Appendix F

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

REPLY TO
ATTENTION OF

CENAP-PL-E

United States Army Corps of Engineers, Philadelphia District
FINAL General Conformity Determination Notice

On October 30, 2012, New York State (DR-4085) and New Jersey State (DR-4086) declared Super Storm Sandy a Major Disaster. In response to the unprecedented breadth and scope of the damages sustained along the New York and New Jersey coastlines, the U.S. Congress passed Public Law (PL) 113-2 "Disaster Relief Appropriations Act 2013", also known as House Resolution (H.R.) 152-2 Title II which was signed into law on January 29, 2013. PL 113-2, which states "That the amounts... are designated by the Congress as being for an emergency requirement pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985", provides funding for numerous projects to repair, restore and fortify the coastline in both states as a result of the continuing emergency as people and property along the coast remain in a vulnerable condition until the coastline is restored and fortified. To this end, New Jersey Governor Christie signed Executive Order No. 140 on September 25, 2013, which authorized the means for the State to acquire all lands outside the State's ownership needed to ensure the sustainability of its coastline, and improve safeguards to diminish the impacts of future storm events, including flood protection for coastal communities that were impacted by the storm. To protect the investments by the Federal, State, local governments and individuals to rebuild damaged sites, it is imperative that these emergency disaster relief projects proceed as expeditiously as possible.

There are a number of coastal projects that were previously proposed and authorized but unconstructed (ABU). The Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island) [WRDA 2000, Title 1, §101a (1)] project is an ABU project that is anticipated to start construction after April 2014 and this document represents the General Conformity Determination required under 40CFR§93.154 by the United States Army Corps of Engineers (USACE). USACE is the lead Federal agency that will contract, oversee, approve, and fund the project's work, and thus is responsible for making the General Conformity determination for this project.

USACE has coordinated this determination with the New Jersey Department of Environmental Protection (NJDEP) [see NJDEP letter provided as Attachment A]. The Philadelphia-Wilmington-Atlantic City PA-New Jersey-Maryland-Delaware nonattainment area is currently classified as "marginal" nonattainment for the 2008 8-hour ozone standard. Ozone is controlled through the regulation of its precursor emissions, which include oxides of nitrogen (NOx) and volatile organic compounds (VOCs).

The equipment associated with this project that is evaluated under General Conformity (40CFR§93.153) includes direct and indirect nonroad diesel sources, such as dredging equipment and land based earth-moving equipment. The primary precursor of concern with this type of equipment is NOx, as VOCs are generated at a significantly lower rate. The NOx emissions associated with the project are estimated to range from 455 to 520 tons per calendar year for 2014 and 2015 respectively (see emissions estimates provided as Attachment B). The project exceeds the NOx trigger level of 100 tons in any calendar year and as a result, the USACE is required to fully offset the emissions of this project. The project does not exceed the VOC trigger level of 50 tons in any calendar year.

USACE is committed to fully offsetting the emissions generated as a result of the disaster relief coastal work associated with this project. USACE recognizes that the feasibility and cost-effectiveness of each offset option is influenced by whether the emission reductions can be achieved without introducing delay to the construction schedule that would prevent timely disaster relief.

USACE will demonstrate conformity with the New Jersey State Implementation Plan by utilizing the emission offset options listed below. The demonstration can consist of any combination of options, and is not required to include all or any single options to meet conformity. The options for meeting general conformity requirements include the following:

a. Emission reductions from project and/or non-project related sources in an appropriately close vicinity to the project location. In assessing the potential impact of this offset option on the construction schedule, USACE recognizes the possibility of lengthening the time period in which offsets can be generated as appropriate and allowable under the general conformity rule (40CFR§93.163 and §93.165).
b. Use of a portion of the Department of Defense Joint Base McGuire and Lakehurst State Implementation Plan emissions budget, as determined by the NJDEP, and in coordination with the United States Environmental Protection Agency (EPA).
c. Use of Clean Air Interstate Rule (CAIR) ozone season NOx Allowances with a distance ratio applied to allowances, similar to the one used by stationary sources found at N.J.A.C 7:27-18.5(c) Table 2.
d. Use of Surplus NOx Emission Offsets (SNEOs) generated under the Harbor Deepening Project (HDP). As part of the mitigation of the HDP, USACE and the Port Authority of New York & New Jersey developed emission reduction programs coordinated through the Regional Air Team (RAT). The RAT is comprised of the USACE, NJDEP, EPA, New York State Department of Environmental Conservation, and other stakeholders. SNEOs will be applied in concurrence with the agreed upon SNEO Protocols to ensure the offsets are real, surplus, and not double counted.

Due to unpredictable nature of dredge-related construction and the preliminary estimates of sand required to restore the integrity of the coastlines, the project emissions will be monitored as appropriate and regularly reported to the RAT to assist the USACE in ensuring that the project is fully offset.

In summary, USACE will achieve conformity for NOx using the options outlined above, as coordinated with the NJDEP and coordinated through the RAT.

19 Dec 2013
Date

John C. Becking
John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

Emissions have been estimated using project planning information developed by the Philadelphia District, consisting of anticipated equipment types and estimates of the horsepower and operating hours of the diesel engines powering the equipment. In addition to this planning information, conservative factors have been used to represent the average level of engine load of operating engines (load factors) and the average emissions of typical engines used to power the equipment (emission factors). The basic emission estimating equation is the following:

$$E = hrs \times LF \times EF$$

Where:

E = Emissions per period of time such as a year or the entire project.
hrs = Number of operating hours in the period of time (e.g., hours per year, hours per project).
LF = Load factor, an estimate of the average percentage of full load an engine is run at in its usual operating mode.
EF = Emission factor, an estimate of the amount of a pollutant (such as NO_x) that an engine emits while performing a defined amount of work.

In these estimates, the emission factors are in units of grams of pollutant per horsepower hour (g/hphr). For each piece of equipment, the number of horsepower hours (hphr) is calculated by multiplying the engine's horsepower by the load factor assigned to the type of equipment and the number of hours that piece of equipment is anticipated to work during the year or during the project. For example, a crane with a 250-horsepower engine would have a load factor of 0.43 (meaning on average the crane's engine operates at 43% of its maximum rated power output). If the crane were anticipated to operate 1,000 hours during the course of the project, the horsepower hours would be calculated by:

250 horsepower x 0.43 x 1,000 hours = 107,500 hphr

The emissions from diesel engines vary with the age of an engine and, most importantly, with when it was built. Newer engines of a given size and function typically emit lower levels of pollutants than older engines. The NO_x emission factors used in these calculations assume that the equipment pre-dates most emission control requirements (known as Tier 0 engines in most cases), to provide a reasonable "upper bound" to the emission estimates. If newer engines are actually used in the work, then emissions will be lower than estimated for the same amount of work. In the example of the crane engine, a NO_x emission factor of 9.5 g/hphr would be used to estimate emissions from this crane on the project by the following equation:

$$\frac{107{,}500 \text{ hphr} \times 9.5 \text{ g } NO_x\text{/hphr}}{453.59 \text{ g/lb} \times 2{,}000 \text{ lbs/ton}} = 1.1 \text{ tons of } NO_x$$

As noted above, information on the equipment types, horsepower, and hours of operation associated with the project have been obtained from the project's plans and represent current best estimates of the equipment and work that will be required. Load factors have been obtained from various sources depending on the type of equipment. Marine engine load factors are primarily from a document associated with the New York and New Jersey Harbor Deepening Project (HDP): "Marine and Land-Based Mobile Source Emission Estimates for the Consolidated Schedule of 50-Foot Deepening Project, January 2004," and from EPA's 1998 Regulatory Impact Analysis (RIA): "EPA Regulatory Impact Analysis: Control of Commercial Marine Vessels." Land-side nonroad equipment load factors are from the documentation for EPA's NONROAD emission estimating model, "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, EPA420-P-04-005, April 2004."

Emission factors have also been sourced from a variety of documents and other sources depending on engine type and pollutant. The NO_x emission factors for marine engines have been developed primarily from EPA documentation for the Category 1 and 2 standards (RIA, "Control of Emission from Marine Engines, November 1999) and are consistent with emission factors used in documenting emissions from the HDP, while the VOC emission factors for marine engines are from the Port Authority of New York and New Jersey's "2010 Multi-Facility Emissions Inventory" which represent the range of marine engines operating in the New Jersey harbor and coastal region in terms of age and regulatory tier level. Nonroad equipment NO_x emission factors have been derived from EPA emission standards and documentation, while the nonroad VOC emission factors have been based on EPA's Diesel Emissions Quantifier (DEQ, accessed at: *www.epa.gov/cleandiesel/quantifier/*), run for moderately old equipment (model year 1995). On-road vehicle emission factors have also been developed from the DEQ, assuming a mixture of Class 8, Class 6, and Class 5 (the smallest covered by the DEQ) on-road trucks.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions. Actual project emissions will be estimated and tracked during the course of the project and will be based on the characteristics and operating hours of the specific equipment chosen by the contractor to do the work.

The following pages summarize the estimated emissions of pollutants relevant to General Conformity, NO_x and VOC, in sum for the project and by calendar year based on the schedule information also presented (in terms of operating months per year). Following this summary information are project details including the anticipated equipment and engine information developed by the Philadelphia District, the load factors and emission factors as discussed above, and the estimated emissions for the project by piece of equipment.

U.S. Army Corps of Engineers

NAP - ABU Sandy-Related Projects

General Conformity Related and Greenhouse Gas Emission Estimates

Barnegat Inlet to Little Egg Inlet (LBI) plus storm damage repair*

DRAFT

28-Apr-16

Summary of emissions estimated using NAP-provided equipment and activity data

Project	Total Emissions NOx (tons)	VOC (tons)	CO_2** (tonnes)
Barnegat Inlet to Little Egg Inlet (LBI)	973.7	32.0	67,966
Storm Damage Repair Additional Work*	225.0	7.4	15,685
LBI plus storm damage repair	1,198.7	39.4	83,651

Project	Cubic yards	Estimated In-State Emissions, tons per year 2013	2014	2015	2016	2017	2018
NOx							
Original LBI plus storm damage repair*	9,600,000	0.0	0.0	438	761	0.0	0.0
VOC							
Original LBI plus storm damage repair*	9,600,000	0.0	0.0	14.4	25.0	0.0	0.0
CO_2							
Original LBI plus storm damage repair*	9,600,000	0.0	0.0	30,536	53,115	0.0	0.0

Schedule by month:

Project	Total months	Calendar months of operation 2013	2014	2015	2016	2017	2018
Original LBI plus storm damage repair*	20			May	December		

Months per year:

Project	Total months	Operating months per year 2013	2014	2015	2016	2017	2018
Original LBI plus storm damage repair*	20			8	12		

Months per ozone season (the ozone season is 1 May - 30 Sept each year):

Project	Total O_3 Season Months	Operating months per ozone season 2013	2014	2015	2016	2017	2018
Original LBI plus storm damage repair*	10			5	5		

* Additional work to repair damage from storms Jonas and Joaquin.

** CO_2 emissions are presented in tonnes (metric tons). Other combustion components of CO_2e contribute less than one percent of the CO_2 component.

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
Conformity Related Emission Estimates
Barnegat Inlet to Little Egg Inlet (LBI)
DRAFT

28-Apr-16

Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors NOx (g/hphr or g/mi)	Emission factors VOC (g/hphr or g/mi)	Emission factors CO_2	Emissions In state waters NOx (tons)	Emissions In state waters VOC (tons)	Emissions In state waters CO_2 (tonnes)	Emissions Out of state waters NOx (assume all mob/demob in state waters)	Emissions Out of state waters VOC	Emissions Out of state waters CO_2
Marine - mob/demob														
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	273.6	0.80	9.7	0.37	571	21.1	0.80	1,125	0.0	0.0	0
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	273.6	0.40	7.5	0.20	571	0.9	0.02	63	0.0	0.0	0
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	0.0	0.80	7.5	0.20	571	0.0	0.00	0	0.0	0.0	0
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0.0	0.80	7.5	0.20	571	0.0	0.00	0	0.0	0.0	0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	273.6	0.69	9.7	0.37	571	2.0	0.08	108	0.0	0.0	0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	273.6	0.40	7.5	0.20	571	0.0	0.00	3	0.0	0.0	0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	273.6	0.50	9.7	0.37	571	0.1	0.01	8	0.0	0.0	0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	273.6	0.40	7.5	0.20	571	0.0	0.00	3	0.0	0.0	0
Derrick Barge - Prime Engine	Dredge auxiliary	1	200	273.6	0.40	7.5	0.20	571	0.2	0.00	13	0.0	0.0	0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	273.6	0.40	7.5	0.20	571	0.0	0.00	3	0.0	0.0	0
Floating booster pump, prime engine	Booster pump	1	5,200	0.0	0.43	9.5	0.20	571	0.0	0.00	0	0.0	0.0	0
Floating booster pump, 2nd engine	Booster pump	1	200	0.0	0.43	9.5	0.20	571	0.0	0.00	0	0.0	0.0	0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	273.6	0.69	9.7	0.37	571	1.0	0.04	54	0.0	0.0	0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	273.6	0.43	7.5	0.20	571	0.0	0.00	3	0.0	0.0	0
Land-side														
Land-side, nonroad	Dozer	1	410	0	0.59	9.5	0.19	571	0.0	0.00	0	0.0	0.0	0
Land-side, onroad	Truck, small			680		10.3	0.54	1,812	0.3	0.01	43	0.0	0.0	0
Mob/Demob subtotal									**25.8**	**1.0**	**1,426**	**0.0**	**0.0**	**0**
Marine														
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	8,172	0.80	9.7	0.37	571	514.3	19.62	27,479	114.8	4.4	6,134
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	8,172	0.40	7.5	0.20	571	21.6	0.58	1,493	5.4	0.1	375
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	8,172	0.80	7.5	0.20	571	60.3	1.61	4,166	101.9	2.7	7,039
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0	0.80	7.5	0.20	571	0.0	0.00	0	0.0	0.0	0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	8,172	0.69	9.7	0.37	571	60.3	2.30	3,221	0.0	0.0	0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	8,172	0.40	7.5	0.20	571	1.4	0.04	93	0.0	0.0	0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	8,172	0.50	9.7	0.37	571	4.4	0.17	233	0.0	0.0	0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	8,172	0.40	7.5	0.20	571	1.1	0.03	75	0.0	0.0	0
Derrick Barge - Prime Engine	Dredge auxiliary	2	200	8,172	0.40	7.5	0.20	571	10.8	0.29	747	0.0	0.0	0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	2	40	8,172	0.40	7.5	0.20	571	2.2	0.06	149	0.0	0.0	0
Floating booster pump, prime engine	Booster pump	1	5,200	8,172	0.43	9.5	0.20	571	191.4	4.03	10,439	0.0	0.0	0
Floating booster pump, 2nd engine	Booster pump	1	200	8,172	0.43	9.5	0.20	571	7.4	0.15	401	0.0	0.0	0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	8,172	0.69	9.7	0.37	571	30.1	1.15	1,611	0.0	0.0	0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	8,172	0.43	7.5	0.20	571	1.2	0.03	80	0.0	0.0	0
Land-side														
Land-side, nonroad	Dozer	1	410	12,470	0.59	9.5	0.19	571	31.6	0.63	1,723	0.0	0.0	0
Land-side, nonroad	Other diesel engines	1	87	9,390	0.59	9.5	0.19	571	5.0	0.10	275	0.0	0.0	0
Land-side, onroad	Truck, small	1		12,722		10.3	0.54	1,812	5.1	0.26	807	0.0	0.0	0
Beachfill subtotal									948.0	31.0	52,992	222.1	7.2	13,548
Total project emissions									**973.7**	**32.0**	**54,418**	**222.1**	**7.2**	**13,548**

CO_2 emissions are presented in tonnes (metric tons). Other combustion components of CO_2e contribute less than one percent of the CO_2 component. **Total CO2:** 67,966 tonnes

On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.
Assumed average on-road speed, mph: 35
The nonroad engine CO2 emission factor is the average of nonroad equipment in the PANYNJ 2014 emissions inventory, representative of nonroad engines in general.
Onroad emission factor is the heavy-duty truck emisison factor in the PANYNJ 2014 emissions inventory.