the terminal, according to its 5 May 2017 comment letter.

Within the terminal 4.441 acres of nontidal freshwater wetlands of intermediate and exceptional resource value and their adjacent transition areas are to be permanently disturbed, with partial compensation proposed by purchase of an equivalent acreage of credits in an offsite wetland mitigation bank. After temporary disturbance, 1.062 acres of wetlands and transition areas are to be restored onsite. For Dock 1 permanent impacts were approved for 3.036 acres of riparian zone and 0.186 acre of mapped coastal wetlands and dredging of 1.4 acres of intertidal shallows. Temporary impacts to be restored onsite for Dock 1 include 0.261 acre of vegetated riparian zone and 0.076 acre of mapped coastal wetlands.

To these totals must be added the wetlands to be destroyed by construction of the Route 44 bypass. Otherwise, the cumulative impacts of this terminal on wetlands, including Dock 2, cannot be known. All the affected wetlands and open waters are Waters of the United States, as well as wetlands and other waters of the State of New Jersey. New Jersey was delegated federal regulation of nontidal waters in 1994 so the Corps of Engineers is not regulating those wetlands here.

End Note

In the course of planning for the proposed construction of the New Jersey Route 44 truck bypass at the margin of the terminal, two sedges were observed by consultants to the Gloucester County Improvement Authority (*Cyperus lancastriensis*, NJ endangered, and *C. engelmannii*, NJ Special Concern). The individuals of Lancaster sedge apparently would require transplanting from the highway footprint; the Engelmann's sedges were outside the construction corridor and deemed not at risk from proposed road construction. These components of the aquatic ecosystem contribute to the habitat value, and that system cannot be protected as required by the DRBC Comprehensive Plan unless they have been credibly searched for and impacts minimized. No inventory in proper field seasons has been attempted for rare plants which are likely to exist in the vicinity of the terminal and which received no consideration during project design or review of facilities that will serve Dock 2.

Authorship

This report was prepared by James A. Schmid. Dr. Schmid is a biogeographer and plant ecologist with fifty years' experience in environmental consulting. He and his firm have specialized in wetlands and environmental impact assessment since 1980. Dr. Schmid has performed fieldwork on the Repauno property prior to the current terminal project and has examined in detail other wetlands near the Delaware River in Gloucester County.

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