



INFRASTRUCTURE POLICIES & DESIGN CRITERIA

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I. INTRODUCTION & PURPOSE

A. General

1. The City of Cheyenne Board of Public Utilities (BOPU) is responsible for construction, operation and maintenance of the water and wastewater collection systems for the City of Cheyenne, WY. It is necessary that the BOPU review and approve all plans, specifications and construction activities for extensions or changes in the water and sanitary sewer systems owned and operated by the BOPU.
2. The purpose of the *Infrastructure Policies & Design Criteria (IPDC)*, previously titled *Rules & Regulations for Establishing Policies & Design Criteria*, is to provide minimum standards for the design and construction of the water and sanitary sewer utilities to be owned and operated by the BOPU including additions to or replacements of the existing systems.
3. Where a local, state, or federal applicable code, statute, or regulation addresses the requirements set forth in these standard criteria, the most stringent requirement shall control. The provisions of the *IPDC* are minimum requirements and do not preclude imposition of more restrictive standards by agreement or by law. The Director or authorized delegate of the BOPU shall provide the official interpretation of the *IPDC*. Any design criteria not addressed in the *City of Cheyenne & Board of Public Utilities Construction Specifications and Standard Drawings (City Specs)* or the *IPDC* shall meet minimum criteria required by Wyoming Department of Environmental Quality (DEQ). 10 States Standards may be used as a supplemental design aid when necessary.
4. All work and activities of utility extensions, construction, and/or modification must comply with the current versions of the *IPDC*, the *City Specs*, and other codes adopted into the *Cheyenne Municipal Code (CMC)*, which are incorporated into the *IPDC* by this reference.
5. Prior to the contractor beginning work, an approved set of plans and specifications must be on file with the BOPU and the City Engineer's Office (CEO). All plans, specifications, and calculations submitted to the BOPU, the CEO, and DEQ to be reviewed, must be prepared by or under the direct supervision of a Professional Engineer duly registered and licensed to practice engineering in the State of Wyoming. All associated fees shall be paid, easements recorded, and a Permit to Construct from BOPU obtained prior to the contractor beginning work.
6. Exceptions to these rules and regulations may be considered on a case-by-case basis if deemed appropriate by the BOPU Director or authorized delegate. Exception process outlined in Section VI.A.

II. ANNEXATION, PRELIMINARY PLATS AND SURVEY, USER AGREEMENTS

A. General

1. Annexation shall comply with the criteria and procedures of Chapter 1.16 of the *CMC*. Preliminary plats and surveys shall comply with Chapters 1.12 and 1.16 of the *CMC*. All annexations must go through the City of Cheyenne Development Services Office approval process.
2. A property must be annexed to the City of Cheyenne, or the property owner must obtain approval from BOPU Staff, City of Cheyenne Development Department Staff, BOPU Board, and Cheyenne City Council to enter into an Outside City User Agreement (Appendix D) to receive water and sanitary sewer services from the BOPU.

III. UTILITY EXTENSIONS AND CONNECTIONS

A. Extensions Required Across the Property

1. As per sections 1.16.040, 1.16.050 and 1.16.060 of Chapter 1.16 of the *CMC*, the property owner/developer shall be required to extend the water and sanitary sewer utilities to the farthest point (or points) of the property being developed. These utility extensions shall be to a point (or points) that are logical for projected future connections by future development projects, as determined by the BOPU and the property owner/developer. In some situations, the BOPU may allow, at their discretion, that water and sanitary sewer easements be provided to facilitate future utility connection and/or extensions, in lieu of the physical construction of the water and/or sanitary sewer utilities.

B. Over-sizing & Cost Sharing

1. All water and sanitary sewer system extensions shall be sized as per the current BOPU water and sewer system master plans and/or shall be sized to meet the potential demands of the maximum possible service area as determined by appropriate hydraulic modeling methods and in no case, shall be less than eight inches in diameter. Hydraulic modeling shall be performed as outlined in Appendix E.
2. Upon entering into a written agreement with the BOPU, prior to the start of any related work or activity, the BOPU may participate in the cost of the water and sanitary sewer mains that are over-sized to meet future needs. The BOPU may only cost share for main sizes greater than eight inches in diameter and greater in size than that required to meet the potential demand of the planned development project. The BOPU will only reimburse for direct costs relating to the design and construction of the over-sized main by use of bid alternates, one alternate being for the required main size and the second bid alternate being for the over-sized main. Professional service agreements and construction contracts must meet BOPU purchasing policies and resolutions to be eligible for reimbursement. Reimbursement payments shall be made within 45 days of receipt of valid invoices for the work, or portions of the work.

C. Reimbursements to Developers and for BOPU/City Main Extensions

1. Persons and/or the BOPU and/or the City of Cheyenne financing the construction of new water and sanitary sewer utilities may be entitled to future reimbursements as per Chapter 1.16 of the *CMC*. City Development Director shall compute the proportionate share value to be reimbursed per §1.16.070 of the *CMC*.
2. Certain projects may require agreements between the developer and BOPU to design and construct water and sanitary sewer utility extensions. These agreements are limited to improvements required by BOPU and not the specific development.

D. Adjustments to Existing System

1. As per Chapters 13.04, 13.08, and 13.12 of Title 13 of the *CMC*, no one shall operate, connect to or make alteration to the City of Cheyenne water and sanitary sewer systems without first obtaining written approval from BOPU.

E. Connections to Existing System

1. As per Sections 13.08.040 through 13.12.380 of Chapters 13.08 and 13.12 of the *CMC*, it is unlawful for anyone to alter, operate or connect to the City of Cheyenne's water and sanitary sewer systems without the approval of and under the supervision of the BOPU.
2. Criteria for the Purchase of Water and Sewer Connection Permits - The following criteria shall be met before the BOPU shall issue a connection permit:
 - a. The property to be served must be annexed to the City or the property owner shall hold an Outside City User Agreement, which must be approved by the BOPU Staff, City of Cheyenne Development Department Staff, BOPU Board, and Cheyenne City Council.
 - b. A final plat of the property (including lots and blocks) shall be recorded with the Laramie County Clerk.
 - c. A water and/or sewer main shall exist, abutting the property and available to serve the property; or the following two conditions shall be met:
 - i. The BOPU shall be in possession of a set of plans, bearing the approval signature of the BOPU, the City Engineer, and the City Fire Department for the construction of the necessary water and sewer mains; and
 - ii. The BOPU shall be in possession of the Permit to Construct of said water and sewer construction project.
 - d. Owner/Developer/Contractor shall submit to BOPU a Utility Layout Plan identifying the water and/or sanitary sewer connection(s), service line size(s), curb stop and meter pit locations from the BOPU main line to the property. The Utility Layout Plan shall clearly show the property location (lot, block, subdivision), street names and addresses if available.
 - e. After BOPU approval of the Utility Layout Plan, the owner/developer/contractor shall complete the connection permit application and pay all fees due prior to the issuance of a connection permit, except for system development fees, which may be paid at either the time of issuance of a connection permit or prior to the issuance of a building permit. The fees due shall be the amount of the fee in effect at the time payment is received. Annual increases generally go into effect on January 1st of every year.
 - f. Connection permit applications require five working days to process.
3. A connection permit is assigned to a specific property and cannot be used for another property. If a property owner/developer/contractor purchases a connection permit for a specific property A and later wants to install that same connection at a different property B then;
 - a. The BOPU may refund or give credit for the property A connection fees, the system development fees, pump station fees, or other fees associated with the permit as outlined in the "Connection Permit Refunds and Credits" section; and
 - b. The owner/developer/contractor shall purchase a new permit for the new property B at the scheduled fee rate that is in effect at the time of the purchase of said permit.
 - c. Installed and unused connections must be disconnected (killed) at the main prior to installation of new connections on the same property.
4. Connection Sizing and Location
 - a. A connection permit must be obtained from the BOPU before any connection is installed. It is the applicant's responsibility to size the connection and service line

appropriately to meet the needs and demands of the facility being served. The connection size (corporation stop) and the service line size shall be the same size to the meter. The following exceptions are allowed:

- i. ¾-inch and 1-inch services using HDPE piping. When HDPE is used, 1-inch piping can be used for ¾-inch meters and 1¼-inch piping can be used for 1-inch meters.
 - ii. 3-inch meters may use 4-inch connection and valve at the main.
 - b. Water service lines shall be no less than ¾-inch in diameter and sewer service lines shall be no less than 4-inches in diameter.
 - c. The water and sewer service lines to each building shall be separate and independent from any other building.
 - d. The BOPU shall inspect the tapping of mains, insertion of corporation and curb stops, and laying of service pipes to the curb stop.
5. Meters & Meter Pits
- a. All water use must be metered, except for emergency service lines (i.e., fire protection). Water meters shall be furnished and installed by the BOPU. The meter will remain the property of the BOPU. The meter shall be the same size as the service connection except for ¾-inch and 1-inch meters using HDPE piping.
 - b. All 1½-inch and larger meters for new construction shall be placed in outside meter pits.
 - c. Per *CMC* Section 13.04.100 every building, structure, or consumer in the City shall have a separate utility service connection, except for common ownership projects approved by the BOPU Board. Common ownership projects must submit a Common Ownership Agreement with the BOPU and receive BOPU Board approval (see Appendix C).
6. Living Units Served
- a. Water services and meters shall be sized to provide adequate flow rates to the proposed use. Table 1 includes general service criteria for selecting meter sizes.

Table 1 - Water Meter Size Selection

Minimum Meter Size (Inches)	Maximum Allowable Flow Rate (GPM)*	Maximum Water Supply Fixture Units (WSFU)**	Maximum Number of Living Units***
¾	15	11	1
1	25	36	4
1½	50	129	10
2	80	275	20
3	175	783	50
4	300	1777	90

Note: Owner/Developer/Contractor shall have their Wyoming licensed Engineer of Record submit stamped fixture unit calculations for sizing of service lines for BOPU review and approval if deviating from the above table. The analysis shall indicate adequate flow rates considering, but not limited to service line development length. Max velocities shall not exceed 10 feet per second at peak hour demand.

*Maximum Allowable Flow Rates based on *AWWA M22 Third Edition Meter Standards* Table 6-1 for High Normal Flow Rates for Multijet (¾"-2") and Compound Class II (3"-4") meters.

**Maximum Water Supply Fixture Units interpolated from *2015 International Plumbing Code* E103.3 Tables.

***Total Number of Living Units Served is based on local and historical data.

7. Disconnected (Killed) Services
 - a. The disconnected services will be disconnected (killed) at the main line. Disconnection (killing) of Sewer and Water services shall be inspected by BOPU and City inspection staff.
 - i. For water services, close and cap corporation stop and remove curb stop at least 18-inches below ground surface; restore surface to match surrounding.
 - ii. For sewer services, plug at wye connection or cap service outside of manhole. If disconnecting a common sewer service, the connection shall be disconnected at the property line when feasible.
 - b. Any sewer or water service that is disconnected (killed), at the direction of the property owner, and removed will be allowed a capacity credit as outlined in the “Connection Permit Refunds and Credits” section.
 - c. Reuse of lead service lines, for new units shall not be permitted. A new service line shall be installed to replace the lead service line.
8. Increase in Connection Size
 - a. If a new larger connection is requested to replace an existing connection, the applicant shall apply for a new connection permit.
 - b. The applicant shall be granted a credit as outlined in the “Connection Permit Refunds and Credits” section, and then be required to pay all appropriate current fees, as defined and adopted by the BOPU, for the new larger connection size. A credit shall only be applied if the existing connection is killed at the main and replaced within forty-five days and shall not exceed the cost of the new larger connection and system development fees to be paid. Fees and credits may only be applied to the same physical address, location or legal property, as appropriate.
9. Decrease in Connection Size
 - a. If a new, smaller connection is requested to replace an active, existing connection, the applicant shall apply for a new connection permit.
10. Wet Taps to Water Main, 3-inch to 12-inch
 - a. After applying for a connection permit and paying all appropriate fees, the BOPU shall make all water line taps that are 3-inch to 12-inch in diameter. The applicant shall be responsible for excavation and backfill of the trench.
 - b. The applicant shall use a licensed and qualified contractor, after all appropriate permits are obtained and all appropriate fees are paid.
11. Wet Taps to Water Main, 2-inch & Smaller and Larger than 12-inch
 - a. The applicant shall use a licensed and qualified contractor to make all water taps that are 2-inch and smaller and larger than 12-inch, after all appropriate permits are obtained and all appropriate fees are paid.
12. Tapping Water Mains Larger than 12-inches
 - a. No taps (service line connections) smaller than 6-inches in diameter will be allowed on water mains larger than 12-inches. All connections to water mains larger than 12-inches shall be made by means of a tee or tapping saddle.
13. BOPU Easements
 - a. General Easement Policies

- i. Water and sanitary sewer utilities shall be located in the Public Right of Way unless pre-approved by BOPU. Property owner shall provide easements for water and sanitary sewer utilities that are not located or constructed within the roadway or Public Right of Way.
- ii. No other utility shall be placed within 10 feet (horizontally) of the face of a water or sanitary sewer main.
- iii. No permanent structures shall be located within a BOPU Easement. Permanent structures shall be considered, but not limited to, building foundations, building walls, retaining walls, underground anchoring systems, and trash enclosures. Sleeves may be used where appropriate and pre-approved by BOPU.
- iv. The following note shall appear on all applicable construction drawings, easement documents, etc.:

“This “BOPU UTILITY EASEMENT”, as shown and described hereon, is granted to the Board of Public Utilities of the City of Cheyenne (“BOPU”). No other utilities may install facilities or trees on or within the BOPU UTILITY EASEMENT per current BOPU rules and regulations unless approved by the BOPU.”
- v. Easement widths may be reduced or vacated as part of the platting, site plan, and engineering plan review and approval process.

b. Water Main Easements (see Figure 1)

- i. Water mains 12-inches in diameter or less shall be centered in a 30-ft BOPU exclusive easement or in a 20-ft BOPU exclusive easement with two 5-ft adjacent utility easements on each side of the BOPU exclusive easement.
- ii. Water mains larger than 12-inches in diameter shall be centered in a 40-ft BOPU exclusive easement or in a 20-ft BOPU exclusive easement with two 10-ft adjacent utility easements on each side of the BOPU exclusive easement.

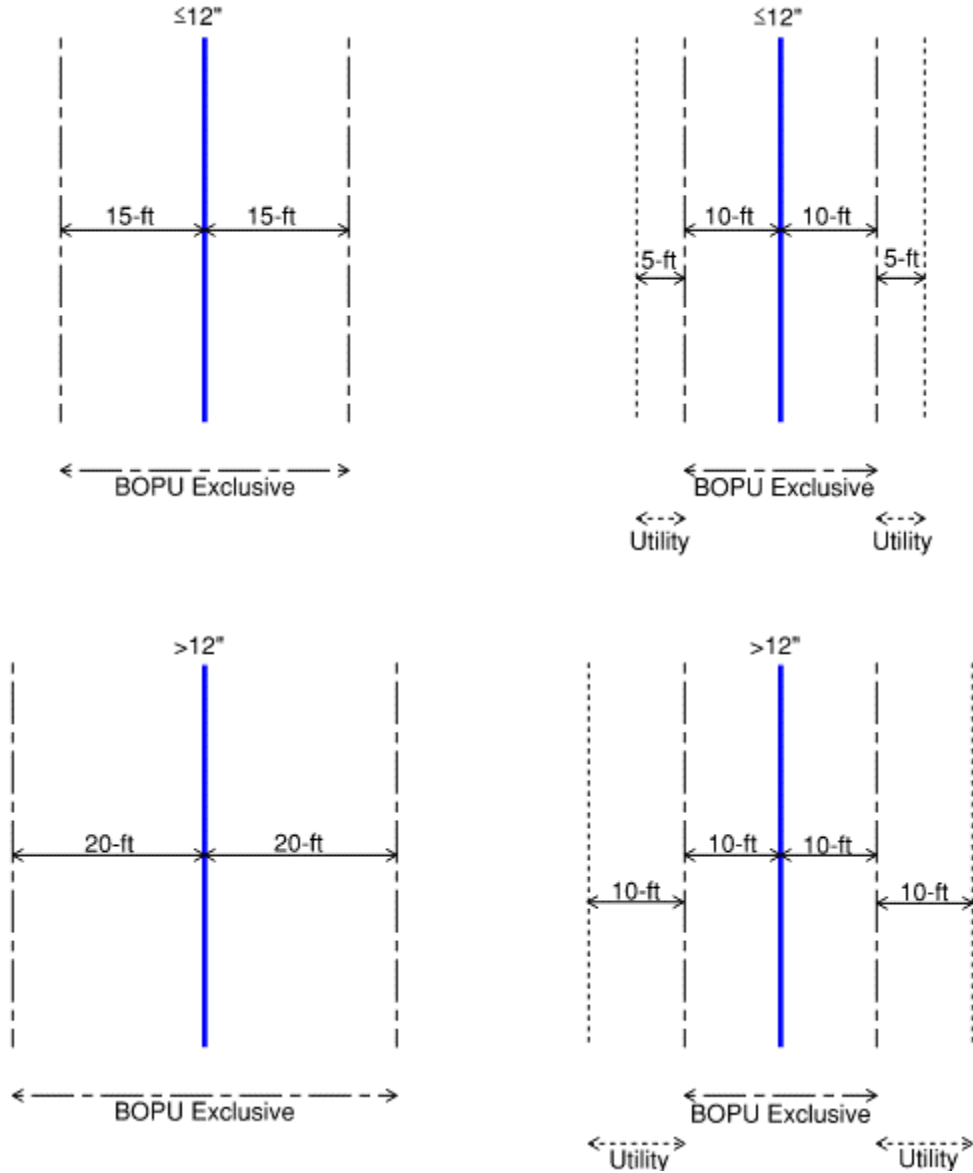


Figure 1 - Exclusive and Non-Exclusive Water Main Easements

- c. Sewer Main Easements
 - i. Sewer mains shall be centered in BOPU exclusive easements based on Table 2.

Table 2 - Sewer Main Easements

Sewer Main Depth (feet below ground surface)	Minimum Total Easement Width (feet)
4-10	20 ¹
10-15	30
15-20	40
>20	Requires BOPU pre-approval

¹ BOPU may require 30-ft easement when sewer main is located between structures or access is limited

- ii. Forced sewer mains shall be centered in easements as described in the Water Main Easements section.
- d. Combination of (or Multiple) Water and Sewer Mains within an Easement
 - i. Water mains shall be located 10-ft horizontally from sewer mains with depth less than 18-ft.
 - ii. Water mains shall be located 12-ft horizontally from sewer mains with depth 18-ft to 20-ft.
 - iii. Parallel water mains shall have 10-ft horizontal separation.
 - iv. Parallel sewer mains shall be reviewed on a case-by-case basis.
 - v. For combination easements, the easement width shall be based on each boundary distance from the water or sewer main, respectively, plus the required separation distance. See Figure 2.

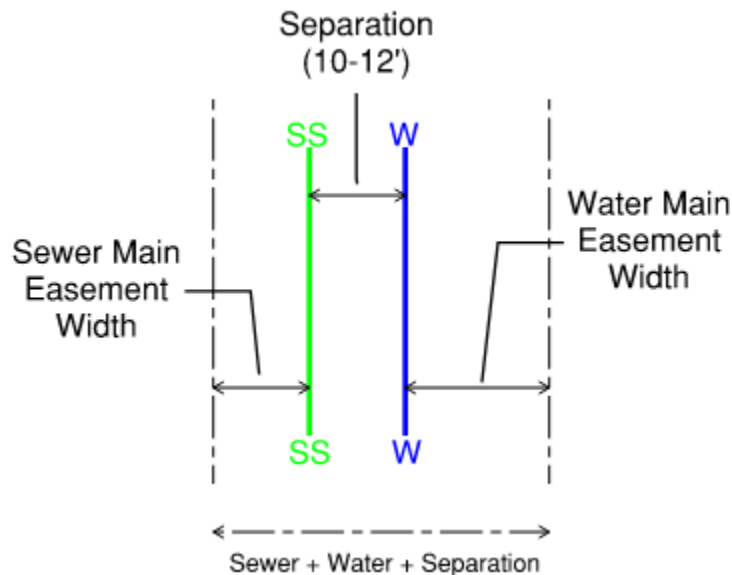


Figure 2 - Combination Easement Width

- 14. Connection Permit Refunds and Credits
 - a. Uninstalled Connections
 - i. System development fees paid are 100% refundable for a connection that has not been installed and is cancelled at the request of the property

- owner/developer/contractor. The BOPU will refund or credit only the actual amounts paid.
 - ii. If a Service Connection has not been installed within one year of its purchase or if a re-plat of the lot and block occurs, then the Connection Permit becomes invalid, and Connection Fees are forfeited.
 - iii. If a site is re-platted and new Connection Permits are required, the administrative portion of the Connection Fee will be applied (i.e., re-plats will be charged an additional administrative portion of connection fee to cover cost of new connection permit).
 - b. Installed Connections
 - i. The BOPU will not issue Connection Fee refunds for a connection that has been installed. This applies to both unused and used service connections.
 - ii. The BOPU will not issue credit for any portion of the connection permit fee.
 - 1. Fully Paid Connections
 - a. If a service connection is disconnected (killed) at the main, the BOPU will issue a system development capacity credit, and if applicable a pump station capacity credit, toward the purchase of a new connection. The capacity credit will be equal to the current effective system development fee (and pump station fee if applicable) that corresponds to the size of the connection being killed. The capacity credit must be used toward the purchase of a new service connection, otherwise the credit will be forfeited.
 - i. If the service connection has been used, the capacity credit can only be used to offset the cost of a new service connection to the same property.
 - ii. If the service connection has not been used, the capacity credit can be used to offset the cost of a service connection within the same subdivision or development.
 - 2. Partially Paid Connections
 - a. If a service connection is disconnected (killed) at the main, the BOPU will issue a credit for the actual amount paid for the system development fees, and if applicable pump station fees. The credit must be used toward the purchase of a new service connection, otherwise the credit will be forfeited. The credit can only be used to offset the cost of the system development fees (or pump station fees if applicable) of a new service connection within the same subdivision or development.
- 15. Future Connection Permits
 - a. Where applicable, BOPU may issue connection permits and postpone related System Development Fees for properties adjacent to new developments subject to the following conditions:
 - i. BOPU receives a request for said connection permit,
 - ii. An engineer (other than BOPU staff) identifies the size and location of the connection,
 - iii. The connection and permit are assigned to a specific parcel of property,
 - iv. Connection shall only be allowed for single family homes,

- v. The entity installing said connection(s) is identified,
- vi. The property owner signs the connection permits,
- vii. The connections cannot be utilized until the property is annexed or an Outside User Agreement is filed, and all deferred fees are paid in full. Said fees due will be fees in effect at the time of payment of said fees.

F. Consecutive System Connections

1. Consecutive Systems are only considered in special circumstances (e.g., industrial campus, rural water use) and shall be pre-approved by BOPU.
2. Water
 - a. All connections to public water supply must include high hazard backflow device and incorporated meter. Meter shall be located offsite to allow BOPU access for operations and maintenance. Meter must meet BOPU specifications.
 - b. Main flushing, other maintenance use, and fire protection will be metered and billed.
 - c. Mains and appurtenances shall be clearly called out as private in design documents.
3. Sewer
 - a. If sewer billing not based on water consumption, all connections to public sewer system must be metered offsite to allow BOPU access for operations and maintenance. Meter must be pre-approved by BOPU.
 - b. Peak flow attenuation may be required as described in subsequent section.
 - c. Mains and appurtenances shall be clearly called out as private in design documents.

IV. WDEQ DELEGATED AUTHORITY

A. Authority

1. Per the Delegation Agreement between Wyoming Department of Environmental Quality and the City of Cheyenne Board of Public Utilities (dated MM/DD/YYYY), the BOPU is authorized to enforce and administer the provisions of W.S. § 35-11-301(a)(iii) and (v).
2. BOPU shall only exercise its delegated authority to permit water distribution and sewer collection projects located within its service boundary. BOPU will not issue permits for consecutive systems not operated and maintained by BOPU (e.g., F.E. Warren Air Force Base and South Cheyenne Water and Sewer District); however, BOPU will review and provide comments where consecutive system connects to public system.

B. Permitting

1. An owner/developer/contractor must obtain a Permit to Construct prior to installation of any new water/sewer infrastructure. The process for obtaining a Permit to Construct is described in the succeeding sections of this document.

C. Appeals

1. If an applicant desires appeal of BOPU recommendation, written appeals should be made to WDEQ, Water Quality Division, Water and Wastewater Southeast District Engineer.

D. Records

1. BOPU shall maintain digital applications, permits, and project records separate from its internal projects. Project file nomenclature shall include a project number including the year the project was introduced to BOPU, project type code (development project or development

miscellaneous), and sequential number (YYYYDVP## or YYYYDVM##). Application and Permit nomenclature shall include effective dates in the form YYYYMMDD.

V. PRELIMINARY DESIGN REPORT

A. General

1. A preliminary design report shall be submitted to the BOPU for review and approval as part of the design for water and sanitary sewer construction projects. All preliminary reports must be received by the BOPU prior to approval of final design drawings and must comply with the requirements of the Wyoming DEQ, Water Quality Rules and Regulations, Chapters 11 and 12.
2. The engineering report shall be submitted with each application. The purpose of the report shall be to describe and provide technical justification for all aspects of the proposed construction, modifications, and/or installations. The report should address existing conditions, capacity analysis of added demands, known or suspected problems, proposed actions, and the reasoning used to arrive at those proposed actions.
3. The preliminary report, construction plans, and specifications must be submitted to the BOPU and a Permit to Construct must be obtained prior to construction.
4. Any hydraulic modeling shall be performed as outlined in Appendix E.
5. Minimum requirements for water distribution and sewer collection system extensions shall be:
 - a. Water distribution system extensions:
 - i. A description of the service area including scaled vicinity plan map(s) of the project with regard to adjacent and proposed development, elevations, and topographic features.
 - ii. Current and projected system water demand for average day, maximum day, peak hour, needed fire flows, and per capita maximum daily flows.
 - iii. Information of fire protection and fire flow capabilities of the proposed system.
 - iv. Description of high service pumping systems, finished water storage facilities, and water utility upgrades and extensions.
 - v. Description of backflow hazard classification and proposed backflow protection device.
 - b. Sewer collection system extensions:
 - i. A description of the service area including scaled vicinity plan map(s) of the project with regard to adjacent and proposed development, elevations, and topographic features.
 - ii. Current and projected average, maximum day, and peak hour flows for the design of the project, per capita design flows, extraneous flows (inflow and infiltration), and industrial and/or commercial waste flows. Peak hour flow based on 25-year storm (June 2012).
 - iii. The downstream impact on existing sewers, lift stations and treatment facilities. This information shall include existing population, waste loads, existing flows and capacity of downstream facilities.
 - iv. Description of new lift stations and sewer collection system upgrades and extensions.
 - v. Description of pretreatment as defined by BOPU Industrial Pretreatment Program.

VI. APPROVALS AND REQUIREMENTS FOR CONSTRUCTION PLANS, SPECIFICATIONS AND RECORD DRAWINGS

A. Construction Plans

1. All plans and specifications for projects within the limits of the City of Cheyenne will follow the City review process. The City will distribute plans to BOPU for review.
2. For projects outside city limits and not subject to City review process, please submit plans to BOPU Engineering & Water Resources Division at ENGreview@cheyennebopu.org or at BOPU Engineering & Administration Building.
3. At the time of the submittal of the plans to the City and BOPU, the following information shall be displayed in the plan set:
 - a. All water mains and their sizes.
 - b. All sewer mains and their sizes.
 - c. Distance between sewer and water mains and other utilities.
 - d. Street names, street widths, and the width of the right-of-way.
 - e. Type of materials the mains are made of.
 - f. All property lines and distances from the property lines to the utility mains.
 - g. Subdivision names, also showing block and lot numbers.
 - h. House addresses if known.
 - i. Size and location of all water connections and curb stops and meter pits.
 - j. Size and location of all sewer service connections.
 - k. Fire hydrant and valve locations shown on mainline profile.
 - l. Fire hydrant lead profile.
 - m. All utility easements must be shown.
 - n. Proper orientation of the north arrow.
 - o. The drawing scale must be shown as a bar scale and in written format.
 - p. Signature block for BOPU and applicable Authorities Having Jurisdiction.
 - q. The elevations of all sewer main inverts at the manholes and the manhole rim.
 - r. The diameter and depth of all manholes shall be shown.
 - s. The distances between all manholes and pipe grade must be shown.
 - t. The drawing must contain at least two points and ties to the PLSS (State Plane System NAD83 and NAVD88).
 - u. The electronic copy must be submitted in DXF, DWG, or shapefile formats referenced using NAD 1983 State Plane Wyoming East FIPS 4901 Feet.
4. The BOPU construction plan approval shall be valid for a period of two years. If no construction progress occurs during a 24-month period, the plan approval will be voided and re-application will be required.
5. Requests for exceptions to BOPU policy or design criteria shall be submitted in writing (print or digital letter) directly to BOPU (ENGreview@cheyennebopu.org) and must include the following:
 - Section of IPDC and/or Standard Specifications from which the exception is being requested.
 - Engineering or technical justification for the exception request.

- Design approach to mitigate risks related to exception request (e.g., encase water main to allow for less separation from a structure).

Requests will first be reviewed and (dis)approved by BOPU Staff and then escalated to BOPU Director and then to BOPU Board Members, as needed.

B. Requirements for Permit to Construct

1. No construction of utilities shall be permitted to begin prior to BOPU's issuance of a notice to proceed in the form of a Permit to Construct. The following criteria must be satisfied before the Permit to Construct will be issued:
 - a. Construction plans approved and signed by the City/County Engineer, BOPU, and Fire Department.
 - b. Receipt of the water and sewer facilities cost estimate.
 - c. Receipt of the cash bond or irrevocable letter of credit.
 - d. Receipt of application for Permit to Construct.
 - e. Completion of a BOPU utility agreement document (if applicable).
 - f. Receipt of the application for inspection.
 - g. Appropriate easements recorded (if applicable).
 - h. Attendance at a BOPU pre-construction meeting.
 - i. Submittal of one hard copy and one electronic format, in NAD 1983 State Plane Wyoming East FIPS 4901 Feet, of the final approved and signed plans and project specifications to the BOPU.
 - j. BOPU approval of submittals and shop drawings.
 - k. Receipt of the associated fees.
 - l. Developer's signature on the Record Drawing Guarantee Form (see Appendix B).
2. If construction is not active, Permit to Construct expires with the expiration of Approved Plans.

C. Construction Inspection and Testing

1. Any deviations from the approved plans and specifications shall be approved in writing by the CEO and BOPU prior to the work being performed. The City and BOPU inspectors have the authority to sign off on minor changes.
2. The BOPU construction inspector will visit the construction site periodically to provide assurance to BOPU that work complies with the pre-approved plans and specifications.
3. The BOPU inspector will be present during all testing of completed work.
4. Formal written requests (print or digital letter) shall be required for system startup and testing. Such requests shall indicate that contractor and all subcontractors are ready for startup and the system is ready to operate as designed.

D. Inspection Fees

1. The BOPU will charge the owner/developer/contractor the following Inspection Fees:
 - a. The owner/developer/contractor will be billed at the current rate for BOPU inspection time that is performed during regular working hours. 7:30 a.m. to 4:00 p.m. Monday through Friday.
 - b. The owner/developer/contractor will be billed at the current rate for all inspection overtime. Overtime includes hours worked on weekends, holidays and hours outside of 7:30 a.m. to 4:00 p.m. time frame on normal working days.

- c. Only one inspector's time will be charged against the project, for any given time frame, unless the project is large enough to justify more than one inspector or unless an event on the project justifies two inspectors for a temporary time frame.
- d. Inspections require a minimum of two working days' notice.

E. Record Drawings and Guarantee of Delivery

1. The owner/developer/contractor of the project shall be required to complete and sign the General Project Guarantee Form for Delivery of Record Drawings (see Appendix B). The owner/developer/contractor is to provide the BOPU with complete and accurate record drawings upon completion of the work on the water and sanitary sewer utilities. The record drawings shall consist of one Mylar copy (11" x 17" or 24" x 36") and one vector-quality PDF (≥ 600 dpi). The record drawings shall be submitted to the BOPU within 90 days of the issuance of the Release for Limited Service by the BOPU. Owner/developer/contractor shall provide BOPU with a cash deposit, performance bond or an irrevocable letter of credit in the amount of \$5,000 or 5% of the estimated cost of the water and sewer utility work, whichever is greater. However, in no case will the cash deposit, performance bond or an irrevocable letter of credit exceed \$20,000. The estimated cost of the project shall be based upon the construction costs of the water mains, valves, fire hydrants, sewer main and manholes. The cash deposit, performance bond or irrevocable letter of credit shall be delivered to the BOPU prior to issuance of a Permit to Construct. Therefore, no work on the water and/or sanitary sewer is to begin until the cash deposit, performance bond or irrevocable letter of credit is received by the BOPU. If the drawings are not delivered prior to the established date, the owner/developer/contractor will forfeit his cash deposit, performance bond or irrevocable letter of credit. The guarantee will be released by the BOPU when the required and acceptable Record Drawings are delivered to the BOPU in a timely manner (unless the owner/developer/contractor has requested and the BOPU has issued written approval of a time extension). The BOPU shall make payment to the owner/developer/contractor within 30 days of receipt of acceptable Record Drawings by the BOPU.
2. An exception to the requirement for a cash deposit will be made for the City of Cheyenne if the appropriate Department Head provides the BOPU with a letter pledging the timely delivery of Record Drawings in lieu of providing the cash deposit (see Appendix B).
3. Record drawings shall include accurate record of items described in §VI.A.2 and:
 - a. Distances from the main line water valve to the water service connections.
 - b. Distances from the center of the manhole cover to the sewer service connections.

VII. RELEASE FOR SERVICE, ACCEPTANCE, WARRANTY

A. Release for Limited Service

1. The owner/developer/contractor shall submit a written letter or e-mail to BOPU requesting the system be released for limited service. Water use shall be limited to fire protection and construction use. Release for limited sewer service shall only be allowed in special circumstances (e.g., rehabilitation work requiring bypass pumping) and pre-approved by BOPU. New sewer mains shall remain plugged at all connections to active (pre-existing) sewer mains.

2. All required disinfection, flushing and testing shall be completed before the release for limited service is issued. All valve boxes, stop boxes, manhole covers and fire hydrants shall be raised to surface grade and fully accessible before release for limited service will be issued. The BOPU will then conduct an inspection and all deficiencies must be corrected before a Release for Limited Service shall be issued. Release for Limited Service does not guarantee BOPU approval of Certificates of Occupancy, which are approved after Acceptance. The owner/developer/contractor shall be fully responsible for the performance, safety, maintenance, and repair of all deficiencies of the water and sewer utilities until Acceptance is issued.
3. BOPU will issue a letter stating water and sewer infrastructure are released for limited service.

B. Issuance of Acceptance

1. Acceptance will not be issued until the following have been fully and satisfactorily completed:
 - a. Written request for Acceptance has been received by the BOPU.
 - b. All valve boxes, stop boxes, manhole covers, and fire hydrants have been raised to final grade and are fully accessible.
 - c. All work is inspected and completed to BOPU satisfaction.
 - d. Record drawings are submitted and approved.
2. BOPU will issue a letter stating acceptance of the water and sewer infrastructure. Full water and sewer services are available during this period. BOPU is responsible for operation and maintenance of the water/sewer infrastructure. The two-year warranty period shall begin on the date of Acceptance.
3. Upon request, BOPU may issue partial Acceptance of a project. Partial Acceptance is typically limited to phased residence construction within a large subdivision development.

C. Warranty

1. The owner/developer/contractor shall warrant all water and sanitary sewer utility work for a period of two years after the issuance of the Notice of Acceptance (partial or full). All repairs arising out of defective work or materials shall be corrected immediately during the warranty period. If not corrected in a timely manner, or in the case of an emergency, the BOPU shall make necessary repairs at the owner's/developer's/contractor's expense. The BOPU will conduct an inspection of the work approximately twenty-one months into the warranty period and all deficiencies found shall be corrected by the owner/developer/contractor.

D. Final Acceptance

1. Final Acceptance will occur at the expiration of the Warranty period. Owner/developer/contractor may request formal documentation of Final Acceptance.
2. Final Acceptance indicates owner/developer/contractor has no further obligation related to installed infrastructure.

VIII. WATER DESIGN CRITERIA

A. Main Sizing & Flow Rates

1. The minimum water main size shall be 8-inches in diameter. Water mains shall be sized to provide peak hour water service and max day plus fire flows while maintaining a minimum pressure of 20 psi and minimum normal working pressure of 50 psi at ground level. Main sizing shall also consider acreage for potential future development. Water demand analysis shall be based on the following water consumption criteria:

Table 3 - Typical Water Duties

Typical Water Duties			
Use	Average (gpd)	Max Day ¹ (gpm)	Peak Hour ² (gpm)
Residential/Person ³	95	2.6 x Average	5.3 x Average
Commercial & Business/Acre ⁴	3000		
Industrial/Acre ⁴	3000		
Schools (with showers)/Student ⁵	25		
Schools (w/out showers)/Student ⁵	15		
Parks & Greenway/Acre ⁴	2000		

Table Notes:

All required fire flows shall be determined by the City's adopted Fire Code.

- 1 - Max Day = 2.6 x Average, from BOPU historic meter data
 - 2 - Peak Hour = 5.3 x Average, from BOPU historic meter data
 - 3 - Residence = 2.5 People/Residence (U.S. Census Bureau)
 - 4 - Derived from *Water Distribution Systems Handbook* by Larry W. Mays, publication 2000, Table 3.2, BOPU meter data, and evaluations of similar agency's design criteria.
 - 5 - From U.S. Department of Energy Federal Water Use Indices. Does not account for irrigation. Use "Parks & Greenway/Acre" to assess irrigation demand.
2. Non-residential water duties provided in Table 3 are intended for general estimates (e.g., subdivision projects where future site use is unknown). For specific site plans, water duties shall be provided by design engineer using fixture counts or other site-specific needs. Proposed water duties shall be provided to BOPU for review and approval.
 3. Water main velocity shall not exceed values presented in Table 4.

Table 4 - Maximum Allowable Design Velocity

Water Main Diameter (inches)	Peak Hour Demand	Max Day plus Fire Flow
Less than 16"	7.5 ft/s	15 ft/s
16" or Greater	5 ft/s	10 ft/s

B. Connections & Service Lines

1. All service taps and connections shall be made by a contractor (licensed by the City of Cheyenne) or BOPU, as outlined in section III.E.
2. All taps and connections shall be inspected by the BOPU prior to backfill and release for service.
3. Each building, structure, or consumer shall have a separate water and sanitary sewer service line, respectively.

C. Combination Service Connections

1. Combination services provide both fire and potable services from a single connection to the main.
2. Combination services shall not be larger than 2-inches in diameter. Larger connections could lead to water age issues on the potable side of the connection.
3. Combination services require curb stops on both the fire line and service line. Curb stops shall be located outside of the building such that BOPU can easily access.

4. Developer/designer will determine the required connection size for the fire system.
5. Fire or combination connections to 4-inch water mains shall be limited to 1.5-inches and shall not exceed a design flow rate of 100 gpm.

D. Fire Hydrants

1. The hydrant piping shall be a maximum of 100-feet in length and a minimum of 6-inches in diameter or sized appropriately to supply required fire flows. Hydrant drains shall not be connected to or located within 10 feet of sanitary sewers or storm drains.
2. Fire hydrant location, spacing, and flow rates shall be approved by the Cheyenne Fire Department in accordance with the City’s adopted Fire Code.

E. Valves

1. Valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs.
2. Valves shall be located at not more than 500-foot intervals in commercial districts and at not more than 1-block or 600-foot intervals in residential areas.
3. Isolation valves shall also be located at all water line crossings such as tees and crosses. Tees shall have two (2) isolation valves installed and crosses shall have three (3).
4. Control valves shall be sized according to maximum flow velocity allowed based on the main pipe size and Table 4.

F. Air Relief/Vacuum Valves

1. At the high points of all transmission lines and in distribution lines 12-inches and larger, provisions shall be made for air relief.
2. Fire hydrants or active service connections may be substituted for air relief valves on 6-inch and 8-inch lines.
3. Manholes or vaults for automatic air relief valves shall be designed to prevent submerging the valve with ground water or surface water. Such manholes or vaults shall be properly vented.

G. Dead End Mains

1. Dead-end mains shall be no larger than 8-inches in diameter.
2. Dead-end water mains shall only be allowed in cul-de-sacs and hammerheads and will be no more than 250 feet in length. There shall be a fire hydrant at the end of the dead-end main. The length of the hydrant lead is counted in the 250-foot maximum length.
3. Water turnover calculation in dead-end main shall be provided in Engineering Design Report and shall not exceed 48 hours during low flow (winter) conditions as approved by BOPU. Turnover time can be calculated using the following equation:

$$T = \frac{L * A}{Q_{min} * n * d * o} = \frac{L}{n}$$

where,

T = turnover time (hr)

L = length of dead-end main (ft)

A = cross-sectional area of 8-inch main (ft²) ≈ 0.345 ft²

Q_{min} = winter flow rate per residence (ft³/hr) ≈ 0.93 ft³/hr

n = number of residences

d = factor for distribution of residences along main = 0.5

o = occupancy percentage of homes during 48-hr period = 75%

4. The fire hydrant located at the entrance to a cul-de-sac (or other dead end main) shall be connected to a water main different than the main which runs up the cul-de-sac. (Such as connecting to the main located on the cross street).
5. Cul-de-sacs and hammerheads that are more than 250 feet in length, will be required to meet additional BOPU and Fire Department criteria as determined on a case-by-case basis. Such additional requirements may include, but not be limited to: Additional fire hydrants, additional valves, and a paved access/utility easement per BOPU policy.
6. 8-inch dead-end stubs meant for future extension into next development (or phase) that have no service connections shall include a 2-inch corporation valve at the farthest point to allow for proper disinfection, testing, and flushing. Following successful disinfection, testing, and flushing of stub, the corporation valve will be replaced with a 2-inch plug. The dead-end section of main shall be isolated by closing the valve nearest a looped connection point.

H. Alignment and Bury Depth

1. Alignment:
 - a. In right-of-way, water mains shall be 12-feet north of centerline on east/west streets or 12-feet west of centerline on north/south streets. All public water mains shall be no closer than 20 feet to any building or permanent structure. Alignment deviation shall not exceed 0.5 foot from the approved plan without authorization from the BOPU.
2. Bury Depth:
 - a. All water mains shall be buried to a depth of no less than 5½-feet and no more than 7-feet of cover to top of pipe.

I. Pressure Zones

1. Portions of the City of Cheyenne water distribution system are within zones of varied water pressure. Such zones are located at various locations. Development projects that are within, adjacent to, or must connect to these pressure zones based on elevation and demand will be required to design and construct adequate PRV vaults, booster pumps, water tanks, and other facilities as necessary, to maintain the pressure of the zones.

IX. SANITARY SEWER DESIGN CRITERIA

A. Main Sizing & Flows

1. The minimum sewer main shall be 8-inches in diameter. Pipelines shall be sized based on the number of residences proposed for the development in addition to acreage for potential future development. Pipelines shall be sized to serve flows based on Table 5:

Table 5 - Typical Sewer Duties

Typical Sewer Duties			
Use	Average (gpd)	Diurnal Peak ¹ (gpm)	Wet Weather Peak Hour ² (gpm)
Residential/Person ³	75	2 x Average	4 x Average
Commercial & Business/Acre ⁴	3000		
Industrial/Acre ⁴	3000		
Schools (with showers)/Student ⁴	25		
Schools (w/out showers)/Student ⁴	15		
Parks & Greenway/Acre ⁴	250		

Table Notes:

- 1 - Dry Weather Diurnal Peak = 2 x Average, from BOPU historic meter data which includes base infiltration
- 2 - Wet Weather = 4 x Average, from Wyoming DEQ Rules and Regulations Chapter 11, Section 9.
- 3 - Residence = 2.5 People/Residence (U.S. Census Bureau)
- 4 - Derived from Wastewater Engineering by Metcalf & Eddy, publication 1991, and evaluations of similar agency’s design criteria.

- 2. Sanitary sewers shall be sized accordingly:
d/D of 50% for Dry Weather Diurnal Peak
- 3. A sewer model shall be developed or referenced to ensure existing infrastructure is adequately sized to accept additional upstream flow.
- 4. BOPU will analyze existing infrastructure and modeling within the proposed development will be performed by the design engineer (Appendix E).

B. Connections & Service Lines

- 1. All service taps and connections shall be made by a contractor licensed by the City of Cheyenne. No taps or connections shall be made to the sanitary sewer system prior to obtaining a connection permit from the BOPU.
- 2. All taps and connections shall be inspected by the BOPU prior to backfill as outlined in Section VI.
- 3. Separate storm sewers shall be provided for the collection of storm water, roof drains, sump pumps, foundation drains and other drains.
- 4. There shall be no extraneous flow connections to the sanitary sewer. Examples of extraneous flow sources include, but are not limited to sump pumps, window wells, surface drains, roof drains, etc.
- 5. Each building, structure, or consumer shall have a separate water and sanitary sewer service line, respectively.

C. Manholes & Drop Manholes

- 1. Manholes shall be located at all changes in pipe size, changes in vertical or horizontal alignment, at pipe intersections, and the end of all lines. Maximum spacing for various line sizes are as follows:

Table 6 - Manhole Spacing

Line Size (In)	Maximum M.H. Spacing
15 or less	350 ft.
16-30	500 ft.
31 or more	600 ft.

- Drop manholes must be constructed where the change in elevation between two lines is greater than 18-inches. The drop pipe shall be exterior of the manhole, unless otherwise approved by the BOPU in writing. Lamp holes shall not be permitted.

D. Inverted Siphons

- Inverted siphons shall have a minimum of two 6-inch barrels. The inlet and outlets shall be arranged to cause only one pipe to be used during normal flows. The minimum velocity shall be 3 fps at average flow, and occur at least daily. The siphon shall be designed for flushing and maintenance.

E. Alignment Grade & Depth to Cover

- Manholes and sanitary sewers shall be horizontally located in the center of the street. If width of street does not allow for centerline placement or curved streets prohibit proper centerline placement, the sanitary sewer pipeline may be located within 5 feet of the center, with prior approval of the BOPU. All sewers shall be designed for straight and uniform slope and alignment between manholes. Alignment and slope changes shall occur at manholes only. Curvilinear sewers may be permitted only for sewers greater than 24 inches in diameter.
- Drop across manholes shall be the same slope as the adjacent sewer mains, but not less than 0.05 feet. Sewers shall be laid with uniform slope between manholes. Minimum/Maximum slopes shall be:

Table 7 - Max/Min Sanitary Sewer Slope

Sanitary Sewer Slope

Sewer Size (in)	Minimum ¹ (ft/100ft)	Maximum ² (ft/100 ft)
8	0.40	4.96
10	0.28	3.68
12	0.22	2.88
14	0.17	2.35
15	0.15	2.12
16	0.14	1.94
18	0.12	1.68
20	0.11	1.45
21	0.10	1.36
24	0.08	1.14
27	0.067	0.98
30	0.058	0.84
33	0.051	0.75
36	0.046	0.66

Table Notes

- Minimum slopes from Wyoming DEQ Chapter 11
- Maximum slopes derived from Manning’s equation, $Q=(1.49/n)*A*(R^{2/3})*(S^{1/2})$, using $n=0.01$ for PVC pipe not to exceed 10 fps velocity.

3. Per DEQ Chapter 11, minimum velocities shall be 2 fps when flowing full and velocities greater than 10 fps require special design considerations. All sewer pipe size changes shall be at manholes. Pipe size shall not be decreased in the direction of flow. The energy gradient line should be maintained when a smaller sewer joins a larger one. Sewers shall be located to protect them from freezing and frost heave. Sewer mains should be kept between 8 and 20 feet deep, shallower mains could be allowed if there is no opportunity to extend the sewer to serve other users (such as in a dead-end cul-de sac). Shallower sewers shall have no less than 4 feet cover to top of pipe and require prior BOPU approval. No sewer shall be allowed or installed nearer than 20 feet from a wall or structure. Increased separation may be required for mains deeper than 8 feet.

F. Deep Sewers

1. The BOPU shall not accept or allow sewers with a flow line over 20 feet in depth. Sewers encased in a steel encasement pipe, such as under highways and railroads, may be deeper than 20 feet as long as the manholes on each end of the encasement pipe are less than 20 feet deep and the encasement pipe does not exceed a length of 250 feet. Pre-approval for exceptions to this deep sewer policy may only be granted upon the review and written approval from the BOPU.

G. Access to Manholes

1. Manholes must be accessible by means of 12-foot-wide asphalt road, paved driveway or a graveled surfaced roadway (such as an alley way) compacted to 95% maximum density and capable of supporting HS-20 loads. Road width shall be a continuous surface.

H. Lift Stations

1. Any proposed development that cannot drain sanitary wastewater (sewage) by gravity shall be required to construct a sewage lift station at its own expense. This lift station shall have a minimum pump size of 4-inches and capacity sized for peak hour flows, including inflow and infiltration. The lift station shall be an underground and self-contained Gorman-Rupp Wastewater Pumping Station or a pre-approved equal. The proposed specification and design shall be submitted to the BOPU for approval. All designs shall be in accordance with the DEQ Chapter 11, Section 10. Designs shall be submitted for review and approval by BOPU staff.
2. Lift station design shall consider the following:
 - a. Area surrounding lift station wetwell shall be graded and finished to prevent surface runoff from entering the wetwell.
 - b. Level working surface around wetwell shall be provided to allow onsite equipment maintenance. Maintenance area shall be rated to accommodate BOPU jet trucks. Access gates, driveways, and approaches shall be sized and rated to accommodate BOPU jet trucks.
 - c. Vehicle access gates shall be constructed using steel frames, hinges, and locking mechanism.
 - d. Security fences shall be provided. Security fence ownership shall be transferred to BOPU and BOPU will maintain security fence. If requested at site, decorative (e.g., white vinyl) fences will be maintained by developer.

- e. BOPU prefers submersible chopper style pumps operated via variable frequency drives capable of regulating discharge flow velocity.
- f. Dry weather pumping rate shall be determined based on modeled capacity analysis performed by BOPU.
- g. Onsite attenuation storage may be required. Storage should be based on wet weather peak flow for 2 hours minus pumping capacity.
- h. Level monitoring device (e.g., bubbler pump) shall be located such that access is segregated from other electrical sources (i.e., pumps can be monitored and maintained while station is active without exposure to electrical hazards).
- i. Flow monitoring manhole shall be provided upstream of wet well (or attenuation structure) and downstream of pumps (force main).
- j. Provide equipment to mitigate electrocution hazards such as, but not limited to, 24V controls equipment and 208V utility equipment where possible.
- k. Design facility to accommodate safe testing and maintenance such as, but not limited to, means of disconnect for racking/ testing circuit breakers and equipment and providing separation of hazards within individual enclosures.
- l. Conduct and provide arc flash study and labels per NFPA 70E.
- m. Install visual and audible alarms for energized open panels (greater than cat. 2).
- n. Design for locked access to areas of extreme hazards (greater than cat. 4).

I. Grease Traps and Sand Traps

- 1. It shall be unlawful for any person to deposit, by any means whatsoever, into any plumbing fixture, floor drain, interceptor, sump, receptacle or device, which is connected to any public sewer, any sand, ashes, cinders, solids, rags, flammable, poisonous or explosive liquids or gasses, oils, grease or any other thing whatsoever which would, or could cause, damage or flow restriction to the public sewer or treatment facilities.
- 2. As required by Chapters 2.68, 13.04, 13.08, 13.12 and 13.20 of the *CMC*, grease, oil and sand interceptors shall be provided or modified when, in the BOPU's opinion, they are necessary for the proper handling of liquid wastes containing floatable grease in excessive amounts or flammable wastes, sand, or other harmful constituents. All grease traps/interceptors must be in compliance with the Rules and Regulations for Grease Traps and Interceptors and Inspection Manholes (Monitoring Facilities) published on the BOPU website.
- 3. Common ownership agreements for water or sewer services will not be allowed at sites where a grease/sand trap is required.

J. Flow Attenuation

- 1. Flow attenuation reduces peak flows within the collection system and extends available capacity of existing infrastructure. Attenuation will be promoted whenever feasible.
- 2. For industrial cooling and other large volume batch discharges, flow attenuation should target outflow equal to 20% of peak hour rate (e.g., peak blowdown rate). Required attenuation will be based on modeled capacity analysis and site condition footprint and grade.

X. INDUSTRIAL COMMERCIAL & DOMESTIC SEWAGE QUALITY & PRETREATMENT REQUIREMENTS

A. General

- i. To protect the public's health, and to comply with applicable laws and regulations, the discharge and disposal of all wastewaters within the Cheyenne service area, shall comply with Chapters 2.68, 13.04, 13.08, 13.12 and 13.20 of the *CMC*.



Appendix A

City Project Guarantee Form For Delivery of Record Drawings

I, _____ representing the City of Cheyenne for the construction of the _____, do
(Name of project and/or other description)

hereby agree to submit the required record drawing to the Board of Public Utilities (BOPU) within a reasonable time, but no later than 90 days after the issuance of the release of service by the BOPU.

Signature

Date



Appendix B

General Project Guarantee Form For Delivery of Record Drawings

I, _____ being the owner of the

(Name of subdivision and/or property description)

Having reviewed the Board of Public Utilities (BOPU) Policy concerning the delivery of "Record Drawings, do hereby agree to submit the required record drawings within 90 days after the issuance of the Release for Service by the BOPU. To assure that the record drawings are produce in a complete, accurate, timely and acceptable manner to the BOPU. The BOPU will require the Developer to provide the BOPU with a cash deposit, performance bond or irrevocable letter of credit in the amount of \$ 5,000.00 or 5% of the estimated cost of the water and or sewer utility work, whichever is greater, not to exceed \$20,000.00 maximum. However, the Developer and BOPU may negotiate the required bond fee for very small projects

Once the Record Drawings are properly provided to the BOPU, the bond or letter of credit will be released and the Developer's obligation will have been met.

If the drawing are not delivered prior to the established date, the Developer will forfeit his cash deposit, performance bond or irrevocable letter of credit, unless the developer has requested and the BOPU has issued written approval of a time extension establishing a new due date for the record drawing.

Signature

Date



Appendix C

Common Tap Request Form One Tap Serving Multiple Buildings, Structures, Units or Consumers

Date: _____

Address(s), Location / Legal Description

I/we _____ owner of said above described property am aware of Section 13.04.100 of the City Code in which it states “ Every building, structure or consumer in the city shall have a separate utility service connection except for common ownership projects approved by the Board “.

I/we _____ owner would like to apply for permission to serve two buildings from a single water service line and a single sanitary sewer service. A deed restriction shall be filled out and recorded with the Clerk of Laramie County by owner and forwarded to the Board of Public Utilities. If buildings, structures or property are separated into individual ownerships at a future date it shall be the owner’s responsibility to install separate service connections.

The following information is attached:

- A copy of the Deed to the property
- A site plan / plumbing plan
- A vicinity map

Respectfully Submitted,



Appendix D

Application For Board of Public Utilities Water, Sanitary Sewer, or Re-use Water Services Outside the Limits of the City of Cheyenne

- | | |
|---|--|
| <input type="checkbox"/> Connect to BOPU Water | <input type="checkbox"/> Proposed Residential |
| <input type="checkbox"/> Connect to BOPU Sewer | <input type="checkbox"/> Proposed Commercial |
| <input type="checkbox"/> Existing Residential Unit | <input type="checkbox"/> Re – Use Water (Irrigation) |
| <input type="checkbox"/> Existing Commercial Business | <input type="checkbox"/> _____ |

Address or Location Description

Name of Subdivision

Legal Description of Area:

Map (Plat) of Area is to be attached:

Total Site Area: _____ Sq. Ft. or _____ Acres

Owner: _____ Telephone: _____

Owner's Address: _____

Applicant/Agent: _____

Applicant/Agent's Address:

For Proposed Developments:

It is proposed that the property will be developed for the following purposes.

If the property is developed for commercial or industrial use, please describe in detail any chemicals or wastes that will be used at the property:

Proposed Size(s) of the Water service connection _____ Inches.

Estimated Monthly Water Usage _____ Gallons.

Intended Uses of Water (Restrooms, Kitchen, Manufacturing?) _____.

Proposed Size(s) of the Sewer service connection _____ Inches.

Sources(s) of Sewerage Discharge (Restrooms, Kitchen, Manufacturing?) _____.

If the property is developed for commercial or industrial use, please describe in detail any chemicals or wastes that will be used at the property and or discharged to the into the sewer.

- There is an application fee that is due upon receipt of this form.
- Applicant must visit with the City Planning Office and return the attached Clearance Form, with this Application to Board of Public Utilities Development Specialist.

SIGNATURE OF OWNER _____ DATE _____

PRINT NAME _____

Person(s) who should be contacted regarding the application:

_____ Telephone _____

Additional Comments:

**APPLICATION SHOULD BE RETURNED TO
BOPU DEVELOPMENT SPECIALIST
2416 SNYDER AVENUE
CHEYENNE, WY 82001
307-637-6497**



Appendix E

Hydraulic Model Analysis Process

Revised May 28, 2021
Change Authority: Engineering and Water Resources Manager

Step	Description/Action	Responsible
1	Provide desired connection points to the BOPU systems, water demands (including max day, peak hour, and required fire flows determined by the Fire Department) and sewer flows (max day and peak hour). Provide flow calculations that comply with BOPU design criteria. For commercial/industrial projects, site specific demands or fixture counts should be used when available. Use the Flow Calculation Worksheet located in Appendix F. Submit as PDF.	Development Engineer
2	Run the existing system water and sewer models. Confirm the existing systems can support the proposed development. If the existing systems cannot support the development, work with Development Engineer to determine the necessary off-site improvements. Once the need for off-site improvements (if any) are reconciled and/or the existing systems are deemed capable to support the development, proceed to Step 3.	BOPU & Development Engineer
3	Provide existing pipe information and hydraulic grade lines at the connection points for specific hydraulic conditions (Water: maximum day + fire and peak hour; Sewer: maximum day under dry conditions). Provide flow test data. BOPU will provide packet with results from Steps 2 and 3.	BOPU
4	Design the water and sewer networks for the proposed developments using the results from Step 3. Include hydraulic calculation results in the engineering report.	Development Engineer
5	Review the engineering report and hydraulic designs for conformance to BOPU and DEQ standards. Deliver comments to Development Engineer.	BOPU
6	Reconcile comments (if any) from Step 5.	Development Engineer
7	Once comments are reconciled, seal and sign engineering report and plans.	Development Engineer
8	Prepare permit application and obtain signatures.	Development Engineer
9	Provide copy of permit to Development Engineer.	BOPU



Appendix F

Project Flow Calculation Worksheet

Below is an example of the project flow calculation worksheet. The Excel form of the document can be downloaded from cheyennebopu.org or by emailing ENGreview@cheyennebopu.org.

Cheyenne BOPU Project Request - Flow Calculations Worksheet

Applicants must use this worksheet to calculate flows and submit to Cheyenne BOPU using the email link: bdorr@cheyennebopu.org

Project Name:

Required Fire Flow: gpm

Typical water and sewer duties derived from City of Cheyenne Board of Public Utilities Infrastructure Policies & Design Criteria. [link to IPDC](#)

Land Use	Typical Water Duties			Typical Sewer Duties		
	Average (gpd)	Max Day Factor	Peak Hour Factor	Average (gpd)	Max Day Factor	Peak Hour Factor
Residential per Person	95	2.6	5.3	75	2.0	5.6
Residential per Residence ¹	237.5			187.5		
Commercial & Business per Acre	3000			3000		
Industrial per Acre	3000			3000		
School (w/showers) per Student	25			25		
School (w/o showers) per Student	15			15		
Parks & Greenway per Acre	2000			250		

¹ 2.5 people per residence (U.S. Census Bureau)

Proposed Development Flow Calculations

Please use the table below to calculate water and sewer flows for your project.

Land Use	Contributing Unit Type	Enter No. of Units	Water	Water			Sewer	Sewer		
				Avg. Flow (gpm)	Max Day Flow (gpm)	Peak Flow (gpm)		Avg. Flow (gpm)	Max Day Flow (gpm)	Peak Flow (gpm)
Residential										
Single Family Homes, Apts., Townhomes, Duplexes	Residence									
Commercial and/or Industrial										
	Acre									
Educational										
Schools with Showers	Student									
Schools without Showers	Student									
Recreational										
Parks, Greenway, Ballfields, Golf Courses	Acre									
				Sub-Totals:				Sub-Totals:		

Future Phase Flow Calculations

Please use the table below to calculate water and sewer flows for any future phases of your project.

Land Use	Contributing Unit Type	Enter No. of Units	Future Water	Future Water			Future Sewer	Future Sewer		
				Avg. Flow (gpm)	Max Day Flow (gpm)	Peak Flow (gpm)		Avg. Flow (gpm)	Max Day Flow (gpm)	Peak Flow (gpm)
Residential										
Single Family Homes, Apts., Townhomes, Duplexes	Residence									
Commercial and/or Industrial										
	Acre									
Educational										
Schools with Showers	Student									
Schools without Showers	Student									
Recreational										
Parks, Greenway, Ballfields, Golf Courses	Acre									
				Sub-Totals:				Sub-Totals:		

NOTE: Enter the number of units as indicated in the appropriate land use to calculate project design flows. Accompanying calculations and justification are required for flow estimates not performed with typical duties given above.

Design Flows: 0.0 0.0 0.0 0.0 0.0 0.0

Proposed Tie-In Locations and Flows

Please use the table below to identify tie-in locations and associated flows to existing system. Provide BOPU water/sewer main or manhole ID when applicable.

Water Use	Location Description, Pressure Zone, and/or BOPU Facility ID	Avg. Flow (gpm)	Phase or Filing	Sewer Use	Location Description or BOPU Facility ID	Avg. Flow (gpm)	Phase or Filing		
Phase 1 Flow:				0.0	Phase 1 Flow:				0.0
Total Flow:				0.0	Total Flow:				0.0

NOTE: Phase 1 flow at proposed tie-in locations must match the proposed development sub-total flow given above. Total flow at proposed tie-locations must match the design flow given above.

Comments:

Applicant's Name:
 Phone No:
 Email: