Environmental Assessment Lawrence Union Free School District Seawall Construction and Facility Upgrades Cedarhurst, Nassau County, New York

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LIST OF ACRONYMS

APE - Area of Potential Effects

- CO Carbon monoxide
- CWA Clean Water Act
- CBRS Coastal Barrier Resource System
- CEHA Coastal Erosion Hazard Area
- CZMA Coastal Zone Management Act
- CZMP Coastal Zone Management Plan
- COC Community of Concern
- CEQ Council of Environmental Quality
- CFR Code of Federal Regulations
- dB Decibels
- dBA A weighted Decibels
- EA Environmental Assessment
- EFH Essential Fish Habitat
- EO Executive Order
- ESA Endangered Species Act of 1973
- FEMA Federal Emergency Management Agency
- FONSI Finding of No Significant Impact
- HFFRRF High Frequency Flooding Risk Reduction Features
- IPaC Information for Planning and Consultation
- Leq Average sound energy over time
- Ldn Day night noise level
- LHS Lawrence High School
- LOMR Letter of Map Revision
- LOR Letter of Resolution
- LWRP Local Waterfront Revitalization Program
- NAAQS National Ambient Air Quality Standards
- NHPA National Historic Preservation Act
- NRHP National Register of Historic Places
- NAVD88 North American Vertical Datum of 1988
- NEPA National Environmental Policy Act
- NMFS National Marine Fisheries Service
- NOAA U.S. National Oceanic and Atmospheric Administration
- NPDES National Pollutant Discharge Elimination System
- NYNHP New York Natural Heritage Program
- NYS New York State
- NYSDEC New York State Department of Environmental Conservation
- NYSDOS New York State Department of State
- NYSED New York State Education Department

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NYSHPO - New York State Historic Preservation Office

NYSOPRHP – New York State Office of Parks, Recreation and Historic Preservation NO₂ – Nitrogen dioxide NOX – Nitrogen oxides PM – Particulate matter SPL – Sound pressure level SPDES – State Pollutant Discharge Elimination System USACE – United States Army Corps of Engineers USDA NRCS – U.S. Department of Agriculture Natural Resources Conservation Service USEPA – U.S. Environmental Protection Agency USFWS – U.S. Fish and Wildlife Services USGS – U.S. Geological Survey

1.0 INTRODUCTION

On October 29, 2012, heavy rain, wind, and storm surge from Hurricane Sandy caused damage throughout areas of lower New York State (NYS) including Nassau County, NY. President Barack Obama declared Hurricane Sandy a major disaster on October 30, 2012. The declaration authorized the Federal Emergency Management Agency (FEMA) to aid the state per federal disaster declaration DR-4085-NY and in accordance with the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) of 1974, as amended, (42 United States Code [U.S.C.] §§ 5121-5207), the Sandy Recovery Improvement Act of 2013, and the accompanying Disaster Relief Appropriations Act of 2013. The New York State Division of Homeland Security and Emergency Services (DHSES) is the recipient partner for this action.

The Lawrence Union Free School District (Subrecipient) applied to FEMA for financial assistance to repair Hurricane Sandy damages to Lawrence High School (LHS) as well as construct flood protection measures to increase resiliency to the school grounds against future storm events. LHS is located in the Village of Cedarhurst, Town of Hempstead, Nassau County, Long Island, NY (Appendix A, Figure 1-1).

FEMA prepared this Environmental Assessment (EA) in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969, as amended, and the Regulations for Implementation of NEPA (40 Code of Federal Regulations [CFR] 1500 to 1508). The purpose of the EA is to analyze the potential environmental impacts of the Proposed Action, and alternative actions including a No Action Alternative to determine whether preparation of an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) is warranted. In accordance with the above-referenced regulations and FEMA's guidance for NEPA compliance, FEMA Directive 108-1, and FEMA Instruction 108-1-1, during decision making FEMA is required to fully evaluate and consider the environmental consequences of major federal actions that it funds or undertakes.

2.0 PURPOSE AND NEED

FEMA's Public Assistance Program fosters the protection of health, safety, and welfare of citizens, assists communities in recovering from damages caused by disasters and reduces future losses resulting from disasters through mitigative measures. The purpose of this project is to provide flood protection measures along the perimeter of the LHS site, thereby reducing damages from tidal and storm surge flooding caused by storms such as nor'easters, tropical storms, and hurricanes with the potential to affect LHS and the LHS site and its emergency response and functional and educational uses. The primary need is to provide protection to the school facilities and surrounding grounds, creating a singular flood-protected site for community sheltering and emergency operations and equipment staging for flood and storm events. This would reduce emergency response times and equipment damages through use of a singular emergency response times and equipment damages to the school, missed student attendance, and overall interruptions in educational programs.

3.0 BACKGROUND

LHS has been used for emergency response operations during past storm events. First responders have utilized LHS to coordinate emergency response efforts, and the grounds have been used to stage essential equipment during emergency situations. However, on October 29, 2012, Hurricane Sandy made landfall in New York and caused significant damage to the LHS building and property. Flood levels in the school's crawlspace reached approximately six (6) feet with other locations within the building also experiencing heavy flooding damages. This resulted in damage to the piping, heating, and electrical systems throughout the school property as well as causing significant damage and deterioration of the school grounds. Site damages included asphalt and concrete pavement, athletic fields, field lighting, grandstands, press box, site structures and continued erosion of the coastal shoreline bordering three sides of the school property.

The flooding was a combination of water, sewage, and salt water, which caused significant damage and progressive deterioration to the school's property. Lawrence Union Free School District received assistance from FEMA as a result of Hurricane Sandy to repair and restore storm damage and provide mitigation protection measures against future damages.

The LHS building and athletic fields are surrounded by the tidal waters of Doxey Creek and Motts Creek on three sides. The elevation of the school grounds ranges from approximately +5.0 ft North American Vertical Datum of 1988 (NAVD88) to +10.0 ft NAVD88 (Appendix B1- Survey). Elevation of the surrounding area is also low-lying and generally consistent with the elevation of the school property (U.S. Geological Survey [USGS], 2019). The LHS site is developed with a three-story school building having interior spaces including classrooms, a gym, an auditorium, and crawl space and facilities spaces that house boiler/electrical and mechanical equipment. The school grounds include athletic fields, a paved running track, associated support structures, and paved parking lots. Grounds are mainly vegetated with an open athletic field, turf grass and synthetic turf. There is a thin band of upland woody trees and shrubs that encircle the property at its outer limits and some tidal wetland vegetation around the edges of the creeks. The coastal bank that exists between the creeks and the upland improved area of the school grounds is a combination of naturally occurring shoreline and areas stabilized with mixed rubble.

As part of a larger-scale coastal resiliency effort by the US Army Corps of Engineers (USACE) to protect the Atlantic seaboard of the Rockaway Peninsula and portions of Jamaica Bay, a seawall is proposed along the shoreline of Doxey Creek including the southwest edge of the LHS property (Appendix A, Figure 3-1). The USACE Cedarhurst-Lawrence project proposes to reduce flooding along low-lying coastal neighborhoods within Jamaica Bay and surrounding tributaries, through the installation of High Frequency Flooding Risk Reduction Features (HFFRRF). These HFFRRF are standalone flood protection projects that can protect large concentrations of vulnerable structures. The USACE Cedarhurst-Lawrence project consists of an approximately 1,000-foot-long bulkhead that follows the existing shoreline at the southern end of Doxey Creek. Project design elevations have preliminarily been established at an elevation of +10.0 ft NAVD88 (USACE). As proposed, the USACE Cedarhurst-Lawrence project extends a small distance to the LHS property. In order to maximize flood protection and structural compatibility, the Subrecipient is currently in discussion with USACE to determine how the USACE Cedarhurst-Lawrence project and the Proposed Action at LHS will be integrated.

4.0 ALTERNATIVES

FEMA, as lead agency, and the Subrecipient have evaluated several alternatives to provide protection to LHS against flooding. These alternatives were evaluated based on engineering considerations, environmental impacts, and the purpose and need of the project. Cost was also considered in the feasibility evaluation of alternatives, but it is not a primary determining element. In addition to the alternatives evaluated, the No Action Alternative is included in this analysis. This Section reviews the No Action Alternative, feasible alternatives, as well as alternatives considered and dismissed, which do not meet the project purpose and need.

4.1 Alternative 1: No Action Alternative

Under the No Action Alternative, resiliency measures would not be implemented. As a result, the LHS property would be subject to flooding inundation during storm events from elevated water levels, which would damage existing school infrastructure. School programs would be paused for an undetermined time depending on the scope of damages while repairs were completed. No action would also significantly restrict or prevent the site's ability to function as an emergency operations and control center. When in use as an emergency operations center, flooding of the site would delay emergency response times, resulting in a significant threat to public health and safety and a potential loss of life for the immediate and surrounding communities.

4.2 Alternative 2: (Proposed Action) Concrete Seawall with Subgrade Steel Sheet Pile Construction and Upland Facility Upgrades

Alternative 2, the Proposed Action, consists of the construction of a concrete seawall with subgrade steel sheet pile, three pumping stations with stone flood dissipation aprons below the existing water outfall pipes, flood gates at the LHS entrance driveways, and a tidal wetland restoration (Appendix B2- Project Plans).

A perimeter seawall would provide protection against flooding from tidal waters and overland flooding that may enter the school property from adjacent low lying upland areas that are also subject to inundation during storms. The proposed seawall will be a poured reinforced concrete wall with a lateral footing on the landward side of the school site. The seawall will have a crest elevation (height) of +14.7 ft NAVD88. The toe elevation (depth) of the concrete wall will be several feet below grade and variable based on the existing ground elevation. Steel sheet pile will extend from a toe elevation of -34.0 ft NAVD88 to several feet above the ground surface where it will be embedded into the concrete wall to an elevation a few feet below the concrete wall crest. The steel sheet pile will be driven into the ground using a vibratory pile hammer. Reinforcing rebar will be added to the concrete wall to provide strength. The concrete wall will then be poured around the sheet pile protruding above grade to create one cohesive structure. The

concrete and sheet pile wall will be contiguous around the entire school grounds except for flood gates that will be installed at the entrances to the LHS site. These flood gates are passive, meaning they are designed to automatically close during high water events. In conjunction with the concrete and sheet pile wall, the flood gates will create a solid perimeter wall around the school grounds to prevent flooding.

All site stormwater within the proposed seawall will be collected through subsurface drainage pipes and infiltration chambers. The subsurface chambers will hold the collected rainwater from a 2-inch 24-hour rain event. Once that capacity is exceeded, water will flow into three underground pumping stations located landward of the seawall. The pump chambers will have sump reservoirs. Pumped water will be discharged through the perimeter seawall into velocity dissipation chambers at the upper edge of the creek embankment and then outlet over vegetated rip-rap flow dissipation aprons into the adjacent creek. The velocity dissipation chambers will be adequately sized to slow the velocity of flow and will have wall perforations to defuse the discharge into the creek. During high tide, the discharged water will rise in the dissipation chambers and overflow through the top, leaving the chambers in a sheet flow fashion over a weir, and through the lower perforations. During low tide, the discharge water will pass through the lower perforations of the dissipation chambers over the bank and into the tidal creek. In order to prevent localized bank erosion, a vegetated rip rap/splash pad will be installed to serve as a flow dissipation device beneath each discharge basin. The pump stations will operate once the underground stormwater chambers fill and will discharge water into the adjacent tidal creek during severe storms and periods of coastal sea level increases. The detailed analysis conducted to evaluate the potential groundwater seepage and rainfall supporting the design of these pump stations is included in Appendix B3 – Hydrologic and Hydraulic Study.

On the shoreline of the western creek, a 5,166-square foot tidal wetland restoration would be completed. Areas of low marsh would be planted with Saltmarsh Cordgrass (*Spartina alterniflora*). Areas of high marsh would be planted with a combination of Saltgrass (*Distichilis spicata*), Saltmeadow Cordgrass (*Spartina patens*), Marsh Elder (*Iva frutescens*), and Groundselbush (*Baccahris halimifolia*). Coir logs are proposed on the seaward edge of the wetland plantings to provide protection and increased stabilization until the plants can become established.

The project includes storm resiliency infrastructure and facility upgrades to the existing buildings as well as landscape and site improvements in some of the upland areas. Within the existing school buildings, upgrades will be completed to the electrical, heating, ventilation, air conditioning, plumbing systems, and furnishings to repair damages that occurred during Hurricane Sandy. This will serve to increase resiliency of the infrastructure, including a combination classroom HVAC solution that utilizes heat pumps for maintaining operations in classroom spaces in the event of discontinuance of natural gas supply lines for heating. The interior of the school buildings will be reconfigured and upgraded in select locations. Landscaping and site improvements will be completed on the school grounds surrounding the buildings. This will include the installation of new native plants on the LHS site. Construction of a new grandstand, equipment storage, new synthetic turf playing fields and tennis courts are also proposed. Improvements will also be made to the existing drainage systems on the LHS site.

The Subrecipient estimates that construction will take approximately 18 months. Construction staging would take place in a secured area on the LHS property. Existing roadways (and site driveways) will be used to access the property. No water access will be necessary to construct the project, as all construction activities will be completed from the upland portions of the site.

The Proposed Action is expected to provide protection against flooding from a storm with a 1% (100 year) annual exceedance probability including middle range average Sea Level Rise Projections for the 2080's in New York City of 2.4 feet (Gornitz et al. 2019). (Appendix B3 – Hydrologic and Hydraulic Study provides data on the Coastal Analysis and Design considerations.) The Proposed Action is expected to provide protection to the school and its facilities for more than 50 years. This would prevent future storm damage and ensure that the property can be used as an emergency operations center during disaster events.

In addition to the flood protection features around the periphery of the school property, the project would provide storm resiliency infrastructure and facility upgrades to the existing buildings, as well as landscape and site improvements in some of the upland areas. These infrastructure and facility upgrades meet FEMA's Categorical Exclusion (N7: Federal Assistance for Structure and Facility Upgrades) and, therefore, will not be reviewed as part of the Proposed Action analysis of this EA.

4.3 Alternatives Considered and Dismissed

4.3.1 Alternative 3: Concrete Seawall Construction Without Steel Sheet Pile

Alternative 3 would entail construction of a concrete seawall without the subsurface steel sheet pile. This alternative was dismissed as subterranean seepage under a seawall lacking a sheet pile core would result in flooding to the LHS site landward of the seawall during storm events due to elevated water levels in the surrounding area.

4.3.2 Alternative 4: Earthen Levee

Alternative 4 would entail construction of an earthen levee surrounding the property to provide flood protection. This alternative would occupy a large footprint due to the necessary elevations and associated side slopes to achieve a stable structure. This alternative was dismissed as the footprint would be too large and would impede into functional space that is necessary for school activities and emergency operations. Additionally, this alternative would not provide protection against subterranean flooding to the LHS site landward of the seawall.

4.4 Summary of Alternatives

Of the four alternatives considered, two were dismissed as they did not meet the purpose and need for the project. The dismissed alternatives were the Concrete Seawall Without Steel Sheet Wall (Alternative 3) and the Earthen Levee (Alternative 4). The following are the remaining alternatives considered for analysis:

- 1. Alternative 1: No Action Alternative
- 2. Alternative 2: (Proposed Action) Concrete Seawall and Subsurface Steel Sheet Pile Construction and Upland Facility Upgrades

The following (Section 5) evaluates the potential impacts of the No Action Alternative and the Proposed Action. Section 8 of this document contains a summary table of the potential impacts of the No Action Alternative and the Proposed Action.

5.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This Section discusses the potential impacts of the No Action Alternative and the Proposed Action on environmental resources. When possible, quantitative information helps to establish potential impacts that FEMA evaluates based on the criteria listed in the table below.

Impact Scale	Criteria		
No Impact	The resource area would not be affected and there would be no impact.		
Negligible	Changes would either be non-detectable or, if detected, would have effects that would be sligh		
	local. Adverse impacts would be well below regulatory standards, as applicable.		
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Adverse		
	impacts would be within or below regulatory standards, as applicable. Mitigation measures would		
	reduce any potential adverse effects.		
Moderate	Changes to the resource would be measurable and have either localized or regional scale impacts.		
	Adverse impacts would be within or below regulatory standards, but historical conditions would be		
	altered on a short-term basis. Mitigation measures would be necessary, and the measures wo		
	reduce any potential adverse effects.		
Major	Changes to the resource would be readily measurable and would have substantial consequences on		
	regional levels. Adverse impacts would exceed regulatory standards. Mitigation measures to offset		
	the adverse effects would be required to reduce impacts, though long-term changes to the resource		
	would be expected.		

Table 5-1: Impact Significance and Context Evaluation Criteria for Potential Impacts

5.1 Resource Topics Dismissed from Detailed Analysis

In accordance with Council of Environmental Quality (CEQ) regulations, an environmental analysis should focus on significant environmental issues (40 CFR 1502.01). FEMA considered all CEQ resource topics in the preparation of this EA, but eliminated nine because they were not applicable to this project or would result in no substantive impacts on those resources. The eliminated resource topics are as follows.

Resource Area or Regulation	Rationale	
Eliminated Geology	FEMA does not anticipate impacts to Geology from actions evaluated in this EA. Bedrock in the project area is more than 1,000 feet from the surface and will not be affected by excavation activities (USGS n.d.).	
Wildlife	FEMA does not anticipate impacts to Wildlife from actions evaluated in this EA. The potential exception may be temporary disturbance to Canada Geese during the project construction phase. However, the project area is developed and provides limited habitat for wildlife. (See section 5.9 for analysis of impacts to Threatened and Endangered Species.)	
Wild, Scenic, or Recreational Rivers	FEMA does not anticipate impacts to Wild, Scenic, or Recreational Rivers from action evaluated in this EA. There are no rivers classified as wild, scenic, or recreational unde the Wild & Scenic Rivers Act (Public Law 90-542; 16 USC 1271 <i>et seq.</i>) on or in the vicinity of the project area. Additionally, there are no designated Significant Coastal Fish and Wildlife Habitats or Significant Natural Communities within the project area.	
Farmland Protection and Policy Act	FEMA does not anticipate impacts to prime, unique, or farmland of statewide or local importance from actions evaluated in this EA. FEMA anticipates actions evaluated in this EA will occur at locations commensurate with census-identified urbanized areas, not subject to the Farmland Protection and Policy Act.	
Migratory Bird Treaty Act	FEMA does not anticipate impacts to Migratory Birds from actions evaluated in this EA. The proposed action is localized to the existing school property, which is actively used in a highly developed surrounding area with lack of suitable habitat on site. Additionally, within nearby Jamaica Bay and the surrounding area, there is a large amount of valuable foraging and resting habitat available, such that it would provide a more suitable location for migratory birds.	
Bald and Golden Eagle Protection Act	FEMA does not anticipate impacts to Bald or Golden Eagles from actions evaluated in this EA. There is no suitable habitat for Bald or Golden Eagles on site or in surrounding areas.	
Land Use and Planning	FEMA does not anticipate impacts to Land Use and Planning from activities evaluated in this EA. The proposed action would not change land use and planning at the site and the site would remain in its present use.	
Transportation	FEMA does not anticipate impacts to Transportation from activities evaluated in this EA. During construction, there may be temporary changes in traffic due to vehicles entering and exiting the school site; however, no long-term impacts will result.	
Hazardous Materials	FEMA does not anticipate impacts related to Hazardous Materials from actions evaluated in this EA. The project would not generate hazardous waste or materials. Per existing protocols, the school addresses any potential hazardous materials generated from school activities (i.e., chemistry labs, etc.) in a manner consistent with all applicable New York State and federal regulations for safe and secure storage and disposal. This includes addressing acid waste with a replacement of the neutralization system for the limited chemistry curriculum.	

5.2 Topography and Soils

5.2.1 Existing Conditions

The LHS building and athletic fields are surrounded by the tidal waters of Doxey Creek and Motts Creek on three sides. The topography of the LHS grounds ranges from approximately +5.0 ft NAVD88 to +10.0 ft NAVD88 (Appendix B1- Survey). Inland areas of the school grounds are level to gently sloping and contain buildings, ancillary facilities, sports fields, and impervious pavement. Elevation of the surrounding area is also low lying with minimal topographic relief and is generally consistent with the topography of the school property (USGS 2019). The shorelines adjacent to the creeks are gently sloping and are inundated by daily tides. Sediments in these shoreline areas have the potential to be reworked by natural coastal processes.

Based on historic USGS maps and site history, the project site appears to be mostly man-made landfill constructed between 1937 and 1941 atop wetlands. This was prior to the construction of the Cedarhurst Municipal Stadium, which was previously located on the site. Review of historic topographic maps from circa 1898 to circa 1938 revealed that the project site was previously marsh area. According to the Web Soil Survey from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), soil classifications within the project area include: Ipswich mucky peat (Ip), 0 to 2 percent slopes, very frequently flooded soils occurring on the adjacent tidal marshes; Udipsamments wet substratum (Ue), typically considered dredge spoil placement areas, on the school recreational fields and adjacent development; Urban Land (Ug) occupying the built and parking lot areas on site and Urban land-Udipsamments, wet substratum complex (Uw) in the surrounding residential areas (Appendix A, Figure 5-1).

5.2.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would not impact site topography or soils. However, not implementing the project would allow bank scour to continue and creep landward onto the school property potentially eroding soils and further exposing fill materials.

Alternative 2: Proposed Action

Under the Proposed Action, the project would slightly reshape the topography during project construction, but impacted areas would be restored to preexisting grades prior to project completion. Any new backfill brought to the project site would be suitable material from a commercial source and be placed according to approved plans and specifications. Soils that might be displaced by below grade construction activities, would be utilized elsewhere on the LHS site (Appendix B2- Project Plans). Therefore, the Proposed Action would have short-term negligible adverse impacts during construction on the existing topography and soils within the project area, but no long-term impacts.

5.3 Air Quality

The United States Environmental Protection Agency (USEPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) under the provisions of the Clean Air Act of 1970 (42 U.S.C. Part 7401 *et seq.*). Primary air quality standards define levels of air quality necessary to protect public health with an adequate margin of safety. Secondary air quality standards protect the public's welfare by promoting ecosystem health, preventing decreased visibility, and reducing impacts to vegetation and wildlife. Federal NAAQS are currently established for the following six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), particulate matter equal to or less than 10 micrograms per cubic meter of air (PM₁₀), and PM equal to or less than 2.5 micrometers in aerodynamic diameter (PM_{2.5}). NYS monitors and regulates emissions for these pollutants to meet NAAQS requirements.

Federally funded actions in nonattainment and maintenance areas are subject to USEPA General Conformity regulations, 40 CFR Parts 51 and 93. The air conformity analysis process ensures that emissions of air pollutants from planned federally funded activities would not affect the state's ability to achieve the Clean Air Act goal of meeting the NAAQS. Section 176(c) of the Clean Air Act requires that federally funded projects must not cause any violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS or any interim milestone. The emissions from construction activities are subject to air conformity review.

Under General Conformity regulations, a determination for federal actions is required for each criteria pollutant or precursor in non-attainment or maintenance areas where the action's direct and indirect emissions have the potential to emit one or more of the six criteria pollutants at rates equal to or exceeding the prescribed *de minimis* rates for that pollutant. For this project, the prescribed annual rates are 50 tons of volatile organic compounds and 100 tons of nitrogen oxides (NO_X) (ozone precursors), 100 tons of CO (in a CO maintenance area), and 100 tons of PM_{2.5}, SO₂, or NO_X (PM_{2.5} and precursors in PM_{2.5} attainment area).

Areas where a criteria pollutant level exceeds the applicable NAAQS are designated as being in nonattainment of the standards. A non-attainment area may be re-designated to attainment, based on monitoring data demonstrating attainment of the applicable standard and implementation of a maintenance plan to assure continued attainment.

5.3.1 Existing Conditions

As of September 2020, USEPA designated this area in Nassau County, which includes the project site, in the 24^{th} percentile in the state for PM_{2.5} and in the 25^{th} percentile in the state for Ozone (USEPA's Environmental Justice Screening and Mapping Tool Version 2020). The project site is in a residential neighborhood. However, commercial and industrial land uses are located immediately across the canal to the south and west of the LHS site and in the surrounding environs. This area includes JFK International Airport. While located within this area, the school is not a generator of air pollutants, and the site currently mirrors ambient air quality conditions. As such, the proposed project would not have a significant impact

on the effects of greenhouse gases which contribute to climate change. The proposed project would also help reduce impacts from increased flooding and storms that result from the changing climate.

5.3.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would not impact the existing air quality of the school property or adjacent neighborhood. Ambient air quality conditions would remain the same.

Alternative 2: Proposed Action

Construction activities under the Proposed Action may result in temporary increases in emissions from on-site equipment and machinery, including both road and non-road, light and heavy, gasoline and dieselpowered equipment related to construction, and fugitive dust. Fugitive dust or airborne dust is typically generated during groundbreaking and excavation activities.

Temporary impacts associated with construction emissions would be mitigated through the implementation of air quality best management practices (BMPs). All equipment and machinery would comply with applicable USEPA standards. Per USEPA regulations, ultra-low sulfur diesel fuel would be used for all diesel-powered construction equipment, limiting Sulphur Oxides emissions. Fugitive dust control measures such as speed limit reductions, sprayed water or other dust suppressant application, and regular vehicle rinsing would be managed according to proper standards and procedures. Additionally, all activities under the Proposed Action would comply with applicable federal, state, and local laws and regulations regarding construction emissions. Overall, FEMA anticipates adverse impacts to air quality being short-term negligible as construction activity would be temporary and BMPs are implemented, with no long-term impacts as the completed Proposed Action would return the site to existing conditions.

5.4 Water Quality

The Clean Water Act (CWA), enacted in 1977, regulates discharge of pollutants into waters of the United States under the jurisdiction of USACE and USEPA. Section 404 of the CWA establishes USACE permit requirements for discharging dredged or fill materials. USACE regulation of activities within navigable waters is authorized under the 1899 Rivers and Harbors Act. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES), USEPA regulates both point and non-point pollutant sources including stormwater and stormwater runoff. In New York State, USEPA has delegated the authority to New York State Department of Environmental Conservation (NYSDEC) to administer the NPDES program, referred to as the State Pollution Discharge Elimination System (SPDES). Activities that disturb one acre or more of ground require an SPDES permit. The SPDES permit requires applicants to prepare a Stormwater Pollution Prevention Plan.

Section 1424(e) of the Safe Drinking Water Act of 1974 [Public Law 93–523], authorizes USEPA to designate an aquifer for special protection under the sole source aquifer program. USEPA can make this designation if the aquifer is the sole or principal drinking water resource for an area (i.e., it supplies 50

percent or more of the drinking water in a particular area) and if its contamination would create a significant hazard to public health. No commitment for federal financial assistance may be provided for any project that USEPA determines may contaminate a sole source aquifer such that a significant hazard to public health is created.

5.4.1 Existing Conditions

The project area is located in the Hook Creek-Head of Bay Watershed (HUC020302020101). The project area is surrounded by the tidal waters of Doxey Creek and Motts Creek on three sides which are considered Long Island Tidal Tributaries to Jamaica Bay (State Waterbody ID: NY1701-0224).

The current New York State 303(d) List of Impaired/Total Maximum Daily Load (TMDL) waters indicates that the Jamaica Bay, Eastern, and Tributaries within Queens County which is immediately *adjacent* to the project area is an impaired water body (NYSDEC 2020). The 303(d) list identifies the suspected source of impairment as urban/stormwater runoff, and combined stormwater outfalls, including nitrogen and fecal coliform. However, the waters immediately *surrounding* the project area are not listed as 303(d) waters. New York State identifies Doxey and Motts Creek adjacent to LHS as Class SC waters (NYSDEC n.d.[a].). Pursuant to 6 CRR-NY 701.12 Class SC waters are waters suitable for fish, shellfish and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

USEPA has designated the entirety of Nassau County as a sole-source aquifer under the Safe Drinking Water Act, which includes the project area. The aquifers in southwestern Nassau County are multi-layered as follows: the upper glacial aquifer is underlain by the Pleistocene Gardiners Clay; which is underlain by the Magothy aquifer; which is underlain by Raritan clay; which is underlain by the Lloyd aquifer; which is underlain by bedrock. All of these hydrogeologic features slope from north to south in the project area (USGS n.d.). Due to the waterfront location of the subject property, flows beneath the site are primarily driven by shallow aquifers that drain towards the surrounding creeks. Deep groundwater recharge is not characteristic for this site.

5.4.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would not directly impact water quality. However, significant future flood events (like Hurricane Sandy that caused significant site damages) could overload or damage sewage systems at LHS, causing contaminated runoff to the adjacent water bodies. The No Action Alternative could have long-term, minor adverse impacts on water quality during and after flood events associated with storm surge.

Alternative 2: Proposed Action

The Proposed Action will temporarily detain surface and groundwater swells experienced during storm events through the use of a seawall, flood gates, and associated flood protection systems. The detained

water would be slowly released back to the groundwater when the tide surge retreats. To reduce contaminants, the temporarily detained water will be filtered through an underground series of drainage chambers. Excess water will then be pumped and released into the surrounding surface waters. The result of this controlled release of detained water will improve the quality of surface and groundwater discharges, as compared with the uncontrolled drainage conditions anticipated under the No Action Alternative.

The Subrecipient will obtain a SPDES General Permit and implement a Stormwater Pollution Prevention Plan to manage discharges from the site. The SPDES permit would ensure that stormwater runoff from the project site related to the Proposed Action is controlled through BMPs and would prevent stormwater runoff from polluting Doxey Creek, Motts Creek, and Jamaica Bay. The Proposed Action would result in negligible impacts to water quality in both the short- and long term.

5.5 Wetlands

Wetlands are areas where surface or groundwater inundates or saturates with a frequency and duration sufficient to support and, under normal hydrological conditions, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Actions that may impact wetlands require review under federal and state regulatory programs, including Section 404 of the CWA (33 USC 1344), the NYS Freshwater Wetlands Act (Article 24 of Environmental Conservation Law), and the Tidal Wetlands Act (Article 25 of Environmental Conservation Law). Executive Order (EO) 11990 Protection of Wetlands requires federal agencies to avoid funding activities that directly or indirectly support occupancy, modification, or development of wetlands, whenever there are practicable alternatives, and that the Proposed Action includes all practicable measures to minimize harm to wetlands that may result from such use.

FEMA implements EO 11990 through 44 CFR Part 9 concurrently with EO 11988 Floodplain (see Section 5.6) and uses the 8-step decision making process to evaluate potential effects on, and mitigate impacts to, wetlands and floodplains. As noted, in New York State, NYSDEC administers and regulates wetlands under the Freshwater Wetlands Act (Article 24 of Environmental Conservation Law) and the Tidal Wetlands Act (Article 25 of Environmental Conservation Law). The United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map is considered the best available information for wetland mapping.

5.5.1 Existing Conditions

The potential presence of wetlands was evaluated based on a review of the project area on the USFWS NWI Wetlands Mapper, the NYSDEC Environmental Resource Mapper and DECinfo Locator websites, as well as a field wetland evaluation and delineation of the project site by qualified ecological engineers and ecologists working on behalf of the Subrecipient.

USFWS classifies aquatic habitats into five distinct categories: marine, estuarine, riverine, lacustrine, and palustrine wetlands (USFWS 1979). Based on a review of the USFWS Wetlands Mapper, there are no designated wetlands in the area, but there are aquatic habitats with Estuarine and Marine Deepwater

classifications (Appendix A, Figure 5-2). NYSDEC categorizes tidal areas to identify wetlands and aid in administering programs for tidal wetland protection. The NYSDEC Tidal Wetlands Map is provided in Appendix A, Figure 5-3. Based on a review of the NYSDEC Environmental Resource Mapper, the DECinfo Locator and the Tidal Wetland Map for the area, NYSDEC categorizes the tidal areas within the project area as littoral zone.

As noted, as part of the proposed project, qualified ecologists hired by the Subrecipient conducted a wetland evaluation and delineation to determine if there were tidal wetland areas present on the site. This evaluation identified that pursuant to NYSDEC Article 25 regulations that there were Intertidal Marsh and High Marsh areas present along the tidal banks on the periphery of the project site (Appendix B2- Project Plans). Therefore, wetlands meeting the definition under Section 404 of the Clean Water Act are within the project area.

5.5.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative there would be no impact to state or federally mapped wetlands.

Alternative 2: Proposed Action

FEMA conducted the 8-step decision-making process for the Proposed Action as described in this EA (Appendix B, Document 4). Under the Proposed Action, the installation of the stone dissipation aprons at the three pump chambers will result in the placement of 1,722 square feet of stone within wetland areas. Much of the wetland area that would be impacted by the placement of the stone aprons is dominated by invasive common reed (*Phragmites australis*) that is indicative of a degraded wetland habitat. To offset any potential impacts from the stone placement, the project includes tidal wetland restoration at a 3:1 mitigation ratio. As part of this tidal wetland restoration, a 5,166-square foot area of high marsh and low marsh on the project site would be planted with native wetland species. Placement of the stone dissipation aprons would have a long-term minor adverse impact on tidal wetlands, but the restoration of tidal marsh area at a 3:1 ratio will mitigate any potential adverse effects resulting in long-term minor benefit with short-term negligible adverse impact during construction activities.

5.6 Floodplain

Executive Order 11988, Floodplain Management, requires federal agencies to avoid potential adverse impacts associated with the occupancy and modification of floodplains, and to avoid floodplain development whenever there are practicable alternatives. If no practicable alternatives exist within or affecting the floodplain, federal agencies then seek to minimize the adverse impacts. Regulations for complying with EO 11988 are detailed in 44 CFR Part 9.

FEMA produces Flood Insurance Rate Maps (FIRMs) to determine if an action is located in the floodplain. FIRMs depict calculated locations of the one percent (100-year) and the 0.2 percent (500-year) floodplains, coastal high hazard areas, and base flood elevation levels. FEMA develops FIRMs through a mapping process that takes into account topography and history of flooding in the region. Federal actions within the 100-year floodplain require the federal agency to conduct an 8-step review process to evaluate alternatives within the floodplain. For projects located within the floodplain, any potential adverse impacts must be mitigated when there are no practicable alternatives.

5.6.1 Existing Conditions

The project site is located within the 100-year floodplain (Zone AE elevation 8 & 9) (Appendix A, Figure 5-4) as shown on the Flood Insurance Rate Map panel #36059C0213G dated September 11, 2009, and subject to Letter of Map Revision (LOMR) Case number 12-02-1677P, effective July 16, 2013 (Appendix C- LOMR) (FEMA 2013).

5.6.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no flood damage risk reduction to the LHS site, and the floodplain would continue to be vulnerable to flooding and storm surge damages. The No Action Alternative would have minor adverse impacts on the floodplain from continued flooding risk.

Alternative 2: Proposed Action

FEMA conducted the 8-step decision-making process for the Proposed Action as described in this EA (Appendix B, Document 4). The Proposed Action would not encourage further development in the floodplain as there would be no increase in developable land with the proposed flood protection system. Construction activities would comply with all code requirements including those for flood-resistant structures located in the 100-year flood zone. FEMA anticipates that BMPs and permit requirements will limit construction to negligible adverse short-term impacts to the floodplain.

FEMA anticipates a long-term minor benefit to the floodplain. The flood protection system including the concrete seawall, pumping stations with stone dissipation aprons, and flood gates will help to reduce the impacts of storm surge and wave action, helping prevent potential damage to the floodplain during storm events. Structures and appurtenances will be built in accordance with codes and local floodplain administrator requirements.

5.7 Coastal Resources

The Coastal Zone Management Act (CZMA) is administered by states with coastal shorelines to manage development with a Coastal Zone Management Plan (CZMP). Projects receiving federal assistance must follow the procedures outlined in 15 CFR 930.90 – 930.101 for federal coastal zone consistency determinations to ensure they are consistent with a state's CZMP. The New York State Department of State (NYSDOS) and NYSDEC have identified and promulgated substantive policies for guiding development and resource management in New York State's coastal area. The CZMP's coastal

management policies seek to promote the beneficial use of coastal resources; prevent their impairment; and manage major activities that may substantially affect resources.

The Village of Cedarhurst has not adopted a Local Waterfront Revitalization Program (LWRP) (NYSDOS 2020). The Coastal Erosion Hazard Law (Environmental Conservation Law 34) empowers NYSDEC to identify and map coastal erosion hazard areas and to adopt regulations (6 NYCRR Part 505). The Coastal Erosion Hazard Area Permit Program manages regulated activities or land disturbance on properties within the coastal erosion hazard areas.

The Coastal Barrier Resources Act (CBRA) of 1982, designated relatively undeveloped coastal barriers along the Atlantic and Gulf coasts of the United States as part of the John H. Chafee Coastal Barrier Resources System, and made these areas ineligible for most new federal expenditures and financial assistance. The U.S. Congress designates mapped areas called system units to reserve primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes. CBRA was amended by the Coastal Barrier Improvement Act of 1990, which added the new designation Otherwise Protected Areas (OPAs). OPAs are mapped areas where only federal flood insurance is restricted.

5.7.1 Existing Conditions

Based on a review of historic USGS maps and local history research, the project site appears to be mostly man-made, consisting of landfill over wetlands and underlain by glacial sediments. As a result of manmade fill and glacial sediments, the site's coastal areas are primarily composed of unconsolidated materials such as gravels, sands, and clays. This contributes to the site's shorelines being dynamic environments, inherently unstable and constantly changing in response to natural and human forces. Constructed walls and other hard features can interrupt such natural processes.

The coastal bank that exists between the creeks and the upland improved area of the LHS site is a combination of unprotected shoreline and areas stabilized with mixed rubble. The coastal area that surrounds the school grounds is a fetch limited system, which limits wind and, in turn, wave generation and littoral transport in the area. These regional conditions as well as flooding conditions for the site were considered as part of the existing baseline for the LHS seawall project.

As noted, the area east of LHS is part of an adjacent USACE proposed project to install a seawall to limit flooding in the region. In order to maximize flood protection and structural compatibility, the Subrecipient is currently in discussion with USACE to determine how the USACE Cedarhurst-Lawrence project and the Proposed Action at LHS will be integrated.

The project is located within the coastal zone of New York State; therefore, the Proposed Action must comply with the forty-four policies established in the NYS CZMP (NYSDOS 2017). The project is not located within a designated CBRS unit or OPA. The Proposed Action will not involve construction within a Coastal Erosion Hazard Area (CEHA) as shown on the official Coastal Erosion Hazard Area maps issued by NYSDEC; therefore, there would be no impact to the CEHA.

5.7.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action alternative, there would be no new work at the LHS site. Therefore, there would be no change in the coastal characteristics of the area and no impact on coastal resources.

Alternative 2: Proposed Action

In accordance with the requirement of the CZMA, the Subrecipient submitted the Proposed Action to NYSDOS on December 21, 2020, for determination of Coastal Consistency Conformance. NYSDOS sent a Consistency Certification letter on June 16, 2021, in which the NYSDOS concurred with the consistency certification for the Proposed Action (Appendix D1). The Proposed Action would contribute to additional hardening of the shoreline. However, considering the baseline conditions of the existing shoreline and the USACE proposed adjacent seawall project, FEMA considers the Proposed Action's long-term impacts on coastal resources to be adverse, but minor.

5.8 Vegetation

Executive Order 13112 Invasive Species requires federal agencies, to the extent practicable, to prevent the introduction of invasive species and provide for their control, as well as to minimize the economic, ecological, and human health impacts that invasive species cause. Invasive species prefer disturbed habitats and generally possess high dispersal abilities, enabling them to out-compete native species.

5.8.1 Existing Conditions

The LHS grounds are vegetative aside from the paved parking lots and school buildings and associated structures with the open athletic fields dominated by turf grass. There is a thin band of upland woody trees and shrubs that encircle the property at its outer limits adjacent to the creeks and some tidal wetland vegetation around the edges of the creeks. On-site investigations have identified the presence of invasive common reed (*Phragmites australis*) within old surface drainage ditches at the rear of the school grounds and along the tidal creek banks.

5.8.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative will have no direct impact on vegetation. However, not implementing the project would allow the existing invasive species to spread to eroded creek banks and throughout the unmaintained vegetated areas. This may, in effect, contribute to stabilization of the tidal creek banks; however, the invasive species would likely out-compete any existing native species.

Alternative 2: Proposed Action

The Proposed Action would have minimal impact on the existing vegetation since the majority of the project installations would occur outside of the area vegetated with upland woody trees, shrubs, and wetland plants. Disturbed upland areas with turf grass outward of the sea wall will be seeded and restored to preexisting conditions according to applicable sediment and erosion control BMPs.

On the shoreline of the western creek, a 5,166-square foot tidal wetland restoration will be completed. Areas of low marsh will be planted with Saltmarsh Cordgrass (*Spartina alterniflora*). Areas of high marsh will be planted with a combination of Saltgrass (*Distichilis spicata*), Saltmeadow Cordgrass (*Spartina patens*), Marsh Elder (*Iva frutescens*), and Groundselbush (*Baccharis halimifolia*). As noted, invasive common reed exists in portions of the restoration area. In areas where common reed exists, the reeds will be cut, rhizomes will be excavated, and clean fill will be placed prior to new native plant installation. The restored wetland plantings will be monitored by the Subrecipient for five years to ensure plant survival and minimization of encroachment into restored areas by invasive species. Negligible short-term adverse impacts to the vegetation are anticipated compared to existing conditions. Overall, however, the Proposed Action will result in a long-term minor beneficial impact on vegetation.

5.9 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The U.S. National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) and the USFWS are the lead federal agencies for implementing ESA. The law requires federal agencies to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed endangered fish or wildlife species.

5.9.1 Existing Conditions

The NOAA ESA Section 7 Mapper system was utilized to identify presence of listed aquatic species in the project area. No species occurrences within the project area were identified. The USFWS Information for Planning and Consultation (IPaC) system was utilized to identify terrestrial species in the project area. IPaC identified six (6) federally listed species that may occur within the project vicinity. They include Piping plover (*Charadrius melodus*), Red knot (*Calidris canutus rufa*), Roseate tern (*Sterna dougallii*), Northern Long-eared Bat (*Myotis septentrionalis*), Sandplain Gerardia (*Agalinis acuta*), and seabeach amaranth (*Amaranthus pumilus*).

Piping plover can be found breeding from April through July (Levine 1998), typically using open beach areas between the primary dune and high-tide line (Elliot-Smith and Haig 2004; McIntyre et al. 2010; New York Natural Heritage Program [NYNHP] 2015). Based on existing conditions, there is no suitable habitat for Piping plover within the project area.

Red knot may be found in intertidal marine habitats in New York State during migration or wintering periods (Cornell Lab of Ornithology 2017). Due to the existing conditions of the project area, Red knot would not likely be found.

Roseate tern arrives at its breeding grounds between April and July and remains until fall migration, which typically occurs from August through September (Gochfeld et al. 1998; Nisbet 1989; NYNHP 2015). The vast majority (greater than 90 percent) of the breeding population of Roseate tern in New York State, breeds within the colony located on Great Gull Island (NYNHP 2015), approximately 93 miles east northeast of the project area. Due to the existing conditions of the project area, there is no suitable habitat for the Roseate tern.

Northern long-eared bats are a forest dependent insectivore species that utilize a diversity of forest habitats for roosting, foraging, and raising young. Any tree large enough to have a cavity or one that has loose bark can be utilized for roosting or rearing young. Northern long-eared bats generally hibernate through late fall and early spring and are active the remaining months of the year (NYSDEC n.d.[b].). There is minimal suitable habitat for the Northern long-eared bat in the project area.

Seabeach amaranth is generally found along the active dunes associated with ocean beaches (Buchanan and Finnegan 2010). The decline of the species is most notably attributed to habitat destruction and alteration, incompatible beach grooming practices, and recreational activities (New Jersey Department of Environmental Protection 2017). The project area does not contain suitable habitat for seabeach amaranth.

Sandplain gerardia is a maritime grassland species maintained by fire and grazing. It does need disturbance in order to provide bare soil within the grassland to allow area for growth (NYNHP 2020). The project area does not contain suitable habitat for sandplain gerardia.

Critical habitat, as defined in the Endangered Species Act, is a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Based on completed research noted above, the project area does not contain any designated critical habitat.

5.9.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no construction at the LHS site. Therefore, there would be no potential impact to threatened and endangered species.

Alternative 2: Proposed Action

The Proposed Action would not impact threatened and endangered species as suitable habitat is not present on the project site to support any of the IPaC listed species. While adjacent properties may provide potential habitat for Northern long-eared bat, those areas will not be disturbed or impacted by the project and, therefore, the project would have no effect. Consultations with USFWS and NOAA regarding listed species were completed by USACE as part of their review of the project under the Nationwide Permit Program. USACE provided authorization for the project in a letter dated April 20, 2022, under USACE Nationwide Permit Numbers 13 and 27 in accordance with Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

5.10 Magnuson Stevens Fisheries Conservation Act & Essential Fish Habitat

Federal agencies are required to assess the potential impacts that proposed actions and alternatives may have on NOAA Fisheries-regulated Essential Fish Habitat (EFH), in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

5.10.1 Existing Conditions

The presence or absence of federally listed species within or adjacent to project areas would be largely determined by the presence of suitable habitat, which is primarily a product of salinity, temperature, water depth, vegetation, and the extent of human disturbance. The NOAA Essential Fish Habitat Mapper was used to identify EFH within the project area. The EFH mapper identifies 17 species with EFH that may occur within the project area. They include Winter Flounder (*Pseudopleuronectes americanus*), Little Skate (*Leucoraja erinacea*), Atlantic Herring (*Clupea harengus*), Windowpane Flounder (*Scophthalmus aquosus*), Winter Skate (*Leucoraja ocellata*), Clearnose Skate (*Raja eglanteria*), Atlantic cod (*Gadus morhua*), Red hake (*Urophycis chuss*), Yellowtail flounder (*Pleuronectes ferruginea*), Monkfish (*Lophius americanus*), White Shark (*Carcharodon carcharias*), Longfin inshore squid (*Loligo pealei*), Bluefish (*Pomatomus saltatrix*), Atlantic butterfish (*Peprilus triacanthus*), Scup (*Stenotomus chyrspos*), Summer flounder (*Paralichthys dentatus*) and, Black sea bass (*Centropristis striata*).

White sharks and bluefish are all highly migratory species and not expected to be impacted by the proposed project. Atlantic cod, Atlantic herring, Atlantic butterfish, Red hake, Monkfish, and Black sea bass are deeper water species that would not utilize the adjacent tidal creeks, but may occur in offshore waters. Longfin inshore squid would be expected to be found further offshore, particularly in the winter months. Winter flounder, Little skate, Windowpane flounder, Winter skate, Clearnose Skate, Yellowtail flounder, and Summer Flounder may potentially utilize the project area during certain times of year, although the project's location in narrow tidal creeks on the edges of the marine system provide less than optimal habitat. The NOAA EFH mapper indicated that there are no Habitat Areas of Particular Concern as well as no EFH Areas Protected from fishing adjacent to the project area.

5.10.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no construction at the LHS site. Therefore, there would be no impact to EFH.

Alternative 2: Proposed Action

As part of the Proposed Action, approximately 720 square feet of area below mean low water will be filled with stone as part of the installation of the energy dissipation aprons below the pump chamber outfalls. This placement of stone may result in temporary water disturbance during installation and a temporary displacement of potential EFH species in the area during project construction. However, prior to project implementation, BMPs including turbidity curtains will be installed to minimize turbidity and sedimentation within the project area. Post-construction, drainage discharge from the LHS site would be comparable to the No Action alternative and would be consistent with current discharge from the site. The Proposed Action may have a short-term negligible to minor impact on EFH species, but the project may have a long-term, negligible beneficial impact on EFH species by creating productive rocky habitat in the project area.

Consultations with NOAA regarding EFH were completed by USACE as part of their review of the project under the Nationwide Permit Program. USACE provided authorization for the project in a letter dated April 20, 2022, under USACE Nationwide Permit Numbers 13 and 27 in accordance with Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

5.11 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and implemented by 36 CFR Part 800, requires federal agencies to consider potential effects of its actions on cultural resources prior to commencement of work (an "undertaking"). NHPA defines a historic property as any prehistoric or historic district, site, building, structure, or object, listed on or eligible for inclusion on, the National Register of Historic Places (NRHP). A historic property includes artifacts, records, and remains that are related to, and located within such properties. Additionally, historic property includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria. Only those historic properties listed or determined eligible for listing on the NRHP are subject to avoidance or minimization measures for adverse impacts resulting from an undertaking. The term "eligible for inclusion on the NRHP" includes all properties that meet one or more of the NRHP listing criteria detailed in 36 CFR Part 60. Sites not yet evaluated may be considered potentially eligible for inclusion on the NRHP and are afforded the same consideration as listed properties.

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area within which an undertaking may directly or indirectly affect cultural resources. FEMA determines an APE based on completed research identifying NRHP-listed and/or -eligible properties. Within the APE, FEMA evaluates impacts on identified cultural resources for above ground resources and below ground prehistoric or historic archaeological resources.

5.11.1 Existing Conditions

The New York State Historic Preservation Office (NYSHPO) maintains a regularly updated list of New York State's historic properties that are subject to NYSHPO and federal agency review. This list is accessible through the NYSHPO-maintained Cultural Resource Information System (CRIS). FEMA evaluated the Proposed Action's (undertaking's) potential effects on historic properties using CRIS and in consultation with NYSHPO.

The APE for the project area is limited to the approximate boundaries as defined by the Nassau County tax map for the subject property (Section 39, Block A, Lot 529) totaling approximately 25 acres. The APE includes all above ground resources adjacent to the proposed work as well as all vertical and horizontal ground disturbance for potential impacts to below-ground historic resources.

CRIS shows that the LHS site is located within an area of archaeological sensitivity. However, there are no archaeological properties eligible or listed on the State or National Register of Historic Places within or immediately adjacent to the project site. As noted, the APE consists mainly of man-made landfill atop wetlands. Any proposed work within the APE will occur in previously disturbed/fill soils that are not likely to possess intact and distinct soil horizons and are unlikely to yield archaeological artifacts or features within their original depositional contexts (Survey 07PR02308 PIN 0072.14.101, NY 878 Inwood). Therefore, due to the recent history and geological contexts, the potential to encounter intact archaeological sites within the APE is assessed as low.

In 2020, NYSHPO determined that the LHS *building* was not eligible for listing on the NRHP. On August 25, 2021, FEMA initiated consultation with NYSHPO under Section 106 of the NHPA. On August 26, 2021, FEMA received concurrence that the LHS *site* was **Not Eligible** for listing on the NRHP. The Determination of Effect for the Proposed Action was **No Historic Properties Affected** for properties that are either on, or eligible for inclusion on the State or National Register of Historic Places.

5.11.2 Potential Impacts on Cultural Resources

Alternative 1: No Action

Under the No Action Alternative, there would be no construction at the LHS site. Therefore, there would be no effect to any *potential* above ground or below ground historic properties.

Alternative 2: Proposed Action

The Proposed Action would not result in an adverse effect to historic properties as the LHS site is not eligible for listing on the NRHP. Additionally, there are no NRHP-eligible above ground resources (buildings, structures, etc.) within or immediately adjacent to the project site. As noted, ground-disturbing activities will be limited to previously disturbed soils. No previously recorded archaeological sites are located within the APE. Based on these combined characteristics, the potential to encounter intact

archaeological resources is low. Therefore, the proposed undertaking would have no impact to cultural resources (historic properties) within the project area.

5.12 Aesthetic Resources

5.12.1 Existing Conditions

The LHS buildings and grounds are visible from all sides during the winter when surrounding vegetation has gone dormant and leaves have dropped from woody vegetation. During the summer, views into the property are obscured by tall vegetation along the western and northern property boundaries. The LHS school is a typical brick and mortar building that is surrounded by paved parking and lawn areas. The track and field spaces occupy the rear of the property bordering the tidal creeks and can be seen from upland properties across the creek. The perimeter of the property is surrounded by a six-foot high chain link fence covered with vines that has partially collapsed due to weather, storm-related damages, and age. At low tide, the west and north-facing banks of the creek are visible, revealing a partially vegetated and partially eroded slope with various types of rubble at the base.

5.12.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no construction at the LHS site. Therefore, there would be no impact to the existing neighborhood character or aesthetic resources as the site would remain in its existing condition.

Alternative 2: Proposed Action

Under the Proposed Action, the seawall will consist of poured concrete, with coping at the top and a formed pattern on the outward exposed face to improve aesthetics to viewers looking towards the property from outside the LHS site. The height of the seawall will be approximately the same as the existing perimeter fence. There will be three openings along the southern side of the seawall corresponding to the road ends of Oxford, Albemarle, and Arlington Place, to allow passage into and out of the LHS grounds. During storm events, passive flood gates will rise to close off those entry points keeping flood control within the LHS site.

The Proposed Action will change the current visual appearance into the school site from neighboring properties. The proposed seawall will replace the aged, vine covered chain link fence, with a structural seawall "hard" surface. Vegetation at the top of the creek banks will remain relatively the same, except for the locations at the three (3) pump station overflow aprons. The proposed action also includes tidal marsh mitigation along the western slope, which will improve the creek bank stabilization, replace non-native plants with native wetland vegetation, and eliminate the eroded sections. Naturalizing the western creek bank will enhance the visual quality of the school property as seen from upland locations across the creek. As a result, the project will have a localized, long- and short-term negligible adverse impacts on visual aesthetic resources.

5.13 Environmental Justice

Executive Order 12898, *Federal Actions to Address the Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify and address any disproportionate and adverse human health or environmental burdens its activities may have on minority or low-income populations. NYSDEC defines a *minority population* as a population that is identified or recognized by the U.S. Census Bureau as Hispanic, African American or Black, Asian and Pacific Islander or American Indian; and defines *minority community* as a specific geographic area having a minority population. NYSDEC defines a *low-income population* as a population having an annual income less than the poverty threshold; and defines a *low-income community* as a specific geographic area having a low-income population equal to or greater than 23.59% of the total population.

5.13.1 Existing Conditions

LHS serves the populations of the Village of Cedarhurst, NY, the Village of Lawrence, NY, and Inwood, NY. Since these municipalities contribute to the enrollment of LHS, their geographic boundaries were used to assess impacts to Environmental Justice. According to the USEPA, EJSCREEN Community Reports, Inwood is a minority community with 70% of its population noted as People of Color. Inwood's per capita income is \$24,445. Both the Village of Cedarhurst and the Village of Lawrence would not be classified as minority communities with their People of Color populations being 18% and 3%, respectively. Cedarhurst's per capita income is \$48,878. Lawrence's per capita income is \$98,779. (See Table 5-2.)

Area (NY)	Population	People of Color Population	% People of Color Population	Per Capita Income
Cedarhurst	7,290	1,312	18%	\$48,878
Inwood	10,533	7,373	70%	\$24,445
Lawrence	6,793	204	3%	\$98,779
Total	24,616	8,889	36%	

Table 5-2: U.S. Census Bureau Environmental Justice Statistics

Source: USEPA EJSCREEN Community Reports.

5.13.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would continue to place the LHS site at risk from flooding, which would result in further property damage during future storm events. However, these potential impacts would adversely affect the community as a whole and would not result in a disproportionate affect to the low-income population of the neighborhoods during or after storm and flood events. The No Action Alternative would not have disproportionate impacts on the identified EJ community; therefore, it would have no short- or long-term impacts relative to environmental justice.

Alternative 2: Proposed Action

The Proposed Action would reduce risk of future flood damage to the LHS site; and reduce the potential to disrupt emergency operations during a storm event, as well as school usage following a storm event. Construction under the Proposed Action will result in minor, temporary impacts, including those to Air Quality and Noise (Sections 5.3 and 5.14, respectively). Implementing the Proposed Action would be beneficial to the community by providing protection against flooding from storm surge, storm damage, and sea-level rise to the LHS site. This would increase the LHS site's ability to be used for community sheltering and emergency response activities and limit disruptions to school programs after storm events. The Proposed Action would not have disproportionate or adverse human health or environmental burdens to the community and, therefore, have no short- or long-term impacts relative to environmental justice.

5.14 Noise

Sound pressure level (SPL) is used to measure the magnitude of sound and is expressed in decibels (dB). Noise levels are often given in dBA (A-weighted sound levels) instead of dB, with the threshold of human hearing defined as 0 dBA. A dBA is a weighted scale for judging loudness that corresponds to the hearing threshold of the human ear. The SPL increases logarithmically, so that when the intensity of a sound is increased by a factor of 10, its SPL rises by 10 dB, while a 100-fold increase in the intensity of a sound increases the SPL by 20 dB. Equivalent noise level (Leq) is the average of sound energy over time, so that one sound occurring for 2 minutes would have the same Leq of a sound twice as loud occurring for 1 minute. The day night noise level (Ldn) is based on the Leq and is used to measure the average sound impacts for the purpose of guidance for compatible land use. It weighs the impact of sound as it is perceived at night against the impact of the same sound heard during the day. This is done by adding 10 dBA to all noise levels measured between 10:00 pm and 7:00 am. For instance, the sound of a car on a rural highway may have an SPL of 50 dBA when measured from the front porch of a house. If the measurement were taken at night, a value of 60 dBA would be recorded and incorporated into the 24-hour Ldn.

Leq and Ldn are useful measures when used to determine levels of constant or regular sounds, such as road traffic or noise from a ventilation system. However, neither represents the sound level as it is perceived during discrete events, such as emergency sirens and other impulse noises. They are averages that express the equivalent SPL over a given period of time. Because the decibel scale is logarithmic, louder sounds reflected by higher SPL are weighted more heavily; however, loud infrequent noises, such as emergency sirens with short durations would not significantly increase Leq or Ldn over the course of a day. The Noise Control Act of 1972 required USEPA to create a set of noise criteria. In response, USEPA published *Information On Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, in 1974, which explains the impact of noise on humans. The USEPA report found that keeping the maximum 24-hour Ldn value below 70 dBA would protect the majority of people from hearing loss. USEPA recommends an outdoor Ldn of 55 dBA. According to published lists of noise sources, sound levels, and their effects, sound causes pain starting at approximately 120 to 125

dBA (depending on the individual) and can cause immediate irreparable damage at 140 dBA. OSHA has adopted a standard of 140 dBA for maximum impulse noise exposure.

5.14.1 Existing Conditions

LHS typically operates on a daytime schedule with most of the buses and cars entering and exiting the property during daylight hours. Noise levels from the school will peak during typical student drop-off and pick-up hours or during active sporting events. Apart from vehicular traffic, other noise sources on the school property include the sound associated with active recreation, such as baseball and track and field events on the rear of the property facing the tidal marsh, and away from adjacent residences. Additionally, depending on flight paths from JFK International Airport, there may also be intermittent noise level increases from overhead jets arriving and/or departing from the airport. Since LHS is considered a sensitive noise receptor, by nature, it is not a source of significant noise pollution. While a site-specific noise study has not been conducted for LHS, the background noise levels typically mimic the surrounding suburban neighborhood.

5.14.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

Under the No Action Alternative, there would be no construction activities or site preparation. Therefore, there would be no noise impacts under the No Action Alternative.

Alternative 2: Proposed Action

Under the Proposed Action, there would be limited temporary and localized effects on ambient noise levels during project construction. The Village of Cedarhurst regulates noise levels within the Village's jurisdiction through two (2) Codes of Ordinances: Chapter 95 – Building Construction; and Chapter 172 – Noise. Chapter 95, Section 13.3 limits the hours and days of construction operations to 8:00 a.m. to 6:00 p.m. Monday through Sunday. Chapter 172 requires permits for any sound-amplifying device or other sound-producing machine at any time in a public place. Construction operations will comply with these local ordinances. This will result in temporary, minor adverse impacts on ambient noise levels limited mainly to construction equipment operating during specified hours following Village regulations.

The Proposed Action's construction activities on ambient noise levels are anticipated to have temporary, minor impacts during the construction phase with similarity to routine traffic along with student busing and commuting, occasional roadway street sweeping or repair operations, and be substantially less than existing air traffic over the area. Post-construction noise levels at the LHS site would be the same as pre-construction with no net change in noise levels.

5.15 Public Services and Utilities

5.15.1 Existing Conditions

The LHS property is connected to municipal electric, gas, water, and sanitary utilities. The gas, water, and sanitary services run underground onto the school property until they enter the building and connect to the school's associated systems. The primary electrical services enter the school property by overhead transmission lines connecting to the school's electrical system. The electrical utilities are then distributed to the ancillary buildings and systems on the school grounds by underground distribution lines.

5.15.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative may have minor to moderate adverse impacts on public services and utilities during and after flood events associated with storm surge. Future flood events may potentially damage powerlines and wastewater systems at the school, causing contaminated runoff and nutrient loading to the adjacent water bodies. Effluent from damaged sanitary wastewater systems may contaminate groundwater and aquifers in the area, and flooding may also increase the risk of electrical fires.

Alternative 2: Proposed Action

The Proposed Action would have a short-term, minor adverse impact during construction as the LHS site will continue to remain vulnerable to storm events. However, the Proposed Action would have long-term minor beneficial impact on public services and utilities. The proposed seawall would reduce the susceptibility of damages to public services and utilities at LHS from future storm events. Additionally, the site would serve as a flood-protected site for emergency response activities and equipment staging including those associated with public utility post-event repairs. With the exception of the three (3) pump houses needed to keep the inner compound dry during severe weather events, no new utilities are proposed as part of the project.

5.16 Public Health and Safety

5.16.1 Existing Conditions

During Hurricane Sandy, brackish floodwater caused severe damages to LHS, causing it to be closed for over six months to restore the building to occupiable condition. Flooding of the LHS site also hampered emergency operations delaying emergency response and damaging many of the emergency response vehicles staged at the site. Due to these delays during Hurricane Sandy, repairs to the Village's damaged roads and other infrastructure such as electric and sewer systems were also delayed.

5.16.2 Potential Impacts and Proposed Mitigation

Alternative 1: No Action

The No Action Alternative would have a minor to moderate adverse impact on the community's public health and safety as the LHS property, including the LHS building, would remain vulnerable to damages from future storm events. Additionally, the No Action Alternative would also limit the LHS site's use for community sheltering and emergency response activities, resulting in reduced sheltering capacity in the affected areas and increased emergency response times.

Alternative 2: Proposed Action

The Proposed Action would have a short-term, minor adverse impact during construction as the LHS site will continue to remain vulnerable to storm events. However, post-construction, the LHS site would serve as a flood-protected site for community sheltering and emergency response activities and equipment staging for first responders and public works employees. Vehicles and other emergency resources could be staged safely and poised for immediate response when safe to do so. As a result, the Proposed Action will have a long-term minor beneficial effect on public health and safety.

5.17 Cumulative Impacts

This EA considers the overall cumulative impact of the proposed alternatives and other actions that are related in terms of time or proximity. According to the CEQ regulations, cumulative impacts represent the impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what government agency (federal or non-federal) or private entity undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). In addition to NEPA, other statutes require federal agencies to consider cumulative impacts. These include the Clean Water Act Section 404 (b) (1) guidelines; the regulations implementing the conformity provisions of the CAA; the regulations implementing Section 106 of the NHPA; and the regulations implementing Section 7 of the ESA. If the alternative does not have direct or indirect effects for a particular resource, there can be no cumulative effects resulting from the project because there would be no impacts to add to past, present, or reasonably foreseeable actions.

FEMA broadly considers the potential for cumulative impacts based on the proposed action and experience with similar type projects. LHS is responsible for consulting with relevant federal, state, and local planning and regulatory agencies, and determining other actions that are underway or proposed, at or near, the project site that, in combination with the proposed project, could result in substantive cumulative effects. Included in the early consideration of flood protection are elements of perimeter surge protection, stormwater detention, and green infrastructure measures among other possible features.

The effects of this project will incrementally increase the shoreline protection from storm surge, flooding, and erosion with integration to the adjacent USACE project that follows the existing shoreline at the

southern end of Doxey Creek. LHS protections include manmade features such as a concrete seawall, pumping stations with stone flood dissipation aprons, and flood gates, as well as tidal wetland restoration.

The proposed actions described in this EA would have minimal impact on the affected environment. Implementing BMPs and requirements identified through permitting are expected to limit individual and cumulative impacts. Mitigation measures to reduce impacts are addressed in each affected environment section and project conditions section.

6.0 PERMITS AND PROJECT CONDITIONS

The Subrecipient is responsible for obtaining and adhering to all applicable federal, state, and local permits and permit conditions, regulatory compliance, and other authorizations for project implementation prior to construction. Any substantive change to the approved scope of work will require re-evaluations by FEMA for compliance with NEPA and other environmental and historic preservation laws and EOs. The Subrecipient must also adhere to the following conditions during project implementation and consider the conservation recommendations. Failure to comply with grant conditions may jeopardize federal funds.

- 1. Any proposed construction in the floodplain must be coordinated with the local floodplain administrator and must comply with federal, state, and local floodplain laws and regulations.
- 2. Excavated soil and waste materials, including potentially hazardous wastes, must be managed and disposed of in accordance with applicable federal, state, and local regulations. Solid waste haulers will be required to have a NYSDEC waste hauler permit, and all waste will need to be disposed of or processed at a permitted facility.
- 3. If any threatened or endangered species are encountered in the project area, the Subrecipient must stop work and notify FEMA, and the agency will continue consultation with USFWS.
- 4. Preparation of a Stormwater Pollution Prevention Plan and adherence to the conditions of SPDES General Permit for Stormwater Discharges is required on project sites where the soil disturbance would be greater than or equal to one acre.
- 5. The Subrecipient and its contractors are required to use appropriate BMPs for construction not limited to sedimentation and erosion control measures, dust control, noise abatement and restriction of work areas to limit vegetation removal and habitat impacts.
- 6. In the event that unmarked graves, burials, human remains, or archaeological deposits are uncovered, the Subrecipient and its contractors will immediately halt construction activities in the vicinity of the discovery, secure the site, and take reasonable measures to avoid or minimize harm to the discovery. The Subrecipient will immediately inform DHSES and FEMA. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historic significance of the discovery.
- 7. Occupational Safety and Health Administration standards shall be followed during construction to avoid adverse impacts to worker health and safety.
- 8. BMPs will be used to limit NAAQS emissions during and after construction under USEPA guidelines.

The Proposed Action's adherence to all applicable federal, state, and local laws, regulations, and programs shall include the following permits, coordination, and/or consultations:

- Clean Water Act, Section 401 Permits (NYSDEC) (Appendix D2)
- NYS Coastal Consistency Review (NYSDOS Coastal Management Program Appendix D1)
- Endangered Species Act, Section 7 Consultation (87 Stat.884, as amended 16 U.S.C. 1531 *et seq.*)
- National Historic Preservation Act Section 106 Consultation (NYSHPO Appendix D4)
- Magnuson-Stevens Act, Essential Fish Habitat Consultations
- USACE Authorization under Clean Water Act Section 404
- NYSDEC Article 25 Tidal Wetland Permit (Appendix D2)
- NYSDEC Article 15, Title 5 Excavation and Fill in Navigable Waters (Appendix D2)

7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

This EA will be available for agency and public review and comment for a period of 30 days. The public information process will include a public notice with information about the Proposed Action in the *Long Island Herald: Five Towns*. The EA will also be available for reviews and download at https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository. Interested parties may request an electronic copy of the EA by emailing FEMA at FEMAR2COMMENT@fema.dhs.gov.

A hard copy of the EA will be available for review at the following location: Peninsular Public Library 280 Central Avenue Lawrence, NY 11559

This EA reflects the evaluation and assessment of the federal government, the decision maker for the federal action. FEMA will take into consideration any substantive comments received during the public review period to inform the final decision regarding grant approval and project implementation. The public is invited to submit written comments by emailing <u>FEMAR2COMMENT@fema.dhs.gov</u> or via mail to:

Federal Emergency Management Agency, Region 2 – DR-4085-NY Attn: Environmental Planning and Historic Preservation 26 Federal Plaza New York, NY 10278

RE: Lawrence Union Free School District Seawall Construction

If FEMA receives no substantive comments from the public and/or agency reviewers, FEMA will adopt the EA as final, and will issue a Finding of No Significant Impact (FONSI). If FEMA receives substantive

comments, it will evaluate and address those comments as part of the FONSI documentation and may consider whether changes to the grant or project implementation are appropriate.

			Proposed Action:	Proposed Action:
Section	Area of Evaluation	No Action Alternative	Short-term / Temporary Impacts	Long-term / Permanent Impacts
5.2	Topography and Soils	No Impact	Negligible Adverse	No Impact
5.3	Air Quality	No Impact	Negligible Adverse	No Impact
5.4	Water Quality	Minor Adverse	Negligible Adverse	Negligible Adverse
5.5	Wetlands	No Impact	Negligible Adverse	Minor Beneficial
5.6	Floodplain	Minor Adverse	Negligible Adverse	Minor Beneficial
5.7	Coastal Resources	No Impact	Minor Adverse	Minor Adverse
5.8	Vegetation	No Impact	Negligible Adverse	Minor Beneficial
5.9	Threatened and Endangered Species	No Impact	No Impact	No Impact
5.10	Essential Fish Habitat	No Impact	Negligible to Minor Adverse	Negligible Beneficial
5.11	Cultural Resources	No Impact	No Impact	No Impact
5.12	Aesthetic Resources	No Impact	Negligible Adverse	Negligible Adverse
5.13	Environmental Justice	No Impact	No Impact	No Impact
5.14	Noise	No Impact	Minor Adverse	No Impact
5.15	Public Services and Utilities	Minor to Moderate Adverse	Minor Adverse	Minor Beneficial
5.16	Public Health and Safety	Minor to Moderate Adverse	Minor Adverse	Minor Beneficial

8.0 SUMMARY OF IMPACTS

9.0 LIST OF PREPARERS

Federal Emergency Management Agency – Region 2 26 Federal Plaza New York, NY 10278
10.0 REFERENCES

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APPENDIX A, Figures



Figure 1-1: Location Map



Figure 3-1: U.S. Army Corps of Engineers Cedarhurst-Lawrence project (USACE 2019).

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Nassau	County, New York	(NY059)	8
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Ue	Udipsamments, 17.9 wet substratum		48.6%
Ug	Urban land	8.2	22.4%
Uw	Urban land- Udipsamments, wet substratum complex	3.2	8.6%
W	Water	7.5	20.4%
Totals for Area of Interest		36.8	100.0%



Figure 5-1: U.S. Department of Agriculture Natural Resources Conservation Service Soil Classifications Map



Figure 5-2: U.S. Fish and Wildlife Services National Wetland Inventory Map



Figure 5-3: New York State Department of Environmental Conservation Tidal Wetlands Map



Figure 5-4: FEMA FIRMette

APPENDIX B, Document 1 – Project Survey









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APPENDIX B, Document 2 – Project Plans



































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Site Construction Notes

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Site Construction Notes

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Synthetic Turf Notes:

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MARK DESGN STUDIOS ARCHITECTURE, P.C.

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BUILDING CONTRACTOR

(Index Section).

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NA SARON

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LAWRENCE HIGH SCHOOL 2 RELLYROAD, CEDARFURE, NY 115

SECNO, 28-0115-03-0-005-044

SYNTHETIC TURF (BASEBALL FIELD) CONSTRUCTION

DETAILS

C-14

140 11/02/2020 resetted: LAW008-110

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Site Construction Notes

GENERAL INFORMATION A The Controllon shoul parties any secure a single noure all access samas Samo Dahru poperty is and than na press an ime actor 30 my work allocates bondper by the use of the hour-le actor 30 my work allocates bondper by the use of the hour-douses for any some overall that be neares in and by the controllon and assistant to be neares in and by the controllon and assistant sections to the shoul Dahro.

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SECNO. 28-01-15-03-0,006-044 SYNTHETIC TURF (MULTI-SPORT) CONSTRUCTION DETAILS (1 OF 2)

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Site Construction Notes

GENERAL INFORMATION

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Site Construction Notes

GEVERAL INFORMATION

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SECTION A-A

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SITE & LANDSCAPE

CONSTRUCTION DETAILS (1 OF 2)

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in General

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Deciduous Tree Planting



Evergreen Tree Planting



Ground Cover Planting

LGAP Bit & particular and a second state of the sec Printer interest MALT. 1 ETTLAN es approx per RITSION FEMA FLOOD MITIGATION LAWRENCE HIGH SCHOOL 2 RELYROAD, CH 380NO.26-01-18-03-0-006-044 -

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MARK DEIGN STUDIOS ARCHITECTURE, P.C.

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Internet and

SMP

SITE & LANDSCAPE CONSTRUCTION DETAILS (2 OF 2)

C-19

248 11/02/2020 result 46 LAN008-110 HISSING - 04 23

in General

LAWRENCE HIGH SCHOOL

DRAWING INDEX

TITLE	SHEET NO
COVER SHEET	1 OF 4
LAYDUT SHEET	2 OF 4
SYSTEMS OVERLAY SHEET	3 QF 4
DETAIL SHEET	4 QF 4

			PROJECT INFORMATION	
PROJECT NO	20-3274			
WUTDS SALED (S.P.	1850 D019 475-286-712 /D015042	ON 2 REATECODE		
OULTED TECHNICAL KANAGET	SAN CESA 175-289-704	aise		
SUATEC CAD TECH	60RD0NJD 475-286-1116 0.30H93/334	Headon 1 Bod, THILE M		
	REVISION	DATE	COMMENT	BY
KVLTDS FALSA REP: VEX.SBA FX32 ("DDTECHER KUT) CCOM CULTED TECHARCAL KANAGER MAN CESA VEX.SBA FX3 SCHERCAD FEDH SCHERCAD FEDH BORDON JD FACON CULTED TECHARCAL KANAGER MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON CULTED CAD FEDH BORDON JD FACON MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN CESA VEX.SBA FX3 SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN FED SCHERCAD FEDH BORDON JD FACON SCHERCAD FEDH BORDON JD FACON MAN FED SCHERCAD FED SCHER	CAL			
COMMENTS	52	1630010	REVISED TO VEET NOW VOLUME REQUIREMENTS FOR ENGINEER PARIS	du

CEDARHURST, NY

CULTEC, Inc.

	Sebrurface Stormwater I	Management Systems
12200	P.O. Box 280	PH: (203) 775-4416
Statement of	878 Federal Road	PH: (800) 4-CULTEC
CULTEC	Brookfield, CT 06804 www.cullec.com	FX: (203) 775-1462 tech@cultec.com

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HOTE THESE SHOP COMMINGS MAIN CONTAINS CONTRIBUTES INCLUDING AUXIMUTED INVITED TO MANIHOLISS, CATCH BESTING, STOREN PRESE AND TITTERES MAINPAINE CASTINGT MACHINES THE SEARCH ANNALYSES IN ANY TAXES THE SUPPLIES BY CALLESS, MICH THIS THE REENT/MASHLITY CATTINE CONTRACTOR MODION SUPPLIES TO COMPARE THE TO THE REENT/MASHLITY CATTINE CONTRACTOR MODION SUPPLIES TO COMPARE THE TO THE REENT/MASHLITY CATTINE ON TRACTOR. BEFORE YOU BEGIN - REQUIRED MATERIALI AND EQUIPMENT

- 1. PROPER GEOTEC-INCAL SOIL EVALUATION BY A QUALIFIED EVGINEER ON SOIL SCIENTIST TO DETERMINE SUITABILITY OF STRUCTURAL INSTALLATION
- 2. OSHA COMPLIANCE
- 3. CULTEC WARNING TAPE, OR EQUIVALENT
- ASSURANCES FROM LOCAL UTLITIES THAT NO UNDERGROUND GAS, ELECTRICAL OR OTHER POTENTIALLY DANGEROUS PRELINES OR CONDUCTS ARE ALREADY BURIED // THE INTE
- ACCEPTABLE 1- 2 INCH (25 51 mm) WASHED, CRUCHEDSTONE AS DETAILED IN CULTED'S INITIALLATION INSTRUCTIONS, CLEANLINESS OF STONE TO BE VERIFIED BY ENGAGER
- 5 ACCEPTABLE FILL MATERIAL AS SHOWN IN CULTEC'S INSTALLATION INSTRUCTIONS.
- 7 ALL CILITED CHARGERS AND ACCESSORIES AS SPECIFED IN THE EXQUEERS IF ANSINGLIDING GUITED NO ATO NON-WOVEN GEOTEXTRE, OUTED STORMILTER AND CULTED NO 4800 WOVEN GEOTEXTLE. WHERE APPLICABLE 8. RECIPROCATING SAW OR ROUTER.
- STONE BUCKET
- ID STONE CONVEYOR AND/OR TRACKED EXCAVATOR
- 11. TRANSIT OR LASER LEVEL MEASURING DEVICE.
- 12. COMPACTION EQUIPMENT WITH MAXIMUM GRODS VEHICLE WEIGHT OF 12:000 LIS (5:440 KGB). VIBRATORY ROLLERS MAY ONLY BE USED ON THE STONE BASE PRIOR TO THE INSTALLATION OF CHAMBERS.
- 13. CHECK DULTED CHAMBERS FOR DAMAGE INFOR TO INSTALLATION DO NOT USE DAMAGED OLETED CHAMBER IN CONTACT YOUR SUPPLIER IMMEDIATELY TO REPORT DAMAGE OR PACKING LIST DISCREPANCING.

REQUIREMENTS FOR CULTEC CHAMBER SYSTEM INSTALLATIONS.

- INSTALLING CONTRACTORS ARE EXPECTED TO COMPREHEND AND USE THE MIGST CURRENT INSTALLATION INSTRUCTIONS PRIOR TO DEGREMING A SYSTEM INSTALLATION. IF THERE IS ANY QUESTION AS TO WIETHER, YOU POSSESS THE MIGST CURRENT INSTRUCTIONS, CONTACT CULTEC AT (20) 175-4416 DR VISIT WWW.CULTEC COM.
- 2. CONTACT CULTED AT LEAST THRTY DAYS PRICE TO SYSTEM INSTALLATION TO ARRANGE FOR A FRE-CONSTRUCTION MEETING
- 3. ALL CULTEC SYSTEM DESIGNS MUST BE CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER
- 4. USE CULTED INSTALLATION INSTRUCTIONSAS A GUIDELINE ONLY FOR MINIMUMAXIMUM REQUIREMENTS, ACTUAL DESIDIN MAY VARY, REFER TO APPROVED CONSTRUCTION DIAXWASS FOR JOB JPECFIC DETAILS WE SHRE TO FOLLOW THE ENGINEERS FOR WINGKAS & CULOR. RIMMARY GUIDE.
- 5 THE FOUNDATION STONE SHALL BE LEVEL AND COMPACTED PRIOR TO CHAMBER INSTALLATION.
- 5. OVERLAPPING RIB CONNECTIONS OF CHAMBERS SHALL BE FULLY SHOULDERED PRIOR TO STONE PLACEMENT
- CENTER TO CENTER SPACING SHALL BE CHECKED AND MAINTAINED THROUGHOUT INSTALLATION PROCESS. ANY DISCREMANCES WITH THE SYSTEM SUB-GRADE SOL'S BEARING CAPACITY MUST BE REPORTED TO THE DESIGN ENGINEER
- 9. NON-WOVEN GEOTEXTILE MUST BE USED AS SPECIFIED IN THE ENGINEER'S DRAWINGS.
- 10 CULTED REQUIRES THE CONTRACTOR TO REFER TO CULTEC'S INSTALLATION INSTRUCTIONS CONCERNING VEHICULAR TRAFFIC, RESPONSELLTY FOR PREVENTING VEHICLES THAT EXCEED CULTEC'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE CHARGES RESIDENT OF WARRING TARE. CONTRACTOR THROUGHOUT THE ENTRE SITE CONSTRUCTION PROCESS. THE PLACEMENT OF WARRING TARE, TEMPORARY PERIOR, AND/OR APPROPRIATELY LOCATED SIGHS IS NIGHL'I RECOMMENDED. IMPRIVED WARRING TARE, TEMPORARY PERIOR, AND/OR APPROPRIATELY LOCATED SIGHS IS NIGHL'I RECOMMENDED. IMPRIVED WARRING TARE, TEMPORARY PERIOR, AND/OR APPROPRIATELY LOCATED SIGHS IS NIGHL'I RECOMMENDED. IMPRIVED WARRING TARE IS AVAILABLE FROM CULTEC FOR ACCEPTABLE VENICLE CAD INFORMATION: REPERT TO CULTECINSTALLATION INSTRUCTIONS.
- TRAFFIC OF INSTALLATION EQUIPMENT OR OTHER VEHICULAR TRAFFIC OVER TOP OF THE CULTED STORMWATER SYSTEM IS STRUCTLY RESTRICTED AND PROMIBITED UNIT, SAI ISPACTORY COVER TWO FOR THE CULTED STORMWATER ACCORDING TO CULTED S MANUFACTURER INSTALLATION INSTRUCTIONS
- 12. EROSION AND SEDMENT-CONTROL MEASURED MUST MEET LOCAL CODES AND THE DEDIGN ENGINEERS
- SPECIFICATIONS THROUGHOUT THE ENTIRE SITE CONSTRUCTION PROCESS. 10. CULTED SYSTEMS MUST BE DESIGNED AND INSTALLED IN ACCORDANCE WITH CULTED'S MINIMUM REQUIREMENTS.
- FAILURE TO DO SO SHALL VOID THE LIMITED WARRANTY 14. CONTACT CLATEC, INC. AT 205-171-4418 WITH ANY QUESTIONE OR FURTHER CLARIFICATION OF REQUIREMENTS.
- 15. PLACEMENT OF EWEDMENT BYONE INJET IN IN ACCORDANCE WITH CNUTLING INSTALLATION INSTRUCTIONS INTO COLLINN REGIT DEFENSION AN AUSTAINABLE CODED TO (XXX with INTERVICE) PLACED TO ANDRESS OF BYONE PRIMETER STONE MUST AN AUGUST AND ACCOUNT THE CHOWN OF THE CHAMBERS TO ANCHOR THE CHAMBERS. IN PLACE AND MANY MONOTONICIA.
- 16 EMERGMENT INTONE MUST DRUY ME RUNCED IN ECONVINCIES IN TELESCOPING LONARTOR SOOM PLANSMENT OF EXECUTIVENT INTONE WITH BULLINGERS IN NOT ANALOGUTING. METHODS OF INSTALL AND/Y AND KAT CALIFED DIMAGE TO THE COMMENTING ANY CRAINING IN DAMAGED UNING AN UNICCENTIALS METHOD OF INCORES, AND NOT COVERED UNDER THE COUNTS, LIMITED WARRANTY.

THIS DRAWING WAS PREPARED TO SUPPORT THE PROJECT ENGINEER OF RECORD FOR THE PROPOSED SYSTEM IT IS THE ULTMATE RESPONSIBILITY OF THE PROJECT ENGINEER OF RECORD TO ENGINE THAT THE OLL TEO VISTEME DESIGN IS NO FOLL COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. ITIS THE PROJECT ENGINEER OF RECORDS RESPONSIBILITY TO ENSURE THAT THE OLL TEO PRODUCTS ARE DESCRIBED IN ACCORDANCE WITH OLL TEO'S MINIMUM REQUIREMENTS OLL TEO DOES NOT APPROVE PLANS BUILDING OR SYSTEM DESIGNS.

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CHAMBER

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SYSTEM (1 of 4)

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SYSTEM AREA I MARCHAELING SUPPLIED	ev cultili	1
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W/CHARGER 1300,2110 END	- 05	PEON
HICEPCANTED CONNECTORS	im0	PEOLE
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CULTEC NO 4000 WOVEN GIOTELETEL (7.5 X 107 ROLLS)	1782	(REALTER
THE TRUE PRIME STRONG WORKS KIT	180	PESSE
COMMAND MATERIALS LIFT NOT SUPPLIED	BY GUATES	1
7 2 NEW VARIAGO, CRUSHED STONE	1480	-038019408
IF 02 HOM-WOVEN GEOTE CELE	165	10,0408
TOTAL INVESTIGATION AND A DECK	14.6	NO THINK

Total a biotecte regimente activate ac

CULTEC STORMWATER MANAGEMENT SYSTEM AREA 1 TOTAL STORAGE REQUIRED: 31,M5 c.f. TOTAL STORAGE PROVIDED: 32,103 c.f.

CULTED STORNIWATER MANAGEMENT SYSTEM AREAS fotal storage required: 33,414 a.d. total storage provides 33,444 a.d. store ponder 4 dos store ponder 4 dos store to area data a nonstore area data a nonstore area data a nonstore area data a nonstore provide code a nonstore provide code a nonstore provide code a nonstore provide code and a store provide code code a store provide code code a store provide code

MICHANGEN / SIGNARD SCHRIften		minets-
TALCIANGER (SECOND AVTERAL CALIFIC AVERAGE)	500	MECES
RECLARGE INDUDE	40	PECES
KVLVX C.34 FERSI CONVERTING	151	INELES.
CNC/TEC HO, 410 NON: WOVEN OUTFLETER	100	BQ TARDS
CRUTECHO, HER WORK CONTRACTS (1973, 1987 HOUSE)	(XED)	shiel year
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COMBINED INTERNALS LIST NOT SUPPLIED B	Y GULTER	
2 NEH WASHED CRUEHED STENI	5.828	OHIC TARS
# RE WON-WOVEN GED TEXALE	968	pi vata
30ME PVC THEPMOREKETTE UNITE	104	112 49920



CULTEC STORNWATER MANAGEMENT SYSTEMAREA J TOTAL STORAGE REQUIRED: 18.548 ± 1. TOTAL STORAGE PROVIDED: 19.305 ± 1.

SYSTEM AREA 3 MATERIALS/UST SUPPLIED BY OULTED

CULTEC NO. 4600 WOVEN GEOTEXTLE IT & K 101 FOLLI) TRO LINEAL REET

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THD PROFIL

TOTAL STORAGE PROVIDED STORES STORESS STORE PORCA 12 AH 38 4 STORE AREA 12 AH 38 4 DEPTH OF BEDDING STORE 6 NO-468 STORE PRIVATER 12 NO-468 STORE PRIVATER 10 NO-468 STORE STORESS

INCOMENTS (SND DAD COMPEND

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WEV FC-M FEED CONNECTORE

DRITEC ASPECTION PORT KIT

RECOMPTER TOOL FO STERNED ATE

CULTRIC KO. ALD HOLE MOURIN DEOTENTLE

SYSTEM ARDA & MATURALS UST SUPPLIED	MATURALS UP1 SUPPLIED BY CULTED							
RECORDER TODALS OF STATER	-51	P.8223						
MUCHARMER TRUE OF INTERACION	825	PERM						
UNCHARGER NOGEDO END	67	whites						
HVLV/C-04 FEED CONNECTORS	93	P9801						
CLETTIC MID, IN SHOW MOVES GROTERING	TRÓ	IS VANUE						
ELCTECAD, 4800 WORKIN GEOTEFTILL (TH X 100 ROLLS)	TRO	LONALFEET						
OUX TOD INSPECTION FORT NOT	785	10000						
COMINIO MATERIALS LIST NOT SUPPLIED I	Y CULTER							
> 2 may WASHED, CRUINED STORE	250	QUIC THOS						
a 0.1, HON-MOVERI ORD/EXTUR	NA	1.1518400						
50.MIL PVD THERMOR ASTICLINES	5.8	HO KRACK						

ULTEC'STORMWATER MANAGEMENT	SYSTEM AREA 4	
OTAL STORAGE REQUIRED: 53,240 c.f.		
TONE POROBITY KON		
EPTH OF EMBECIMENT STONE & INCHES EPTH OF BEDONG STONE & INCHES		
TONE PERIMETOR 12 INCHES PACING BETWICEN CHAMBER FROWS & INCHES		

CULTEC STORMWATER MANAGEMENT SYSTEM AREA S TOTAL STORAGE REQUIRED: 13,11 6.7. TOTAL STORAGE PROVIDE: 23,49 6.7. ETORE POROSITY: 40% STOTEM AREA SHERO & STORE & STORE CEPTH OF PAREDWEIN STORE & STORE ETTY OF READMENT AND STORE & STORE STACING BEITHER CHAMBER ROWS 9 INCRES

WECHNINGER BOTTERS BEVILLER	127	(1600)
Auconitotal moules internationity	(99)	PECE)
RECAMBLER INVILLERS END	525	Peter
NA VICOVERS CONNECTORS	246	NECC1
QUICTIE NOL 416 NON-MIDVEN BILD TEXTILE	780	SQ YARDS
DALTRO NO. 4600 (ADMINI, OCOTIOCTILE (T.B. X 100" ROLLS)	THE	LIVEAL (1965)
DULTIC HEPICTION PORT KIT	1180	+6128
COMBINED MUTHIALE LINT HOT IN POLICE	N OULTER	
1-2-WAR PARAMED DRUGHT D STUME	(6)	DIRC TWOS
B GZ, NON-WRIVER GROTEKTLE	NA	14 14/08
SOME, PVT THEIMORALTIC LINER	24.8	10.14000

LGAP -----Conduct Institute. 1 PEALI 1 KET PLAN ea asomos R0/SION SAIR. FEMA FLOOD MITIGATION LAWRENCE HIGH SCHOOL 2 RELLY ROAD, CED SEDNO. 28-02-15-03-0-006-044 ----DRAINAGE CHAMBER SYSTEM (2 of 4)

Mark Descent Studios ARCHTECTURE PC.

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 This ensuing is for informational purposes any for further starfactor, plage refer to Sneing C-8 Greining & Sneining I
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CULTEC RECHARGER 150XLHD HEAVY DUTY PLAN VIEW

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GULTEC HVLV FC-24

MODEL HORLINED STAND ALONE SVALUME LANS HIS

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INSPECTION PORT - ZOOM DETAIL

63 YPS

ATON STR

could be to be shown in a (CULTEC SEPARATOR ROW - INSPECTION PORT DETAIL (IF APPLICABLE)

目 DAK MA

FEMA FLOOD MITIGATION

LAWRENCE

HIGH SCHOOL 2 REILLY ROAD, CEDARHURE, N

KD DECEMON DATE REFSION

M=S MARK DEIGN STUDIOS ARCHITECTURE, P.C. MA DIRECTOR

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SEDNO. 26-02-15-03-0-006-044

ALANAG THE

DRAINAGE CHAMBER

SYSTEM (4 of 4)

C-23

11/02/2020 190,807.90 LAW008-110 -3 07 28

IRRIGATION SYSTEM DESIGN CRITERIA

Inatcil new underground suportatic irrigation ayevem to pover 100X of new gross fract/dreem areas as sheen including appropriate sprayholony heads froit to exceed 60 x 60 approximation and an approximate the strength reark under the strength to 3 vice monitoring (interground prior), administre measing neark under to 3 vice monitoring (interground prior), administre theory, and while to 3 vice monitoring (interground prior) and the strength for administre theory of the strength (interground prior) and the beard contrastuti while be responsible for providing tim, while pressure of 80 per to the base of each read, fingtions avaies insput (approximate & prior) pairs are beard. The contrastuti while be presentable for providing tim, where pressure of 80 per to the base of each read, fingtions avaies insput (approximate & prior) pairs and all were to be performed by a licensed Neesou Courty Number & electricion.

No Be Alformating to understand network provided and the analysis of the composition o

IRRIGATION LEGEND

(19) Proposed irrigation area

----- Proposed irrigation water



- OSHA REDUREMENTS PUBLIC WORKS PROJECT ESTIMATE D'O COST WORK THAN \$10 000 MUST CENTRY UNDER THE PAINS AND PUBLIC WORKS OF PERJING THAT ALL EMPLOYEES EMPLOYED ON THE WORKSTE. OR IN WORK SUBJECT TO THE
- BID HAVE SUCCESSFULLY COMPLETED AT LEAST TEN HOURS OF OSHA APPROVED TRAINING PROOF OF OSHA CERTIF CATION OF ALL WORKERS ONSITE WILL BE REQUIRED BY MASSPORT PRIOR TO THE START OF WORK SURVEY CONTROL AND BASELINES: ELEVATIONS SHOWN ARE IN FEET AND TENTHS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988
- NAVO88) SEE TIDAL DATUM FOR GRAPHIC DATUM CONVERSIONS: NEGATIVE VALUES R BELOW NAVERS
- CONTROL POINTS ARE SHOWN ON DRAWNIGS CK-IDI. CONTRACTOR SHALL PROTECT AND MANTAIN SURVEY CONTROL FOR DURATION OF PROJECT CONTRACTOR SHALL RESISTABLEN ANY DAMAGED CONTROL POINTS AT NO ADDITIONAL COST TO THE OWNER. 2
- CODES: (LATEST EDITION AS OF 2020)
- 1 AMER CAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
- AMER CAN WELDING SOCIETY (AWS) AMER CAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
- AISC STEEL CONSTRUCTION MANUAL 14TH EDITION AMER CAN CONCRETE INSTITUTE (ACI-318)
- CONCRETE REINFORCING STEEL INSTITUTE (CRS)
- AMER CAN INSTITUTE OF TIMBER CONSTRUCTION (AITC)
- AMER CAN WOOD COUNCIL 4 NEW YORK STATE STATE BUILDING CODE

SITE PREPARATION:

- THE CONTRACTOR SHALL COMPLY WITH NY GENERAL LAWS CHAPTER 82 SECTION 40 AS AMENDED WHICH THE COMMERCING VALL COMENT WITH MIT DEBENGI, LAWE DARF IS AS SECTION 41, AS AMALLES WARDS EXTERE THAT NO DE MAY DOCAMENT AND THE LAPPE OF LAW VORK LOCET THAT ALL BERGEORY MITHOUT 72 HOURS MOTICE ELCLIPHIC OF BATTIGENTS BUILDRYS AND LEGAL HOLIARS TO MATTARA, BAS PRELINE COMMERCIES AND MUNCHAL LITTLY COMMENTS AND LEGAL HOLIARS TO MATTARA, BAS PRELINE COMMENSES AND MUNCHAL LITTLY COMMENTS AND LEGAL HOLIARS TO MATTARA, BAS PRELINE COMMENSES AND MUNCHAL LITTLY COMMENTS AND LEGAL HOLIARS TO MATTARA, BAS PRELINE COMMENSES AND MOTIO THE DITY OR TOMM WHERE THE EXCINATION & TO BE MADE THE CONTRACTOR SHALL CALL YOR SAFE" AT 1-888-DIG-SAFE
- CURTINGCTON SHALL COLL UNS GAPER AT 1988 CIRCARE THE CONTRACTOR SHALL COMPLY WITH HY GENERAL LAWS CHAPTER B2A ALSO REFERRED TO AS JACKIES LAW AS DETAILED IN SECTION 521 CAR 14 00 OF THE CODE OF NEW YORK REGULATIONS
- ALL UTILITY CONNECTIONS ARE SUBJECT TO THE APPROVAL OF AND GRAVITING OF PERMITS BY THE BOSTON ALL ITELY COMPLETIONE AND BUILT TO THE APPROVAL OF AND OBJECTING OF POWERS AT THE SAULT MITTER AND SERVICE COMMES ON INVESTIG: THATLE SET REPORTS INTO THE CONTRACTOR TO BE THAT ALL PERMITS AND APPROVAL AND DEFORMED BEFORE STARTING CONTRACTOR. THE CONTRACTOR AND ABULL BECILIES REPORTING FOR MAIN ALL RESEARCH REPORTS FOR AND ONE PERFORMING ANY RECEIPANT MORE MADILIED IN COMPLECTION WITH THE DECONTINUANCE OF ANY UTILITIES OF WITHIN ANY RECEIPANT. THE JURISDICT ON OF ANY UTILITY COMPANIES SUCH AS ELECTRICITY. TELEPHONE, WATER, GAS, AND ANY THE EXEQUELY OF MY UTILITY COMPARES SOUTHS ELECTIVITY TELEFINITE WHEN WE AN ADMINI-STREM OR STREMS WHEN WILL BE REPETED BY THE MORE TO BE FEROTINEL WHEN THE CONTROL TO THE CONTRACTOR SHELL NOTH ALL APPROPRIATE AGENCIES CEPARTIENTS AND UTILITY COMPANIES. IN MINITAR AT LEGATE HOURS AND AND THAT THAT ADD AND REPORT TO AN CONSTRUCTION SHELL NOT INTERPRENUMTH ON INTERFLUES WHICH ARE TO REMAIN IN OFERAL ON ALL WATER AND DRAIN WORK SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS AND STANDARD
- SPECIF CATIONS OF THE BWISC CONTRACTOR SHALL INSTALL ALL SIGNAGE PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES INCLUDING
- CEP FILE NUMBER FEDERAL STATE AND MPA MANDATED WORK FLACE SIGNAGE CONTRACTOR SHALL HAVE IN-PLACE TRASH AND SANITARY FACILITIES FOR THE WORK FLACE EXISTING STRUCTURES AND AMENIT ES WITHIN THE PROXIMITY OF THE WORK SHALL BE PROTECTED TO
- Even the single independent and the single of the model of the model and the single of the second of the single of the contractor shall provide a photographic and video record of existing site conditions of
- THE WORK AREA, BUILDINGS AND AREAS D RECTLY ADJACENT TO WORK AREAS PRIOR TO COMMENCING ANY WORK
- ġ, DISCOVERY OF INCONSISTENT SITE INFORMATION OR CONDITIONS SHALL BE IMMEDIATELY CONVEYED TO THE RESIDENT ENGINEER PR OR TO COMMENCING OR CONTINUING CONSTRUCTION
- 10 THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS OF UTILITIES AND EXISTING STRUCTURES AS MAY BE REQUIRED 11 THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES CONTINUES AS A RESULT OF
- THE CONTINUE OF SPILL BE VIDED LOCATE AND PROTOCOLOGICAL DAMAGES OCCUMING AS A RESULT OF THE CONTINUE TO REFAULTE TO LOCATE AND PROTOCOL UNDERSOUND UTILITIES AND STRUCTURES ALL REPAIRS SHALL BE MADE AT THE CONTRACTORS EXPENSE 12 CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY UTLIT IS FOR CONSTRUCTION INCLUEING WATER
- POWER LIGHTING DATA AND TELEPHONE 13 CONTRACTOR SHALL READ AND UNDERSTAND ALL REGULATORY CONDITIONS ASSOCIATED WITH THE PROJECT AND SHALL COMPLY WITH ALL ENVIRONMENTAL REGULATORY CONDITIONS ASSOCIATED WITH THE PROJECT
- AND SHALL COMPLY IN HALL ENVIRONMENTAL REQUIREMENTS AND FEMAL CONDUCTIONS 14 CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY AND SHALL PROVIDE BIGNAGE TEMPORARY BARRIERS FENCING OF EXUMALENT TO FREMENT UNAUTHORIZED ACCESS INVOKRA RESA AT ALL THES 15 ALL CONSTRUCTION ACTIVITY SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL AND STATE REPUTATIONS

EXISTING SITE CONDITIONS:

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- ROCOFLAN INFORMAT ON WAS OSTAINED FROM THE FLOOD INSURANCE RATE MAP IF RMI COMMUNITY PAVIEL. NO 2502500841 DATED MARCH 10 2016 THE SITE IS LOCATED IN ZONES AE (BASE FLOOD ELEVATIONS DETERMINED) MID ZONEX (AREAS DETERMINED TO BE OUTSIDE 0 2% ANNUAL R.COD CHANCE FLOODFILMN) 2 CONTRACTOR SHALL NOTE THAT ALL EXISTING STRUCTURE DETAILS AND DIMENSIONS ARE APPROXIMATE
- BIODERS SHALL MAKE THE R OWN ASSESSMENT OF STRUCTURE MATERIALS DIMENSIONS THICKNESSES AND NUMBER OF PUER CONTRACTOR SHALL ASSUME BURIED OBSTRUCTIONS ARE PRESENT AND PROVIDE SUITABLE EQUIPMENT FOR
- DEMOLITION AND REMOVAL OF THESE TYPES OF STRUCTURES AND OBSTRUCTIONS 4 CONTRACTOR SHALL NOTIFY RESIDENT ENGINEER WHEN BUR ED STRUCTURES OR OBSTRUCTIONS ARE
- FOUND 5 THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE AND MUST THE LOCATIONS AND ELEVATIONS OF ALL EXSTING UTLINES SHALL BE CONSIDENT APPROVAL BE VERIFIED BY THE CONTRACTOR FINOR TO ANY UTLITY CONNECTIONS OF CROSSINGS OF FROPOSEE OR EVENTING UTLITES THE CONTRACTOR SHALL CONTRACT THE RESPECTING UTLITY COMPANIES RELATIVE TO THE LOCATIONS AND ELEVATIONS OF THEIR LINES THE CONTRACTOR SHALL KEEP A RECORD OF ANY DISCREPANCIES OR CHANGES IN THE LOCATIONS OF ANY UTILITIES SHOWN OR ENCOUNTERED DURING CONSTRUCTION ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER

EARTHWORK

EARTHWORK MATERIALS TO MEET THE FOLLOWING STANDARDS: ORDINARY BORROW SHALL BE EXISTING GRANULAR SOL FOR REUSE WITH MAXIMUM 4 STONE SUBJECT TO APPROVAL BY THE ENGINEER AS PER THE SPECIF CATION

GRAVEL BORROW SHALL COMPLY WITH MHO M1 03 0 TYPE B 3 INCH CRUSHED STONE SHALL COMPLY WITH ASTM D448 SIZE NUMBER 2 AND THE FOLLOWING GRADING:

- SEVE SIZE PERCENT PASSING BY WEIGHT 26 90-100 35-70 1-12 0-15
- DENSE GRADED CRUSHED STONE SHALL COMPLY WITH MHD M2 017 AND THE SPECIF CATION

STRUCTURAL STEEL AND M SCELLANEOUS METALS:

- STRUCTURAL STEEL SHALL BE DESIGNED IN ACCORDANCE WITH A SC SPECIFICATION FOR THE DESIGN FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS
- 2 STEEL SHALL CONFORM TO THE FOLLOWING ASTM GRADES: -STEP SHEETPI PS SEE BELOW
- HIGH STRENGTH BOLTS F3125 GRADE A325 - ALL OTHER STRUCTURAL STEEL ASS2 GRADE 50 (Fy - 50 KSI) UNO
- WELDING SHALL CONFORM TO AWS 3
- -WELDING ELECTROOES AWS ETXXX. ALL NEW STEEL HARDWARE AND FABR CATIONS SHALL BE HOT DIPPED GALVANIZED AND CONFORM TO ASTM ALL REW STEEL PHOLINARE AND PARK CALLING STALL BE NO UPPED CALMARZED AND CONFININT IONS IN A 123 ANODAR 253 UNLESS OTHERWISE NOTED THE CONTRACTOR SHALL COORDINATE ALL DIMENSIONS SHOWN ON THE FLANS WITH THE VARIOUS TRADES SIZE OF UNITS AND EXISTING CONDIT ONS BEFORE DETAILING AND FASRICATING STEEL
- 5
- . STAINLESS STEEL SHALL BE SERIES 300 TYPE 318 UNLESS OTHERWISE NOTED

EEL	SHEET P	LE CUTURE	WAL

- 1 ALL STEEL FOR STEEL SHEET PILE SHALL CONFORM TO ASTM A572 GR 50 MINIMUM Y ELD STRESS OF 50 KSI - TIP EL SEE DRAWING · ALL STEEL PILES SHALL HAVE A MINIMUM STEEL THICKNESS OF # ON BOTH WEE AND FLANGE
- ALL STEEL FILES SHALL BE COATED AS PER SPECIFICATION MINULUX SECTION MODULUS SHALL BE EDUIVALENT TO 25 2 CUBIC INCHES PER LINEAR FOOT OF INSTALLED
- WALL MINIMUM MOMENT OF INERTIA SHALL BE 170 6 IN PER LINEAR FOOT OF INSTALLED WALL
- CONCRETE
- ALL REINFORCEMENT SHALL BE NEW DEFORMED STEEL BARS GRADE tO CONFORMING TO ASTM 4015 REINFORCEMENT ACCESSORIES SHALL BE DIELECTRIC COATED STEEL OR APPROVED PLASTIC
- ALL CONCRETE EXCEPT TREMIE CONCRETE SHALL HAVE THE FOLLOWING SPECIF CATIONS: 3 - MINIMUM COMPRESSIVE STRENGTH: 5 000 PS - AIR ENTRAINMENT SHALL BE MAINTAINED AT 5% - 7% 5 000 PSI AT 28 DAYS
 - MAXIMUM S ZE OF AGGREGATE SHALL BE % INCH
 - WATER TO CEMENT RATIO SHALL BE 0.40
 - ASTM C150 TYPE II - CEMENT SHALL MEET MIN CEMENT PER CY SHALL BE 550 LBS
- AS PER SPECIF CATION - MAX CEMENT REPLACEMENT
- ORDUT SHALL BE A HIGH STRENGTH NON-BHRINK GROUT WITH SALTWATER RESISTANCE CONCRETE COVER SHALL BE A MINIMUM OF 2 UNLESS NOTED OTHERWISE
- CONCRETE COVER SHALL BE A MINIMUM OF 3 WHERE CONCRETE IS CAST DIRECTLY ON SOIL
- ALL EXPOSED EDGES OF CONCRETE AT COLD JOINTS SHALL HAVE A ROUGHENED FINISH AND BE COATED WITH
- FROMY BONDING AGENT PRICE TO CARTING ADJACENT POUR ALL CONSTRUCT ON JOINTS SHALL BE ROUGHENED PRICE TO ADJACENT CONCRETE POUR
- ALL TOP SUPERCES SHALL BE FLOAT FINISH

10 REIN DEVELOPMENT AND LAP SPL CE LENGTHS SHALL BE AS SHOWN IN TABLE TO BELOW:

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PUMP AND DRIVER REDUIREMENTS: PUMPS SHALL BE PENTAR MODEL # OR APPROVED EQUIVALENT PUMPS SHALL MEET OR EXCEED THE FOLLOWING MINIMUM CRITERIA: - MINIMUM RATED FLOW: 7 000 US GPM MINIMUM RATED DIFFERENTIAL HEAD: 25 FT
 MAXIMUM REQUIRED MOTOR RATING: 75 HORSEPOWER VARIABLE SPEED CONTROLLER MOTORS SHALL BE EQUIPPED WITH A SOFT STARTER



NON CRITERIA FUMP CHAMBER - INTERIOR FUNP CHAMBER - EX

125 P8F

250 F81

20 PS





TIDAL DATUM MHHW MHW NAVDS8 MLW MLLW 2.82 2.8 0.0 -3.17 -3.38















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APPENDIX B, Document 3 – Hydrologic and Hydraulic Study





Consulting Engineers and Scientists

Hydrologic and Hydraulic Study Design Wave Heights and Pump Sizing for Lawrence High School

Lawrence High School, Cedarhurst, New York

Submitted to:

Mr. Michael Mark, AIA Mark Design Studios Architecture, P.C. 270 North Broadway Hicksville, NY 11801

Submitted by:

GEI Consultants, Inc. P.C. 1000 New York Avenue Huntington Station, NY 11746

September 1, 2020 Project 2001113

PA

Leila Pike, P.E. Water Resources Engineer

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Sernor Consultant, waterfront and Coastal Engineer



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Appendices

- A. POT Wind Analysis
- B. ACES Wave Growth Results
- C. ACES Wave Runup Results
- D. Sheet Pile Infiltration Analysis

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1. Introduction

GEI Consultants, Inc. P.C. presents this report to Mark Design Studies Architecture, P.C. to assist with design heights of the sea wall and pump sizing for the Lawrence High School Sea Wall Design at the project located off Peninsula Boulevard in Lawrence, Nassau County, New York. In this report, we present a coastal analysis and seepage and rainfall analysis used to determine design wave heights for coastal storm events and the volume of water needed to be pumped out of the enclosed area during a combined coastal and rainfall event, respectively. Storm events for the 100-yr and 500-yr annual recurrence intervals (i.e., 1% and 0.2% annual chance, respectively) were considered in this analysis.

Elevations in this document are referenced to the North American Vertical Datum of 1988 (NAVD88) in feet unless otherwise specified.

2. Coastal Analysis and Design Wave Heights

The coastal analysis used to determine design wave heights for the 1% and 0.2% annual chance coastal storm event involved the following steps:

- Obtaining Still Water Elevation (SWEL) values from site-specific Federal Emergency Management Agency (FEMA) analyses.
- Estimating a local sea level rise value.
- Calculating the 1% and 0.2% annual chance local wind velocities.
- Determining local nearshore wave heights and wave periods.
- Calculating wave runup values.

2.1 Still Water Elevations

SWEL values were obtained from a FEMA Letter of Map Revision (LOMR) for Nassau County issued on January 16, 2013 (FEMA, 2013).

A value of 8 ft was used for the 1% annual chance storm, and a value of 9.8 ft was used for the 0.2% annual chance storm. These represent the lower range of values for the Head of Bay (Jamaica Bay), shown to be applicable to the site location from the Valley Stream Flood Profile (12P).

2.2 Sea Level Rise

Sea level rise was estimated based on the table below from New York City Panel on Climate Change 2019 Report (Gornitz et al., 2019).

Table 1. New York City sea level rise projections for the 2020s, 2050s, and2100, relative to 2000-2005 (Gornitz et al., 2019)

Sea level rise baseline (2000-2004)	Low estimate (10th percentile)	Middle range (25th-75th percentile)	High estimate (90th percentile)
2020s	+2 in.	+4-8 in.	+10 in.
2050s	+8 in.	+11-21 in.	+30 in.
2080s	+13 in.	+18-39 in.	+58 in.
2100	+15 in.	+22=50 in.	+75 in.

*Based on 24 GCMs and two representative concentration pathways, RCP 4.5 and 8.5. Shown are the low-estimate (10th percentile), middle range (25th-75th percentile), and high-estimate (90th percentile).

A sea level rise value of 28.5 inches, or 2.4 ft, was chosen based on the average value of the "Middle range" estimates for the 2080s, which is assumed to be nearest to the design life of the sea wall.

2.3 Extreme Value Wind Speed Analysis

The 1% and 0.2% annual chance wind speeds were calculated based on data obtained from the USACE Wave Information Study (WIS) Station 63126 (USACE, 2014). Extreme values were obtained using Generalized Extreme Value (GEV) fitting procedures with the Peaks-Over-Threshold (POT) method (Goda, 2000). The GEV equation combines three theoretical extreme value probability distribution functions used to fit the sample of data: The Fisher Tippet Type I (Gumbel) distribution, the Fisher Tippet Type II (Frechet) distribution, and the Weibull distribution. The distribution with the highest correlation was used for the results.

The POT analysis was performed on 34 years' worth of data was obtained from the WIS Station. The data was ranked and filtered to have only one event per 48-hr period to reject duplicate storms (Melby et al., 2012). A threshold value of 35.8 mph was used for the analysis to capture significant extreme events and optimize curve fitting (FEMA, 2016). The Weibull distribution had the highest correlation of best-fit, r^2 , value of 0.973, for a 1% annual chance wind speed of 59 mph and a 0.2% annual chance wind speed of 65.1 mph.

While these values are used in the analysis to determine nearshore waves and wave runup values, it is recognized that with a larger sample size of wind data these values may be able to be improved upon and used with a higher confidence.

The POT analysis is provided in Appendix A.

2.4 Nearshore Wave Heights and Wave Periods

Nearshore wave heights were calculated based on shallow fetch-restricted wind-wave generation using the Automated Coastal Engineering System (ACES) modeling software (ACES, 2019). Fetch lengths were calculated assuming still water elevations of the 1% and 0.2% annual chancel SWEL values plus 2.4 ft of sea level rise. For 1% annual chance storm, the SWEL with sea level rise was determined to be 10.4 ft NAVD88. For the 0.2% annual chance storm, the SWEL with sea level rise was determined to be 12.2 ft NAVD88.

For the 0.2% annual chance storm, an average fetch depth of 10 ft was used in the ACES analysis. A wind direction of 315 degrees was used, based on Wind Rose data for WIS Station 63126. The results of the analysis showed a nearshore wave height of 1.34 ft and wave period of 2.04 seconds.

For the 1% annual chance storm, an average fetch depth of 8 ft was used in the ACES analysis. A wind direction of 315 degrees was used, based on Wind Rose data for WIS Station 63126. The results of the analysis showed a nearshore wave height of 1.16 ft and a wave period of 1.91 seconds.

The ACES wave height analysis is provided in Appendix B.

2.5 Wave Runup

Wave runup was calculated using the ACES program for wave runup and overtopping on impermeable structures. Nearshore significant wave heights and periods were taken from the previous analysis and the structure was assumed to be a smooth vertical seawall with a toe elevation of 6 ft NAVD88. For the 0.2% annual chance storm, the wave runup is calculated to be 1.53 ft above the SWEL and sea level rise prediction, for a total wave runup elevation of 13.7 ft. For the 1% annual chance storm, the wave runup is calculated to be 1.34 ft, for a total wave runup elevation of 11.7 ft.

The results of the ACES wave runup analysis are provided in Appendix C.

2.6 Summary

See Table 2 below for a summary of the coastal analysis parameters used to derive the final design elevation for a 1% annual chance and a 0.2% annual chance coastal storm at the project site.

Table 2.	Coastal	Analysis	Summary
----------	---------	----------	---------

Parameter	1% Annual Chance Value	0.2% Annual Chance Value
SWEL (NAVD88)	8 ft	9.8 ft
Sea Level Rise for 2080s	2.4 ft	2.4 ft
Wind Velocity	59 mph	65.1 mph
Nearshore Significant Wave Height	1.16 ft	1.34 ft
Nearshore Significant Wave Period	1.91 seconds	2.04 seconds
Wave Runup	1.34 ft	1.53 ft
Design Elevation NAVD88 (SWEL + SLR + Wave Runup)	11.7 ft	13. 7 ft

The design elevations provided above have the chance to be improved upon through the acquisition of more site-specific wind data. If more than 34 years' worth of data is obtained or made available, the 1% and 0.2% annual chance wind velocities can be refined. Additionally, the sea level rise values used for this analysis were taken as averages of the middle-range for the 2080s. These values could be refined through discussions with the client.

3. Groundwater Seepage and Rainfall Analysis

3.1 Sheet Pile Infiltration

The groundwater flow through the proposed sheet pile wall interlocks was calculated based on the 1% annual chance (100-yr) coastal storm water elevation of 11.7 ft and the 0.2% annual chance (500-yr) coastal storm water elevation of 13.7 ft. The potentially permeable section of the wall is assumed to span from 5 ft NAVD88 to -29 ft NAVD88, extending from one foot below the wall at ground surface to the bottom extent of sheet pile drive activity at the impermeable clay layer. The wall is assumed to be comprised of AZ14-770 sheet piles. Above 5 ft NAVD88, the sheet pile wall is assumed to be impermeable due to being enclosed by concrete.

The estimated peak flow through the sheet pile interlocks at the peak water surface elevations for the 1% and 0.2% annual chance storm events would be 49 gallons per minute (gpm) and 63 gpm, respectively. Calculations are for the sheet pile infiltration are provided in Appendix D.

3.2 Rainfall Analysis

To estimate the volume of rainfall that would need to be pumped out of the enclosed area and peak rate of rainfall accumulation, we have compiled volumetric and intensity information for both 1% annual chance (100-yr) events and 0.2% annual chance (500-yr) events under existing conditions, looked at future projected rainfall intensities for these return periods under the knowledge of increasing intensity of rainfall events due to climate change, researched the maximum observed rainfall even in the area, and analyzed pump sizing for both the peak 1-hr rainfall intensity and the 24-hr rainfall intensity. The following sections review the data sources. A summary of the data is provided at the end of this letter.

Rainfall intensities for 100-yr and 500-yr storm events can be obtained from sources such as the Northeast Regional Climate Center (NRCC) Cornell (DeGaetano and Zarrow, 2010), NOAA Atlas 14 (Perica et al., 2015), NRCC Atlas 93, and TP40. NRCC Cornell and NOAA Atlas 14 represent more recent rainfall measurements and thus data from the latter two sources have not been considered in this analysis.

3.2.1 NRCC Cornell

NRCC Cornell has an analysis period starting at the beginning of a station's record and extending through 2008. The source provides 5-minute to 10-day rainfall intensities for return periods of 1-yr to 500-yrs. At JFK Airport, the same station used for evaluating

NOAA Atlas 14 below and located near to Lawrence High School, the 1-hr rainfall amount for a 100-yr storm is 2.83 inches and the 24-hr rainfall amount is 8.92 inches. For a 500-yr storm, the 1-hr rainfall amount is 4.13 inches and the 24-hr amount is 13.33 inches.

3.2.2 NOAA Atlas 14

NOAA Atlas 14 analyzes rainfall data through 2015. At the JFK Airport station, the 1-hr rainfall amount for a 100-yr storm is 3.06 inches and the 24-hr rainfall amount is 8.09 inches. For a 500-yr storm, the 1-hr rainfall amount is 4.03 inches and the 24-hr rainfall amount is 10.9 inches.

3.2.3 Future Projections

The New York Panel on Climate Change 2019 Report confirms that there is a projected increase in precipitation, both mean and extremes, within New York (Gonzalez et al., 2019). However, when it comes to rainfall amounts, there is a lot of uncertainty. Nevertheless, Intensity Duration Frequency (IDF) curves have been created for the State of New York, including future projections considering climate change. The New York Panel on Climate Change has created IDF curve projections for the 1% annual chance event, but has not created IDF curve projections for the 0.2% annual chance scenario

At the JFK airport, a 1% annual chance rainfall event given a High Emission Scenario for the time range of 2070 to 2099 leads to a mean rainfall intensity of 3.73 inches over a 1-hour period (DeGaetano and Castellano, 2015). The same parameters for a Low Emission Scenario yield a rainfall intensity of 3.47 inches over a 1-hour period. The observed 1% annual chance rainfall intensity from the years 1970-1999 for a 1-hour period is 3.07 in/hr. The intensities (inches/hour) for durations ranging from 1-hour to 24-hours for the High Emissions and Low Emissions scenarios can be seen in the Tables 3 and 4 below.

Table 3. Projected Rainfall Intensity at JFK Airport for the High Emission (RCP 8.5) Scenario for Years 2070-2099 for a 1% Annual Chance Rainfall Event

Projected 2070-2099 Intensity

Ensemble Member

Duration (hrs)	10th	Mean	90th
1	3.01	3.73	4.69
2	1.87	2.31	2.91
3	1.41	1.75	2.20
6	0.87	1.08	1.36
12	0.54	0.67	0.84
18	0.41	0.51	0.64
24	0.34	0.42	0.52

Table 4. Projected Rainfall Intensity at JFK Airport for the Low Emission (RCP4.5) Scenario for Years 2070-2099 for a 1% Annual Chance RainfallEvent

90th
4.21
2.61
1.97
1.22
0.76
0.57
0.47

3.2.4 Maximum Observed Event

On August 13, 2014, 13.57 inches or rainfall fell on Suffolk County over a 24-hour period. At the peak of the storm, 5 inches of rainfall fell during a 1-hr period (Santora and Dollinger, 2014).

3.3 Summary

The volume of water needed to be pumped out of the area will be based on the amount of infiltration through the sheet pile wall and the volume of rainfall collected in the area during an extreme storm event. We propose sizing the pump based on the rainfall over a 24-hr period instead of the peak 1-hr intensity due to the practicality (size and cost) of readily available versus specialty pump sizes. However, if an event similar to the maximum observed event occurs near the site where 5 inches of rain falls within a 1-hr period, and if the pump size is based on the lower intensity 24-hr storm events, there will likely be several inches of ponded water on the site while the pumps work to remove water from the site.

See the tables below for a summary of the flow rate values and sources used to aid in pump sizing for this site. Table 5 summarizes pump size estimates for the peak flows computed from the 1-hr rainfall intensity, and Table 6 summarizes pump size estimates for the peak flows computed from the 24-hr rainfall intensity.

	100-yr		100-yr Projections		500-yr		Max Observed
Source	NRCC Cornell	NOAA Atlas 14	High Emissions Scenario	Low Emissions Scenario	NRCC Cornell	NOAA Atlas 14	Heaviest Downpour on Record & 0.2% Annual Chance Coastal Conditions
Sheet Pile Wall Infiltration (GPM)	49	49	49	49	63	63	63
Rainfall (GPM)	22,119	23,917	29,153	27,121	32,280	31,498	39,079
Total Flow Rate (GPM)	22,168	23,966	29,202	27,170	32,343	31,561	39,142

mmary

	100	-yr	100-yr Projections		500-yr		Max Observed
Source	NRCC Cornell	NOAA Atlas 14	High Emissions Scenario	Low Emissions Scenario	NRCC Cornell	NOAA Atlas 14	Heaviest Downpour on Record & 0.2% Annual Chance Coastal Conditions
Sheet Pile Wall Infiltration (GPM)	49	49	49	49	63	63	63
Rainfall (GPM)	2,905	2,635	3,283	3,048	4,341	3,550	4,419
Total Flow Rate (GPM)	2,954	2,684	3,332	3,097	4,404	3,613	4,482

Table 6. Peak 24-hr Event Summary

4. Limitations

This report presents the results of analysis to estimate the coastal wave design height and rate of water infiltration into the enclosed site via seepage through the sheet pile walls and from rainfall during selected frequency storm events. The results are based on our judgment, information provided by others, techniques provided by Northeast Regional Climate Center, NOAA, and others, and the input parameters selected for the analysis. The results of this analysis should only be used to estimate the potential storm wave heights and the volume and flow rate that may need to be pumped out of the enclosure. An actual storm event with water surface elevations outside of the sheet pile wall and rainfall inside the wall will have volume and flow rates that will vary from those presented in this letter report. This analysis does not indicate or represent the integrity, condition, or stability of the sheet pile wall but rather potential infiltration through the wall and rainfall behind the wall for the frequency events described herein. Reuse of this report for any other purposes, in part or in whole, is at the sole risk of the user.

5. References

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Hydrologic and Hydraulic Study Design Wave Heights and Pump Sizing for Lawrence High School Lawrence High School, Cedarhurst, New York September 1, 2020



POT Wind Analysis

Statistical Analysis of Wind Speed at ST63126 using Peaks-Over-Threshold (POT) Method

<u>Reference:</u> Goda, Y. 2000. "Statistical Analysis of Extreme Waves." In *Random Seas and Design of Maritime Structures*. Singapore: World Scientific Publishing Co. Pte. Ltd.

<u>Data:</u> USACE WIS Station ST63126. The data set used for this analysis is from 1980 through 2014. The threshold was applied to the entire data set.

POT :=
$$16 \frac{m}{s}$$

OrderedStatistics :=

	0	1
0	1	29
1	2	23.2
2	3	22.9
3	4	22.6
4	5	22.2
5	6	21.8
6	7	21.6
7	8	21.3
8	9	21.2
9	10	

Threshold value

Table of wind speed values (m/s) with data imported from spreadsheet.

In spreadsheet

- Establish wave height threshold.
- Select data exceeding threshold.
- Sort data in descending order.
- Rank data from 1 to N.
- Save spreadsheet data in ".prn" format

In Mathcad

- Choose Insert-Component-Input Table.
- Call Table OrderedStatistics.
- Right Click in first cell.
- Choose import and select ".prn" file to import.

 $m := \text{OrderedStatistics}^{(0)}$

 $x := OrderedStatistics^{\langle 1 \rangle}$

 $N_T := max \text{ OrderedStatistics}^{(0)} N_T 212$

 $K := 34 \cdot yr$

$$\lambda \coloneqq \frac{N_T}{K} \qquad \qquad \lambda \quad 6.235 \cdot \frac{1}{yr}$$

Ordered statistics - order number. (First column of table.)

Extreme variate - water level. (Second column of table.)

Number of events in sample.

Period of sample in years.

Mean rate of extreme events. (Equation 11.1)

Fisher-Tippett type I (Gumbel)

 $\alpha := 0.44$ $\beta := 0.12$

$$\mathbf{F} \coloneqq 1 - \frac{\mathbf{m} - \alpha}{\mathbf{N}_{\mathrm{T}} - \beta}$$

y := -ln(-ln(F))

B := intercept(y, x)

 $\mathbf{r} \coloneqq \operatorname{corr}(\mathbf{y}, \mathbf{x}) \qquad \mathbf{r} \quad 0.962$

Best_fit := $B + A \cdot y$

Unbiased plotting position formula. (Equation 11.14)

formula. (Table 11.2)

Constants of unbiased plotting position

Reduced variate. (Equation 11.16)

Best-fit slope of Reduced variate vs.

Extreme variate. (Scale Parameter)

Best-fit intercept of Reduced variate vs. Extreme variate. (Location Parameter)

Correlation of best-fit line.

Equation of best-fit line. (Equation 11.17)



1.235

16.871

0.926

В

 r^2

Fisher-Tippett type II (Freche	Shape Parameter - Use 10, 25, 50 or	
k := 10.		100 to obtain best correlation coeffecient. (Equation 11.15)
$\alpha := 0.44 + \frac{0.52}{k} \alpha 0.492$	$\beta := 0.12 - \frac{0.11}{k} \beta 0.109$	Constants of unbiased plotting position formula. (Table 11.2)
$F := 1 - \frac{m - \alpha}{N_T - \beta}$		Unbiased plotting position formula. (Equation 11.14)
$\mathbf{y} \coloneqq \mathbf{k} \cdot \left[(-\ln(\mathbf{F}))^{\frac{-1}{k}} - 1 \right]$		Reduced variate. (Equation 11.16)
A := slope(y, x)	A 1.094	Best-fit slope of Reduced variate vs. Extreme variate. (Scale Parameter)
B := intercept(y, x)	B 16.831	Best-fit intercept of Reduced variate vs. Extreme variate. (Shape Parameter).
r := corr(y, x) r 0.984	r ² 0.968	Correlation of best-fit line.
Best fit := $B + A \cdot y$		Equation of best-fit line. (Equation 11.17)



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Hydrologic and Hydraulic Study Design Wave Heights and Pump Sizing for Lawrence High School Lawrence High School, Cedarhurst, New York September 1, 2020



ACES Wave Growth Results

ACES 1% Annual Chance Wave Growth Results

Case: 100yr

Windspeed Adjustment and Wave Growth

Breaking criteria 0.	0.780			
Item	Value	Units		
EL of Observed Wind Speed (Zobs)	32.80	feet		
Observed Wind Speed (Uobs)	59.00	mph		
Air Sea Temp. Diff (dT)	0.00	deg F		
Dur of Observed Wind (DurO)	1.00	hours		
Dur of Final Wind (DurF)	3.00	hours		
Lat. of Observation (LAT)	30.00	deg		
Results				
Wind Fetch Length	0.58	MILES		
Avg Fetch Depth (d)	8.00	feet		
Wind Direction (WDR)	315.00	deg		
Eq Neutral Wind Speed (Ue)	49.33	mph		
Adjusted Wind Speed (Ua)	73.63	mph		
Mean Wave Direction (THETA)	277.00	deg		
Wave Height (Hmo)	1.16	feet		
Wave Period (Tp)	1.91	sec		

Wind Obs Type		Wind Fetch Options		
Overwater Shallow restricted		Shallow restricted		
Restricted Fetch Geometry				
#	Fetch Angle	Fetch Length (miles)		
	(deg)			
1	270.00		0.63	
2	280.00		0.59	
3	290.00		0.16	
4	300.00		0.07	
5	310.00		0.15	
6	320.00		0.10	
7	330.00		0.11	
8	340.00		0.20	
9	350.00		0.26	
10	0.00		0.27	
11	10.00		1.37	

Wave Growth:

Shallow

ACES 0.2% Annual Chance Wave Growth Results

Case: 500yr

Windspeed Adjustment and Wave Growth

Breaking criteria 0.780					
Item	Value	Units			
EL of Observed Wind Speed (Zobs)	32.80	feet			
Observed Wind Speed (Uobs)	65.10	mph			
Air Sea Temp. Diff (dT)	0.00	deg F			
Dur or Observed Wind (DurO)	1.00	hours			
Dur of Final Wind (DurF)	3.00	hours			
Lat. of Observation (LAT)	40.60	deg			
Results					
Wind Fetch Length	0.58	MILES			
Avg Fetch Depth (d)	10.00	feet			
Wind Direction (WDR)	315.00	deg			
Eq Neutral Wind Speed (Ue)	54.43	mph			
Adjusted Wind Speed (Ua)	83.97	mph			
Mean Wave Direction (THETA)	277.00	deg			
Wave Height (Hmo)	1.34	feet			
Wave Period (Tp)	2.04	sec			

Wind Obs Type		Wind Fetch Options	
Sho	re (windward)	Shallow restricted	
Restricted Fetch Geometry			
#	Fetch Angle	Fetch Length (miles)	
	(deg)		
1	270.00	0.6	
2	280.00	0.5	
3	290.00	0.1	
4	300.00	0.0	
5	310.00	0.1	
6	320.00	0.1	
7	330.00	0.1	
8	340.00	0.2	
9	350.00	0.2	
10	0.00	0.2	
11	10.00	1.3	

Wave Growth:

Hydrologic and Hydraulic Study Design Wave Heights and Pump Sizing for Lawrence High School Lawrence High School, Cedarhurst, New York September 1, 2020



ACES Wave Runup Results

ACES 1% Annual Chance Wave Runup Results

Case: 100yr

Wave Runup and Overtopping on Impermeable Structures

Wave type: Monochromatic Rate estimate: Runup

Breaking criteria: .0780

Incident wave ht (Hi):	1.160	ft	Wave Runup (R):	1.338	ft
Peak wave period (T):	1.910				
COTAN of nearshore slope (cot phi):	100.000		Deepwater wave (Ho):	1.250	ft
Water depth at structure toe (ds):	4.400	ft	Relative height (ds/Ho):	3.519	
COTAN of structure slope (cot theta):	0.000		Wave steepness (Ho/gT ²):	0.011	
Structure height above toe (hs):	15.000	ft			

ACES 0.2% Annual Chance Wave Runup Results

Case: 500yr

Windspeed Adjustment and Wave Growth

Wave type: Monochromatic

Slope type: Smooth

Slope type: Smooth

Rate estimate: Runup

Breaking criteria: .0780

Di cutting ci iteritati	.0700				
Incident wave ht (Hi):	1.340	ft	Wave Runup (R):	1.534	ft
Peak wave period (T):	2.040				
COTAN of nearshore slope (cot phi):	100.000		Deepwater wave (Ho):	1.417	ft
Water depth at structure toe (ds):	6.200	ft	Relative height (ds/Ho):	4.377	
COTAN of structure slope (cot theta):	0.000		Wave steepness (Ho/gT ²):	0.011	
Structure height above toe (hs):	15.000	ft			

Hydrologic and Hydraulic Study Design Wave Heights and Pump Sizing for Lawrence High School Lawrence High School, Cedarhurst, New York September 1, 2020



Sheet Pile Infiltration Analysis



Groundwater Flow Through Proposed Sheet Pile Sea Wall

Purpose:

The purpose of this calculation is to estimate groundwater flow through the proposed sheet pile sea wall during 100-year and 500-year storm events.

References:

ArcelorMittal (2014). "Impervious Steel Sheet Pile Walls, Design & Practical Approach," January.

Elevations:

Elevations are in units of feet and are referenced to NAVD88:

- 100-year storm event sea level: El. 11.7
- 500-year storm event sea level: El. 13.7
- Minimum ground surface: El. 5 (based on Boring B-3)
- Minimum bottom of parapet wall: El. 5
- Minimum top of clayey silt: El. -29

Assumptions:

- Sheet piles are AZ14-770.
- Sheet pile interlocks are not filled.
- Water El. inside sheet pile wall is at minimum ground surface.
- No flow through parapet wall.



Eq. 5: $Q_1 = p^* \wedge (0.5 \wedge h)$

 $Q_1 = total discharge through one interlock$

p = inverse interlock resistance (m/s)

However, since there is an impermeable parapet wall for the distance H, the equation can be modified as follows:

 $Q_1 = p * \wedge *h$

Table 1 provides p for different hydrostatic pressures. For an empty interlock, Table 1 indicates $p > 1,000 \times 10^{-10}$ m/s for 100 kPa and $p > 4,500 \times 10^{-10}$ m/s for 150 kPa.

100-yr hydrostatic pressure = 6.7 ft * 62.4 pcf = 418.1 psf = 20 kPa 500-yr hydrostatic pressure = 8.7 ft * 62.4 pcf = 542.9 psf = 26 kPa

Conservatively assume p 1,000 x 10⁻¹⁰ m/s





Conclusions:

- Estimated groundwater flow through proposed sheet pile sea wall:
 - 100-year storm event: 49 gpm
 - 500-year storm event: 63 gpm

APPENDIX B, Document 4 – E011988 8-Step Narrative

Lawrence Union Free School District, Nassau County, NY Project: Lawrence High School Seawall Construction and Facility Upgrades PW4004 FEMA 4085-DR-NY

Executive Order 11988 – FLOODPLAIN MANAGEMENT Executive Order 11990 – WETLAND PROTECTION

8-STEP PROCESS SUMMARY

Date: 08/17/2023

Prepared By: Kyle Bartowitz, Environmental Protection Specialist

Project: Lawrence Union Free School District (Lawrence UFSD – the Subrecipient) has applied for FEMA Public Assistance funding. The New York State Division of Homeland Security and Emergency Services (DHSES) is the Recipient partner for the Proposed Action to construct a concrete seawall with subgrade steel sheet pile, three pumping stations with stone flood dissipation aprons below the existing water outfall pipes, flood gates at the LHS entrance driveways, and tidal wetland restoration.

STEP 1 - Determine whether the proposed actions are located in a wetland and or the 100year floodplain (500-year floodplain for critical action [44 CFR Sec. 9.4]) or whether they have the potential to affect or be affected by a floodplain or a wetland (44 CFR Sec. 9.7).

X The project site is located in the 100-year floodplain as mapped by:

Site: Lawrence High School FIRM map: #36059C0213G, 09/11/2009, Zone AE (El 8 & 9) NAVD88 datum Latitude 40.631617 / Longitude -73.734978

X The project site is *not* located in the wetland as identified by:

A review of the National Wetlands Inventory (NWI) Map.

Note: The project site is not mapped in a wetland based on the NWI Map. Based on a review of the NYSDEC Environmental Resource Mapper, the DECinfo Locator and the Tidal Wetland Map for the area, NYSDEC categorizes the tidal areas within the project area as littoral zone. Based on wetland evaluation and delineation by the Subrecipient, it was determined that there

are Intertidal Marsh and High Marsh areas present along the tidal banks on the periphery of the project site. Therefore, wetlands meeting the definition under Section 404 of the Clean Water Act are within the project area.

STEP 2 - Notify the public at the earliest possible time of the intent to carry out an action in a floodplain or wetland and involve the affected and interested public in the decision-making process (44 CFR Sec. 9.8).

____Not applicable - Project is not located in a floodplain or wetland.

X Applicable - Notice will be or has been provided by:

A Cumulative Initial Public Notice was published in the New York Post 12/14/2012. An additional public notice will be provided in the public comment period for the Environmental Assessment for this project.

STEP 3 - Identify and evaluate practicable alternatives to locating the proposed action in a floodplain or wetland (including alternative sites, actions, and the "No Action" option) [44 CFR Sec, 9.9]. If a practicable alternative exists outside of the floodplain or wetland, FEMA must locate the action at the alternative site.

____Not applicable – Project is not located in a floodplain or in a wetland.

X Applicable – Alternative identified in the EA Document or as described below:

Alternative 1: No Action – The Lawrence High School site would remain in its current state. Resiliency measures would not be implemented, and the site would continue to be susceptible to flooding inundation during storm events from elevated water levels.

Alternative 2: Proposed Action - The proposed project consists of the construction of a concrete seawall with subgrade steel sheet pile, three pumping stations with stone flood dissipation aprons below the existing water outfall pipes, flood gates at the LHS entrance driveways, and a tidal wetland restoration. While independent from the Proposed Action, a larger-scale, coastal resiliency project by the US Army Corps of Engineers (USACE) to protect the Atlantic seaboard of the Rockaway Peninsula and portions of Jamaica Bay is adjacent to the project site. The USACE project at this location consists of a seawall leading to the southwest edge of the Lawrence High School property.

STEP 4 - Identify the potential direct and indirect impacts associated with occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action (44 CFR Sec. 9.10).

_____Not applicable – Project is not located in a floodplain or in a wetland.

X Applicable – Alternative identified in the EA document or as described below:

Alternative 2: Proposed Action – The work associated with the proposed action results in the restoration and increased resiliency of the Lawrence High School site, and reduces the hazards from storm event damages, as well as bolstering the shoreline against future storm surge and erosion. It would not support additional floodplain or wetland development beyond the existing and identified by Lawrence UFSD. Specifically, there would be negligible short-term impacts to wetlands and floodplains during construction, and a long-term minor benefit to wetlands from the native plantings and other erosion control measures. FEMA also anticipates a long-term minor benefit to floodplains from the native plantings and structures and appurtenances built in accordance with codes and local floodplain administrator requirements.

STEP 5 - Minimize the potential adverse impacts and support to or within floodplains and wetlands identified under Step 4, restore and preserve the natural and beneficial values served by floodplains, and preserve and enhance the natural and beneficial values served by wetlands (44 CFR Sec. 9.11).

_____Not applicable – Project is not located in a floodplain or in a wetland.

X Applicable – Mitigation measures identified in the EA document or as described below:

The purpose of this project is to provide flood protection measures along the perimeter of the Lawrence High School site, thereby reducing damages from tidal and storm surge flooding caused by storm events. Items that would help preserve the natural and beneficial values of wetlands and floodplains include: removal of Phragmites and replacement with native wetland plantings, riprap/dissipation aprons to limit erosion and flooding, and hardened shoreline to limit the potential for wave action and overland flooding.

Replacement/repairs and construction of facilities to pre-disaster shall be in accordance with local floodplain ordinances and meet codes to mitigate and minimize adverse effects.

STEP 6 - Re-evaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others and its potential to disrupt floodplain and wetland values. Second, evaluate if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain or wetland unless it is the only practicable location (44 CFR Sec. 9.9).

_____Not applicable – Project is not located in a floodplain or in a wetland.

 $\underline{\mathbf{X}}$ Applicable – Action proposed is located in the only practicable location as described below:

The proposed action is the chosen practicable alternative based upon a review of possible adverse effects on the floodplain.

STEP 7 - **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain or wetland is the only practicable alternative (44 CFR Sec. 9.12).**

___Not applicable – Project is not located in a floodplain or in a wetland.

X Applicable – Finding is or will be prepared as described below:

A Cumulative Initial Public Notice was published in the New York Post 12/14/2012. An additional public notice will be provided in the public comment period for the Environmental Assessment for this project.

STEP 8 - Review the implementation and post-implementation phases of the proposed action to ensure that the requirements state in 44 CFR Sec. 9.11 are fully implemented. Oversight responsibility shall be integrated into the existing process.

_____Not applicable – Project is not located in a floodplain or in a wetland.

 $\underline{\mathbf{X}}$ Applicable – Approval is conditioned on review of implementation and postimplementation phases to ensure compliance with the order(s).

Review the implementation and post-implementation phase of the proposed action to ensure that the requirement(s) stated in 44 CFR Sec. 9.11 are fully implemented.
APPENDIX C – FEMA Letter of Map Revision



Washington D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION			PROJECT DESCRIPTION	BASIS OF REQUEST			
COMMUNITY	Village of Valley Stream Nassau County New York COMMUNITY		NO PROJECT	BASE MAP CHANGES COASTAL ANALYSIS NEW TOPOGRAPHIC DATA			
	COMMUNITY NO.: 360495						
IDENTIFIER	Nassau County LOMR	A S	APPROXIMATE LATITUDE AND LONGITUDE: 40.638, -73.730 SOURCE: Precision Mapping Streets DATUM: NAD 83				
	ANNOTATED MAPPING ENCLOSURES		ANNOTATED STU	IDY ENCLOSURES			
TYPE: FIRM* TYPE: FIRM* TYPE: FIRM* TYPE: FIRM*	NO.: 36059C0211G DATE: September 11, NO.: 36059C0212G DATE: September 11, NO.: 36059C0213G DATE: September 11, NO.: 36059C0213G DATE: September 11, NO.: 36059C0214H DATE: September 11,	2009 D 2009 P 2009 F 2009 S	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 11, 2009 PROFILES: 6P, 12P AND 13P FLOODWAY DATA TABLE: 8 STILLWATER ELEVATION TABLE: 5				
Enclosures reflect * FIRM - Flood Ins	changes to flooding sources affected by this revision. urance Rate Map;	I					
	FLOODING SOU	IRCES AN	ID REVISED REACHES See Page	ge 2 for Additional Flooding Sources			
Jamaica Bay - enti Motts Creek - from	Jamaica Bay - entire area within Nassau County, New York, affected by flooding from Jamaica Bay Motts Creek - from approximately 1,240 feet downstream of Cochran Place to approximately 1,220 feet upstream of Rockaway Avenue						
	SUMM	ARY OF	REVISIONS				
Flooding Source	Effectiv	ve Floodir	ng Revised Flooding Increa	ses Decreases			
Jamaica Bay	Zone A	F	Zone AF VES	VES			
bamaioa bay	BFFs		BEEs NONE	YES			
	Zone X	(shaded)	Zone X (shaded) NONE	YES			
Motts Creek	Zone A	E.	Zone AE NONE	YES			
* BFEs - Base Floo	od Elevations						
	DET		ΝΔΤΙΩΝ				
This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.							
This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip .							

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration



Washington D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

OTHER FLOODING SOURCES AFFECTED BY THIS REVISION

FLOODING SOURCES AND REVISED REACHES

Valley Stream - from approximately 100 feet downstream of Mill Road to approximately 520 feet upstream of West Sunrise Highway

	SUMMARY OF REV	ISIONS		
Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Motts Creek	BFEs	BFEs	NONE	YES
	Zone X (shaded)	Zone X (shaded)	NONE	YES
Valley Stream	Zone AE	Zone AE	YES	YES
	BFEs	BFEs	NONE	YES
	Zone X (shaded)	Zone X (shaded)	NONE	YES
* DEEa - Deea Flood Flovetiens				

* BFEs - Base Flood Elevations

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip.

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration

TYPE: FIRM*

NO.: 36059C0218G



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS REVISION **CID Number: 360460** Name: Village of Cedarhurst, New York AFFECTED MAP PANELS AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT TYPE: FIRM* NO.: 36059C0213G DATE: September 11, 2009 DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 11, 2009 TYPE: FIRM* NO : 36059C0301G DATE: September 11, 2009 STILLWATER ELEVATION TABLE: 5 **CID Number:** Town of Hempstead, New York 360467 Name: AFFECTED MAP PANELS AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT TYPE: FIRM* NO.: 36059C0194G DATE: September 11, 2009 DATE OF EFFECTIVE FLOOD INSURANCE STUDY: September 11, 2009 TYPE: FIRM* NO.: 36059C0211G DATE: September 11, 2009 PROFILE: 12P TYPE: FIRM* 36059C0212G September 11, 2009 NO.: DATE: STILLWATER ELEVATION TABLE: 5 TYPE: FIRM* NO.: 36059C0213G DATE: September 11, 2009 TYPE: FIRM* NO.: 36059C0214H DATE: September 11, 2009 TYPE: FIRM* NO.: 36059C0218G DATE: September 11, 2009 TYPE: FIRM* 36059C0282G DATE: September 11, 2009 NO.: TYPE: FIRM* NO.: 36059C0301G DATE: September 11, 2009

CID Numbe	r: 360478	Name:	Village of Lynbrook, New York		
AFFECTED MAP PANELS				AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT	
TYPE: FIRM*	NO.: 36059C0214H	DATE: Se	eptember 11, 2009	DATE OF EFFECTIVE FLOOD INSURANCE STUDY September 11, 2009	

DATE: September 11, 2009

STILLWATER ELEVATION TABLE: 5

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip.

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration



Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on a storm surge analysis performed for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that any permits required by Federal or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

Because the FIS report establishing the BFEs for your community has been completed, certain additional requirements must be met under Section 1361 of the National Flood Insurance Act of 1968, as amended, within 6 months from the date of this letter. Prior to the effective date of this revision your community is required, as a condition of continued eligibility in the National Flood Insurance Program (NFIP), to adopt or show evidence of adoption of floodplain management regulations that meet the standards of Paragraph 60.3(d) of the enclosed NFIP regulations (44 CFR 59, etc.). These standards are the minimum requirements and do not supersede any State or local requirements of a more stringent nature.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration



Washington D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

It must be emphasized that all the standards specified in Paragraph 60.3(d) of the NFIP regulations must be enacted in a legally enforceable document. This includes adoption of the current effective FIS report and FIRM to which the regulations apply and other modifications made by this map revision. Some of the standards should already have been enacted by your community in order to establish initial eligibility in the NFIP.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

Your community can meet any additional requirements by taking one of the following actions:

- 1. Amending existing regulations to incorporate any additional requirements of Paragraph 60.3(d);
- 2. Adopting all the standards of Paragraph 60.3(d) into one new, comprehensive set of regulations; or
- 3. Showing evidence that regulations have previously been adopted that meet or exceed the minimum requirements of Paragraph 60.3(d).

Communities that fail to enact the necessary floodplain management regulations will be suspended from participation in the NFIP and subject to the prohibitions contained in Section 202(a) of the Flood Disaster Protection Act of 1973 (Public Law 93-234) as amended.

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Timothy P. Crowley Director, Mitigation Division Federal Emergency Management Agency, Region II 26 Federal Plaza, 13th floor New York, NY 10278-0002 (212) 680-3622

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panels and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip.

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration



Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

A notice of changes will be published in the *Federal Register*. A short notice will also be published in your local newspaper on or about the dates listed below. Please refer to FEMA's Web site at <u>https://www/floodmaps.fema.gov/fhm/Scripts/bfe_main.asp</u>.

LOCAL NEWSPAPER

Name: *The Newsday* Dates: 01/23/2013 and 01/30/2013

Within 90 days of the second publication in the local newspaper, any interested party may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision will be effective 6 months from the date of this letter and only after we have resolved any appeals that we receive during the appeal period. Until this LOMR is effective, the revised flood hazard information presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the Engineering Library, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our Web site at http://www.fema.gov/business/nfip.

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Todd A. Steiner, Program Specialist Engineering Management Branch Federal Insurance and Mitigation Administration

12-02-1677P

102-I-A-C

APPENDIX D, Correspondence 1 – NYS Department of State Coastal Consistency



Consulting December 21, 2020 Engineers and Project 2001113

Scientists VIA E-Mail: CR@dos,ny.gov

Mr. Matthew Maraglio New York State Department of State Attn: Consistency Review Unit One Commerce Plaza-Suite 1010 99 Washington Avenue Albany, New York 12231

Re: Tidal Wetlands Permit Application for a Seawall Installation Project at Lawrence High School, Cedarhurst, Nassau County, New York

Dear Mr. Maraglio,

GEI Consultants, Inc., P.C. (GEI) has been retained by Mark Design Studios Architecture, P.C. and Lawrence Union Free School District to oversee the permit application for a Seawall Installation Project at Lawrence High School in Cedarhurst, New York. FEMA funding has been granted to Lawrence High School to redevelop the campus to prevent the recurrence of flooding and FEMA Flood Mitigation designs have been completed. The proposed project will construct a perimeter seawall and three associated pump stations.

The following documents are attached for your review:

- Joint Application
- Project Description
- Project Location Map
- Project Drawings
- NYSDOS Federal Consistency Assessment Form and Supporting Narrative
- Photo Location Map and Photo Log

If you have any questions or require additional information, please do not hesitate to contact Damon Oscarson at doscarson@geiconsultants.com or (631) 479-3512 or Laura Schwanof lschwanof@geiconsultants.com or (631) 513-1604.

Sincerely,

GEI CONSULTANTS, INC., P.C.

Damon Oscarson

Senior Ecologist

una

Laura Schwanof, RLA Landscape Architect/Senior Ecologist

LS/DO:gd Attachments cc: USACE NYSDEC M. Mark (Mark Design Studios Architecture, P.C.) V. Hagopian, M.B. Billerman (GEI)

Purpose of the Project:

Lawrence High School is used as an emergency management command and control center during hurricanes, floods, disasters and special events where first responders assemble to provide help and relief to the entire community. However, in 2012 during Superstorm Sandy, the entire high school grounds were flooded cutting off access to the facility. FEMA funding has been granted to Lawrence High School to redevelop the campus to prevent the recurrence of similar flooding and provide a community facility which is resilient and safe for an emergency command center. Therefore, significant upgrades are necessary to flood proof the school building, infrastructure and grounds to prevent damage to first responder's apparatus and equipment, and to provide a safe area for emergency management.

Current School Facility Conditions:

The School Grounds include:

- A three-level brick and mortar school building
- Interior infrastructure including the auditorium, crawl space, boiler room, and electrical control panels that were flooded and damaged during Hurricane Sandy
- Athletic fields and associated support structures
- Paved parking lots

The school property borders Doxey/Motts Creek and is surrounded by tidal waters on three sides.

Proposed Project:

The proposed project includes:

- Since the high school and athletic fields are low and surrounded by tidal waters on three sides, a complete sea wall will be needed to protect the site along all sides of the property.
- Flood gates will be installed at the three entrances to the facility and designed to close during high water events to prevent flooding.
- All site stormwater water will be collected through subsurface drainage pipes and infiltration chambers. The subsurface chambers will hold the collected rainwater from a 2" 24-hour rain event. Once that capacity is exceeded, water will flow into three underground pumping stations located landward of the sea wall.
- The pump chambers will have sump reservoirs. Pumped water will be discharged through the perimeter sea wall into velocity dissipation chambers at the upper edge of the creek embankment and then outlet over vegetated rip-rap flow dissipation aprons into the adjacent creek. The velocity dissipation chambers will be adequately sized to slow the velocity of flow and will have wall perforations to defuse the discharge into the creek.
- During high tide, the discharged water will rise in the dissipation chambers and overflow through the top, leaving the chambers in a sheet flow fashion over a weir, as well as though the lower perforations.
- During low tide, the discharge water will pass through the lower perforations of the dissipation chambers over the bank and into the tidal creek. In order to prevent localized bank erosion, a vegetated rip rap/splash pad will be installed to serve as a flow dissipation device beneath each discharge basin. The total estimated area of vegetated stone riprap for all three outfalls is approximately 1,700 SF.
- The pump stations will operate once the underground stormwater chambers fill up and will discharge water into the adjacent tidal creek during severe storms and periods of coastal sea level increases, such as hurricanes or Nor'easters.

NEW YORK STATE DEPARTMENT OF STATE COASTAL MANAGEMENT PROGRAM

Federal Consistency Assessment Form

An applicant, seeking a permit, license, waiver, certification or similar type of approval from a federal agency which is subject to the New York State Coastal Management Program (CMP), shall complete this assessment form for any proposed activity that will occur within and/or directly affect the State's Coastal Area. This form is intended to assist an applicant in certifying that the proposed activity is consistent with New York State's CMP as required by U.S. Department of Commerce regulations (15 CFR 930.57). It should be completed at the time when the federal application is prepared. The Department of State will use the completed form and accompanying information in its review of the applicant's certification of consistency.

A. <u>APPLICANT</u> (please print)

	Lawrence	Union	Free	School	District
1. Name:					

Lawrence High School, 2 Reilly Road, Cedarhurst, NY 11516

2. Address:

3. Telephone: Area Code () 516-295-7030

B. PROPOSED ACTIVITY

1. Brief description of activity:

See attached project description

2. Purpose of activity:

See attached project description

3. Location of activity:

Nassau	Inc. Village of Cedarhurst	Reilly Road		
County	City, Town, or Village	Street or Site Description		
4. Type of federal permit/license require	d: USACE			
5. Federal application number, if known	:			
6. If a state permit/license was issued or application or permit number, if known:	is required for the proposed activity	y, identify the state agency and provide the		

NYSDEC

C. <u>COASTAL ASSESSMENT</u> Check either "YES" or "NO" for each of these questions. The numbers following each question refer to the policies described in the CMP document (see footnote on page 2) which may be affected by the proposed activity.

1. Will the proposed activity <u>result</u> in any of the following:	YES	/ <u>NO</u>
a. Large physical change to a site within the coastal area which will require the preparation of an environmental impact statement? (11, 22, 25, 32, 37, 38, 41, 43)		×
b. Physical alteration of more than two acres of land along the shoreline, land under water or coastal waters? (2, 11, 12, 20, 28, 35, 44)		×
 c. Revitalization/redevelopment of a deteriorated or underutilized waterfront site? (1) d. Reduction of existing or potential public access to or along coastal waters? (19, 20) e. Adverse effect upon the commercial or recreational use of coastal fish resources? (9,10) f. Siting of a facility essential to the evaluation of evaluation of energy resources 		× ×
 g. Siting of a facility essential to the generation or transmission of energy? (27) h. Mining, excavation, or dredging activities, or the placement of dredged or fill material in 		×
 coastal waters? (15, 35) i. Discharge of toxics, hazardous substances or other pollutants into coastal waters? (8, 15, 35) j. Draining of stormwater runoff or sewer overflows into coastal waters? (33) k. Transport, storage, treatment, or disposal of solid wastes or hazardous materials? (36, 39) l. Adverse effect upon land or water uses within the State's small harbors? (4) 		x x i x
2. Will the proposed activity affect or be located in, on, or adjacent to any of the following:	YES	/ NO
 a. State designated freshwater or tidal wetland? (44) b. Federally designated flood and/or state designated erosion hazard area? (11, 12, 17,) c. State designated significant fish and/or wildlife habitat? (7) d. State designated significant scenic resource or area? (24) e. State designated important agricultural lands? (26) f. Beach, dune or barrier island? (12)		
3. Will the proposed activity require any of the following:	YES	5 / NO
 a. Waterfront site? (2, 21, 22) b. Provision of new public services or infrastructure in undeveloped or sparsely populated sections of the coastal area? (5) c. Construction or reconstruction of a flood or presion control structure? (13, 14, 16) 	×	
 d. State water quality permit or certification? (30, 38, 40)		
4. Will the proposed activity <u>occur within and/or affect</u> an area covered by a State approved local waterfront revitalization program? (see policies in local program document)		×

D. ADDITIONAL STEPS

- 1. If all of the questions in Section C are answered "NO", then the applicant or agency shall complete Section E and submit the documentation required by Section F.
- 2. If any of the questions in Section C are answered "YES", then the applicant or agent is advised to consult the CMP, or where appropriate, the local waterfront revitalization program document*. The proposed activity must be analyzed in more detail with respect to the applicable state or local coastal policies. On a separate page(s), the applicant or agent shall: (a) identify, by their policy numbers, which coastal policies are affected by the activity, (b) briefly assess the effects of the activity upon the policy; and, (c) state how the activity is consistent with each policy. Following the completion of this written assessment, the applicant or agency shall complete Section E and submit the documentation required by Section F.

E. CERTIFICATION

The applicant or agent must certify that the proposed activity is consistent with the State's CMP or the approved local waterfront revitalization program, as appropriate. If this certification cannot be made, the proposed <u>activity shall not be</u> <u>undertaken</u>. If this certification can be made, complete this Section.

"The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program."

Applicant/Agent's Name:	Damon Oscarson,	GEI Consultants,	Inc. P.C.	(CONTACT)
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Address:	1000	New	York	Avenue	Suite B.	Huntington	Station.	NY 11746
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Telephone: Area Code (631)	479-3512		
Applicant/Agent's Signature:	*Ink Signature - Damon Oscarson	(CONTACT)	12/7/2020 Date:

F. SUBMISSION REQUIREMENTS

1. The applicant or agent shall submit the following documents to the New York State Department of State, Office of Coastal, Local Government and Community Sustainability, Attn: Consistency Review Unit, 1 Commerce Plaza, 99 Washington Avenue - Suite 1010, Albany, New York 12231.

- a. Copy of original signed form.
- b. Copy of the completed federal agency application.
- c. Other available information which would support the certification of consistency.

2. The applicant or agent shall also submit a copy of this completed form along with his/her application to the federal agency.

3. If there are any questions regarding the submission of this form, contact the Department of State at (518) 474-6000.

^{*}These state and local documents are available for inspection at the offices of many federal agencies, Department of environmental Conservation and Department of State regional offices, and the appropriate regional and county planning agencies. Local program documents are also available for inspection at the offices of the appropriate local government.

Lawrence High School Seawall Installation Federal Consistency Assessment Form Supporting Narrative

Section D.2. Supplemental Information to the Coastal Assessment

The following coastal policies may be affected by the proposed project.

Policy 11: Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.

The proposed seawall will protect the existing structures on the property so it can function as a community facility that is resilient and safe for an emergency management command and control center during hurricanes, floods, disasters and special events where first responders assemble to provide help and relief to the entire community. Significant upgrades are necessary to flood proof the school building, infrastructure and grounds to prevent damage to first responder's apparatus and equipment, and to provide a safe area for emergency management.

Policy 12: Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.

The proposed seawall will be built to reduce property flooding and shorefront erosion. Natural beaches, dunes and barrier islands are not located in this area and will not be impacted.

Policy 13: The construction or reconstruction of erosion protection structures shall be undertaken only if they have reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.

The proposed construction of a seawall at elevation 14'+ will enclose the property and is anticipated to provide protection of the site for approximately 60 years.

Policy 14: Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable

increase in erosion or flooding at the site of such activities or development, or at other locations.

The Lawrence High School has historically been flooded during severe storm events, and most recently by Superstorm Sandy. The proposed construction of a seawall on this property is planned to eliminate flooding from hurricanes, damaging winds and waves. The seawall will also reduce chronic shoreline erosion that has been occurring over several decades. The project is supported by FEMA and is intended to improve overall community safety and to enable essential communication during future severe storm events.

Policy 16: Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.

In 2012 during Superstorm Sandy, the entire high school grounds were flooded cutting off access to the facility. FEMA funding has been granted to Lawrence High School to redevelop the campus to prevent the recurrence of similar flooding. The proposed seawall design has been developed to protect the existing structures and facility so it can function as an emergency management command and control center during hurricanes, floods, disasters and special events where first responders assemble to provide help and relief to the surrounding communities.

Policy 17: Non-structural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.

The property is fully developed as a high school facility. Non-structural methods are not adequate for this project due to the existing nature of the property and development located there.

Policy 21: Water dependent and water enhanced recreation will be encouraged and facilitated and will be given priority over non-water-related uses along the coast.

The property functions as a high school facility that is already developed along the waterfront. There is no additional land beyond the ballfields that would provide access to the shoreline, and no opportunity for water-related recreation or water dependent activities such as boating, swimming, and fishing. These activities are not applicable.

Policy 22: Development when located adjacent to the shore will provide for waterrelated recreation whenever such use is compatible with reasonably anticipated demand for such activities and is compatible with the primary purpose of the development.

The property is currently built out and functions as a high school facility. There are no additional opportunities for providing water-related recreation facilities on site.

Policy 33: Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.

There is no combined sewer overflow associated with this project. However, there currently is a SPDES permitted outfall that outlets directly into Mott's Creek. The project design incorporates best management practices for stormwater runoff control and disposal. The proposed site improvements will minimize the runoff volume and improve the quality of surface discharges into the surrounding tidal wetlands.

Stormwater runoff volume will be minimized through capture, storage and percolation to the groundwater by subsurface infiltration chambers. The subsurface chambers will hold the collected rainwater from a 2" 24-hour rain event. Any suspended sediment will settle out in these chambers. Once the storage capacity of all the chambers is exceeded, water will flow into three underground pumping stations located landward of the seawall. The pump chambers will have sump reservoirs that will provide a secondary siltation function. Pumped water will be discharged through the perimeter sea wall into velocity dissipation chambers at the upper edge of the creek embankment. The dissipation chambers will be adequately sized to slow the velocity of flow and will have wall perforations to control water release over a vegetated stone rip-rap apron into the adjacent creek.

Policy 44: Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

The proposed project has been designed to avoid direct impacts to vegetated tidal wetlands by constructing the sea wall above SHW. Flow dissipation stone aprons associated with 3 pump stations will be constructed below SHW to provide erosion protection of the bank during peak run-off events.

The proposed project does not affect the following coastal management policies related to FCAF questions answered "yes": #2, #30, #38, and #40.

STATE OF NEW YORK DEPARTMENT OF STATE

ONE COMMERCE PLAZA **99 WASHINGTON AVENUE** ALBANY, NY 12231-0001 WWW.DOS.NY.GOV

June 16, 2021

Damon Oscarson GEI Consultants, Inc, P.C. 1000 New York Avenue, Suite B Huntington Station, NY 11746

> Re: F-2020-1151

U.S. Army Corps of Engineers/New York District Permit Application - Lawrence Union Free School District Construct a perimeter sea wall and pump stations to reduce flooding on site. Pump stations will receive overflows from subsurface drainage system below the playing fields. When rainfall and groundwater swells exceed capacity of subsurface holding chambers, overflow water will be directed to 3 pumping stations on-site. Submersible pumps will direct water into energy dissipation devices before discharging into the adjacent tidal creek. 2 Reilly Road, Village of Cedarhurst, Nassau County,

Doxey/Motts Creek

Concurrence with Consistency Certification

Dear Damon Oscarson:

The Department of State has completed its review of your consistency certification regarding the consistency of the above-referenced activity with the New York Coastal Management Program.

Pursuant to 15 CFR Part 930.62, and based upon the project information submitted, the Department of State concurs with your consistency certification for this activity. This concurrence is without prejudice to and does not obviate the need to obtain all other applicable licenses, permits, or other forms of authorization or approval that may be required pursuant to existing State statutes.

Sincerely,

Gregory L. Capobianco Office of Planning, Development and **Community Infrastructure**

GLC/tl

cc: COE/New York District - Ronald Pinzon NYSDEC/Region 1 - Thomas S Kohlmann (1-2820-00525/00004-06)



APPENDIX D, Correspondence 2 – NYS Department of Environmental Conservation Permit

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1 SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790 P: (631) 444-0365 F: (631)) 444-0360 www.dec.ny.gov

June 28, 2021

Lawrence Union Free School District 2 Reilly Rd Cedarhurst, NY 11516

Re: Permit No. 1-2820-00525/00004

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction.

Sincerely,

Nun Jehn

Thomas Kohlmann Environmental Analyst



PERMIT Under the Environmental Conservation Law ECL

Permittee and Facility Information

Permit Issued To: LAWRENCE UNION FREE SCHOOL DISTRICT 2 REILLY RD CEDARHURST, NY 11516 (516) 528-0198 **Facility:** LAWRENCE HIGH SCHOOL

2 REILLY RD CEDARHURST, NY 11516

Facility Application Contact: GEI CONSULTANTS INC 1000 New York Ave Ste B HUNTINGTON STATION, NY 11746 (631) 759-2979

Facility Location: in HEMPSTEAD in NASSAU COUNTY Village: Cedarhurst
Facility Principal Reference Point: NYTM-E: 607 NYTM-N: 4498.7 Latitude: 40°37'56.0" Longitude: 73°44'05.1"
Project Location: Lawrence HS, 2 Reilly Rd, Cedarhurst, NY Watercourse: Motts Creek
Authorized Activity: Construct perimeter seawall surrounding the grounds of Lawrence High School. Construct associated flood gates, pump stations, and flow dissipation aprons. Revegetate areas with native tidal wetlands vegetation. All authorized activities shall be done in swict conformance with the attached plans stamped "NYSDEC Approved" on 6/28/2021. (TSK)

Permit Authorizations

Tidal Wetlands - Under Article 25Permit ID 1-2820-00525/0004Expiration Date: 6/27/2026New PermitEffective Date: 6/28/2021Expiration Date: 6/27/2026Excavation & Fill in Navigable Waters - Under Article 15, Title 5Permit ID 1-2820-00525/00005New PermitEffective Date: 6/28/2021Expiration Date: 6/27/2026Water Quality Certification - Under Section 401 - Clean Water ActPermit ID 1-2820-00525/00006New PermitEffective Date: 6/28/2021Expiration Date: 6/27/2026New PermitEffective Date: 6/28/2021Expiration Date: 6/27/2026

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION Facility DEC ID 1-2820-00525

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: SHERRIAL AICHER, Deputy Permit Administrator Address: NYSDEC Region 1 Headquarters SUNY @ Stony Brook|50 Circle Rd

Stony Brook, NY 11790 -3409

Authorized Signature:

Date 6 128 12021

Distribution List

GEI CONSULTANTS INC Bureau of Marine Habitat Protection Fisheries THOMAS S KOHLMANN

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; EXCAVATION & FILL IN NAVIGABLE WATERS; WATER OUALITY CERTIFICATION

1. Conformance With Plans All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Mark Design Studios Architecture P.C., last revised 4/9/2021.

2. Notice of Commencement At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work. **3. Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

4. Creek Disturbance Prohibition Period for Alewife & American Eel To protect the spawning run of alewife and the inland migration of American eel, all activities involving the disturbance of the bed or banks of Motts Creek, the placement of fill in the creek, or any other activity which will increase the turbidity in the waterway are prohibited between the dates of March 1 and May 31, inclusive, of any calendar year.

5. Authorized Rock Revetment The authorized rock revetment shall consist of natural capstone and shall be underlain with filter cloth and installed in the approved area as per the NYSDEC stamped approved plan.

6. Concrete Leachate During construction, no wet or fresh concrete or leachate shall be allowed to escape into any wetlands or waters of New York State, nor shall washings from ready-mixed concrete trucks, mixers, or other devices be allowed to enter any wetland or waters. Only watertight or waterproof forms shall be used. Wet concrete shall not be poured to displace water within the forms.

7. No Construction Debris in Wetland or Adjacent Area Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

8. Materials Disposed at Upland Site Any demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of in an authorized solid waste management facility. These materials shall be suitably stabilized as not to re-enter any water body, wetland or wetland adjacent area.

9. No Disturbance to Vegetated Tidal Wetlands There shall be no disturbance to vegetated tidal wetlands or protected buffer areas as a result of the permitted activities.

10. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined within the project work area and/or upland areas greater than 75 linear feet from the tidal wetland boundary.

11. Clean Fill Only All fill shall consist of clean sand, gravel, or soil (not asphalt, slag, flyash, broken concrete or demolition debris).

12. **Backfilling** All peripheral berms, cofferdams, rock revetments, seawalls, gabions, bulkheads or other approved shoreline stabilization structures shall be completed prior to placement of any fill material behind such structures.

13. Seawall Construction as per Approved Plan The seawall shall be constructed as per the NYSDEC stamped approved plans with no seaward expansion.

14. Grade and Stabilize Slope of Tidal Wetland The existing bank shall be graded and shaped to receive the revetment or other shoreline stabilization structure so that the final toe of slope extends no further seaward or closer to the tidal wetlands than the existing toe of slope.

15. Excavation for Bulkhead/Structure Prior to any construction or removal of bulkheads and other shoreline stabilization structures all backfill shall be excavated landward of the structure and retained so as not to enter the waterway, tidal wetland or protected buffer area.

16. No Runoff Over or Through Bulkhead or into Wetland There shall be no discharge of runoff or other effluent over or through any bulkhead or shoreline stabilization structure or into any tidal wetland or protected buffer area.

17. Use of Treated Wood The use of wood treated with Pentachlorophenol or other wood treatment not specifically approved by the Department for use in wetlands and/or marine waters, is strictly prohibited in the construction of structures that will be in contact with tidal waters.

18. No Floats This permit does not authorize the installation of floats.

19. No Dredging or Excavation No dredging, excavating or other alteration of shoreline or underwater areas is authorized by this permit, nor shall issuance of this permit be construed to suggest that the Department will issue a permit for such activities in the future.

20. Vegetate All Disturbed Areas The permittee shall revegetate all exposed faces and disturbed areas to prevent soil erosion prior to the project completion or expiration date of this permit, whichever comes first.

21. No Runoff down Bluff or onto Beach There shall be no discharge of runoff or other effluent on, in or down the bluff face or onto the beach.

22. Area of Disturbance for Structures Disturbance to the natural vegetation or topography greater than 25 feet seaward of the approved structure is prohibited.

23. Install, Maintain Erosion Controls Necessary erosion control measures, i.e., straw bales, silt fencing, etc., are to be placed on the downslope edge of any disturbed area. This sediment barrier is to be put in place before any disturbance of the ground occurs and is to be maintained in good and functional condition until thick vegetative cover is established.

24. Stormwater Treatment System The stormwater treatment system must be inspected twice yearly at 6 month intervals and cleaned at least once per year before June 1st, or as per manufacturers specifications. The permittee shall keep a written maintenance log of all inspections and service and shall submit a copy of each annual log by December 31 of each calendar year to

Marine Habitat Protection NYSDEC Region 1 Headquarters SUNY @ Stony Brook|50 Circle Rd Stony Brook, NY11790 -3409 Attn: Compliance

25. No Changes to Septic System This permit does not authorize any alteration, expansion or replacement of existing septic systems.

26. Storm Drain Sediment Filter A sediment removal filter system (Wetlands Filter Bag) shall be installed immediately adjacent to storm drain to prevent sediments from entering waterbody.

27. Monitor Dewatering Discharge for Plume The discharge outfall in the waterbody shall be monitored by the permittee or his agent. If a plume is visible, dewatering shall cease and the problem shall be corrected.

28. Dewatering Discharge The discharge must be directed away from the shoreline, tidal wetland vegetation or any area where erosion may occur. If the depth of the receiving water is less than 5 feet at mean low water, a diffuser must be properly installed on the pipe outlet to prevent scour of bottom sediments.

29. Dewatering Discharge Limited to Groundwater The authorized discharge is limited to dewatering of uncontaminated ground water.

30. Disposal Locations All excavated material shall be appropriately disposed of as per the project plan with minimal disturbance and/or impact to vegetated marsh areas. Disposal of excess material beyond the approved project site will require further written approval from the Department (permit, modification, amendment).

31. Fueling Areas Fueling of equipment is strictly prohibited within tidal wetlands and within 100 feet of the tidal wetland boundary. Fueling areas must be approved by the department and contained by haybales or other approved containment devices. Spills must be prevented from entering tidal wetlands and/or waterways. Should a spill occur, the permittee shall notify the office of Regional Habitat - TW immediately and shall provide a plan for containment, clean-up and restoration of the impacted area for the approval of the department.

32. Activities Consistent with Approved Plans All activities and marsh alterations must be consistent with the approved plan. Activities or alterations beyond the scope of the approved project and/or not explicitly authorized by the permit will require further written approval of the Regional Habitat - TW office prior to commencement.

33. Seeding Disturbed Areas All areas of soil disturbance resulting from the approved project shall be stabilized as per the specifications of the approved plans immediately following project completion or prior to permit expiration, whichever comes first. If the project site remains inactive for more than 48 hours or planting is impractical due to the season, then the area shall be stabilized with straw or hay mulch or jute matting until weather conditions favor germination.

34. Long Term Plant Survival The permittee shall ensure a minimum of 85% survival of plantings by the end of 5 growing seasons. If this goal is not met, the permit holder shall re-evaluate the restoration project to determine how to meet the mitigation goal. The permittee must submit these re-evaluation plans to the department for review along with the annual report for that respective calendar year. The report must be submitted by January 15th of each calendar year and sent to: NYS DEC - Region 1 Bureau of Marine Habitat Protection, Attention Compliance 50 Circle Road Stony Brook, NY 11790

35. Incidental Disturbance to Vegetation It is the responsibility of the applicant to remedy any incidental disturbances resulting in damage or removal of wetland vegetation. Upon completion of construction activities, any disturbed areas shall be planted with the appropriate marsh vegetation. Please contact the Bureau of Marine Habitat at (631)444-0295 for more information.

36. Contain Exposed, Stockpiled Soils All disturbed areas where soil will be temporarily exposed or stockpiled for longer than 48 hours shall be contained by a continuous line of staked haybales / silt curtains (or other NYSDEC approved devices) placed on the seaward side between the fill and the wetland or protected buffer area. Tarps are authorized to supplement these approved methods.

37. Temporary Mulch, Final Seeding If seeding is impracticable due to the time of year, a temporary mulch shall be applied and final seeding shall be performed at the earliest opportunity when weather conditions favor germination and growth but not more than six months after project completion.

38. Maintain Erosion Controls All erosion control devices shall be maintained in good and functional condition until the project has been completed and the area has been stabilized.

39. No Interference With Navigation There shall be no unreasonable interference with navigation by the work herein authorized.

40. State May Order Removal or Alteration of Work If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

41. State May Require Site Restoration If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

42. Precautions Against Contamination of Waters All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

43. State Not Liable for Damage The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. Water Quality Certification The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. Facility Inspection by The Department The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator NYSDEC Region 1 Headquarters SUNY @ Stony Brook|50 Circle Rd Stony Brook, NY11790 -3409

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Tidal Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee, excepting state or federal agencies, expressly agrees to indenmify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indenmification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-ofway that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.


















APPENDIX D, Correspondence 3 – USACE (Dept. of the Army) Permit Application



REGULATORY BRANCH

April 20, 2022

SUBJECT: Department of the Army Permit Application File Number NAN-2020-01313-EBR By Lawrence Union Free School District

Lawrence Union Free School District Attn: Dr. Anne Pedersen 2 Reilly Road Cedarhurst, NY 11516

Dear Dr. Pederson:

On December 27, 2020, the New York District of the U.S. Army Corps of Engineers received your request for Department of the Army authorization for the installation of three (3) vegetated rip-rap flow dissipation aprons, resulting in the discharge of a total of approximately 215 cubic yards (CY) of fill in a total area of approximately 1,700 square feet below the plane of Mean Higher High Water (MHHW). Each vegetated rip-rap flow dissipation apron will be vegetated with native salt marsh vegetation, including but not limited to saltmarsh cordgrass (*Spartina alterniflora*) below Mean High Water (MHW) and marsh elder (*Iva frutescens*) at elevations higher than MHW.

The work includes aquatic habitat restoration, enhancement, and establishment activities over a total of approximately 5,166 square feet of existing tidal wetlands in two separate areas along Motts Creek.

The aquatic habitat restoration, enhancement, and establishment activities proposed in Wetland Mitigation Area A comprise of planting a total of 3,735 SF of native wetland vegetation, such as but not limited to approximately 3,100 SF of saltmarsh cordgrass (*Spartina alterniflora*), approximately 470 SF of saltmeadow cordgrass (*Spartina patens*) and approximately 165 SF of groundseltree (*Baccharis halmifolia*) and utilize a total of approximately 150 linear-feet (LF) of 20-inch-diameter coir logs for stabilization purposes.

The aquatic habitat restoration, enhancement, and establishment activities proposed in Wetland Mitigation Area B comprising of the removal invasive *Phragmites australis* and approximately 53 CY of its rhizomes and sediments from an approximately 1,431 SF area landward of the existing wetland boundary. After the removal of the invasive vegetation and sediments is completed a total of approximately 53 CY of clean substrate will be placed and graded to existing grade as a planting medium. The work also includes planting a total of approximately 1,431 SF of native wetland vegetation, such as but not limited to approximately 1,151 SF of a saltmeadow cordgrass (*Spartina patens*) and saltgrass (*Disticlis spicata*) mixture and 165 SF of groundseltree (*Baccharis halmifolia*) and utilize a total of approximately 190 linear-feet (LF) of 20-inch-diameter coir logs for stabilization purposes.

SUBJECT: Department of the Army Permit Application File Number NAN-2020-01313-EBR By Lawrence Union Free School District

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Located landward and upland of Corps jurisdiction the work includes the installation of an upland seawall, pump stations and outfall structures.

The project is located in Motts Creek, a tributary of Head of Bay at 2 Reilly Road in the Village of Cedarhurst, Town of Hempstead, Nassau County, New York.

The specific applicant-provided details are as shown on the attached permit drawings, titled "Seawall Installation Project Lawrence High School" prepared by GEI Consultants.

The information provided constitutes a complete pre-construction notification for Nationwide Permit Numbers 13 and 27 as prescribed as a Reissuance of Nationwide Permits in the Federal Register dated December 27, 2021 (86 FR 73522). It appears that the activities within the jurisdiction of this office could be accomplished under Department of the Army Nationwide General Permit Numbers 13 and 27 in accordance with Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S. C. 1344).

In accordance with General Condition Number 32(a)(2) of the Nationwide Permits, since more than 45 days have passed since our receipt of the complete Nationwide Permit verification request without a response from this office, you may proceed with the proposed activities within in Waters of the United States as described in the above referenced submittals without further authorization from this office. Please be advised that you are responsible for constructing the project as proposed and complying with all the terms and conditions of the Nationwide Permit Program, as well as any applicable New York District regional conditions, and any applicable water quality certifications, and coastal zone concurrence statements that are available at:

http://www.nan.usace.army.mil/Missions/Regulatory/Nationwide-Permits/

You are also reminded that a Department of the Army permit may be required for any additional work on this site. If you decide to implement any other projects on this site in the future, please submit a timely and completed application for our review. Impacts to Waters of the United States for this project may be reviewed cumulatively with any future requests or any other applications you may submit for work in Waters of the United States on this site.

Please note that this determination does not eliminate the need to obtain any other Federal, State or local authorization required by law for the proposed work, including any required permit, Coastal Consistency from the Department of State, and/or Water Quality Certification from the New York State Department of Environmental Conservation.

In order for us to better serve you, please complete our Customer Service Survey located at: <u>http://www.nan.usace.army.mil/Missions/Regulatory/CustomerSurvey.aspx.</u>

SUBJECT: Department of the Army Permit Application File Number NAN-2020-01313-EBR By Lawrence Union Free School District

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If any questions should arise concerning this matter, please contact William T. Bruno at <u>William.Bruno@usace.army.mil</u>.

Sincerely,

FOR AND IN BEHALF OF Ronald R. Pinzon Chief, Eastern Section

NATIONWIDE GENERAL PERMIT COMPLIANCE CERTIFICATION AND REPORT FORM

Permit File Number: <u>NAN-2020-01313-EBR</u> Permittee: <u>Lawrence Union Free School District</u> Location: <u>2 Reilly Road in the Village of Cedarhurst, Town of Hempstead, Nassau</u> County, New York

Date Permit Letter Issued: April 20, 2022

Within 30 days of the completion of the activity authorized by this nationwide general permit and any mitigation required in the verification letter, please sign this certification and return it to the address at the bottom of this form.

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the permit's terms and conditions you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced nationwide general permit has been completed in accordance with the terms and conditions of said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

FOLD THIS FORM INTO THIRDS, WITH THE BOTTOM THIRD FACING OUTWARD. TAPE IT TOGETHER AND MAIL TO THE ADDRESS BELOW OR FAX (212) 264-4260.

> PLACE STAMP HERE

DEPARTMENT OF THE ARMY NEW YORK DISTRICT CORPS OF ENGINEERS USACE OPERATIONS/REGULATORY 16-406 C/O PSC MAIL CENTER 26 FEDERAL PLAZA NEW YORK, NEW YORK 10278





April 20, 2022

















APPENDIX D, Correspondence 4 – FEMA NYSHPO Consultation

U.S. Department of Homeland Security Federal Emergency Management Agency FEMA Region 2 One World Trade Center 285 Fulton Street New York, New York 10007



August 25, 2021

R. Daniel MackayDeputy State Historic Preservation OfficerDivision for Historic PreservationPeebles Island State ParkP. O. Box 189Waterford, NY 12188-0189

Project Number: PA-02-NY-4085-PW-04004
Recipient/Subrecipient: DHSES/Lawrence Union Free School District
Address: Lawrence High School 2 Reilly Road, Cedarhurst, NY 11516 (40.63051, -73.73433)
Undertaking: In-kind school repairs and hazard mitigation to construct a flood wall surrounding the school grounds

Dear Mr. Mackay:

This letter serves as consultation pursuant to Section 106 of the National Historic Preservation Act for the Undertaking identified above. The Federal Emergency Management Agency (FEMA) will be providing Public Assistance funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for FEMA-4085-DR-NY, dated October 28, 2012, as amended.

Project Information

Lawrence High School is a two-story, mid-century building built on infill land that includes adjacent asphalt parking areas, athletic fields, and appurtenances. Due to its location with water inlets on three sides, storm surge from nearby Goose Bay during Hurricane Sandy inundated the site with approximately four feet of contaminated saltwater. The rapid flood water movement within the crawlspace and basement created scour, causing the soil beneath the foundation to wash away, resulting in two separate pothole areas at the north-eastern and south-eastern most corners of the school building. The basement, which is approximately 64,068 square feet (281' x 228'), sustained damage to boilers, switchgear, electrical wiring, sump pumps, compressors, plumbing, and generators. Additional damages were incurred throughout the facility to steam piping, circuit breakers and electrical system gear, ductwork, insulation, tiling, auditorium seating, and sound systems.

In-kind repairs were completed; however, additional damages were discovered during construction. These damages included areas of subsidence in the parking lot in and around areas known to contain underground utilities such as water, sewer, and storm drain lines. This subsidence, combined with school bus and other vehicular traffic, caused multiple failures in the main water line between the tap at Oxford Place to the school's main valve. The cause of this subsidence was attributed to factors associated with Hurricane Sandy including:

- Hydrostatic pressure of the storm surge waters standing on the site
- Saturation of the substrate materials under the paving and the utility lines
- Bus and other vehicular traffic traveling over the saturated substrate
- Increase in the height of the water table

Description of Undertaking

To mitigate future damages, Lawrence UFSD proposes to construct a flood wall around the entire facility including the school building, parking areas and driveways, and sports facilities. The layout of the flood wall will require the site appurtenances to be re-configured along with the code-required storm water control systems. Entrances into the school grounds will be fitted with passive flood gates that will rise as the flood waters increase in depth. All rainwater that falls within the flood wall system will drain to specific areas and be pumped outside the perimeter wall. Generators will be installed to ensure the pumping systems continue to function if power is disrupted.

The scope of work for the repair and replacement project met the Tier I Allowance: I.A.1. and Tier II Allowances: I.A.1. and IV.D.1 executed from the 2019 New York State Programmatic Agreement.

Area of Potential Effects (APE)

Pursuant to 36 CFR 800.4(a)(1), the area of potential effects (APE) is defined as the geographic area(s) within which the Undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this Undertaking will be limited to the approximate boundaries as defined by the Nassau County tax map for the subject property (Section 39, Block A, Lot 529) totaling approximately 25 acres.

Evaluation of Architectural Significance

Research conducted using the NYSHPO Cultural Resources Information System (CRIS) shows that Lawrence High School was evaluated by SHPO in 2020 and determined **Not Eligible** for listing on the National Register of Historic Places (NRHP) (USN 05901.000384). The two-story masonry, concrete, and steel building with a sub-basement and crawlspace was constructed in 1958, but appears to lack integrity as apparent fenestration changes, updates and remodeling have removed character defining features that are associated with schools of this style (e.g. glazed architectural tiling). As Lawrence High School does not possess a high level of integrity or sufficient character defining features associated with the Mid-Century Modern style to reflect qualities that would make it eligible for NRHP listing, FEMA concurs with the previous determination that the building is **Not Eligible** for listing on the NRHP.

Evaluation of Archaeological Impact

Research conducted using CRIS shows that the Lawrence High School site is located in an archaeologically sensitive area. However, there are no State or National Register of Historic Places eligible or listed archaeological properties within or immediately adjacent to the project area. The closest recorded archeological site, the Abraham Hewlett historic site, is located one mile southeast of the APE along the Woodmere Country Club.

Based on historic USGS maps and local history research, the APE appears to be mostly man-made landfill atop wetlands constructed between 1937 and 1941, prior to the construction of the Cedarhurst Municipal Stadium, which was previously located on the site. Review of historic topographic maps from 1898 – 1938 reveal the APE was previously marsh area. The soil profiles in the area support the urban fill environment. Soils in the APE are classified as approximately 43% Ug (Urban land) and approximately 57% Ue (Udipsamments, wet substratum). Per the 2009 NYS DOT/NYS Museum Cultural Resources Survey Report for the neighboring NYS Route 878, Udipsamments, wet substratum are low level areas that have been filled with sandy material dredged primarily from adjacent waterways. The APE is comprised of

Urban land and dredged soils. Therefore, any proposed work within the APE will occur in previously disturbed/fill soils that are not likely to possess intact and distinct soil horizons and are unlikely to yield archaeological artifacts or features within their original depositional contexts (Survey 07PR02308 PIN 0072.14.101, NY 878 Inwood). Due to the recent history and geological contexts, the potential to encounter intact archaeological sites within the APE is assessed as low.

Determination of Effect

Based on the information above, FEMA concurs with the 2020 determination that Lawrence High School is **Not Eligible** for listing on the National Register of Historic Places. Additionally, the potential to encounter *in situ* precontact and/or historic archaeological sites is low. Therefore, FEMA has determined that the Undertaking's effect on the proposed site is **No Historic Properties Affected** for properties that are either on, or eligible for inclusion on, the State or National Register of Historic Places.

We request concurrence with this determination of effect within fifteen (15) calendar days. For additional information please contact archaeology reviewer, Brock Giordano (brock.giordano@fema.dhs.gov).

Sincerely,

JAMES M Digitally signed by JAMES M ZWOLAK ZWOLAK Date: 2021.08.25 13:07:20 -04'00'

For,

Brock Giordano FEMA EHP Sandy (4085) Supervisor 4085-DR-NY

BG/ag

- cc: Stephanie Couture, NYS Division of Homeland Security & Emergency Services
- enc: 20210825_Map Index_Lawrence 20210825_Photo Index_Lawrence DEC PLANS Lawrence HS 20210628

Map Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516



Fig. 2. Image of site via CRIS. APE outlined in red.



Map Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516





Map Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516



Photo Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516

Fig. 1. Image of building front elevation from Reilly Rd. via Google Street View.



Fig. 2. Image of building front elevation from Reilly Rd. via Google Street View.



Photo Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516

Fig. 3 Image of portion of front elevation and side elevation from intersection of Reilly Rd. and Oxford Rd. via Google Street View.



Fig. 4. Image of part of front elevation and side elevation from intersection of Arlington Pl. and Reilly Rd. via Google Street View.



Photo Index FEMA-NY-4085-PW-4004 Lawrence Union Free School District 2 Reilly Road, Cedarhurst, NY 11516

Fig. 5. Image looking NNE from Peninsula Blvd. showing western parcel boundary via Google Street View.























Parks, Recreation, and Historic Preservation

KATHY HOCHUL Governor ERIK KULLESEID Commissioner

August 26, 2021

James Zwolak FEMA 285 Fulton Street New York, NY 10007

Re: FEMA/PA Lawrence UFSD - Lawrence High School Flood Wall 2 Reilly Rd, Cedarhurst, NY 11516 21PR05716 PA-02-NY-4085-PW-04004

Dear James Zwolak:

Thank you for requesting the comments of the New York State Historic Preservation Office (SHPO). We have reviewed the submitted materials in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include other environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York State Environmental Conservation Law Article 8).

Based on this review, the SHPO concurs with your agency's determination that there will be No Historic Properties Affected by the proposed undertaking.

If further correspondence is required regarding this project, please refer to the SHPO Project Review (PR) number noted above. If you have any questions, please contact me via email.

Sincerely,

Tim Lloyd, Ph.D. Scientist - Archaeology timothy.lloyd@parks.ny.gov

via e-mail only