

City of Cape May
Cape May County, New Jersey
Preliminary Engineering Study:
Replacement of Various Sanitary Sewers
October 19, 2023



Prepared by:

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SECTION 1 – PROJECT PLANNING

INTRODUCTION

The City of Cape May is located along the Atlantic coastline, known for its historic charm and vibrant community. However, as time passes, the City's vital infrastructure faces the inevitable challenges of aging and deteriorating systems, particularly wastewater management. In response to this pressing need, this study was conducted, aimed at revitalizing and modernizing the City's sewer system.

Cape May's sewer infrastructure has been evaluated due to the age and current material. Corrosion, wear and tear, and evolving regulatory requirements necessitate a comprehensive overhaul to ensure the continued well-being of the residents, safeguard the environment, and sustain the City's economic vitality.

This proposal seeks support from the United States Department of Agriculture (USDA) to secure the necessary funding for the replacement of aging sewer mains, services, and related infrastructure. Through this collaborative endeavor, we aspire not only to address immediate infrastructure deficiencies but also to implement solutions that align with best practices in wastewater management, resilience, and environmental stewardship.

The limits of the study proposed in this application include five segments of sanitary sewer mains:

- Ohio Avenue from Pittsburg to Reading Avenue
- Ohio Avenue from Reading Avenue to Philadelphia Avenue
- Stockton Place from Beach Avenue to Columbia Avenue
- Washington Street from Sidney Avenue to Route 663
- Madison Avenue from Lafayette Street to Washington Street

The current sanitary sewer mains in the study area are comprised of gravity terracotta and asbestos cement. The sanitary sewer mains are over 50 years old, contain defective pipe joints and experience inefficient sewage flow due to pipe grade issues. The proposed investigation will allow us to evaluate the condition of these segments to determine the extent of the repairs that are needed for each.

Funding has been obtained from the New Jersey Department of Transportation (NJDOT) through the Local Transportation Projects Fund for the Ohio Avenue from Pittsburg Avenue to Reading Avenue road repairs. An additional application is currently being reviewed in the NJDOT Municipal Aid program for Ohio Avenue from Reading Avenue to Philadelphia Avenue. Additional funding is being requested from the USDA through Water and Environmental Programs funding.

In the pages that follow, we present a detailed overview of the project, encompassing its scope, objectives, anticipated outcomes, and the anticipated benefits for the City of Cape May and its residents. By investing in this critical infrastructure upgrade, we aim to fortify the community's foundation, ensuring a sustainable and prosperous future for generations to come.

LOCATION

The City of Cape May is situated at the southernmost point of the Cape May Peninsula in New Jersey, where the Delaware Bay converges with the Atlantic Ocean. This location imparts a distinctive maritime character and offers a favorable climate. The City is known for its historic Victorian architecture and holds strategic importance within the state. Its unique position at the convergence of major bodies of water contributes to its appeal and significance. The City is bounded by the Township of Lower to the north, the City of West Cape May to the west and the Atlantic Ocean to the east.



ENVIRONMENTAL RESOURCES PRESENT

The project limits were reviewed to determine the environmental impact by reviewing available mapping and site observations. The presence of freshwater wetlands, designated habitat for endangered species, streams, aquifers, farmland soil, federally listed threatened species and flood hazard areas were considered. The environmental consequences the project will have on land use are minimal. The project is the replacement of an existing linear development beneath existing paved roadways.

Soil Types

Soil maps provided by web soil survey, national cooperative soil survey, USDA national resources conservation service. The project is located within the following soil types:

USPSAS – Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded

USPSBR – Urban land-Psamments, wet substratum complex, 0 to 2 percent slopes, rarely flooded

IngB – Ingleside loamy sand, 0 to 5 percent slopes, Northern Tidewater Area

GamB – Galloway loamy sand, 0 to 5 percent slopes

The custom soil report is included in the appendix.

Geological Features & Location of Waterways

The closest waterway is the Cape Island Creek Tributary. However, this project will be located beneath existing paved roadways with minimal impact to nearby waterways. The project is located within the Cape May Bay and Tribs East Watershed (HUC11). There are no significant geological features within the potential project area.

Location of Environmentally Critical Areas

The project will not take place within a wetlands area and the nearest identified area is PFO1E by the US Fish and Wildlife Service National Wetlands Inventory. The proposed project is confined within the previously improved Right-of-Ways, virtually eliminating any effect to wetlands areas. Requiring construction to remain within the Right-of-Ways eliminates the consequences of this project to wetlands.

Measures taken to reduce negative impacts include limiting the amount of work outside of asphaltic surfaces, implementation of appropriate soil erosion and sedimentation control techniques and continuous inspection of work progression and contractor procedures.

Flood Hazard Requirements

The proposed project will be constructed within Zone AE with a base flood elevation of 8 and 9 feet determined by the Federal Emergency Management Agency (FEMA). The project will be constructed below grade and within existing impervious areas. There will be no negative impact on the floodplain.

POPULATION TRENDS

The City, and all of Cape May County, is part of the Ocean City metropolitan statistical area, and is part of the Philadelphia-Wilmington-Camden, PA-NJ-DE-MD combined statistical area, also known as the Delaware Valley or Philadelphia metropolitan area.

As of the 2020 United States census, the City's resident population was 2,768, a decrease of 839 (-23.3%) from the 2010 census count of 3,607, which in turn reflected a decline of 427 (-10.6%) from the 4,034 counted in the 2000 census. In the summer, Cape May's population is expanded by as many as 40,000 to 50,000 visitors. Population fluctuation can be an issue when providing the necessary utilities and this will be taken into consideration during the design process. The infrastructure will be designed to the larger summer population during the peak months. The entire City of Cape May is designated the Cape May Historic District, a National Historic Landmark due to its concentration of Victorian architecture.

COMMUNITY ENGAGEMENT

The City of Cape May conducts on-going meetings to establish project priorities as they impact the residents. The proposed activities are part of a large scale planned infrastructure improvement to the area. Residents often provide valuable insight to the City that is used to minimize the impact the community during construction. Once the project is initiated, the City will provide notices to the surrounding property owners to update them on the progress and schedule.

In addition to the notices provided directly to homeowners, the City discusses planned projects at the bimonthly scheduled meetings. At these meetings the City provides insight into future projects, the importance of the improvements, and allows the public a chance to provide input. Public outreach is crucial to a successful project.

SECTION 2 – EXISTING FACILITIES

LOCATION MAP

A site location map is located within the appendices.

EXISTING CONDITIONS

The gravity sewer system in the City of Cape May faces the challenge of aging infrastructure. This system, which relies on gravitational force to convey wastewater from various sources, consists of a network of underground pipes. Over time, the components of the system have aged and require more regular maintenance to ensure continued functionality. The gravity sewer system is a critical asset in safeguarding public health and the environment by efficiently collecting wastewater. In order to accurately determine the condition of the underground pipes and identify the priority of replacement, our office televised the sewer connection system in the City in Spring 2023. The televised report was analyzed, and the project scope includes areas with immediate need for replacement. The existing sanitary sewer mains in the project area include asbestos cement and vitrified clay pipe. These materials have reached their lifespan and exhibit sagging, water intrusion, cracks, and breaks.

FINANCIAL STATUS OF EXISTING FACILITY

The City of Cape May's rate schedule has been included in the appendices of this report.

One of the biggest challenges in a municipality like the City of Cape May is the balance of sufficient utility rates that do not overburden residents. Repair and reconstruction of aged infrastructure is needed to avoid emergency repair, which would cost the City millions of dollars. This cost would be passed onto the rate-payers unless proactive rehabilitation of these facilities is completed with grant assistance.

WATER/ENERGY/WASTE AUDITS

There have been no water, energy, or waste audits completed for this system.

SECTION 3 – NEED FOR PROJECT

HEALTH, SANITATION, AND SECURITY

Replacing sanitary sewer mains and laterals provides significant improvements in public health, sanitation, and security. Upgrading this crucial infrastructure ensures the efficient and safe transport of wastewater, reducing the risk of waterborne diseases and contamination. By preventing the leakage and overflow of sewage, modern sewer systems protect water sources from contamination, safeguarding the health of the community. Additionally, the replacement of sewer mains and laterals minimizes the potential for soil contamination, creating a cleaner and healthier environment. This upgrade is essential for enhancing overall public health.

Moreover, the overhaul of sewer mains and laterals leads to substantial environmental benefits. It curtails pollution of natural water bodies and reduces the environmental impact of sewage discharge. Properly functioning infrastructure ensures that wastewater undergoes treatment before being released. This, in turn, bolsters the overall health of the environment and contributes to a sustainable ecosystem. In terms of security, the upgrade enhances the resilience of the community to extreme events. Modern sewer systems are designed to efficiently manage stormwater, reducing the likelihood of flooding and the associated risks to public safety. By preventing infrastructure failures, communities can enjoy a safer living environment. Overall, the replacement of sanitary sewer mains and laterals not only supports public health and sanitation but also fortifies the security and sustainability of the community.

AGING INFRASTRUCTURE

Aging sanitary sewer infrastructure poses a critical challenge for the community. The sewer system was constructed decades ago and is showing signs of wear and deterioration. Cracks, leaks, and structural weaknesses are common issues, leading to sewage overflows, environmental contamination, and public health risks. As these systems age, they become increasingly susceptible to failures, especially during heavy rainfall or extreme weather events. The existing sanitary sewer mains in the project area include asbestos cement and vitrified clay pipe. Outdated material exacerbates the problem, making it imperative to invest in upgrading and modernizing these essential components of urban infrastructure. Failure to address this issue can result in not only significant financial burdens for emergency repairs but also long-lasting environmental and public health repercussions. It is crucial for communities to prioritize the renewal of aging sanitary sewer infrastructure to ensure a sustainable, safe, and healthy living environment for current and future generations.

REASONABLE GROWTH

The proposed infrastructure upgrades are also necessary to support the full buildout of the City and the increasing summertime population. Although the census shows a decrease in the year-round population, the summer months continue to show an increase as the City is a popular destination. The improvements would be designed for the peak summer months and flow from potential commercial and residential developments.

The maximum daily flow during the peak season will be handled by the proposed infrastructure. The existing mains are often coated with grease and other debris that can limit flow. Also, cracks and leaks allow ground water infiltration. This infiltration puts unnecessary stress on the system, creating more flow for pump stations and treatment centers.

SECTION 4 – ALTERNATIVES CONSIDERED

DESCRIPTION

There are several alternatives to fixing aging sewer infrastructure that were considered. These alternatives aim to address the challenges posed by deteriorating sewer systems in a cost-effective and sustainable manner. Here is a summary of the alternates considered:

No Action:

The No Action alternative consists of allowing the existing sewer main and laterals to remain. As emergency repairs are needed, the roadway would be excavated and the issue fixed.

Partial Replacement:

The second alternative would be to replace the sewer main on an as needed basis. With the information from the televised report, the main could be replaced only where deficiencies are seen. This would include identifying and mitigating sources of excess water entering the sewer system, such as through leaky pipes, improper connections, or groundwater infiltration.

Rehabilitation and Relining:

The third alternative would be to utilize a relining process instead of material replacement. This involves repairing or reinforcing existing sewer pipes without extensive excavation. Methods may include cured-in-place pipe (CIPP) lining, slip lining, and grouting to seal leaks and extend the lifespan of the pipes.

Trenchless Technologies:

The fourth alternative would be to utilize trenchless technology to replace the sewer main. These techniques minimize excavation and examples include pipe bursting, jack and bore, and horizontal directional drilling.

Replacement:

The fifth alternative is complete replacement of deteriorated sewer pipes with new, more durable materials (e.g., PVC) to ensure long-term functionality. All main and laterals would be replaced in their entirety.

DESIGN CRITERIA

The criteria used to compare the technology alternative included:

1. *Cost*: overall project cost.
2. *Site Footprint*: the total area on a project site that is used by the process and associated requirements. Typically, a smaller footprint correlates to a more cost effective project.
3. *Construction Feasibility*: how common the technology is in real world applications. Typically, the more common the technology, the more efficient and effective.
4. *Maintenance Requirements*: the routine maintenance of the system. Typically, the less maintenance requirements allow for more efficient operation.

Criteria	Option 1: No Action	Option 2: Partial Replacement	Option 3: Rehabilitation and Relining	Option 4: Trenchless Technologies	Option 5: Replacement
Cost	+ No initial cost	+ Could potentially save compared to full replacement	* Not least expensive, but cost is not prohibitive consideration	- Typically more expensive than open cut excavation	* Not least expensive, but cost is not prohibitive consideration
Site Footprint	+ No initial impact, but future repairs would disturb site	- Multiple different excavations with possibility of failure in the future	+ No excavation necessary for main, only laterals	+ Only need excavation for enter, exit pit and laterals	* Not least site footprint, but all environmental conditions considered
Construction Feasibility	+ No construction	+ Common practice	- Common practice but limited local contractors. Often difficult to incorporate laterals	- Common practice but would not address laterals. Open excavation needed to lateral connections	+ Most common practice and addresses all issues
Maintenance Requirements	- Issues not addressed and high potential for future issues	- Current issues addressed but high potential for future issues at multiple connect points leads to high O&M costs	* If effectively completed, low maintenance but life span not as long as replacement. Does not address main sag or misalignment	+ Low maintenance after all main and laterals are replaced	+ Virtually no maintenance as all issues will be address during open cut excavation and replacement. Nothing overlooked
Conclusion	ELIMINATE	ELIMINATE	ELIMINATE	ELIMINATE	SELECT

+ Positive Category - Negative Category * Neutral Category

ENVIRONMENTAL IMPACTS

The environmental impacts are similar across all scenarios, as the location of the project is the same for each alternate. Measures would be taken to reduce negative impacts include limiting the amount of work outside of asphaltic surfaces, implementation of appropriate soil erosion and sedimentation control techniques and continuous inspection of work progression and contractor procedures.

LAND REQUIREMENTS

The City of Cape May maintains the property rights to the streets through the Right of Ways.

POTENTIAL CONSTRUCTION PROBLEMS

The construction problems are anticipated to be similar across all alternatives. Replacing or lining the system has potential construction problems including maintaining the system throughout construction, gaining public acceptance, reducing environmental impacts by controlling sediment runoff, and adhering to construction schedule despite the potential for inclement weather.

SUSTAINABILITY CONSIDERATIONS

Sustainability considerations are expected to be similar across the different alternatives. A durable, corrosion resistant material has been selected to minimize future replacements. Also, all existing material will be properly disposed of including the asbestos cement pipe. Sustainability considerations for aging sewer infrastructure alternatives focus on minimizing environmental impact, optimizing resource use, and enhancing long-term resilience to environmental challenges.

COST ESTIMATES

The cost estimate for the chosen project is broken down in the appendices. The summary table displays the cost for the sanitary sewer main, laterals, and corresponding roadway repairs.

SECTION 5 – SELECTION OF ALTERNATIVE

LIFE CYCLE COST ANALYSIS

Life Cycle Cost Analysis	Alternate 1: Partial Replacement	Alternate 2: Rehabilitation and Relining	Alternate 3: Trenchless Technologies	Total Replacement
Total Capital Cost	\$2,181,142.70	\$2,312,317.70	\$3,255,017.70	\$2,604,367.70
Annual O&M Cost	\$75,000	\$45,000	\$20,000	\$12,000
Salvage Value	\$0	\$0	\$0	\$0
Present Worth	\$2,356,770.44	\$1,414,062.27	\$628,472.12	\$377,083.27
Net Present Value	\$4,537,913.14	\$3,726,379.97	\$3,883,489.82	\$2,981,450.97

$$P = A * [(1 + i)^n] / [i * (1 + i)^n]$$

P = Present Worth

n = number of years (50 years)

i = interest rate (2.0%)

A = annual O&M cost

Real Interest Rates on Treasury Notes and Bonds of Specific Maturities (in percent)

<u>3-Year</u>	<u>5-Year</u>	<u>7-Year</u>	<u>10-Year</u>	<u>20-Year</u>	<u>30-Year</u>
1.2	1.3	1.4	1.5	2.0	2.0

Programs with duration longer than 30 years may use the 30-year interest rate

OMB Circular No. A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs."

The life cycle cost for the project was considered throughout the design process. The project includes a major initial investment with very little costs incurred throughout the lifespan of the materials. C900 polyvinyl chloride (PVC) main and services were chosen for their long lifetime and low maintenance. PVC pipe has a 100-year service life with no necessary replacements or corrosion. PVC pipe has been proven to have the lowest annual and life cycle costs of any pipe material. The residents within the project limits will be provided a sewer distribution system with durability, low break rate, corrosion resistance, and long-lasting performance.

The entire sewer distribution system will be owned, operated, and maintained by the City of Cape May.

NON-MONETARY FACTORS

The table in Section 4 outlines the factors analyzed during this study. Replacement of the aging sewer infrastructure has been selected as the existing system is severely deteriorated and rehabilitation or other methods are not feasible. Here are the key reasons why replacement is the best option:

Severe Deterioration: When pipes are extensively damaged, corroded, or structurally compromised, rehabilitation may not provide a long-lasting solution. Replacement ensures a fresh start with new, durable materials.

Lifespan and Durability: New pipes have a longer lifespan and can withstand the demands of modern usage, reducing the likelihood of future repairs or replacements.

Capacity and Performance: Aging infrastructure may struggle to handle the increasing population growth and replacement can accommodate higher capacity and improved performance.

Reduced Ongoing Maintenance: New pipes require less frequent maintenance compared to older, deteriorated ones, leading to cost savings over the long term.

Minimized Environmental Impact: Replacement can be executed with minimal disturbance to the surrounding environment.

Public Health and Safety: Aging sewer systems may pose health risks due to potential leaks or contamination. Replacement ensures a safer, more reliable system.

Economic Viability: While replacement may involve higher upfront costs, it is the most cost-effective option over the long run, considering reduced maintenance and potential for increased system lifespan.

In summary, replacement is the best option for addressing the severely deteriorated sewer infrastructure, offering long-term durability, improved performance, and reduced maintenance.

SECTION 6 – PROPOSED PROJECT

PRELIMINARY PROJECT DESIGN

The proposed project includes the replacement of the existing aging sanitary sewer main and laterals. The system is in need of repairs and the amount of degradation and environmental concerns warrant full replacement. The mains are over 50 years old, contain defective joints, and experience inefficient sewage flow due to pipe grade issues. During full replacement the main will be installed to meet the current slope standards for efficient flow. The sanitary sewer main will be replaced within the following sections:

- Ohio Avenue from Pittsburg to Reading Avenue
- Ohio Avenue from Reading Avenue to Philadelphia Avenue
- Stockton Place from Beach Avenue to Columbia Avenue
- Washington Street from Sidney Avenue to Route 663
- Madison Avenue from Lafayette Street to Washington Street

The main and laterals will be replaced with C900 PVC pipe. C900 polyvinyl chloride (PVC) main and services were chosen for their long lifetime and low maintenance. After the replacement the roadway will be restored to the existing condition. Due to the close proximity of the laterals, the restoration will justify a full roadway reconstruction. The asphalt roadway, concrete curbing and driveways will be restored. Also, during the replacement of the sanitary sewer system, the City has also elected to replace the water main, water services and storm sewer system as needed for a complete project. Once completed the roadway will not need to be disturbed for many years.

PROJECT SCHEDULE

Task	Description	Timeframe	Schedule
1	Project Design	3 Months	Feb. 2024 – April 2024
2	Permit Applications & Regulatory Approvals	1 Month	May 2024
3	Bid Document Preparation	1 Month	June 2024
4	Bidding Phase	1 Month	July 2024
5	Contract Award	1 Month	August 2024
6	Procurement & Construction	6 Months	Sept. 2024 – Feb. 2025
7	First Year Operations	12 Months	March 2025 – March 2026

The table above shows the anticipated project schedule. The schedule is dependent on the timing of authorization, among other considerations.

PERMIT REQUIREMENTS

The following permits are required for the proposed activities:

- NJDEP Short Term Water Use Permit-By-Rule
- Cape May County Utility Opening Permit

SUSTAINABILITY CONSIDERATIONS

Sustainability considerations were analyzed for the proposed project. A durable, corrosion resistant material has been selected to minimize future replacements. It will not require energy as it is a gravity conveyed system. Also, all existing material will be properly disposed of including the asbestos cement pipe. Sustainability considerations for aging sewer infrastructure alternatives focus on minimizing environmental impact, optimizing resource use, and enhancing long-term resilience to environmental challenges.

TOTAL PROJECT COST ESTIMATE

The cost estimate for the chosen project is broken down in the appendices. The summary table displays the cost for the sanitary sewer main, laterals, and corresponding roadway repairs.

ANNUAL OPERATING BUDGET

The City’s annual operating budget can be found on their website: <https://www.capemacity.com/FinancialReporting>.

SUMMARY OF RATES AND TERMS

5,000 Minimum gallons plus (additional 1,000 gallon excess rate on anything over 5,000 gallons)

	Water	Sewer	Total
Minimum charge includes: 5,000 gallons	\$39.00	\$71.40	\$110.40
Excess Rate: over 5,000 gallons – First, Second & Fourth Quarters	\$9.09	\$18.10	\$27.19
Excess Rate: over 5,000 gallons – Third Quarter	\$9.45	\$18.10	\$27.55

Basis of rates:

A minimum water rate of \$39.00 is assessed for up to 5,000 gallons of water used. The minimum sewer rate for that same 5,000 gallons of water used will be \$71.40.

For all water used over 5,000 gallons there will be an excess rate of \$9.09/1,000 gallons in the 1st, 2nd & 4th quarters and \$9.45/1,000 gallons in the 3rd quarter.

SECTION 7 – CONCLUSIONS AND RECOMMENDATIONS

In conclusion, we recommend that the City initiate the sanitary sewer replacement project. Securing the USDA grant for the replacement of our aging sanitary sewer system would assist the community's commitment to safeguarding public health and improve the infrastructure. The current infrastructure is over 50 years old and contains multiple defects. The project would address the discussed concerns including any environmental concerns, leaking pipes, and inefficient grades. The study analyzed various alternatives and the total replacement is recommended. This approach addresses all issues and will produce a virtually maintenance free system.

SECTION 8 – APPENDICES

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APPENDIX F: FEMA FIRM Maps

APPENDIX G: Existing Pipe CCTV Report

APPENDIX H: Preliminary Survey Data

APPENDIX I: Engineer’s Estimate of Construction

Appendix A: Location Map





**PROJECT SITE:
WASHINGTON STREET (SIDNEY TO
ROUTE 663)**

**PROJECT SITE:
MADISON AVENUE (LAFAYETTE TO
WASHINGTON STREET)**

**PROJECT SITE:
OHIO AVENUE (PITTSBURGH TO
PHILADELPHIA AVENUE)**

**PROJECT SITE:
STOCKTON PLACE (BEACH AVENUE
TO COLUMBIA AVENUE)**



PROJECT LOCATION MAP
 Replacement of Various Sanitary Sewers
 City of Cape May, Cape May County, New Jersey
 Date: 9/25/2023

Appendix B: Sewer Service Area

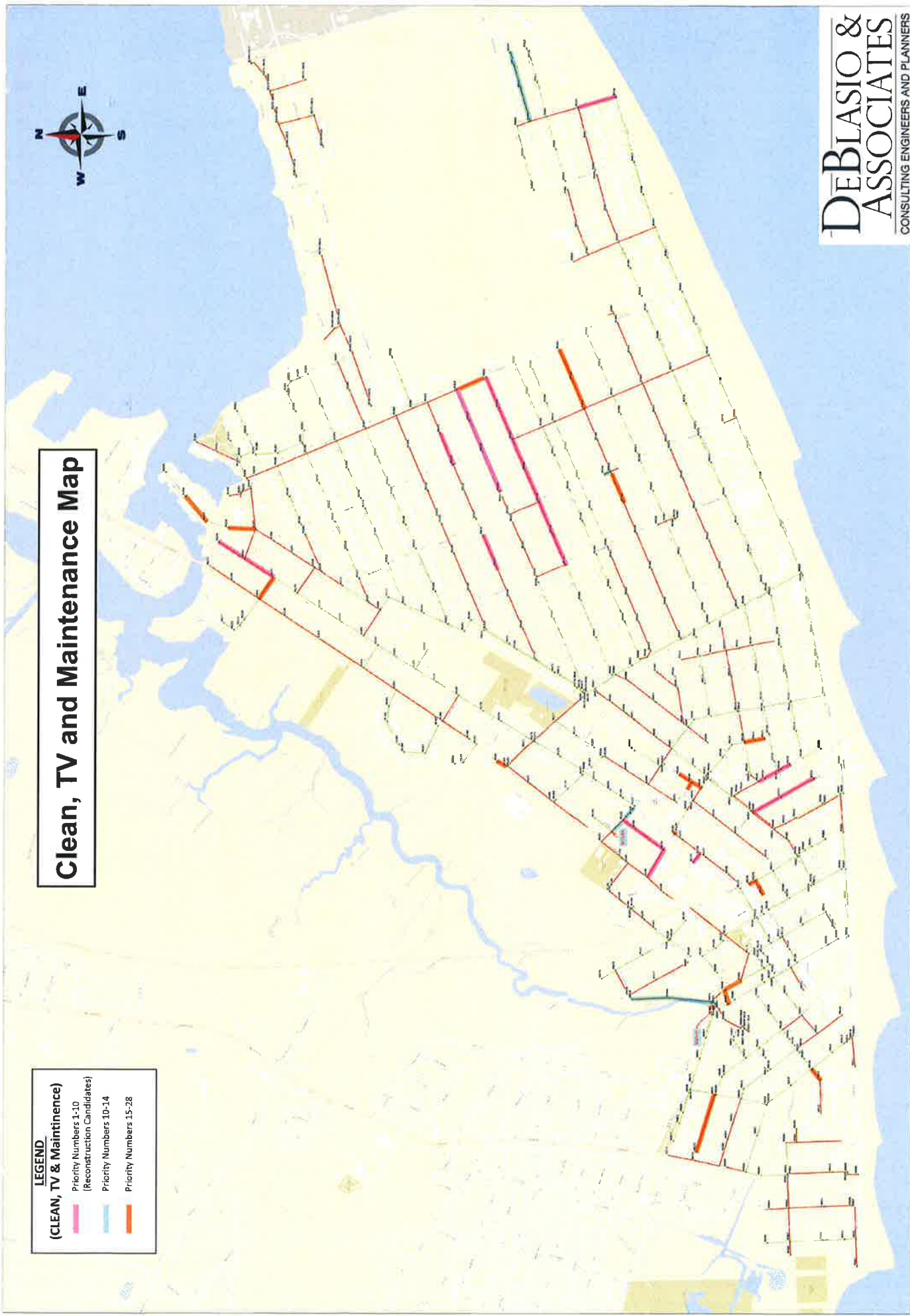




Clean, TV and Maintenance Map

LEGEND
(CLEAN, TV & Maintenance)

- Priority Numbers 1-10
(Reconstruction Candidates)
- Priority Numbers 10-14
- Priority Numbers 15-28



Appendix C: NRCS Soil Report



Soil Map—Cape May County, New Jersey
(Soils)






































Map Scale: 1:18,600 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



MAP LEGEND

 Area of Interest (AOI)	 Spoil Area
 Soils	 Stony Spot
 Soil Map Unit Polygons	 Very Stony Spot
 Soil Map Unit Lines	 Wet Spot
 Soil Map Unit Points	 Other
Special Point Features	 Special Line Features
 Blowout	Water Features
 Borrow Pit	 Streams and Canals
 Clay Spot	Transportation
 Closed Depression	 Rails
 Gravel Pit	 Interstate Highways
 Gravelly Spot	 US Routes
 Landfill	 Major Roads
 Lava Flow	 Local Roads
 Marsh or swamp	Background
 Mine or Quarry	 Aerial Photography
 Miscellaneous Water	
 Perennial Water	
 Rock Outcrop	
 Saline Spot	
 Sandy Spot	
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cape May County, New Jersey
Survey Area Data: Version 18, Aug 29, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AptAv	Appoquinimink-Transquaking-Mispillion complex, 0 to 1 percent slopes, very frequently flooded	122.9	9.4%
BEADV	Beaches, 0 to 15 percent slopes, very frequently flooded	54.1	4.1%
BEXAS	Berryland and Mullica soils, 0 to 2 percent slopes, occasionally flooded	29.3	2.2%
DoeAO	Downer sandy loam, 0 to 2 percent slopes, Northern Tidewater Area	3.4	0.3%
GamB	Galloway loamy sand, 0 to 5 percent slopes	55.8	4.3%
HbmB	Hammonton loamy sand, 0 to 5 percent slopes	6.2	0.5%
HboA	Hammonton sandy loam, 0 to 2 percent slopes	4.4	0.3%
HorDr	Hooksan sand, 2 to 15 percent slopes, rarely flooded	21.1	1.6%
IngB	Ingleside loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	75.0	5.7%
PdwAv	Pawcatuck-Transquaking complex, 0 to 1 percent slopes, very frequently flooded	19.0	1.5%
PstAt	Psammaquents, sulfidic substratum, 0 to 2 percent slopes, frequently flooded	114.4	8.8%
UR	Urban land	77.6	5.9%
USPSAS	Urban land-Psamments, sulfidic substratum complex, 0 to 2 percent slopes, occasionally flooded	320.1	24.5%
USPSBR	Urban land-Psamments, wet substratum complex, 0 to 2 percent slopes, rarely flooded	162.6	12.5%
WATER	Water	0.9	0.1%
WATERs	Water, saline	237.9	18.2%
Totals for Area of Interest		1,304.7	100.0%

Appendix D: Wetlands Map

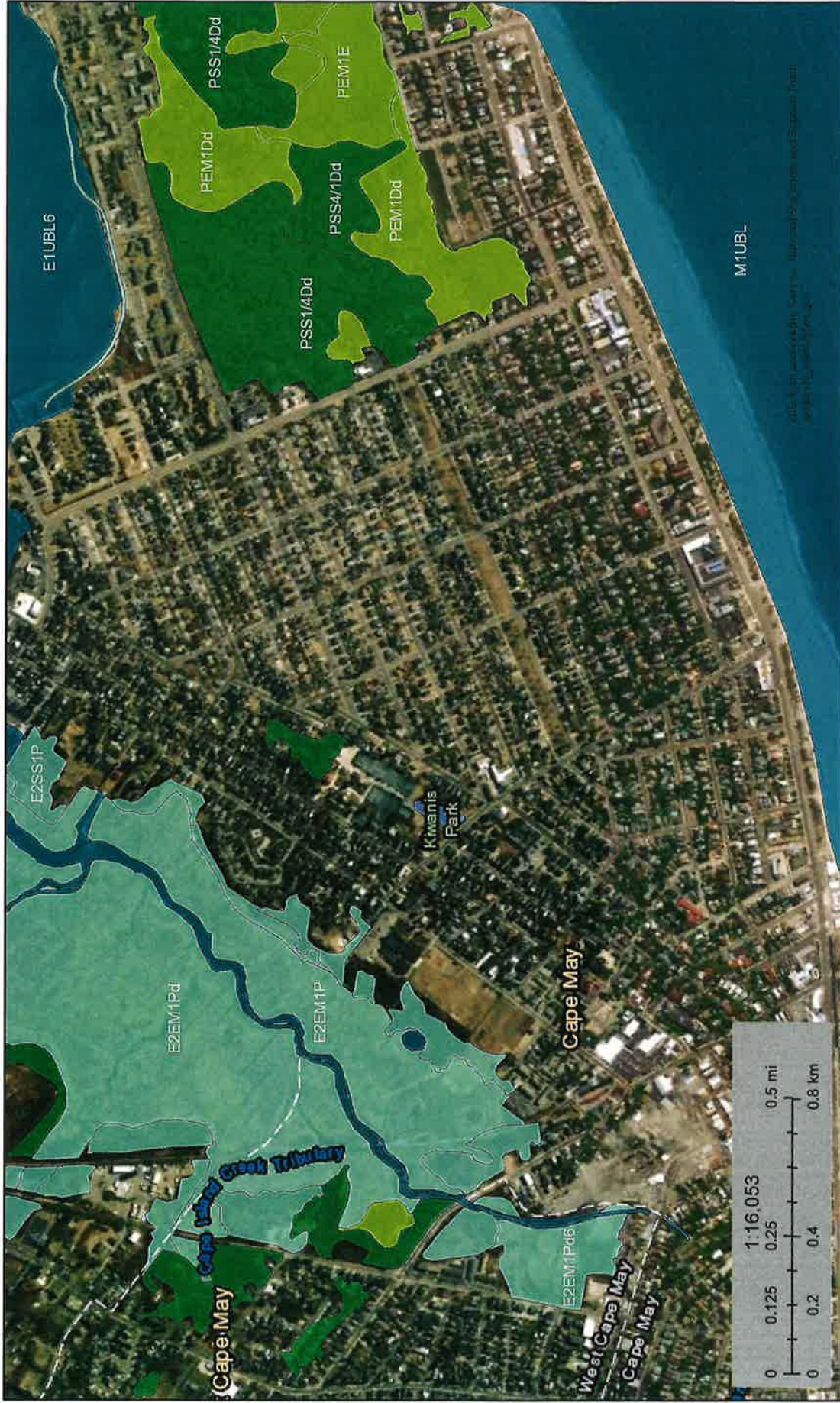




U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetlands



September 14, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Appendix E: NJDEP Water Withdraws, Uses, Transfers, and Discharges



Water Withdrawals, Transfers and Discharges for CAPE MAY BAYS & TRIBS EAST --- 02040302080

WMA:	Cape May County	16
HUC11:	Cape May Bays & Tribs East	02040302080

Table 1. Freshwater¹ Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q2)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water ²											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	4	4	4	34	13	29	13	13	28	36	18
sum	4	4	4	34	13	29	13	13	28	36	18
groundwater ³											
confined	1,432	1,552	1,372	1,713	1,497	1,722	1,793	1,626	1,647	1,706	1,646
unconfined	1,997	2,247	2,219	2,353	2,223	887	793	920	949	977	1,501
sum	3,399	3,800	3,591	4,067	3,721	2,589	2,592	2,746	2,796	2,683	3,197
total withdrawals:	3,392	3,804	3,595	4,101	3,734	2,618	2,605	2,759	2,825	2,719	3,215

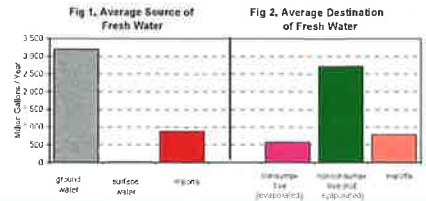


Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports ⁴	587	330	353	372	375	1,301	1,283	1,423	1,317	1,303	873
exports ⁵	905	1,027	899	1,010	843	623	636	654	681	592	765
net	312	297	454	357	532	678	647	769	636	711	78

Table 3. Nonconsumptive⁶ & Consumptive⁷ Water Use⁸ in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	2,009	2,036	2,001	2,230	2,044	2,088	2,088	2,215	2,153	2,141	2,101
consumptive	333	351	333	391	325	343	356	393	382	362	357
domestic wells											
nonconsumptive	442	445	451	456	451	465	471	476	482	489	464
consumptive	62	63	63	64	65	66	66	67	68	69	65
industrial & commercial & mining											
nonconsumptive	111	84	68	96	100	124	134	170	173	215	127
consumptive	14	11	9	12	13	15	16	20	21	25	16
agricultural & non-agricultural irrigation											
nonconsumptive	9	11	12	21	15	18	12	18	20	21	16
consumptive	80	96	103	184	132	165	97	159	170	182	137
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM											
nonconsumptive	2,572	2,576	2,531	2,802	2,620	2,896	2,714	2,879	2,828	2,865	2,708
consumptive	489	520	508	651	535	569	536	640	641	638	575
PERCENTAGES											
nonconsumptive	84.0%	83.2%	83.3%	81.2%	83.0%	82.1%	83.5%	81.8%	81.5%	81.8%	82.5%
consumptive	16.0%	16.8%	16.7%	18.8%	17.0%	17.9%	16.5%	18.2%	18.5%	18.2%	17.5%

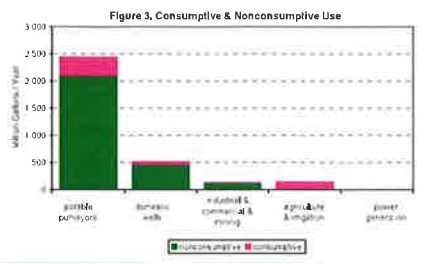


Table 4. Average Seasonal⁹ Use - Nonconsumptive⁶ & Consumptive⁷ (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-	Consump-	Noncon-	Consump-	Noncon-	Consump-	Noncon-	Consump-	Noncon-	Consump-
potable purveyors	374	0	469	38	776	288	499	51	2,112	357
domestic wells	106	0	109	8	135	47	113	10	464	65
industrial & commercial & mining	24	3	31	4	37	5	35	4	127	16
agricultural & non-agricultural irrigation	0	3	3	22	9	82	3	30	16	137
power generation	0	0	0	0	0	0	0	0	0	0
SUM	505	3	611	72	951	402	651	95	2,719	575

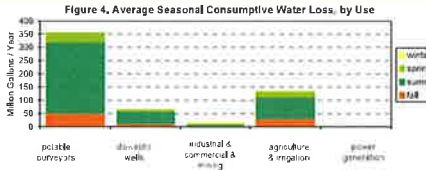


Table 5. Sewage Generation & Transfers¹⁰ in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	1,420	1,591	1,593	1,626	2,852	3,637	5,149	4,541	4,747	4,445	3,160
imported to HUC11	0	0	0	0	0	366	1,353	1,197	1,241	1,779	534
exported from HUC11	1,405	1,577	1,587	1,615	2,844	3,992	3,143	2,767	2,908	2,896	2,363

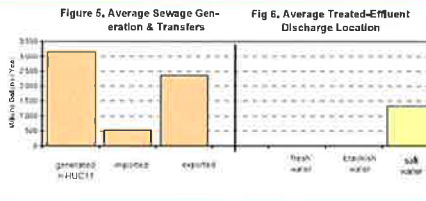


Table 6. Destination of Treated Effluent (Reclaimed Water) Discharges¹¹ in the HUC11 (millions of gallons)

Destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	12	9	6	6	3	0	0	0	0	0	4
brackish water	4	4	4	6	3	3	1	1	0	0	3
salt water	0	0	0	0	0	908	3,358	2,970	3,080	2,997	1,324
sum	16	13	10	11	6	911	3,360	2,971	3,080	2,997	1,331

Table 7. 1999 Water Allocations¹² in HUC11 by Water Source

Water Source	MGY
surface water	181
groundwater	3,237
total	3,431

Table 8. 1999 Water Allocations¹² in HUC11 by Water Use Group

Use Group	MGY
agricultural	930
commercial	241
industrial	241
irrigation	310
mining	78
potable supply	2,134
power generation	
total	3,431

Table 9. HUC11 Descriptive Statistics

--- Area: in this HUC11 only 103.2 sq. mi., upstream HUC11s 0.0 sq. mi., total watershed 103.2 sq. mi. (this HUC11 onshore area: 83.7 sq. mi.)

--- Population of this HUC11:

Year	Population	Change
1940	13,532	
1950	17,789	31.5%
1960	23,103	28.8%
1970	27,811	20.6%
1980	37,812	35.5%
1990	42,012	11.1%
2000	44,549	6.3%
2010	48,245	8.1%, est. ¹¹
2020	51,812	7.4%, est. ¹²
2030	55,347	6.8%, est. ¹²

--- Land Use of this HUC11:

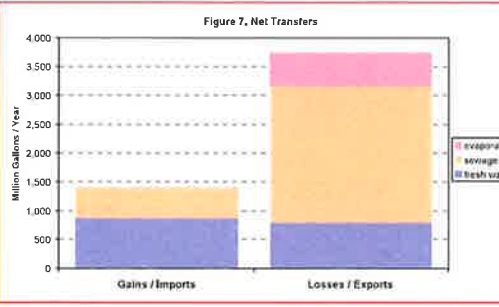
Type	1986	1995	Change
agri.	4.1%	3.0%	-1.1%
barren	0.8%	0.9%	0.0%
forest	10.4%	0.8%	-9.6%
urban	16.9%	19.0%	2.1%
water	23.1%	23.2%	0.1%
wetlands	44.7%	44.5%	-0.3%

--- % of this HUC11 in:

Pinelands	0.0%
Highlands	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

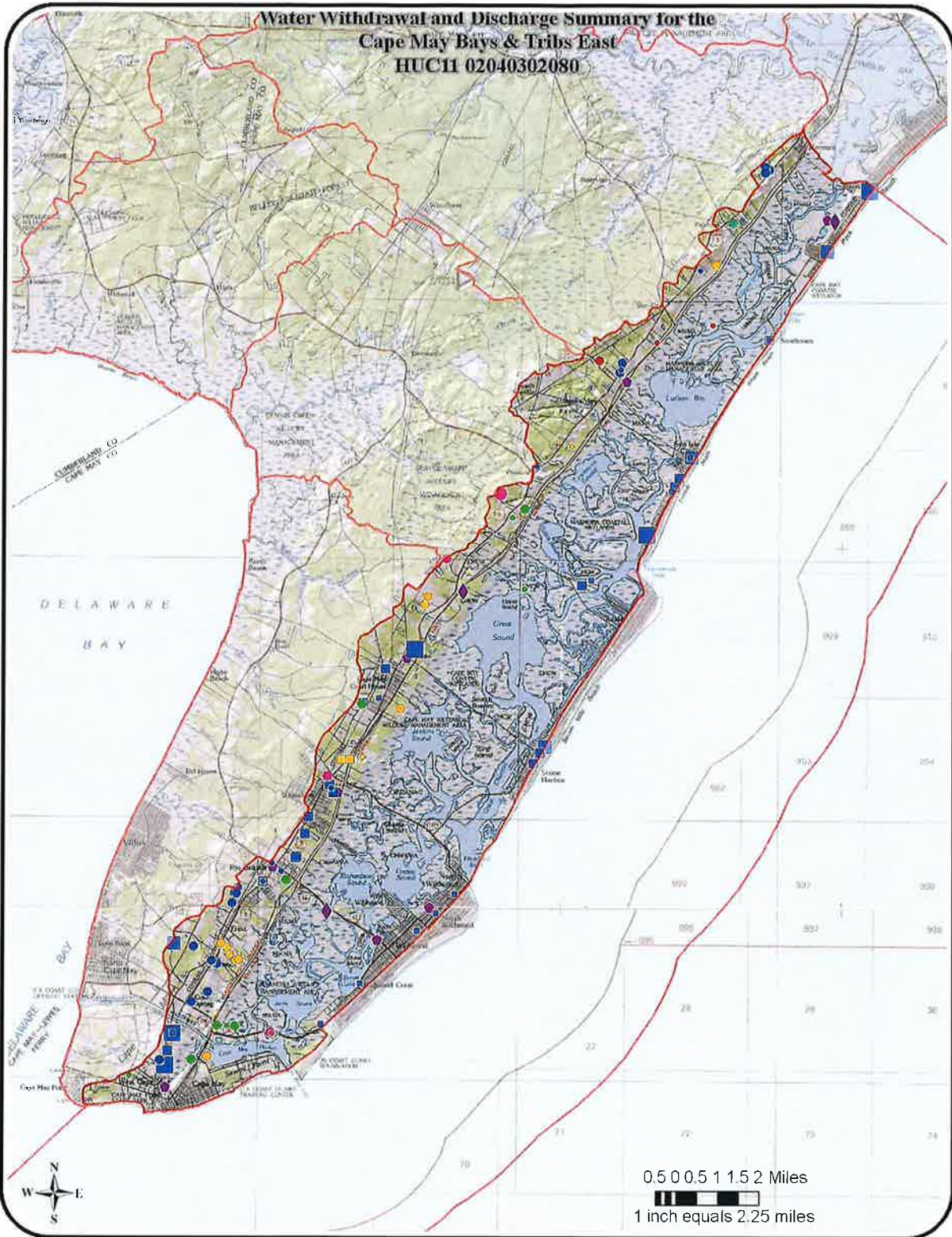
location	#	name
downstream (if any)	02040302040	Atlantic Coast (34th St to Cape May Pt)
upstream (if any)		



NOTES:

- Salt and brackish water withdrawn and use is not included in this data.
- This does not account for water released from upstream reservoirs for downstream intakes.
- Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- Nonconsumptive water use refers to water used in the watershed but not evaporated.
- Consumptive water use refers to water evaporated in the watershed. It does not include exports.
- Uses refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
- Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
- Sewage generation and transfers are based on intercession of sewer service areas with HUC11s.
- Based on discharge volume reported under NPDES program.
- The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
- Import and export volumes based on reported transfers between purveyors and on intercession of purveyor service areas with HUC11s.
- Projected population estimates based on NJ Metropolitan Planning Organization estimates.
- Subject to revision.
- Withdrawals for offshore reservoirs are problematic and complicate Figures 1 and 2.

**Water Withdrawal and Discharge Summary for the
Cape May Bays & Tribs East
HUC11 02040302080**



Key for Discharge Data

1999 Treated Effluent Discharge	
0 - 50 MGY	•
50 - 100 MGY	◆
100 - 500 MGY	◇
> 500 MGY	◊
Other Permitted Discharge	◆

Key for Withdrawal Data

Source	1999 Withdrawal	Use Group
GW Confined	□	Agricultural
GW Unconfined	○	Commercial
SW	—	Industrial
No 1999 Use	●▲	Irrigation
1 - 50 MGY	■▲	Mining
51 - 100 MGY	■●▲	Not Classified
101 - 500 MGY	■●▲	Potable Supply
> 500 MGY	■●▲	Power Generation

MGY = millions of gallons per year



Appendix F: FEMA FIRM Maps



Appendix G: Existing Pipe CCTV Report





**MOBILE DREDGING
& VIDEO PIPE**

A Carylton Company

1566 Harding Highway
Newfield, NJ 08344
p: (856) 697-1900
f: (856) 697-0757
mobiledredging.com

DeBlasio Associates

Cape May, NJ

CCTV Report

Work Performed 2/20/2023 – 4/6/2023



Inspection report

Date: 2/27/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M349/M338
Year laid:	Pre-cleaning: Light Cleaning	Direction: Downstream	Pipe Joint Length:	Total Length: 331.8'	Length Surveyed: 331.8'

City: CAPE MAY NJ	Drainage Area:	Upstream MH: M349
Street: READING AND OHIO	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M338
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 8"	Sewer Category: SEC	Joints passed: 0
Pipe material: Asbestos Cement	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May, NJ	



Additional Info: **Section No. 17**

1:2366	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M349	00:00:22		
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:23		
	12.9	TFA	Tap Factory Activity at 9 o'clock, dia/height: 6inch	00:02:57		
	14.9	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:04:02		
	16.4	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:04:53		
	94.7	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:07:40		
	100.0	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:08:14		
	151.8	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:09:50		
	158.2	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:10:31		
	166.5	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:11:28		
	204.7	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:14:21		
	220.1	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:26:34		
	225.3	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:27:03		
	267.4	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:29:06		
276.2	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:29:40			
299.1	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:30:55			



Inspection report

Date: 2/27/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M349/M338
Year laid:	Pre-cleaning: Light Cleaning	Direction: Downstream	Pipe Joint Length:	Total Length: 331.8'	Length Surveyed: 331.8'

1:2366	Distance	Code	Observation	Counter	Photo	Grade		
	327.7	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:32:04				
	331.8	AMH	Manhole / M338	00:32:46				
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0000	0.0	0.0	0.0	0.0	0.0	0.0



Inspection report

Date: 3/10/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M233/M232
Year laid:	Pre-cleaning: Light Cleaning	Direction: Upstream	Pipe Joint Length:	Total Length: 35.4'	Length Surveyed: 35.4'

City: CAPE MAY NJ	Drainage Area:	Upstream MH: M233
Street: WASHINGTON AVE	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M232
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 12"	Sewer Category: SEC	Joints passed: 0
Pipe material: Polyvinyl Chloride	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May, NJ	

Additional Info: **Section No. 34**

1:268	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M232	00:00:36		
	0.0	MWL	Water Level, 10% of the vertical dimension	00:00:39		
	6.0	MMC	Miscellaneous Material Change, Vitrified clay pipe / MATERIAL CHANGE	00:01:11		
	6.0	IRJ	Infiltration Runner Joint at 2 o'clock, within 8 inch	00:02:18	M233_M2 32_31020 23_125258	M4
	8.7	IRJ	Infiltration Runner Joint at 2 o'clock, within 8 inch	00:03:33	M233_M2 32_31020 23_125258	M4
	8.7	MMC	Miscellaneous Material Change, Asbestos cement / MATERIAL CHANGE	00:03:39		
	8.9	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 8inch	00:04:26		
	14.2	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 8inch	00:04:58		
	14.7	ISJ	Infiltration Stain Joint from 8 o'clock to 4 o'clock, within 8 inch	00:05:58		M1
	26.6	IDL	Infiltration Dripper Lateral at 12 o'clock	00:06:37		M3
	26.6	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:06:45	M233_M2 32_31020 23_125258	
	32.1	S01 MWLS	Miscellaneous Water Level, Sag, 50% of the vertical dimension, Start	00:07:45		
	35.4	F01 MWLS	Miscellaneous Water Level, Sag, 50% of the vertical dimension, Finish / SAG CONTINUES/UNABLE TO PROCEED	00:10:18		S3
	35.4	MSA	Miscellaneous Survey Abandoned / WATER LEVEL TOO HIGH	00:10:22		

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3100	4231	4232	3.0	12.0	15.0	3.0	3.0	3.0

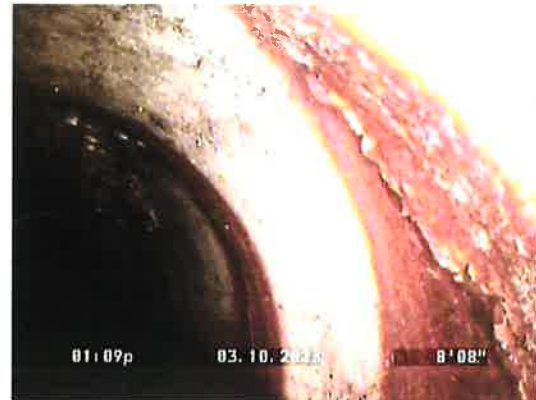


Section Pictures - 3/10/2023 - M233/M232

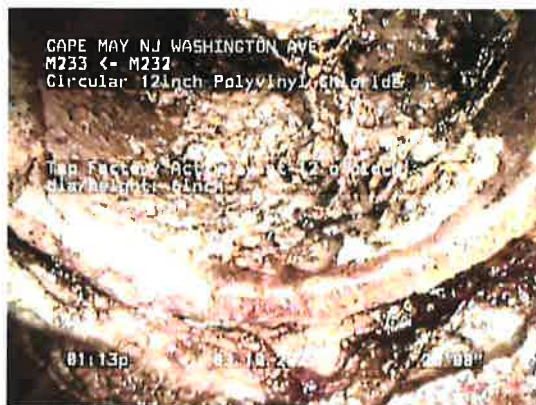
City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY NJ	WASHINGTON AVE	3/10/2023	M233/M232	34



M233_M232_3102023 125258 PM_IRJ_113.jpg, 00:02:18, 5.97ft
Infiltration Runner Joint at 2 o'clock, within 8 inch



M233_M232_3102023 125258 PM_IRJ_114.jpg, 00:03:33, 8.71ft
Infiltration Runner Joint at 2 o'clock, within 8 inch



M233_M232_3102023 125258 PM_TFA_115.jpg, 00:06:45, 26.63ft
Tap Factory Activity at 12 o'clock, dia/height: 6inch



Inspection report

Date: 3/14/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M236/M233
Year laid:	Pre-cleaning: Light Cleaning	Direction: Upstream	Pipe Joint Length:	Total Length: 86.6'	Length Surveyed: 86.6'

City: CAPE MAY NJ	Drainage Area:	Upstream MH: M236
Street: WASHINGTON & TEXAS	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M233
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 10"	Sewer Category: SEC	Joints passed: 0
Pipe material: Asbestos Cement	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May, NJ	

Additional Info: **Section No. 42**

1:561	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M233	00:00:19		
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:21		
	15.0	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:03:07		
	20.5	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 6inch	00:04:04		
	39.4	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 12 o'clock to 5 o'clock, within 8 inch	00:05:16	M236_M2 33_31420 23 81806	M2
	41.3	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:06:46		
	42.4	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 12 o'clock to 12 o'clock, within 8 inch	00:08:21	M236_M2 33_31420 23 81806	M2
	44.5	TFC	Tap Factory Made Capped at 1 o'clock, dia/height: 6inch	00:08:37		
	47.7	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 12 o'clock to 12 o'clock, within 8 inch	00:09:22		M2
	51.2	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 12 o'clock to 12 o'clock, within 8 inch	00:09:35	M236_M2 33_31420 23 81806	M2
	54.3	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 8 o'clock to 12 o'clock, within 8 inch	00:09:49		M2
	57.8	DAE	Deposits Attached Encrustation, 5% of cross sectional area from 8 o'clock to 12 o'clock, within 8 inch	00:10:02		M2
	57.9	MMC	Miscellaneous Material Change, Polyvinyl chloride / MATERIAL CHANGE	00:10:27		
	62.4	TFC	Tap Factory Made Capped at 11 o'clock, dia/height: 6inch	00:10:51		
	67.6	TFC	Tap Factory Made Capped at 1 o'clock, dia/height: 6inch	00:11:20		
	71.1	CL	Crack Longitudinal at 1 o'clock, within 8 inch	00:12:08	M236_M2 33_31420 23 81806	S2



Section Pictures - 3/14/2023 - M236/M233

City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY NJ	WASHINGTON & TEXAS	3/14/2023	M236/M233	42



M236_M233_3142023 81806 AM_DAE_13.jpg, 00:05:16,
39.38ft
Deposits Attached Encrustation, 5% of cross sectional area



M236_M233_3142023 81806 AM_DAE_14.jpg, 00:08:21,
42.42ft
Deposits Attached Encrustation, 5% of cross sectional area



M236_M233_3142023 81806 AM_DAE_15.jpg, 00:09:35,
51.23ft
Deposits Attached Encrustation, 5% of cross sectional area



M236_M233_3142023 81806 AM_CL_16.jpg, 00:12:08,
71.08ft
Crack Longitudinal at 1 o'clock, within 8 inch



03-17-23

Inspection report

Date: 11/19/2022	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M531M532
Year laid:	Pre-cleaning: Light Cleaning	Direction: Downstream	Pipe Joint Length:	Total Length: 319.6'	Length Surveyed: 319.6'

City: CAPE MAY	Drainage Area:	Upstream MH: M531
Street: STOCKTON PL	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M532
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 8"	Sewer Category: SEC	Joints passed: 0
Pipe material: Vitrified Clay Pipe	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May, NJ	

Additional Info: **Section No. 62**

1:734	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M531	00:00:25		
	0.0	MWL	Water Level, 10% of the vertical dimension	00:00:26		
	5.2	B	Broken at 8 o'clock, within 8 inch	00:06:36	M531_M5 32_11192 022_34432	S4
	28.8	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 6inch	00:07:45		
	30.7	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:08:06		
	48.3	CC	Crack Circumferential from 7 o'clock to 11 o'clock, within 8 inch	00:09:40		S1
	63.9	DAE	Deposits Attached Encrustation, 10% of cross sectional area at 9 o'clock	00:10:37		M2
	63.9	TFA	Tap Factory Activity at 9 o'clock, dia/height: 6inch	00:10:41		
	64.9	IS	Infiltration Stain from 1 o'clock to 5 o'clock, within 8 inch	00:11:13		M1
	64.9	FC	Fracture Circumferential from 1 o'clock to 5 o'clock, within 8 inch	00:11:17		S2
	66.0	MWLS	Miscellaneous Water Level, Sag, 15% of the vertical dimension	00:11:28		S2
	70.0	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 6inch	00:11:49		
	71.9	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:12:12		
	73.9	DAE	Deposits Attached Encrustation, 5% of cross sectional area at 12 o'clock	00:12:38		M2
	73.9	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:12:40		
	85.5	CC	Crack Circumferential from 8 o'clock to 4 o'clock, within 8 inch	00:14:00		S1



Inspection report

Date: 11/19/2022	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M531M532
Year laid:	Pre-cleaning: Light Cleaning	Direction: Downstream	Pipe Joint Length:	Total Length: 319.6'	Length Surveyed: 319.6'

1:734	Distance	Code	Observation	Counter	Photo	Grade
	108.8	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 6inch	00:14:56		
	110.9	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:15:18		
	114.3	CC	Crack Circumferential from 8 o'clock to 4 o'clock, within 8 inch	00:16:11		S1
	114.7	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:17:34		
	115.3	CL	Crack Longitudinal at 12 o'clock, within 8 inch	00:18:04		S2
	119.0	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:18:22		
	132.8	CC	Crack Circumferential from 1 o'clock to 5 o'clock, within 8 inch	00:19:28		S1
	139.7	S01 MWLS	Miscellaneous Water Level, Sag, 20% of the vertical dimension, Start	00:19:54		
	146.3	TFC	Tap Factory Made Capped at 2 o'clock, dia/height: 6inch	00:20:50		
	147.4	FC	Fracture Circumferential from 8 o'clock to 4 o'clock, within 8 inch	00:21:21		S2
	148.2	TFC	Tap Factory Made Capped at 9 o'clock, dia/height: 6inch	00:21:38		
	151.1	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:22:13		
	154.6	F01 MWLS	Miscellaneous Water Level, Sag, 5% of the vertical dimension, Finish	00:22:45		S2
	160.0	B	Broken from 12 o'clock to 12 o'clock, within 8 inch	00:23:07	M531_M5 32_11192 022 34432	S4
	160.9	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:23:50		
	166.1	FC	Fracture Circumferential from 12 o'clock to 4 o'clock, within 8 inch	00:24:22	M531_M5 32_11192 022 34432	S2
	168.3	S02 MWLS	Miscellaneous Water Level, Sag, 20% of the vertical dimension, Start	00:25:00		
	170.0	FC	Fracture Circumferential from 8 o'clock to 4 o'clock, within 8 inch	00:25:35	M531_M5 32_11192 022 34432	S2
	172.0	B	Broken from 8 o'clock to 4 o'clock, within 8 inch	00:25:58	M531_M5 32_11192 022 34432	S4



Inspection report

Date: 11/19/2022	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M531M532
Year laid:	Pre-cleaning: Light Cleaning	Direction: Downstream	Pipe Joint Length:	Total Length: 319.6'	Length Surveyed: 319.6'

1:734	Distance	Code	Observation	Counter	Photo	Grade		
	201.2	IR	Infiltration Runner from 8 o'clock to 4 o'clock, within 8 inch	00:30:01	M531_M5 32_11192 022_34432	M4		
	201.2	F02 MWLS	Miscellaneous Water Level, Sag, 5% of the vertical dimension, Finish	00:30:08		S2		
	220.8	TFA	Tap Factory Activity at 2 o'clock, dia/height: 6inch	00:31:05				
	222.7	TFC	Tap Factory Made Capped at 10 o'clock, dia/height: 6inch	00:31:27				
	252.9	B	Broken from 7 o'clock to 11 o'clock, within 8 inch	00:35:05	M531_M5 32_11192 022_34432	S4		
	271.0	FC	Fracture Circumferential from 7 o'clock to 1 o'clock, within 8 inch	00:36:24		S2		
	281.8	FC	Fracture Circumferential from 8 o'clock to 11 o'clock, within 8 inch	00:37:13		S2		
	319.3	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:38:34				
	319.3	CC	Crack Circumferential from 8 o'clock to 12 o'clock, within 8 inch	00:38:44		S1		
	319.6	MSA	Miscellaneous Survey Abandoned / INTRUDING TAP	00:39:28				
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
442B	4122	452C	57.0	9.0	66.0	2.1	2.2	2.1



Section Pictures - 11/19/2022 - M531M532

City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY	STOCKTON PL	11/19/2022	M531M532	62



M531_M532_11192022 34432 AM_B_19.jpg, 00:06:36, 5.16ft
Broken at 8 o'clock, within 8 inch



M531_M532_11192022 34432 AM_B_20.jpg, 00:23:07,
159.97ft
Broken from 12 o'clock to 12 o'clock, within 8 inch



M531_M532_11192022 34432 AM_B_21.jpg, 00:23:07,
159.97ft
Broken from 12 o'clock to 12 o'clock, within 8 inch



M531_M532_11192022 34432 AM_FC_22.jpg, 00:24:22,
166.15ft
Fracture Circumferential from 12 o'clock to 4 o'clock, within 8



M531_M532_11192022 34432 AM_FC_23.jpg, 00:25:35,
169.99ft
Fracture Circumferential from 8 o'clock to 4 o'clock, within 8



M531_M532_11192022 34432 AM_B_24.jpg, 00:25:58,
172.02ft
Broken from 8 o'clock to 4 o'clock, within 8 inch



Section Pictures - 11/19/2022 - M531M532

City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY	STOCKTON PL	11/19/2022	M531M532	62



M531_M532_11192022 34432 AM_IR_25.jpg, 00:30:01, 201.18ft
Infiltration Runner from 8 o'clock to 4 o'clock, within 8 inch



M531_M532_11192022 34432 AM_B_26.jpg, 00:35:05, 252.91ft
Broken from 7 o'clock to 11 o'clock, within 8 inch



Inspection report

Date: 3/31/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M182/M174
Year laid:	Pre-cleaning: No Pre-Cleaning	Direction: Upstream	Pipe Joint Length:	Total Length: 369.9'	Length Surveyed: 369.9'

City: CAPE MAY	Drainage Area:	Upstream MH: M182
Street: MADISON AVE	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M174
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 8"	Sewer Category: SEC	Joints passed: 0
Pipe material: Polyvinyl Chloride	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May	

Additional Info: **Section No. 89**

1:2783	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M174	00:00:32		
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:34		
	27.1	DFBI	Deformed Flexible Bulging Inverse Curvature, change to: 5% from 5 o'clock to 7 o'clock	00:02:59	M182_M1 74_33120 23_120938	S5
	123.4	S01 MWLS	Miscellaneous Water Level, Sag, 15% of the vertical dimension, Start	00:07:31		
	133.7	F01 MWLS	Miscellaneous Water Level, Sag, 5% of the vertical dimension, Finish	00:07:55		S2
	152.3	B	Broken from 10 o'clock to 12 o'clock, length: 15inch	00:08:59	M182_M1 74_33120 23_120938	S4
	162.0	MWLS	Miscellaneous Water Level, Sag, 10% of the vertical dimension	00:09:30		S2
	162.0	DFE	Deformed Flexible Elliptical, change to: 5%	00:09:33	M182_M1 74_33120 23_120938	S3
	214.4	TFA	Tap Factory Activity at 3 o'clock, dia/height: 6inch	00:11:28		
	229.1	S02 MWLS	Miscellaneous Water Level, Sag, 10% of the vertical dimension, Start	00:12:11		
	244.8	TFA	Tap Factory Activity at 3 o'clock, dia/height: 6inch	00:13:20		
	255.9	F02 MWLS	Miscellaneous Water Level, Sag, 5% of the vertical dimension, Finish	00:13:57		S2
	271.2	MWLS	Miscellaneous Water Level, Sag, 10% of the vertical dimension	00:14:31		S2
	298.7	TFA	Tap Factory Activity at 3 o'clock, dia/height: 4inch	00:15:47		
	316.7	TFA	Tap Factory Activity at 3 o'clock, dia/height: 4inch	00:16:53		
	367.4	MMC	Miscellaneous Material Change, Vitrified clay pipe / MATERIAL CHANGE	00:20:02		



Inspection report

Date: 3/31/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M182/M174
Year laid:	Pre-cleaning: No Pre-Cleaning	Direction: Upstream	Pipe Joint Length:	Total Length: 369.9'	Length Surveyed: 369.9'

Distance	Code	Observation	Counter	Photo	Grade
369.9	AEP	End of Pipe / PIPE ENDS	00:21:37	M182_M1 74_33120	23 120938

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5141	0000	5141	30.0	0.0	30.0	2.5	0.0	2.5



Section Pictures - 3/31/2023 - M182/M174

City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY	MADISON AVE	3/31/2023	M182/M174	89



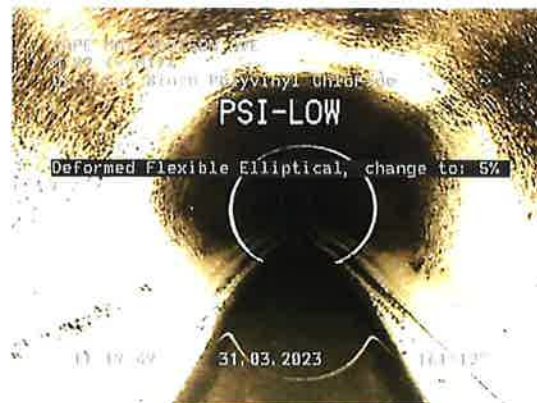
M182_M174_3312023 120938 PM_DFBI_56.jpg, 00:02:59,
27.05ft
Deformed Flexible Bulging Inverse Curvature, change to: 5%



M182_M174_3312023 120938 PM_B_57.jpg, 00:08:59,
152.28ft
Broken from 10 o'clock to 12 o'clock, length: 15inch



M182_M174_3312023 120938 PM_B_58.jpg, 00:08:59,
152.28ft
Broken from 10 o'clock to 12 o'clock, length: 15inch



M182_M174_3312023 120938 PM_DFE_59.jpg, 00:09:33,
161.99ft
Deformed Flexible Elliptical, change to: 5%



M182_M174_3312023 120938 PM_AEP_60.jpg, 00:21:37,
369.92ft
End of Pipe



Typo:
M349/M350

Inspection report

Date: 4/3/2023	Work Order:	Weather:	Surveyed By: DANA WEISS	Certificate Number: P0041031-012023	Pipe Segment Ref.: M309/M350
Year laid:	Pre-cleaning: Light Cleaning	Direction: Upstream	Pipe Joint Length:	Total Length: 201.8'	Length Surveyed: 201.8'

City: CAPE MAY	Drainage Area:	Upstream MH: M350
Street: OHIO AVE	Media Label: DT	Up Rim to Invert: 0.0
Location Code:	Flow Control:	Downstream MH: M349
Location Details:	Sheet Number:	Down Rim to Invert: 0.0
Pipe shape: Circular	Sewer Use: Sanitary Sewage Pipe	Total gallons used: 0.0
Pipe size: 8"	Sewer Category: SEC	Joints passed: 0
Pipe material: Asbestos Cement	Purpose: Maintenance Related	Joints failed: 0
Lining Method:	Owner: Cape May	

Additional Info: **Section No. 102**

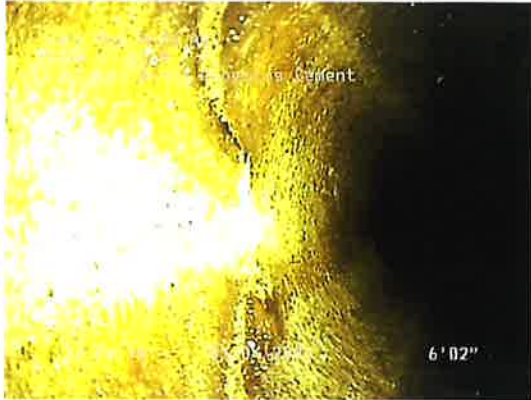
1:1523	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / M349	00:00:20		
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:22		
	6.2	CL	Crack Longitudinal at 12 o'clock	00:02:23	M350_M3 49_432023 11321	S2
	55.6	TFA	Tap Factory Activity at 9 o'clock, dia/height: 6inch	00:04:36		
	74.0	TFA	Tap Factory Activity at 3 o'clock, dia/height: 6inch	00:05:20		
	115.1	TFA	Tap Factory Activity at 12 o'clock, dia/height: 6inch	00:06:45		
	124.3	TFA	Tap Factory Activity at 10 o'clock, dia/height: 6inch	00:07:12		
	154.5	TFA	Tap Factory Activity at 9 o'clock, dia/height: 6inch	00:08:18		
	156.1	TFA	Tap Factory Activity at 2 o'clock, dia/height: 6inch	00:08:44		
	196.7	OBB	Obstruction Brick or Masonry, 5% of cross sectional area from 4 o'clock to 5 o'clock, within 8 inch	00:10:00	M350_M3 49_432023 11321	M2
201.8	MSA	Miscellaneous Survey Abandoned / HEAVY DEBRIS	00:11:34			

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2100	2100	2200	2.0	2.0	4.0	2.0	2.0	2.0



Section Pictures - 4/3/2023 - M309/M350

City	Street	Date	Lateral Segment Reference	Section No.
CAPE MAY	OHIO AVE	4/3/2023	M309/M350	102



M350_M349_432023 11321 PM_CL_101.jpg, 00:02:23, 6.17ft
Crack Longitudinal at 12 o'clock

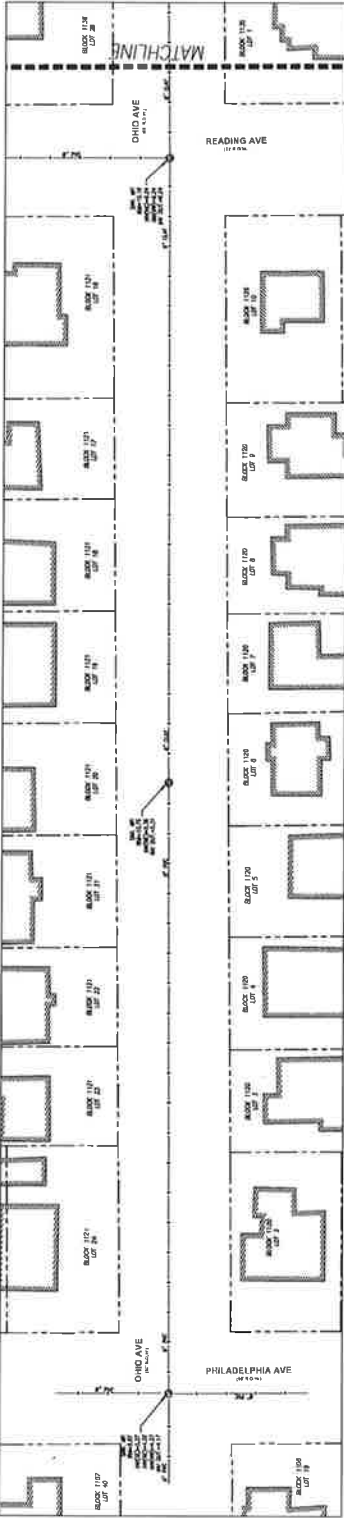


M350_M349_432023 11321 PM_OBB_102.jpg, 00:10:00,
196.73ft
Obstruction Brick or Masonry, 5% of cross sectional area from

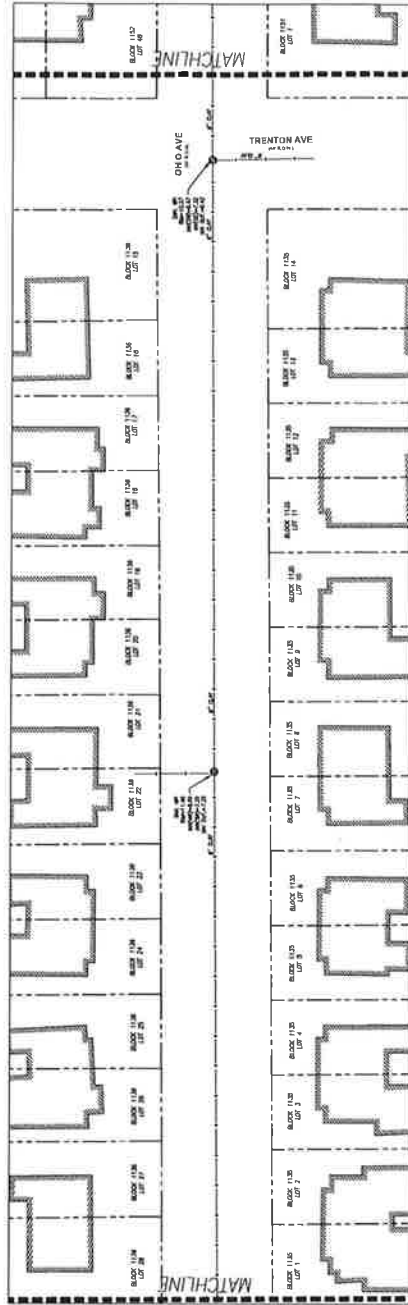
Appendix H: Preliminary Survey Data



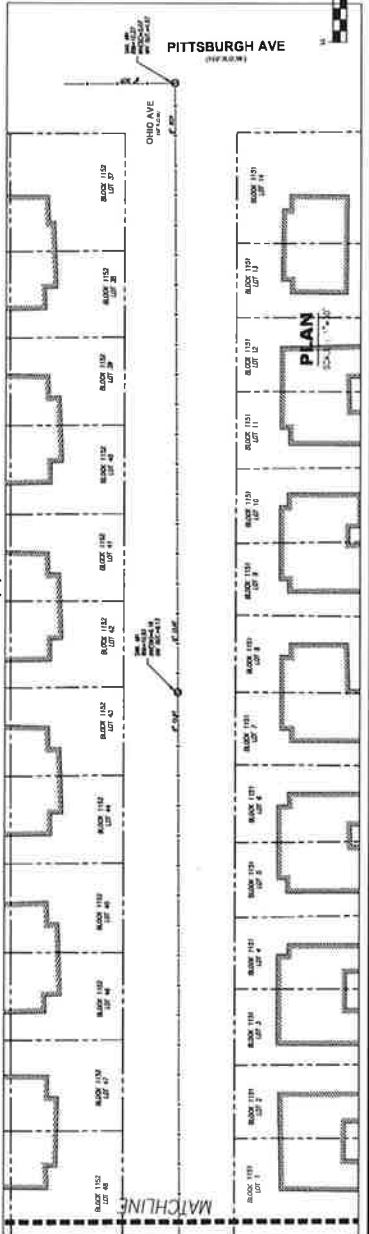
OHIO AVENUE (1)



OHIO AVENUE (2)



OHIO AVENUE (3)



PRELIMINARY 10/1/2023

DEBLASIO & ASSOCIATES
CONSULTING ENGINEERING AND PLANNERS

4700 AVENUE
SUITE 200
MILWAUKEE, WI 53209
PHONE: (414) 354-3371
FAX: (414) 354-3372
www.deblasio.com

OHIO AVENUE
USDA APPLICATION - REPLACEMENT OF
CANE MAY COUNTY, NEW JERSEY

DATE: 10/1/2023
TIME: 10:00 AM
JOB NO: 2023/0853

EXHIBIT
HENRY V. ENGEL, P.L.L.C.
100 JAMES LANE, SUITE 300
MILWAUKEE, WI 53233
PHONE: (414) 354-3371
FAX: (414) 354-3372

NO.	DATE	DESCRIPTION

GRAPHIC SCALE
1" = 100'

PLAN
SCALE: 1" = 100'

CONTRACT: 2023-0853 & ASSOCIATES, P.C. - ALL RIGHTS RESERVED. NO COPYING OR REUSE OF THIS DOCUMENT OR ANY PART THEREOF IS PERMITTED WITHOUT THE WRITTEN PERMISSION OF DEBLASIO & ASSOCIATES, P.C. OR ITS EMPLOYEES.

Appendix I: Engineer's Estimate of Construction



ENGINEER'S CONSTRUCTION COST ESTIMATE

Client: City of Cape May
Date: October 17, 2023
Project Name:
Reconstruction of Ohio Avenue
(Pittsburgh Avenue to Philadelphia Avenue)
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$15,000.00	\$15,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$20,000.00	\$20,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	5,000	0	5,000	\$1.00	\$5,000.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	10,000	0	10,000	\$1.00	\$10,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	2,475	0	2,475	\$45.00	\$111,375.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	8,100	0	8,100	\$12.00	\$97,200.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	1,535	0	1,535	\$90.00	\$138,150.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	1,025	0	1,025	\$95.00	\$97,375.00
9	INLET FILTERS, TYPE 1	S.F.	150	0	150	\$25.00	\$3,750.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	3,900	0	3,900	\$30.00	\$117,000.00
11	CONCRETE GUTTER, 8" THICK	L.F.	3,900	0	3,900	\$30.00	\$117,000.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	144	0	144	\$75.00	\$10,800.00
13	DETECTABLE WARNING SURFACES	S.Y.	8	0	8	\$400.00	\$3,200.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	270	0	270	\$85.00	\$22,950.00
15	SODDING	S.Y.	1,500	0	1,500	\$30.00	\$45,000.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	360	0	360	\$6.00	\$2,160.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	112	0	112	\$6.00	\$672.00
18	RESET BRICK PAVERS	S.Y.	20	0	20	\$85.00	\$1,700.00
19	SELECT FILL	C.Y.	1,400	0	1,400	\$10.00	\$14,000.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	2,000	0	2,000	\$125.00	\$250,000.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	6	0	6	\$6,000.00	\$36,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	45	0	45	\$2,000.00	\$90,000.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	2,000	0	2,000	\$5.00	\$10,000.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	2	2	\$4,000.00	\$8,000.00
25	TEST PIT EXCAVATION	UNIT	0	12	12	\$500.00	\$6,000.00

ESTIMATED CONSTRUCTION COST: \$1,232,332.00

10% CONTINGENCY: \$123,233.20

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$1,355,565.20

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



10/17/2023

Marc DeBlasio, P.E., Project Engineer

Date

ENGINEER'S CONSTRUCTION COST ESTIMATE

Client: City of Cape May
Date: October 17, 2023
Project Name:
Reconstruction of Stockton Place
(Beach Avenue to Columbia Avenue)
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	2,500	0	2,500	\$1.00	\$2,500.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	5,000	0	5,000	\$1.00	\$5,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	950	0	950	\$45.00	\$42,750.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	3,100	0	3,100	\$12.00	\$37,200.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	590	0	590	\$90.00	\$53,100.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	400	0	400	\$95.00	\$38,000.00
9	INLET FILTERS, TYPE 1	S.F.	90	0	90	\$25.00	\$2,250.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	1,750	0	1,750	\$30.00	\$52,500.00
11	CONCRETE GUTTER, 8" THICK	L.F.	1,750	0	1,750	\$30.00	\$52,500.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	72	0	72	\$75.00	\$5,400.00
13	DETECTABLE WARNING SURFACES	S.Y.	6	0	6	\$400.00	\$2,400.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	200	0	200	\$85.00	\$17,000.00
15	SODDING	S.Y.	450	0	450	\$30.00	\$13,500.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	0	0	0	\$6.00	\$0.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	64	0	64	\$6.00	\$384.00
18	RESET BRICK PAVERS	S.Y.	0	0	0	\$85.00	\$0.00
19	SELECT FILL	C.Y.	450	0	450	\$10.00	\$4,500.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	700	0	700	\$125.00	\$87,500.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	3	0	3	\$6,000.00	\$18,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	16	0	16	\$2,000.00	\$32,000.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	700	0	700	\$5.00	\$3,500.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	2	2	\$4,000.00	\$8,000.00
25	TEST PIT EXCAVATION	UNIT	0	10	10	\$500.00	\$5,000.00

ESTIMATED CONSTRUCTION COST: \$502,984.00

10% CONTINGENCY: \$50,298.40

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$553,282.40

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



10/17/2023

Marc DeBlasio, P.E., Project Engineer

Date

ENGINEER'S CONSTRUCTION COST ESTIMATE

Client: City of Cape May
Date: October 17, 2023
Project Name:
Reconstruction of Washington Street
(Sidney Avenue to Route 663)
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	2,000	0	2,000	\$1.00	\$2,000.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	5,000	0	5,000	\$1.00	\$5,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	650	0	650	\$45.00	\$29,250.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	2,100	0	2,100	\$12.00	\$25,200.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	400	0	400	\$90.00	\$36,000.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	265	0	265	\$95.00	\$25,175.00
9	INLET FILTERS, TYPE 1	S.F.	105	0	105	\$25.00	\$2,625.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	1,300	0	1,300	\$30.00	\$39,000.00
11	CONCRETE GUTTER, 8" THICK	L.F.	1,300	0	1,300	\$30.00	\$39,000.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	60	0	60	\$75.00	\$4,500.00
13	DETECTABLE WARNING SURFACES	S.Y.	5	0	5	\$400.00	\$2,000.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	64	0	64	\$85.00	\$5,440.00
15	SODDING	S.Y.	300	0	300	\$30.00	\$9,000.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	200	0	200	\$6.00	\$1,200.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	32	0	32	\$6.00	\$192.00
18	RESET BRICK PAVERS	S.Y.	100	0	100	\$85.00	\$8,500.00
19	SELECT FILL	C.Y.	375	0	375	\$10.00	\$3,750.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	650	0	650	\$125.00	\$81,250.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	3	0	3	\$6,000.00	\$18,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	14	0	14	\$2,000.00	\$28,000.00
23	CLEAN AND TELEVIEW SANITARY AND STORM SEWER MAIN	L.F.	650	0	650	\$5.00	\$3,250.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	2	2	\$4,000.00	\$8,000.00
25	TEST PIT EXCAVATION	UNIT	0	10	10	\$500.00	\$5,000.00

ESTIMATED CONSTRUCTION COST: \$401,332.00

10% CONTINGENCY: \$40,133.20

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$441,465.20

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



Marc DeBlasio, P.E., Project Engineer

10/17/2023

Date

ENGINEER'S CONSTRUCTION COST ESTIMATE

Client: City of Cape May
Date: October 17, 2023
Project Name:
Reconstruction of Madison Avenue
(Lafayette Street to Washington Street)
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$10,000.00	\$10,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	2,000	0	2,000	\$1.00	\$2,000.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	5,000	0	5,000	\$1.00	\$5,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	375	0	375	\$45.00	\$16,875.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	1,200	0	1,200	\$12.00	\$14,400.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	225	0	225	\$90.00	\$20,250.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	150	0	150	\$95.00	\$14,250.00
9	INLET FILTERS, TYPE 1	S.F.	60	0	60	\$25.00	\$1,500.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	360	0	360	\$30.00	\$10,800.00
11	CONCRETE GUTTER, 8" THICK	L.F.	360	0	360	\$30.00	\$10,800.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	100	0	100	\$75.00	\$7,500.00
13	DETECTABLE WARNING SURFACES	S.Y.	7	0	7	\$400.00	\$2,800.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	120	0	120	\$85.00	\$10,200.00
15	SODDING	S.Y.	120	0	120	\$30.00	\$3,600.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	432	0	432	\$6.00	\$2,592.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	32	0	32	\$6.00	\$192.00
18	RESET BRICK PAVERS	S.Y.	20	0	20	\$85.00	\$1,700.00
19	SELECT FILL	C.Y.	200	0	200	\$10.00	\$2,000.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	350	0	350	\$125.00	\$43,750.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	2	0	2	\$6,000.00	\$12,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	7	0	7	\$2,000.00	\$14,000.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	350	0	350	\$5.00	\$1,750.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	2	2	\$4,000.00	\$8,000.00
25	TEST PIT EXCAVATION	UNIT	0	10	10	\$500.00	\$5,000.00

ESTIMATED CONSTRUCTION COST: \$230,959.00

10% CONTINGENCY: \$23,095.90

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$254,054.90

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



Marc DeBlasio, P.E., Project Engineer

10/17/2023

Date

ENGINEER'S CONSTRUCTION COST ESTIMATE - TOTAL

Client: City of Cape May
Date: October 17, 2023
Project Name:
U.S.D.A Grant Application
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS					
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	\$45,000.00	\$45,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	\$50,000.00	\$50,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	11,500	\$1.00	\$11,500.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	25,000	\$1.00	\$25,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	4,450	\$45.00	\$200,250.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	14,500	\$12.00	\$174,000.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	2,750	\$90.00	\$247,500.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	1,840	\$95.00	\$174,800.00
9	INLET FILTERS, TYPE 1	S.F.	405	\$25.00	\$10,125.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	7,310	\$30.00	\$219,300.00
11	CONCRETE GUTTER, 8" THICK	L.F.	7,310	\$30.00	\$219,300.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	376	\$75.00	\$28,200.00
13	DETECTABLE WARNING SURFACES	S.Y.	26	\$400.00	\$10,400.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	654	\$85.00	\$55,590.00
15	SODDING	S.Y.	2,370	\$30.00	\$71,100.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	992	\$6.00	\$5,952.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	240	\$6.00	\$1,440.00
18	RESET BRICK PAVERS	S.Y.	140	\$85.00	\$11,900.00
19	SELECT FILL	C.Y.	2,425	\$10.00	\$24,250.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	3,700	\$125.00	\$462,500.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	14	\$6,000.00	\$84,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	82	\$2,000.00	\$164,000.00
23	CLEAN AND TELEVIEW SANITARY AND STORM SEWER MAIN	L.F.	3,700	\$5.00	\$18,500.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	8	\$4,000.00	\$32,000.00
25	TEST PIT EXCAVATION	UNIT	42	\$500.00	\$21,000.00

ESTIMATED CONSTRUCTION COST: \$2,367,607.00

10% CONTINGENCY: \$236,760.70

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$2,604,367.70

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



10/17/2023

Marc DeBlasio, P.E., Project Engineer

Date

**ENGINEER'S CONSTRUCTION COST ESTIMATE
PARTIAL REPLACEMENT**

Client: City of Cape May
Date: October 17, 2023
Project Name:
U.S.D.A Grant Application
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$45,000.00	\$45,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$20,000.00	\$20,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	11,500	0	11,500	\$1.00	\$11,500.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	25,000	0	25,000	\$1.00	\$25,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	4,450	0	4,450	\$45.00	\$200,250.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	14,500	0	14,500	\$12.00	\$174,000.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	2,750	0	2,750	\$90.00	\$247,500.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	1,840	0	1,840	\$95.00	\$174,800.00
9	INLET FILTERS, TYPE 1	S.F.	405	0	405	\$25.00	\$10,125.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
11	CONCRETE GUTTER, 8" THICK	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	376	0	376	\$75.00	\$28,200.00
13	DETECTABLE WARNING SURFACES	S.Y.	26	0	26	\$400.00	\$10,400.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	654	0	654	\$85.00	\$55,590.00
15	SODDING	S.Y.	2,370	0	2,370	\$30.00	\$71,100.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	992	0	992	\$6.00	\$5,952.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	240	0	240	\$6.00	\$1,440.00
18	RESET BRICK PAVERS	S.Y.	140	0	140	\$85.00	\$11,900.00
19	SELECT FILL	C.Y.	1,000	0	1,000	\$10.00	\$10,000.00
20	8" POLYVINYL CHLORIDE (PVC) SANITARY SEWER MAIN, SDR 35	L.F.	2,000	0	2,000	\$125.00	\$250,000.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	7	0	7	\$6,000.00	\$42,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	40	0	40	\$2,000.00	\$80,000.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	3,700	0	3,700	\$5.00	\$18,500.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	4	2	6	\$4,000.00	\$24,000.00
25	TEST PIT EXCAVATION	UNIT	42	12	54	\$500.00	\$27,000.00

ESTIMATED CONSTRUCTION COST: \$1,982,857.00

10% CONTINGENCY: \$198,285.70

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$2,181,142.70

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:

 10/17/2023
 Marc DeBlasio, P.E., Project Engineer Date

**ENGINEER'S CONSTRUCTION COST ESTIMATE
REHABILITATION AND RELINING**

Client: City of Cape May
Date: October 17, 2023
Project Name:
U.S.D.A Grant Application
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$45,000.00	\$45,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$20,000.00	\$20,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	11,500	0	11,500	\$1.00	\$11,500.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	25,000	0	25,000	\$1.00	\$25,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	4,450	0	4,450	\$45.00	\$200,250.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	14,500	0	14,500	\$12.00	\$174,000.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	2,750	0	2,750	\$90.00	\$247,500.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	1,840	0	1,840	\$95.00	\$174,800.00
9	INLET FILTERS, TYPE 1	S.F.	405	0	405	\$25.00	\$10,125.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
11	CONCRETE GUTTER, 8" THICK	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	376	0	376	\$75.00	\$28,200.00
13	DETECTABLE WARNING SURFACES	S.Y.	26	0	26	\$400.00	\$10,400.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	654	0	654	\$85.00	\$55,590.00
15	SODDING	S.Y.	2,370	0	2,370	\$30.00	\$71,100.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	992	0	992	\$6.00	\$5,952.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	240	0	240	\$6.00	\$1,440.00
18	RESET BRICK PAVERS	S.Y.	140	0	140	\$85.00	\$11,900.00
19	SELECT FILL	C.Y.	2,425	0	2,425	\$10.00	\$24,250.00
20	CURED-IN-PLACE PIPE, 8" DIAMETER	L.F.	3,700	0	3,700	\$120.00	\$444,000.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	14	0	14	\$6,000.00	\$84,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	0	0	0	\$2,000.00	\$0.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	3,700	0	3,700	\$5.00	\$18,500.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	0	0	\$4,000.00	\$0.00
25	TEST PIT EXCAVATION	UNIT	0	0	0	\$500.00	\$0.00

ESTIMATED CONSTRUCTION COST: \$2,102,107.00

10% CONTINGENCY: \$210,210.70

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$2,312,317.70

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



Marc DeBlasio, P.E., Project Engineer Date: 10/17/2023

**ENGINEER'S CONSTRUCTION COST ESTIMATE
TRENCHLESS TECHNOLOGIES**

Client: City of Cape May
Date: October 17, 2023
Project Name:
U.S.D.A Grant Application
D&A Project #: CCM-C-015

#	DESCRIPTION	UNITS	PLAN QUANTITY	IF & WHERE DIRECTED	CONTRACT QUANTITY	EST. UNIT PRICE	BID AMOUNT
U.S.D.A. PARTICIPATING ITEMS							
1	TRAFFIC CONTROL	LUMP SUM	LUMP SUM	0	LUMP SUM	\$45,000.00	\$45,000.00
2	CLEARING SITE	LUMP SUM	LUMP SUM	0	LUMP SUM	\$20,000.00	\$20,000.00
3	FUEL PRICE ADJUSTMENT	DOLLAR	11,500	0	11,500	\$1.00	\$11,500.00
4	ASPHALT PRICE ADJUSTMENT	DOLLAR	25,000	0	25,000	\$1.00	\$25,000.00
5	ROADWAY EXCAVATION, UNCLASSIFIED	C.Y.	4,450	0	4,450	\$45.00	\$200,250.00
6	DENSE GRADED AGGREGATE BASE COURSE, 6" THICK	S.Y.	14,500	0	14,500	\$12.00	\$174,000.00
7	HOT MIX ASPHALT BASE COURSE, MIX 19M64, 3" THICK	TON	2,750	0	2,750	\$90.00	\$247,500.00
8	HOT MIX ASPHALT SURFACE COURSE, MIX 9.5M64, 2" THICK	TON	1,840	0	1,840	\$95.00	\$174,800.00
9	INLET FILTERS, TYPE 1	S.F.	405	0	405	\$25.00	\$10,125.00
10	8" x 18" CONCRETE VERTICAL CURB	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
11	CONCRETE GUTTER, 8" THICK	L.F.	7,310	0	7,310	\$30.00	\$219,300.00
12	CONCRETE SIDEWALK, 4" THICK	S.Y.	376	0	376	\$75.00	\$28,200.00
13	DETECTABLE WARNING SURFACES	S.Y.	26	0	26	\$400.00	\$10,400.00
14	CONCRETE DRIVEWAY, 6" THICK	S.Y.	654	0	654	\$85.00	\$55,590.00
15	SODDING	S.Y.	2,370	0	2,370	\$30.00	\$71,100.00
16	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 24"	L.F.	992	0	992	\$6.00	\$5,952.00
17	TRAFFIC MARKINGS, LINES, LONG-LIFE, THERMOPLASTIC 12"	L.F.	240	0	240	\$6.00	\$1,440.00
18	RESET BRICK PAVERS	S.Y.	140	0	140	\$85.00	\$11,900.00
19	SELECT FILL	C.Y.	2,425	0	2,425	\$10.00	\$24,250.00
20	8" SEWER MAIN, DIRECTIONAL DRILL	L.F.	3,700	0	3,700	\$300.00	\$1,110,000.00
21	SANITARY SEWER MANHOLE, 4' DIAMETER	UNIT	14	0	14	\$6,000.00	\$84,000.00
22	SANITARY SEWER SERVICE LATERALS, PVC SDR 35	UNIT	82	0	82	\$2,000.00	\$164,000.00
23	CLEAN AND TELEWISE SANITARY AND STORM SEWER MAIN	L.F.	3,700	0	3,700	\$5.00	\$18,500.00
24	UTILITY CROSSINGS (IF & WHERE DIRECTED)	UNIT	0	0	0	\$4,000.00	\$0.00
25	TEST PIT EXCAVATION	UNIT	42	12	54	\$500.00	\$27,000.00

ESTIMATED CONSTRUCTION COST: \$2,959,107.00

10% CONTINGENCY: \$295,910.70

TOTAL ESTIMATED CONSTRUCTION COST, ITEMS 1 - 25: \$3,255,017.70

The above cost estimate is an approximation of the probable construction cost based upon recent bid prices and assumes that the Contractor will pay wages on this project in conformance with the New Jersey Prevailing Wage Rate Act and Federal Davis Bacon Wage Act. All prices assume that the Contractor shall comply with the American Iron and Steel provisions in accordance with the Build American Buy American Act. DeBlasio & Associates, P.C. cannot and does not guarantee that proposals, bids or actual costs will not vary from these opinions of probable costs.

Prepared by:



10/17/2023

Marc DeBlasio, P.E., Project Engineer

Date