US Army Corps
of Engineers®
New York District

REVISED DRAFT

Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement

Atlantic Coast of New York

East Rockaway Inlet to Rockaway Inlet and Jamaica Bay

Appendix D

Environmental Compliance

Attachment D7
Draft General Conformity Determination Notice

August 2018

East Rockaway Inlet to Rockaway Inlet and Jamaica Bay Reformulation Study

Revised Draft General Reevaluation Report and Environmental Impact Statement

Draft General Conformity Determination Notice

United States Army Corps of Engineers, New York District
DRAFT 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 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.

The Atlantic Coast of New York, East Rockaway Inlet to Rockaway Inlet and Jamaica Bay (Rockaway) study is called a General Reformulation Report, because it seeks to reexamine the Project that was originally authorized by the House of Representatives, dated 27 September 1997, as stated within the Congressional Record for the US House of Representatives. Subsequent to the original authorization, is the new authorization under Public Law 113-2 (29Jan13), The Disaster Relief Appropriations Act of 2013 (the Act), was enacted in part to "improve and streamline disaster assistance for Hurricane Sandy, and for other purposes". The Act directed the Corps of Engineers to: "…reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities and reduce the economic costs and risks associated with large-scale flood and storm events in areas along the Atlantic Coast within the boundaries of the North Atlantic Division of the Corps that were affected by Hurricane Sandy" (PL 113-2).

East Rockaway is a Reformulation Study project that is anticipated to start construction during or after January 2019, 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 York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (EPA) Region 2. Based on the National Ambient Air Quality Standards (NAAQS), Queens, King, and Nassau County are currently classified as 'marginal' nonattainment for the 2008 8-hour ozone standard and 'maintenance' for both the 2006 particulate matter less than 2.5 microns ($PM_{2.5}$) and the 1971 carbon monoxide standards (40CFR§81.333). The counties are part of the Ozone Transport Region. Ozone is controlled through the regulation of its precursor emissions, which include oxides of nitrogen (NO_x) and volatile organic compounds (VOC). Sulfur dioxide (SO_2) is a precursor for $PM_{2.5}$.

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 support vessels operating in the back bay. The primary pollutant of concern with this type of equipment is NO_x, as VOCs, $PM_{2.5}$, SO_2, and CO are generated at significantly lower rates. The NO_x emissions associated with the project are estimated to be approximately 158 tons per calendar year for 2019 through 2024, (see emissions estimates provided as Attachment A). The project exceeds the NO_x trigger level of 100 tons in any calendar year and as a result, the USACE is required to fully offset the NO_x emissions of this project. The project does not exceed the ozone related VOC trigger level of 50 tons (for areas in an ozone transport region) in any calendar year, nor the $PM_{2.5}$, SO_2, CO maintenance areas' related trigger levels of 100 tons in any calendar year, per pollutant.

The USACE is committed to fully offsetting the emissions generated as a result of the disaster relief and coastal protection 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 implementation of the project to protect the coastline from future storm events.

USACE will demonstrate conformity with the New York 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, 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 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, NYSDEC, New Jersey Department of Environmental Protection, United States Environmental Protection Agency (EPA) Region 2, 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.

c. Development of a Marine Vessel Engine Repower Program (MVERP) which replaces older, more polluting marine engines with cleaner engines, the delta in emissions being used to offset project emissions. The MVERP approach worked successfully for offsetting the HDP's construction emissions. The details of the MVERP, its implementation, and tracking would be coordinated with the RAT.

d. Use of Cross-State Air Pollution Rule (CSAPR) ozone season NO_x Allowances with a distance ratio applied to allowances, similar to the one used by stationary sources.

e. Rescheduling the project by elongating the construction schedule so as not to exceed the 100 tons per year threshold for NOx in any one calendar year.

Due to the 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 NO_x using the options outlined above, as coordinated with the NYSDEC and coordinated through the RAT.

Signature Block (TBD)

Attachment A

General Conformity Related Emission Estimates

Emissions have been estimated using project planning information developed by the New York 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:

$$250 \text{ horsepower} \times 0.43 \times 1{,}000 \text{ hours} = 107{,}500 \text{ hphr}$$

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 most pollutants than older engines. The 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. 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. Nonroad equipment NOx and other emission factors have been derived from EPA emission standards and documentation. On-road vehicle emission factors have also been developed from the EPA model MOVES2014a run for 15-year-old single-unit short-haul trucks operating in CY 2017.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions.

The following pages summarize the estimated emissions in sum for the project including the anticipated equipment and engine information developed by the New York District, the load factors and emission factors as discussed above, and the estimated emissions for the project.

USACE - New York District

NAN - GRR East Rockaway

General Conformity-Related Emission Estimates

Emission Estimates, East Rockaway to Rockaway Inlet **8/22/2018**

DRAFT

General Conformity-applicable emissions per calendar year based on project duration

Total project emissions (assumes all components proceed concurrently)

	Estimated Emissions, tons per year								
Pollutant	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
NO_x	158.3	158.3	158.3	158.3	158.3	0.0	0.0	0.0	0.0
VOC	6.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0
$PM_{2.5}$	8.2	8.2	8.2	8.2	8.2	0.0	0.0	0.0	0.0
SO_2	0.08	0.08	0.08	0.08	0.08	0.0	0.0	0.0	0.0
CO	17.7	17.7	17.7	17.7	17.7	0.0	0.0	0.0	0.0

Project Duration and Working Months per Year

Activity	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**Total Construction Months**
Dredging	6	6	6	6	6	0	0	0	0	30

2,617,000 cubic yards dredging (initial placement and renousishment on 4-year cycle)

Due to environmental and ozone season windows in place for the NY projects, there will be a maximum of 6 months of dredging per year for the NY projects

Shore-side work proceeds when dredging occurs. Combination of environmental and ozone season windows results in no dredging during April through September each year.

USACE - New York District

NAN - GRR East Rockaway
General Conformity-Related Emission Estimates
Supporting Information, East Rockaway to Rockaway Inlet
DRAFT
8/22/2018

			Load			grams per hp-hr					tons				
Description, dredges and vessels	**Category**	**Horsepower (approx.)**	**Factor**	**Hours**	**hphrs**	**NOx**	**VOC**	**PM2.5**	**SOx**	**CO**	**NO_x**	**VOC**	**$PM_{2.5}$**	**SO_x**	**CO**
Cutter suction dredge main engine	CSD primary engine	9,000	0.66	8,463	50,269,836	9.7	0.37	0.51	0.005	1.06	537.51	20.503	28.261	0.277	58.738
Cutter suction dredge secondary engine	CSD secondary engi	3,310	0.66	8,463	18,488,129	9.7	0.37	0.51	0.005	1.06	197.68	7.541	10.394	0.102	21.603
Dredge auxiliry engine	CSD aux engine	830	0.40	8,463	2,809,695	7.3	0.2	0.29	0.005	1.27	22.61	0.619	0.898	0.015	3.933
Work tug main engine	Tug main	250	0.68	8,463	1,438,699	9.7	0.37	0.51	0.005	1.06	15.38	0.587	0.809	0.008	1.681
Work tug aux engine	Tug aux	50	0.40	8,463	169,259	7.3	0.2	0.29	0.005	1.27	1.36	0.037	0.054	0.001	0.237
Crew/survey boat main engine	Tug main	100	0.68	8,463	575,480	9.7	0.37	0.51	0.005	1.06	6.15	0.235	0.324	0.003	0.672
Crew/survey boat main engine	Tug aux	40	0.40	8,463	135,407	7.3	0.2	0.29	0.005	1.27	1.09	0.030	0.043	0.001	0.190
Derrick barge main	Crane	200	0.43	8,463	727,812	9.5	0.183	0.16	0.005	1.21	7.62	0.147	0.128	0.004	0.971
Derrick barge aux	Generator	40	0.43	8,463	145,562	9.5	0.183	0.16	0.005	1.21	1.52	0.029	0.026	0.001	0.194
Tug Boat, 1950 hp	Tug main	1,950	0.68	15	19,890	9.7	0.37	0.51	0.005	1.06	0.21	0.008	0.011	0.000	0.023
Tug auxiliary engine	Tug aux	150	0.40	15	900	7.3	0.2	0.29	0.005	1.27	0.01	0.000	0.000	0.000	0.001
Barge Mounted Crane, 100 ton	Crane	200	0.43	25	2,150	9.5	0.183	0.16	0.005	1.21	0.02	0.000	0.000	0.000	0.003
Tug Boat, 1950 hp	Tug main	1,950	0.68	25	33,150	9.7	0.37	0.51	0.005	1.06	0.35	0.014	0.019	0.000	0.039
Tug auxiliary engine	Tug aux	150	0.40	25	1,500	7.3	0.2	0.29	0.005	1.27	0.01	0.000	0.000	0.000	0.002
Barge Mounted Crane, 100 ton	Crane	200	0.43	3	258	9.5	0.183	0.16	0.005	1.21	0.00	0.000	0.000	0.000	0.000
Tug Boat, 1950 hp	Tug main	1,950	0.68	3	3,978	9.7	0.37	0.51	0.005	1.06	0.04	0.002	0.002	0.000	0.005
Tug auxiliary engine	Tug aux	150	0.40	3	180	7.3	0.2	0.29	0.005	1.27	0.00	0.000	0.000	0.000	0.000
Barge Mounted Crane, 100 ton	Crane	200	0.43	5	430	9.5	0.183	0.16	0.005	1.21	0.00	0.000	0.000	0.000	0.001
Tug Boat, 1950 hp	Tug main	1,950	0.68	5	6,630	9.7	0.37	0.51	0.005	1.06	0.07	0.003	0.004	0.000	0.008
Tug auxiliary engine	Tug aux	150	0.40	5	300	7.3	0.2	0.29	0.005	1.27	0.00	0.000	0.000	0.000	0.000
Totals											**791.7**	**29.8**	**41.0**	**0.4**	**88.3**