North American Aggregates

a subsidiary of **Weeks Marine, Inc.**

WEEKS

CONSTRUCTION AGGREGATE

Environmental Product Declaration

Weeks Marine, Inc.
4 Commerce Drive
Cranford, NJ 07016

North American Aggregates
Environmental Product Declaration
General Information

Product Name	Fine aggregate (10-105F, 10-105F1, 10-105F8, 10-105F9)
Manufacturer Name and Address	North American Aggregates, a subsidiary of Weeks Marine, Inc. 4 Commerce Drive, Cranford, New Jersey 07016 (908) 272-4010 www.weeksmarine.com
Program Operator	National Ready Mixed Concrete Association 66 Canal Center Plaza, Suite 250 Alexandria, Virginia 22314 www.nrmca.org/epd
General Program Instructions and Version No.	NRMCA General Program Instructions for Environmental Product Declarations (EPD), Version 3.1
Declaration Number	NRMCAEPD: 20211
Reference PCR and Version No.	NSF/ASTM 1126-23 Product Category Rule for Construction Aggregates, Version 2 with Errata, issued April 2024
EPD Type and Scope (facility/product/average)	Cradle-to-gate (modules A1-A3); facility and product-specific
Defined functional or declared unit	1 U.S. (short) ton of construction aggregate
Product's Intended Application and Use	fine aggregate component in the generation of concrete
Markets of Applicability	North American market, for business-to-business communication
Date of Issue	March 31, 2025
Period of Validity	5 years (valid until March 31, 2030)
Year of Reported Manufacturer Primary Data	2023
LCA Software and Version No.	Global Cement and Concrete Association (GCCA) EPD Tool v4.2, North American version, December 2023 2 Kingdom St., London, W2 6JP, United Kingdom +44 (0)20 3580-4268 www.gccaepd.org
LCI Database and Version No.	Ecoinvent (v3.5)
LCIA Methodology and Version No.	GCCA's Industry EPD Tool for Cement and Concrete (v4.2) LCA Model, North American version
Overall Data Quality Assessment and Score	1.7 (very good)
The sub-category PCR review was conducted by:	Thomas P. Gloria, Ph. D, Industrial Ecology Consultants t.gloria@industrial-ecology.com Terrie Boguski, Harmony Environmental, LLC tboguski@harmonyenviro.com Bill Stough, Bill Stough, LLC bill@billstough.net *The PCR peer review report is available upon request: ncss@nsf.org*
This declaration was independently verified in accordance with ISO 14025:2006. ISO 21930:2017 serves as the core PCR. Sub-category PCR: NSF/ASTM 1126: Construction Aggregates Product Category Rule:	□ Internal ■ External
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Emily Hunziker, Haley & Aldrich, Inc. ehunziker@haleyaldrich.com
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Athena Sustainable Materials
Explanatory material may be obtained from the following:	Chris Camarote, Staff Engineer/Quality Control Manager 1250 State Street, Perth Amboy, NJ 08861 (908) 956-6715 ccamarote@northamericanaggregates.com

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Products

The fine aggregate products for concrete covered in this EPD are manufactured at:

North American Aggregates
1250 State Street
Perth Amboy, NJ 08861

North American Aggregates (NAA) is a sand mining and processing facility, selling approximately 1.2 million tons annually.

The products are compliant with the following standards and specifications:

- ASTM C-33 - Concrete Aggregates
- NYSDOT Standard Specifications

Material Composition

The material composition of the aggregate covered in this study is natural sand from the Ambrose Federal Navigation Channel, which is a naturally occurring mineral complex.

Raw Material	US Unit	SI Unit	Relative Composition
Ocean-mined sand	1,000,000 tons	907,441 metric tonnes	approx. 83%
Grit additive	200,000 tons	181,488 metric tonnes	approx. 17%

Declared Unit: 1 U.S. (short) ton of construction aggregate (0.907 metric tonnes)

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System Boundary

In accordance with ISO 21930 Clause 5.2.2, this study captures the following mandatory cradle-to-gate (A1-A3) life cycle product stages (as illustrated in Figure 1).

A1 – Extraction and production of raw materials (dredging) including fuels used in extraction and transport within the process;

A2 – Specific transportation of raw materials from extraction site or source to manufacturing site; and,

A3 – Manufacturing of the product, including all energy and materials required and all emissions and wastes produced.

Figure 1. Life Cycle Stages and Modules

Production Stage (mandatory)			Construction Stage		Use Stage					End-of-Life Stage			
Extraction and raw material supply	Transport to facility	Manufacturing	Transport to site	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	De-construction / Demolition	Transport to waste processing or disposal	Waste processing	Disposal of waste
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

NOTES: X = module declared MND = module not declared

Except as noted above, all other life cycle stages as described in Figure 1 are excluded from the LCA study. The following processes are also excluded from the study:

1. Production, manufacture, and construction of manufacturing capital goods and infrastructure;
2. Production and manufacture of production equipment, delivery vehicles, and lab equipment;
3. Personnel-related activities (travel, furniture, office supplies);
4. Energy and water use related to company management and sales activities that may be located either within the factory site or at another location.

Because construction aggregates are used as constituents in a variety of applications, their end-of-life benefits are not known with certainty and are therefore not included in this EPD. It is noteworthy, however, that aggregates are typically recycled and reused and rarely landfilled.

This EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers or programs, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the construction works level per ISO 21930:2017 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.

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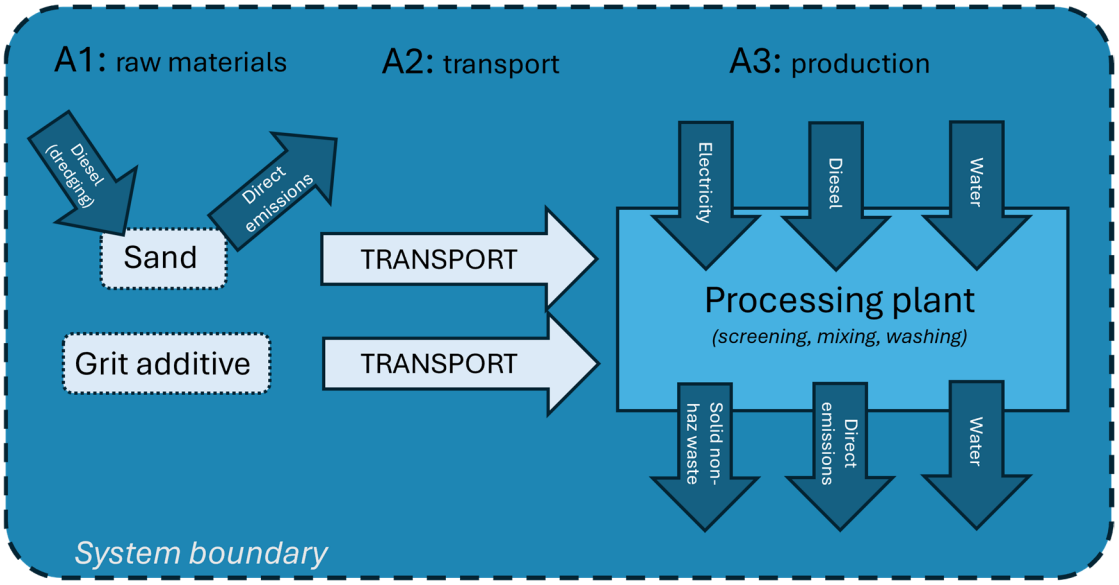
The main processes included in the system boundary are illustrated in Figure 2.

Figure 2. Main Processes Included in System Boundary



The criteria to determine whether the system boundary between the product system is reached have been met. There is no waste generated within the applicable life cycle product stages A1 through A3. No substances with hazardous and toxic properties that pose a concern for human health and/or the environment were identified in the framework of this EPD.

The cut-off criteria for all activity stage flows considered within the system boundary conform with ISO 21930: 2017. Per ISO 21930 Section 7.1.8, the cut-off rules are based on the environmental impacts related to the respective material flows. All input/output data required were collected and included in the LCI modelling. A 1% cut-off is considered for renewable and non-renewable primary energy consumption and the total mass of inputs within a unit process. The sum of the total neglected flows does not exceed 5% of all energy consumption and mass of inputs. All flows known to contribute a significant impact or to uncertainty are included. The cut-off rules are not applied to hazardous and toxic material flows, all of which are included in the LCI.

The allocation of co-products or secondary flows across the system boundary conforms with ISO 21930:2017. There are no co-products or by-products produced within this system boundary. Per ISO 21930 Section 7.2.4, allocation was not applied to any of the gate-to-gate production facilities. For facilities that manufacture additional products, the LCI flows at the facility specific to the aggregate production were reported.

All upstream material, resource, and energy carrier inputs have been sourced from facility utility bills, industry-average datasets and literature. **Table 1** describes each LCI data source and the data quality for each data source.

Table 1: Secondary Data Sources

Resource	LCI Data & Inventory Source	Data Quality	Year
Electricity	Quantis (IEA 2017)	Technology: excellent; Time: very good; Geography: very good; Completeness: excellent; Precision: excellent; Overall: very good	2015-2018
Diesel (truck and barge)	Ecoinvent v3.5 (US LCI, Athena Sustainable Materials Institute)	Technology: excellent; Time: very good; Geography: very good; Completeness: very good; Precision: very good; Overall: very good	2011-2018
Water	Ecoinvent v3.5 (US LCI, Athena Sustainable Materials Institute)	Technology: excellent; Time: very good; Geography: very good; Completeness: excellent; Precision: excellent; Overall: excellent	2015-2018

Notes: Data sources used in this study can be seen at the following link: GCCA_EPD-Tool_LCA-Database-v4.2_2024-04-23.xlsx

Cradle to Gate (A1-A3) impact results per 1 short ton (dry weight) of product are outlined in **Tables 2 & 3** for each aggregate. These results are based on the manufacturer's primary data for the calendar year 2023.

Table 2: Cradle-to-Gate Impact Results: Core Indicators

Impact Category	Abbreviation	Unit	A1. Raw materials	A2. Transportation	A3. Production	Production Stage (A1-A3)
Global warming potential	GWP	kg CO_2 eq	4.57E-1	3.1E0	3.12E0	6.67E0
Ozone depletion potential	ODP	kg CFC-11 eq	7.16E-7	7.46E-7	9.53E-8	1.56E-6
Eutrophication potential	EP	kg N eq	1.39E-3	5.53E-3	4.7E-3	1.16E-2
Acidification potential	AP	kg SO_2 eq	4.23E-3	1.75E-2	5.39E-3	2.71E-2
Photochemical oxidant creation potential	POCP	kg O_3 eq	3.54E-2	2.17E-1	5.81E-2	3.1E-1

The EPD only covers the cradle-to-gate impacts of aggregates using a declared unit and the results cannot be used to compare between products.

Environmental declarations from different programs (ISO 14025) may not be comparable. EPDs are comparable only if they use the same PCR (or sub-category PCR where applicable), include all relevant information modules, and are based on equivalent scenarios with respect to the context of construction works. This PCR allows EPD comparability only when the same functional requirements between products are ensured and the requirements of ISO 21930:2017 §5.5 are met. However, variations and deviations are possible. Example of variations: different LCA software and background LCI datasets may lead to different results for the life cycle stages declared.

End of life carbonation, as occurring in recycled concrete aggregate, is an area of ongoing study. The following impacts are reported separately to acknowledge the greater uncertainty in the calculation of impacts of carbonation as of now.

Table 3: Cradle-to-Gate Impact Results: Secondary Indicators

Impact Category	Abbreviation	Unit	A1. Raw materials	A2. Transportation	A3. Production	Production Stage (A1-A3)
Emissions from calcination and removals from carbonation	CC	kg CO_2 eq	0E0	0E0	0E0	0E0

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The combustion of renewable and non-renewable waste is not applicable to this system, therefore emissions associated with waste combustion is not included in this report. There is no packaging of the product identified in this EPD, therefore removals and emissions associated with packaging are not included in this report.

Table 4: Cradle-to-Gate Resource Use and Output Flows

Resource/Output	**Abbreviation**	**Unit**	**A1.** Raw materials	**A2.** Transportation	**A3.** Production	**Production Stage (A1-A3)**
Renewable primary resources used as an energy carrier	RPRE	MJ. net calorific value	1.32E-1	7.27E-1	2.59E-1	1.12E0
Renewable primary resources with energy content used as material	RPRM	MJ. net calorific value	0E0	0E0	0E0	0E0
Non-renewable primary resources used as an energy carrier	NRPRE	MJ. net calorific value	4.2E1	4.73E1	1.24E1	1.02E1
Non-renewable primary resources with energy content used as material	NRPRM	MJ. net calorific value	0E0	0E0	0E0	0E0
Secondary materials	SM	kg	0E0	0E0	0E0	0E0
Renewable secondary fuels	RSF	MJ. net calorific value	0E0	0E0	0E0	0E0
Non-renewable secondary fuels	NRSF	MJ. net calorific value	0E0	0E0	0E0	0E0
Recovered energy	RE	MJ per energy carrier	0E0	0E0	0E0	0E0
Components for reuse	CRU	kg	0E0	0E0	0E0	0E0
Materials for recycling	MFR	kg	0E0	0E0	2.36E-2	2.36E-2
Materials for energy recovery	MER	kg	0E0	0E0	0E0	0E0
Exported energy	EE	MJ per energy carrier	0E0	0E0	0E0	0E0
Abiotic depletion potential for fossil resources	ADPF	MJ. net calorific value	4.2E1	4.73E1	1.24E1	1.02E2
Net fresh water	nFW	m^3	5.48E-3	1.02E-2	1.84E-2	3.41E-2
Non-hazardous waste generated	nhW	kg	0E0	0E0	1.42E-1	1.42E-1
Hazardous waste generated	hW	kg	0E0	0E0	0E0	0E0
Radioactive waste generated	rW	kg	0E0	0E0	0E0	0E0
Removals and emissions associated with biogenic carbon content of the bio-based product	GWP-prod	kg CO_2	0E0	0E0	0E0	0E0

Air quality impacts

North American Aggregates (NAA) is centrally located in an industrial shipping port region in the tri-state area. With access to major transportation networks both on land and by water, NAA provides the opportunity to reduce transit emissions by offering an alternative to standard vehicular transport. Transporting materials by water is a greener alternative, taking advantage of economies of scale and easing congestion by taking trucks off the roadway.

Habitat and resource preservation

NAA understands and values the long-term preservation of the ecological feature which generates their core product. The sand material is mined from the Ambrose Federal Navigation Channel, a naturally replenishing source in the lower New York Bay. The Ambrose Channel's clean sands have a long history of successful use in the tri-state area. NAA's process avoids the erosion and destruction of habitat caused by traditional sand mining, while ensuring that the Ambrose Channel remains navigable. NAA is permitted by both the New Jersey Department of Environmental Protection and the United States Marine Corps of Engineers to mine 2-million cubic yards annually from the Ambrose Channel.

Community

In addition to providing high-quality aggregate to support the construction services industry and the prosperous economy of the tri-state area, NAA's parent company, Weeks Marine, prioritizes the health and preservation of its local communities beyond client work. With a presence throughout every reach of the country, Weeks Marine is involved in a variety of community-led projects and initiatives, including beach clean-ups along the coast of Louisiana, benefit runs for veterans in New Jersey, and holiday toy drives beyond the continental US.

Supporting documentation for the above additional environmental information can be found at:
www.weeksmarine.com and www.northamericanaggregates.com.

References

ISO 21930:2017, *Sustainability in Building Construction—Environmental Declaration of Building Products*

NSF/ASTM PCR for Construction Aggregates, with Errata (2024)

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