REQUEST FOR BOARD ACTION

HENDERSON COUNTY BOARD OF COMMISSIONERS

MEETING DATE: December 4, 2017

SUBJECT: Hendersonville Sanitary Sewer Master Plan

PRESENTER: Marcus Jones, PE

ATTACHMENTS: Yes
1. November 13, 2017 Letter from John Connet

SUMMARY OF REQUEST:

Per the attached letter from Hendersonville Manager John Connet, the City is requesting the Board of Commissioner's input on their proposed sanitary sewer master plan for the Hendersonville Wastewater Treatment Plant drainage area. Specifically, if they need to modify the plan's scope of work to account for a "comprehensive sewer study for Henderson County" that is a pending item in the County's comprehensive plan (Section 3.7A: Support the development of a countywide sewer and water master plan).

BOARD ACTION REQUESTED:

The Board is requested approve development of the plan by the City, and to direct Staff to communicate with the City accordingly.

Suggested Motion:

I move the Board approve the City proceeding with development of a comprehensive sanitary sewer master plan, and to direct Staff to communicate with the City accordingly.

CITY OF HENDERSONVILLE

The City of Four Seasons

OFFICE OF THE CITY MANAGER
JOHN F. CONNET

November 13, 2017

Mr. Steve Wyatt, County Manager
Henderson County
1 Historic Courthouse Square, Suite 2
Hendersonville, NC 28792

RE: Hendersonville Sanitary Sewer Master Plan

Dear Mr. ~~Wyatt~~ Steve:

Please allow this letter to serve as notification to Henderson County that Hendersonville Water and Sewer intends to proceed with the development of a comprehensive sanitary sewer master plan for the Hendersonville Wastewater Treatment Plant drainage area. A copy of the scope of work for the development of the master plan is included in this letter for your information. Although we do not believe that we need Henderson County's approval to move forward with the development of this plan, we wanted to notify you of our intentions in the spirit of cooperation between our entities. It is our understanding that Henderson County has no immediate plans to move forward with a comprehensive sewer study for Henderson County. If this understanding is incorrect, please let us know prior to December 7, 2017, so that we may consider a possible modification of our scope of work accordingly.

Hendersonville Water and Sewer is moving forward with the development of this plan for the following reasons:

1. To evaluate the long-term capacity and location of the Hendersonville Wastewater Treatment Plant.
2. To evaluate the current and long-term capacity of the existing Hendersonville sewer collection system.
3. To evaluate the potential for additional public sewer service in underserved areas of Henderson County that drain to the Hendersonville Wastewater Treatment Plant. Future flows will be calculated based on the population and employment forecasts used in the recently completed Water System Master Plan. This evaluation will be coordinated with extensive input from stakeholder groups (the Water and Sewer Technical Advisory Board and Water and Sewer Advisory Council), and will include potential industrial, commercial and residential development as well as existing on-site septic and package wastewater issues.
4. To develop high level planning documents for the provision of sewer service in underserved areas of Henderson County. This information will be readily available to all stakeholders for use in making long-term public health, land-use and/or economic development decisions.
5. To develop preliminary project cost estimates to assist in making the aforementioned public health, land use or economic development decisions.
6. To assist Henderson County local governments in developing land use plans that encourage orderly, efficient and environmentally sensitive growth in all areas of Henderson County.

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Please feel free to share this information with the County Commissioners and staff as you deem appropriate.

Thank you for your consideration in this matter. The City looks forward to discussing this matter further with the County. If you have any questions or need any additional information, please feel free to contact me at (828) 233-3201.

Sincerely,

John F. Connet
City Manager

Cc: Mayor and City Council
Hendersonville Water and Sewer Advisory Council
Hendersonville Water and Sewer Technical Advisory Board
Brent Detwiler, City Engineer
Lee Smith, Utilities Director

AMENDMENT 2
ATTACHMENT A
SCOPE OF SERVICES

Owner: City of Hendersonville, North Carolina
Engineer: Black & Veatch International Company
Project: Sanitary Sewer Asset Inventory and Assessment Phase 2

PROJECT DESCRIPTION

The City of Hendersonville's collection system consists of approximately 177 miles of sanitary sewer, 31 sewer pump stations, approximately 5,200 manholes over 9,500 service connections, and is tributary to a 4.8 MGD wastewater treatment plant. The City was awarded a grant from the NCDEQ Division of Water Infrastructure to partially fund this project.

The purpose of the Sanitary Sewer Asset Inventory and Assessment project is to conduct an analysis of the City of Hendersonville sanitary sewer system to assess system performance at current and future flow conditions. The Project will be conducted in phases:

Phase 1: COMPLETE

- Task 1: System Inventory - Part A
  - Data request and review
  - Data collection processes and database designs
  - Work plan, procedures and QC plan
  - Manhole elevations and missing attribute inventory
  - Pump station inventory and assessment
  - Compile Existing Data
  - Refine Data Management Tools
- Task 2: Flow/Rain Monitoring
- Task 3: Model Development and Calibration
- Task 4: Condition Assessment – Part A

Phase 2:

- Task 1: System Inventory – Part B
- Task 2: Condition Assessment – Part B
- Task 3: Flow Projections
- Task 4: Future Year Model Capacity Assessment and Project Identification
- Task 5: Project Prioritization and CIP
- Task 6: Master Plan Documentation and Planning Tools
  - Management Tools

- Model Training
- Task 7: Asset Management Plan Narrative

Goals for this project include:

- A well-documented, forward looking Master Plan
- An overall Assessment of the condition of the sewer system, as well as guidance for future repairs and maintenance
- Prioritization of recommended improvements in order to direct budgets to highest significance projects
- An expanded GIS database updated with missing data
- An interactive, easy to use planning tool

SCOPE OF SERVICES

General Project Administration

1. Provide project management and administration for a 9 month project period to:
    a. Correspond and consult with Owner,
    b. Coordinate activities of the project team,
    c. Develop and implement specific work plans, procedures and a quality control and quality assurance plan, and
    d. Provide overall project direction to meet Owner's objectives.
2. Maintain a project filing system to document and retain project records.
3. Prepare monthly invoices and written status reports to document project progress.
4. Arrange for and participate in 8 monthly project status meetings with OWNER to review progress, budget, schedule and deviations from this scope of services and exchange ideas and information. Meetings will be a mix of in-person and conference call meetings.
5. Prepare and distribute the minutes for project meetings. Minutes for the project meetings will include a record of decisions made and actions assigned.
6. Prepare and submit data request(s) to obtain key data for the project.
7. Engineer will initiate the project by preparing for and conducting a kickoff meeting with key City of Hendersonville staff to review project goals and scope, establish lines of communication, and initiate the collection of data that will be needed to perform the project. A meeting summary will be prepared and distributed to Owner. The kick-off meeting will include discussion of the following items:
    a. Project team introductions
    b. Project goals
    c. Communication points of contact

d. Project schedule and work planning

The following sections detail the proposed scope of work. Some activities can be performed concurrently with others. Specific tasks will likely evolve as additional data is obtained and alternative solutions are addressed.

Phase 2:

Task 1: System Inventory – Part B

Owner will continue to conduct field inventory of remaining 4,100 of the total 5,200 manholes to acquire missing elevation data and/or key attribute data.

To support risk-based prioritization analysis, Owner must update the City's GIS with the latest, most accurate asset inventory information and that US/DS MH IDs are properly defined in the GIS.

Similar to Phase 1, Engineer will support the Inventory Task by providing up to 16 hours of general field inventory and data compilation guidance as appropriate.

Task 2: Condition Assessment – Part B

1. Engineer to provide support services for condition assessment activities performed by Owner's personnel and subcontractor's hired by the Owner. An allowance of 200 hours for Engineer's condition assessment project engineer is provided for this task and assumes 80 hours on-site working with Owner's staff. Additional time is included for staff supporting the condition assessment task. The Phase 2 work may include:
   - Review with operations staff the prioritized segments of the collections system to confirm known areas with sediment, roots, FOG or backups.
   - Develop an inspection plan for gathering additional information on the condition of the collection system. The plan will include the use of Owner staff and equipment for conducting smoke testing in a prioritized approach, a subcontractor for conducting acoustic testing (SL-RAT) on manhole segments, and coordinate CCTV inspection with Owner staff and equipment for the defects identified by the smoke testing and acoustic testing.
   - Conduct a workshop to review the testing results.
   - Review the results of the smoke testing, acoustic testing and CCTV confirmation and develop a draft and final Technical Memorandum summarizing the work. The Technical Memorandum will include an assessment of the general condition of the collection system based on the results and recommend corrective actions for the defects identified.

2. All acquired pipe inspection data must be readily available in an assessable digital NASSCO PACP format and ratings calculated. Note: all prior inspection data previously provided to Engineer has been imported into the Inspection Tracker

database. NASSCO and Modified-NASSCO ratings were also calculated. However, any recently-acquired pipe inspection datasets will also need to be processed. Owner to provide copies of all recent pipe inspections in NASSCO PACP MS Access database format. Engineer will then load this data into the Inspection Tracker database and generate rating scores. Based on the status of pipe inspections, Owner may need to update the City's GIS with the results of the smoke and acoustic testing (to be determined)

Task 3 Flow Projections

1. Base Year Flows - Engineer will develop a base year flow by reviewing WWTP influent flow data. The base year flows will be the starting flows on which all the future population and employment flows and other flow contributions are built upon. The selection of the base year and resulting flow should reflect reasonably current collection system conditions and population and typical groundwater or rainfall impacts. This base year could be an actual recent calendar year or a synthesized annual flow derived from recent historical flows. The base year flow approach incorporates the present I/I in the collection system and accounts for it in the total flow.
2. Maximum Month Peaking Factors - Engineer will assemble recent years of WWTP influent flow and adjust to account for known bypass and diversion issues that impact total flow during excessive flow conditions. A maximum month peaking factor will be calculated for the WWTP and each year. The appropriate historical peaking factor will be selected that represents and incorporates a range of I/I conditions experienced over the recent past. Peaking factors higher than 3 to 3.5 will be communicated to the Owner for further evaluation.
3. Define Sanitary Sewer Service Area - Planning year sanitary sewer service area boundaries will be developed and used to define the extent of areas served by existing and future flows. If available, Engineer will incorporate planning areas defined by the Owner. Engineer in coordination with Owner will schedule, coordinate, and attend a planning organization stakeholder workshop. The purpose of the workshop is to collect non-Owner stakeholder input for defining the sanitary sewer service areas for the Owner's sanitary sewer system. Engineer will review and exclude areas that are unlikely to be served (e.g. protected areas, large bodies of water, etc.).
4. Future Population and Employment Projections - Population and employment forecasts will be developed based on the recently completed projections in the Water Master Plan. A review of the 2015 TAZ ACS data will be conducted to determine if any adjustments to the projections are warranted based on the changes from the 2010 to 2015 data. Traffic Analysis Zone (TAZ) data will be utilized to facilitate the GIS spatial allocation within the sanitary sewer service area. NCDOT will also be contacted to identify proposed road projects that could influence growth projections/locations.
5. Review of Redevelopments, Package WWTP's and Septic Users - It is assumed that redevelopment population and employment projects are in the TAZ data. Engineer will review up to 5 redevelopments to confirm if the TAZ accounts for

redevelopments. If redevelopment population and employment projections are not incorporated into the TAZ data, Engineer will add the redevelopment projections to the TAZ data. The Engineer will also identify developer driven package WWTP's and septic users within the service area based on billing or usage data provided by the Owner.

6. Population and Employment Flow Projections - Future population and employment projections will be converted to flow using unit factors representative of state guidance or local experience. This may come from the projection developed in the Water Master Plan (provided by Owner), Owner design standards (e.g. population flow of 240 gallons per day (gpd) per 3 bedroom house) or persons per dwelling unit with a gpcd flow factor. Employment unit flows are typically more modest, e.g. 20 gpcd or less. Prospective employee unit rates incorporate assumptions due to a range of commercial property uses and discharge potential.
7. Review of Industrial Flows - Flow permits for the top 25 industrial contributors will be reviewed to understand major single point discharges for the purposes of capturing them in the hydraulic model. Permits of the top 25 and others also need to be reviewed to identify those permits which allow stormwater from the industrial site into the sanitary sewer. To support future flow projections, Engineer will review any trends with major wastewater dischargers to determine if flows will increase, decrease or remain the same in the future.
8. Final Flow Projections - Base Year and Maximum Month flow projections for the WWTP will be assembled based on a prescription that incorporates population and employment flow projections, external flows, and other flows that may enter the system during the planning horizon for each planning year.
9. A Final Future Flow Projections TM will be provided to the Owner. The TM will include the project year in which the WWTP will reach 80% of its flow capacity based upon maximum month flow expansion / wet weather treatment.
10. Future Flow Projections Conference Call - A conference call will be conducted by Engineer to discuss the results of the future flow projection tasks and TM.
11. Final Future Flow Projections TM - Engineer will prepare the final draft of the Future Flow Projections TM making updates based on discussions and comments received from the Owner during the Future Flow Projections Conference Call. The final TM will be delivered to the Owner for review. The future flow projections will be approved by the Owner prior to commencing with future model scenario development.

Task 4: Future Year Model Capacity Assessment and Project Identification

1. Base Year Model Development - The calibrated model will be updated for projects completed after the monitoring period as well as projects that are nearing completion of design/construction to develop a base year model. The projects included in the model will be limited to significant sewer system extensions, sewers 10 inches or greater in diameter, and significant lift stations/force mains. The Owner will provide information for these projects including but not limited to GIS layers, record/design drawings, and design reports. If necessary, the dry

weather flows from the calibrated model will be adjusted to match the base year flows (annual average flows). The adjustment will largely be limited to changing the GWI component only to reflect seasonal changes.

2. Design Storm Analysis – Engineer will analyze the base year model under four (4) different design storms – 2-year, 5-year, 10-year, and 25-year. The design storms will be based on synthetic rainfall distributions such as the SCS Type II response. Black & Veatch will gather past, hourly rainfall data from a nearby weather station (50 year or more) and compare the historical record to the synthetic rainfall distributions to validate the appropriateness of the synthetic distribution for long-term capacity analysis. Conveyance improvements for each design storm will be incorporated into the model to address "trigger" criteria exceedances. System improvements will be sized to meet long term system performance "design" criteria. Using the unit costs, opinions of probable planning levels costs will be developed and graphed. The design storm where the planning level costs increase dramatically as compared to the more frequent storm event will be selected as the design event for subsequent analysis ("knee of the curve"). A technical memorandum will be prepared by Engineer detailing the design storm analysis and selection recommendation. The selected design storm will be approved by the Owner prior to commencing with future improvement analysis.
3. Performance Criteria – Engineer will develop performance criteria for the collection system that define the operational goals for the various components under dry, peak wet weather, and low flow conditions. These goals include, but not limited to, the level of service in the gravity sewers (depth of flow), force main velocity, and lift station operation. The performance goals will define "trigger" criteria when a capacity improvement should be implemented as well as "design" criteria establishing post implementation system performance goals. The "trigger" and "design" criteria may not necessarily be the same. A technical memorandum will be prepared by Engineer detailing the performance criteria. The selected performance criteria will be approved by the Owner prior to commencing with future improvement analysis.
4. Future Scenario Model Development – Engineer will incorporate the future flow projections developed in Phase 2 - Task 3 into the hydraulic model for the selected design storm alternative. The dry and wet weather loadings will also be updated for service area expansion.
5. Unit Costs - Engineer will review recent bid tabulations for sewer system improvement projects constructed in the Owner's system to develop unit costs for improvements proposed in subsequent analysis. The bid tabulation data will be augmented with other construction data Engineer has developed for nearby areas to develop unit costs for a wide range of pipeline diameters and lift station capacities.
6. Improvement Projects - The hydraulic system developed for the base year system under the selected design storm will be assessed and immediate improvements will be developed to meet the performance criteria. The base year 2017 system with the base year improvements will then be assessed under the planning year 2025 loading conditions and the selected design storm. Improvements for the

2025 planning year will be developed to meet the performance criteria, and the improvements will only address capacity issues. The hydraulic system including the planning year 2025 improvements will then be assessed under the 2040 planning year (planning years are 2017, 2025, 2040) with improvements sized to comply with the performance criteria. This process will be repeated for all of the planning years to develop the necessary improvements for each planning year. Each improvement will be sized to convey the peak flow for the 2040 planning year. A meeting will be scheduled with the Owner to review the improvement projects and to develop the three alternatives to be analyzed for the alternatives analysis task.

7. Alternative Analysis – Engineer will add model scenarios that incorporate the alternatives developed during the Improvement Projects meeting. The improvements will include different options of conveyance, rehabilitation, and/or storage to reduce overflows and optimize the performance of the tributary interceptors. A total of three alternatives will be analyzed. Each of the alternatives will use the performance criteria for conveying wet weather peak flows from the selected design storm. Opinions of probable planning level costs will be developed for each alternative using planning year flows using the unit costs as a basis for alternatives screening. A technical memorandum will be prepared by Engineer summarizing the results of the alternative analysis. The Owner will provide feedback for their preferred alternative to use going forward.
8. Future Treatment Needs – Engineer will compare current treatment capacity to projected wastewater flows. Future treatment plant capacities will be identified based on 2040 average, and maximum month and peak wet weather flows. In addition, a high level assessment of alternative locations for treatment will be provided and shall consider proximity to growth areas, cost to convey wastewater to treatment locations, and costs to construct treatment at the existing site or alternative locations. Costs shall be order of magnitude in nature for evaluation of alternatives.
9. Capacity Driven Improvements – Engineer will prepare a list of improvements for the planning period through 2040. An overall system map and a spreadsheet containing the costs and timing for each improvement project will be provided. The improvements will address the level of service goals and performance criteria.
10. A technical memorandum of the recommended capacity driven improvement projects will be provided to the Owner. The technical memorandum will contain a summary of the required improvements (in tables and figures), the phasing year, and opinions of probable planning level cost. Following receipt of comments from the Owner, a final version of the technical memorandum will be delivered to the Owner.

Task 5: Project Prioritization and CIP

1. Engineer will develop and build a risk-based prioritization analysis using data complied during the prior tasks. Likelihood of Failure (LoF) and Consequence of Failure (CoF) criteria will be introduced and refined refined for rehabilitation /

replacement and maintenance strategies. Process assumes that all data sources required for the agreed-upon LoF/CoF criteria are readily available publically or from the Owner. Prioritization for future inspections may also be identified. Output products will include sewer mains prioritization list, graphical scatter diagram and heat-map charts of results, and GIS pipe attributes providing pipes color-coded by risk scores and strategy groups. The use of standard cost look-up tables provides a preliminary (budgetary) cost calculation for the recommended actions.

2. Engineer will configure and provide Owner with the GIS-based iCIP Cost Estimating Tool. This tool allows users to review multiple scenarios to refine the costs and details of new, replacement and repair, and inspection projects by year. Capacity driven improvements and results from the risk-based prioritization analysis will be loaded into the iCIP tool. Individual assets will be grouped into logical projects based on directives agreed to with Owner.
3. The prioritized CIP information will be incorporated into an MS Excel based CIP Spreadsheet Tool. The tool will be used to create a list of recommended capacity-driven and risk-based CIP projects and include descriptions and notes about each project. Example project types may include replacement, rehab, inspections and/or new constructions. The spreadsheet will also include the detailed cost calculations for each project. Owner staff will be able to use the tool to adjust cost assumptions and update the cost calculations in the future, if and as needed. The CIP Spreadsheet Tool will also include the project phasing as well as encumbrance and cash flow schedules for the CIP. The iCIP GIS-based Tool will synchronize any updates with the CIP Spreadsheet. Engineer will provide a User's Guide for iCIP and the CIP Spreadsheet Tools to describe features and functionality.
4. The CIP Spreadsheet Tool and iCIP will be delivered to the Owner electronically. Approximately two weeks following delivery of the tools to the Owner, an 8 hour onsite training session will be held to present the tools, work on the data management practices, and answer any questions.

Task 6: Master Plan Documentation and Planning Tools

1. Following completion of Task 5, project work efforts will be documented within a draft hydraulic model development, risk-prioritization, and overall Master Plan report.

   The Master Plan report will include the following items:

   - An Executive Summary
   - Existing Conditions
   - Flow Monitoring Data
   - Hydraulic Model Construction and Calibration
   - Flow Projections
   - System Analysis
   - Future Conditions
   - Findings of the Evaluation

- Condition Data and Analysis
- Recommended Improvements and project descriptions
- Documentation of the development and results of the risk-based prioritization
- Appendices

Tools:

- Hydraulic Model (in *InfoSewer* format)
- Asset Risk-Prioritization Model
- CIP Spreadsheet
- iCIP Cost Estimating tool
- Capacity Assessment Tool

2. Improvement Project Descriptions – For each capacity driven improvement identified, an opinion of probable planning level cost will be developed. The cost will consider length, diameter, routing, stream and/or road crossing, and other site specific obstacles. A project description will be provided for each improvement project. A GIS layer will be provided to Owner with information regarding the improvement's location, diameter, planning level cost, and phasing year. A cash flow analysis will also be performed to detail when Owner should have funds available for the design and construction of each improvement.
3. The draft report will be delivered to Owner for review and comment.
4. Draft Master Plan Workshop – A workshop will be conducted by Engineer to present the Draft Master Plan Report. The purpose of the workshop is to discuss the Draft Master Plan Report to receive feedback and comments from the Owner for incorporation into the final master plan report.
5. Final Master Plan Report – Engineer will finalize the Master Plan Report based on feedback and comments received during the draft master plan workshop. The final report will be printed 5 color copies for delivery to the Owner. In addition, an electronic copy of the report will be delivered to the Owner.
6. Presentation to City Council – Engineer will develop a presentation summarizing the Master Plan and detailing the Master Plan recommendations and present the Master Plan to the City Council.
7. Capacity Assessment Tool – A Capacity Assessment tool will be developed based on the model results. For modeled sewers, the tool will compare the available capacity in each pipe to the projected flow. The tool will allow for new development requests to be added on top of the existing flows in downstream sewers. The tool output will show the number of downstream sewers and whether there is available capacity. A GIS trace of the downstream sewers is also created.
8. Model Training – A focused training in a workshop environment for Owner staff using the Owner's model will be provided to gain familiarity with the updated model. Training will include background on how the model was constructed and calibrated, its planning applications, and examples of how the model can help

solve real world issues. For example, the workshop may include a session on how to update the asset database as new information such as surveying is obtained, evaluate the performance and develop improvements for portions of the system under peak wet weather conditions, and adding new infrastructure like pump stations. Workshop agenda and training examples will be developed based on Owner input. The training will consist of 16 hours of onsite training with a second 8 hour follow up onsite training session.

9. A model user manual will be provided with the final model during the workshop. These materials will provide a fully documented model and serve as a reference for current and future staff after the project. The model user's manual will document the technical details of the model construction within the modeling software platform such as the wet weather hydrology and how to update these parameters.

Task 7: Asset Management Plan Narrative

1. With assistance from Owner, Engineer will prepare a high-level narrative outlining an Asset Management Plan based on meeting Line Item 3B of the Priority Rating System Form of the SRF funding application. Narrative will address each of the four key areas:
    - Inventory of assets including maps, provided by Owner. Inventory to include water and wastewater infrastructure assets owned by Owner (including both linear and plant assets). Each asset item to have Owner's unique identifier.
    - Assessment of the condition of the infrastructure in the inventory. Define Owner's assessment scale for asset condition describing how rating is determined and how assets are evaluated.
    - A capital improvement plan (CIP) with projected cost estimates from Owner's water Master Plan and Wastewater Master Plan. Describe process for assessing assets and how these are combined into an overall CIP. Projects proposed for funding must be included in the CIP.
    - An operation and maintenance plan to ensure proper management of the assets. Narrative to describe Owner's O&M Plan and how plan is based on manufacturers' recommendations and/or typical industry best management practices
2. Should gaps in the plan be discovered, Engineer will provide guidance on logical solutions to make improvements. Plan narrative to describe Owner's ability to conform to the application requirements and to demonstrate the described Asset Management capabilities; including the analysis of asset attribution (age, type, size, etc.) and the mapping of applicable assets. Plan document is not intended to be a comprehensive roadmap to implementing an enhanced Asset Management Solution, but as a narrative to assist Owner in meeting Line Item 3B of funding application only.
3. Draft of narrative to be provided to Owner for review, revision and approval prior to delivery of final version.

Unspecified Additional Services

Unspecified Additional Services may be provided after authorization by Owner. Any work requested by the Owner that is not included in the Phases and Tasks as described herein will be considered an Additional Service to this Scope of Services and may be added to the Scope upon mutual agreement.

In addition to those items mentioned specifically in the Scope of Services, Additional Services may also include, but are not limited to:

A. Additional model calibration work.
B. Any meetings with local, state or federal agencies or utilities or other affected parties in addition to those specifically noted.
C. Additional population and/or flow projection work following City acceptance of those projections during Task 3.
D. Appearances at more public meetings than identified in Scope of Services.
E. Special consultants or independent professional associates requested by Owner.
F. Any meetings in addition to those identified in the Scope of Services.
G. Data hosting services
H. Data acquisition or data conversion services beyond reasonable for task description.
I. Any additional work authorized by Owner that exceeds the Allowance amount.

AMENDMENT 2
ATTACHMENT B
COMPENSATION

Owner: City of Hendersonville, North Carolina
Engineer: Black & Veatch International Company
Project: Sanitary Sewer Asset Inventory and Assessment Phase 2

For the Scope of Services Phase 2 in Attachment A, Owner will compensate Engineer a fee not exceed $372,000 unless authorized by the Owner in writing. Engineer will invoice Owner in accordance with the attached Budget Estimate, plus reimbursable expenses. The estimated cost of each phase of work is included in the Budget Estimate following this page. Owner agrees Engineer may alter the distribution of compensation between individual phases of the work noted herein to be consistent with services actually rendered, but not exceed the total amount unless approved in writing by the Owner. Standard hourly rates are subject to review and adjustment annually.

AMENDMENT 2
ATTACHMENT C
SCHEDULE

Owner: City of Hendersonville, North Carolina
Engineer: Black & Veatch International Company
Project: Sanitary Sewer Asset Inventory and Assessment Phase 2

Phase 2: (11 months)

- General Project Administration (9 Months)
- Task 1: System Inventory – Part B (On-going)
- Task 2: Condition Assessment – Part B (To Be Determined)
- Task 3: Flow Projections (2 Months)
- Task 4: Future Year Model Capacity Assessment and Project Identification (3 Months)
- Task 5: Project Prioritization and CIP (1 Month)
- Task 6: Master Plan Documentation and Planning Tools (3 Months)
  - Capacity Assurance Tool
  - Model Training
- Task 7: Asset Management Plan Narrative (To Be Determined)