Areté Engineers, PLLC
7668 Valley Blvd.
Blowing Rock, NC 28607
828-434-0587
Firm License Number: P-1357
Areté Project: 4836 / TO5

March 26, 2026

Contract For:
Attn: Richard Hicks
Interim Town Manager, Town of Black Mountain
160 Midland Avenue
Black Mountain, NC 28711
828-419-9311, richard.hicks@tobm.org

We are pleased to submit this proposal for Task Order 5 (TO5) – Lakeview Center Active Aging Floodplain Improvement Modeling to the Town of Black Mountain. Arete Engineers is the Prime and KCI Technologies is the subcontractor for this work.

1.0 Scope of Work

1.1 Areté Engineers, PLLC (Consultant or Areté) is an engineering services firm located in Blowing Rock, NC.

1.2 **Project Management (PM)**

Areté will provide PM services to the Town of Black Mountain relating to TO5. Services include but are not limited to:

- Attending the bi-weekly Town of Black Mountain project status meetings specific to this task order.
- Project coordination between the Town and KCI Technologies (KCI or Subconsultant).
- Provide project documentation including meeting minutes and invoices.

1.3 **Floodplain Improvement Modeling**

See attached scope of work from KCI for detailed scope information for TO5, which is referred to as Phase 1 in the KCI document.

2.0 Fees / Payment Schedule

2.1 Schedule of Fees**:** This contract will be lump sum totaling **$30,750**.

2.1.1 Project Management: $5,750.

2.1.2 Active Aging Floodplain Improvement Modeling: $25,000

2.2 Invoices will be sent monthly.

3.0 Assumptions and Exclusions

3.1 This contract assumes all PM related meetings are virtual and does not include site visits.

3.2 See attached scope of work for KCI for assumptions and exclusions related to their work.

4.0 Closure

Thank you for the opportunity to submit this contract. If you have any questions, please do not hesitate to contact me.

Sincerely,



Adam Felmlee, PE
Principal Engineer
828-783-3955

Prepared by: MSR

By:_____ (Signature) Name:_____

Title:_____Date: _____

Town of Black Mountain – Lakeview Center for Active Aging Floodplain Improvement Modeling

The Town of Black Mountain has awarded KCI the task of developing floodplain improvement models to support the renovation and floodproofing of the Lakeview Center for Active Aging facility following damage caused by Hurricane Helene.

The effort will consist of three phases. Phase 1 will develop a corrected effective model that will include the existing terrain survey captured by KCI after the effects of Hurricane Helene. Phase 2 will be incorporating the proposed design by Arete in a proposed conditions model. Phase 3 will be a post as-built model which will include the post as-built survey and documentation for Letter of Map Revision to FEMA for floodplain compliance.

Phase 1 – Site Survey & Existing Conditions Modeling

The purpose of this phase is to develop a revised effective model that reflects existing site conditions, including updated terrain and surveyed crossings along Laurel Circle Drive and W. Connolly Street. This phase includes a **Survey Task** and a **Hydrologic and Hydraulic Modeling Task**.

Task 1: Survey

KCI will perform survey services to collect the following:

- Locations of site improvements, including buildings, walkways, signage, roadways, parking areas, driveways, streams, sheds, fences, residential structures, curbing, and utility poles.
- Finished floor elevations of buildings within the survey limits.
- Cross sections along Tomahawk Branch on both the north and south sides of Lake Tomahawk.
- Survey of the pedestrian bridge crossing Lake Tomahawk.
- Spot elevations collected on a 50-foot grid (or finer where necessary), along with breaklines, to generate 1-foot contour mapping.
- Utilities based on visible surface features and designations performed by KCI.
- Locations of existing stormwater and sanitary sewer structures, including top and invert elevations, pipe connectivity, and pipe size/type (limited to one structure beyond the survey limits).

Survey control will be established as follows:

- Horizontal control: NC State Plane Coordinate System, NAD 83 (2011)
- Vertical control: NAVD 88

Additional assumptions and exclusions:

- KCI assumes unrestricted access to the site during normal business hours.
- Property boundary, right-of-way, and easement surveys are excluded from this scope.

Deliverables will include an AutoCAD file and a signed and sealed PDF.

Utility Designation Services

KCI's Subsurface Utility Engineering (SUE) team will provide utility designation services for an approximately 3.5-acre area along the banks of Lake Tomahawk and surrounding park areas in Black Mountain, NC.

Utility designation will be performed using non-invasive geophysical methods to identify the approximate horizontal location of existing, traceable underground utilities. These methods may include:

- Electromagnetic (EM) locating
- Ground Penetrating Radar (GPR)

Detected utilities will be marked on the ground surface in accordance with the American Public Works Association (APWA) color-coding standards.

This effort will be supplemented with available utility records provided by the client or facility owner prior to fieldwork. The combination of record data and geophysical locating provides the best opportunity to identify existing utilities within the project area.

Task 2: Hydrologic and Hydraulic Modeling

KCI will develop an existing conditions hydraulic model based on the completed survey.

Two model geometries will be developed:

- **Duplicate Effective Model**
  The existing effective HEC-RAS model will be updated to the current HEC-RAS version and validated against the Buncombe County Flood Insurance Study (FIS) dated January 6, 2010.
- **Corrected Effective Model**
  A revised geometry will be developed incorporating KCI's survey data to better represent current site conditions.

The corrected effective model will establish updated base flood elevations, which will be used to inform the design of the proposed floodproofing measures for the facility.

Deliverable will include: topographic work map and Hec-Ras

Phases 2 and 3 will be scoped later.

Total Cost: $25,000
Anticipated Start Date: June 2026