Middlesex County Utilities Authority
Restoration, Upgrade, and Flood Hazard Mitigation Project

Appendix P

EO 11988 & 11990 Eight-Step Review Documentation

APPENDIX P

EO 11988 & EO 11990 Eight-Step Decision Making Process Summary
Restoration, Upgrade, and Flood Hazard Mitigation for the Middlesex
County Utilities Authority's Edison Pump Station
FEMA-4086-DR-NJ PW 0575

Executive Order 11988 (Floodplain Management) and Executive Order 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 Middlesex County Utilities Authority Edison Pump Station (MCUAEPS) Project. The Township of Woodbridge, NJ experienced storm damages and flooding from Hurricane Sandy that occurred October 26, 2012. The storm incident period was declared a major declaration by President Barack H. Obama on November 25, 2012). During the incident period of October 26 through November 28th, 2012, an estimated 156 million gallons of raw sewage was spilled into the Raritan River and Raritan Bay. The project is described in FEMA-4086-DR-NJ PW 0575 (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 proposes to construct a floodwall, isolation vault, bypass pumping system, and shaft concrete riser ring in order to protect MCUAEPS facilities from flood events up to the 500-year design elevation of 23.0 feet (NAVD88) and therefore minimize the risk of future raw sewage spillage into the Raritan River. The majority of the floodwall design would utilize a reinforced concrete wall with either wood pile or steel sheet foundation to provide support against design flood loads. An isolation sluice gate chamber and a stormwater pump station will be required in order to prevent internal flooding from the influent gravity sewer pipeline. A stormwater pump station would further provide control of rainfall runoff within the flood wall area as well. Refer to project design plans in the Environmental Assessment associated with this project *Appendix D*.

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 majority of MCUAEPS 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), Community Panel Number 34023C152G, Preliminary, January 31, 2014. A portion of the site is adjacent to the V Zone. The Base Flood Elevation (BFE) at the facility site is approximately 15 feet, NAVD 1988. The design elevation for the 500-year floodplain is 23.0 feet, NAVD 1988. Refer to Preliminary FIRM in *Appendix D of the Environmental Assessment (EA).*

Pursuant to the current FEMA Preliminary Flood Insurance Rate Map (FIRM) release subsequent to Hurricane Sandy, the BFE of 15-feet now exceeds the finished floor elevation by nearly 5-feet. Even in the absence of anticipated sea level rise, this revised BFE indicates that the MCUAEPS is now susceptible to repeated flooding damage for flood events with a recurrence interval of 21-years or greater. Including sea level rise, damages equal in magnitude to the Hurricane Sandy disaster event-approximately $5 million of capital damages, 9 days of complete loss of wastewater service, and an estimated 156 million gallon spill of raw sewage into the Raritan River and surrounding surface water-now correspond to an estimated 74-year flood event.

The site and service area of MCUAEPS is located within two watersheds encompassing an area of approximately 25 square miles. The southern portions of Woodridge Township and the City of Perth Amboy are located in the Lower Raritan River basin, near its convergence with the Raritan Bay. The remainder of these two municipalities, along with the entire Borough of Carteret, is located in the Rahway River/Woodbridge Creek basin. Both waterways discharge directly into Raritan Bay. Coastal and freshwater wetland habitats have been delineated adjacent to the MCUAEPS site as shown in Appendix D. Observed wetlands plants are consistent with coastal estuarine wetland vegetation and the predominant species include the common reed (*Phragmites australis*), and groundsel bush *(Baccharis halimifolia*). MCUA has filed a Waterfront Development permit and freshwater wetland permit applications with the New Jersey Department of Environmental Protection for any impacts to wetlands; no permanent disturbances are anticipated and any temporarily disturbed wetlands would be restored under NJDEP permit requirements.

Step 2 **Early public notice (Preliminary Notice)**

A cumulative public notice for the disaster was published in the *Star Ledger, Asbury Park Press and other NJ* newspapers 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 (the 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 & Star ledger*. The public notice will invite comments within 30 days of the publication date of the notice.

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) the 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 4.3. 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 a flood wall around the site perimeter of the Plant as flooproofing and implement dewatering measures within the flood barrier walls to allow the Plant to remain in limited operation during a flood disaster.

3) Alternatives Considered and Dismissed - Included relocation of the facility outside of the 500-year floodplain; wet floodproofing, and bypass pumping

The No Action Alternative would result in the strong likelihood that flooding would damage the Plant again during subsequent major storm events. This alternative would also subject the towns and communities to future risk of service disruptions and create potential adverse public health and safety impacts as occurred during Hurricane Sandy. This

alternative would not address the project's purpose and need.

The Proposed Action Alternative to construct a flood wall around the Plant and implement dewatering measures within the flood barrier walls would allow the Plant to remain in limited operation during a flood disaster, and return to full operation more quickly after flood waters subside, thereby protecting the health and safety of the public and protection of the Raritan River and Bay.

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 from USACE. As shown on design plans in *Appendix D* of the EA, the Subgrantee would plan to construct the floodwall to a design elevation of 23' (NAVD88), per the 2014 Preliminary FIRM for the project location. Please refer to Section of 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; wet flood proofing and bypass pumping. These alternatives were deemed not practicable due to cost factor, risk to public health and safety and water quality, and were therefore dismissed from further analysis.

Therefore, no practicable alternatives were identified to continued floodplain occupancy or the minor adverse impact to riparian corridor upland and wetland habitat involved 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 Plant through installation of the proposed floodwall and associated infrastructure for the flood damage risk reduction structural alternative. 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 proposed project would temporarily impact wetland habitat in the floodplain due to temporary disturbances during floodwall construction. Wildlife that may use the wetland and upland riparian habitat would also be temporarily displaced due to noise and disturbance during construction. Restoration of the disturbed site and any mitigation requirements will be accomplished under NJDEP permits.

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 and through construction of associated mitigation measures. The floodwall would be in compliance with FEMAs requirements that are designed to avoid any increases in water surface elevations or hazardous increases in velocities along the Raritan River.

The Subgrantee would be responsible for a Stormwater Pollution Prevention Plan and would be expected to install silt fences and turbidity barriers for erosion control and to minimize potential sedimentation into adjacent watercourses during construction, according to the NJDEP Waterfront Development Permit.

The Plant would prepare an operations and maintenance plan for the facility to detail how 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) that 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 floodproofed to at/above the 500-Year Floodplain utilizing the Best Available Data for 500-year floodplain determination (*Community-Panel 34023C152G Preliminary, dated January 31,2014**)*** 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.