Beaufort Jasper Water & Sewer Authority

Development Policy

and

Procedure Manual

Revised July 2011

RESOLUTION

ADOPTING THE BEAUFORT JASPER WATER AND SEWER AUTHORITY DEVELOPMENT POLICY AND PROCEDURE MANUAL DATED JULY 1, 2011.

WHEREAS, it is the policy of the Beaufort-Jasper Water and Sewer Authority to require all development connecting to its water and wastewater systems to follow certain specific procedures; and,

WHEREAS, the Authority has previously adopted a formal procedures document, which has recently been refined by the staff; and,

WHEREAS, the Authority's Capital Projects Committee has reviewed the revised Development Policy and Procedure Manual and recommends its adoption by the BJWSA Board of Directors,

NOW, THEREFORE, BE IT RESOLVED by the members of the Beaufort Jasper Water and Sewer Authority duly assembled, that the revised Development Policy and Procedure Manual dated January 1, 2010 is hereby adopted.

ADOPTED, this _____th day of _____, 2011 in Regular Session.

(SEAL)

BEAUFORT-JASPER WATER AND SEWER AUTHORITY OF SOUTH CAROLINA

By: _____
Brandy M. Gray, Chair

Attest:

_____
Lorraine W. Bond, Secretary/Treasurer

PREFACE

The purpose of this manual is to provide guidelines for the orderly installation of water and sewer systems in an effort to meet the growing needs of the development community in the BJWSA service area. These guidelines were written to be flexible enough to accommodate the individuality of each project while maintaining high standards and orderly procedures. Each project must be handled in a professional manner so that the system design and construction standards are met. Adherence to these standards is imperative to ensure that the projects installed under this policy will provide years of low cost maintenance to BJWSA and uninterrupted service to our customers.

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CHAPTER 1: GENERAL OVERVIEW AND DEVELOPMENT POLICIES

1.1 - Introduction

The following policies and procedures apply to all public water and wastewater related activities being undertaken by third party developers in the Beaufort-Jasper Water and Sewer Authority (BJWSA) service area. The provisions of this manual apply to all such activities.

1.2 - Definitions

1.2.1 **Authority** - The Board of Directors of the Beaufort-Jasper Water and Sewer Authority (BJWSA), its delegates, and/or employees.

1.2.2 **Capital Contribution Fees (CCF)** – Also called capacity fees, these fees are assessed to new developments and customers to recover the cost of current and future infrastructure based on their maximum anticipated allotment of water and/or sewer capacity in the BJWSA system. These fees, measured in cost per gallons per day ($/GPD), are used to build or upgrade facilities required for growth while minimizing the financial impact on our existing customers.

1.2.3 **Contractor** - A person, firm, corporation or other legal entity authorized to perform construction by the State of South Carolina Licensing Board for Contractors. A contractor may not perform work outside of his licensed capacity.

1.2.4 **Density** - Defined as the number of REU per acre or the number of GPD per acre.

1.2.5 **Development** - The performance of any land improvement operation; the making of any material change in the use of any structure or land; or the division of land into two (2) or more parcels.

1.2.6 **Developer** - Any person, firm, corporation, or other legal entity improving property for commercial, industrial or residential purposes.

1.2.7 **Developer Agreement** - A written agreement between BJWSA and a developer that provides for specific procedures that apply to a particular development. Such agreements will only be used on projects greater than 250 REU and will not adjust or change any of the substantive technical requirements of BJWSA. Developers of large projects are encouraged to meet with BJWSA to discuss the applicability and desirability of a developer agreement.

1.2.8 **Easement** – A right afforded to BJWSA to use another's real property to access the infrastructure for maintenance or construction activities.

1.2.9 **Effluent** – Wastewater which has been treated and suitable for disposal.

1.2.10 **Engineer** - A person currently licensed as a Professional Engineer by the South Carolina State Board of Registration for Professional Engineers and Land Surveyors; Division of Occupational and Professional Licensing; Department of Labor, Licensing and Regulation.

1.2.11 **Land Surveyor** - A person currently licensed as a Land Surveyor by the South Carolina State Board of Registration for Professional Engineers and Land Surveyors; Division of Occupational and Professional Licensing; Department of Labor, Licensing and Regulation.

1.2.12 **Lot** - A single parcel or tract of land that has been subdivided for the purpose of building a residence or commercial facility.

1.2.13 **Parcel** – A portion or plot of land, usually a division of a larger area.

1.2.14 **Plat** - A map or drawing upon which the development is presented for approval.

1.2.15 **Potable Water** – Drinking water that is of sufficiently high quality that it is suitable for human consumption or use.

1.2.16 **Pre-construction Conference (Pre-Con)** – The kick-off meeting with representatives from BJWSA, the owner/developer, engineer and contractor to discuss procedures prior to construction.

1.2.17 **Project** - Water and/or sewer construction activities required to serve a development in accordance with this policy.

1.2.18 **Project Fees** – Fees required to offset the costs associated with design review, construction inspection, conversion of record drawings and legal documents.

1.2.19 **Public Right-of-Way** - Street or road right-of-way.

1.2.20 **Record Drawings** – Drawings that are used to record as-built conditions of the water and sewer systems at the completion of construction.

1.2.21 **Residential Equivalent Unit (REU)** - A unit of measure established by BJWSA that equals the average daily water consumption and sewer discharge for a typical residential unit. The water consumption is 400 gallons per day (GPD) and the sewer discharge is 300 GPD.

1.2.22 **Reuse (Reclaim) Water** – Wastewater that has been filtered and chemically treated to stringent standards so that the effluent meets state and federal standards for reclaimed water. While it is not suitable for potable water, reuse water can be used for non-potable applications such as irrigation.

1.2.23 **SC DHEC Approval to Place in Operation (formerly Permit to Operate)** – A permit issued by the SC DHEC District Engineer that authorizes usage of a new water and/or sewer.

1.2.24 **Service Authorization** – A letter of acceptance written by the BJWSA Project Manager to the SC DHEC District Engineer after new construction, stating that a water and/or sewer system will be owned, operated, and maintained by the Authority from that point forward.

1.2.25 **Service Connection** – Pipe laterals from municipal water and/or sewer mains to the front property lines of the parcels served.

1.2.26 **Sewer Capacity** – The anticipated sewer usage assigned to a project, based on the calculated maximum daily wastewater flows discharged from the development and measured in gallons per day (GPD). Residential applications may also be calculated in residential equivalent units (REU), where 1 REU equals 300 GPD of sewer capacity. Values for typical establishments can be found in SCDHEC's Unit Contributory Loadings for Wastewater Treatment Plants in **Appendix A**.

1.2.27 **Subdivision** - The division of a tract, parcel, or lot into two or more lots, building sites, or other divisions for the purpose of immediate or future sale, legacy, or building of a development. Subdivision shall also refer to uses of land not ordinarily considered a subdivision but requiring utility installations. Examples of these uses are mobile home parks, multi-family projects, townhouses, apartments, and planned unit developments.

1.2.28 **Utility Right-of-Way** – Private right-of-way granted to BJWSA which is not dedicated to the public, but for the exclusive use of BJWSA.

1.2.29 **Wastewater** – Any liquid waste or sewage discharged from a building sanitary plumbing system into a central or private collection, transmission, treatment and disposal system.

1.2.30 **Water Capacity** - The anticipated water usage assigned to a project, based on the calculated maximum daily wastewater flows discharged from the development and measured in gallons per day (GPD). Residential applications may also be calculated in residential equivalent units (REU), where 1 REU equals 400 GPD of sewer capacity. For commercial applications, the water capacity is calculated at a rate of 1.5 times the sewer capacity.

1.3 – BJWSA Development Policies

The following policies were written in response to requests for guidance by the development community on a number of issues pertaining to BJWSA's role in providing water and sewer services throughout the two-county service area.

- **POLICY FOR INFRASTRUCTURE EXTENSIONS OR EXPANSIONS (Page 10)**
- **POLICY FOR HYDRANTS (Page 13)**

BJWSA INFRASTRUCTURE EXTENSION / EXPANSION POLICY

OVERVIEW

Over the past 20 years, BJWSA has increased its customer base throughout its service area in Beaufort and Jasper Counties by expanding and extending infrastructure into locations where water and sewer service had been previously unavailable. Infrastructure is a term that describes the Authority's physical assets, such as treatment plants, pump stations and pipelines, which are required to provide water and sewer service to our customers. Funding sources for these types of projects is obtained through either BJWSA's Capital Improvement Program (CIP) or through developer aid-to-construction.

Expansion and extension projects are based on the Board directive that "growth pays for growth". This means that the cost associated with infrastructure expansions and/or extensions shall not be borne by BJWSA's customers through their usage rates. Rather, the Authority largely finances these projects from its water and sewer capital accounts with funds collected as capital contribution fees (also called capacity fees) from new development projects or property owner groups.

The purpose of this policy is to provide guidelines for the approval and funding of projects which expand or extend the water and sewer infrastructure intended to serve existing residents, property owners and developments in BJWSA's two county service area.

GENERAL PIPELINE EXTENSION POLICY

In parts of Beaufort and Jasper Counties where water and/or sewer capacity is either insufficient to meet the needs of existing residents, or unavailable altogether, BJWSA will consider funding pipeline extension or upgrade requests from local governments, fire districts, private citizens and/or developers in an upcoming CIP. The Authority updates its ten year CIP every three years with projects to expand, improve or replace infrastructure used to deliver water and sewer service to its customers in Beaufort and Jasper Counties. Candidate projects are classified as either non-discretionary (projects that are critical to BJWSA operations) or discretionary - projects that are not critical but will be considered based on their ranking against other discretionary projects and the availability of funding. All these projects are ranked and programmed into the CIP for a particular period based on their level of importance to the Authority's operation and mission. With Board approval, critical projects may be added into the CIP between the three year renewal points.

General Purpose Local Government Projects - Local governments and/or fire districts may propose projects for consideration during the capital improvement planning process. At the start of this process, BJWSA will notify the municipalities that it is accepting requests for projects for consideration in the upcoming CIP. The projects submitted by the municipalities will be evaluated based on benefit to BJWSA and its customers. BJWSA staff will then develop project work scopes and budgetary cost estimates, which will be considered during the ranking process. All such projects will be included in the

ten year CIP, and, based on the availability of discretionary funds, the highest ranked projects will be scheduled for funding and construction during the upcoming three year period

Front Foot Assessment Projects - Private property owners, in communities developed before water and sewer service became available, may also request a pipeline extension project be included in BJWSA's CIP, by submitting a petition calling for a water or sewer line extension to serve their neighborhood.

Because many older subdivisions in South Carolina were developed before water and sewer services were available, State Statutes (Sec 6-11-1230 (4)) authorize public service districts to install water distribution and sewer collection lines, and to asses the actual cost of the construction to those parcels of land directly abutting the lines. This statutorily authorized funding technique is referred to as a "front foot assessment". This statutory process allows Beaufort-Jasper Water and Sewer Authority (BJWSA) to install water distribution or sewer collection facilities to serve an already developed or subdivided area and then, by following a specific legal process, to assess the costs of those facilities against the parcels abutting the lines. The cost of the construction project is then collected from the property owners over a period not to exceed twenty years through an assessment added to their property taxes. As land use changes, BJWSA must recalculate the assessment. BJWSA must ensure that each parcel included pays its fair share of the project cost in accordance with the state statutes.

When the petition is submitted, BJWSA staff will develop a work scope and budgetary cost estimate for the pipeline extension project and schedule a meeting with the citizen group or neighborhood association to present the conceptual design and budgetary cost estimate, including the pro rata cost share of each property served. The affected property owners must then vote to adopt a resolution in support of the pipeline extension project. BJWSA will add the project into the CIP when a 2/3 majority of the property owners vote to adopt the resolution. It is important to note that an affirmative vote for the pipeline extension obligates ALL affected property owners to fund their portion of the pipeline upon completion of the project, regardless of whether they voted for or against the resolution.

Infrastructure Extension or Expansion Projects for New Developments - The timing of CIP projects may not coincide with the schedule of a new development project, so a developer may opt to provide funding as an aid-to-construction in exchange for water and sewer capacity credits that can be used to offset the capacity requirements of their current and future project(s).

If CIP funds are not programmed for the requested project within the scheduled development time frame, a developer can provide aid-to-construction funds and/or resources to install the necessary infrastructure to serve his development, including offsite extensions of water and/or sewer pipelines or larger pump stations. In this case, BJWSA will work with the developer to determine the level of cost sharing between BJWSA and the developer and the viable funding options as described below.

1. In the case of a pipeline extension to serve a single development, BJWSA will credit the developer's required capacity fee with the agreed aid-to-construction amount so as to offset the

cost of the offsite pipeline extension. If the pipeline extension cost exceeds the value of the capacity required, the developer will be responsible for the additional amount, for which he will receive additional water and/or sewer capacity to be used on future projects within the BJWSA service area.

2. In the case where BJWSA determines that a pump station or a pipeline serving a developer project should be relocated or increased in size to serve additional parcels in the vicinity, BJWSA will consider providing funds or capacity credits, at its discretion, equal to the cost difference between the optimal location/size and the location/size needed to serve the development. If there is a shortfall in funding for the infrastructure expansion or extension, and if the developer has no interest in additional capacity credits for future projects, BJWSA may submit the project for funding in a future CIP cycle as a discretionary project.
3. In the case where neither the developer nor BJWSA is able to fund the offsite pipeline extension in the time frame required for the development of the property, BJWSA will notify the developer that the capacity required to serve the development is unavailable until further notice.

BJWSA HYDRANT POLICY

OVERVIEW

The purpose of this policy is to provide guidance regarding the usage of hydrants on water transmission and distribution pipelines throughout BJWSA's two county service area in support of life safety systems. Through FY 2011, BJWSA has installed over 1100 miles of water mains ranging in size from 6" to 30" and over 6700 hydrants. While these hydrants perform a valuable role in providing a water supply for fire protection in Beaufort and Jasper Counties, their primary role is in flushing the Authority's water transmission and distribution pipelines to maintain quality of water delivered to and used by our customers.

BJWSA flushes and tests its hydrants on an annual basis to determine and record operating characteristics such as flow rate, as well as static and residual pressure. The test information is used to monitor water distribution system flow characteristics and as a tool to model system performance for use in designing water supplies to new developments and areas where water service is currently unavailable. The test results are also provided as a service to the fire districts in Beaufort and Jasper Counties and used to determine their ISO ratings.

There is a common misconception among developers, engineers, and even fire districts, that BJWSA is responsible for providing hydrants and supplying the necessary fire flows and pressures to meet the fire protection design conditions for proposed development projects. In actuality, the flow and pressure characteristics of BJWSA's water transmission and distribution systems should be used only to determine baseline operating conditions, from which fire protection systems can be designed for, and built in, developments to meet the requirements of the fire district.

HYDRANT USAGE POLICY

This hydrant usage policy shall be used to clarify BJWSA's role in the supply of water and the installation of hydrants to support the fire protection requirements of new developments. BJWSA will work with developers, engineers and fire districts to provide sufficient water supply as described below.

1. BJWSA will test all hydrants on an annual basis to determine instantaneous flow rate and static and residual pressures at each location.
2. BJWSA will maintain a minimum of 2000 GPM at 20 PSI residual pressure from hydrants on water transmission mains (pipelines greater than 12" diameter), with spacing as required for water system maintenance.
3. BJWSA will maintain a minimum of 1000 GPM at 20 PSI residual pressure from hydrants on water distribution mains (pipelines 6" – 12" diameter), with spacing in 1000 FT increments for water system maintenance.
4. It is the responsibility of the fire district and/or the associated municipality to request the addition of hydrants to BJWSA's water transmission and distribution systems for the sole purpose of fire

protection. These requests will be considered for funding as discretionary projects in BJWSA's CIP planning process. The fire district or the municipality may at any time request and pay for the installation of a hydrant and BJWSA will have it installed immediately.

5. It is the responsibility of the developer and his engineer to design a fire protection system that meets the requirements of the fire district based on the available BJWSA system flows and pressures at the point of connection.

CHAPTER 2: DESIGN AND PERMITTING PROCEDURES

These procedures shall be followed by developers who plan, design and construct water and/or sewer services that will be taken over by BJWSA upon completion of the associated work within a development. Depending upon the size and scope of the proposed project, some procedures may be modified by BJWSA. If the development requires an individual tap with no significant system improvements, the procedure outlined in Section 3.2.4 shall be used.

2.1 - Procedures and Activity Sequence

Administrative fees will be charged in accordance with the fee rates and charges outlined in Section 2.7 and Appendix A. The development sequence is:

2.1.1 Water/Wastewater Availability Request and BJWSA Response (Section 2.2)

2.1.2 Design Approval Process (Section 2.3)

1. Preliminary Design Submittal and Pre-design Meeting (Section 2.3.1)
2. Design Drawing Requirements (Section 2.3.2)
3. Engineering Calculations (Section 2.3.3)
4. Permit Submittals (Section 2.3.4)
5. Submission of the Design to BJWSA (Section 2.3.6)
6. Design Package Approval (Section 2.3.7)
7. Delegated Review Process (Section 2.3.8)

2.1.3 Capacity Commitment and Payment of Fees (Section 2.4)

2.1.4 Pre-construction Conference (Section 3.1)

2.1.5 Project Closeout Procedures (Chapter 4)

1. Final Inspection and System Testing (Sections 4.1 and 4.2)
2. Closeout Requirements for Engineers, Contractors and Developers (Section 4.3)
3. BJWSA Acceptance and Service Authorization (Section 4.4)
4. Warranty Period & Inspection (Section 4.5)

2.2 - Water/Wastewater Availability

BJWSA owns, operates and maintains hundreds of miles of water and sewer pipelines throughout Beaufort and Jasper Counties. However, there are some areas where service is not yet available. Potential developers should request information on the availability of water and/or wastewater while performing due diligence prior to purchasing a parcel or tract of land for development.

2.2.1 Water and Wastewater Availability Request

Developers requesting availability must submit a Water/Wastewater Availability Request Form **(See**

Appendix B), which is used to describe the location, purpose, scope, and size of a potential project. The completed request form must be forwarded to the Engineering Department Project Coordinator, BJWSA, 6 Snake Road, Okatie, South Carolina 29909, or online from BJWSA's internet website at www.bjwsa.net. The processing fee associated with an Availability Request, as listed in BJWSA's Ancillary Fee Schedule, must be submitted with the availability form.

2.2.2 Water/Wastewater Availability Request Response

BJWSA will issue a written response within 5 working days of receipt of the completed request form and associated fee. This response will inform the developer of the availability, size and proximity of the water and/or wastewater infrastructure in the requested area.

2.3 – Design Approval Process

The purpose of the design approval process is to verify that the developer, through his/her consulting engineer, is presenting a project that meets SCDHEC regulations and BJWSA technical specifications. Once the design package is approved by BJWSA, SCDHEC will issue a project-specific construction permit. In an effort to streamline the design review process and ensure that all necessary information is included in the submission, BJWSA has compiled and adopted the requirements provided in this section.

2.3.1 Pre-design Meeting/Preliminary Design Submittal

Upon review of the availability request, BJWSA may require a pre-design meeting if staff determines that the project is of sufficient magnitude, if the developer is planning to phase the development, or if a pump station using a force main manifold is required. Based on the outcome of the pre-design meeting, a preliminary design submittal may be required to confirm the design intent prior to submission of the detailed design package. Approval of the preliminary plan is on a conditional and conceptual basis and does not constitute final approval of the plan for construction. In order to coordinate with the Beaufort or Jasper County Planning Department review procedures, engineers should have plans, specifications, and design calculations submitted to BJWSA no later than thirty days prior to the submission of the development permit application to the County.

2.3.2 Design Drawing Requirements

At a minimum, the following elements are required on their respective sheets for proper review of a standard design submittal:

1. **General Requirements**
    a. Boundary survey in the USA and South Carolina State Plane Coordinates (RNAD 83 coordinate system (Map Code SC83F)) shall be prepared by a SC licensed professional land surveyor, provided in electronic format for verification by BJWSA GIS Coordinator and used as the base layer for all design site plans. All required elevations shall be based on the 1929 USGS Datum. The SC licensed professional land survey shall be contracted by developer's engineer of record to provide surveying services throughout the project.

b. Design drawings shall be prepared by a SC licensed professional engineer and include his/her seal and signature certification.
c. Water and/or sewer designs shall use BJWSA technical specifications on file with SC DHEC and available in the BJWSA website (www.BJWSA.org) Engineering Section.
d. All drawings shall be submitted on D size sheets (24" x 36"), with the north arrow orientation consistent throughout all plan sheet.
e. Each drawing sheet shall use the title block of the engineering firm of record with the following information provided and/or updated as necessary:
    - Project title;
    - Sheet title;
    - Sheet number;
    - Plan date;
    - Scale used;
    - Engineer name and contact information;
    - Revision block with description and date of each revision;
    - Project title and BJWSA tracking number in lower left corner.

2. **Cover Sheet**
    a. Project name in sufficient detail to describe the scope of development;
    b. Legal name and address of the developer, person in charge and contact information;
    c. Project development data, including governmental jurisdiction, tax map number and 911 street address;
    d. Site specific data, including GPS location, number of parcels and/or units, and usage designation (single family, multi-family, commercial);
    e. Vicinity map showing the general project location, including any municipal boundaries, roads and water bodies within 3 miles of the project;
    f. Schedule of drawings.

3. **Index Sheet -** The purpose of the index sheet is to provide BJWSA reviewers with an understanding of the project scope and layout, and must include the following elements.
    a. Project map showing the overall site plan with the following information:
        - Labeled roads, streets and parcels within the project boundary;
        - Layout of water and sewer mains, structures, and pump stations;
        - Information on properties adjacent to the proposed project location, including property owner and tax map number, as well as all roads, parcels, subdivisions, major developments and municipalities within 1000 FT of the project;
        - Location and names of streams, lakes, swamps, and wetlands and any other water bodies, including areas subject to flooding.

- MSL elevations of proposed major system appurtenances (i.e. pump stations, junction manholes, main valve clusters, etc.).
- Orientation of multiple sheets indexed to show the match lines on connecting drawings (the orientation of the map must be maintained on all subsequent sheets).

b. Other elements that may be shown on the index sheet include municipality, utility, and/or agency contact information, as well as the design engineer's general notes.

4. **Utility Plan Sheet** - The purpose of the utility sheet is to show the physical site layout of the project in greater detail than on the project map, so specific water and sewer design elements can be laid out as they relate to the civil/site design (staking, paving, grading and drainage). The following elements must be represented on the utility sheet.
   a. Existing and/or proposed physical layout of the development, shown in sufficient detail to show roads, streets, lot layouts and phasing limits, as well as water bodies and wetlands;
   b. All existing roadways, including streets of record (recorded but not constructed) on or abutting the tract shall be shown, including the names and right-of-way widths;
   c. Site plans drawn to a scale no greater than 1" = 20'-0" and no less than 1" = 40'-0", with the north arrow orientation in the same direction on all sheets;
   c. A minimum of 1" plan overlap is required beyond the sheet match lines, with care taken to avoid splitting a lot, street intersection, pump station site or other physical feature that can be shown in total;
   d. In case of re-subdivision, a copy of the existing plat must be submitted with proposed re-subdivisions superimposed thereon;
   e. All existing (in gray scale) and proposed (in bold) water and sewer infrastructure;
   f. Pump stations assigned with a BJWSA ID number and labeled for any view shown.
   g. Other utilities in proximity to the water and sewer systems, including storm drains as well as electrical, communications, and natural gas lines, shown in plan and section views;
   h. All existing and proposed rights-of-way, utility easements.

5. **Utility Profile Sheet** - The purpose of the profile sheet is to show a vertical representation of a water/sewer pipeline design layout as it relates to physical grades and other underground utilities in close proximity. Where applicable, the profile should be shown below the utility site plan on the same drawing sheet. The following profile elements must be represented:
   a. Constructed grade;
   b. Stationing to match the plan view;
   c. Manholes with the following information:
      - Survey stations
      - Manhole types (standard, drop, cut-in)
      - Existing and proposed rim and invert elevations (upstream and downstream)

d. Pipelines with the following information:
    - Tangent length
    - Pipe diameter
    - Pipe type and class (DIP, PVC, etc.)
    - Pipe slope (%)
e. Any known conflicting utilities;
f. Separation of all storm drainage crossing water/sewer pipelines;
g. Stream crossings identified;
h. Aerial crossings identified;
i. Fittings, air release valves, restrained joints/thrust blocks, and any other necessary information for force mains.

6. **Pump Station Plans and Details** – The purpose of this sheet is to show a horizontal (plan) and vertical (section) representation of the various mechanical, electrical, civil and structural elements that comprise a wastewater pump station. The site plan shall show the actual layout of the pump station to scale with respect to the proposed project site. Where applicable, the following information shall be provided on this sheet:
    a. Pump station ID number;
    b. Locations and details of all visible features, including wet well, control panel, receiving manhole, generator connection, etc.;
    c. All weather access road from the closest paved road to the pump station gates;;
    d. Contour lines showing storm drainage within 20-FT of the site;
    e. Pump station data and wet well elevations as listed on BJWSA Standard Detail S-13.
    f. For developments with multiple pump stations, a bubble diagram showing the operational relationship of the pump stations to the BJWSA system.

7. **Water/Sewer Detail Sheets** – The purpose of these sheets is to provide the contractor with BJWSA standard details that are specific to the proposed project. All standard details are included in BJWSA's Technical Specification Manual and available in PDF format upon request by the developer's design engineer.

2.3.3 Engineering Calculations

Appropriate water and sewer design criteria, including number of services, the corresponding usage designations (residential, multi-family, commercial), and unit contributory loadings, must be provided with supporting hydraulic design calculations stamped and signed by the professional engineer of record. The calculations are needed to determine the technical basis of design derived from the requirements of the proposed project and the availability of sufficient water and sewer capacity to meet or exceed those requirements. At a minimum, the following elements are required for review and approval of the project design calculations:

1. **Project Water System Calculations**
   a. Project Summary (with the total number of parcels and associated usage designations)
   b. Average Daily Water Demand
   c. Peak Hourly and Instantaneous Flow Demands
   d. Fire Hydrant Flow/Pressure Test
      - Provides an instantaneous measurement of flows based on the static and residual pressures in pipelines throughout BJWSA's water distribution system.
      - Supplies fire flow and pressure information as well as baseline values for hydraulic modeling applications.
      - Single or dual flow test can be performed depending on the application.
      - Results may be obtained through the Authority's website by e-mailing the hydrant number (found on the top nut) to HYDRANTS@BJWSA.ORG.
   e. Model Analysis of Proposed Water Distribution System
      - Peak Instantaneous Demand Analysis
      - Fire Flow Analysis
   f. Conclusions and Recommendations

2. **Project Wastewater System Calculations**
   a. Project Summary (with the total number of parcels and associated usage designations)
   b. Average Daily and Peak Design Flows
   c. Collection System Considerations
   d. Proposed Pump Station (if required) Considerations
   e. Pump System Curve
   f. Force Main Sizing
   g. Pump Cycle Times
   h. Wetwell Flotation
   i. Proposed Wetwell Design

3. **Wastewater Unit Loadings -** Prior to submitting the design calculations, the engineer should check with BJWSA's Engineering Department to determine the proper unit loadings to be used. The Authority has been approved for reduced residential unit loadings.

   The following table lists the reduced loadings and design factors. The reduced loadings should be used on the DHEC application. The design flows should be used for sewer designs. Residential capacity fees will be charged on a per REU basis.

WW Plant	DHEC Permit	DHEC Loading	Design Factor	Design Flows
Cherry Point	ND 0074004	270 GPD/REU	1.1	300 GPD/REU
Hardeeville	SC 0048127	300 GPD/REU	1.0	300 GPD/REU
Palmetto Bluff	ND 0082147	300 GPD/REU	1.0	300 GPD/REU
Palm Key	ND 0064513	300 GPD/REU	1.0	300 GPD/REU
Port Royal (PWRF)	SC0048348	300 GPD/REU	1.0	300 GPD/REU
St. Helena	ND 0039811	250 GPD/REU	1.2	300 GPD/REU

2.3.4 Permits Required for Installation of Water/Wastewater Utilities

1. **LCOG 208 Certification** – LCOG must certify that a project is consistent with the state and regional plans developed pursuant to Section 208 of the Federal Clean Water Act.
2. **OCRM Water/Wastewater Supply Certification** - SC DHEC's Office of Ocean and Coastal Resource Management must certify that the project is consistent with the SC Coastal Zone Management Program regarding land disturbance activities which result in changes in the natural topography that cause erosion, contribute to sedimentation, affect the quality and quantity of storm water runoff from the site, or result in disturbance of fresh water wetlands.
3. **SC DHEC Water and Wastewater Permits to Construct** – South Carolina Department of Health and Environmental Control, after receipt of the OCRM certification, will issue separate water and wastewater permits for construction of pipelines and associated infrastructure.
4. **SC DOT Encroachment Permit** – The Department of Transportation requires an encroachment permit from BJWSA and the developer for water or sewer utility construction performed in the DOT right-of-way. The encroachment permit grants permission to encroach into the right-of-way for approved construction activities based on the conditions stipulated in the permit. Encroachment permits may also be required from other agencies such as municipalities, counties, power companies and railroads for work in public rights-of-way.
5. **SC DHEC Water and Wastewater Permits to Operate** – South Carolina Department of Health and Environmental Control, after receipt of the BJWSA Service Authorization, will issue separate water and wastewater permits to place the constructed systems into operation.

2.3.5 Other Documentation Required for Design Approval

1. Cover letter, including project description, number of units and number of pump stations.
2. Completed Water/Wastewater Availability Request (**Appendix B**).
3. Electronic AutoCad file of the project boundary survey plat using State Plane Coordinates.
4. All onsite and offsite easements required to serve the proposed project.
5. Letter from District Fire Marshall stating fire flow requirements, spacing and number of hydrants required based on the available water distribution system flow.
6. Electrical utility letter confirming voltage and phase available to pump station sites.

2.3.6 Engineer's Submission for Design Approval

Once the developer's professional engineering firm has compiled all of the relevant elements noted in this section, the design package may be submitted review and approval by BJWSA's design review team (DRT), which meets on a weekly basis (currently Thursday mornings). Design packages submitted for review must contain two sets of plans and engineering calculations and be delivered to BJWSA's Engineering Department at least 24 hours prior to review. Design packages that are deemed incomplete or non-compliant will be returned to the sender without review. BJWSA staff will work to review and return design packages by the end of the following week. All red-line mark-ups from the DRT must be returned with any subsequent design submissions for compliance with DRT comments.

2.3.7 BJWSA's Response and Approval of Design Package

BJWSA will review and respond to the design package within two weeks of receipt. During the review process, BJWSA's DRT will confirm that the design is in compliance with BJWSA Technical Specifications and this manual and grade the package in the following manner:

1. **Approved** – All elements are in compliance and may be submitted for DHEC DRP;
2. **Approved with Comments** – Although the package is generally in compliance, the DRT has provided red-line comments that must be addressed in the DHEC DRP submittal;
3. **Revise and Resubmit** – The DRT has determined that the design package is non-compliant and must be redesigned or additional information provided before the engineer is allowed to submit the DHEC DRP submittal. If a revision is required, a re-submittal fee of $100 must accompany the revised design package.

After approval of the design package, the developer and/or engineer will be notified in writing. The approval letter will include the following information:

1. Permission to submit the project for DHEC DRP submittal as outlined in **Section 2.3.8**.
2. Confirmation that BJWSA will own, operate, and maintain the constructed water and sewer utilities once construction is completed.
3. Estimation of capacity fees and project fees corresponding to the water and sewer loadings provided in the engineering calculations, which must be paid within 30 days of the issuance of the DHEC Construction Permit.

Once the design package has been approved, lot lines may not be changed without written consent from BJWSA. If the lot lines are altered, the developer will be responsible for any costs associated with moving service laterals, modifying as-built record drawings, and updating the BJWSA Engineering Department.

Any project that has been inactive for a period of 12 months shall be considered void and removed from active status 30 days after notification from the BJWSA Engineering Department. If the project is voided, any future return to active status will require re-submittal as a new project and new fees will be assessed.

2.3.8 Delegated Review Process (DRP) Submittal – Water/Wastewater

BJWSA is an approved DRP agency for water and wastewater construction. Upon approval of the Design Package and upon the request of the BJWSA Engineering Department, the Engineer shall submit the following to BJWSA for SCDHEC DRP submission:

1. A transmittal letter, signed by the professional engineer of record, noting that the project is a DRP submittal. The letter should state the project has been reviewed by BJWSA and complies with DHEC Regulations R.61-58 and/or R.61-67.
2. DHEC application to construct the water and wastewater facilities with two (2) copies and a check payable to SCDHEC for fees based upon the delegated review program.
3. Four (4) sets of construction plans and a letter referring to the use of BJWSA specifications. The plans must be sealed, certified and signed by the design engineer in blue ink.
4. Four (4) sets of design calculations for the water and wastewater systems.
5. OCRM certification for water and wastewater.
6. Four (4) 8½" x 11" copies of a detailed location map separate from the plans.
7. Two (2) copies of an overall layout sheet of the wastewater system separate from the plans, showing the proposed sewer lines and their sizes and including existing streets and sewer lines. The proposed sewer lines must be highlighted for easy identification.
8. Lowcountry Council of Governments (LCOG) 208 Certification Fee, to be obtained by BJWSA (Check made to LCOG).
9. SC DHEC Water Construction Permit Fee (Check made to SC DHEC).
10. SC DHEC Sewer Construction Permit Fee (Check made to SC DHEC).

BJWSA will send the DRP submittal for the DHEC Construction Permit. BJWSA will submit the application package to DHEC on the next business day after receipt of all required documentation. Upon issuance of the SCDHEC Construction Permit, the developer or engineer will be responsible for providing copies of the approval letter and the construction permit to BJWSA and the appropriate municipal development agencies.

2.4 Water/Wastewater Capacity Fee Determination

Water and wastewater capacity must be purchased for each development, based on the number of residential and/or commercial units proposed for SCDHEC construction permitting and also submitted to the municipal planning agency for development permitting. In order for a developer to receive a capacity commitment from BJWSA, all capacity fees and any other applicable fees must be paid for the total number of units for which the commitment is requested.

If for financial reasons, a developer decides to phase a development after DRP approval, capacity fees may not be reduced or refunded unless the number of units is also reduced on the SCDHEC construction permit and the municipal agency development permit. BJWSA must approve the phasing plan as part of the project design approval process. BJWSA system-wide fees for water and wastewater capacity used to calculate the fees due will be quoted along with approval of the design package.

2.4.1 Residential Development Capacity

Water and wastewater capacity must be purchased for each residential development based on the number of single family homes, also called residential equivalent units (REU). Capacity fees for residential developments are calculated based on values per REU of 400 GPD for water and 300 GPD for sewer.

2.4.2 Multi-family Development Capacity

Water and wastewater capacity must be purchased for each multi-family facility. Water capacity fees are calculated by using a peaking factor of 1.5 times the wastewater capacity, which is calculated using SCDHEC's unit contributory loadings for various applications **(Appendix A)**. Metering of water consumption for these facilities must be accomplished using master meters for each building. The required wastewater capacity fees are calculated using the DHEC approved reduced unit contributory loadings, as shown below. Capacity fees for multi-family projects using the SC DHEC standard loadings for permitting are also based on the reduced loadings shown below.

Apartments	Accepted Unit Loadings
1 bedroom	150 GPD/apartment unit
2 bedroom	200 GPD/apartment unit
3 bedroom	250 GPD/apartment unit

2.4.3 Commercial Development Capacity

Water and wastewater capacity must be purchased for each commercial facility in a development. Water capacity is calculated using a peaking factor of 1.5 times the wastewater capacity using SCDHEC's Unit Contributory Loadings Chart for various applications **(Appendix A)**. Capacity fees are calculated using BJWSA's system-wide development fees for water and wastewater in effect at the time of design approval. The minimum capacity required for any commercial unit or space is 200 GPD for wastewater and 300 GPD for water. Additional capacity may be required at the time service is requested and the specific use of the facility is established. Developments with multiple commercial units may be assigned capacity based upon the minimum capacity assignment per unit as described above or the total square footage of commercial space (i.e. 100 GPD/1000 SQ FT), whichever is applicable at the time of permitting.

Commercial facility water and wastewater capacities may be adjusted if historical consumption data from similar facilities is available from the developer. Twelve continuous months of consumption data is required from at least three establishments in similar market areas. The data, which must be verified by the engineer and approved by BJWSA, shall be based on the peak quarterly historical consumption.

BJWSA will periodically monitor consumption to verify the amount of capacity utilized in a commercial facility. If, after one year of operation, the facility has consumed water and/or generated wastewater in volumes greater than the capacity commitment assigned to the facility, BJWSA will assess the customer additional capacity fees based upon the average of the highest three (3) months of consumption that occurred during the past 12 months. An invoice for the additional fees will be sent and if necessary, service may be terminated for non-payment.

2.4.4 Payment of Fees and Commitment of Capacity

Capacity fees for a proposed development must be paid in full or otherwise secured prior to a commitment of capacity to the project by BJWSA. The capacity fees can be secured either by cash, an irrevocable letter of credit (LOC) or surety bond in a form that is acceptable to the BJWSA Finance Department.

BJWSA has established the minimum allowable capacity fee amount of $100,000 for consideration of an LOC or surety bond. In those situations where a letter of credit is allowed, the developer must make a down payment of at least 25% of the capacity fees due in cash, along with payment of any project fees, with the remainder paid by the developer based on the schedule approved by BJWSA in the LOC or bond**. BJWSA shall draw down on the letter of credit only if payment is not received in accordance with the agreed upon schedule; at which time the LOC or bond will be liquidated for the full balance due.** The cash payment and LOC must be received and the form approved prior to BJWSA's issuance of a Capacity Certificate. The developer can then submit the capacity commitment form and certificate to the municipal planning agency as evidence of compliance with BJWSA prior to issuance of the project development permit by the municipality.

2.4.5 Transfer, Reassignment or Sale of BJWSA Water/Wastewater Capacity

Water and sewer capacity not assigned to a specific parcel may be transferred or reassigned within the BJWSA service area with the written approval of the Authority. Requests for such transfers or reassignments must be directed to the BJWSA Engineering Department and should specify the following:

1. Transferring individual or party.
2. Receiving individual or party.
3. Parcel to which capacity was initially assigned.
4. Parcel to which capacity will be assigned.
5. Description of capacity being transferred (water and/or sewer, REU or GPD, etc.).
6. Notarized signatures of all parties taking part in the transfer or reassignment.

2.5 BJWSA Ancillary Fees

2.5.1 Project Development Fees

Project development fees are due prior to the Pre-construction Conference. These fees are required to recover staff costs incurred by BJWSA in evaluating the design and monitoring the construction. For a phased development, the fees are based upon the number of units in the specific phase being constructed.

The following project fees from BJWSA's Ancillary Fee Schedule will be quoted with the capacity fees:

1. Water/Sewer Availability Letter Fee
2. Plan Review Fee
3. Construction Inspection Fee
4. Record Drawing Conversion to GIS Fee
5. Easement Recording Fee
6. Pump Station Deed Recording Fee (if a pump station is included in the project)

2.5.2 Construction and Hydrant Meter Rental Fees

If, in the course of development, construction water is needed, the developer's contractor can rent water meters that connect to hydrant outlets on existing water lines. The meters available for this purpose are:

1. Construction Meter – ¾" hose bibb connection to a hydrant outlet
2. Hydrant Meter/Backflow Device – full size connection to a hydrant outlet

These meters can be ordered by contacting BJWSA's Customer Service Department and paying the appropriate rental deposit as indicated in BJWSA's Ancillary Fee Schedule. Before BJWSA can issue the service authorization at the end of construction, the contractor must return all rented equipment and pay for any associated metered water usage.

2.5.3 Water and Sewer Tap Fees

Tap fees account for the cost associated with physically tapping into a water main, force main or gravity sewer main and installing a water or sewer service connection to the property line of parcel to be served. Water tap fees include the cost of the water meter, and as such are dependent on the size of the connection and meter required and are shown in BJWSA's Ancillary Fee Schedule.

2.5.4 Sewer Lateral Inspection Fees

The Authority's responsibility for water and sewer service to a parcel typically ends at the property line fronting the road right-of-way. However, BJWSA crews represent the appropriate municipal building departments by inspecting the gravity sewer lateral from the structure to the cleanout at the property line. In order to inspect the sewer lateral, the developer's plumbing contractor must slope the line at the proper grade and leave the trench open until the sewer inspection is completed. The sewer inspection fee associated with this work is shown in BJWSA's Ancillary Fee Schedule**.**

CHAPTER 3: CONSTRUCTION PROCEDURES

3.1 - Pre-construction Conference

A pre-construction conference (pre-con) shall be required for every development project that involves the construction of water and/or wastewater facilities. The purpose of the pre-con is as follows:

1. Present the engineer's approved drawings and material submittals;
2. Go over the contractor's proposed construction methods;
3. Review BJWSA safety requirements and construction inspection procedures;
4. Discuss the project close out requirements.

Any deviations from the approved drawings and material submittals must be submitted to the BJWSA Engineering Department at least 48 hours prior to the scheduled pre-con. No construction will begin until the pre-con is held and BJWSA gives authorization to proceed. The pre-con must be scheduled through the BJWSA Project Manager after receipt of the SCDHEC Construction Permit, approval of the final construction drawings and material shop drawings, verification of contractor licensing and payment of all outstanding fees. Also, the engineer must acquire and present all encroachment permits, rights-of-way and electronic drawing files prior to scheduling the pre-con. The engineer must contact BJWSA a minimum of five days prior to the proposed date to ensure availability of all concerned parties. BJWSA's project manager will specify the time and place of the pre-con, which should include the following project stakeholders:

1. Engineer
2. Developer Representative
3. Contractor and sub-contractor(s), if applicable.
4. Town, County, SC DOT representatives, if applicable
5. Other utility representatives if applicable.

The engineer is responsible for notifying the above mentioned parties. In cases where the developer is located outside the area, the engineer may act in his behalf. However, developers must provide a letter at the pre-construction conference stating that they have read this manual and will comply with all BJWSA requirements contained herein.

3.1.1 Construction Drawing Approval

The project drawings submitted by the engineer in the DRP package represent the approved construction drawings once they are permitted by SCDHEC for issuance of the Permit to Construct. BJWSA's Engineering Department reserves the right to approve these drawings with comments if minor additional considerations are required prior to construction. If the construction drawings are "approved with comments", then a final construction set must be submitted along with the material shop drawing submittals at least 48 hours prior to the pre-con.

3.1.2 Material Shop Drawing Submittals

Material shop drawing submittals are required for all physical assets to ensure that they comply with

BJWSA Technical Specifications. These submittals are project-specific, and as such, must include or highlight only the specific materials to be used in the project. All material submittals must be routed in electronic format. Paper submittals or faxes will not be accepted. The submittal approval process and progression are as follows:

1. Material vendor furnishes submittals to the contractor based on the project requirements.
2. Contractor reviews the submittals for compliance with SCDHEC permitted construction drawings and BJWSA Technical Specifications and forwards to the developer's engineer-of-record when complete,
3. The developer's engineer-of-record verifies compliance, stamps and signs the submittal, and forwards the package to the BJWSA project manager. If it is determined that the material shop drawing submittal is not in compliance, the engineer shall return it to the contractor for correction and resubmission as noted above.
4. BJWSA's project manager reviews the submittal from the developer's engineer-of-record, verifies compliance, and notifies the engineer that the materials are approved for construction. If it is determined that the material shop drawing submittal is not in compliance, the submittal will be returned to the engineer for correction and resubmission as noted above.

3.1.3 Contractor Licensing Requirements

A list of all subcontractors performing the water and/or sewer installation must be provided to BJWSA at least 48 hours prior to the pre-construction conference. At this time, all contractors and subcontractors will be required to provide their current license number, classification and sub-classifications as listed with the South Carolina Board of Labor, Licensing and Regulation (SCLLR).

1. BJWSA reserves the right to reject any contractor and/or subcontractor. No developer or contractor shall subcontract the construction of an approved project to another party without written approval from BJWSA. If it is discovered that a developer/contractor has sub-contracted all or part of a job without notification to BJWSA, the contractor and subcontractor may be restricted from performing future work on utilities connected onto the BJWSA system and the installed product may have to be removed. A stop work order may be issued on any work in progress that is in violation of these terms and conditions.
2. Any contractor or subcontractor who, in the opinion of BJWSA, has not performed in a satisfactory manner may be restricted from working on any project that will be connected to the BJWSA system. A notice of restriction shall be issued in writing by the BJWSA Engineering Department via registered mail. A list of contractors restricted from working on BJWSA projects is available from the Engineering Office.
3. Pursuant to the above statements, contractors and/or subcontractors may be rejected or restricted from working on BJWSA projects for the following reasons:

a. Failure to perform work in a timely manner and in accordance with project schedules.
b. Constructing facilities not in compliance with approved plans and specifications.
c. Producing sub-standard or poor quality work.
d. Failure to perform warranty work.
e. Chronic failure to comply with BJWSA's Development Policy and Procedures.

4. Any contractor in violation of this policy may be suspended from work in the BJWSA system for a minimum of one year from the date of notification. The contractor must submit a request for reinstatement to BJWSA's Director of Engineering after the suspension period has expired.

3.2 General Construction Procedures

All work shall be in accordance with the latest edition of BJWSA's Technical Specifications. Failure to comply with these specifications will be cause for rejection of all work and as-built plans.

3.2.1 Worksite Safety

1. Contractor Responsibilities:

   a. The Contractor is responsible for assuring that construction safety procedures, as required by Federal, State, and Local Regulations, are observed. The Contractor is required to take all necessary steps to prevent injury to persons or property in the performance of his contract.

   b. If a BJWSA Inspector, as part of his routine duties, observes unsafe practices or construction methods, he will normally inform the Contractor's Superintendent or Developer's Engineer of the hazard. If appropriate action is not taken, the BJWSA Inspector may direct that all work be stopped until corrective measures are taken to assure a safe working environment.

   c. The Contractor shall remedy any and all damage, injury or loss to any property, caused directly or indirectly, in whole or in part, by the Contractor or an person employed by them, or anyone for whose acts any of them may be liable.

2. Accident Prevention:
   a. In the performance of the contract, the Contractor shall comply with the applicable provisions of the regulations issued by the Secretary of Labor pursuant to Section 107 of the Contract Work Hours and Safety Standards Act entitled, "Safety and Health Regulations for Construction" (C29 CFT 1518), renumbered as Part 1926. Occupational Safety and Health Standards (29 CFR Part 1910) issued by the Secretary of Labor pursuant to the Williams Steigen Occupational Safety and Health Act of 1970 are applicable to work performed by the Contractor subject to the provisions of the act.

b. The Contractor will utilize and maintain, as required by conditions and progress of the work, all necessary safeguards. He will notify owners of adjacent utilities and property, when execution of the work may affect them.

c. The Contractor will take all necessary precautions for the safety of the general public as well as his employees. All roadside work shall be properly marked with lights, cones and barrels in accordance with the most recent revision of Part V of the South Carolina Manual on Uniform Traffic Control Devices for Streets and Highways.

d. At all times during the construction of the project and its component parts, the Contractor shall provide, install, and maintain proper temporary supports, shoring, and bracing to prevent any damage, injury, or loss to all employees performing the work and other persons who may be affected.

3.2.2 Wet Tap Connections on Water Mains or Force Mains

All 2" – 12" diameter wet taps on existing water and sewer lines must be performed by BJWSA. Wet taps greater than 12" diameter must be performed by an approved tapping contractor. The Developer's contractor will be responsible for safe excavation and shoring of the trench at the location to be tapped and shall mark the tap location. See **Appendix D**, Tapping Policy and Procedures, for instructions. Fees associated with the taps are listed on BJWSA's Ancillary Fee Schedule.

3.2.3 Service Interruptions and Shutdowns for Water Main/Force Main Tie-ins

When a wet tap is not possible or the relocation of a water or sewer line requires interruption of service, BJWSA must review and approve the procedure. Once approval has been received, the contractor must contact BJWSA's project manager to schedule the interruption ten (10) days in advance of the work. BJWSA will identify those customers affected by the shut down and schedule notification by mail or by distributing door hangers a minimum of 48 hours prior to the service interruption. The schedule agreed upon by the contractor must be strictly followed. If weather conditions prohibit the work from being performed, the interruption must be rescheduled in accordance with the above procedures.

3.2.4 Individual Service Connections for Commercial Development

New individual service connections for existing commercial developments must be performed by BJWSA or a licensed utility contractor. Administrative fees will be charged in accordance with the fee rates and charges indicated in BJWSA's Ancillary Fee Schedule. The procedure for an individual commercial service connection is as follows:

1. A completed Water/Wastewater Availability Request Form **(Appendix B)** and site plan must be submitted to the BJWSA Engineering Department. The site plan must show the locations of water and/or sewer laterals, along with connections at the building and property line.
2. Water/wastewater usage calculations for the commercial site should be submitted if available from the developer or his engineer.

3. The Engineering staff will review the project for certain requirements, such as payment of water and sewer capacity fees, material shop drawing submittals, tap construction methods, backflow prevention devices, water meter sizing and location, fire protection, sewer discharge protection and limitations, etc.

4. Once BJWSA has reviewed and approved the submittal, a commercial quote outlining fees due will be issued to the applicant by the BJWSA Engineering Department. The fees must be paid to the Customer Service Department at least 15 working days prior to the desired date of connection to the system.

5. All sewer laterals, taps and connections must be inspected by BJWSA. The inspections are performed on Tuesdays and Thursdays and a 24 hour notice is required. The piping must be exposed from the building to the street connection at the time of inspection. All work must be done in accordance with BJWSA specifications.

6. Water and sewer connections to new systems may not be used prior to the issuance of a SCDHEC Approval to Place in Operation.

7. For commercial developments with multiple subdivided units, each unit will be required to have an individual metered water and sewer connection.

8. In the case of a multi-family development, water usage for each building will be master metered to include usage for the total number of units in each building.

3.2.5 Stop Work Orders

BJWSA may issue a stop work order for any of the following reasons:

1. Failure to follow the approved plans and/or specifications for construction of the project;

2. Failure to abide by applicable BJWSA operational policies and/or procedures;

3. Failure to use OSHA and BJWSA safe work practices in the construction site;

4. Failure to adhere to SCDOT or other municipal requirements or conditions.

BJWSA's project manager will send copies of the stop work order to the developer, engineer, and contractor. A copy will be left on site with the in-charge contractor representative.

Approval to restart construction shall be issued only by BJWSA's project manager. Any construction performed by a contractor while under a stop work order will be considered unacceptable by BJWSA and subject to removal and reconstruction.

3.3 Waterline Construction Procedures

3.3.1 Construction Water Use Policy

All construction involving the extension of water mains or requiring the use of construction water must comply with this Section.

1. On all projects that require extension of existing water mains, an in-line temporary meter (jumper connection) is required for installation at the same time the wet tap is made for the project. This jumper connection consists of a 2" hydrant turbine meter and backflow prevention device. The contractor must contact BJWSA Customer Service to lease this device. See BJWSA's Ancillary Fee Schedule for the fee associated with the meter.
2. At all times, the main tap valve will remain closed unless opened by BJWSA for scheduled water usage. Unauthorized use or tampering with the main valve is grounds for a stop work order, administrative fees, civil penalties, or criminal prosecution.
3. After service authorization has been issued, the contractor shall return the hydrant meter and backflow device to BJWSA within two weeks and pay for all metered water use. The contractor/developer will be advised of applicable water rates at the pre-construction conference by the BJWSA project manager.

3.3.2 Hydrant Usage

Hydrant operation will be controlled and closely monitored by BJWSA to ensure the integrity of the water system. Contamination of the potable system can occur due to improper use of or connection to hydrants. Directly following installation, all hydrants must be bagged and taped, tied or otherwise secured to provide visual confirmation that the water system is not ready for operation and acceptance by BJWSA. Also:

1. No one except Authority personnel, the local fire department and authorized customers are approved to use a fire hydrant or post hydrant within BJWSA's service area.
2. A request for fire flow information shall be made through BJWSA's Operations Department by e-mailing the hydrant number (on the top nut) to HYDRANTS@BJWSA.ORG. Persons or entities wanting to perform fire flow tests on BJWSA's system must be in the presence of BJWSA staff. See BJWSA's Ancillary Fee Schedule for the associated testing fee.
3. Unauthorized persons or entities may not use a hydrant in the BJWSA system to obtain water to fill tanker trucks, hydro seeders or for any other purpose, unless they complete a hydrant meter rental application which may be obtained from the Customer Service Department and pay the appropriate deposit prior to receiving the hydrant meter.
4. After the work has been completed and the hydrant meter is no longer needed, the contractor will remove the hydrant meter, return it to BJWSA and pay for all metered water use. Once the meter has been returned and no damage to the meter or hydrant is evident, BJWSA will refund the deposit. If the user fees are unpaid or repairs are required, these costs will be deducted from the deposit and the remainder will be returned to the contractor. If the contractor intends to use the hydrant meter for more than 30 days, the meter readings must be submittted to the BJWSA Customer Service Department by the 15th day of each month. Failure to do so may result in forfeiture of the contractor's deposit.

5. Any unauthorized use of a hydrant will be subject to unauthorized or illegal usage fees.

3.3.4 Unauthorized or Illegal Usage

Unauthorized water usage is a violation of BJWSA policies and is subject to Unauthorized Usage Fees as listed in BJWSA's Ancillary Fee Schedule. Unauthorized water usage is also illegal and therefore subject to civil or criminal penalties in Magistrates Court. The decision whether to press legal charges will be made by the BJWSA General Manager. When an illegal connection is found:

1. BJWSA will confiscate the device used on any illegal connection. If the responsible person is at the scene, he will be advised of the policy and disconnect the device. Failure to comply with the request may result in BJWSA pressing charges.
2. BJWSA will calculate a bill for the estimated water used consumed based on twice the current unit consumption charge. If water is returned to BJWSA's sewer system, the estimated gallons used will also be subject to sewer charges at the highest volume charge per 1000 GAL currently approved. An invoice including these charges and the Unauthorized Usage Fee will be sent to the appropriate person.

3.4 Gravity Sewer Construction Procedures

3.4.1 Gravity Sewer Main Extensions

Connection to existing manholes must be made in the presence of a BJWSA inspector. A 48 hour advance notification is required. No debris will be allowed to remain within the sewer system. Upon completion of the first section of gravity sewer, the contractor is required to plug the extension. The plug is not to be removed until service authorization is issued by BJWSA and a SC DHEC Approval to Place in Operation is received. The BJWSA inspector must witness the removal of all plugs. **Failure to comply with this provision is a violation of South Carolina State law.**

3.4.2 Construction of Manholes Over Existing Gravity Sewer Mains

All manholes installed over an existing gravity sewer main must be constructed in the presence of a BJWSA inspector. A 48 hour advance notification is required. The contractor shall provide a certified survey of existing pipe elevations at the point of tie-in, along with upstream and downstream manhole invert elevations before proceeding with manhole installation.

3.4.3 Installation of Pump Station Wet Wells

The installation of all pump station wet wells must be witnessed by a BJWSA inspector. The specific steps to be inspected include the final excavation, placement of the stone base, and installation of the wet well bottom section. A 48 hour advance notification is required.

3.4.4 Force Main Tie-Ins

All tie-ins of force mains into existing manholes must be done in the presence of a BJWSA inspector. A 48 hour advance notification is required.

CHAPTER 4: PROJECT CLOSEOUT PROCEDURES

4.1 BJWSA Inspection Services

4.1.1 General Inspection – Construction Phase Review

Routine and unscheduled inspection of ongoing projects will be made by BJWSA personnel during the construction phase to ensure conformance with the approved plans and specifications, as well as compliance with this policy manual.

Projects approved for construction by the Authority automatically authorize BJWSA inspection personnel access to the construction site at all times for the purpose of inspecting constructed facilities or observing construction operations in progress. BJWSA inspectors will take appropriate action, as outlined herein, when improper material or unacceptable workmanship is detected on the project and will notify the contractor, engineer and/or developer.

BJWSA inspectors shall make periodic checks during all phases of construction to ensure that the contractor is complying fully with project design and specifications as well as the policies and procedures herein established. Any deviation or revision to the approved engineering plans shall be furnished in writing to the project design engineer. The contractor shall not initiate any deviations or revisions until the engineer and BJWSA have approved the change in writing.

4.1.2 Punch List Inspection

A punch list inspection will be conducted at the request of the developer's engineer, who is responsible for coordinating the inspection schedule with the BJWSA inspector assigned to the project. Typically, this inspection should be performed on all water and sewer assets after final grading and associated roadwork is completed and all storm sewer appurtenances are installed. **Two (2) sets of preliminary (as-built) record construction plans shall be provided, along with an electronic copy, at the punch list inspection.**

It is the responsibility of the developer and/or contractor to pump and dispose of all extraneous water from the sewer system prior to the inspection. This extraneous water cannot be discharged into BJWSA's wastewater system.

After the BJWSA inspector verifies final changes to the preliminary as-built drawings, the engineer shall submit the final record drawings to the BJWSA project manager as outlined in **Appendix F**.

4.1.3 Final Inspection

A final inspection may be requested only by the developer's engineer once all items identified during the punch list inspection have been corrected. The sewer system shall be cleaned and flushed prior to the final inspection. The developer's engineer and BJWSA inspector shall prepare a written punch list of any defects noted during the final inspection, and distribute copies to the developer and contractor. Any corrections to be made will reviewed by the developer's engineer and BJWSA inspector prior to issuance of the Service Authorization.

4.2 System Testing

All structures retaining liquid, pressure piping, and gravity sewer piping shall be tested by the contractor as specified in the BJWSA Technical Specifications in accordance with SCDHEC regulations and as directed by the developer's engineer. All testing must be conducted in the presence of the BJWSA inspector and the engineer's representative in a manner that will minimize interference with the work progress.

4.2.1 Soil Compaction Testing

All BJWSA pipelines constructed in the SCDOT right-of way must be inspected by a SCDOT certified soil technician as the pipe is installed, as stated in the conditions of the project encroachment permit. Post-installation compaction testing will not be allowed. Completed compaction testing reports must be submitted to the project inspector as part of the project punch list inspection prior to project closeout.

4.2.2 Water Main and Force Main Hydrostatic Pressure Testing

All pressure pipelines must be subjected to hydrostatic testing in accordance with industry standards. These pipelines shall be tested to 1.5 times the working pressure, but not less than 150 PSI for a period of 2 hours. If the pipeline experiences a pressure drop of 5 PSI or greater, then the test fails. Refer to BJWSA Technical Specifications for more information on this procedure.

4.2.3 Disinfection (BacT) Testing

Before being placed in service, all potable water pipelines, tanks or other structures used for potable water storage shall be disinfected by the contractor as specified in the BJWSA Technical Specifications and as directed by the developer's engineer.

4.2.4 Gravity Sewer Testing

1. ***Air Test*** – All gravity main tangents between manholes must be tested for leakage before being placed into service. In order to pass the air test, each tangent must maintain a pressure of 4 PSIG for five minutes. The project inspector should be notified prior to the air test, which must be witnessed by a representative of the engineer-of-record.
2. ***Pipe Deflection Test*** – Also called the "mandrel test" because the contractor must verify minimal pipe deflection by pulling a mandrel through the pipe tangent from manhole to manhole. The mandrel, which must be sized to no less than 95 percent of inside pipe diameter, must be witnessed by the project inspector.
3. ***Visual Inspection Test*** – The visual inspection test is performed by the contractor by shining a lamp down the pipe tangent from in one manhole while the project inspector views the reflection from the other manhole to determine if a full circle of light can be seen, indicating no deflection.
4. ***Video Inspection Test*** – If the first three test methods are inconclusive or fail outright, then the contractor must provide a digital video inspection of each tangent to confirm that the pipeline is not deflected, sagged, or holding water.

If the contractor is either unable or unwilling to pass these tests, then he may be required to relay the pipeline tangent and correct the failure before the acceptance by BJWSA.

4.2.5 Pump Station Start-up Testing

Pump station start-up testing will be performed by the pump representative. The contractor for the project will contact the pump representative, the electrician for the station, and the project inspector for this start-up. Following the startup, the test results will be forwarded to the project engineer-of-record.

4.3 Project Closeout Requirements

Before BJWSA issues the service authorization for the SC DHEC Permit to Operate, the following documentation must be submitted by the developer's engineer and approved by BJWSA as listed in **Appendix G, Project Closeout Documents** and **Appendix H, Service Authorization Requirements**.

4.3.1 Engineer's Certification Letter, stating that the project was constructed as designed in accordance with the SC DHEC approved construction permit.

4.3.2 Certificate of Non-litigation, signed by the developer, engineer and contractor that there are no liens or legal actions that would affect the dedication of water and/or sewer utilities to BJWSA.

4.3.3 Contractor Guaranty, stating that all work described or shown in the construction documents was performed and guaranteed for a period of twelve months.

4.3.4 Asset Cost Certificate verifying the incremental overall costs of water/sewer improvements.

4.3.5 Asset Bill of Sale, conferring ownership of the installed water an sewer physical assets to BJWSA.

4.3.6 Pump Station Deed Executed and Recorded

Platting information required for easements or real property to be dedicated to BJWSA, conforming to Beaufort and/or Jasper County DSO requirements.

4.3.7 Water/Sewer Utility Easements

An easement is a right afforded by a private property owner to BJWSA to access the water and sewer infrastructure serving a parcel for construction and maintenance activities. For developments with extensive infrastructure serving structures and end users on the parcel, BJWSA's standard document is a **blanket easement** as shown in template form in **Appendix G**. For developments with minor pipeline extensions, either through or across the front of the parcel, where the property owner wishes to limit the extent of encroachment, a specific or dedicated easement may be used. The width of a dedicated easement is determined as follows:

1. Minimum easement width for a single pipeline - 15 FT.
2. Minimum easement width for two pressure pipes installed in parallel - 20 FT.
3. Minimum easement width for pressure pipe and gravity sewer in parallel - 25 FT.

A temporary dedicated construction easement may also be necessary to account for materials and equipment used during installation of water and sewer infrastructure through private property. Once the work is completed, the construction easement is terminated.

4.3.8 System Testing Results, as described in **Sections 4.2** above.

4.3.9 As-built Record Drawings, as described in **Appendix F**.

4.3.10 Maintenance Bond

A maintenance bond shall be required on all water/wastewater construction projects. The purpose of the maintenance bond is to protect and ensure the integrity of systems taken over by BJWSA throughout the warranty period:

1. After issuance of the BJWSA Service Authorization and SC DHEC Operating Permit;
2. Before the development has been completed;
3. Through the warranty period and an additional 6 months to correct any defective items.

The amount of the bond shall be 10% of the total water and/or sewer construction costs or $5,000, whichever is greater. The amount must be sufficient to cover all possible repairs required during the warranty period, as well as the manpower costs associated with locating any newly constructed water and/or sewer pipelines in conjunction with ongoing site work done during the remainder of construction. The bond will be cashed in the event that a repair is made to the system by BJWSA personnel during the warranty period. The acceptable form of the bond is a surety bond, certified or cashiers check. Once the BJWSA inspector completes the warranty inspection and the 18 month time period has elapsed, the bond will be released. However, if dry utilities are still not installed by the end of the warranty period, the maintenance bond must be extended.

4.4 Final Acceptance – Service Authorization

Once the engineer-of-record has fulfilled the project closeout requirements as listed in **Section 4.9**, the service authorization will be issued by the BJWSA project manager. Final acceptance takes into account the following considerations:

1. Compliance with all Service Authorization requirements as shown on **Appendix H**.
2. Repair of any facilities damaged by site construction, paving, drainage, and dry utility installation activities during the warranty period.
3. Payment for any repairs performed by BJWSA.
4. Acceptance of final inspection results.

For gated residential communities, receipt of the gate pass code from the developer is required upon final project acceptance for ongoing water and sewer system operation and maintenance by BJWSA

personnel. Any change in the gate code must be reported to the BJWSA to ensure that there is no interruption in service to customers.

Upon issuance of the Service Authorization, the contractor must remove all jumper connections in the water system and plugs in the sewer system **in the presence of the BJWSA inspector**. The engineer must submit the Service Authorization with the required project certification and test results to SCDHEC in order to obtain the official Approval to Place in Operation. Upon issuance of the DHEC approval, BJWSA personnel will operate the main water valve connecting the new system and the one year system warranty will begin. Then, the developer can apply for service and request taps and meters. Residential developments can apply for service through BJWSA's Customer Service Department. Commercial developments can apply for service through the BJWSA Engineering Department Project Coordinator.

The BJWSA Service Authorization and the SC DHEC Approval to Place in Operation must be issued before discharging any wastewater into the sewer system or using potable water in any development.

BJWSA may issue a partial service authorization for the following reasons:

1. If a project is broken up into phases;
2. If the site work, including grading, paving, and dry utility installation is incomplete;
3. If construction water and/or fire protection is needed during construction of the development.

In order to obtain a partial service authorization, the developer's engineer must provide preliminary as-built record drawings, test results, and a maintenance bond as stipulated in Section 4.3.9. At the end of the project, this bond must be rolled over for an additional 18 months to cover the warranty period. BJWSA will notify the engineer in writing of the final acceptance of the system. At this time, the developer must provide a maintenance bond on the completed system as stipulated in Section 4.3.3.

4.5 Project Warranty Period and Inspections

The one (1) year warranty period begins with the issuance of the SC DHEC Approval to Place in Operation. For ongoing site work during the warranty period, any and all locate requests performed by BJWSA field crews will be billed to the developer on a time and expense basis. BJWSA will perform a warranty inspection (to include the area in the SC DOT right-of-way impacted by the project) during the last quarter of the warranty period. If needed, a punch list will be developed and submitted to the engineer and developer for correction. It is the responsibility of the developer to contact the contractor, who will be given 30 days to complete the punch list before the BJWSA arranges for the work to be done. If the BJWSA does the corrections, an invoice for the cost of the work will be sent to the developer. If the developer declines to pay for the corrective work performed by BJWSA, the maintenance bond will be liquidated for the outstanding amount due.

APPENDIX A

DHEC UNIT CONTRIBUTORY LOADINGS FOR WASTEWATER TREATMENT FACILITIES

TYPE OF ESTABLISHMENT	*HYDRAULIC LOADING (GPD)*
Airport Terminal	
Per Employee	10
Per Passenger	5
Apartments, Condominiums, Patio Homes	
Three (3) Bedrooms (per unit)	400
Two (2) Bedrooms (per unit)	300
One (1) Bedroom (per unit)	200
Assembly Halls	
Per Seat	5
Barber Shop	
Per Employee	10
Per Chair	100
Bars, Taverns	
Per Employee	10
Per Seat (excluding restaurant)	40
Beauty Shop	
Per Employee	10
Per Chair	125
Boarding House, Dormitory	
Per Resident	50
Bowling Alley	
Per Employee	10
Per Lane, No Restaurant, Bar or Lounge	125
Camps	
Resort, Luxury (per person)	100
Summer (per person)	50
Day, with Central Bathhouse (per person)	35
Travel Trailer (per site)	175
Car Wash	
Per Car Washed	75
Churches	
Per Seat	3
Clinics, Doctor's Office	
Per Employee	15
Per Patient	5
Country Club, Fitness Center, Spa	
Per Member	50
Dentist Office	
Per Employee	15
Per Chair	8
Per Suction Unit (standard unit)	370
Per Suction Unit (recycling unit)	95
Per Suction Unit (air generated unit)	0
Factories, Industries	
Per Employee	25
Per Employee, with Showers	35
Per Employee, with Kitchen	40
Per Employee, with Showers and Kitchen	45

Fairgrounds	
Average Attendance, Per Person	5
Grocery Stores	
Per One Thousand (1,000) SQ FT, no restaurant	200
Hospitals	
Per Resident Staff	100
Per Bed	200
Hotels	
Per Bedroom, No Restaurant	100
Institutions	
Per Resident	100
Laundries	
Self Service, Per Machine	400
Marinas	
Per Slip	30
Mobile Homes	
Per Unit	300
Motels	
Per Unit, No Restaurant	100
Nursing Homes	
Per Bed	100
Per Bed, with Laundry	150
Offices, Small Stores, Business, Administration Buildings	
Per Person, No Restaurant	25
Picnic Parks	
Average Attendance, Per Person	10
Prison/Jail	
Per Employee	15
Per Inmate	125
Residences	
Per House, Unit	400
Rest Areas, Welcome Centers	
Per Person	5
Per Person, with Showers	10
Rest Homes	
Per Bed	100
Per Bed, with Laundry	150
Restaurants	
Fast Food Type, Not 24 hours (Per Seat)	40
24 Hour Restaurant (Per Seat)	70
Drive-in (Per Car Served)	40
Vending Machine, Walk-up Deli (Per Person)	40
Schools, Day Care	
Per Person	10
Per Person, with Cafeteria	15
Per Person, with Cafeteria, Gym and Showers	20
Service Stations	
Per Employee	10
Per Car Served	10
Car Wash (Per Car Served)	75
Shopping Centers, Large Department Stores, Malls	
Per one thousand (1,000) sq. ft., No Restaurant	200
Stadiums, Coliseums	
Per Seat, No Restaurant	5
Swimming Pools	
Per Person, with Sewer Facilities and Showers	10
Theaters: Indoor (Per Seat), Drive In (Per Stall)	5

APPENDIX B

WATER/WASTEWATER AVAILABILITY REQUEST FORM

Date:_____

A. **Owner/Developer:**_____ Phone#_____

Address:_____ E-mail_____

Owner Local Contact: _____ Phone#_____

Address:_____ E-mail_____

Owner Engineer:_____ Phone#_____

Address:_____ E-mail_____

B. Development Name:_____

Development Location:_____

Township, Map & Parcel # (Attach Plat):_____

C. Optional DRC Preliminary Review Date:_____

Proposed DRC Final Review Date:_____

D. **Type of Development (Circle appropriate choice)**

Residential Multi-Family Commercial Industrial Institutional

Type of Business:_____

Number of Units:_____ Building Area (SQ FT):_____

E. **Anticipated Water/Sewer Capacity Required**

Number of employees:_____

If restaurant, seating capacity:_____

If car wash, number of bays:_____

If Laundromat, number of washers:_____

If church, number of seats:_____

****SITE PLANS AND WATER USE CALCULATIONS ARE NEEDED FOR FEE QUOTES****

APPENDIX C

BJWSA TAP REQUEST FORM

Date:_____ BJWSA Project No.:_____

Name of Development/Wholesale Customer:_____

_____

Installer of Tap Assembly

(Contractor or Wholesale Customer): _____

Size of Tap: _____

Location, Size, and Material Type of Line Tapped:_____

_____

Reason for Tap: _____

DHEC Construction Permit #: _____

Meter Type (Wholesale Customers Only):_____

Tapping Fee Due: _____ Date Needed:_____

Contact Person:_____ Phone No.:_____

_____

To be completed by BJWSA:

Date Received: _____

Date Approved/Disapproved:_____

Date Payment Received:_____

Customer Service: Attach work order to this form and forward to the Pipeline Division.

APPENDIX D

BJWSA WET TAPPING POLICY & PROCEDURE

PURPOSE

The purpose of this policy is to ensure that BJWSA's water and wastewater pressurized pipelines are not compromised when new developments connect to the system. Because every tap made onto the BJWSA system is a potential contamination and/or leak point, this Tapping Policy must be followed to eliminate the use of excessive taps, improper procedures, and/or unapproved equipment during the tapping process.

POLICY

BJWSA personnel shall perform all taps ranging in size from 2" to 12" diameter on the water and wastewater transmission and distribution systems. For taps greater than 12", the tapping contractor must be approved by BJWSA. A minimum tap size of 6" is allowed on all BJWSA transmission pipelines.

PROCEDURE

1. The *Tap Request Form* (**Appendix E**) must be submitted to BJWSA's Project Coordinator a minimum of two weeks prior to the requested date of the tap.
2. A description of the tap assembly meeting BJWSA Technical Specification must accompany the request form.
3. BJWSA will review the request within a week of receipt. If approved, the contractor must schedule the tap through the BJWSA Operations Department. Fees associated with the taps are listed in **Appendix D** and must be paid prior to scheduling the tap.
4. The contractor must excavate the line and install the tap assembly and confirm the pressure test prior to the arrival of BJWSA's tapping crew. The tap assembly must hold 150 PSI when BJWSA's crew arrives. **If the BJWSA crew arrives as scheduled and the test fails, an additional return charge of one half of the tap cost must be paid prior to rescheduling.**
5. The tap assembly and associated piping will be owned, operated and maintained by BJWSA.

APPENDIX E

BJWSA GRAVITY SEWER TAP SPECIFICATION

The intent of this specification is to ensure that every service lateral connected to BJWSA's sewer collection system will perform properly for the life of the building it serves. Inspections emphasize the following criteria: quality of materials used, grade maintained along the full length on the pipe, access to the pipe in the event that service is needed, conformance to all applicable County codes and construction techniques. The following guidelines shall be followed for this purpose.

1. If preexisting sewer lateral is stubbed out at a lot property line, the contractor must slope lateral to this stub out. No other taps to the gravity main or manholes shall be made without approval of the Authority. The contractor must verify location and elevation of this lateral before laying out the plumbing plans.
2. The lateral must be constructed of 4" or 6" either all SDR-35 (ASTM-3034) gasketed sewer pipe or all SCH-40 DWD PVC pipe. Do not mix pipe types. **Commercial buildings must be 6".**
3. All laterals using SDR-35 gasketed pipe must also use gasketed fittings. No petroleum-based pipeline shall be used. All lettering on pipe must be on top and exposed.
4. All laterals using SCH-40 DWD PVC must use glued fittings. All fittings must have purple primer/cleaner and grey medium glue. All lettering must be on top and exposed.
5. The minimum finished grade of the pipe is ¼ -inch per foot on 4" and 1/8-inch per foot on 6". The Authority will determine if this grade can be modified. A minimum 1-foot cover is required for all lateral piping.
6. Pipe must be run straight, with no more than a 5% deflection. The start and finish point must be verified by a leveling instrument before laying pipe.
7. There must be a dual sweep clean out at building and a 4" clean out at the property line. All clean outs except the one directly adjacent to the building shall include a PVC cap surrounded by a metal valve box with a sewer lid. A clean out is required at any bend or change of direction in the sewer lateral. All clean outs must be turned towards the main and set to final finished grade. Clean out spacing shall not exceed 70 FT.
8. The plumber will be responsible for barricading any open holes or ditches.
9. The contractor must call the Field Operations Office at 843-987-9209 between the hours of 7:30 am and 4:00 pm to schedule sewer tap inspections for completed taps. Barring emergencies, inspections will be done on Mondays, Wednesdays, and Fridays only. Information for an inspection may be called in up to 4:00 pm the afternoon before an inspection day or sent by fax to

843-987-9234 or e-mailed to inspection@bjwsa.org. BJWSA cannot schedule a specific time for an inspection.

10. If an inspection fails or is not complete, the plumber is responsible for correcting the problem and calling the Operations and Maintenance office for a re-inspection. There will be a re-inspection fee. The re-inspection will be the clean out nearest the building. A copy of the approved form will be E-mailed to the proper Building Codes Department. Permanent power connection will not be allowed until the Building Codes Department is notified of the approved sewer inspection or a letter is received from BJWSA allowing permanent power but no CO.

APPENDIX F

AS-BUILT RECORD DRAWINGS

The purpose of the **as-built record drawings** is to verify that the water and sewer systems serving the project were installed per BJWSA Technical Specifications, in accordance with the SC DHEC approved construction permit, and recorded to show the actual locations of the water and sewer assets turned over to the Authority for long term ownership, operation and maintenance.

The BJWSA Development Projects Manager shall issue the service authorization after verification by the BJWSA Construction Manager and Inspector that the project is complete, and that the information on the **as-built record drawings** is correct and consistent with the SCDHEC approved design as described in **Section 2.3.2**.

The following elements must be submitted by the developer's engineer prior to the service authorization:

1. An electronic format of AutoCAD, (dwg, dxf, winzip, pkzip on CD).
2. Three (3) sets of paper copies.

All electronic files will be reviewed for adherence to BJWSA standards before service authorization is issued. Incorporate Section 2.3.2, "Design Drawing Requirements" in addition to the following on all record drawings:

GENERAL NOTES

1. Developer's name, address, and telephone number (all sheets).
2. Contractor's name, address, and telephone number (all sheets).
3. Street names, 911 address, and lot numbers (all sheets).
4. The "Record Date" must be boldly marked on each plan sheet.
5. Plans submitted shall be in the USA South Carolina State Plane, RNAD 83 coordinate system **(Map Code SC83F)** with data in units of FT. Elevations will be based on the 1929 USGS Datum.
6. Only information pertinent to the location of water and/or sewer facilities being dedicated to BJWSA should be shown.
7. Plans shall show all facilities abandoned in place, but no reference shall be made to any proposed or removed facilities.
8. Phased projects will be required to submit as-built drawings for subsequent phases, which include as-built information on all prior phases. Lot numbers throughout all phases shall run consecutively and not repeated on later phases. Naming convention shall remain consistent throughout phases.

9. Indicate all storm sewer, water, and wastewater pipeline utility crossings. Include vertical and horizontal separation distances, depth of cover, and pipe materials. Show the location of all dry utilities (electric, cable, telephone, natural gas, etc.)

10. Water, wastewater and storm drains are to be shown concurrently on plan view drawing sheets. **Do not submit separate sheets for these utilities.**

AUTOCAD NOTES

1. Submit one electronic file containing the water and/or wastewater utilities that were shown as-built in addition to the site where the utilities were constructed. The files must have an insertion point of 0,0,0 referencing the South Carolina State Plane Coordinate System. Preserve the project integrity by maintaining the site as a whole rather than breaking it up into multiple drawing files.
2. Layer the water and/or wastewater features, including text, individually on separate layers.
3. All entities and object colors must be drawn BYLAYER.
4. All dimensions shall be to the nearest one hundredth of a foot in the vertical plane and the nearest tenth of a foot in the horizontal plane, with angles to the nearest minute. Dimensions to be on suggested layer.

EASEMENTS & PLATS

1. Show all easements conveyed and surveyed boundaries of any property deeded to BJWSA.
2. Show where water and/or sewer facilities are located within private property through which an easement will be granted. A surveyor will establish metes and bounds of such easements.
3. Water lines and force mains located within public rights-or-way shall be referenced to permanent visible structures such as centerline or edge of pavement, manholes, catch basins, and power poles. Right-of-way boundaries may be used as a last resort.

SEWER LINES

1. Provide schedule of sewer line tangents with manhole rim and invert elevations, pipe diameter, length, type and class, and slope. Manholes shall be tied to permanent visible structures including centerline or edge of pavement, rights-of-way, property line boundaries, and/or property corners.
2. Laterals shall be stationed from the downstream manhole to upstream, with all manholes reverting to 0+00 for the next line tangent. End of service lateral shall be located from property corners.
3. Show on the drawing the linear feet of sewer main (manhole to manhole) number of single and double services.
4. Provide mean sea level (MSL) elevation on top of force main connection to manhole or force main manifold.

SEWER PUMP STATION

1. Complete layout of the pump station shall be shown in detail, with the layout representing the actual as-built condition of all entities. Provide elevations for the following points: influent line invert, bottom of wet well, top of slab (including brass benchmark), pump off level, pump on level, lead/lag levels, both pumps on level, and high water alarm level. The pump station detail shall include all conduit layouts.

2. The orientation of the pump station site shown on all sheets must be preserved.

WATER MAINS AND ASSOCIATED FEATURES

1. Water mains shall be referenced to permanent visible structures, including road centerlines, edges of pavement, buildings, manholes, catch basins, and power poles. Rights-of-way/property line boundaries may be used in the absence of the other references noted. Tie down locations of all valves, bends, and tees, to fire hydrants, manholes, buildings, markers, or other permanent structures. A minimum of two tie-down dimensions are required for each fitting. Show depth of cover on all valves and fittings if greater than 3'.

2. A “blow-up” is required of all valve clusters and other areas of congestion if not clearly shown otherwise. Show distance from hydrant to main line. Show depth of cover if less than 3' or greater than 5' deep.

3. Show tie-down locations of water service termination points to permanent structures such as buildings, manholes and fire hydrants. Property corners may be used in the absence of other reference points when visible permanent structures are not nearby.

4. Provide on plans the type and manufacturer of all valves, linear feet of water main, as well as the size, type and class of pipe.

The following statements shall appear on all record drawings and shall be signed by a licensed surveyor and the engineer of record, and show their respective registration numbers.

SURVEYOR'S CERTIFICATION:

I hereby state that to the best of my knowledge, information, and belief, the survey shown hereon was made in accordance with the requirements of the minimum standards manual for the practice of land surveying in South Carolina, and meets or exceeds the requirements for a Class A survey as specified therein; also there are no visible encroachments or projections other than shown. I also state that the survey shown is based upon USA South Carolina State Plane, NAD 83 coordinate system and elevations are based upon the 1929 USGS Datum.

SURVEYOR'S NAME (PRINTED):_____

SURVEYOR'S SIGNATURE:_____

SC RLS NUMBER:_____

DATE:_____

Alternate Surveyor Wording:

I hereby state that, to the best of my knowledge, information, and belief, the survey shown hereon was made in accordance with the requirements of the minimum standards manual for the practice of land surveying in South Carolina, **and maintains a minimum horizontal accuracy of 0.2 FT and a minimum vertical accuracy of 0.01 FT;** also there are no visible encroachments or projections other than shown. I also state that the survey shown is based upon USA South Carolina State Plane, NAD 83 coordinate system and elevations are based upon the 1929 USGS Datum.

ENGINEERS CERTIFICATION:

These record drawings have been prepared based upon information provided by others and our periodic observations. (ENGINEERING FIRM NAME) has reviewed this information and to the best of our information, knowledge and belief these Record Drawings represent the approved site development plans.

ENGINEER'S NAME (PRINTED):_____

ENGINEER'S SIGNATURE:_____

SC PE NUMBER:_____

DATE:_____

SEAL:

APPENDIX F
ASSET MATERIAL SUBMITTALS

(In Development)

APPENDIX H

PROJECT CLOSEOUT DOCUMENTS

ATTACHMENTS INCLUDED:

I. Certificate of Non-litigation

II. Contractor Guaranty

III. Asset Cost Certificate

IV. Asset Bill of Sale Document

V. Water/Sewer Utility Blanket Easement Document

Attachment I

Date: _____

General Manager
Beaufort-Jasper Water and Sewer Authority
Post Office Box 2149
Beaufort, South Carolina 29901

Certificate of Non-Litigation for (Project Name): _____

_____

Dear Sir:

This is to certify that there are no pending or threatened actions at law that will affect the fee simple dedication of the ***water and/or sewer utilities*** for the above referenced project. I further certify that all affected contractors, sub-contractors, material suppliers, engineers, attorneys, or other persons, firms or corporations retained for the purpose of designing, planning, and/or constructing the ***water and/or sewer utilities*** on the referenced project have been paid in full.

_____ _____
Witness Developer

_____
Witness

_____ _____
Witness Contractor

_____
Witness

_____ _____
Witness Engineer

_____
Witness

Attachment II

CONTRACTOR GUARANTY

WHEREAS, Beaufort-Jasper Water and Sewer Authority, as the ultimate owner and operator of _____ (project name) water and/or sewer utility systems, located at _____ (street address, lot, block, or tract), requires tangible assurance as to the quality of materials and workmanship used on the project; and,

WHEREAS, _____(contractor), as the duly licensed and responsible contractor having constructed and/or supervised the construction of the project, desires to assure Beaufort-Jasper Water and Sewer Authority that the quality of materials and workmanship meet published standards governing the construction of such utilities work;

THEREFORE, it is hereby agreed that neither final payment by the developer nor any provision in the contract with the developer, no partial or entire use of the constructed utility improvements by Beaufort-Jasper Water and Sewer Authority or the public shall constitute an acceptance of work not performed in accordance with approved plans, or relieve the contractor of liability or responsibility for faulty materials or workmanship. It is further agreed that the contractor shall promptly remedy any defects in the work, with the exception of damages construed as acts of God, at his own expense, and pay for any damage to other work resulting therefrom which shall appear within twelve (12) months from the date the "Permit to Operate" is issued by SC DHEC.

THEREFORE, the contractor hereby certifies that all work described or shown on the construction documents was performed. If it can be demonstrated that work was not performed, then the contractor shall remedy the oversight at his own expense or reimburse BJWSA for the cost plus twenty (20%) per cent for administrative costs. This clause shall be in effect indefinitely.

IN WITNESS WHEREOF, this instrument of **GENERAL GUARANTY** is hereby executed.

Attest: _____(Authorized Signature of Contractor)

For: _____(Company Name)

At: _____(Company Address)

Submitted and sworn to before me this _____ day of _____, 20_____

By_____(Authorized Official) for _____(Company)

_____
Notary Public for South Carolina
My commission expires _____

Attachment III

STATE OF SOUTH CAROLINA)
)
COUNTY OF BEAUFORT)

COST CERTIFICATE

I, _____ (developer or representative name) who constructed _____(project name), hereby attest that the cost of the water and/or sewer improvements, including engineering and related development costs, is as follows:

WATER:

_____ Pipeline Size	_____ Pipeline Length	_____ Pipeline Cost
_____ Pipeline Size	_____ Pipeline Length	_____ Pipeline Cost
_____ Pipeline Size	_____ Pipeline Length	_____ Pipeline Cost
_____ Number of Hydrants		

SEWER:

_____ Force Main Size	_____ Force Main Length	_____ Force Main Cost
_____ Gravity Main Size	_____ Gravity Main Length	_____ Gravity Main Cost
_____ Number of Manholes	_____ Pump Station Size	_____ Pump Station Cost

_____
Name of Developer

_____
Signature of Developer or Representative

SWORN to before me
This _____ day of _____, 20_____

_____
Notary Public for South Carolina
My commission expires _____

Attachment IV

STATE OF SOUTH CAROLINA)
)
COUNTY OF BEAUFORT)

BILL OF SALE

KNOW ALL MEN BY THESE PRESENTS, that _____ (Grantor) for and in consideration of the sum of One ($1.00) Dollar to it in hand paid, at and before the sealing and delivery of these presents by BEAUFORT-JASPER WATER AND SEWER AUTHORITY (the receipt of which is hereby acknowledged), have bargained and sold, by these Presents do bargain, sell, and deliver to the said BEAUFORT-JASPER WATER AND SEWER AUTHORITY, the following described property, to-wit:

PERSONAL PROPERTY DESCRIBED IN EXHIBIT "A", WHICH IS ATTACHED HERETO AND INCORPORATED HEREIN BY REFERENCE AND LOCATED OR AFFIXED TO THE REAL PROPERTY DESCRIBED IN EXHIBIT "B", WHICH IS ALSO ATTACHED HERETO AND INCORPORATED HEREIN BY REFERENCE.

To have and to hold the same unto the said BEAUFORT-JASPER WATER AND SEWER AUTHORITY, its successors and assigns forever.

And Grantor does hereby binds its successors, heirs, and assigns, to warrant and forever defend all and singular the said bargained property unto the said BEAUFORT-JASPER WATER AND SEWER AUTHORITY, its successors, heirs, and assigns, against Grantor and its successors, heirs, and assigns and all persons lawfully claiming or to claim the same, or any part thereof.

IN WITNESS WHEREOF Grantor has set its hand and seal on the in the year of our Lord two thousand ten in the Two Hundred and Thirty-fourth year of the Sovereignty and Independence of the United States of America.

Sealed and Delivered in the Presence of

_____ By:_____
Witness 1

_____ Attest:_____
Witness 2

STATE OF SOUTH CAROLINA)
) ACKNOWLEDGMENT
COUNTY OF BEAUFORT)

I, the undersigned Notary Public, do hereby certify that personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal this _____ day of _____, 20__.

_____
Notary Public for South Carolina
My Commission Expires: _____

Attachment V

STATE OF SOUTH CAROLINA)
) BLANKET EASEMENT
COUNTY OF BEAUFORT)

THIS AGREEMENT, made this _____ day of _____ 2010, by and between _____ (hereinafter called Grantor) and the Beaufort-Jasper Water and Sewer Authority (hereinafter called Grantee).

WITNESSETH: that, in consideration of One ($1.00) Dollar received from Grantee, Grantor owning a tract or development known as, situate in the County of _____, State of South Carolina, shown on a certain plat or various plats filed or to be filed in the Office of the R.M.C. of said County and generally described as:

SEE EXHIBIT "A" WHICH IS INCORPORATED HEREIN BY REFERENCE
(Hereinafter referred to as "Development")

This being the same real property recorded in Beaufort County's R.M.C. office in Deed Book _____ at Page _____ on _____. Specific locations of all future lines are to be mutually agreed upon by both the Grantor and Grantee.

The Grantor hereby grants and conveys to Grantee, its successors and assigns, the right, privilege and authority, from time to time, to enter upon, construct, extend, inspect, operate, replace, relocate, repair, and perpetually maintain upon, over, along, across, through, and under any and all streets, alleys, roads, or other public ways or designated easements of said Development now existing or hereinafter laid out, various service lines, manholes, hydrants, valves, meters, and other usual fixtures and appurtenances as may from time to time be or become convenient to the transaction of its business, or that of municipal, public, or private systems, for the provision of water and sewer services, together the right of ingress, egress, and access to and from such rights-of-way across and upon lands of Grantor as may be necessary or convenient for the purposes connected therewith.

Together with the right, from time to time, to install water/sewer service lines, manholes, hydrants, valves and meters in said Development near the lot lines, with the right from time to time, to trim, cut, or remove trees, underbrush and other obstructions that are over, under, or through a strip of land extending five (5') feet on either side of the center of sewer service lines, manholes, hydrants, valves, and meters; provided, however, any damage to the property of Grantor (other than that caused by trimming, cutting, or removing) caused by Grantee in maintaining or repairing said water/sewer service lines, manholes, hydrants, valves, and meters, shall be borne by Grantee; provided further,

however, that Grantor agrees for itself, its successors and assigns, who may be in possession and control of the premises at the time, to promptly remove the same upon demand of the Grantee herein. The parties to this Easement agree that if any repaving is required said repaving will be the sole responsibility of the Grantor. Notwithstanding the foregoing, Grantee will be responsible to repair and/or replace any other damage it causes to other utility lines serving the Development or any permanent improvement thereupon.

The words "Grantor" and "Grantee" shall include their heirs, executors, administrators, successors, and assigns, as the case may be.

IN WITNESS WHEREOF, Grantor has caused this indenture to be duly executed the day and year first above written.

_____ By: _____

Witness 1

_____ Attest: _____

Witness 2

STATE OF _____)

) PROBATE

COUNTY OF _____)

PERSONALLY appeared before me, the first witness, signed hereinabove who, on oath, says that he/she saw the within named Grantor sign, seal, and as his/her act and deed, deliver the foregoing instrument and that s/he with the second witness signed hereinabove, witnessed the execution thereof.

_____

Witness 1

SWORN to and subscribed before me
this _____ day of _____ 20__.

Second Witness/Notary Public for South Carolina
My commission expires _____

APPENDIX I

SERVICE AUTHORIZATION REQUIREMENTS

BJWSA's project manager will issue a service authorization letter upon acceptance of the water and/or sewer system by BJWSA. The service authorization letter is required to obtain service to the project. A copy of the service authorization shall be provided to the developer, engineer, and contractor.

To receive the service authorization letter, the following items must be completed:

1. All punch list items as identified by the engineer and BJWSA inspectors.
2. The Wastewater Pump Station Start Up Report (see Inspector for form) accompanied by design criteria, pump and motor identification, O&M manuals, pump curves and spare parts.
3. Final record drawings received and approved by BJWSA **(See Appendix G)**.
4. The engineer's certification, to include confirmation that the air test, pressure test, and bacteriological test have been satisfactorily performed, along with the status of dry utility installation and final site grading. Because the bacteriological test results are valid for 30 days, this test should be performed within 30 days of the end of the project. Samples taken sooner will require a confirmation test at the end of the project to ensure that the test results are still valid.
5. Executed Certificate of Non-Litigation. **(See Project Coordinator for form).**
6. Contractor's Warranty for not less than one year after receiving the SC DHEC Approval to Place in Operation. **(See Project Coordinator for form).**
7. Certified & notarized cost certificate from the developer **(See Project Coordinator for form)**.
8. Submission of the maintenance bond guarantee **(See Section 2.10)**.
9. A signed SC DOT approval form/letter indicating their acceptance of the project.
10. Release by other agencies such as State, County or others as applicable for encroachment permits or other liabilities.
11. Execution of all easements and deeds necessary for the conveyance of the water and/or sewer facilities to be maintained and owned by BJWSA.
12. Certification that the developer has had an abstract of title performed for all property that is to be dedicated to BJWSA either by fee simple conveyance or granting of rights-of-way. No service authorization or dedication of systems will be made until the abstract of title indicating clear title is presented to BJWSA.
13. All paperwork shall be delivered to the Project Coordinator and signed in blue ink.

APPENDIX J

DEVELOPMENT POLICY ACCEPTANCE FORM

PROJECT NAME: _____

LOCATION: _____

_____

BJWSA
PROJECT NUMBER: _____

BJWSA PM: _____

BJWSA INSPECTOR: _____

We the undersigned attest that we have read the BJWSA Development Policy and Procedure Manual (Revised 2/1/11) and will comply with its contents where applicable to the project listed above.

DEVELOPER: _____

ENGINEER: _____

CONTRACTOR: _____

DATE: _____