

**NEW HAVEN HARBOR
CONNECTICUT
NAVIGATION IMPROVEMENT PROJECT
INTEGRATED FEASIBILITY REPORT AND
ENVIRONMENTAL IMPACT STATEMENT**

**APPENDIX L
RECORD OF NON-APPLICABILITY**

Appendix L

Air Quality Analysis

RECORD OF NON-APPLICABILITY (RONA)

Emissions Calculations for:

New Haven Harbor Navigation Improvement Project
New Haven, Connecticut

GENERAL CONFORMITY - RECORD OF NON-APPLICABILITY

Project/Action Name: New Haven Harbor
Navigation Improvement Project
New Haven, Connecticut

Project/Action Point of Contact: Joseph B. MacKay,
Chief, Environmental Resources Section
Phone: 978-318-8142

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because:

Total direct and indirect emission from this project/action are estimated at less than 100 tons for Ozone per year, and are below the conformity threshold value established at 40 CFR 93.153(b) of 100 tons/year of Ozone;

AND

The project/action is not considered regionally significant under 40 CFR 93.153(i).

Supporting documentation and emissions estimates are:

- ATTACHED
- APPEAR IN THE NEPA DOCUMENTATION (Section 7.12)
- OTHER

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Joseph B. MacKay, Chief, Environmental Resources Section

Emissions Calculations for the New Haven Harbor Navigation Improvement Project

General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project
 Estimates from Project Manager & Cost Engineer
 5-Jun-18

Equipment/Engine Category	YEAR 2021										
	1	2	3	4	5	6	7	8	9	10	11
	Project Emission Sources and Estimated Power										
# of Engines	hp	LF	hrs/year	# of Calendar Years	hp-hr	NOx Emission Estimates (g/hp-hr)	NOx Emissions (tons)	VOC Emission Estimates (g/hp-hr)	VOC Emissions (tons)	hrs	%
Mechanical Dredge	1	5000	0.43	1773	1	3,811,950	9,200	38.66	1,300	1773	90%
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1773	1	190,598	9,200	1.93	1,300	805	60%
Crew/Survey Workboat	2	100	0.43	1773	1	152,478	9,200	1.55	1,300		
Derrick	2	150	0.43	1773	1	228,717	9,200	2.32	1,300		
Towing Tugboat	1	3000	0.43	1773	1	2,287,170	9,200	23.19	1,300		
Dump Scow	2	50	0.43	1773	1	76,239	9,200	0.77	1,300		
Hydraulic Dredge	1	1700	0.43	0	1	-	9,200	0.00	1,300		
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	0	1	-	9,200	0.00	1,300		
Crew/Survey Workboat	1	100	0.43	0	1	-	9,200	0.00	1,300		
Derrick	2	150	0.43	0	1	-	9,200	0.00	1,300		
Booster	1	1600	0.43	0	1	-	9,200	0.00	1,300		
Work Tug (Blast Attendant)	1	250	0.43	805	1	86,538	9,200	0.88	1,300		
Towing Vessel (Blasting)	1	3000	0.43	805	1	1,038,450	9,200	10.53	1,300		
Total Emissions							NOx Total	79.83	VOC Total	11.28	

Horsepower Hours
 hp-hr = # of engines * hp * LF * hrs / day * days of operation

Load Factors
 Load Factor (LF) represents the average percentage of rated horsepower used during a source's operational profile. LFs used are from EPA (2010) Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling. US EPA, NR-005d, 47 pp.

Emission Factors
 NOx Emissions Factor for Off-Road Construction Equipment is 9.20 g/hp-hr
 VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr
 Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)
 Emissions (tons) = Emissions (g) * (1 ton/907200 g)

General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project
 Estimates from Project Manager & Cost Engineer
 5-Jun-18

YEAR 2022		1	2	3	4	5	6	7	8	9	10	11	
		Project Emission Sources and Estimated Power											
Equipment/Engine Category	# of Engines	hp	LF	# of Calendar Years		NOx Emission Estimates (g/hp-hr)	NOx Emission Estimates (tons)	VOC Emission Estimates (g/hp-hr)	VOC Emission Estimates (tons)	NOx Emission Estimates (g/hp-hr)	NOx Emission Estimates (tons)	VOC Emission Estimates (g/hp-hr)	VOC Emission Estimates (tons)
				hrs/year	Years								
Mechanical Dredge	1	5000	0.43	1695	1	3,644,250	36.96	1.300	1.300	1.300	1.300	5.22	
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1695	1	182,213	1.85	1.300	1.300	1.300	1.300	0.26	
Crew/Survey Workboat	2	100	0.43	1695	1	145,770	1.48	1.300	1.300	1.300	1.300	0.21	
Derrick	2	150	0.43	1695	1	218,655	2.22	1.300	1.300	1.300	1.300	0.31	
Towing Tugboat	1	3000	0.43	1695	1	2,186,550	22.17	1.300	1.300	1.300	1.300	3.13	
Dump Scow	2	50	0.43	1695	1	72,885	0.74	1.300	1.300	1.300	1.300	0.10	
Hydraulic Dredge	1	1700	0.43	1350	1	986,850	10.01	1.300	1.300	1.300	1.300	1.41	
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	1350	1	174,150	1.77	1.300	1.300	1.300	1.300	0.25	
Crew/Survey Workboat	1	100	0.43	1350	1	58,050	0.59	1.300	1.300	1.300	1.300	0.08	
Derrick	2	150	0.43	1350	1	174,150	1.77	1.300	1.300	1.300	1.300	0.25	
Dozer	1	440	0.43	1350	1	255,420	2.59	2.300	2.300	2.300	2.300	0.65	
Booster	1	1600	0.43	1350	1	928,800	9.42	1.300	1.300	1.300	1.300	1.33	
Work Tug (Blast Attendant)	1	250	0.43	530	1	56,975	0.58	1.300	1.300	1.300	1.300	0.08	
Towing Vessel (Blasting)	1	3000	0.43	530	1	683,700	6.93	1.300	1.300	1.300	1.300	0.98	
Total Emissions							NOx Total	99.06	VOC Total	14.28			

	hrs	%
Dredge Interior Channel	195	10%
Dredge Bend (ordinary)	250	30%
Dredge manuv Area	1050	100%
Dredge turning Basin	200	100%
	1695	
Hydraulic Dredge	1350	100%
Blasting	530	40%

Horsepower Hours
 hp-hr = # of engines*hp*LF*hrs/day*days of operation

Load Factors
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Emission Factors
 NOx Emissions Factor for Off-Road Construction Equipment is 9.20 g/hp-hr
 VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)
 Emissions (tons) = Emissions (g) * (1 ton/907200 g)

General Conformity Review and Emission Inventory for the New Haven Harbor Improvement Project

Estimates from Project Manager & Cost Engineer

5-Jun-18

YEAR 2023

1	2	3	4	5	6	7	8	9	10	11
Equipment/Engine Category	Project Emission Sources and Estimated Power						NOx Emission Estimates NOx EF (g/hp-hr)	NOx Emission Estimates NOx Emissions (tons)	VOC Emission Estimates VOC EF (g/hp-hr)	VOC Emission Estimates VOC Emissions (tons)
	# of Engines	hp	LF	hrs/year	# of Calendar Years	hp-hr				
Mechanical Dredge	1	5000	0.43	1910	1	4,106,500	9,200	41.64	1,300	5.88
Work Tug (Mechanical Dredge attendant)	1	250	0.43	1910	1	205,325	9,200	2.08	1,300	0.29
Crew/Survey Workboat	2	100	0.43	1910	1	164,260	9,200	1.67	1,300	0.24
Derrick	2	150	0.43	1910	1	246,390	9,200	2.50	1,300	0.35
Towing Tugboat	1	3000	0.43	1910	1	2,463,900	9,200	24.99	1,300	3.53
Dump Scow	2	50	0.43	1910	1	82,130	9,200	0.83	1,300	0.12
Hydraulic Dredge	1	1700	0.43	0	1	-	9,200	0.00	1,300	0.00
Work Tug (Hydraulic Dredge Attendant)	2	150	0.43	0	1	-	9,200	0.00	1,300	0.00
Crew/Survey Workboat	1	100	0.43	0	1	-	9,200	0.00	1,300	0.00
Derrick	2	150	0.43	0	1	-	9,200	0.00	1,300	0.00
Booster	1	1600	0.43	0	1	-	9,200	0.00	1,300	0.00
Work Tug (Blast Attendant)	1	250	0.43	0	1	-	9,200	0.00	1,300	0.00
Towing Vessel (Blasting)	1	3000	0.43	0	1	-	9,200	0.00	1,300	0.00
Total Emissions							NOx Total	73.71	VOC Total	10.42

	hrs	%
Dredge Bend (ordinary)	580	70%
Dredge Bend (rock)	75	100%
Dredge Entrance Channel	910	100%
Dredge Entrance Channel Extension	345	100%
	1910	

Horsepower Hours

hp-hr = # of engines*hp*LF*hrs/day*days of operation

Load Factors

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Emission Factors

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VOC Emissions Factor for Off-Road Construction Equipment is 1.30 g/hp-hr

Emissions (g) = Power Demand (hp-hr) * Emission Factor (g/hp-hr)

Emissions (tons) = Emissions (g) * (1 ton/907200 g)