

Middlesex County Utilities
Authority
Sayreville Pump Station
Floodwall Construction Project

EO 11988 & 11990 Eight-Step
Review Documentation

EO 11988 & EO 11990 Eight-Step Decision Making Process
Summary Middlesex County Municipal Utilities Authority
Sayreville Pump Station, Sayreville, NJ
Floodwall/Mitigation Construction Project
FEMA-4086-DR-NY PW 05061

Executive Order (E.O.) 11988 (Floodplain Management) and Executive Order (E.O.) 11990 (Protection of Wetlands) require Federal agencies “to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of the floodplains/wetlands and to avoid direct or indirect support of floodplains/wetland development wherever there is a practicable alternative.” FEMA’s implementing regulations are contained in 44 CFR Part 9, which includes an Eight-Step Decision Making Process for compliance with this part.

This Eight-Step Decision Making Process is applied to the proposed Sayreville Pump Station Floodwall Construction Project. The Township of Sayreville, Middlesex County, New Jersey experienced storm damages and flooding from Hurricane Sandy that occurred October 29, 2012 to October 30, 2012. The storm incident period was declared a major declaration by President Barack H. Obama on October 30, 2012. The project is described in FEMA-4086-DR-NJ PW 05061 (hereon, the Project). The Grantee for the proposed project is the State of New Jersey and the Subgrantee is the Middlesex County Utilities Authority.

The Subgrantee provides wastewater treatment services for approximately 700,000 people over three (3) counties (Middlesex, Mercer and Somerset). The service area and pump station location are shown in *Appendix A, Figure 1*, and municipalities served in *Appendix B, Table 1*. The facility was constructed along the tidal portions of the Washington Canal, which is located in the New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area #9 (Lower Raritan, South, and Lawrence Rivers, *Appendix A, Figure 3*).

Hurricane Sandy caused physical damage to the facility resulting in a protected loss of treatment and capability. From October 29, 2012 until January 2013, untreated sewage was discharged directly to the Raritan River and surrounding area due to a lack of pumping capacity the damages are described in FEMA-4086-DR-NJ PW 05061). The facility provides a critical public health function, therefore, alternatives must be evaluated with respect to critical action within the context of the 500-year floodplain (CFR 44 9.4)

The Subgrantee proposes to construct flood barrier walls around the pump station (which is sited within the 100-year floodplain) and implement dewatering measures inside the flood barrier walls to allow the pump station to maintain essential operation during a flood disaster, and return to full operation quickly after flood waters subside, in order to protect public health and safety. The majority of the floodwall design would utilize a concrete flood wall

reinforced with sheet piling. Standalone steel sheet pile walls would be constructed along the west and south side of the site. These walls would be 12 to 14 feet in height. The sheet pile would be a half inch thick and coated to extend longevity. Case-in-place concrete walls would be constructed along the north and east sides due to the public exposure. Foundations will range in width from 6 to 16 feet, and walls would range in thickness from 24 to 36 inches. Sheet piling would be utilized to support the front of the concrete walls and to serve as a seepage cutoff. The sheet piling would extend into the concrete wall foundation where it would serve as support. In addition, installation of a flood resilient standby power system will allow for some functional capacity during severe storm events. The floodwall height would be set at 21 feet to account for the 20 ft. 0.02% flood event plus one (1) foot of freeboard. Refer to project design plans in the Environmental Assessment associated with this project *Appendix A, figure 4*.

The steps in this decision making process are steps 1, 2, 3, 4, 5, 6, 7, and 8 per 44 CFR Part 9.5(d), as follows:

Step 1 Determine if the proposed action is located in, affects or is affected by the Floodplain or Wetland.

The Sayreville Pump Station (55 Canal Street, Sayreville, NJ; GPS: 40.46982/-74.36751) is located in Zone AE within the 100-year floodplain, also referred to as the Special Flood Hazard Area (SFHA), as noted on the National Flood Insurance Program's Flood Insurance Rate Map (FIRM), Preliminary Community Panel Number 34023C0157G January 30, 2015. The Advisory Base Flood Elevation (ABFE) at the facility site is approximately 15 feet, NAVD 1988. The elevation of the 500-year floodplain is 20 feet, NAVD 1988. Refer to *Appendix A of the Environmental Assessment (EA)*. The proposed action floodwall alignment would be adjacent to the Raritan River at a height of 21 feet (includes 1 foot of freeboard).

The 2012 event is the flood of record, as discussed by NOAA/U.S. Geological Survey. The Flood Recurrence Interval (Stillwater) Calculator indicates a Recurrence Interval of 73.22 years. The site is located adjacent to estuarine wetlands of the Raritan River within the New York/New Jersey Harbor Estuary. The National Wetlands Mapper indicates estuarine wetlands adjacent to the site. The USFWS Information, Planning, and Conservation System (IPaC) indicates no occurrences of threatened or endangered species on the site.

Step 2 Early public notice (Preliminary Notice)

A cumulative public notice for the disaster was published in the *Asbury Park Press* newspaper on November 25, 2012. As indicated in the notice, "projects and activities may adversely affect historic property, floodplains or wetlands, or may result in continuing vulnerability to damage by flooding...however, certain measures to mitigate the effects of future flooding or other hazards may be included in the work". The notice also states that "mitigation measures will be incorporated on an action by action basis and this

November 25, 2012 notice) may be the only public notice concerning these actions. In addition, a project specific notice integrated with the Notice of Availability of the National Environmental Policy Act (NEPA) Environmental Assessment will be published in the local newspapers, the *Asbury Park Press and the Star Ledger*. The public notice will invite comments within 30 days of the publication date of the notice. The New Jersey Environmental Infrastructure Trust held a public hearing on the proposal on July 28th, 2014.

Step 3 Identify and evaluate alternatives to locating in the base floodplain.

44 CFR 9.9 (b) requires that FEMA “identify and evaluate practicable alternatives to carrying out a proposed action in floodplains or wetlands, including:

- 1) Alternative sites outside the floodplain or wetland;
- 2) Alternative actions which serve essentially the same purpose as the proposed action, but which have less potential to affect or be affected by the floodplain or wetlands; and
- 3) No action. The floodplain and wetland site itself must be a practicable location in light of the factors set out in this section.

Factors to consider in determining practicable alternatives include:

- 1) natural environment (topography, habitat, hazards, etc.);
- 2) social concerns (aesthetics, historical and cultural values, land patterns, etc.);
- 3) economic aspects (cost of space, construction, services and relocation);
- 4) legal constraints (deeds, leases, etc.); and
- 5) engineering

The Alternatives analyzed in further detail in the EA included a No Action Alternative and Proposed Action Alternative. The EA also discussed Alternatives Considered and Dismissed in Section 4.0. A brief summary of the three categories of alternatives is the following:

- 1) No Action Alternative- facility would remain at risk to future flooding events. The facility would be repaired, but no hazard mitigation measures would be constructed. No federal funding would be applied for proposed hazard mitigation measures.
- 2) Proposed Action Alternative - To construct flood barrier walls around the entire site perimeter including flood-proofing and implementation of dewatering measures within the flood barrier walls.
- 3) Alternatives Considered and Dismissed - Included relocation of the facility outside of the 500-year floodplain, and flood-proofing the individual structures.

The No Action Alternative would result in the strong likelihood that flooding would

damage the pump station again during subsequent major storm events. This alternative would also subject the town and community to future risk of service disruptions and create potential adverse public health and safety impacts as occurred during Hurricane. This alternative would not address the project's purpose and need.

The Proposed Action Alternative to construct flood barrier walls around the entire perimeter of the Plant and implement dewatering measures within the flood barrier walls to allow the pump station to remain in operation during a flood disaster, and return to full operation quickly after flood waters subside, protects health and safety of the public. The floodwall would be designed in accordance with United States Army Corps of Engineers (USACE) EM 1110-2-2502 Retaining and Flood Walls and other applicable engineering and design guidelines.. As shown on design plans, the Subgrantee would plan to construct the floodwall to a design elevation of 21 feet (NAVD88), providing for 1 foot of freeboard above the 500-Year floodplain elevation of 20 feet per the Preliminary FIRMS/Working Maps for the project location. Please refer the EA for additional information on the proposed project description.

The Alternatives Considered and Dismissed included: relocation of the facility outside of the 500-year floodplain; and only flood proofing the individual buildings. These alternatives were deemed not practicable due to cost factor and other considerations and were therefore dismissed from further analysis.

Additionally, it was determined that there were no practicable alternatives to the proposed floodwall alignment due to site space constraints and the prohibitive costs to partially relocate existing wastewater treatment infrastructure within or to off-property location.

Therefore, no practicable alternatives were identified to continued floodplain occupancy with the Proposed Action Alternative.

Step 4 Identify impacts of the proposed action associated with occupancy or modification of the floodplain.

The Proposed Action Alternative would have beneficial floodplain management impacts for the facility. The proposed alternative would provide flood damage risk reduction at or above the 500-year flood elevation for the pump station through installation of the proposed floodwall and associated infrastructure for the flood damage risk reduction. The facility would be more resilient with the structural protections and would have less risk of disruption of the public services it provides in the future. The proposed project would reduce the risk of release of wastewater into the surrounding environment during future flood events.

The construction may result in temporary minor impacts to aquatic habitats due to sedimentation during construction. Wildlife that may use the wetland and upland riparian habitat would also be temporarily displaced due to noise and disturbance during construction. These would be minimized with best management practices.

The proposed project would be designed to comply with the National Flood Insurance Program. The location of this pump station and the acreage of the proposed construction in the tidal waterway are minimal due to the tide range and are not required under NJDEP flood hazard rules for tidal areas. Therefore an H&H Study is not required. Instead, the floodwall construction requirements are guided under FEMA's Risk Map modeling studies which include a hydrologic component. The floodwall system would comply with all local, state and Federal floodplain ordinances and regulations, and designed to ensure no adverse effects on the adjacent community.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values.

In order to minimize the risk of future floodplain damage to the existing facility and to comply with EO 11988 and the NFIP, FEMA must minimize potential harm to lives and the investment at risk from the base flood. The Proposed Action Alternative would provide flood damage risk reduction to above the 500-year level of protection through construction of the floodwall above the 500-Year floodplain elevation. The floodwall would not increase water surface elevations.

The stormwater/effluent pump stations would have the capacity to pump stormwater surface runoff from the 500-year level rainfall event, nominal seepage through the floodwall barrier, inadvertent overtopping of the floodwalls from waves or debris dams, and non-bypassed influent inflows that exceed pump station capacity.

The MCOA would prepare an operations and maintenance plan for the facility to detail how closure gates, pumps, other floodplain management control devices were operated.

Step 6 Re-evaluate the proposed action.

After evaluating alternatives including impacts and minimization opportunities, as set forth by factors described in 44 CFR Part 9.9(c) and documented in Step 3 of this Eight-Step Review, FEMA determined that the Proposed Action Alternative was a practicable alternative. No practicable alternatives to avoid continued floodplain occupancy were identified. The No Action Alternative would not meet the project purpose and need. The public benefits of the project outweigh the risk of investment into the floodplain-located facility. Future flood damage risk would be reduced to the extent practicable with the floodwall designed to above the 500-year floodplain elevation.

Step 7 Final Public Notice

FEMA's determination is documented in this summary. This Eight-Step Review as part of the project's Environmental Assessment (EA) will be made available for public review and comment with a project specific public notice. The Final Public Notice will be integrated with the anticipated Finding of No Significant Impact statement for the EA.

Step 8 Implement the action.

The project will be constructed in accordance with the proposed scope of work and applicable floodplain development requirements as described in the project worksheet and per conditions of the federal grant. The Subgrantee is responsible for review of the final building plans and will need to ensure compliance with all applicable Federal, state, and local codes and standards. The Subgrantee will need to obtain all required building and site development permits, as a condition of the Federal grant, to protect the environment, and to minimize risk and harm to life and property. To restore the facility to its pre-disaster functionality, the facility must be sited, elevated or flood proofed to at/above the 500-Year Floodplain utilizing the Best Available Data for 500-year floodplain in accordance with the NFIP and 44 CFR Part 9. The Subgrantee will submit copies of obtained permits and certification from the local floodplain administrator in accordance with 44 CFR 65.10 to NJDEP/FEMA at/before final project closeout documentation submission.