

**CORNELL COOPERATIVE EXTENSION OF ULSTR COUNTY,  
IN SUPPORT OF THE TOWN OF OLIVE, NY  
REQUEST FOR PROPOSALS TO COMPLETE  
LOCAL FLOOD HAZARD MITIGATION ANALYSIS AND PLANNING**

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**AUTHORIZED AGENCY CONTACT:**

Proposers are advised that the agency's authorized contact person for ALL matters concerning this RFP is:

NAME: Leslie Zucker  
TITLE: Program Coordinator  
Cornell Cooperative Extension of Ulster County  
PHYSICAL SHIPPING ADDRESS: 6375 Route 28  
Phoenicia, NY 12464  
PHONE: 845-688-3047  
E-MAIL ADDRESS: laz5@cornell.edu

**SECTION I: TIMETABLE**

**Release Date of this Request for Proposals:** September 17, 2014

*Please register your intent to respond to this Request for Proposals by 4:30 p.m. September 24, 2014:*

Leslie Zucker, the Authorized Agency Contact Person  
E-Mail Address: laz5@cornell.edu

**A. Questions:**

*Questions must be made in writing via email to laz5@cornell.edu by 4:30 p.m. September 29, 2014.*

Questions will not be answered by telephone. Answers will be distributed to all registered responders by October 1.

**B. Site Visit:**

There is no site visit scheduled for this RFP.

**D. Proposal Due Date and Time and Location:**

Date: October 8, 2014  
Time: 12:00 PM  
Location: Technical & Cost Proposals shall be submitted to:

**Leslie Zucker, Program Coordinator  
Cornell Cooperative Extension of Ulster County  
6375 Route 28  
Phoenicia, NY 12464**

E-mailed or faxed proposals will not be accepted.

Proposals received at this Location after the Proposal Due Date and Time are late and shall not be accepted. CCEUC will consider requests made to the Authorized Agency Contact Person to extend the Proposal Due Date and Time prescribed above. However, unless CCEUC issues a written addendum to the RFP that extends the Proposal Due Date and Time for all proposers, the Proposal Due Date and Time prescribed above shall remain in effect.

**E. Anticipated Contract Start Date:**

February 1, 2015

## **SECTION II: SUMMARY OF THE REQUEST FOR PROPOSALS**

### **A. Purpose of RFP**

Flooding produces a variety of hazards and impacts to public safety, homes and businesses, infrastructure (roads, utilities, etc.) and the natural environment. There are various types of hazards caused by flooding, for example, inundation, erosion and debris are three that are common in this region. CCEUC is seeking a qualified vendor to develop a Flood Mitigation Plan for the Town of Olive and complete Local Flood Analysis (LFA) for certain portions of the Town of Olive (Appendix B).

Flood Mitigation Planning is needed to assist the Town in identifying and implementing actions to reduce the risk of floods to residents and businesses. The consultant will also help the Town apply for the National Flood Insurance Community Rating System (CRS) as a way to help strengthen floodplain management in the Town and to reduce flood insurance premiums for residents. A Town Flood Mitigation Plan should be compliant with CRS planning standards, and include a special emphasis on Boiceville and West Shokan through completion of Local Flood Analysis for these population centers.

Local Flood Analysis is undertaken to determine the conditions contributing to inundation of public and private infrastructure associated with high flows, develop and analyze the potential of specific projects, and projects in combination, to mitigate these flood damages and hazards, and to provide planning assistance to characterize the relative costs and benefits of technically effective projects, and help assist the communities in determining the social feasibility of projects that are shown to be both technically and cost-effective. This analysis and planning effort will complement past planning, such as the NY Rising Community Reconstruction Plan and County All Hazards Mitigation Plans, by further defining future projects and prioritize between projects. Upon completion of the engineering analysis and feasibility plan, the Town may seek funding for design of priority projects and their implementation.

The scope of services within this RFP has been developed to provide the framework for Local Flood Analysis and mitigation planning related to inundation hazards. It defines the activities and deliverables expected of the consultant who will advise Olive under contract. The scope of services is phased to limit any unnecessary analysis. Some options for mitigating hazards may only require completion of some of these subtasks.

The Ashokan Watershed Stream Management Program (AWSMP) will also provide technical, administrative, coordination and outreach support and guidance to this effort, and will provide resources necessary to complete the analysis.

**B. Anticipated Contract Term**

It is anticipated that the term of the contract awarded from this RFP will be eighteen (18) months. CCEUC reserves the right, prior to contract award, to determine the length of the initial contract term and each option to renew, if any.

**C. Anticipated Payment Structure**

It is anticipated that the contract(s) awarded from this RFP will be not-to-exceed unit price requirements-type contract(s), with services based upon the contract Task items, with payment made only for work satisfactorily completed, and only for hours of work actually performed as documented by timesheets. CCEUC does not guarantee that the Vendor will be contracted to perform a minimum or maximum number of Tasks (Task 1 through Task 8 below) and may make multiple awards to secure acceptable terms on each Task.

**D. Minimum Qualification Requirements**

The following are the Minimum Qualification Requirements of this RFP. Proposals that fail to meet these requirements shall be rejected.

1. Vendor shall employ a hydraulics engineer licensed in the State of New York, with demonstrated experience in open channel hydraulics analysis, including experience with the HEC-RAS water surface profile model, including its state-of-the-science modules for analysis of sediment transport and split channels, incorporating non-uniform flow and deformable boundaries.
2. Vendor shall have demonstrated experience with flood modeling and best management practices to reduce flood inundation.
3. Vendor shall have demonstrated experience leading flood hazard mitigation efforts and translating complex hydraulic models to a non-technical audience.
4. Vendor shall have demonstrated experience performing Benefit/Cost Analysis on flood hazard mitigation projects.

**SECTION III: SCOPE OF WORK/SPECIFICATIONS****A. AGENCY GOALS AND OBJECTIVES FOR THIS RFP**

Ashokan Watershed Stream Management Program (AWSMP), a program of Cornell Cooperative Extension of Ulster County, Ulster County Soil & Water Conservation District, and New York City DEP Stream Management Program partners with agencies and communities in the NYC

water supply reservoir watersheds to provide for long-term stewardship of stream system stability and ecological integrity. Program efforts aimed at Flood Hazard Mitigation are an integral part of this stewardship effort.

The objectives of the work outlined in this RFP are to support several identified communities in their efforts to generate, evaluate and prioritize actions that could mitigate future flood-related damages to public and private infrastructure, and to lay the groundwork, with conceptual designs, for grant applications to execute high priority projects.

**The work performed under Tasks 1-6 of this contract will be limited to two population centers: Boiceville (Site #1) and West Shokan (Site #3) in the Town of Olive, New York.** Task 7 pertains to Site #3. This RFP will request detailed technical and cost proposals for completion of the Boiceville, West Shokan, and Town of Olive study areas.

Study Site #1: Boiceville, NY. The study area within Boiceville extends from the Town Boundary to approximately 2.3 river miles downstream on Esopus Creek, which is approximately 1.2 miles downstream of the Rt. 28A bridge. The modeled area includes the corridor along the Esopus Creek within these extents, including the width of the 500-year (0.2% annual exceedance probability) flood and of surveyed cross-sections.

Study Site #2: West Shokan, NY. The study area within West Shokan extends approximately 1.2 miles upstream of the Bushkill-Ashokan Reservoir confluence to the confluence with Maltby Hollow Brook on the Bushkill, and on Dry Brook, from the confluence with the Bushkill to approximately 0.7 miles upstream of the confluence. The modeled area includes the corridor along Esopus Creek and Beaver Kill within these extents, including the width of the 500-year (0.2% annual exceedance probability) flood and of surveyed cross-sections.

Study Site #3: Town of Olive, NY outside Study Site #1 and #2 and within the NYC Watershed. No extent of Study Site #3 will be hydraulically modeled.

**B: TYPICAL TASKS MAY BE AS FOLLOWS:**

**PHASE I – FLOOD ENGINEERING ANALYSIS**

**Task 1 – Project Management, Coordination, and Meetings**

In this Phase, the Town will better understand the nature of flooding, what significant factors exacerbate flooding, consider options for reducing losses, model potential projects to mitigate flooding, document community opinions about these options, and decide whether to proceed to Phase 2 for a subset of projects that stand out as potentially effective and feasible based on Phase 1.

- 1.1 Project Management - Throughout the course of the project, the consultant will coordinate tasks; perform project-related managerial tasks; maintain project records, technical data,

drawings, and reports; maintain financial records; and coordinate with the Town Board and/or their appointed designees.

- 1.2 Project Initiation – The Town of Olive has established a Flood Advisory Committee to assist in the LFA process. The Flood Advisory Committee includes Town officials and residents, and invited agency representatives from Ulster County Dept. of Environment, County Soil and Water Conservation District, County Emergency Services, Cornell Cooperative Extension, NYCDEP, Catskill Watershed Corporation, and other agencies with interests in flood-prone areas. The consultant will meet and collaborate with the Town Board and the appointed Flood Advisory Committee. The consultant will engage and communicate with these project stakeholders in support of the overall process, which will include explaining the engineering analysis to be undertaken and its results. The consultant will solicit input from project stakeholders relative to the identification of flooding threats and potential mitigation strategies to be included as part of the analysis, as well as prioritizing recommendations based upon the results of the analysis. Where possible the process should be integrated with similar or on-going efforts, such as the Ulster County All Hazard Mitigation Plan.
- 1.3 Educational Materials - As requested by the Town Board, and/or their designees, the consultant will prepare general and technical educational materials, as well as participate and contribute to ongoing education and outreach efforts regarding LFA.
- 1.4 Public Meetings - Prepare for and attend a minimum of **four** public information meetings. The first meeting will provide an introduction and general overview of the scope of the Local Flood Analysis to the public and Town Board. Meeting two will be to gather information from property owners about historic flooding and property damage in the hamlets of Boiceville and West Shokan. Meeting three will be a follow-up to present preliminary results and invite participants to weigh in on the mitigation alternatives in the hamlets. Meeting four will present the final project analysis and results to the public and Town Board.
- 1.5 Planning Meetings - Prepare for and attend (at the option of the Town Board) a minimum of **three** Flood Advisory Committee meetings.
  - 1.5.1 Project Reports - Throughout the project duration, coordinate with Town Board, and/or their designees, to provide written and verbal project updates and technical information.
  - 1.5.2 Educational Support - Provide additional educational support activities and materials as determined by the Town Board, and/or their designees,

#### Task 1 Deliverables

- Preparation for and attendance at 4 public meetings
- Preparation for and attendance at 3 Flood Advisory Committee meetings
- Meeting minutes
- Periodic project updates to the client
- Educational support materials
- Complete set of all records including any digital copies of any model files, maps, datasets, GIS map layouts, survey records, Autocad files produced for this project.

- Prepare a record of time spent on each task in an invoicing format consistent with the LFA grant funding agreement.

### **Task 2 –Data Collection and Field Verification**

- 2.1 **Data Gathering** - Gather, compile, and review existing available mapping and aerial photography of the river channel and floodplain as well as information regarding potentially flood-prone structures, infrastructure, and water quality threats located along the river corridor and within the floodplain. The following information will be provided by the Ulster County Soil & Water Conservation District for use in the analysis:
- Available construction drawings of bridge crossings and structures; and associated hydraulics models for bridges, where available;
  - Available aerial photogrammetry (DOQQs), topographic mapping, LiDAR based DEMs (1m horizontal resolution);
  - 2013 Preliminary FEMA Flood Insurance Study for the Ashokan Watershed including both the Hydrology and Hydraulics study reports, Digital Flood Insurance Rate Maps (DFIRMs) and depth grids, and associated surveys and HEC-RAS models;
  - Reports of flooding that have been compiled and documented by the local Town, county or federal government (i.e., Damage Survey Reports);
  - Water quality reports that have been compiled and documented by the local community, the county, or NYCDEP;
  - Prior reports and analyses that may be available;
  - The community's flood mitigation plans (including the county-wide all-hazard mitigation plan, other multi-jurisdiction plans, a community annex, or a single-jurisdiction plan if applicable);
  - Esopus Creek Stream Management Plan and information from a 2012 stream assessment of the Bush Kill completed by UCSWCD; and
  - Stream Feature Inventory Geodatabase, in ESRI ArcGIS formats.
  - Data and reports developed for the NY Rising Community Reconstruction plan for Olive from NY Rising consultant.

The following data, mapping, reports, and information will be sought by the consultant:

- Request from NYCDEP a revised 2009 land use/land cover layer developed from aerial imagery.
- 2.2 **List of Resource Material** - Compile a list of resource material from Task 2.1 and submit an electronic copy of same. Periodically update the list as it is expanded.

- 2.3 Field Assessment - Conduct a visual assessment of the river channel and floodplain in the project area. The assessment will include identification of low lying structures, bank and channel conditions, and vegetation along the stream corridor. Photo-document channel reaches. Identify significant storm drainage discharge points into the stream and locations of known or suspected inadequate road drainage conveyance.
- 2.4 Watershed Survey - Perform a “windshield survey” to observe the watershed and site conditions.
- 2.5 Identify Sources of Water Quality Impairment - Identify potential sources of water quality impairment within the study area that could result from flood discharges, such as household contaminants, roadway contaminants, streambank and bed erosion, fuel tanks, and other sources as appropriate to the project area. Document any known historic impacts to water quality that resulted from flooding.
- 2.6 Technical Memorandum - Prepare a technical memorandum summarizing data, mapping, and information obtained in Tasks 2.1 through 2.5. Identify any constraints and/or deficiencies in the existing database, including known changes in the system that have occurred following data collection. Evaluate the vulnerability of the system under study to potentially undergo rapid changes.

#### Task 2 Deliverables

- List of resource materials gathered
- Technical memorandum of existing conditions.

#### **Task 3 – Hydraulic Modeling Baseline**

- 3.1 FEMA Effective Model - Obtain the most recent FEMA modeling (Effective Model) in digital format for use in evaluating possible mitigation measures. The model must be obtained either directly from FEMA or as provided by FEMA to the state, county or local community.
- 3.2 FEMA Duplicate Model - Import the FEMA model into HEC-RAS software to develop a "FEMA Duplicate Effective Model" model<sup>1</sup>. This is necessary to demonstrate the reproducibility of the model results obtained by FEMA on the consultant's equipment/software. Compare output with published FEMA data and identify any discrepancies. This modeling effort will be conducted in accordance with FEMA requirements.
- 3.3 Corrected Effective Model - Review the FEMA model cross sections, Manning's 'n' coefficients, site conditions, and expansion/contraction coefficients to ensure that the information in the Effective FEMA model and the FEMA Duplicate Effective Model accurately reflect site conditions. If warranted, prepare a "Corrected Effective Model" to modify the Duplicate Effective Model. This modeling effort will be conducted in

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<sup>1</sup> If HEC RAS is not used, the consultant must use another FEMA approved modeling software and provide justification why HEC RAS is not appropriate for the analysis (attach list).

accordance with FEMA requirements. Acquisition of additional survey or topographic information is not permitted.

- 3.4 Additional Survey/Modeling Assessment - Determine the need to acquire additional survey and other field data to run HEC-RAS split channel (or 2-D) and sediment transport modules, as conditions dictate. If approved to advance and adequate funding is available, acquire needed additional data. Incorporate new survey data, as well as known forthcoming channel modifications, including scheduled bridge replacements, using existing design data.
- 3.5 Existing Conditions Model - Run the model for the 2-, 10-, 25-, 50-, 100-, and 500-year flow conditions utilizing FEMA published flows. For undefined flow conditions (i.e. 2-year flow) use USGS regression analysis and compare to statistical analysis of USGS stream gage data (if available) for the specific flow to adjust flow values if needed. Calibrate model using most recent flood events of August 28, 2011 and September 18, 2012.
- 3.6 Additional Survey/Modeling - Develop and run the HEC-RAS split channel and/or 2-D sediment transport module, as needed, on selected reaches.
- 3.7 Floodplain Mapping - Import floodplain shape files from available GIS and FEMA data and present the existing floodplains on available LiDAR based DEM or GIS mapping of the stream channel corridor on the most recent available aerial imagery.
- 3.8 Floodprone Property Mapping - Identify and map flood-prone properties and infrastructure (i.e. roads, bridges, utilities, etc.).
- 3.9 Technical Memorandum - Prepare a technical memorandum summarizing Tasks 3.1 through 3.7.

#### Task 3 Deliverables

- Electronic versions in HEC-RAS of all model input and output (presentation of analysis to be provided in Task 6)
- Revised digital planimetric inundation maps and depth grids depicting revised pre-project conditions
- Flood-prone property mapping
- Technical memorandum

#### Task 4 – Evaluate Mitigation Alternatives

- 4.1 Mitigation Alternatives - Working with the Town Board, and at their discretion the Flood Advisory Committee, identify flood mitigation goals and objectives, and develop potential actions for the following categories of flood hazard mitigation:
  - a. Property Protection - Actions that reduce potential damage to buildings, infrastructure and other kinds of physical property (including property acquisition/relocation,

- elevation or flood proofing of buildings);
- b. Flood Damage Prevention and Planning - Actions that lower flood elevations or prevent future losses (such as channel and floodplain modifications, floodplain reclamation, and adoption or amendment of land use regulations, building codes or flood damage prevention regulations);
  - c. Natural Resource Protection - Actions that minimize hazard loss of, or preserve/restore the function of natural systems and associated ecosystem services, including water supply (such as soil stabilization measures such as bank protection and stabilization or landslide stabilization, attenuation of peak flows through detention and enhanced storage, debris management);
  - d. Structural Projects - Actions that use or modify structures to mitigate a hazard (such as replacement or retrofit of bridges and culverts, protection of critical utilities and infrastructure);
  - e. Emergency Services - Actions that mitigate risks to the provision of emergency services that protect people and property during and immediately following a flood;
  - f. Community Pollution Prevention - Actions at the community scale that reduce pollution during a flood event (such as securing oil and propane tanks);
  - g. Public Education and Information - Education efforts centered on the benefits of general best management practices to code enforcement officers, realtors, contractors, municipal officials and property owners about how to protect themselves and the community from flood disasters and associated losses.

Consult with the local hazard mitigation plan as needed to ensure consistency with the goals and potential actions listed in that plan.

- 4.2 Modeling of Mitigation Measures - Using the modeling from Task 3, develop, analyze and evaluate potential structural flood mitigation in an attempt to decrease or alleviate flooding and flood related damage in populated areas using technically and economically justifiable alternatives. Such evaluation may include the following:

- Replacement or retrofits of bridges or culverts;
- Removal or relocation of structures, buildings, or channel encroachments;
- Stream channel and floodplain modifications.

Consultant should be prepared to coordinate with NYCDEP to incorporate into modeling the effects of plans to modify the Rt. 28A bridge over the Esopus Creek at Boiceville. Modeling will also be requested for floodplain modification at Boiceville upstream of the Ashokan Reservoir.

- 4.3 Evaluate Alternative Actions - Evaluate the potential of the alternative actions, alone and in combination, to mitigate flood hazard risks at each of the flows modeled. Evaluate and summarize model output relative to each potential mitigation alternative to include changes in water surface elevations, extent of inundation, depth of flooding, and flow conditions in the floodway. A comparison shall be made between existing and proposed conditions (i.e. with and without the proposed mitigation). Assess potential alternatives individually and in combination, to evaluate collective flood reduction potential. Plot

flood profiles and prepare inundation maps for individual measures as well as those that will be achieved with combined measures.

- 4.4 Impact Analysis - Identify potential impacts associated with structural mitigation alternatives, including the potential for downstream impacts caused by greater flood conveyance and the effect on sediment transport.
- 4.5 Cost Opinions - Develop preliminary cost opinions for mitigation alternatives.
- 4.6 Feasibility Analysis - Complete an initial feasibility analysis of structural mitigation measures identified in tasks 4.2 and 4.3, as a first-cut determination of which measures should be evaluated in greater detail, and which are so unlikely to provide acceptable benefit/cost ratios that they don't merit more detailed analysis. Alternatives shall be evaluated based on initial estimates of tangible benefits, project goals, impacts, regulatory requirements, and costs associated with design and construction.
- 4.7 Evaluate Non-Structural Alternatives - For areas where flood protection through structural modifications is determined to be not feasible, non-structural measures shall be evaluated. Non-structural alternatives do not try to limit flooding, but instead attempt to reduce flood damage by protecting structures in the flood prone areas. Evaluation and recommendations shall include flood proofing, relocation, and purchase of flood insurance, potentially with "increased cost of compliance" coverage.
- 4.8 Additional Data Needs - Identify the need for any future data collection, analysis, and design.

#### Task 4 Deliverables

- Electronic versions in HEC-RAS of all model input and output (presentation of analysis to be provided in Task 6)
- Technical memorandum describing analysis, including the results of any sediment transport analysis performed, mitigation alternatives, initial feasibility analysis and recommendations
- Inundation mapping

#### *Task 5 -Flood Engineering Analysis Report*

- 5.1 Draft Flood Engineering Analysis Report - Prepare a draft local flood mitigation plan that documents the results of Tasks 1 through 4. It is anticipated that the plan will include the information and analysis contained in the numerous technical memoranda developed in previous tasks. Specifically, the plan will include the following:
- Summary of public outreach process and results;
  - Narrative and mapping to present existing conditions, including results of field assessment;
  - Mapping of inundation areas and flood-prone;
  - Alternatives analysis, including feasibility;

- Narrative and mapping of hydraulic modeling, including a summary of model output relative to forecast reductions in flood inundation areas, depth of flooding, and water surface elevations;
  - Inundation mapping and flood profiles (for all relevant existing and proposed flood conditions including the 100-year event);
  - Recommended mitigation actions;
  - Preliminary benefit cost analysis;
  - Implementation plan and prioritization of mitigation actions;
  - Recommendations for future analysis; and
  - List of reference and resource materials.
- 5.2 Distribute Draft Report - Provide paper and electronic (pdf) copies of the draft plan for review by the Town Board, and/or their appointed designees and funding agencies.
- 5.2.1 Present Draft Report - Meet with the Town Board, and/or their designees, to present draft findings and implementation plan and recommendations to the Town Board for review, revision, and approval for certain projects to proceed to Phase 2.
- 5.3 Final Flood Engineering Analysis Report - Modify and revise the flood mitigation plan based on review comments and provide the final plan in paper and electronic (pdf) format.

#### Task 5 Deliverables

- Draft Flood Engineering Analysis Report
- Preparation and attendance at a Town Board meeting
- Final Flood Engineering Analysis Report

### **Phase 2–Feasibility Analysis**

In this Phase, the consultant will explore in detail the costs, benefits and feasibility of each option deemed in Phase 1 as having a flood inundation reduction or water quality benefit and as acceptable to the Town Board. Phase 2 will culminate with a plan for implementing the projects that are deemed viable.

#### **Task 6 - Local Flood Hazard Mitigation Feasibility Analysis and Plan**

- 6.1 Review Municipal Regulations - Working with Town Board and their designees review municipal regulations concerning zoning, subdivision of land, and flood damage prevention to verify compatibility with NFIP regulations and determine where modifications may be feasible.
- 6.2 Benefit Cost Ratio - Using the FEMA BCA toolkit, determine the benefit cost ratio (BCR). Where site-specific information is available (i.e. cost of response or repairs, such as damage to flooded structures and the contents of such structures; the lost functions of roads, utilities, and services; and the time and costs incurred to clean up from flooding

and repair facilities and infrastructure), the damage frequency assessment module will be used. Otherwise, the flood module will be used, with default values.

- 6.3 Potential Water Quality Benefits - Identify potential water quality benefits and give general enumeration of scale of benefits for each feasible option defined in Tasks option. The reservoir basin, its status with respect to various pollutants, and the specific pollutants mitigated will be taken into consideration. The following is an example of the enumeration:

- Number of residential structures mitigated
- Number of commercial structures mitigated
- Number of tons of sediment from erosion mitigated

- 6.4 Funding Sources - Identify likely funding sources for the feasible mitigation alternatives.

For recommendations with a potential benefit-cost ratio of greater than 1.0 using the FEMA BCA toolkit, identify funding sources for mitigation actions such as FEMA's Pre-Disaster Mitigation (PDM), Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), Severe Repetitive Loss (SRL), Stream Management Implementation Program, and CWC Flood Hazard Mitigation Implementation Program; and determine which programs are most appropriate based on the type of recommendation and the funding available from each program at the time of analysis.

For recommendations benefit-cost ratios less than 1.0, identify relevant funding sources including, for example the following programs administered by the U.S. Army Corps of Engineers: Small Flood Damage Reduction Projects (Section 205 of Flood Control Act), Emergency Streambank and Shoreline Protection (Section 14), and Clearing and Snagging Projects (Section 208), Stream Management Implementation Program, and CWC Flood Hazard Mitigation Implementation Program. Also identify recommendations that may fit the "5% Initiative Project" class under HMGP (projects that are difficult to conduct a benefit-cost analysis but meet the goals and objectives of local hazard mitigation plans).

- 6.5 Implementation and Prioritization - Update the implementation plan and prioritization of mitigation actions based on 6.1-6.4. Present update to the Town Board.

- 6.6 Local Flood Hazard Mitigation Plan - In close coordination with the Town Board, and their designees, prepare a Local Flood Hazard Mitigation Plan that includes and documents the results of Tasks 6.1 through 6.5. Specifically, the plan will include the following:

- Assessment of local regulations currently in force and their adequacy relative to flood prevention and protection;
- Discussion of known historic and potential sources of water quality impairment within the study area;

- Mapping of inundation areas and flood-prone and flood-damaged properties;
- Assessment of available funding;
- Implementation plan and prioritization of mitigation actions;
- Recommendations for future analysis, including hydrologic assessment and/or two-dimensional hydraulic modeling; and
- List of reference and resource materials.

#### Task 6 Deliverables

- Final Local Flood Hazard Mitigation Plan delivered to the Town Board, and/or their designees and funding agencies.

### **Phase 3 –Town Flood Hazard Mitigation Planning**

Phase III will run concurrently with Phase I and II. In this Phase, the consultant will lead the effort to prepare an expanded Flood Hazard Mitigation Plan for the Town of Olive to include Town area outside the hamlets of Boiceville and West Shokan, but within the NYC Watershed. The expanded plan should be compliant with CRS planning standards.

#### **Task 7 – Town Flood Hazard Mitigation Planning**

- 7.1 Planning Meetings - Attend at least one Town of Olive Flood Advisory Committee meeting at planning initiation to obtain input on flood issues and hazards within the expanded area.
- 7.2 Educational Materials - As requested by the Town Board, and/or their designees, the consultant will prepare general and technical educational materials, as well as participate and contribute to ongoing education and outreach efforts regarding Town Flood Hazard Mitigation Planning.
  - 7.2.1 Public Meetings - Prepare for and attend a minimum of **two** public information meetings targeted to reach all residents, particularly those outside of Boiceville and West Shokan. The purpose of the first meeting will be to provide an introduction and general overview of the scope of the Town Flood Hazard Mitigation Plan and to gather information from property owners about historic flooding and property damage in the expanded planning area. A final meeting will present the Town Flood Mitigation Plan and results to the public and Town Board.
- 7.3 Project Reports - Throughout the project duration, coordinate with Town Board, and/or their designees, to provide written and verbal project updates and technical information.
- 7.4 Data Gathering - For the expanded planning area: gather, compile, and review existing available mapping and aerial photography of the river channel and floodplain as well as information regarding potentially flood-prone structures, infrastructure, and water quality threats located along the river corridor and within the floodplain. Existing studies to review include (at a minimum):
  - Ulster County All Hazard Mitigation Plan

- USGS Flood Reports
- Flood Insurance Studies
- Olive Comprehensive Plan and other relevant Town and County Plans
- NY Rising Community Reconstruction Plan

7.5 Hazard and Risk Assessment - For the expanded planning area, perform a hazard and risk assessment that will include:

- Map and description of known flood hazard;
- Overall assessment of vulnerability from identified hazards;
- Review of properties that received flood insurance claims, properties without flood insurance that have documented flood damage, and properties in repetitive loss areas;
- Identify areas that provide natural and beneficial functions that should be protected (floodplains, wetlands, riparian buffers);
- Identify at-risk critical facilities and infrastructure; and
- Review development and population trends.

7.7 Flood Hazard Mitigation Plan - In close coordination with the Town Board, and their designees, prepare a Town Flood Hazard Mitigation Plan that combines the results of Tasks 6 and 7. Specifically, the Town Flood Mitigation Plan will include the following:

- Assessment of local regulations currently in force and their adequacy relative to flood prevention and protection;
- Discussion of known historic and potential sources of water quality impairment within the Town;
- Mapping of inundation areas and flood-prone and flood-damaged properties;
- Assessment of available funding;
- Implementation plan and prioritization of mitigation actions;
- Recommendations for future analysis, including hydrologic or geomorphic assessment; and
- List of reference and resource materials.

7.8 CRS Application Development - Assist the Town in preparing an application to FEMA for the Community Rating System program of the National Flood Insurance Program. Specific tasks that are required for CRS application are:

- Review the elevation certificates for the Town and identify deficits.
- Assist town in improving system for completion and retention of elevation certificates for compliance with CRS. Assist the town in adopting the use of the FEMA elevation certificates if they are not currently used.
- Document that town has copies of all FIRM maps issued for the town.
- Map repetitive loss areas. Because Olive has more than 10 such properties, the plan (below) must include a sub-plan to reduce damage in repetitive loss areas.
- Prepare emergency response plan for the Town of Olive.
- Prepare report on CRS points and summation of flood insurance reduction costs with recommendations for additional steps the Town can take to improve score. Include a

“roadmap” of activities within reach of the Town to improve their score. Provide information on which tasks can generate the most points with least effort on part of Town and how to obtain those points.

- Prepare CRS application. Work with the Olive Flood Advisory Committee and Code Enforcement Officer to compile required documentation.

#### Task 7 Deliverables

- Final Town Flood Hazard Mitigation Plan delivered to the Town Board, and/or their designees and funding agencies.
- Final CRS application and related reports and plans.

#### POTENTIAL SUPPLEMENTAL TASKS

The following tasks may be required to supplement the initial assessment and can be added with approval from the Town Board.

- P2.1 Identify and map flood-damaged properties and infrastructure (i.e. roads, bridges, utilities, etc.), including those located outside of special flood hazard areas, repetitive loss properties (RLPs), and severe repetitive loss properties.
- P2.2 Working with the local floodplain administrator, characterize and categorize flood-prone and flood-damaged properties into groups based on types of damage suffered, use (i.e. residential vs. non-residential), building or structure type (basement, crawlspace, slab on grade, number of stories, etc.), types of accessory structures on the properties, and location of building utilities relative to basements and first floors. If known, determine whether damage resulted from flood inundation, avulsion, or slope failure. Develop a database of such properties by address.
- P2.3 Working with the local floodplain administrator, and to the extent that data is available, determine which flood-prone and flood-damaged properties are insured under the National Flood Insurance Program (NFIP) and which are not insured.
- P2.4 Utilize HAZUS to evaluate cost-effectiveness.
- P2.5 Prepare information to estimate the social and economic impacts of select options identified during the analysis and planning phases. Such information might include identification of potential impacts to business community, residents, property values or the local tax base.
- P2.6 Prepare SEQR documents to enable the municipal to adopt the plan if desired by the municipality.

#### **SECTION IV: FORMAT AND CONTENT OF THE PROPOSAL**

**Instructions:** Proposers should provide all information required in the format below. The proposal should be typed double-spaced on both sides of 8 1/2" x 11" white paper, and paginated. The proposal will be evaluated on the basis of its content, not length.