

**Proposed Scope of Services  
Branchville-Georgetown Infrastructure  
Feasibility Study**

## **Scope of Services**

Our proposed Scope of Services consists of nine tasks as follows:

- Task 1 – Market Assessment
- Task 2 – Development of Average and Peak Sewer Flows
- Task 3 – Redding WPCF Capacity Evaluation
- Task 4 – Development of Cost Estimates
- Task 5 – Sewer Routing Development
- Task 6 – Floodplain Evaluation
- Task 7 – Intermunicipal Agreement Recommendations
- Task 8 –Report Development
- Task 9 - Public Participation Program and Project Meetings

A detailed scope for each task is presented below:

### **Task 1 – Market Assessment**

1. A project kickoff meeting will be held virtually with all parties to discuss the overall project scope and schedule. Key members from each Town and WestCOG will be identified, along with contact information and lines of communication.
2. Data Gathering and Analysis: Collect and assemble background information necessary for the Sewer Infrastructure Feasibility Study.

#### **Tasks:**

- Review of Current Land Use Plans, Zoning Maps and Town of Ridgefield Zoning Regulations:  
Collect and analyze existing land use types and densities in Branchville and Georgetown.
- Projected Development Data:  
Compile data on projected residential, commercial, and industrial developments (number of housing units, commercial space square footage, etc.) from the Branchville Transit-Oriented Development (TOD) plan.
- Demographic and Economic Data:  
Gather data on population growth projections and economic development trends to support development potential estimates.

#### **Deliverables:**

- Database of current land use and projected developments.
- Summary of key demographic and economic data

3. Planning Document Review: Review and analyze existing plans and studies to develop a clearer understanding of the planning area's resources and needs.

Tasks:

- Review relevant documents, including:
  - Existing Wastewater Collection/Treatment Infrastructure Reports.
  - 2017 TOD Study for Branchville.
  - 2018 Redding Plan of Conservation and Development (POCD).
  - 2020 Ridgefield POCD.
  - Existing information on development at the Gilbert and Bennett Site.
- Analyze the consistency between these documents and the goals of the Sewer Infrastructure Feasibility Study.

Deliverables:

- Summary report highlighting key findings from each reviewed document.
- Identification of gaps and opportunities related to wastewater infrastructure and development plans.

4. Public Outreach: Engage stakeholders and gather feedback on the sewer infrastructure and potential development plans.

Tasks:

- Conduct meetings with:
  - Town Elected Officials, Boards, and Commissions.
  - Town Engineering Department and Department of Public Works.
  - Water Pollution Control Authority (WPCA).
  - Aquarion Water Company and public utilities.

Deliverables:

- Meeting agendas and minutes.
- Stakeholder feedback summary.
- Actionable insights from consultations with utility companies and town departments.

5. Market Assessment and Buildout Analysis

Tasks:

- Current Market Analysis:  
Collect and analyze data on existing developments in the study area. Conduct interviews with local real estate agents, developers, and stakeholders.
- Development Projections:  
Review demographic data to project population growth and economic development trends. Assess historical development patterns and recent construction activity.
- Market Support Assessment:  
Analyze market demand and trends for different land uses (residential, office,

commercial). Identify the most viable development types and project the mix and density of future developments.

- **Buildout Analysis:**  
Estimate the range (low, medium, high) of developments, including the number of housing units and commercial square footage.

**Deliverables:**

- **Market Assessment Report:** Detailed analysis of market conditions, development potential, and market support.
- **Buildout Analysis:** Estimate of future development densities and potential barriers.

## **Task 2 - Development of Average and Peak Sewer Flows**

1. Sewer flows from the Branchville area will be based upon the projected development and sewer service area evaluated as part of the Task 1 Market Analysis.
2. Tighe & Bond will facilitate and attend an in-person joint workshop between the Redding WPCF members and key Redding Department heads for the purpose of identifying areas targeted for future development within the Town of Redding. Assumed Town Departments attending may include the Health Department, Land Use Department, Building Department and others to gather information regarding anticipated residential, commercial, and industrial development over the planning period that could increase flows to the existing plant. Input will also be obtained on areas within the Town with failing septic systems and/or areas prone to failure due to poor soils, high groundwater, ledge, proximity to sensitive receptors, etc. where sewer extensions should be considered. The Town will also be asked to confirm how much future treatment plant capacity is to be reserved for development at the Gilbert and Bennett site.
3. Future flow estimates to the Redding WPCF from Branchville and from within the Town of Redding will be based on current estimates of existing per capita per day flows and loads estimated at the plant, available water consumption data, per capita flow estimates identified in existing Wastewater Facilities Planning Documents, as well as published engineering values for municipal wastewater.
4. Standard loading factors identified in NEIWPCC's "Guides for the Design of Wastewater Treatment Works" (TR-16) will be used to estimate the future loading to the Redding plant for Biological Oxygen Demand, Total Suspended Solids, Total Kjeldahl Nitrogen and Phosphorus.
5. The future sewer service areas and the associated flows and loadings to the Redding WPCF from both areas will be summarized in a Draft Technical Memorandum, which will be submitted to the Town of Ridgefield, Town of Redding, and WestCOG for review and comment.
6. A virtual Technical Memo Review workshop will be held with all parties to address comments and questions. The Memorandum will be finalized once all comments have been addressed.
7. The Final Technical Memorandum will be incorporated into the Final Report as part of Task 8.

**Task 3 - Redding WPCF Capacity Evaluation**

1. Tighe & Bond will review and evaluate the condition of the existing processes and equipment at the Redding WPCF based upon a review of the existing information and records. This includes record drawings of the last plant upgrade available in Tighe & Bond's design files, records from the Town of Redding on maintenance and equipment replacement activities, a review of 3 years' worth of plant monthly operating reports, and discussions with the plant operators.
2. Two WPCF site visits will be made by Tighe & Bond process engineers to collect existing information and observe plant operations. The actual operating capacity of the existing influent pumps will be determined by using existing flow meters and compare them to their design capacity. Discussions with WPCF operating staff will be held to confirm how plant operations have been impacted by the change from Zenon membranes to Lane membranes, the current methodologies being used for membrane cleaning and replacement, and how these operations impact the overall treatment plant capacity.
3. Based on the above assessment, the existing effective capacity of the treatment plant in terms of flows and loads based on its current operations and condition will be established.
4. Tighe & Bond will identify and screen options for operational changes and improvements to allow the existing plant to be operated and/or upgraded to allow the plant to handle the future additional flows and loads identified in Task 2. The work included as part of this scope of services assumes that the plant capacity will remain at or below the existing permitted capacity of 245,000 gallons per day. This negates the need to perform a detailed evaluation of the treatment facility's hydraulic profile. Improvements to be evaluated include the addition of flow equalization, addition of grit removal, improvements to allow for membrane cleaning, equipment replacements required to due wear, the addition of primary clarification, the addition of carbon, and the modification or elimination of the grinders prior to the screen.
5. Once the necessary treatment plant improvements have been identified, a Workshop Meeting with all stakeholders will be held to review and discuss the recommendations and obtain agreement of the specific improvements to be carried into the cost development phase. It will also be important to obtain a consensus on which costs are necessary to improve the treatment plant in general, and what portion of the improvements, if any, is attributable to the future flow from the Branchville area.
6. The results of the WPCF capacity evaluation will be documented/included in Task 8.
7. Work associated with the evaluation of increasing the treatment plant capacity higher than 245,000 gpd, plant expansion beyond its existing footprint, and/or improving the flood resiliency of the existing treatment facility is not included. This can be performed for an additional fee if required.

**Task 4 - Development of Treatment Plant Cost Estimates**

1. Tighe & Bond will provide an Opinion of Probable Construction Cost (OPCC) for the recommended treatment plant improvements proposed under Task 3. These will be preliminary planning level estimated costs for the recommended capital improvements that will be developed by reaching out to manufacturer representatives, vendors, or local contractors to achieve accurate and realistic costs. Potential cost impacts related to State Revolving Fund (SRF) cost implications such as American Iron and Steel (AIS) or Build America, Buy America (BABA) requirements will also be identified.

2. Tighe & Bond will review the existing annual Operation and Maintenance (O&M) costs at the treatment plant and provide an Opinion of Probable Operations Cost (OPOC) based on projected cost increases associated with operational changes at the Town of Redding WPCF associated with the future flow scenario as developed in Task 3. Items such as inflation and the increased price for materials and supplies will be factored in. The costs reviewed will strictly be those associated with the necessary and essential maintenance of the wastewater treatment plant and sewer system to insure the normal functioning of the system. Categories of O&M costs to be reviewed include salaries and wages, employee benefits, materials & supplies, power & light, and other miscellaneous costs such as servicing of repairs and inspections.
3. Capital costs for the portion of the treatment plant expansion that is necessary to provide service to the Branchville area will be separated out if applicable and as agreed upon at the conclusion of the Task 3 evaluation work.
4. Once costs have been finalized, Tighe & Bond will review Redding's and Ridgefield's current sewer rates to determine if and how they may be affected based on the projected capital and O&M costs at the treatment plant.
5. The results of the cost evaluation work will be documented and included in Task 8.

### **Task 5 – Sewer Routing Development**

A preferred route for the Branchville-Georgetown connecting pipeline was established through previous studies and discussed in the RFP for this project. As part of this task, Tighe & Bond will review the project area to determine if other feasible pipe routes exist, confirm the feasibility of the previously recommended route, and update the proposed Opinion of Probable Construction Cost (OPCC) of the final connection route as listed below.

1. The proposed route for the sewer main from Branchville will be evaluated for potential wetland crossings through a review of existing Town wetland mapping and field reconnaissance to identify valuable wetland resources that are best avoided. Where wetlands and watercourses must be disturbed, recommendations for mitigation will be made, which could take the form of invasive and debris removal, or installation of rock weirs and shoreline boulders that promote fisheries habitats. Wetland mitigation costs, if any, will be included in the overall construction OPCC.
2. The current CTDEEP Natural Diversity Database Maps for the project area show that there is an area of concern for endangered and threatened species located between Branchville and Georgetown that would likely overlap potential sewer routes. Tighe & Bond will coordinate with NDDB staff at CTDEEP to confirm potential impacts and determine appropriate mitigation measures that should be taken if the project is constructed.
3. The proposed sewer routes will be evaluated to determine a corridor of least likely impact through the existing Gilbert & Bennett site. This will be accomplished by reviewing existing data and property drawings Based on Tighe & Bond's previous work on the Gilbert & Bennett site, where impacts are present due to the presence of historical fill materials and impacts are also likely present from the railroad along the proposed sewer route. Further, the proposed sewer route between Branchville and the Gilbert & Bennett site will also be assessed for environmental impacts. A preliminary review of the project area identified several properties of potential environmental concern (e.g., potential dry cleaner, mechanic shop, auto dealerships). In addition,

soil impacts may be present along roadways from anthropogenic sources associated with motor vehicle use and road maintenance. The proposed sewer line and pump station installation/construction will require the development of a Soil Materials Management Plan (SMMP) to be used during construction. However, that is not a deliverable for this Feasibility Study.

4. A pump station will be required to transmit the flow from the Branchville area to the Redding WPCF. Tighe and Bond will coordinate with the Town of Ridgefield to identify potential sites for a new pump station. Factors to be considered when evaluating feasibility will include topography and terrain, environmental impacts, regulatory and permitting requirements, accessibility and maintenance, public health and safety, hydrological considerations, community impact and acceptance and economic factors.
5. Once a feasible pump station site has been identified, Tighe & Bond will determine if there are areas outside of the proposed development area that might also be able to receive sewer service. Tighe & Bond will also coordinate with the Town of Ridgefield WPCA to confirm the specific components, if any, that should be included in the pump station to meet their standard requirements. The construction cost for the pump station will be developed once the requirements have been confirmed.
6. Proposed sewer layouts will be developed for the Branchville area showing how the various parcels will be provided with sewer service. A force main route will also be developed showing how the new Branchville pump station will be able to connect into the Redding sewer system. Our staff will coordinate with the CTDOT to confirm that they will allow the force main to be constructed, their pavement restoration requirements, and potential work hour limitations. Development of sewer layouts within the Town of Redding will not be prepared unless it is determined that the new pump station will be located in the Town of Redding.
7. Once preliminary sewer and force main layouts have been developed, a review Workshop will be held with key Team members to review and discuss the routing methodology, environmental and permitting requirements, and recommendations. This will include meeting with the Town of Wilton if the recommended pipeline route will pass through this community.
8. Once the sewer route has been agreed upon by all parties, an updated construction OPCC will be developed.
9. The results of the cost evaluation work will be documented and included in Task 8.

## **Task 6 – Floodplain Evaluation**

1. Any proposed construction within the floodplain of the Norwalk River will require a hydraulic analysis to evaluate impacts to river flood elevations and the conformity with the local zoning regulations of both Redding and Ridgefield. The existing conditions hydraulic model of the Norwalk River will be modified by supplementing it with additional cross sections obtained from available LiDAR data and in the model through the area of proposed encroachments into the floodplain. FEMA flow rates will be utilized for this analysis, since those are the regulatory basis of the floodplain.
2. Run the existing conditions model for the 1% annual chance (100-year) and 0.2% annual chance (500-year) storm to determine the resultant flood elevations where proposed alignments will cross the watercourse. This model will be used to inform the type of crossing that will be used, whether attached to an existing bridge girder or mounted on a separate utility bridge.

3. Once the proposed development within the Branchville area has been confirmed, prepare a proposed conditions model addressing additional development and Branchville, and schematic-level grading changes necessary to accommodate proposed sanitary sewer alignment crossings to confirm that proposed construction will not adversely impact flood elevations. We will make reasonable assumptions regarding the pier dimensions of utility bridge crossings based on similar work performed elsewhere.
4. Prepare up to three schematic crossing alternatives to accommodate the proposed improvements while not increasing flood elevations of the Norwalk River and minimizing velocity increases.
5. Evaluate the riverbank using HEC-23 or similar methodology to develop a schematic design for necessary embankment linings that may be necessary as a result of potential encroachments into the floodplain.
6. Once the evaluation work is complete, attend and present at a Workshop Meeting with all stakeholders to review and discuss the findings and recommendations.
7. Review the feedback received at the Workshop Meeting, and document the final results of the floodplain evaluation in Task 8.

#### **Task 7 – Intermunicipal Agreement Recommendations**

1. A task kickoff Workshop meeting will be held virtually with appropriate representatives from Redding, Ridgefield and WestCOG to review the goals of the intermunicipal agreement, information needs, and project timeline.
2. Tighe & Bond will draft the terms of an intermunicipal agreement between Ridgefield and Redding that will serve as the basis for both communities to continue negotiations. This agreement will address the following:
  - Service area delineation
  - Capacity allocation
  - Maintenance responsibilities
  - Cost-sharing mechanisms for capital improvements, including facility expansion
  - Dispute resolution procedures
  - Terms for future expansion or modifications
  - Possible Representation of Ridgefield's WPCA on the Redding WPCC
  - Compensation to Redding WPCC for the loss in capacity due to the 170,000 gallon per day allocation required to service the Gilbert & Bennett Wire Mill site.
  - Possible considerations to be given to the Town of Wilton if the new force main will be located in a portion of this community.

The agreement will be crafted to address:

- Representation of the Ridgefield WPCA and Redding WPCC and their respective municipalities
  - Service standards and performance metrics
  - Financial obligations and revenue sharing
  - Governance structure for joint decision-making
  - Procedures for amending the agreement
  - Term of the agreement and renewal provisions
3. To support the terms contained in the intermunicipal agreement, Tighe & Bond will prepare a financial analysis that includes the following:

- Projected costs for infrastructure development and expansion
- Operational and maintenance expenses
- Revenue projections based on anticipated user base and recommended connection fees
- Long-term financial sustainability analysis

The analysis will identify potential funding sources such as State and federal grants, low-interest loans from State and federal agencies, municipal bonds and public-private partnerships. To assess the financial effects on property owners, Tighe & Bond will:

- Estimate connection costs for individual properties
  - Project ongoing sewer usage fees
  - Analyze potential property value impacts
4. To establish fair and transparent connection fees, Tighe & Bond will:
    - Assess infrastructure requirements for a typical property in the area to be served
    - Develop a standardized cost calculation method
    - Consider factors such as distance from main lines, terrain, and existing septic systems
    - Propose options for financing or phasing connection costs
    - Special assessments for capital improvements
    - Procedures for billing and collection
    - Provisions for fee adjustments and appeals
  5. To ensure equitable cost-sharing for operational supplements and capital improvements, Tighe & Bond will:
    - Analyze historical data on sewer system costs in both municipalities
    - Project future capital needs and operational expenses
    - Develop a formula based on factors such as usage, population served, and infrastructure ownership
    - Propose mechanisms for regular review and adjustment of the cost-sharing model
  6. To maintain a consistent funding stream prior to customer flows, and plan for future facility expansions, the recommended agreement will also include the following:
    - Establishing a reserve fund with initial contributions from both the WPCA and WPCB
    - Implementing a phased approach to infrastructure development
    - Exploring temporary financing options to bridge the gap until customer revenues begin
    - Developing contingency plans for potential delays or lower-than-expected initial usage
  7. Tighe & Bond will create a detailed implementation plan including:
    - Timeline for key milestones and decision points
    - Stakeholder engagement strategy
    - Regulatory compliance checklist
    - Risk assessment and mitigation strategies
    - Monitoring and evaluation framework



8. Once the draft agreement has been prepared and financial analysis completed, a draft copy will be sent to all parties for review and comment.
9. A Task Workshop meeting will be held virtually to review and discuss comments received. Revisions to the agreement will be made as appropriate, and a final copy submitted to all parties.
10. Information to be provided by each Town is as follows:
  - Each Town shall identify at least one individual to participate in the development of the Intermunicipal Agreement
  - The Towns shall agree on legal counsel arrangements and shall conduct timely reviews of the Agreement language
  - Current year operating cost data shall be provided along with the previous two years
11. A copy of the final agreement and the financial analysis results will be included in the Final Report as part of Task 8.

### **Task 8 – Report Development**

1. A Comprehensive Report will be developed summarizing the work completed in Tasks 1 – 7. The focus of the report will be summarizing the proposed developments, future wastewater flows, connections to the Redding WPCF, a summary of future flows to the plant, and recommended plant improvements to accommodate these flows.
2. Submit the Draft Report to the Project Team members for review. A virtual review meeting will be held to discuss comments and questions from all team members.
3. Address comments as agreed upon, finalize the Report, and submit a copy of the final Report to all parties.

### **Task 9 - Public Participation Program and Project Meetings**

1. The following meetings are specifically included for this project as part of Tasks 1 - 7:
  - a. Project kickoff meeting (virtual)
  - b. Task Workshop meetings (4 meetings for Task 1, 8 meetings for Tasks 2 - 8).
2. The proposed scope also includes an allowance for the following:
  - a. Four virtual team project status meetings
  - b. One in person meeting in the Town of Ridgefield (participants to be determined)
  - c. One in person meeting in the Town of Redding (participants to be determined)

## Exclusions

This scope of services does not include any of the following:

1. Engineering design services beyond the basic planning level.
2. Construction phase services.
3. Preparation of design level cost estimates (cost estimates developed as part of this scope of services are planning level opinions of probable construction and operating cost).
4. Property survey.
5. Topographic survey.
6. Wetland delineations.
7. Soil investigations.
8. Groundwater monitoring.
9. Hydraulic modeling or computer modeling of any wastewater collection systems or treatment facilities. This will likely be required in followup work if it is necessary to expand the capacity of the plant.
10. Floodplain modeling excludes the treatment plant area.
11. Conditions assessments or field testing of any WPCF or collection system equipment or systems (including but not limited to structures, electrical, controls and building systems).
12. Wastewater sampling or analysis.
13. Groundwater sampling or analysis.
14. Treatment Plant, Collection Systems, or Pump Station capital improvement plans
15. Environmental Impact Evaluation (EIE).