WATER AND SEWER ORDINANCE

CHARLES COUNTY, MARYLAND

Effective July 1, 1998

CHARLES COUNTY MARYLAND
Where Eagles Fly™

Prepared By:

Department of Planning and Growth Management

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Vision Statement

Charles County is a place where…

* *All people thrive and businesses grow and prosper; where the preservation of our heritage and environment is paramount;*
* *Government services to its citizens are provided at the highest level of excellence; and*
* *The quality of life is the best in the nation.*

Mission Statement

The Mission of the Charles County Government is to provide our citizens the highest quality service possible in a timely, efficient, and courteous manner. To achieve this goal, our government must be operated in an open and accessible atmosphere, be based on comprehensive long- and short-term planning, and have an appropriate managerial organization tempered by fiscal responsibility.

TABLE OF CONTENTS

SECTION SUBJECT PAGE

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

PART I - GENERAL

1.0 ABBREVIATIONS AND DEFINITIONS

Act - Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 1251, et seq. amendments.

Allocation - The discreet amount of water and/or sewer service to be provided by the County. An allocation of capacity is an assurance of water and wastewater service from the County.

APHA - American Public Health Association

Applicant - A person, partnership, corporation, firm or governmental agency undertaking or proposing the construction of water and/or sewer improvements or other related improvements, who is primarily responsible for the improvements, and who is acting directly or through the owner of the property to be served, or its agents or employees.

Approved Equal/County Approved Equal - As determined by Charles County Government. the County's evaluation shall include, but not be limited to, technical merits, operation and maintenance considerations, expeditions availability for spare parts and/or repairs, and the county's standardization of equipment, materials, products and/or construction methods.

As-Built Drawing - Drawings that show actual location of pipe and valves as constructed including dimensional ties to physical structures.

ASCE - American Society of Civil Engineers

Authorized Representative of the User:

A. In the case of a corporation, the president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any person who performs similar policy or decision-making functions for the corporation.

B. In the case of a partnership or proprietorship, a general partner or proprietor; and

C. In the case of a federal, state, or local government facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

D. The individuals described in paragraphs "A" through "C", above, may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall responsibility from which the discharge originates or having overall responsibility for environmental matters for the company and the written authorization is submitted to the County.

E. If the authorization under paragraph "D", above, is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, or overall responsibility for environmental matters for the company, a new authorization satisfying the requirements of paragraph "D" above must be submitted to the County prior to or together with any reports to be signed by an authorized representative.

Availability for Hook-up - The project shall have attained a certificate of substantial completion, has all appropriate interior plumbing in place and approved, and is ready to receive water/or sewer service.

Available Capacity:

A. Treatment of Wastewater: The positive difference between the rated capacity of a waste treatment plant and the rolling annual average daily flow through the system, less any allocations granted but not yet used. Where applicable, the rated capacity of pump stations and interceptors shall also be taken into account. The most restrictive volume prevails for use computation prevails where rated capacities of various components of the collection system differ.

B. Supply of water: The positive difference between the applicable State water appropriation(s) for the water system or the rated capacity of the system, whichever is less, and the rolling annual average daily demand through the system, less any allocations granted but not yet used. This capacity shall include proportional adjustments which reserve amounts of water sufficient to meet maximum daily demand, provide fire protection and water system maintenance. Where applicable, the rated capacity of water treatment, distribution and storage facilities shall also be taken into account. The most restrictive volume prevails for use estimating purposes where rated capacities for various components of the water system differ.

Available Capacity = rated capacity – (current flows + current commitments)

Average day demand - The volume of water used in the year divided by 365.

Average day rate (average day) - The average day demand volume divided by a one-day period expressed in gallons per minute (gpm) or million gallons per day (mgd).

Average Residential Flow - The flow, as determined by the County, expressed in gallons per day that residential unit typically uses.

AWWA - American Water Works Association

Biochemical Oxygen Demand (B.O.D.) - The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure for five (5) days at 20 degrees centigrade, expressed in terms of weight and concentration (milligrams per liter (mg/l)).

B.O.D. - Biochemical Oxygen Demand - A standard test used in assessing wastewater strength.

Bulk Allocation - The percentage of available capacity less discretionary reserved bulk allocation.

Building Drain - In plumbing, shall mean the part of the lowest horizontal piping of a drainage system that received the discharge from the drainage pipes inside the walls of the building and conveys it to the building sewer. The latter begins five feet outside the inner face of the building wall.

Building Sewer - Shall mean the extension from the building drain to the public sewer or other place of disposal beginning five feet outside the inner face of the building wall.

Bypass - The intentional diversion of waste streams from any portion of an industrial user's treatment facility.

Categorical pretreatment standard or categorical standard - Any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307 (b) and (c) of the act (33 U.S.C. 1317) which apply to a specific category of users and which appear in 40 CFR Chapter I, Sub-chapter N, Parts 405-471.

CFR - Code of Federal Regulations

COD - Chemical Oxygen Demand - The amount of oxygen required to oxidize the organic compounds in a water sample to carbon dioxide and water. a standard test used by wastewater treatment plants to characterize the plant's influent.

Collector Sewer - Sewer pipeline designed and constructed to convey wastewater from lateral or branch sewers to the outfall or trunk sewer.

COMAR - means the Code of Maryland Regulations.

Connection - Any single property or structure connected to the public water or sewer main for which a connection fee is paid and a utility permit issued.

Construction cost - Includes all labor, materials, equipment and incidental work required to accomplish the project improvements as shown on the approved project plans.

Contract - Any agreement entered into by the County for the procurement of supplies, services, construction, or any other items and includes:

A. Awards and notices of award;

B. Contracts of a fixed-price, cost reimbursement, cost-plus-a-fixed-fee, fixed-price incentive, or cost-plus incentive fee type;

C. Contracts providing for the issuance of job or task orders;

D. Leases;

E. Letter Contracts;

F. Purchase Orders;

G. Supplemental agreements with respect to any of these;

H. Orders; and

I. Grants.

J. Developer Agreements

CONTRACT DOES NOT INCLUDE:

A. Collective bargaining agreements with employee organizations; or

B. Medical, Medicare, Judicare, or similar reimbursement contracts for which user eligibility and cost are set by law or regulation.

Contractor - The party of the second part to the contract; the individual, partnership, firm or corporation undertaking the execution of the work under the terms of the contract and acting directly or through his/her, their, or its agents or employees.

County - The term shall mean Charles County, Maryland a body corporate and politic.

County Engineer - The engineer employed by the County who is in responsible charge and has direct supervision of water and sewer engineering.

County Infrastructure Permit - Includes the plans and supporting documentation required to issue a permit for the construction of public water and sewer infrastructure by the department.

Cut Sheets - A written tabulation indicating the centerline station, elevation of the centerline or offset line marker, invert of the pipeline, and the excavation depth to invert from the top of marker.

Department - Shall mean the Department of Planning and Growth Management, the Department of Public Works, and/or the Department of Fiscal & Administrative Services as appropriate.

Developer - A person, partnership, corporation, firm or governmental agency undertaking or proposing the construction of water and/or sewer improvements or other related improvements, and who is primarily financially responsible for the improvements.

Distribution Mains - Water mains connecting the transmission mains to the service connections. The distribution mains provide area-wide fire protection. Generally, the distribution mains will be in a grid or branched configuration.

Easement/(Right-of-Way) - A grant of a right of use of the property of an owner for a certain purpose at the will of the grantee.

EPA - The U.S. Environmental Protection Agency or, where appropriate, the regional water management division director, or other duly authorized official of said agency.

Excess Capacity Cost - The total off-site cost for the water and/or sewer improvements, less the off-site cost required for on-site flows.

Excess Capacity Cost Per Gallon - The excess capacity cost divided by the excess capacity in gallons, times the meter factor.

Existing Source - Any source of discharge, the construction or operation of which commenced prior to the publication by EPA of proposed categorical pretreatment standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

Final Plat Approval - The signing and dating of a final subdivision plat by the chair of the Planning Commission.

Firm User - Is a user of the reclaimed effluent where service is guaranteed without interruption. An example would be for fire protection.

Force Main - A sewer which conveys sewage from a pumping station to a treatment plant at a higher elevation or to a higher elevation in the sewer system from which gravity flow may resume.

Front-Foot Benefit Assessment - An assessment made upon a front foot basis, payable to the County, on all properties, improved or unimproved, binding upon a street, road, lane or right-of-way in which a water main or sewer main has been built.

Governing Body - Shall mean the body or board authorized by law to enact ordinances or adopt resolutions for the particular county.

GPD - Gallons per day

Grab Sample - A sample which is taken from a waste-stream without regard to the flow in the waste-stream and over a period of time not to exceed fifteen (15) minutes.

House or Building Connection - A sewer which connects a house or other building to a collector sewer.

Improvements - Shall mean the construction, installation, and/or repairing of water and sewerage facilities.

Indirect Discharge or Discharge - The introduction of pollutants into the POTW from any non-domestic source regulated under Section 307 (b),(c), or (d) of the act.

Instantaneous Maximum Allowable Discharge Limit - the maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any discrete or composite sample collected, independent of the industrial flow rate and the duration of the sampling event.

Interceptor Sewer - Sewer pipeline (15 – inch and larger diameter) designed and constructed to convey wastewater from a series of outfall or trunk sewer to a wastewater treatment plant.

Interference - A discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its sludge processes, use or disposal; and therefore, is a cause of a violation of the County's NPDES Permit or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent state or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title 11 commonly referred to as the Resource Conservation and Recovery Act (RCRA); any state regulations contained in any state sludge management plan prepared pursuant to Subtitle "D" of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.

Journeyman Plumber - Shall mean a registered, licensed journeyman plumber, working under the supervision of a master plumber in the installation of plumbing work.

Lateral or Branch – Sewer pipeline designed and constructed to convey wastewater from the house/dwelling/building to the collector sewer.

Manhole - A structure providing access to a buried sewer, valve, conduit, etc.

Master Plumber - Shall mean a registered, licensed master plumber who is authorized to install and supervise the installation of plumbing work.

Maximum Day Demand - The largest volume of water used in one day during the year.

Maximum Day Rate (Max. Day) - The volume of water used during the maximum day divided by a one-day time period expressed in gpm or mgd.

Meter Factor - A factor determined by the County which is used as the basis for determining the demand for water based on meter size.

MG/L - Milligrams per liter

Minor Subdivision - is defined as set forth in the Charles County subdivision regulations as may be amended.

Moratorium - The regulatory condition which occurs when inadequate capacity exists for further allocation of capacity. No allocation will be made for systems under moratorium by the County.

New Source - The definition for "New Source" contained in the General Pretreatment

Regulations, Part 403, Section 403.3 (k) is hereby incorporated.

Non-Contact Cooling Water - Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.

Non-Firm User - A user of reclaimed effluent where service is not guaranteed and with interruption possible. An example would be for irrigation.

NPDES - National Pollutant Discharge Elimination System.

Off-Site - A water and/or sewerage system located outside the boundaries of a subdivision which has capacity to serve other County customers or which is located on-site and has capacity to serve other off-site County customers.

On-Site - A water and/or sewerage system located within the boundaries of a subdivision which is used to support only the development within the boundaries of the subdivision.

Onsite Sewage Disposal System (OSDS) - Means a sewage treatment unit, collection system, disposal area, and related appurtenances

Outfall Sewer or Trunk Sewer – Sewer pipeline designed and constructed to convey wastewater from a series of collector sewer to the interceptor sewer.

Pass Through - A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the County's NPDES Permit, including an increase in the magnitude or duration of a violation.

Peak Hour Demand - The largest volume of water used in one hour. The peak hour demand usually occurs during the day of maximum daily demand.

Peak Hourly Rate (Peak Hour) - The peak hour demand volume divided by 60 minutes, expressed in gpm; or multiplied by 24 hours, expressed in mgd.

Person - Any individuals, partnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity or any other legal entity, or legal representatives, agent or assigns. This definition includes all Federal, State, and Local governmental entities.

pH - A measure of the acidity or alkalinity of a solution, expressed in standard units.

Plans - The official approved plans, profiles, typical cross sections, working drawings and supplemental drawings, or exact reproduction thereof which show the location, character, dimension, and details of the work to be done, and which are to be considered as a part of the contract supplementary to these specifications and which are identified as such.

Pollutant - Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural

and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, TSS, turbidity, color, BOD, COD, toxicity, or odor).

POTW - Publicly Owned Treatment Works

Pretreatment - The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.

Pretreatment Requirements - Any substantive or procedural pretreatment requirement, other than a national categorical pretreatment standard, imposed on an industrial user by the EPA, State, or the County.

Pretreatment Standard or Standards - Pretreatment standards shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.

Prohibited Discharge Standards or Prohibited Discharge - Absolute prohibitions against the discharge of certain substances; these prohibitions appear in Section 4.6.B of this ordinance.

Project - The term shall mean either the construction, reconstruction, relocation or extension of County public water and/or sewer facilities or any combination thereof. As it relates to allocation**,** the term shall mean a development, subdivision, unsubdivided property, parcel, individual lot or unit, regardless of whether the use is residential, commercial, industrial or institutional/government.

Project Cost - Construction cost plus atleast 10 %.

Public Street - Shall mean an existing street or a platted street dedicated for the use of the general public, graded and paved or to be graded and paved in order that every person has the right to pass and to use it at all times for the purposes of travel, transportation or parking to which it is adapted and devoted.

Public Use Lot – has the meaning set forth in the Charles County Subdivision Regulations.

Public Works - Is the Charles County Department of Public Works.

Publicly Owned Treatment Works or POTW - A treatment works as defined by Section 212 of the Act (33 U.S.C. 1292) which is owned by the County. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances which convey wastewater to a treatment plant.

Rated Capacity:

A. Treatment of Wastewater - The lesser of the volume recorded on the NPDES Permit or the design volume of the treatment facility.

B. Supply of Water - The lesser of the pumping capacity for a 18-hour period or the state groundwater appropriation permit.

C. Pump Stations – Facilities including pumps and equipment for pumping fluids from one place to another. they are used for a variety of infrastructure systems; suchas, the removal of sewage to processing sites.

D. Water Booster Stations – Supply water to elevated water storage tanks where the water then flows via gravity to customers. Also used to increase operating system pressures in areas where gravity is not suitable for system demands.

E. Water Storage Facility – Store water during low demand periods for distribution during high demand periods.

RCRA - Resource Conservation and Recovery Act – A Federal law enacted on october 21, 1976, to address the increasing problems the nation faced from our growing volume of municipal and industrial waste. Define (part of pre-treatment)

Reclaimed Effluent - Wastewater produced by a WWTP which has been treated to control pollutants and distributed for reuse.

Reclaimed Effluent Supply Line - A buried transmission pipeline which transports the reclaimed effluent originating from a WWTP.

Representative - Shall mean a representative of the Department.

Reserved Bulk Allocation - A discretionary percentage of the bulk allocation amount annually allocated by the County. This reserve is apportioned by the Commissioners. The County Commissioners must stipulate specific projects and discreet amounts of capacity in accordance with the priority system for reserved bulk allocations established under this policy.

Rolling Annual Average Daily Demand of Water - The total flow of water into the distribution system for the preceding twelve months, divided by the number of days counted.

Rolling Annual Average Daily Flow of Wastewater - The total flow of wastewater through a treatment plant for the preceding twelve months divided by the number of days counted.

S.E.F. - system expansion fee

Schedule of Allocation Targets - The listing of available capacity for water and sewer systems owned and operated or maintained by the County Commissioners. These are found in this policy as Appendix "I", which is updated periodically.

Segment - That portion of line which the connecting developer is using that is constructed with private funds.

Septic Tank Waste - Any sewage from holding tanks such as vessels, chemical toilets, campers,

trailers, and septic tanks.

Severe Property Damage - Substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources.

Sewage - Human excrement and gray water (household showers, dish washing operations, etc.).

Sewerage Service Area - The area served by, or potentially served by, a single collection system under the control of a single utility, or, in a very large system, sub-areas delineated by the County as shown on the adopted Water and Sewer Plan Maps.

Sewerage System - Shall mean and shall include all plants, systems, facilities or properties used or useful or having the present capacity for future in connection with the collection, carrying away, treating, neutralizing, stabilizing or disposal of sewage, industrial wastes or other wastes, and any integral part thereof, including sewage treatment plants, disposal fields, lagoons, ditches, outfall sewers, force mains, pipes, pipe lines, conduits, equipment, appurtenances, and all properties, rights, easements, and franchises relating thereto and deemed necessary or convenient by the department for the operation thereof.

SIC - Standard Industrial Classification

Significant Industrial User:

A. A user subject to categorical pretreatment standards; or

B. A user that:

(1) Discharges an average of twenty-five thousand (25,000) gpd or more of process wastewater to the POTW (excluding sanitary, non-contact cooling, and boiler blow-down wastewater);

(2) Contributes a process waste stream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or

(3) Is designated as such by the County on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.

C. Upon a finding that a user meeting the criteria in subsection B.(2) above has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the County, may at any time, on [it's] own initiative or in response to a petition received from a user, and in accordance with procedures in 40

CFR 403.8(f)(6), determine that such user should not be considered a significant industrial user.

Slug Load or Slug - Any discharge at a flow rate or concentration which could cause a violation

of the prohibited discharge standards in Section 4.6.B.1 of this ordinance.

Specifications - Shall mean the directions, provisions and requirements pertaining to the method and manner of performing the work or to quantities and qualities of materials and workmanship to be furnished in accordance with the latest Charles County Standards and Specifications for Construction Manual.

Solid Waste - Shall mean all refuse materials, other than gaseous and liquid wastes, from all public and private establishments and residences.

Solid Waste Disposal System - Shall mean any system, whether publicly or privately owned, which provides scheduled or systematic collection of solid wastes and their transportation to and treatment or other disposition at a solid waste acceptance facility. A solid waste disposal system includes all solid waste acceptance facilities used in connection with the system.

Standard Details - Shall mean the latest Charles County Standards and Specifications for Construction Manual or reproductions thereof which pertain to the standard method of construction of water and sewerage facilities and which are approved by the Department.

Standard Industrial Classification (SIC) Code - A classification pursuant to the Standard Industrial Classification Manual issued by the United States Office of Management and Budget.

Substantial Completion - "The date of Substantial Completion of a project or specified part of a project is the date accepted by County, following submission of a Certificate of Substantial Completion by the developer when the construction is sufficiently completed, in accordance with the approved plans, so that the project or specified part of the project can be utilized for the purpose for which it was intended".

Sufficient Security - Financial instrument which guarantees funds to satisfactorily complete construction of the required water and/or sewer improvements.

Superintendent - The person designated by the County to supervise the operation of the POTW, and who is charged with certain duties and responsibilities by this ordinance.

Supplemental Policy - A supplemental policy is required under this general policy if:

A) Available capacity is 15% or less of the rated capacity of the facility or infrastructure proposed to serve the project.

B) A system is under moratorium; or

C) At the discretion of the County Commissioners and in the best interest of the County.

The supplemental policy presents additional information unique to that system. If the general policy and supplemental policies are in conflict, the supplemental policy prevails.

Suspended Solids - The total suspended matter that floats on the surface of, or is suspended in, water, wastewater or other liquids, and which is removable by laboratory filtering.

System Expansion Fee - The excess capacity cost per gallon multiplied by the average residential flow.

TSS - Total Suspended Solids: Shall mean solids that either float on the surface of or are in suspension in water, wastewater, or other liquids, and which are largely removable by laboratory filtering. The quantity of material removed from wastewater in a laboratory test.

USC - United States Code

User or Industrial User - A source of indirect discharge.

Wastewater - Liquid and water-carried industrial wastes and sewage from residential dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

Wastewater Pump Station Service Area - The surrounding area in which the wastewater pump station serves.

Wastewater Treatment Plant or Treatment Plant - That portion of the POTW which is designed to provide treatment of municipal sewage and industrial waste.

Water and Sewer Allocation Eligibility List (formerly known as the Sewer Capacity Waiting List) - The list of potential users for water and sewer service within the county; generated from the applications for allocation submitted by project owners, or their agents. Being on the water and sewer allocation eligibility list does not guarantee water or sewer service to the project owner.

Water Service Area - The area served by, or potentially served by, a single distribution system under the control of a single utility, or, in a very large system, sub-areas delineated by the County as shown on the adopted Water and Sewer Plan Maps.

Water System - Shall mean and shall include all plants, systems, facilities or properties used of useful or having the present capacity for future use in connection with the supply or distribution of water and any integral part thereof, including water supply systems, water distribution systems, reservoirs, dams, wells, intakes, mains, laterals, pumping stations, standpipes, filtration plants, purification plants, hydrants, meters, valves and equipment, appurtenances, and all properties, rights, easements and franchise relating thereof and deemed necessary or convenient by the Department for the operation thereof.

WEF - Water Environment Federation

1.1 POWER OF THE CHARLES COUNTY GOVERNMENT TO ESTABLISH AND PROMULGATE WATER AND SEWERAGE FACILITIES ORDINANCE

Water and Sewer Facilities Rules and Regulations are adopted in accordance with the provisions of Title 9, Environmental Article, of the Annotated Code of Maryland (1957

edition as amended), and the Code of Charles County Maryland, Division 1 - Code of Public Local Laws, Chapter 97.

A. Wherever there exists in any street or alley a water and sewer main available for public use, owners of all houses on properties abutting such street or alley shall install adequate plumbing systems as hereinafter provided, and shall connect the same with said water and sewer system wherever topographically possible; provided that no house more than 500 feet from the water or sewer main shall be required to connect with it, unless the Maryland Department of Environment shall deem such connection necessary.

B. Wherever there exists in any street or alley a water main and not a sewer main available for public use but the owners of houses on said street or alley do have an adequate private sewerage disposal system, owners of all such houses on properties abutting such street or alley shall install adequate plumbing systems as hereinafter provided, and shall connect the same with said water main wherever topographically possible; provided that no house more than 500 feet from the water main shall be required to connect with it, unless the Maryland Department of Environment shall deem such connection necessary.

C. Wherever there exists in any street or alley a water main and not a sewer main available for public use and the owners of houses on said street or alley do not have plumbing or an adequate sewerage disposal system, owners of all houses on properties abutting such street or alley shall connect to the water main with a water fixture outside the foundation or footings of any habitable building wherever topographically possible; provided that no house more than 500 feet from the water main shall be required to connect with it, unless the Maryland Department of Environment shall deem such connection necessary.

D. Fixtures Required: Whenever a building is connected to a public water system and a public or private sewer, there shall be installed for each family in said building, or on the premises, not less than one water closet and one sink or washbasin, both of which shall be properly connected with said public or private sewer. All new residences shall have, in addition, at least one bathtub or shower for each family.

E. No officer, agent or employee of the County can bind it by an agreement or representations except when authorized so to do, in writing, by action of the County Commissioners.

F. The Department of Planning and Growth Management with the consent of the County Commissioners reserves the right to make such changes to this Water and Sewer Ordinance, from time to time, as in its opinion, may be desirable or beneficial for the more efficient operation and control of the systems, and to amend or to change the rates or charges in such manner and at such times as in its opinion, may be advisable.

G. This Water and Sewer Ordinance shall become effective at once and shall be applicable to all properties connected, or as soon as they respectively become connected with and have the right to use County water and sewage systems.

1.2 VIOLATIONS OF PROVISIONS: PENALTY

"Pursuant to section 9-699 of the Environmental Article of the Annotated Maryland Code, a person who violates this ordinance is guilty of a misdemeanor and on conviction is subject to a fine not exceeding $100 or imprisonment in jail not exceeding 30 days or both."

1.3 SERVICE AREAS

The water service areas and sewerage service areas included in Charles County, and subject to the rules and regulations promulgated by the Commissioners, are delineated on Appendix A and "A-1" attached to this Water and Sewer Ordinance and are updated through the adopted Water and Sewer Comprehensive Plan.

1.4 TRANSITIONAL PROVISIONS

The requirements established in the Charles County Water and Sewer Ordinance shall not apply to any construction proposed pursuant to a valid permit issued prior to September 17, 2011

The requirements established in the Charles County Water and Sewer Ordinance shall not apply to pending permit applications provided these permit applications are issued permits within sixty (60) days of September 17, 2011 and that some manifest commencement of work is undertaken within 6 (six) months of the date of the issued permit.

1.5 DESIGN VARIANCES

The County may grant a written variance from any design requirement of this ordinance, if there are exceptional circumstances applicable to the site, such that strict adherence to the design provisions of this ordinance will result in unnecessary hardship and not fulfill the intent of the ordinance. A written request for variance shall state the specific variances sought and reasons for their granting; however, all designs still must adhere to good engineering practices.

Variances should be directed to the County Engineer. Persons may appeal decisions to the Director of Planning and Growth Management.

1.6 FEE ASSESSMENT AUTHORITY

The County shall have the authority by virture of this ordinance to charge fees for all types of water and/or sewer related permits, water and/or sewer service connections, all plan reviews or other reviews, inspection, variances, administration costs, re-inspection fees, minimum inspection fees, additional inspection fees due to permit extensions, fees in lieu, service reconnection fees, service tests, and/or other costs associated with water and/or sewer permits. fee amounts shall be determined as specified in the county's fees & charges schedule.

The County shall also have the authority to charge for reimbursement if the County or their agent has had to respond to a site for water, sewer, road, drainage, or other public safety issues. Reimbursements will be based on actual costs incurred by the County, including any administrative costs and/or penalties.

PART II - PERMITTING

2.0 POWER AND DUTIES OF THE CHARLES COUNTY DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT, EMPLOYEES

A. Stop Work Orders: Upon notice from the authorized County representative that work on any water/sewer installation is being done contrary to the provisions of the Water and Sewer Ordinance, or in a dangerous or unsafe manner such work shall be immediately stopped. Such notice shall be in writing and shall be given to the owner of such property, or to his agent, or to the person doing the work, and shall state the conditions under which work may be resumed. Where any emergency exists, oral notice given by the authorized County representative shall be sufficient.

B. Revocation of Permits: The County may revoke a permit or approval, issued under the provisions of the false statement or misrepresentation as to the material fact in the application or plans on which the permit or approval was based. In all such cases no fees shall be refunded.

2.1 PERMITS REQUIRED

General

Before any person, firm or corporation shall engage in the plumbing business, he shall be qualified as set forth herein, and a license shall be obtained from the County or State, as required, and a proper Bond posted. Where any plumbing work is being done, a Master Plumber or Journeyman Plumber shall at all times be present on the job, and in actual control, and in charge of the work in accordance with the State Plumbing Code.

A. Licensed Plumbers: Any duly licensed master Plumber who desires to connect any plumbing work with any County water or sewer facility shall first make application to the County and obtain the proper permit therefor.

B. Bond Required: Before any person, firm or corporation shall be granted a permit to engage in the business of plumbing on any system connected to County water or sewer facilities, he/she shall first obtain the proper license and whose company is bonded and insured otherwise they must deposit with the County a good and sufficient minimum bond in the sum of Ten Thousand Dollars ($10,000.00), to be approved by the legal Counsel for the County, conditioned that the person, firm or corporation engaged in the plumbing business will faithfully observe all the laws pertaining to plumbing, drain, laying and excavating; further, that the County shall be indemnified and save harmless from all claims arising from accidents and damage of any character whatsoever caused by the negligence of such person, firm or corporation engaged in the Plumbing business or by any other unfaithful, inadequate work done either by themselves or other agents or employees, and that such person, firm or corporation will maintain such plumbing work in accordance with the latest

Standard Specifications for Construction Manual, and further that all dirt and other material excavated will be replaced in a good condition. The company shall provide written documentation upon the county's request which verifies that the company is both currently licensed, bonded and insured.

C. Allowing Ones Name, License or Bond to be used to obtain Permit Fraudulently: No person, firm or corporation engaged in the business or plumbing shall allow his, its, or their name to be used by any other person, firm or corporation, directly or indirectly, to obtain a permit from the County.

2.2 INSPECTION OF WORK AND APPROVAL

A. Prior to Test: The plumbing system or part thereof shall remain uncovered until it has been inspected, tested and approved as prescribed in this section.

B. Uncovering of Work: If a plumbing system or part thereof is covered before being inspected, tested, and approved as prescribed, it shall be uncovered upon the direction of the authorized County representative.

C. Test of Defective Plumbing: The water and/or sewer system of any building, where there is reason to believe that it has become defective, shall be subjected to test or inspection.

2.3 PUBLIC SAFETY

A. All requirements of County, State or Federal [Highway] permits must be met by all persons excavating or working in areas covered by such permits.

B. Requirements of all County, State or Federal Safety Laws must be met in carrying out work on County Systems.

PART III - WATER SERVICE

3.0 WATER SERVICE - SUBJECT TO THE WATER AND SEWER ORDINANCE

Water service at any time is furnished only in accordance with the Water and Sewer Ordinance of Charles County Government which is made as a part of every application, contract, agreement or license entered into between the property owner or customer and the County.

3.1 APPLICATION FOR SERVICE

A. Residential

Residential property owners desiring to connect to the County's water supply shall complete items "1" through “6” below:

(1) There must be water mains available. The property owner can check this by calling the Department of Planning and Growth Management.

(2) If these facilities are available, the property owner must apply for allocation approval and permission to connect to them on forms which may be obtained at the Department of Planning and Growth Management.

(3) The form must be completed and signed by both the property owner and registered master plumber at the time of submission. At the time of filing the form, the applicant must give written notice as to whether the applicant's water connection charge is subject to a water connection charge agreement between the County and a developer pursuant to Section 3.14 below.

(4) Upon approval of the application for service, the applicant must pay to the County the connection charges and inspection fees in accordance with the latest Fees and Charges Schedule and as set forth in Section 3.14 below. Once all fees are paid, the Application for Utility Service will be considered issued.

(5) An Application for Utility Service shall automatically become null and void if the approved water utility service is not commenced within six (6) months after a permit is issued. Furthermore, an application for water utility service will be considered abandoned if, after the date of filing, the application is not approved or issued within six (6) months. The connection and inspection fees will be refunded less an approved administrative fee as determined by the County.

(6) The County will build the connection from the main in the street to your property line if the property is of residential use and built prior to October

19, 1988. For residences built after October 19, 1988, the owner is responsible for the cost and installation. For non-residential projects, the developer must construct the tap (see Appendices D-1 and D-2).

(7) All fees in effect at the time an application for Utility Service form is received will be charged to the applicant.

B. Residential: Deferred Payment of Connection Charges

(1) The owner of a single-family residence, which is occupied as a principle residence by the owner thereof, and which was in existence and used as a single-family residence at the time the sewer line and/or water line became operational, to which connection is to be made, may be permitted to connect to a sewer line and/or water line without making payment of the connection charges subject to the following conditions:

(a) That payment of at least twenty percent (20%) of the total water and /or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in four (4) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement, or

(b) That payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in nine (9) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement, or

(c) That payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in fourteen (14) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement.

(2) The owner shall enter into a written Agreement, which shall be recorded among the Land Records of Charles County, Maryland, which shall be in a form satisfactory to the County Attorney which shall set forth the terms of payment and shall provide that upon the sale, transfer, to conveyance, by any means whatsoever, of the property being connected to sewer lines and/or water lines, or any part thereof, the balance of the entire sewer and/or water connection fees shall immediately become due and payable and that the owner grants to the County a lien on the property being connected to sewer lines and/or water lines upon terms which are acceptable to the County Commissioners. The agreement may also provide that if payment of any installment of a deferred connection fee is

not made within thirty (30) days after the mailing of a statement therefore by the County, the County shall have the absolute right to immediately terminate water service to the property.

(3) This shall not be construed to permit the installment payment of the connection fee for connection to only a water line.

(4) The rate of interest and terms of repayment shall be established quarterly by the Director for Fiscal and Administrative Services of Charles County. The Director for Fiscal and Administrative Services shall establish the interest rate based upon the published prime rate plus points. The number of points to be added to the prime rate is dependent on the percentage of down payment paid at the time the Utility Permit is issued and the life of the loan.

C. Industrial and Commercial

Industrial and commercial establishments desiring to connect to the County water system, in addition to making written application for such services shall furnish a detailed description as to type of public building, commercial or industrial establishment to be served, together with a list setting forth the number and type of fixtures served.

Such industrial and commercial applicants shall also furnish to the County at least one copy of a detail plan showing:

(1) The boundaries of the property.

(2) The location within the property of structures to be served.

(3) The location and profiles of the services to be installed.

(4) Detail showing the connections to water lines and the arrangement and detail of appurtenances.

D. Deferred Payment of Connection Charges

(1) The owner of an improved parcel of property (which is not a single-family residence which is a principle residence of the owner) which is under an Order of the Maryland Department of the Environment to connect to a water line, may be permitted to connect to a sewer line and/or water line without making payment of the connection charges subject to the following conditions:

(a) Payment of at least twenty percent (20%) of the total water and/or sewer connection fee shall be paid at the time the utility permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in four (4) equal annual payments,

the first of said payments to be billed on the first anniversary date of the executed agreement, or, in the alternative, payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility Permit is issued and the balance of the water and/or sewer connection fee, plus interest shall be payable in nine (9) or fourteen (14) equal annual payments, the first of said payments to be billed on the first anniversary date of the executed agreement.

(b) Payment of at least twenty percent (20%) of the total water and/or sewer connection fee shall be paid at the time the Utility Permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in equal annual payments over a four (4) year period, the first of said payments to be billed on the first anniversary date of the executed agreement, or, in the alternative, payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility Permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in equal annual payments over a nine (9) or fourteen (14) year period, the first of said payments to be billed on the first anniversary date of the executed agreement.

(c) The owner of such improved property (which is not a single-family residence which is the principle residence of the owner) shall enter into a written agreement, which shall be recorded among the Land Records of Charles County, Maryland, shall be in a form satisfactory to the County Attorney, and shall set forth the terms of payment and shall provide that upon the sale, transfer, or conveyance of the property being connected to a sewer line and/or water line, or any part thereof, by any means whatsoever, the balance of the entire sewer and/or water connection fees shall immediately become due and payable and that the owner grants to the County a lien on the property being connected to a sewer line and/or water line upon terms which are acceptable to the County Commissioners. The Agreement may also provide that if payment of any installment of a deferred connection fee is not made within thirty (30) days after the mailing of a statement therefor by the County, the County shall have the absolute right to immediately terminate sewer and/or water service to the property.

(2) This section shall not be construed to permit installment payment of the connection fee for connection to only a water line. Similarly, this section shall not be construed to permit installment payment of the connection fee for new development or construction.

(3) The rate of interest and terms of repayment shall be established quarterly by the Director for Fiscal and Administrative Services of Charles County. The Director for Fiscal and Administrative Services shall establish the

interest rate based upon the published prime rate plus points. The number of points to be added to the prime rate is dependent on the percentage of down payment paid at the time the Utility Permit is issued and the life of the loan.

3.2 WATER SERVICE LINES

The connection charge for each new water installation directly connected to the water main shall be in accordance with the latest Fees and Charges Schedule. Lines that serve two or more properties will be dedicated to the County.

A. The applicant will furnish and install new connections to County water mains for all projects only after issuance of a permit from the County.

The applicant desiring such water service line, shall pay to the County the scheduled fee in accordance with the latest Fees and Charges Schedule.

B. All water service lines from the curb stop boxes or water meter pits to the premises served, whether located in private right-of-ways or in streets, shall be constructed at the expense of, and by the applicant, and shall be, and remain, the property of the applicant, and shall be maintained by them in good condition and repair under penalty of discontinuance of service by the County. It is the responsibility of the customer to ascertain that a party or parties engaged by the customer to repair water service from the curb stop box or meter pit to the customer's premises notify the County and obtain a utility permit prior to starting any repair work.

C. The repair and maintenance of all water service lines from the water main to the curb stop boxes or water meter pit will remain the responsibility of the County.

D. Specifications Covering the Construction of Water Service Line

(1) Water service connections must be constructed according to this Water and Sewer Ordinance, the latest version of the Standard Specifications for Construction Manual and the latest version of the Water and Sewer Detail Manual. Special attention is directed to the fact that all negotiations required to permit the construction of water service lines from the applicant's property through private property to the lines owned and operated by the County must be carried out at the applicant's own time and expense.

(2) (a) Consumers connected to the County water supply system shall not connect water supplies from other sources (such as, but not limited to, wells) to their house water supply system. The offer to use or the use of protective devices of whatever kind is not a basis for an exception from the provision of this rule.

(b) Private Wells shall not be allowed when the property is connected to the water system. Immediately upon the connection to the county water distribution system, property owners shall be required to properly abandon all private wells on the property. Such abandonment shall be in accordance with state regulations. Subsequent drilling of private wells shall not be allowed. A variance would be considered to keep a private well for commercial agricultural use as long as there were measures in place to prevent cross contamination.

(3) Services to establishments such as public buildings, churches, apartments, buildings, commercial and industrial establishments, shall be installed on the basis of respective detail installation plans and specifications furnished by the applicant and approved by the County.

(4) All work performed by the applicant must meet all the local and state regulations and rules and prevailing plumbing codes of the area in which the work is performed.

(5) Water services shall be installed only by state registered plumbers from the right-of-way or easement line to the building.

(6) No service connection or any part thereto will be backfilled until inspected and approved in writing by the authorized County representative.

(7) Any rejected work will be promptly corrected to the satisfaction of the authorized County representative.

(8) No water service line shall be laid in the same trench with gas pipe, drain or sewer pipe, or any public service facility, nor within three (3) feet of any open excavation or vault.

(9) Whenever it shall be found that a service installation has been made contrary to this Water and Sewer Ordinance and County specifications or in any manner other than that approved by the County, the service shall be disconnected and removed. Service shall not again be supplied until the service installation is made according to this Water and Sewer Ordinance and County specifications, and all expenses and damages shall be paid by the applicant or their successors.

3.3 METERS AND METER HOUSING WATER

A. The County will furnish meters for all water service except fire service, and such meters will be maintained and kept in repair and adjustment by the County, except as provided in Section 3.4 - Extra Meter Tests.

B. Only authorized representatives of the County shall at any time be allowed to repair, remove, or replace any meter.

C. The customer shall be responsible to the County for any injury to the meter by freezing, hot water, or otherwise, or the loss of any meter arising out of the customer's negligence or Carelessness; with the County assuming the burden of ordinary maintenance.

D. Size and Location

Residential meters are to be placed outside, however the County reserves the right to determine the location and size of all meters, and the customer will provide, free of charge and expense to the County an easily accessible place near the entrance of service pipes for the placement of a meter, all in accordance with the County approved drawings, specifications**,** and details. Meters to be placed outside the building must be placed in the approved meter box/vault in accordance with the Water and Sewer Detail Manual and the Standard Specifications for Construction Manual. Water meters shall not be sized to reduce pressure losses in the service line. Water meters shall always be sized based upon the flow demands of the property to be served.

E. Remote Reading Meters

If the County should require outside read-o-matic meters, the consumer shall provide a location on a convenient accessible outside wall as determined by the County.

F. Separate Meters

Every single house and business building must have a separate meter and all duplex houses and multi-family houses must have a separate meter for each unit.

G. Single Meters

An apartment, multiplex house, single standing office building occupied by more than one (1) tenant will be supplied through a single meter, provided that no portion thereof is capable of separate ownership as determined by the County.

H. Apartment and Shopping Center Complexes

Where an apartment or shopping center complex exists, with two (2) or more buildings, each separate user shall have its individual meter as determined by the County.

I. Changes in Load

Any increase in size of meter required after the initial installation will be at the owner's expense, in accordance with the County prevailing prices. In cases where a meter is substantially over sized, the County may require the property owner to install a smaller meter at the owners expense.

J. condominiums would require separate meters and water/sewer service lines for individual tenant spaces, unless a condominium association is legally established to the satisfaction of the county engineer for the purpose of being responsible for the single building meter, water/sewer service line, and water/sewer charges.

3.4 EXTRA METER TESTS

A. Calibration

Should any customer of the County doubt the correctness of the water meter readings, the customer may have said meter tested, upon written application to the Department of Fiscal & Administrative Services and by making a deposit, as indicated by the latest Fees and Charges Schedule, to defray the cost of said meter test. Should such accuracy test show the meter in question to register a flow of less than 104% of the actual flow, the customer shall bear the cost of said test. On the other hand, should the test show said meter to be registering a flow of more than 104% of the actual flow, the required deposit shall be refunded, and the entire cost of the test in this latter event shall be borne by the County.

B. On-site Leak

Should any water customer of the County suspect a plumbing leak on the customer side of the water meter, a request in writing can be made to have a leak test performed at the premises being served. The owner must be available on the premises to operate water valves inside the premises for the technician to complete the leak test. A service fee in accordance with the latest Fees and Charges Schedule for the leak test will be added to the customer's next water bill.

3.5 METER READING AND BILLING

All meter readings and billings are performed on at least a quarterly basis at the option of the Department of Fiscal & Administrative Services.

A. One (1) month or two (2) month billings will be rendered to close a customer's account, or to start a new customer on the quarterly billing cycle. Notification of at least three (3) working days is requested for this type of service.

B. Special Billing

A request for special billing occasioned by change of title will be at no charge if received more than three (3) working days before settlement.

C. Minimum Bill

The minimum bill for water and/or sewer service will be in accordance with the

latest Fees and Charges Schedule.

D. Non-Metered Billing

Where sewer service is provided and there is not a means of metering water consumption, the sewer bill will be based on an equivalent meter size in accordance with the latest Fees and Charges Schedule. Non-metered sewer accounts may contact the PGM office or billing office to ask if the property is eligible for a meter on the property's well. At that time the sewer bill would be subject to the cost of the meter and the latest metered sewer fees and charges.

E. Customer Account Fees

A flat fee per bill will be collected to offset the costs associated with maintaining the account. The fee amount is specified in accordance with the latest Fees and Charges Schedule.

F. A bill for water service is mailed directly to the property owner who is primarily responsible for payment, or, if the property is leased, to the agent or tenants a proper renter's and/or property management from the billing office is completed and signed by the owner or property manager.

G. A onetime fee will be included with a customer's first bill after each new customer account set up. This includes new tenants, vacancies, owners moving back into previous rentals and new owners. The fee, in accordance with the latest fees and charges, offsets the costs associated with transferring customers on the accounts.

3.6 PAYMENTS AND PENALTIES

A. Bills for water charges are payable from the date of posting/mailing up to the billing due date indicated on the bills. A bill for which payment is not posted on the account by the due date becomes delinquent and shall be charged a penalty as established by the county. A bill which remains unpaid ten (10) days after the due date will result in termination of water service to the premises.

B. All bill balances are required to be paid in full before a property can be transferred to a new owner.

C. Any unpaid balances or payments that are not received over a set number of days or months determined by the Department of Fiscal & Administrative Services may be transferred to the owner's property taxes.

3.7 SPECIAL SERVICE CHARGES

A. Charge for Resumption of Service

When water service has been terminated at any premises for the nonpayment of a bill or for any other violation of the County rules, all payments of past-due accounts and penalties will be accepted at the Treasurer's office and payment centers designated by the County. The charge for resumption of water service will be in accordance with the latest Fees and Charges Schedule; this payment must be made in advance at the Charles County Government building in addition to payment of the entire past-due amount and penalty. Service will not be restored for new owners without balances paid. Payment must be made and posted on the account before 3:00 p.m., subject to change as determined by the Department of Fiscal and Administrative Services, on Monday through Friday, in order for the water service to be restored that same day. If the payment is made after 3 p.m., time is subject to change, the water service will be restored during the following business day.

Due to the unknown structural integrity and age of the premises' pipes, there is an increased risk of pipes bursting once water service is resumed after having been shut off for two days or more. services terminated longer than two days shall require an appointment to be scheduled for service restoration, and shall require that a property owner be on-site during restoration of service to verify there are no breakages, leaks, open valves, etc., which may cause damage or high service bills. The county shall not be liable for any property damage resulting from restoration of service.

B. A penalty will be charged for all returned payments in accordance with the latest Fees and Charges Schedule.

3.8 WATER SERVICE REGULATIONS

A. County government representatives shall have access, upon notice, at all reasonable hours to the premises supplied with water, for the purpose of setting, reading, repairing or removing of meters or for making necessary inspections.

B. The County will presume service is being rendered at the time the water is transferred to the customer. Upon notice, a final reading will be taken and charges will be billed accordingly to transfer from current customer to a new customer

C. Water service may be discontinued for any violation of any provision of the application or contract; or for any rule or regulation of the County or for nonpayment of any water bill.

D. Turning on of water, into any premises, for any purpose, by anyone, excepting a proper representative of County government, is prohibited, with violators being prosecuted.

E. Customers will not be permitted to supply water to any premises other than that mentioned in the application agreement or contract without permission from the

County.

F. The County reserves the right to shut off water in the mains, at any time, for the purpose of making repairs or extensions, or for other necessary purposes, and will endeavor to give due notice except in cases of breaks and emergencies.

G. Leaks and Defective Plumbing

The County shall not be liable for any damage resulting from leaks, broken pipes, open valves, or from any other causes, occurring to, or within any house or building, and it is expressly stipulated by and between the County and the consumer that no claims shall be made against the County on account of the bursting or breaking or any main or service pipe or any attachment to said water supply system.

H. Leaks or Waste

All water passing through a meter shall be charged for at the regular rate, and no allowance will be made for excessive consumption due to leaks or waste.

I. Turning Off Water

The County reserves the right, at all times, after due notice, to shut off water for nonpayment of bills, meter nonservice**,** or for neglect or refusal to comply with the Water and Sewer Ordinance of Charles County. There will be a charge for the resumption of said service, as specified in Section 3.7 (a) above.

J. Supply of Water

The County shall not be liable for a deficiency or failure in the supply when occasioned by shutting off water to make repairs or connections, or failure from any cause beyond its control.

K. The County reserves the right to restrict the supply of water in case of scarcity or whenever public welfare may require it.

L. Connection or Outlets Between Mains and Meter

No connection or outlet will be permitted on the service pipe or pipes supplying any premises between the street main and the meter except for approved fire supply.

M. Resumption of Water Service

A service appointment is to be made with the Department of Public Works (DPW) for water turned off more than two days at any premise. Someone must be present at the time of reconnection. The DPW has the authority to schedule a time window to perform the reconnection of service. If no one is present at the

appointed time, the customer will need to reschedule with the department for another appointment. A fee determined by the department will be applied to the account for any appointment missed. Any property damage resulting from restoration of service shall be the responsibility of the property owner, whereas the County shall not be liable, as it is the property owner's responsibility to be on-site during restoration of the service to verify there are no breakages, leaks, open valves, etc., which may cause damage or high service bills.

N. Pressure reducing valve required where the pressure at any fixture on a premise is found, known, or planned to exceed 80 psi, the owner or their agent shall be required to make such corrections as may be necessary to limit the water supply pressure at any fixture, appliance, appurtenance, or outlet to not more than 80 psi under no-flow conditions. Approved pressure reducing valves complying with ANSI/ASSE 1003 shall be provided and installed by, and at the expense of, the owner of the premise. Strainers, properly installed and maintained, are recommended in advance of pressure reducing valves.

O. Thermal expansion tank required where a backflow prevention device, check valve, or water pressure regulator is installed serving water heating equipment such that a closed system is created, an appropriately sized thermal expansion tank (or tanks) shall be installed. Exception: instantaneous hot water heaters. Pressure relief valves that drain water from the water system shall not be allowed.

3.9 EXTENSIONS TO WATER MAINS

When an application has been received for water service requiring an extension of a main to provide such service, or where an application has been received for extension of mains in newly developed tracts of land, all cost of such extension necessary, in the opinion of the County to adequately serve the property, shall be borne by the applicant covering the entire cost of installing the necessary pipe lines and appurtenances.

A. All applications for extensions are to be prepared according to the forms contained in the Appendix "B" and Plan Preparation Package.

3.10 SWIMMING POOLS

The following regulations pertain to all swimming pools, individual or commercial, private or public, portable or permanent, which are used or to be used for swimming, bathing or wading. These regulations do not constitute approval of the type, location, construction, operation or protection of swimming pools.

A. All water used in the filling, operation or maintenance of a swimming pool shall be metered by a type of water meter approved by the County. The cost of this water shall be billed to the owner of the swimming pool at the rates prevailing for all county water customers. The sewer charge is based on 100% of the water charge, unless sub-metering of the pool was approved prior to July 1, 1994 in

accordance with Ordinance #94-66.

3.11 FIRE SERVICE

Whenever County facilities are capable, in the opinion of the County, of providing fire protection, and whenever proper application has been made by a property owner, the County shall be willing to make such service available. The County does not assume any liability as insurer of property or persons and a customer receiving fire service will not be entitled, in the event of a fire, to any service, pressure, capacity or facility other than that available at the time. The County shall not be liable for any damage or injury to any persons or property by reason of any fire, water, failure to supply water or pressure or capacity or lack thereof, due to any cause beyond the reasonable control of the County.

A. Ownership of Fire Hydrants

All fire hydrants, appurtenances, and mains supplying the hydrants which are connected to the County water system shall be owned and maintained by the County.

B. Use of Fire Hydrants

All persons are forbidden to open any fire hydrant, or to use any water therefrom for sprinkling streets, for building, or for any purpose whatsoever, without the permission in writing from the County under the penalty prescribed by law, except in case of fire, and by fire companies which usage shall be made only upon notification of the County.

C. Fire Hydrant Meter Rental

A deposit is required of at least the cost of the meter at the time of issuance. One half the cost is refundable when the hydrant meter is returned in good working order and the water usage charge is paid. Applications are included in the Appendix **"C"** with deposit and usage charges being in accordance the latest Fees and Charges Schedule. Applicants need to reapply every 3 years at minimum and pay difference of replacement meters.

D. Fire Sprinkler Service Connections

Whenever any property owner desires sprinkler and/or standpipe fire protection and such owner makes proper application to the County, the County shall be willing to make such service available, upon full payment of all required fees in accordance with the latest Fees and Charges Schedule. Said permit application shall include two (2) sets of plans of the proposed installation.

E. Size of Sprinkler Service Connection

The maximum size of any sprinkler/standpipe service connection shall be

determined by the County. In no event will the County allow a connection to the County system which would seriously jeopardize the fire protection of other customers connected to the system.

F. Installation of Sprinkler/STANDPIPE Service Line

The applicant will furnish and install new connections to County water mains for all projects only after issuance of a permit from the County. The County shall maintain all sprinkler/STANDPIPE service lines from the water main to, and including the curb stop. The installation and maintenance of the line between the curb and consumer's building shall be the responsibility of the consumer.

(1) The installation of the exterior portion of the sprinkler system must be made in accordance with the Charles County Standard Specifications for Construction Manual and all other applicable Federal, State, and Local laws or codes, and under the Inspection of the authorized County representative.

G. Use of Sprinkler/standpipe System

Use of water from the sprinkler/standpipe system for plant use, lawn sprinkling, or for any other purpose whatsoever is forbidden, except in case of fire and for testing purposes. Such test shall be made only with the knowledge and approval of an authorized agent of the County and any other State or Local regulating agency.

(1) No charge will be made for water used for fire suppression. The owner will be responsible for any consumption of water caused by, testing, unauthorized use, or leakage.

H. Obstruction of and access to Fire Hydrants

Nothing shall be erected or planted, which shall interfere with the use of a fire hydrant. Sufficient clearance shall be maintained around the hydrant to permit easy connection of hoses and full circle operation to the hydrant using regular hydrant wrenches and hose spanners.

(1) Shrubs, trees, flowers or weeds, shall not be planted, nor permitted to grow so as to prevent full view of a fire hydrant from the street.

(2) Fire hydrants shall not be obstructed by designated parking spaces.

3.12 WATER USED IN THE PRODUCTION OF A PRODUCT

To the extent water used in manufacturing a product for human consumption becomes a constituent or integral part of the product and therefore is not discharged into a sewer system, the owner will not be charged a sewer user fee for this amount of water, provided

that an acceptable method of metering is proposed by the owner and approved by the County to accurately determine the amount of water in the product.

3.13 MISCELLANEOUS

A. Boiler Pressure

All consumers having boilers upon their premises, depending upon the pressure of the water in the County pipes, to keep them supplied, are cautioned against the danger of collapse, and all such damage must be borne exclusively by the consumer.

B. The electrical grounding system for buildings shall not be connected to the water supply piping system.

3.14 CREDITS AGAINST WATER CONNECTION CHARGES

A. A developer that constructs a water system to service a community may, if the requirements of this Section 3.14 are satisfied, obtain credits on behalf of the fee payers against water connection charges. The total amount of credits granted to the fee payers under a Water Connection Charge Agreement may not exceed the fair market value of the water system constructed and dedicated by the developer as determined in Section 3.14.C below. The amount of credit against the water connection charge that each individual fee payer may obtain pursuant to a Water Connection Charge Agreement may not be less than 80% of the water connection charge in effect from time to time. The County shall collect from each fee payer no more than 20% of the water connection charge in effect from time to time in order to meet capital cost associated with incorporating the community water system into the County system.

B. If a developer wants the fee payer of a water connection charge to receive a credit against the water connection charge for a community water system constructed by the developer, the developer shall enter into a Water Connection Charge Agreement with the County. The Water Connection Charge Agreement shall provide for the establishment of credits and payments of the charges in a specified manner and time and shall be executed prior to recordation of any final plat relating to the community.

C. The fair market value of the water system constructed and dedicated by the developer shall be determined by the Director for Planning and Growth Management. The date of the value shall be the date that the dedication of the system is accepted by the County. The determination shall be based on the Director's review of two (2) appraisals performed according to standard appraisal practice, one (1) appraisal shall be submitted by the developer to the Department

of Planning and Growth Management, and one (1) appraisal shall be conducted by the Department. The cost of the appraisal conducted on behalf of the Department shall be subtracted from the total credits afforded to fee payers in the community under the water connection charge agreement.

D. The final decision of the appropriate amount of credits under the Water Connection Charge Agreement shall be determined by the County Commissioners upon consideration of the recommendation of staff, the appraisals, and any additional information submitted by the developer.

3.15 PREPARATION OF PLANS

A. Construction Drawings

Plans, design analysis, and cost estimates for all water installations as prepared by an engineer duly authorized by the State of Maryland to prepare such plans, shall be submitted to the County for approval. Such plans shall be in conformance with the current County requirements for plan preparation.

Plans shall have signed permission by representatives of any outside agency involved, i.e., Maryland State Highway Administration, Maryland State Health Department, etc., and shall conform to all applicable Federal, State, and Local rules and regulations, including the following: Charles County Comprehensive Plan, Charles County Subdivision Regulations, Road Ordinance, Zoning Ordinance, grading and sediment control ordinance, forest conservation ordinance, the Charles County Building Code, the Comprehensive Water and Sewer Plan for Charles County, and this ordinance.

B. Building Water

In subdivisions where the water mains are being installed by the developer, the developer shall also install a lateral or extension from the water main to one foot beyond the property line for each lot on the street. The connection is to receive the extension of the building water for each lot.

Such connection shall be shown on the water plans submitted to and approved by the County, and the connection to be installed shall be shown on the as-built plans in their exact locations.

These connections shall be constructed in accordance with applicable plumbing regulations for the County. These connections shall be inspected, tested and approved by the County.

After a building water is connected through a building water connection to the curb stop, the connection shall become a part of the building water and the owner of the premises shall be responsible for the operation and maintenance of the entire building water between the building and the curb stop at the property/easement line.

3.16 NOTIFICATION OF CUSTOMERS

Each water service customer shall be notified not less than once every year, of the charges for operation and maintenance of the water service system, i.e., the water charge and the water commodity charge.

3.17 CROSS CONNECTION CONTROL PROGRAM

3.17.1 – Applicability:

1.1 This ordinance applies only to piping and appurtenances connected to the water systems that are owned, operated, or maintained by Charles County Government.

3.17.2 – Basic Principles

2.1 This ordinance pertains to "containment" devices or assemblies notwithstanding the isolation devices. Containment devices shall be equal to the highest hazard on the premises.

2.2 No connection to county water shall be subject to backflow or backsiphonage.

2.3 The property owner shall be responsible for all costs associated with the installation, testing, retesting, maintenance and replacement of backflow prevention devices/ assemblies as well as any permitting and disconnect/reconnection fees.

2.4 Backflow prevention assembly tester/plumbers must hold a current state of Maryland or WSSC approved cross connection backflow prevention training course certification as well as a Maryland or WSSC master plumbing license. Journeymen with backflow certification may test under the direct supervision of a licensed master tester/plumber.

2.5 The supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow. Plumbing fixture fittings shall provide backflow protection in accordance with the current adopted plumbing code, and the Charles County Cross Connection Control Ordinance.

3.17.3 – Objectives of Ordinance

3.1 The objectives of the cross connection control ordinance for the county are:

3.2 To protect the potable water supply of the county, by requiring the use of appropriate backflow protection methods. This is to be accomplished by containing and isolating within the owner's private water system those contaminants or pollutants that could, under adverse conditions, backflow or backsiphon through uncontrolled cross connections into the public water system;

3.3 To identify and eliminate or control existing and future cross connections, actual or potential, direct or indirect, between the owner's private potable water system(s) and non-potable water system(s), plumbing fixtures and industrial piping systems; and

3.4 To provide for the administration and maintenance of a continuing program of cross connection control that will minimize the possibility for the contamination and or pollution of the potable water systems by cross connection.

3.17.4 – Definitions

4.1 Accessible: The term “accessible” shall mean having access to, but in some cases may require the removal of a panel door or similar covering of the item described.

4.2 Accessible, Readily: The term “readily accessible” shall mean having access without the need of removing any panel, door or similar covering of the item described.

4.3 Air Gap Separation: The term “air-gap separation” shall mean a physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. an “approved air-gap separation” shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel but, not less than 1 inch (2.54 cm). If there are sidewalls, splash shields or other obstructions to the admission of free atmosphere to the air gap within a horizontal distance of two times the diameter or one inch, the air gap must be increased to three times the inlet diameter. If there are two intersecting walls within a horizontal distance of two times the diameter or one inch, the air gap shall be increased to four times the inlet diameter.

4.4 ANSI: American National Standards Institute, Washington, D.C.

4.5 Approved:

a: The term "approved" as herein used in reference to a water supply shall mean a water supply that has been approved by Maryland Department of the Environment, and the Environment Protection Agency.

b: The term "approved" as herein used in reference to air-gap separation, a double check valve assembly, a reduced pressure principle backflow prevention assembly or other backflow prevention assemblies or devices or methods shall mean as approved by the County.

4.6 Approved Assembly: In reference to backflow prevention assemblies or methods, those assemblies or methods which have been accepted by ASSEU, USC foundation for cross connection control and hydraulics research, and Charles County as an effective measure or method to prevent backflow.

4.7 ASSE: American Society of Sanitary Engineers, Westlake, Ohio

4.8 Assembly: A grouping of one or more approved body components and including approved test cocks and shutoff valves used during testing procedures.

4.9 AWWA: American Water Works Association, Denver, Colorado

4.10 Backflow: The term "backflow" shall mean the undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of the potable supply of water from any source or sources.

4.11 Backflow Prevention Assembly: The term "approved backflow prevention assembly" shall mean an assembly that has been investigated and approved by the county. County requirements include approval from ASSE, USC foundation for cross connection control and hydraulics research and Charles County.

4.12 Backpressure: Shall mean any elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or gas pressure) above the supply pressure at the point of consideration which would cause, or tend to cause, a reversal of the normal direction of flow through the backflow prevention assembly.

4.13 Backsiphonage: shall mean a form of backflow due to a reduction in water system pressure that causes a negative or sub-atmospheric pressure to exist at a site in the water system.

4.14 Certified Tester/Plumber: An individual who has proven his/her competency to test backflow prevention assemblies of all types, and to

prepare reports on such assemblies, as evidenced by the successful completion of a state approved backflow assembly testing certification issued from a Maryland State or WSSC approved backflow prevention training course as well as possessing a WSSC or Maryland State master or journeyman plumbing license.

4.15 Charles County Department of Public Works (DPW): The purveyor of the Charles County water distribution system.

4.16 Containment: Shall mean the appropriate type of method of backflow protection at the service connection (water meter), commensurate with the highest degree of hazard within the owner's property or system.

4.17 Contamination: Shall mean an impairment of the quality of the water that creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, or waste.

4.18 Cross Connection: A "cross connection" shall mean any actual or potential unprotected connection or structural arrangement between a public or an owner's potable water system and any other source or system through which it is possible to introduce into any part of the potable system and any used water, industrial fluid gas, or substance other than the intended potable water which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or change-over assemblies and other temporary or permanent assemblies through which or because of which "backflow" can or may occur are considered to be cross connections.

4.19 Cross Connection Control Specialist: An employee or agent of Charles County designated by the commissioners to administer and enforce the provisions of this ordinance.

4.20 Degree of Hazard: The term "degree of hazard" shall mean the actual or potential threat level of contamination of a physical or toxic nature to the public potable water system or the owner's potable water system.

4.21 Device: A non-testable backflow prevention apparatus.

4.22 Direct Connection: Any connection (such as a shuroff valve) between a potable water-supply line and a non-potable source at which there is the possibility of contaminating the water supply should the valve leake or be opened when it should be closed. a direct connection is subject go backpressure.

4.23 Double Check Valve Assembly: An assembly composed of two (2) single independently-acting approved check valves, including tightly closing shut-off valves located at each end of the assembly, and suitable connections for testing the water tightness of each check valve. Charles

County will only accept double check valve assemblies identified with an ASSE 1015 mark (ANSI/AWWA C510-97). Such assemblies shall not be installed within a pit or vault, or below the 100 year flood elevation.

4.24 Double Detector-Check Valve Assembly: An assembly composed of an approved double check valve assembly with a bypass water meter and meter-sized approved double check valve assembly. The meter shall register accurately very low flow rates and shall register all flow rates. Charles County will only accept double detector-check valve assemblies identified with an ASSE 1015 mark (ANSI/AWWA C510-97). Such assemblies shall not be installed within a pit or vault, or below the 100 year flood elevation.

4.25 Dual Check Valve: An assembly of two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks. When installed as a containment assembly the device is to be installed immediately downstream of the water meter prior to any branch of service. Charles County will only accept dual check valves identified with an ASSE 1024 mark.

4.26 Flood Level: The level from which liquid in plumbing fixtures, appliances tanks, or vats will overflow to the floor, when all drain and overflow openings built into the equipment are obstructed. Flood level shall also be defined as the 100 year flood elevation.

4.27 Grade: The term “grade” shall mean the slope or fall of a line of pipe in reference to a horizontal plane. In drainage, it is usually expressed as the fall in a fraction of an inch-per-foot length of pipe.

4.28 High Hazard: An actual or potential threat of contamination to the public water system or to a private water system to such a degree or intensity that there could be a danger to health.

4.29 Indirect Cross Connection: An indirect cross connection is not subject to backpressure.

4.30 Isolation: The term “isolation” shall mean to confine a potential source of contamination to the non-potable system being served; to provide a backflow prevention mechanism to each actual (individual water outlet) or potential cross connection.

4.31 Low Hazard: The classification assigned to an actual or potential cross connection that potentially could allow a substance that may be objectionable but not hazardous to one’s health, to backflow into the potable water supply.

4.32 Owner: Any person who has legal title to, or license to operate, or inhabits a property upon which a cross connection inspection is to be made or upon which a cross connection is present.

4.33 Person: An individual, partnership, company, public or private corporation, political subdivision or agency of the state department, an agency or instrumentality of the United States or other legal entity.

4.34 Permit: A document issued by charles county which allows the installation and use of a backflow prevention assembly or device.

4.35 Pollutant: The presence of any foreign substance (e.g., organic, inorganic, or biological) in water which tends to degrade its quality so as to constitute a non-health hazard or impair the usefulness or quality of the water to a degree which does not create an actual health hazard to the public health but does adversely and unreasonably affect such waters for the domestic use.

4.36 Potable Water: The term "potable water" shall mean water from any source that has been investigated by the Maryland Department of Environment (MDE) and the Environmental Protection Agency (EPA), which has been approved for human consumption.

4.37 Potable Water System: The term "potable water system" shall mean any publicly or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and the point of delivery, such as valves, pumps, pipes, conduits, tanks, receptacles, fixtures, equipment, and appurtenances used to produce, convey, treat, or store potable water for public consumption or use.

4.38 Pressure Vacuum Breaker Assembly: An assembly consisting of an independently operating, internally loaded check valve, and independently operating, loaded air-inlet valve located on the discharge side of the check valve, with shutoff valves attached at each end of the assembly designed to be operated under pressure for prolonged periods of time to prevent backsiphonage. The pressure vacuum breaker may not be subjected to any backpressure. Charles County will only accept atmospheric vacuum breaker assemblies identified with an asse 1020 mark (ANSI/AWWA C512-92). Such assemblies are not to be used within a pit or vault, or below the 100 year flood elevation.

4.39 Private (owner's water system): The term "private or owner's water system'' shall mean that portion of the privately owned potable water system lying between the point of delivery and the point of use. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or dispense potable water.

4.40 Protected Cross Connection: A water connection between a public potable water distribution system and a non-potable water distribution system with an approved backflow prevention assembly or device properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

4.41 Reduced Pressure Principle Assembly: An assembly containing with its structure a minimum of two (2) independently acting, approved check valves, together with an automatically operating pressure differential relief valve located between the check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and at cessation of normal flow, the pressure between the checks shall be less than the supply pressures. In case of leakage of either check valve the differential relief valve, by discharge to the atmosphere, shall operate to maintain pressure between the checks less than the supply pressure. The assembly must include properly located test cocks and tightly closing shutoff valves at each end of the assembly. Installations of reduced pressure principle assemblies require a drain that is capable of consuming the maximum discharge capacity of the reduced pressure principle assembly. Charles County will only accept reduced pressure principle assemblies identified with an ASSE 1013 mark (ANSI/AWWA C511-97). Such assemblies shall not be installed within a pit, vault, or below the 100 year flood elevation. Reduced pressure principle assemblies are to be installed in a horizontal position only.

4.42 Retrofit: To modify something such as a machine or a building by adding parts, of types or sizes not originally included.

4.43 Unprotected Cross Connection: A water connection between a public potable water distribution system and a non-potable water distribution system without an approved backflow prevention assembly or device properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

4.44 USC foundation for cross connection control and hydraulic research foundation: University of Southern California foundation for cross connection control and hydraulic research foundation, Los Angeles, CA.

3.17.5 – Elimination of Cross Connections

5.1 No private water system may be connected in any manner to the public water system unless the requirements of this ordinance and other applicable laws have been satisfied. The water may not be turned on, and the water may not remain turned on to any premise where identified or unprotected cross connections may exist.

3.17.6 – Responsibility of the County

6.1 The County shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to the backflow or backsiphonage of contaminants or pollutants up to the water service connection.

6.2 If, in the judgment of the County, an approved backflow assembly or device is required at the county's water service connection to any owner's premises, the county, or its delegated agent, shall give notice in writing to said owner(s) to install an approved backflow prevention assembly or device at each service connection to said premises. The owner shall, within a specified period of time (by the county), install such approved assemblies or devices.

6.3 Failure, refusal, or inability on the part of the owner to install said assemblies or devices within the designated period of time, shall constitute grounds for discontinuing water service to the premises until such assemblies or devices have been properly installed, inspected and tested.

6.4 The County will operate a cross connection control program, to include keeping of necessary records, which fulfills the requirements of the MDE Cross Connection Regulations. (COMAR 26.04.01.32)

6.5 The County shall keep on file, a list of private contractors that are certified backflow assembly tester/plumbers.

3.17.7 – Responsibility of Owner

7.1 The owner shall be responsible for maintaining all necessary records on backflow prevention assemblies and devices installed on their premises.

7.2 The owner shall be responsible for the elimination of, or protection against, cross connections on his/her premises.

7.3 The owner shall maintain any backflow prevention assemblies or devices within his/her property in good operating condition. The owner shall immediately correct any malfunction of the backflow preventer which was revealed by periodic testing or observation.

7.4 The owner shall be responsible for overhauling the assembly or assemblies every five (5) years or in accordance with the manufacturer's recommendations.

7.5 The owner shall notify the cross connection control specialist if there is or may be reason to believe that backflow has or may have occurred from a private water system to the public water system as soon as the situation is identified.

7.6 The owner shall notify the county cross connection control specialist in writing of any backflow prevention assembly that has been taken out of service.

7.7 The owner shall be responsible for completing all permit applications and cross connection control questionnaires to obtain a backflow permit for installation. Only testable assemblies require a backflow permit.

7.8 The owner shall immediately notify the county when the nature of the use of property changes so as to change the hazard classification of the property.

7.9 The owner shall be responsible for forwarding all completed test reports to the cross connection control specialist within 15 days of completion of testing. Charles County may accept completed and signed test reports submitted via fax or electronic version. The County will not accept a scanned copy of a fax.

3.17.8 – Responsibility of Tester/Plumber

8.1 Tester/plumbers must have knowledge and understanding of the currently adopted plumbing code and the county's cross connection control ordinance.

8.2 Tester/plumbers must understand and strictly adhere to installation and testing procedures for all ASSE certified assemblies and devices accepted by the county.

8.3 The tester/plumber shall conduct testing upon assurance that all safety procedures have been observed and that all personnel involved have been appropriately notified.

8.4 The tester/plumber's certification shall be kept current by completing recertification on or before the date the current certification expires. Any lapses in certification or discontinuance of certification will void any test reports submitted to the county during the lapse of certification or after discontinuance of certification.

8.5 Any testing, repair, installation or discontinuance of an assembly or device completed by the yester/plumber to achieve satisfactory test results for the customer shall be documented on county issued test forms. Charles County requires documentation of all check valve and relief readings for testable assemblies as well as all pertinent information for both assemblies and devices (make, model, serial number, size, point of use, installation date)

8.6 Reconstruction or overhaul of backflow prevention assemblies must be done using only manufacturer recommended parts for a particular application.

8.7 No tester/plumber shall be allowed to substitute any manufacturer's product for the use in another manufacturer's product.

8.8 The tester/plumber shall report any nonstandard installations not conforming to the county's water and sewer ordinance.

8.9 The tester/plumber shall provide the customer and county with accurate and complete test records.

8.10 If an individual tests assemblies within Charles County he/she must register with the cross connection control specialist prior to testing assemblies. The following documentation will be required: plumbing license, proof of insurance, contact information, a certificate of completion from a recognized Maryland state or WSSC approved cross connection backflow prevention training course, and an annual test gauge calibration certification. Failure to supply all of the above mentioned information will disqualify tester/plumbers from testing within Charles County.

8.11 Test gauge calibration certificates must include the following information: make, model, serial number, test date, test expiration date or test renewal date, indication that the gauge passed testing, contact information for testing company.

8.12 If a tester/plumber is found to have falsified documentation he/she will be removed from the county's approved list and notification will be sent to the Maryland state board of plumbing. Repeated submissions of backflow assembly test reports containing inaccuracies, omissions or otherwise incomplete information may result in the removal of the tester/plumber from the county’s approved listing.

8.13 It shall be the responsibility of the tester/plumber to contact the County's cross connection control specialist with reports of any potential or unprotected cross connections.

8.14 The tester/plumber shall be responsible for ensuring that supply lines and fittings for every plumbing fixture shall be installed so as to prevent backflow. All devices, appurtenances, appliances and apparatus intended to serve some special function, such as sterilization, distillation, processing, cooling, or storage of ice or foods, and that connect to the water supply system, shall be provided with protection against backflow and contamination of the water supply system. Water pumps, filters, softeners, tanks and all other appliances and devices that handle or treat potable water shall be protected against contamination.

8.15 The tester/plumber shall notify the county cross connection control specialist in writing of any backflow prevention assembly that has been taken out of service.

3.17.9 – Right of Entry

9.1 The cross connection control specialist or his or her authorized agent shall have the right to enter any building, structure or premises at reasonable times to perform any duty imposed upon him/her by this ordinance. Duties may include but are not limited to: disconnection of service, verification that an acceptable backflow prevention assembly or device has been installed, sampling, testing of water, or inspections and observations of all piping systems connected to the public water supply. Prior notice will be given unless an immediate threat to life or health has been reported. Refusal to allow entry for these purposes shall constitute grounds for immediate termination of the water service.

9.2 At the request of the county, the owner shall furnish any pertinent information regarding the piping system and any chemical storage and handling on such property where cross connections are deemed possible.

3.17.10 – High Hazard

10.1 If the high hazard posses an immediate threat to life or health the County reserves the right to immediately terminate the water supply until such time as the hazard is removed, isolated, or contained via a reduced pressure principle (ASSE 1013) backflow prevention assembly.

10.2 If the county determines that an owner's private water system constitutes a high hazard, such owner shall install a backflow prevention assembly as may be specified by the County within a specified amount of time.

10.3 If the owner fails to take corrective measures in a timely manner or refuses to install the specified assembly, water service to the subject location may be terminated.

10.4 If the county is unable to give notice to such owner or his representative within five (5) business days after the determination that a high hazard exists despite efforts to provide such notice the county may terminate water service to the private water system until the specified corrected measures are taken. All disconnection and reconnection fees will apply.

3.17.11 - High Hazard Facilities:

11.1 High hazard facilities shall have an approved reduced pressure principle assembly (ASSE 1013) as minimum containment assembly. High hazard facilities include, but are not limited to:

11.1.1 A building with five or more stories above ground level;

11.1.2 Any private water system that contains water which has been or is being re-circulated;

11.1.3 Any private water system with a booster pump;

11.1.4 Barber shops

11.1.5 Battery manufacturers;

11.1.6 Beauty or nail salons

11.1.7 Boiler and heat exchangers;

11.1.8 Bottling plant;

11.1.9 Booster pump facilities with chemical additives;

11.1.10 Breweries;

11.1.11 Cannery;

11.1.12 Car wash;

11.1.13 Chemical plant or facilities that store a significant amount of chemicals;

11.1.14 Commercial laundry;

11.1.15 Dairies;

11.1.16 Daycare facilities

11.1.17 Dental office;

11.1.18 Dry cleaner;

11.1.19 Dye works;

11.1.20 Exterminators;

11.1.21 Health spas or gyms

11.1.22 Fertilizer plant;

11.1.23 Film laboratory;

11.1.24 Fire sprinkler or standpipe system with chemical additives;

11.1.25 Hospital or clinic;

11.1.26 Hydrant meter customers

11.1.27 Hydropneumatic tanks;

11.1.28 Irrigation system;

11.1.29 Laboratory;

11.1.30 Lawn care companies;

11.1.31 Medical;

11.1.32 Metal processing plant;

11.1.33 Mortuary; or funeral home;

11.1.34 Nursing home;

11.1.35 Pharmaceutical plant;

11.1.36 Power plant;

11.1.37 Recycling facilities;

11.1.38 Restaurant;

11.1.39 Schools

11.1.40 Sewage treatment plant, or Pumping station

11.1.41 Swimming pool;

11.1.42 Tanning or waxing salons

11.1.43 Tire manufacturer;

11.1.44 Veterinary hospital or clinic;

11.1.45 Warehouses or storage facilities;

11.2 If an authorized agent of the County does not have sufficient access to every portion of a private water system to permit the complete evaluation of the degree of hazard associated with such private water system, an approved reduced pressure principle assembly shall be installed.

3.17.12 – Low Hazard Facilities:

12.1 Low hazard facilities include, but are not limited to:

12.1.1 Fire sprinkler systems without chemicals;

12.1.2 Commercial facilities not identified as high hazard facilities.

12.2 The DPW may approve a double check valve assembly as a minimum containment assembly for low hazard facilities.

3.17.13 – Notices

13.1 Letter or inspection report issued to accounts that the County has conducted an internal inspection to determine the type of backflow prevention assembly required for installation.

13.2 Notification issued to existing accounts with a backflow prevention assembly installed and with requirements to perform an annual backflow test.

13.3 Notification issued to an owner whose backflow prevention assembly failed annual testing, or has been installed incorrectly**.**

3.17.14 – Permits

14.1 Permits required for each backflow prevention assembly are obtained from the Department of Planning and Growth Management.

14.2 Anyone wanting to obtain a backflow prevention assembly permit must submit a permit application and a completed cross connection control questionnaire.

14.4 Permits are subject to revocation and shall be immediately revoked if the owner should change the degree of hazard associated with the service, or if a change of ownership or use should occur.

14.5 The County may modify a backflow prevention assembly permit for a good cause, including, but not limited to, the following:

14.5.1 To incorporate any new or revised federal, state, or local cross connection control standards or requirements;

14.5.2 To address significant alterations or additions to the owner's operation, process, or character since the time of backflow prevention assembly permit issuance;

14.5.3 To correct typographical or other errors on the backflow prevention assembly permit;

14.6 Permits are nontransferable. New owners must complete a permit application as well as a cross connection control questionnaire.

14.7 The County may revoke a backflow prevention assembly permit for a good cause, including, but not limited to, the following reasons:

14.7.1 Failure to notify the county of a change in the degree of hazard located on the premises;

14.7.2 Misrepresentation or failure to fully disclose all relevant facts in the backflow prevention assembly permit application;

14.7.3 Falsifying backflow prevention assembly test reports;

14.7.4 Tampering with backflow prevention assembly or device;

14.7.5 Refusing to allow the county access within a specified time period to the facility and records;

14.7.6 Failure to have the assembly tested or maintained;

14.7.7 Failure to have the proper device installed commensurate with the highest degree of hazard on the premises.

14.8 backflow prevention assembly permits shall be void upon cessation of operations or transfer of business ownership. All backflow prevention assembly permits issued to a particular user are void upon the issuance of subsequent permits.

3.17.15 – Existing in-use backflow prevention assemblies

15.1 Any existing backflow prevention assembly in service at the effective date of this ordinance, shall be allowed by the county to continue in service, subject to sections 3.17.14 (permits) & 3.17.16 (installation, testing and maintenance of backflow prevention assemblies), when installed according to the current plumbing code, the water and sewer detail manual, the water and sewer ordinance

and when proper maintenance records are produced, unless in the judgment of the County the degree of hazard is such as to supersede the effectiveness of the present backflow prevention assembly, or which may, in the judgment of the county, result in an unreasonable risk to the public health or public water supply.

15.2 Where the degree of hazard has increased, as in the case of a residential installation converting to a business establishment, any existing backflow prevention assembly must be commensurate with the degree of hazard.

15.3 Assemblies that were installed and maintained before the adoption of this ordinance shall remain in service until it is to be, repaired or replaced in accordance with this ordinance. The owner shall produce test reports documenting that the assembly has been maintained in accordance with this ordinance.

15.4 The County will not accept any backflow prevention assembly installed in a pit, vault, or similar potentially submerged location.

3.17.16 – Installation, Testing and Maintenance of Backflow Prevention Assemblies

16.1 All backflow prevention assemblies shall be installed in accordance with the accepted procedures of manufacturers, USC foundation for cross connection control and hydraulic research, the department of public works, ANSI/AWWA standards (ANSI/AWWA C510-97 – C512-92), and the current adopted plumbing code.

16.2 All backflow prevention assemblies or devices shall be installed on the owner's side of and immediately adjacent to the customer's side of the water meter. There shall be no branches in the service line ahead of the backflow prevention assembly or device. There shall be no branch of service off of the meter bypass service.

16.3 Any backflow prevention assembly or device, that is not approved by ASSE, USC foundation for cross connection control and hydraulics research, and the county, shall be replaced with an approved backflow prevention assembly or device within a specified period of time.

16.4 All backflow prevention assemblies and devices required by this ordinance shall be installed in accordance with USC foundation for cross connection control and hydraulic research, the DPW, ANSI/AWWA standards (ANSI/AWWA C510-97 – C512 – 92), the currently adopted plumbing code and maintained on the owner's premises as part of the owner's water system.

16.5 Ownership, testing, and maintenance of backflow prevention assemblies and devices are the responsibility of the owner. Each assembly and device required in this ordinance shall be properly maintained and functioning properly at all times.

16.6 Backflow prevention assembly tests shall be conducted upon initial installation and at least annually thereafter with a record of all testing and repairs retained by the owner. Backflow assemblies may be required to be tested more frequently depending upon the degree of hazard or as requested by the department of public works.

16.7 Each backflow prevention assembly or device required under this ordinance shall be accessible or readily accessible to county representative at reasonable times.

16.8 The County shall not accept an unprotected by-pass around a backflow prevention assembly or device. Any existing or proposed by-pass shall be permanently removed or protected in accordance with this ordinance.

16.9 Where a continuous water supply is critical and cannot be interrupted for the periodic testing of a backflow prevention assembly, multiple backflow preventions assemblies or other means of maintaining a continuous supply shall be provided. Such other means shall not create a potential cross connection.

16.10 When repairs to backflow prevention assemblies or devices are deemed necessary, whether through annual testing or routine inspection by the owner or by the county, these repairs shall be completed within a time specified in accordance with the degree of hazard.

16.11 Upon a determination that a backflow prevention assembly or device is required to be installed on an owner's private water system, the owner will be notified of the required type of backflow prevention assembly or device.

16.12 The County may require the installation of the required backflow prevention assembly or device immediately if, in the judgment of the County, it is determined that any condition poses a critical threat of contamination to the public water supply system.

16.13 All assemblies required for new construction shall be installed, tested and inspected prior to occupancy. All new construction plans and specifications shall be made available to the county for approval and to determine the degree of hazard.

16.15 All newly constructed residential homes with low hazards (domestic service line and non-chemical fire protection) shall be required to install a dual check assembly on the owner's side and immediately adjacent to the water meter. Residential water systems containing higher hazards shall be required to install a reduced pressure principal assembly.

16.16 For premises existing prior to the effective date of this program the department of public works may perform evaluations and inspections to inform the owner of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. This time period may be shortened depending upon the degree of hazard involved.

16.17 Hose connection vacuum breakers (ASSE 1011 AND ASSE 1019) are required for residential or commercial properties and shall be permanently attached to all threaded hose bibs.

16.18 All retrofit installations of reduced pressure principle assemblies and double check valve backflow preventers shall include the installation of strainers located immediately upstream of the backflow assembly. The installation of strainers will help reduce the potential for fouling of backflow assemblies due to circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning, and flushing of mains and hydrants, etc. These occurrences may "stir up" debris within the water main that could cause fouling of backflow assemblies installed without the benefit of strainers.

16.19 Reduced pressure principle assemblies shall require an air gap basket to be installed in the drain pipe to an area capable of conveying the assemblies maximum discharge. Strainers shall be installed ahead of the incoming shut off valve to prevent fouling of the assembly.

16.21 Backflow prevention assemblies are required to be tested annually at a minimum, upon installation, and after repair.

16.22 Air gaps shall be measured vertically from the lowest end of a potable water outlet to the flood rim or line of the fixture or receptor into which it discharges. The minimum required air gap shall be twice the effective opening of a potable water outlet unless the outlet is a distance less than 3 times the effective opening away from a wall or similar vertical surface in which case the minimum required air gap shall be 3 times the effective opening of the outlet. In no case shall the minimum required air gap be less than 1".

16.23 Double check valve and reduced pressure principle valves shall be installed with the bottom of the assembly not less than 12 inches above the floor with the maximum of the top of the assembly 60 inches above the floor or working platform. Testable backflow prevention assemblies having atmospheric vents shall not be installed in pits, vaults, or similar potentially submerged locations. Flooding of the pit can result in cross connection contamination.

16.24 Reduced pressure principle assemblies should be planned where water discharge from the relief port will not be objectionable. An optional air gap drain can be used to positively drain away minor discharges. Charles County will only allow reduced pressure principle assemblies to be installed in a horizontal position.

16.25 Atmospheric vacuum breakers shall be installed with the critical level at least six inches above the flood level rim or highest point of discharge of the fixture being served. Approved deck-mounted and pipe-applied vacuum breakers and vacuum breakers within equipment, machinery and fixtures where the critical level is a specified distance above the source of contamination shall be installed in accordance with manufacturer's instructions with the critical level not less than

one inch above the flood level rim. Such assemblies shall be installed on the discharge side of the last control valve to the fixture and no shut-off valve or faucet shall be installed downstream of the vacuum breaker. Vacuum breakers on urinals shall be installed with the critical level six inches above the flood level rim. Atmospheric vacuum breakers cannot be installed where it will be exposed to continuous pressure for more than 12 out of 24 hours.

16.26 Pressure type vacuum breakers shall be installed with the critical level at a height of at least 12 inches above the flood level rim and with the critical level at least six inches above the flood level rim or highest point of discharge of the fixture being served for ASSE 1056 assemblies. Deck-mounted and pipe applied pressure type (ASSE 1056) vacuum breakers within equipment machinery and fixtures where the critical level is a specified distance above the source of contamination shall be installed in accordance with manufacturer's instructions with the critical level not less than one inch above the flood level rim.

16.27 Backflow prevention assemblies located outdoors shall be enclosed within an ASSE 1060 box to protect the assembly from freezing except those backflow prevention assemblies installed with unions, so that the entire assembly may be removed during inclement weather. Assemblies are required to be tested each time the assembly is reinstalled.

3.17.17 – Thermal Expansion

17.1 installations of backflow prevention assemblies create a closed plumbing system. As such, provisions must be made by the owner to provide for thermal expansion within their closed loop system, e.g., the installation of thermal expansion assemblies. Instantaneous water heaters are exempt.

3.17.18 – Use of hydrant meters

18.1 It is the policy of the county that the opening or closing, damaging, tampering, connection to, or withdrawal of water from any publicly owned or privately owned fire hydrant connected to the county water system is expressly prohibited, except in compliance with the terms of this ordinance. Authorized withdrawal of water from any hydrant defined above is strictly limited to the following persons and purposes:

18.2 Fire fighting activities by the personnel of the county and other fire departments who provide fire protection services within a jurisdiction served by County fire hydrants or fire departments that provide mutual aid within any area served by County fire hydrants.

18.3 Test operations to establish the rate of the flow of water available from fire hydrants by personnel of the County or their delegated agents. This test operations may include the testing necessary to furnish data needed for fire insurance evaluations or engineering evaluations of the effectiveness of the

water system.

18.4 Water flushing and collection of water samples by authorized county personnel for improving or determining the quality of water in the County water system, or to minimize the possibilities of impurities remaining in the water system from breaks, leaks, or repairs to the water system.

18.5 Water withdrawal from publicly owned fire hydrants by authorized county personnel for cleaning of sanitary or storm sewer lines.

18.6 Companies who provide justification and have received a permit from the County with the use of a county issued hydrant meter and reduced pressure principle backflow prevention assembly purchased and maintained by the company.

18.7 Any person who opens, closes, damages, tampers with, connects to, or withdraws water from a county fire hydrant in a manner that does not fully comply with the provisions of this ordinance shall be subject to enforcement actions, not limited to fines.

18.8 All authorized hydrant users are required to use a reduced pressure principle backflow prevention assembly when connecting to a hydrant that is supplied by the county water distribution system. To prevent damage to the fire hydrant, the reduced pressure principle backflow prevention assembly shall be supported either where the meter joins the backflow prevention assembly or where the reduced pressure principle backflow prevention assembly and the gate valve meet. The user will maintain a clearance of at least 12” from the bottom of the relief zone to the ground at all times.

18.9 If a permitted user is identified as connecting to the county's water distribution system without a reduced pressure principle backflow prevention assembly, the permit is considered void and all deposits will be forfeited. An immediate suspension of privileges is established and closure of any account issued to the person in violation of this ordinance will take place followed by the demand for the return of the county's hydrant meter immediately.

18.10 Denial of a future application for an account to use a hydrant meter within the county may also be imposed upon anyone connecting to a hydrant supplied by the county's water distribution system without using a certified backflow prevention assembly or without a permit.

18.11 To eliminate cross contamination, all permitted users are required to use an (ASSE 1013) reduced pressure principle backflow prevention assembly at the meter. No exceptions will be made. The assembly will include a threaded connection to a county fire hydrant, a county issued water meter, a reduced pressure principle backflow preventer (purchased and maintained by the company or individual) with a support, and a gate valve. Ownership of the water meter will be retained at all times by the County.

18.12 Reduced pressure principle backflow preventers used for backflow protection on hydrant meters shall be tested annually, or more frequently when required.

18.13 County issued hydrant meters will be clearly marked to provide identification. The County will retain the right to change the identification marks as they see fit.

18.14 All permitted hydrant meter customers are required to comply with the meter reading schedule. Failure to comply may result in the forfeiture of deposit, late fees, fines and potential incarceration.

3.17.19 – Lawn irrigation system or lawn sprinklers

19.1 Lawn irrigation systems connected to the potable water system shall be protected by a reduced pressure principle assembly.

19.2 If the reduced pressure principle assembly is installed with unions so that the entire assembly may be removed during inclement weather the installation does not require the ASSE 1060 enclosure. Assemblies are required to be tested each time the assembly is reinstalled.

19.3 A permit is required for this installation and may only be installed by a Maryland state or WSSC registered master tester/plumber or a registered journey tester/plumber working under a master with backflow certification.

19.4 Assemblies that were installed and maintained before the adoption of this ordinance shall remain in service until it is to be, repaired or replaced in accordance with this ordinance. The owner shall produce test reports documenting that the assembly has been maintained in accordance with this ordinance.

19.5 The County will not accept the use of an ASSE 1020 OR ASSE 1024 on lawn irrigation systems. Irrigation systems that currently include the installation of an ASSE 1024 must be brought up to code prior to activation of the irrigation system. Assemblies that were installed and maintained before the adoption of this ordinance shall remain in service until it is to be, repaired or replaced in accordance with this ordinance. The owner shall produce test reports documenting that the assembly has been maintained in accordance with this ordinance.

3.17.20 – Fire Sprinkler Systems

20.1 All unmetered fire sprinkler systems without booster facilities, or chemical additives shall have a double check valve assembly as a minimum isolation assembly. The Department of Public Works will accept a double detector check assembly at their discretion.

20.2 All fire sprinkler systems with a booster facility, and or chemical additive, must have a reduced pressure principle assembly as a minimum containment assembly.

20.3 In the event that chemicals are added, or found to have been added, to a fire sprinkler system after installation of a backflow preventer the unit shall be replaced by a reduced pressure principle assembly (ASSE 1013). Failure to comply will result in notification to the health department, and fire marshal as well as termination of water service until the assembly has been replaced and inspected.

20.4 A permit is required for this installation of backflow prevention assemblies and may only be installed by a Maryland State or WSSC registered master tester/plumber or a journeyman with backflow credentials working directly under a licensed master tester/plumber.

3.17.21 – Swimming Pools, Hot Tubs, Spas

21.1 Any commercial swimming pool, hot tub, or spa with or without a chemical booster pump directly connected to the County water system shall have a certified (ASSE 1013) reduced pressure principle assembly installed. If the reduced pressure principle assembly is outside it shall be confined within a certified ASSE 1060 enclosure to protect from freezing and allowing room to test and maintain the assembly. If the backflow prevention assembly is installed with unions so that the entire assembly may be removed during inclement weather the installation does not require the ASSE 1060 enclosure. Assemblies are required to be tested each time the assembly is reinstalled.

21.2 Residential applications for swimming pools, hot tubs, or spas with or without chemical booster pumps shall be protected by an approved backflow prevention assembly recommended by the DPW.

3.17.22 – Unapproved Source of Supply

22.1 No person shall connect, or cause, or allow to be connected to the public water supply system, any supply of water, gas or any other substance not approved by the County.

22.2 Where a connection to a County water line is made, and the property owner continues to have a well or other source of water, it shall be unlawful for the plumbing servicing any building upon such property to be so connected that any water within the building may be served with water from any source other than the county connection. A reduced pressure principle assembly shall be required and it shall be installed, at the property line within an ASSE 1060 enclosure, protecting the device from freezing. If the backflow prevention assembly is installed with unions so that the entire assembly may be removed during inclement weather the installation does not require the ASSE 1060 enclosure. Assemblies are required to be tested each time the assembly is reinstalled.

3.17.23 - Violations

23.1 A written notice of violation shall be given to any person who is determined to be in violation of any provision of this ordinance.

23.2 Such notice shall set forth the violation and the time period within which the violation must be corrected. The violation must be corrected within a reasonable time, as specified in the notice. If in the judgment of the County the violation is occurring on a owner's private water system and that such violation has created or contributed to the existence of an immediate hazard, the owner will be required to correct the violation within a period of time specified by the DPW.

23.3 Water service may be terminated to a premise if the owner fails to correct a violation. Termination of water service will be without prejudice to the County's ability to, impose any other remedy available to the County against the owner or any other person responsible for the violation.

23.4 Failure by the owner, to have backflow prevention assemblies tested and repaired as required will result in disconnection of water service.

23.5 Any person found in violation of any provision of this ordinance shall pay the County all expenses incurred by the county in repairing damages to the public water system caused in whole or in part by such violation, and expenses incurred by the County in investigating and correcting such violation.

PART IV - SEWER SERVICE

4.0 SEWER SERVICE - SUBJECT TO THE WATER AND SEWER ORDINANCE

Sewer service at any time is furnished only in accordance with the Water and Sewer Ordinance of Charles County Government which is made as a part of every application, contract, agreement or license entered into between the property owner or customer and the County.

4.1 APPLICATION FOR SERVICE

A. Residential

Residential property owners desiring to connect to the County's sewer system shall complete items "1" through "7" below:

(1) There must be sewer lines available. The property owner can check this by calling the Department of Planning and Growth Management.

(2) If these facilities are available, the property owner must apply for allocation approval and permission to connect to them on forms which may be obtained at the Department of Planning and Growth Management.

(3) The form must be completed and signed by both the property owner and registered master plumber at the time of submission.

(4) Upon approval of the application for service, the applicant must pay to the County the connection charges and inspection fees in accordance with the latest Fees and Charges Schedule. Once all fees are paid, the Application for Utility Service will be considered issued.

(5) An application for Utility Service shall automatically become null and void if the approved sewer utility is not commenced within six (6) months after a permit is issued. Furthermore, an application for sewer utility service will be considered abandoned, if after the date of filing, the application is not approved or issued within six (6) months. The connection and inspection fees will be refunded less an approved administrative fee as determined by the County.

(6) The County will build the connection from the main in the street to your property line if the property is of residential use and built prior to October 19, 1988. For residences built after October 19, 1988, the owner is responsible for the cost and installation. For non-residential projects, the developer must construct the tap (see Appendices D-1 and D-2).

(7) All fees in effect at the time an Application for Utility Service form is

received will be charged to the applicant.

B. Residential: Deferred Payment of Connection Charges

(1) The owner of a single-family residence, which is occupied as a principal residence by the owner thereof, and which was in existence and used as a single-family residence at the time the sewer line and/or water line became operational, to which connection is to be made, may be permitted to connect to a sewer line and/or water line without making payment of the connection charges subject to the following conditions:

(a) That payment of at least twenty percent (20%) of the total water and/or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in four (4) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement, or

(b) That payment of at least ten percent (10%) of the total water and /or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in nine (9) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement, or

(c) That payment of at least ten percent (10%) of the total water and /or sewer connection fee be paid at the time the Utility permit is issued and that the balance of the water and/or sewer connection fee, plus interest, shall be payable in fourteen (14) equal annual payments, the first of said payments to be billed on the first annual anniversary date of the executed agreement.

(2) The owner shall enter into a written Agreement, which shall be recorded among the Land Records of Charles County, Maryland, which shall be in a form satisfactory to the County Attorney which shall set forth the terms of payment and shall provide that upon the sale, transfer, or conveyance, by any means whatsoever, of the property being connected to sewer lines and/or water lines, or any part thereof, the balance of the entire sewer and/or water connection fees shall immediately become due and payable and that the owner grants to the County a lien on the property being connected to sewer lines and/or water lines upon terms which are acceptable to the County Commissioners. The agreement may also provide that if payment of any installment of a deferred connection fee is not made within thirty (30) days after the mailing of a statement therefor by the County, the County shall have the absolute right to immediately terminate sewer service to the property.

(3) This shall not be construed to permit installment payment of the connection fee for connection to only a water line.

(4) The rate of interest and terms of repayment shall be established quarterly by the Director for Fiscal and Administrative Services of Charles County. The Director for Fiscal and Administrative Services shall establish the interest rate based upon the published prime rate plus points. The number of points to be added to the prime rate is dependent on the percentage of down payment paid at the time the Utility Permit is issued and the life of the loan.

C. Industrial and Commercial

Industrial and commercial establishments desiring to connect to the County sewerage system, in addition to making written application for such services shall furnish a detailed description as to type of public building, commercial or industrial establishment to be served, together with a list setting forth the number and type of fixtures served.

Such industrial and commercial applicants shall also furnish to the County at least one copy of a detail plan showing:

(1) The boundaries of the property.

(2) The location within the property of structures to be served.

(3) The location and profiles of the services to be installed.

(4) Detail showing the connections to sewer lines and the arrangement and detail of clean outs.

D. Other: Deferred Payment of Connection Charges

(1) The owner of an improved parcel of property (which is not a single-family residence which is the principal residence of the owner) which is under an Order of the Maryland Department of the Environment to connect to a sewer line, may be permitted to connect to a sewer line and/or water line without making payment of the connection charges subject to the following conditions:

(a) Payment of at least twenty percent (20%) of the total water and/or sewer connection fee shall be paid at the time the Utility permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in four (4) equal annual payments, the first of said payments to be billed on the first anniversary date of the executed agreement, or, in the alternative, payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility permit is issued and the balance of the water and/or sewer connection fee, plus interest shall be payable in nine (9) or fourteen (14) equal annual payments, the

first of said payments to be billed on the first anniversary date of the executed agreement.

(b) Payment of at least twenty percent (20%) of the total water and/or sewer connection fee shall be paid at the time the Utility permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in equal quarterly payments over a four (4) year period, the first of said payments to be billed on the first quarterly sewer service bill after the date of the executed agreement, or, in the alternative, payment of at least ten percent (10%) of the total water and/or sewer connection fee be paid at the time the Utility permit is issued and the balance of the water and/or sewer connection fee, plus interest, shall be payable in equal quarterly payments over a nine (9) or fourteen (14) year period, the first of said payments to be billed on the first quarterly sewer service bill after the date of the executed agreement.

(c) The owner of such improved property (which is not a single-family residence which is the principal residence of the owner) shall enter into a written Agreement which shall be recorded among the Land Records of Charles County, Maryland, shall be in a form satisfactory to the County Attorney and shall set forth the terms of payment and shall provide that upon the sale, transfer, or conveyance of the property being connected to sewer and/or water lines, or any part thereof, by any means whatsoever, the balance of the entire sewer and/or water connection fees shall immediately become due and payable and that the owner grants to the County a lien on the property being connected to sewer and/or water lines upon terms which are acceptable to the County Commissioners. The Agreement may also provide that if payment of any installment of a deferred connection fee is not made within thirty (30) days after the mailing of a statement therefor by the County, the County shall have the absolute right to immediately terminate sewer service to the property.

(2) This section shall not be construed to permit installment payment of the connection fee for connection to only a sewer line. Similarly, this section shall not be construed to permit installment payment of the connection fee for new development or construction.

(3) The rate of interest and terms of repayment shall be established quarterly by the Director for Fiscal and Administrative Services of Charles County. The Director for Fiscal and Administrative Services shall establish the interest rate based upon the published prime rate plus points. The number of points to be added to the prime rate is dependent on the percentage of down payment paid at the time the utility permit is issued and the life of the loan.

E. Entrance to Sewer System

Only authorized agents of the County may remove manhole covers for the purpose of entrance for maintenance, inspection, stoppage removal, etc.

Engineering or surveying firms wishing to perform inspection or as-built surveying of sewer systems must first notify the County. Anyone who removes a manhole cover of the County shall be liable according to the Statutes of the Annotated Code of Maryland and the Public Local Laws of Charles County.

4.2 SEWER SERVICE LINES

The connection charge for each new sewer installation directly connected to the sewer line owned by the County shall be in accordance with the latest Fees and Charges Schedule as shown in the appendices D-1 and D-2. Lines that serve two or more properties will be dedicated to the County.

A. The applicant will furnish and install all new connections to County sewer lines for all projects only after issuance of a permit from the County.

The applicant desiring such sewer service line, shall pay to the County the scheduled fee in accordance with the latest fees and charges schedule.

B. All sewer lines from the right-of-way or easement line to the premises served, whether located in private right-of-ways or in streets, shall be constructed at the expense of, and by the applicant, and shall be, and remain, the property of the applicant, and shall be maintained by them in good condition and repair under penalty of continuance of service by the County. It is the responsibility of the customer to ascertain that a party or parties engaged by the customer to repair the sewer line from the right-of-way or easement line to the customer's premises, notify the County and obtain a utility permit prior to starting any repair work.

C. The repair and maintenance of all sewer lines from the sewer main to the limit of the public right-of-way or easement line will remain the responsibility of the County.

For maintenance of sewer services without clean-outs installed at the property line the following shall apply:

(1) The county may not enter onto private property to correct any problem.

(2) If it cannot be determined whether the problem is located within the public right-of-way or easement the property owner must contact a plumber to correct the problem, at the expense of the property owner.

(3) If it is determined that the problem was located within public right-of-way or easement, the County will reimburse the property owner upon verification of responsibility and submittal of a paid invoice from the plumber.

(4) The County will install a clean-out at the public right-of-way line or easement line at the expense of the county.

D. Specifications Covering the Construction of Sewer Lines

(1) Sewer service connections must be constructed according to this Water and Sewer Ordinance, and the latest version of the Standards and Specifications for Construction Manual and the latest version of the Standard Detail Manual. Special attention is directed to the fact that all negotiations required to permit the construction of sewer service lines from the applicant's property through private property to the lines owned and operated by the County must be carried out at the applicant's own time and expense.

(2) Services to establishments such as public buildings, churches, apartments, buildings, commercial and industrial establishments, shall be installed on the basis of respective detail installation plans and specifications furnished by the applicant and approved by the County.

(3) All work performed by the applicant must meet all the local and State regulations and rules and prevailing plumbing codes of the area in which the work is performed.

(4) Sewer services shall be installed only by state registered master plumbers from the right-of-way or easement line to the building.

(5) No service connection or any part thereof will be backfilled until inspected and approved in writing by the authorized County representative.

(6) Any rejected work will be promptly corrected to the satisfaction of the authorized County representative.

(7) Whenever it shall be found that a service installation has been made contrary to this Water and Sewer Ordinance and County specifications or in any manner other than that approved by the County, the service shall be disconnected and removed. Service shall not again be supplied until the service installation is made according to this Water and Sewer Ordinance and County specifications, and all expenses and damages shall be paid by the applicant or their successors.

(8) Sewer service lines shall be installed at a depth not less than forty-two (42) inches.

(9) Clean-out plugs/caps will be installed per this Water/Sewer Ordinance, Charles County Standard Specs and Charles County Standard Details.

(10) No storm drains are allowed to be connected into the public sewer system.

(11) No basement drains may be connected directly or through sump pump operation into the public sewer system.

(12) All sewer connections and requirements must be in accordance with the State Plumbing Code of Maryland, and this Ordinance.

4.3 PAYMENTS AND PENALTIES

A. The sewer charges for the County are based on water usage. Bills for sewer charges are payable within thirty (30) days from the billing date. A bill which is not paid within thirty (30) days becomes delinquent and shall be charged a penalty as established by the County. A bill which remains unpaid ten (10) days after the due date will result in termination of water and/or sewer service to the premises.

B. A bill for sewer service is mailed directly to the property owner who is primarily responsible for payment, or, if the property is leased, to the agent or tenant if requested in writing by the property owner.

4.4 SERVICE REGULATIONS - GENERAL

A. The County representatives shall have access upon notice at all reasonable hours to the premises supplied with sewer for the purpose of making necessary inspections.

B. The County will presume service is being rendered from the time the sewer is connected, at the request of the customer, until said customer gives written notice to the County to discontinue the service, and charges will be made accordingly.

4.5 NOTIFICATION OF CUSTOMERS

A. Each sewage service customer shall be notified, in conjunction with a regular bill and not less than once every year, of the charges for operation and maintenance of the sewage service system, i.e. the sewage charge and the sewage commodity charge.

4.6 SEWER USE REGULATIONS

A. General Provisions

(1) Purpose and Policy

This ordinance sets forth uniform requirements for direct and indirect contributors who discharge into the wastewater collection and treatment systems operated by the Charles County Department of Public Works. The ordinance enables the County to comply with all applicable State and

Federal laws required by the Clean Water Act (33 United States Code) and the General Pretreatment Regulations (40 CFR, Part 403).

The objectives of this ordinance are:

(a) To prevent the introduction of pollutants into the publicly owned treatment works that will interfere with its operation;

(b) To prevent the introduction of pollutants into the publicly owned treatment works that will pass through the publicly owned treatment works, inadequately treated, into receiving waters, or otherwise be incompatible with the publicly owned treatment works;

(c) To protect the publicly owned treatment works personnel who may be affected by wastewater and sludge in the course of their employment and to protect the general public;

(d) To improve the opportunity to recycle and reclaim wastewaters and sludges from the systems;

(e) To provide for equitable distribution of the costs of the County's wastewater systems.

(f) To enable the County to comply with its National Pollutant Discharge Elimination System permit conditions, sludge use and disposal requirements, and any other federal or state laws to which the publicly owned treatment works is subject.

(2) Administration

Except as otherwise provided herein, Charles County shall administer, implement, and enforce the provisions of this ordinance. Any powers granted to or duties imposed upon Charles County may be delegated by the County Commissioners to other County personnel.

B. General Sewer Use Requirements

(1) Prohibited Discharge Standards

(a) General Prohibitions - No user shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference. These general prohibitions apply to all users of the POTW whether or not they are subject to categorical pretreatment standards or any other national, state, or local pretreatment standards or requirements.

(b) Specific Prohibitions - No user shall introduce or cause to be introduced into the POTW the following pollutants, substances, or

wastewater:

(i) Pollutants which create a fire or explosive hazard in the POTW, including, but not limited to, waste streams with a closed-cup flashpoint of less than 140°F (60°C) using the test methods specified in 40 CFR 261.21;

(ii) Wastewater having a pH less than 5.0 or greater than 10.0; or otherwise causing corrosive structural damage to the POTW or equipment;

(iii) Solid or viscous substances in amounts which will cause obstruction of the flow in the POTW resulting in interference but in no case 2 inch in any dimension;

(iv) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with the POTW;

(v) Wastewater having a temperature greater than 130°F (55° C), or which will inhibit biological activity in the treatment plant resulting in interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104°F (40°C);

(vi) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

(vii) Fats, oils, or greases of animal or vegetable origin in concentrations greater than 150 mg/l.

(viii) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

(ix) Any trucked or hauled pollutants, except at discharge points designated by the County, in accordance with Section 4.6.C.4 of this ordinance;

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(2) National categorical pretreatment standards

The categorical pretreatment standards found at 40 CFR Chapter I, Subchapter N, Parts 405-471 are hereby incorporated.

(3) State pretreatment standards

State pretreatment standards located at COMAR 26.08.01 are hereby

incorporated.

(4) Local Limits

The following pollutant limits are established to protect against pass through and interference. No person shall discharge wastewater containing in excess of the following: (daily maximums)

PARAMETER	**DAILY MAXIMUM (MG/L)**
Total Arsenic	3.45 mg/l
Total Cadmium	1.37 mg/l
Total Chromium	1.78 mg/l
Total Copper	2.14 mg/l
Total Cyanide	0.94 mg/l
Total Lead	5.01 mg/l
Total Mercury	0.008 mg/l
Total Nickel	36.94 mg/l
Total Silver	0.45 mg/l
Total Zinc	1.21 mg/l
Total Molybdenum	0.25 MG/L
Total Selenium	0.05 MG/L
BOD_5	350 MG/L
Total Suspended Solids	400 MG/L
Ammonia	45 MG/L

The above limits apply at the point where the wastewater is discharged to the POTW. The County may impose mass limitations in addition to, or in place of, the concentration-based limitations above.

(5) Surcharges for Excessive Strength Wastewater

Wastewater with compatible pollutants exceeding the following concentrations may be discharged with the permission of the County if, in the County's opinion, the prohibited discharge standards as listed in Section 4.6.B.1 are met. Such discharges may be subject to surcharges for extra-strength wastewater, as set forth below.

PARAMETER	**MAX. AVERAGE WITHOUT SURCHARGE MG/L**
Phosphorus	10.0 mg/l

The County may establish a system of user surcharges that are:

(a) Based on the treatment costs for compatible pollutants, in order to recover the actual cost of treatment of excessive strength waste introduced into the collection system by users, these treatment costs will be as set forth in the County's schedule of fees and

charges.

(b) The surcharge shall be calculated in accordance with the formula below;

Sewer use surcharge (S)=V X 8.34 [FP(AP-10.0)]

V= is the volume of the sewage in millions of gallons discharged by a public sewer system user during the billing period.
Fp= is the sewer use surcharge rate for total phosphorus (TP) expressed in dollars/pound.
Ap= it the average daily concentration of TP constituents in the sewage discharged expressed in mg/l.
10.0= is the maximum daily concentration (mg/l) of TP in the sewage discharged for which a sewer use surcharge is not required for that sewage parameter.

The term, FP(AP-10.0) in the above formula, only if the term has a positive values for the sewage discharged shall it be used in the computation of the sewer use surcharge**.**

(i) The flow rate will be from the county's water consumption meter readings; unless a sewage flow meter has been approved for use by the county. If no water or sewer meter is available, the average flow rate used by the county for flat rate sewage billing purposes will be used.

(ii) The average actual concentration will be the average of testing results on pollutant samples taken during the period used to determine the flow rate.

(c) The surcharges may be invoiced on a monthly or quarterly basis depending on flow meter reading intervals.

(6) County's Right of Revision

The County reserves the right to establish by the ordinance or discharge permit more stringent limitations, requirements, or prohibition on discharges to the POTW if deemed necessary to comply with General Pretreatment Regulations (40 CFR, Part 403).

(7) Dilution

No user shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable pretreatment standard or requirement. The County may impose mass limitations on users who are

using dilution to meet applicable pretreatment standards or requirements,

or in other cases when the imposition of mass limitations is appropriate.

C. Pretreatment of Wastewater

(1) Pretreatment Facilities

(a) Users shall provide wastewater treatment as necessary to comply with this ordinance and shall achieve compliance with the Federal General Pretreatment Standards, any applicable categorical pretreatment standards, local limits, and the prohibitions set out in Section 4.6.B.1 of this ordinance within the time limitations specified by EPA, State, or the County, whichever is more stringent.

(b) Any facilities necessary for compliance shall be provided, operated, and maintained at the user's expense. Detailed plans describing such facilities and operating procedures shall be submitted to the County for review, and shall be acceptable to the County before such facilities are constructed. The review of such plans and operating procedures shall in no way relieve the user from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the County under the provisions of this ordinance.

(2) Additional Pretreatment Measures

(a) The County may require any person discharging into the POTW to install and maintain, on their property and at their expense, a suitable storage and flow-control facility to ensure equalization of flow. A wastewater discharge permit may be issued solely for flow equalization.

(b) Grease, oil, and sand interceptors shall be provided when, in the opinion of the County, they are necessary for the proper handling of wastewater containing excessive amounts of grease and oil, or sand; except that such interceptors shall not be required for residential users. All interception units shall be of type and capacity approved by the County and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the user at their expense.

(3) Accidental Discharge/Slug Control Plans

(a) Industrial users shall provide protection from accidental discharge of materials which may interfere with the POTW by developing spill prevention plans. Facilities necessary to implement these

plans shall be provided and maintained at the owner's or industrial user's expense. Spill prevention plans, including the facilities and

the operating procedures, shall be approved by the County before construction of the facility.

(b) Industrial users that store hazardous substances shall not contribute to the POTW after the effective date of this regulation unless a spill prevention plan has been approved by the County. Approval of such plans shall not relieve the industrial user from complying with all other laws and regulations governing the use, storage, and transportation of hazardous substances.

(c) The County may require any user to develop, submit for approval, and implement an accidental discharge/slug control/spill prevention plan. Alternately, the County may develop such a plan for any user. At a minimum, an accidental discharge/slug control/spill prevention plan shall address the following;

(i) Description of discharge practices, including non-routine batch discharges;

(ii) Description of stored chemicals;

(iii) Procedures for immediately notifying the County of any accidental or slug discharge, or any spill as required by Section 4.6.F.6 of this ordinance;

(iv) Procedures to prevent adverse impact from any accidental or slug discharge or spill. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutant, including solvents, and/or measures and equipment for emergency response.

(4) Hauled Wastewater

(a) Septic tank waste may be introduced into the POTW only at locations designated by the County, and at such times as are established by the County. Such waste shall not violate Section 4.6.B.1 of this ordinance or any other requirements established by the county. The county may require septic tank waste haulers to obtain wastewater discharge permits.

(b) The County may require generators of hauled industrial waste to obtain wastewater discharge permits. The County also may prohibit the disposal of hauled industrial waste. The discharge of

hauled industrial waste is subject to all other requirements of this ordinance.

(c) Industrial waste haulers may discharge loads only at locations designated by the county. No load may be discharged without prior consent of the County. The County may collect samples of each hauled load to ensure compliance with applicable standards. The County may require the industrial waste hauler to provide a waste analysis of any load prior to discharge.

(d) Industrial waste haulers must provide a waste-tracking form for every load. This form shall include, at a minimum, the name and address of the industrial waste hauler, permit number, truck identification, names and addresses of sources of waste, and volume and characteristics of waste. The form shall identify the type of industry, known or suspected waste constituents, and whether any wastes are RCRA hazardous wastes.

(5) Best Management Practices

(a) In circumstances where, upon the finding of and in the sole opinion of the department of public works, the installation and operation of pretreatment measures, devices or facilities is impractical, the county may, at its sole discretion, require the user to develop, adopt, implement, periodically review and revise a Best Management Practices (BMP) plan as a means of preventing conventional pollutants as listed in section 4.6.b.1, including Fats, Oils and Greases (FOG), from entering the sewer system.

(b) All BMPs shall contain an employee training component including levels of training, management and employer evaluation of effectiveness. All new employees shall be trained on the required BMP's before they may be allowed to work in the facility. The employer shall maintain a contemporaneous record of all individuals, training and evaluated proficiencies. Failure to maintain records shall be cause for the immediate revocation of the BMP waiver and shall require immediate installation of full pretreatment facilities.

(c) all BMPs shall be approved by the county pretreatment specialist prior to implementation of the BMP or any proposed device contained therein.

(d) BMPs shall not be the control mechanism of first choice, but rather, may only be proposed when normal pretreatment controls are not practical or impose severe hardship on the user. The required level of pretreatment and the approved corresponding pretreatment device(s) shall be identified prior to approval of the bmp waiver so that, if it should become necessary to revoke the

bmp waiver under paragraph (b) or (f), the level of pretreatment is already known and approved.

(e) BMPs shall never be proposed or used to satisfy categorical industrial user or significant industrial user pretreatment limitations.

(f) If, after periodic review following implementation of the BMP plan, the BMP plan does not appear, in the sole opinion of the department of public works and not withstanding any previous agreements to the contrary, to achieve the goal of preventing pollutants from entering the county's sewer system, the county reserves the right to require the installation of full pretreatment control measures, devices or facilities to achieve pretreatment limits or goals.

D. Wastewater Discharge Permit Application

(1) Wastewater Analysis

When requested by the County, a user must submit information on the nature and characteristics of its wastewater, within a time frame specified by the County.

(2) Wastewater Discharge Permit Application Requirement

(a) The following users are required to apply for a wastewater discharge permit:

(i) Any user whose discharge would be in violation of Section 4.6.B.1 if they had no permit;

(ii) Any significant industrial user;

(iii) Any user subject to a national categorical pretreatment standard;

(iv) Any user required by State pretreatment requirements to obtain a permit;

(v) Any user providing pretreatment;

(vi) Any other user directed by the County to apply for a permit.

(b) Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of this ordinance and subjects the permittee to the sanctions set out in Section 4.6.I, J &

K of this ordinance. Obtaining a wastewater discharge permit does not relieve a permittee of its obligation to comply with all Federal and State pretreatment standards or requirements or with any other requirements of Federal, State, and Local law.

(3) Wastewater Discharge Permitting: Existing Connections

Any users required to obtain a wastewater discharge permit who were discharging into the POTW prior to the effective date of this ordinance and who wishes to continue such discharges in the future, shall, within 90 days of the after said date, apply to the County for a wastewater discharge permit in accordance with Section 4.6.D.5 of this ordinance, and shall not cause or allow discharges to the POTW to continue after 180 days of the effective date of this ordinance except in accordance with a wastewater discharge permit issued by the County.

(4) Wastewater Discharge Permitting: New Connections

Any user required to obtain a wastewater discharge permit who proposes to begin or recommence discharging into the POTW must obtain such permit prior to the beginning or recommencing of such discharge. An application for this wastewater discharge permit, in accordance with Section 4.6.D.5 of this ordinance must be filed at least 90 days prior to the date upon which any discharge will begin or recommence.

(5) Wastewater Discharge Permit Application Contents

All users required to obtain a wastewater discharge permit must submit a permit application. The County may require all users to submit as part of an application the following information:

(a) All information required by Section 4.6.F.1.b.i-iii,v-viii.

(b) SIC number according to the Standard Industrial Classification Manual, issued by the Executive Office of the President, Office of Management and Budget, 1972;

(c) Wastewater constituents and characteristics including but not limited to those mentioned in Section 4.6.B.1;

(d) Time and duration of contribution;

(e) Average daily and 30 minute peak wastewater flow rates, including daily, monthly and seasonal variations if any;

(f) Site plans, floor plans, mechanical and plumbing plans along with details to show all sewers, sewer connections, and appurtenances by the size, location, and elevation;

(g) Description of activities, facilities and plant processes on the premises including all materials which are or could be accidently or intentionally be discharged to the POTW.

(h) Each product by type, amount, process or processes, and a rate of production;

(i) Type and amount of raw materials processes (average and maximum per day);

(j) Number and type of employees, hours of operations, and proposed or actual hours of discharge;

(k) Any other information as may be deemed necessary by the County to evaluate the permit application.

(6) Application Signatories and Certification

All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

(7) Permit Decisions

The County will evaluate the date furnished by the user and may require additional information, to determine whether or not to issue a wastewater discharge permit. The County may deny any application for a wastewater

discharge permit.

E. Wastewater Discharge Permit Issuance Process

(1) Wastewater Discharge Permit Duration

A wastewater discharge permit shall be issued for a specified time period, not to exceed five (5) years from the effective date of the permit. A wastewater discharge permit may be issued for a period less than five (5) years, at the discretion of the County. Each wastewater discharge permit will indicate a specific date upon which it will expire. The user shall

reapply for permit re-issuance at least 180 days prior to the expiration of the user's existing permit in accordance with Section 4.6.E.3.

(2) Wastewater Discharge Permit Contents

(a) Permit(s) shall contain the following:

(i) A statement of duration;

(ii) A statement of non-transferability without prior notification to the County in accordance with Section 4.6.E.5 of this ordinance, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;

(iii) Effluent limitations based on applicable pretreatment standards;

(iv) Self-monitoring, sampling, reporting, notification, and record keeping requirements. These requirements shall include an identification of pollutants to be monitored, sampling location, sampling frequency, and sample type based on Federal, State, and County law;

(b) A wastewater discharge permit may contain, but not limited to, the following conditions:

(i) Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;

(ii) Requirements for the installation of pretreatment technology, pollution control, or construction of appropriate containment devices, designed to reduce, eliminate, or prevent the introduction of pollutants into the POTW;

(iii) Requirements for the development and implementation of spill control plans or special conditions including

management practices necessary to adequately prevent accidental, unanticipated, or on-routine discharges;

(iv) Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;

(v) The unit charge or schedule of user charges and fees for the management of the wastewater discharged to the POTW;

(vi) Requirements for installation and maintenance of inspection and sampling facilities and equipment;

(vii) Compliance schedules;

(viii) A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable Federal and State pretreatment standards, including those which become effective during the term of the wastewater discharge permit; and

(ix) Other conditions as deemed appropriate by the County to ensure compliance with this ordinance, and State and Federal laws, rules and regulations.

(3) Permit Re-issuance/Reapplication

(a) A user with an expiring wastewater discharge permit shall apply for a new wastewater discharge permit by submitting a complete permit application, in accordance with Section 4.6.E.1 of this ordinance, a minimum of 180 days prior to the expiration of the user's existing wastewater discharge permit. If the user complies with the above requirements and through no fault of the user the county is unable to reissue a new permit prior to the expiration date of the existing permit, the users expired wastewater discharge permit shall remain in full effect until the new permit is issued, but not to exceed six months.

(b) A user must re-apply for a wastewater discharge permit when the mass loading of pollutants in the permitted discharge exceeds the permit limitations by 10%.

(c) A user may re-apply for a wastewater discharge permit when the user believes that some of the permit limitations and/or requirements are no longer applicable.

(4) Wastewater Discharge Permit Appeals

Any person, including the user, may petition to reconsider the terms of a wastewater discharge permit within 30 days of issuance to the Director of Public Works. Failure to submit a timely petition shall be deemed to be a waiver of the administrative appeal. In its petition, the appealing party must indicate the wastewater discharge permit provisions being objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit. The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal. If the County fails to act within 30 days, a request for reconsideration shall

be deemed to be denied. Decisions not to reconsider a wastewater discharge permit, not to issue a wastewater discharge permit, or not to modify a wastewater discharge permit shall be considered final administrative actions for purpose of judicial review.

(5) Permit Modifications

The County may modify a wastewater discharge permit for a good cause, including, but not limited to, the following:

(a) To incorporate any new or revised Federal, State, or Local pretreatment standards or requirements;

(b) To address significant alternations or additions to the user's operation, process, or wastewater volume or character since the time of wastewater discharge permit issuance;

(c) A change in the POTW that requires either a temporary or permanent reduction or elimination of the authorized discharge;

(d) Information indicating that the permitted discharge poses a threat to the County's POTW, County personnel, or the receiving waters;

(e) Violation of any terms or conditions of the wastewater discharge permit;

(f) Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;

(g) Revision of or a grant of variance from categorical pretreatment standards pursuant to 40 CFR 403.13;

(h) To correct typographical or other errors in the wastewater discharge permit;

(i) To reflect a transfer of the facility ownership or operation to a new owner or operator;

(6) Wastewater Discharge Permit Transfer

Wastewater discharge permits may be transferred to a new owner or operator only if the permittee gives at least (30) days advance notice to the County and the County approves the wastewater discharge permit transfer, in writing. The notice to the County must include a written certification by the new owner or operator which:

(a) States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;

(b) Identifies the specific date on which the transfer is to occur; and

(c) Acknowledges full responsibility for complying with the existing wastewater discharge permit.

Failure to provide advance notice of a transfer renders the wastewater discharge permit void as of the date of facility transfer.

(7) Wastewater Discharge Permit Revocation

The County may revoke a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

(a) Failure to notify the County of significant changes to the wastewater prior to the changed discharge;

(b) Failure to provide prior notification to the County of changed conditions pursuant to Section 4.6.E.4 of this ordinance;

(c) Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permit application;

(d) Falsifying self-monitoring reports;

(e) Tampering with monitoring equipment;

(f) Refusing to allow the County timely access to the facility premises and records;

(g) Failure to meet effluent limitations;

(h) Failure to pay fines;

(i) Failure to pay sewer charges;

(j) Failure to meet compliance schedules;

(k) Failure to complete a wastewater survey or the wastewater discharge permit application;

(l) Failure to provide advance notice of the transfer of business ownership of a permitted facility; or

(m) Violation of any pretreatment standard or requirement, or any terms of the wastewater discharge permit or this ordinance.

Wastewater discharge permits shall be voidable upon cessation of

operations or transfer of business ownership. All wastewater discharge permits issued to a particular user are void upon the issuance of a new wastewater discharge permit to that user.

(8) Regulation of Waste Received from Other Jurisdictions

(a) If another municipality, or user located within another municipality, contributes wastewater to the POTW, the County shall enter into an inter-jurisdictional agreement with the contributing municipality.

(b) Prior to entering into an agreement required by paragraph a, above, the County shall request the following information from the contributing municipality:

(i) A description of the quality and volume of wastewater discharged to the POTW by the contributing municipality;

(ii) An inventory of all users located within the contributing municipality that are discharging to the POTW; and

(iii) Such other information as the County may deem necessary.

(c) An inter-jurisdictional agreement, as required by paragraph a, above, shall contain the following conditions:

(i) A requirement for the contributing municipality to adopt a sewer use ordinance which is at least as stringent as this ordinance and local limits which are at least as stringent as those set out in Section 4.6.B.4 of this ordinance. The requirement shall specify that such ordinance and limits must be revised as necessary to reflect changes made to the County's ordinance or local limits;

(ii) A requirement for the contributing municipality to submit a revised user inventory on at least an annual basis;

(iii) A provision specifying which pretreatment implementation activities, including wastewater discharge permit issuance, inspection and sampling, and enforcement, will be conducted by the contributing municipality; which of these activities will be conducted by the County; and which of

these activities will be conducted jointly by the contributing municipality and the County;

(iv) A requirement for the contributing municipality to provide the County with access to all information that the contributing municipality obtains as part of its pretreatment

activities;

(v) Limits on the nature, quality, and volume of the contributing municipality's wastewater at the point where it discharges to the POTW;

(vi) Requirements for monitoring the contributing municipality's discharge;

(vii) A provision ensuring the County access to the facilities of users located within the contributing municipality's jurisdictional boundaries for the purpose of inspection, sampling, and any other duties deemed necessary by the County; and

(viii) A provision specifying remedies available for breach of the terms of the inter-jurisdictional agreement.

F. Reporting Requirements

(1) Baseline Monitoring Report

(a) Within either one hundred eighty (180) days after the effective date of a categorical pretreatment standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later, existing categorical users currently discharging to or scheduled to discharge to the POTW shall submit to the County a report which contains the information listed in paragraph b, below. At least ninety (90) days prior to commencement of their discharge; new sources, and sources that become categorical users subsequent to the promulgation of an applicable categorical standard, shall submit to the County a report which contains the information listed in paragraph b, below. A new source shall report the method of pretreatment it intends to use to meet applicable categorical standards. A new source also shall give estimates of its anticipated flow and quantity of pollutants to be discharged.

(b) Users described above shall submit the information set forth below.

(i) Identifying Information - The name and address of the facility, including the name of the operator and owner.

(ii) Environmental Permits - A list of any environmental

control permits held by or for the facility.

(iii) Description of Operations - A brief description of the nature, average rate of production, and standard industrial classifications of the operation(s) carried out by such user. This description should include a schematic process

diagram which indicates points of discharge to the POTW from the regulated processes.

(iv) Flow Measurement - Information showing the measured averaged daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in 40 CFR 403.6(e).

(v) Measurement of Pollutants

(a) The categorical pretreatment standards applicable to each regulated process.

(b) The results of sampling and analysis identifying the nature and concentration, and/or mass, where required by the standard or by the County, of regulated pollutants in the discharge from each regulated process. Instantaneous, daily maximum, and long-term average concentrations, or mass, where required, shall be reported. The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in Section 4.6.F.10 of this ordinance.

(c) Sampling must be performed in accordance with procedures set out in Section 4.6.F.11 of this ordinance.

(vi) Certification - A statement, reviewed by the user's authorized representative and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O&M) and/or additional pretreatment is required to meet the pretreatment standards and requirements.

(vii) Compliance Schedule - If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the user will provide such additional pretreatment and/or O&M. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A

compliance schedule pursuant to this section must meet the requirements set out in Section 4.6.F.2 of this ordinance.

(viii) Signature and Certification - All baseline monitoring reports must be signed and certified in accordance with

Section 4.6.D.6 of this ordinance.

(2) Compliance Schedule Progress Reports

The following conditions shall apply to the compliance schedule required by Section 4.6.F.1.b.vii of this ordinance:

(a) The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable pretreatment standards (such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation);

(b) No increment referred to above shall exceed nine (9) months;

(c) The user shall submit a progress report to the County no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the user to return to the established schedule; and

(d) In no event shall more than nine (9) months elapse between such progress reports to the County.

(3) Reports on Compliance with Categorical Pretreatment Standard Deadline

Within ninety (90) days following the date for final compliance with applicable categorical pretreatment standards, or in the case of a new source following commencement of the introduction of wastewater into the POTW, any user subject to such pretreatment standards and requirements shall submit to the County a report containing the information described in Section 4.6.F.1.b.iv-vi of this ordinance. For users subject to equivalent mass or concentration limits established in accordance with the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the user's long-term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the user's actual production during the appropriate sampling period. All compliance reports must be signed and certified in accordance with Section 4.6.D.6 of this ordinance.

(4) Periodic Compliance Reports

(a) All significant industrial users shall, at a frequency determined by the County but in no case less than twice per year in June and

December for the periods January through June and July through December, respectively, submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All periodic compliance reports must be signed and certified in accordance with Section 4.6.D.6 of this ordinance.

(b) All wastewater samples must be representative of the user's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a user to keep its monitoring facility in good working order shall not be grounds for the user to claim that sample results are unrepresentative of its discharge.

(c) If a user subject to the reporting requirement in this section monitors any pollutant more frequently than required by the County, using the procedures prescribed in Section 4.6.F.11 of this ordinance, the results of this monitoring shall be included in the report.

(5) Reports of Changed Conditions

Each user must notify the County of any significant changes to the user's operations or system which might alter the nature, quality, or volume of its wastewater at least one day before the change.

(a) The County may require the user to submit such information as may be deemed necessary to evaluate the changed condition, including the submission of a wastewater discharge permit application under Section 4.6.D.5 of this ordinance.

(b) The County may issue a wastewater discharge permit under Section 4.6.D.7 of this ordinance or modify an existing wastewater discharge permit under Section 4.6.E.5 of this ordinance in response to changed conditions or anticipated changed conditions.

(c) For purposes of this requirement, significant changes include, but are not limited to, flow increases of 20% or greater, and the discharge of any previously unreported pollutants.

(6) Reports of Potential Problems

(a) In the case of any discharge, including, but not limited to,

accidental discharges, discharges of a non-routine, episodic nature, a non-customary batch discharge, or a slug load, that may cause potential problems for the POTW, the user shall immediately

telephone and notify the County of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the user.

(b) Within five (5) days following such discharge, the user shall, unless waived by the County, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any fines, penalties, or other liability which may be imposed pursuant to this ordinance.

(c) A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees whom to call in the event of a discharge described in paragraph a, above. Employers shall ensure that all employees, who may cause such a discharge to occur, are advised of the emergency notification procedure.

(7) Reports from Un-permitted Users

All users not required to obtain a wastewater discharge permit shall provide appropriate reports to the County as may be required.

(8) Notice of Violation/Repeat Sampling and Reporting

If sampling performed by a user indicates a violation, the user must notify the County within twenty-four (24) hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the County within thirty (30) days after becoming aware of the violation. The user is not required to re-sample if the County monitors at the user's facility at least once a month, or if the County samples between the user's initial sampling and when the user receives the results of this sampling.

(9) Notification of the Discharge of Hazardous Waste

(a) Any user who commences the discharge of hazardous waste shall notify the POTW, the EPA Regional Waste Management Division Director, and State Hazardous Waste authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR part 261. Such notification must include the name of the hazardous waste as

set forth in 40 CFR part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the user

discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the user: An identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months. All notifications must take place no later than one hundred and eighty (180) days after the discharge commences. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed conditions must be submitted under Section 4.6.F.5 of this ordinance. The notification requirement in this section does not apply to pollutants already reported by users subject to categorical pretreatment standards under the self-monitoring requirements of Sections 4.6.F.1, 4.6.F.3 and 4.6.F.4 of this ordinance.

(b) Dischargers are exempt from the requirements of paragraph a, above, during a calendar month in which they discharge no more than fifteen (15) kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen (15) kilograms of non-acute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the user discharges more than such quantities of any hazardous waste do not require additional notification.

(c) In the case of any regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the user must notify the County, the EPA Regional Waste Management Waste Division Director, and State Hazardous Waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.

(d) In the case of any notification made under this section, the user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

(e) This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this ordinance, a permit issued there under, or any applicable federal or state law.

(10) Analytical Requirements

All pollutant analyses, including sampling techniques, to be submitted as part of a wastewater discharge permit application or report shall be performed in accordance with the techniques prescribed in 40 CFR Part 136, unless otherwise specified in an applicable categorical pretreatment standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by EPA.

(11) Sample Collection

(a) Except as indicated in Section 4.6.F.11.b, below, the user must collect wastewater samples using flow proportional composite collection techniques. In the event flow proportional sampling is infeasible, the County may authorize the use of time proportional sampling or a minimum of four (4) grab samples where the user demonstrates that this will provide a representative sample of the effluent being discharged. In addition, grab samples may be required to show compliance with instantaneous discharge limits.

(b) Samples for oil and grease, temperature, pH, cyanide, phenols, sulfides, and volatile organic compounds must be obtained using grab collection techniques.

(12) Timing

Written reports will be deemed to have been submitted on the date postmarked. For reports which are not mailed, postage prepaid, into a mail facility serviced by the United States Postal Service, the date of receipt of the report shall govern.

(13) Record Keeping

Users subject to the reporting requirements of this ordinance shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by this ordinance and any additional records of information obtained pursuant to monitoring activities undertaken by the user independent of such requirements. Records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses. These records shall remain available for a period of at least three (3) years. This period shall be automatically extended for the duration of any litigation concerning the user or, or where the user has been specifically notified of a longer retention period by the County.

G. Compliance Monitoring

(1) Right of Entry

Representatives of the County, the State and EPA, upon showing proper identification, shall have the right to enter and inspect the premises of any user who may be subject to the requirements of this regulation. Any and all industrial users shall allow authorized representatives of the County, State, and EPA access at all reasonable times to all premises for the purpose of inspecting, sampling, examining records or copying records in the performance of their duties. Authorized representatives of the County, State, and EPA shall have the right to place on any user's property such devices as are necessary to conduct sampling and monitoring. The County may require the user, at its own expense, to install sampling and monitoring equipment as appropriate. Where a user has security or safety measures in force which would require clearance, training, or wearing of special protective gear, the user shall make necessary arrangements at its own expense, to enable authorized representatives of the County, State, and EPA to enter and inspect the premises as guaranteed by this paragraph.

(2) Search Warrants

If the County has been refused access to a building, structure, or property, or any part thereof, and is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program of Charles County designed to verify compliance with this ordinance or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, then the County may seek issuance of a search warrant from the circuit court of Charles County.

H. Confidential Information

Information and data on a user obtained from reports, surveys, wastewater discharge permit applications, wastewater discharge permits, and monitoring programs, and from the County's inspection and sampling activities, shall be available to the public without restriction, unless the user specifically requests, and is able to demonstrate to the satisfaction of the County, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets under applicable State law. Any such request must be asserted at the time of submission of the information or data. When requested and demonstrated by the user furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or pretreatment program, and in enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics and other "Effluent Data" as defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

I. Publication of Users in Significant Noncompliance

The County shall publish annually, in the largest daily newspaper published in the municipality where the POTW is located, a list of the users which, during the previous twelve (12) months, were in significant noncompliance with applicable pretreatment standards and requirements. The term significant noncompliance shall mean:

(1) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of wastewater measurements taken during a six (6) month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;

(2) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six (6) month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria (1.4 for BOD, TSS, fats, oils and grease, and 1.2 for all other pollutants except pH);

(3) Any other discharge violation that the County believes has caused, alone or in combination with other discharges, interference or pass through, including endangering the health of POTW personnel or the general public;

(4) Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the County's exercise of its emergency authority to halt or prevent such a discharge;

(5) Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;

(6) Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, and reports on compliance with compliance schedules;

(7) Failure to accurately report noncompliance; or

(8) Any other violation(s) which the County determines will adversely affect the operation or implementation of the local pretreatment program.

J. Administrative Enforcement Remedies

(1) Notification of Violation

When the County finds that a user has violated, or continues to violate,

any provision of this ordinance, a wastewater discharge permit or under issued hereunder, or any other pretreatment standard or requirement, the County may serve upon that user a written notice of violation. Within (15) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to the County. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the notice of violation. Nothing in this section shall limit the authority of the County to take any action, including emergency actions or any other enforcement action, without first issuing a notice of violation.

(2) Consent Orders

The County may enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any user responsible for noncompliance. Such documents will include specific action to be taken by the user to correct the noncompliance within a time period specified by the document. Such documents shall have the same force and effect as the administrative orders issued pursuant to Sections 4.6.J.4 and 4.6.J.5 of this ordinance and shall be judicially enforceable.

(3) Show Cause Hearing

The County may order a user which has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, to appear before the County and show cause why the proposed enforcement action should not be taken. Notice shall be served on the user specifying the time and place for the meeting, the proposed enforcement action, the reasons for such action, and a request that the user show cause why the proposed enforcement action should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least [30] days prior to the hearing. Such notice may be served on any authorized representative of the user. A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the user.

(4) Compliance Orders

When the County finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the County may issue an order to the user responsible for the discharge directing that the user come into compliance within a specified time. If the user does not come into compliance within a specified time provided, sewer service may be discontinued unless adequate treatment facilities,

devices, other related appurtenances are installed and properly operated.

Compliance orders also may contain other requirements to address the noncompliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the user of liability for any violations, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user.

(5) Cease and Desist Orders

When the County finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the user's past violations are likely to recur, the County may issue an order to the user directing it to cease and desist all such violations and directing the user to:

(a) Immediately comply with all requirements; and

(b) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.

(6) Administrative Fines

(a) When the County finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the County may fine such user in an amount not to exceed $1,000. Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation.

(b) Users desiring to dispute such fines must file a written request for the County attorney to reconsider the fine along with full payment of the fine amount within seven days of being notified of the fine. Where a request has merit, the attorney may convene a hearing on the matter.

(c) Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other enforcement action against the

user.

(7) Emergency Suspensions

The County may immediately suspend a user's discharge permit, after informal notice to the user, whenever such suspension is necessary to stop an alleged discharge which reasonably appears to present or cause an imminent or substantial endangerment to the health or welfare of persons. The County may also immediately suspend a user's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

(a) Any user notified of a suspension of its discharge permit shall immediately stop or eliminate its contribution. In the event of a user's failure to immediately comply voluntarily with the suspension order, the County may take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals. The County may allow the user to recommence its discharge when the user has demonstrated to the satisfaction of the county that the period of endangerment has passed, unless the termination proceedings in Section 4.6.J.8 of this ordinance are initiated against the user.

(b) A user that is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence, to the County prior to the date of any show cause or termination hearing under Sections 4.6.J.3 or 4.6.J.8 of this ordinance.

Nothing in this section shall be interpreted as requiring a hearing prior to any emergency suspension under this section.

(8) Termination of Discharge

In addition to the provisions in Section 4.6.E.6 of this ordinance, any user who violates the following conditions is subject to discharge termination:

(a) Violation of wastewater discharge permit conditions;

(b) Failure to accurately report the wastewater constituents and characteristics of its discharge;

(c) Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;

(d) Refusal of reasonable access to the user's premises for the purpose

of inspection, monitoring, or sampling; or

(e) Violation of the pretreatment standards in Section 4.6.B of this ordinance.

Such user will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section 4.6.J.3 of this ordinance why the proposed action should not be taken. Exercise of this option by the County shall not be a bar to, or a prerequisite for, taking any other action against the user.

K. Judicial Enforcement Remedies

(1) Injunctive Relief

When the County finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the County may petition the district court through the County's attorney for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this ordinance on activities of the user. The County may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the user to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a user.

(2) Civil Penalties

(a) A user who has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirements shall be liable to the County for a maximum civil penalty of $1,000 per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.

(b) The Charles County Commissioners may recover reasonable attorneys' fees, court costs, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the County.

(c) In determining the amount of civil liability, the court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the

user's violation, corrective actions by the user, the compliance history of the user, and any other factor as justice requires.

(d) Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, taking any other action against a user.

(3) Criminal Prosecution

(a) A user who willfully or negligently violates any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor, punishable by a fine of not more than $1,000 per violation, per day, or imprisonment for not more than six months or both.

(b) A user who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor and be subject to a fine not exceeding $1,000 or imprisonment for not more than six months, or both. This penalty shall be in addition to any other cause of action for personal injury or property damage available under State law.

(c) A user who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this ordinance, wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be punished by a fine of not more than $1,000 per violation, per day, or imprisonment for not more than six months, or both.

(4) Remedies Nonexclusive

The remedies provided for in this ordinance are not exclusive. The County may take any, all, or any combination of these actions against a non-compliant user. Enforcement of pretreatment violations will generally be in accordance with Charles County's Enforcement Response Plan. However, the County may take other action against any user when the circumstances warrant. Further, the County is empowered to take more than one enforcement action against any non-compliant user.

(5) Recovery of Costs Incurred

In addition to any and/or all enforcement actions established, the permittee violating any of the provision of this permit or causing damage to or otherwise inhibiting Charles County's wastewater disposal system shall be

liable to the County for any expense, loss, or damage caused by such violation or discharge. The County shall bill the user for the costs incurred for any cleaning, repair, or replacement work caused by the violation or discharge. Refusal to pay the assessed costs shall constitute a separate violation.

L. Affirmative Defenses to Discharge Violations

(1) Upset

(a) For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary noncompliance with categorical pretreatment standards because of factors beyond the reasonable control of the user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) An upset shall constitute an affirmative defense to an action brought for noncompliance with categorical pretreatment standards if the requirements of paragraph (c), below, are met.

(c) A user who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(i) An upset occurred and the user can identify the cause(s) of the upset;

(ii) The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and

(iii) The user has submitted the following information to the county within twenty-four (24) hours of becoming aware of the upset

(a) A description of the indirect discharge and cause of noncompliance;

(b) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue;

(c) Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

(d) In any enforcement proceeding, the user seeking to establish the occurrence of an upset shall have the burden of proof.

(e) Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with categorical pretreatment standards.

(f) Users shall control production of all discharges to the extent

necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

(2) Prohibited Discharge Standards

A user shall have an affirmative defense to an enforcement action brought against it for noncompliance with the general prohibitions in Section 4.6.B.1.a of this ordinance or the specific prohibitions in Sections 4.6.B.1.b.iii through 4.6.B.1.b.vii of this ordinance if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

(a) A local limit exists for each pollutant discharged and the user was in compliance with each limit directly prior to, and during, the pass through or interference; or

(b) No local limit exists, but the discharge did not change substantially in nature or constituents from the user's prior discharge when the County was regularly in compliance with its NPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

(3) Bypass

(a) For the purposes of this section,

(i) "Bypass" means the intentional diversion of waste streams from any portion of a user's treatment facility.

(ii) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonable

be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) A user may allow any bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) through (f) of this section.

(c) If a user knows in advance of the need for a bypass, it shall submit prior notice to the County, at least ten (10) days before the date of the bypass, if possible.

(d) A user shall submit oral notice to the County of an unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the user becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent re-occurrence of the bypass. The County may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours.

(e) Bypass is prohibited, and the County may take an enforcement action against a user for a bypass, unless

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The user submitted notices as required under paragraph (c) and (d) of this section.

(f) The County may approve an anticipated bypass, after considering its adverse effects, if the County determines that it will meet the

three conditions listed in paragraph (e) of this section.

M. Miscellaneous Provisions

(1) Pretreatment Charges and Fees

The Charles County Commissioners may adopt reasonable fees for reimbursement of costs of setting up and operating the County's pretreatment program which may include:

(a) Fees for wastewater discharge permit applications including the cost of processing such applications;

(b) Fees for monitoring, inspection, and surveillance procedures including the cost of collection and analyzing a user's discharge, and reviewing monitoring reports submitted by users;

(c) Fees or reviewing and responding to accidental discharge procedures and construction;

(d) Fees for filing appeals; and

(e) Other fees as the Charles County Commissioners may deem necessary to carry out the requirements contained herein. These fees relate solely to the matters covered by this ordinance and are separate from all other fees, fines, and penalties chargeable by Charles County.

(2) Severability

If any provision of this ordinance is invalidated by any court of competent jurisdiction, the remaining provisions shall not be affected and shall continue in full force and effect.

N. Effective Date

This ordinance shall be in full force and effect immediately following its passage, approval, and publication, as provided by law.

4.7 APPLICATION FOR SEWERAGE CONNECTION, EXTENSION OF CONSTRUCTION

A. General

No subdivision, building extension or other facility requiring a sewerage system may be constructed without approval in writing having first been obtained from the Charles County Planning Commission, the Charles County Department of

Planning and Growth Management, the Charles County Board of Appeals, as applicable, and in the case of community facilities, the Maryland State Department of Health.

B. Application to the County for Residential or Commercial Connection to Existing Sewerage Facilities

The permit application shall be supplemented by any plans and specifications as required by the County. The residential or commercial building sewer permit fee shall be paid to the County according to the current County Fees and Charges Schedule in effect at the time the application is filed.

C. Application to the County for Industrial Waste Connection to Existing Sewerage Facilities

Application for connection to existing facilities should be made on forms obtained from the County and submitted to the County by owner.

The permit application shall be supplemented by any plans and specifications as required by the County. the Industrial Waste Connection permit fee shall be paid to the County according to the current County Fees and Charges Schedule in effect at the time the application is filed.

4.8 PREPARATION OF PLANS

A. Construction Drawings

Plans, design analysis, and cost estimates for all sanitary sewer installations as prepared by an engineer duly authorized by the State of Maryland to prepare such plans, shall be submitted to the County for approval. Such plans shall be in conformance with the current County requirements for plan preparation.

Plans shall have signed permission by representatives of any outside agency involved, i.e., Maryland State Highway Administration, Maryland State Health Department, etc., and shall conform to all applicable Federal, State, and local rules and regulations, including the following: Charles County Comprehensive Plan, Charles County Subdivision Regulations, Road Ordinance, Zoning

Ordinance, Grading and Sediment Control Ordinance, Forest Conservation Ordinance, the Charles County Building Code, the Comprehensive Water and Sewer Plan for Charles County, and this ordinance.

B. Building Sewer

In subdivisions where the sanitary street sewer mains are being installed by the developer, the developer shall also install a 6" lateral or extension from the sanitary sewer main to one foot beyond the property line for each lot on the street. The connection is to receive the extension of the building sewer for each lot.

Such connection shall be shown on the sewer plans submitted to and approved by the County, and the connection to be installed shall be shown on the As-Built plans in their exact locations.

These connections shall be constructed in accordance with applicable plumbing regulations for the County. These connection shall be inspected, tested and approved by the County.

After a Building Sewer is connected through a Building Sewer Connection to the sanitary sewer, the connection shall become a part of the building sewer and the owner of the premises shall be responsible for the operation and maintenance of the entire building sewer between the building and the clean out at the property line.

C. All dwellings, structures, and lots identified in 8.3.E.1.b.iii.B-D shall be noted on the drawing with the following:

"This lot is subject to sewage backup in the event of a pumping station and/or collection system malfunction. Backwater valves in any structure on these lots connected to the sewage system shall be required, in accordance with the latest edition of the County adopted plumbing code. Backwater valves shall be installed in branches of the drainage system which receive flow only from fixtures and/or drains subject to backflow from the public sewer. Other portions of the drainage system not subject to such backflow shall drain directly to the public sewer. Backwater valves shall conform to the standard listed in the plumbing code and shall be installed so that their internal working parts are readily accessible for periodic cleaning, repair, or replacement."

D. Owners of existing buildings where branches of the drainage system which receive flow from fixtures and/or drains subject to backflow from the public sewer will be required to install backwater valves as deemed necessary by the County for the general safety and welfare of the occupants and the public.

PART V - CONSTRUCTION PROCESS

5.0 CENTRAL WATER OR SEWERAGE SYSTEMS SERVING TWO OR MORE BUILDINGS, LOTS, RESIDENCES, OR COMMERCIAL AND INDUSTRIAL SITE DEVELOPMENT

Plans for the development of a subdivision consisting of two or more building sites, or a commercial or industrial site, which includes the construction of a central water or sewerage system to be dedicated to the County shall indicate all proposed water or sewerage systems. In the case of water systems, this includes facilities such as mains, service lines, curb stops, fire hydrants, etc. In the case of sewerage systems, this includes facilities such as trunk sewers, collector sewer, pumping stations, appurtenances, etc. All proposed facilities shall conform to standards for water or sewerage facilities established by the County, and shall be in conformance with the Comprehensive Water and Sewer Plan.

5.1 POLICY ON INDIVIDUAL WELL AND SEPTIC SYSTEMS WITHIN THE DEVELOPMENT DISTRICT

A. New Residential Developments

Individual well and septic systems are permissible in the R-l (residential - low density) zone, within the area corresponding to the comprehensive plan's development district. Such systems are permitted providing dry water mains and dry sewer mains, including all necessary appurtenances are constructed in accordance with this ordinance, the approval of ground water appropriation permits by the Maryland Department of the Environment, and the approval of percolation tests by the Charles County Health Department. The development district is generally identified in the comprehensive plan as the area to be served by the Mattawoman Sewerage Treatment Plant. Ultimately, this area will be served by public systems; therefore, individual well and septic systems in the development district are considered interim systems. Connection to the public water supply and sewerage systems is required within one (1) year of the time when these systems become available. Once connections are made, proper abandonment of private well and/or septic systems are required. Minor residential subdivisions and individual residential building permits are exempted from this policy.

B. Commercial/Industrial and Existing Residential Development

Interim water supply and sewerage facilities may be allowed, at the discretion of the County Commissioners, within the development district, subject to the following conditions:

(1) The Comprehensive Water and Sewerage Plan maps indicate the location of the infrastructure which is proposed as the permanent route to provide service;

(2) The applicant has consented to participate in the program to implement the permanent infrastructure solution;

(3) The applicant, or subsequent property owners, shall enter into an agreement with the County Commissioners. This agreement shall specify the timing of construction of permanent infrastructure, financing programs to be used to implement proposed permanent infrastructure, as well as other issues, as determined appropriate by the County Commissioners. This agreement must be executed prior to preliminary subdivision approval; and

(4) The applicant is required to discontinue use of such facilities within one year of the availability of public water supply and sewerage systems.

5.2 PRELIMINARY PLANS

The developer shall submit to the County the required number of sets of preliminary plans for the proposed system. Such preliminary plans shall include sufficient information for the County to determine the extent and scope of the proposed system and shall include, but not be limited to, the following information:

A. Preliminary plat of the proposed subdivision, including topography based on a datum acceptable to the County.

B. Plans of proposed system, including preliminary street grades.

C. Locations of sites for well houses or pumping stations, and locations of existing structures.

D. Such other reasonable data as may be requested by the County.

Upon completion of review by the County, one (1) set of preliminary plans will be returned to the developer marked "approved" and/or subject to any conditions which the County may consider in the public interest. In the event it is determined by the County that the central system does not have sufficient capacity to serve the proposed subdivision, commercial or industrial site, the County may require the developer to construct additional facilities to satisfy the requirements in accordance with County standards.

5.3 CONSTRUCTION DRAWINGS AND SPECIFICATIONS

A. Upon receipt of fully approved preliminary plans, the developer shall have construction plans and specifications prepared in accordance with the Water and Sewer Ordinance, the Water and Sewer Detail Manual and the Standard Specifications for Construction Manual.

B. The required number of copies of the construction drawings and specifications shall be submitted to the County along with the following:

(1) Engineers construction cost estimate.

(2) A non-refundable Plan Review fee and a refundable inspection fee are required based upon the approved Engineer's estimated construction costs. (See Appendix "D"). The inspection fee is only refundable if the project is voided and construction never commenced. Plan review and inspection fees, regular and minimums, are required as determined by the fees and charges schedule.

C. The County will review and return the plans and specifications to the developer within a time frame consistent with current county policy.

D. The Developer will correct the drawings and specifications and submit the required number of copies to the County for final approval and signature.

E. The Developer shall be required to submit deeds of easements and/or rights-of way, as applicable, prior to final approval of plans.

F. The Developer must obtain all necessary Federal, State and local permits for the proposed facility before beginning construction.

5.4 CERTIFICATE OF SUBSTANTIAL COMPLETION

A. The Developer shall submit a "Certificate of Substantial Completion" when the facilities are ready for service in order to schedule an inspection. (See Appendix "E")

B. The County will respond within 30 calendar days to schedule the inspection.

C. The constructed water or sewerage system shall not be placed in service until a Certificate of Substantial Completion is issued.

D. Before the Certificate of Substantial Completion is issued, the following must be provided by the Developer to the County:

(1) All requested information concerning testing and operation of the system's equipment, as outlined in the Charles County Standard Specification for Construction Manual.

(2) In the case of water system construction, a Certificate of Substantial Completion will not be issued until satisfactory potability tests have been completed.

E. The County will begin operation and accept responsibility for the costs of maintenance, and shall be entitled to collect all fees of any nature for the operation of the system. (See Appendix "E")

5.5 CERTIFICATE OF FINAL COMPLETION ACCEPTANCE

Upon completion of the facilities by the Developer, including all punch list items, surface course of paving and submission of as-built drawings, a final inspection shall be conducted by the County and the Developer. If the results of the final inspection are satisfactory, the County shall issue a Certificate of Final Completion Acceptance. (See Appendix "F"). If the results are not satisfactory, the items at issue shall be corrected before the County will issue the certificate.

Before the Certificate of Final Completion Acceptance is issued, the following must be provided by the Developer to the County:

A. Subdivided Property

Sufficient surety, in accordance with Article IV, Section 35 - "Protection Against Defects", of the Subdivision Regulations, to guarantee (See Appendix "G") that any defects in the facilities will be corrected by the applicant.

B. Non-Subdivided Property

Sufficient surety to guarantee that any defects in the facilities that appear within one (1) year after issuance of the Certificate of Final Completion Acceptance shall be corrected by the applicant. This requirement may be satisfied by a retainer held by the County for an amount equivalent to ten (10) percent of the bond amount established for the original surety. (See Appendix "E")

5.6 DEDICATION

A. Subdivided Property

All dedication documents are to be submitted to the County in accordance with Article IV Section 34, "Dedications".

B. Non-Subdivided Property

Prior to issuance of a permit for construction, the Developer shall submit to the County a "Dedication Agreement". (See Appendix "H")

The system (including all facilities) shall be dedicated to the County by a Dedication Agreement thus conveying to the County title to the system free and clear of all liens and encumbrances.

5.7 REIMBURSEMENTS

The developer, within a fifteen year period from the date of dedication of the off-site improvement, shall be entitled to a payment or credit from the County in an amount up to the approved construction cost of the off-site or on-site improvement which has capacity available to serve other off-site County customers. The payment amount due to the developer can be expressed in a mathematical formula as:

Maximum Payment Amount = Construction Cost - Cost of Improvements to serve on-site connections only

The resultant amount will then be the "Excess Capacity Cost".

A. Agreements

All agreements to construct facilities subject to these regulations and to become beneficiary to this program, shall be codified within a development agreement between the County and the developer and may include subsidiary agreements with the Department of Fiscal & Administrative Services.

B. Number of Connections

The number of connections shall be limited to the available excess capacity of the off-site improvements over and above that which is required by the developer who constructed and dedicated the improvement. The amount of reimbursement shall be limited to the amount of predetermined and agreed-upon cost of the excess capacity of the developer constructed improvement.

C. SEF Fee

The County customer connecting to an off-site improvement will be required to pay to the County a system expansion fee (SEF), in addition to the County's standard connection fee, at the time a utility permit is issued. No system expansion fee will be charged if the customer connects more than fifteen years after dedication of an off-site improvement.

The system expansion fee will be assessed to each customer based on the capacity available to serve future development (excess capacity available to County customers) and each County customer's meter size (which quantifies water usage).

(Appendix "I" provides a hypothetical case study which illustrates the mechanics of the proposed program). The excess capacity cost per gallon is determined by applying the following formula:

$$\text{Excess Cap Cost/Gallon} = \frac{\text{Excess Capacity Cost}}{\text{Excess Capacity}} \times \text{Meter Factor}$$

Under this scenario, the standard residential meter (5/8") and the standard commercial meters (3/4") are the mathematical constants of the program with a value of 1.0. Larger meter sizes are mathematical multipliers and are factored into the equation.

This is based on the fact that, for instance, an 8" meter will use approximately 80 times the amount of water than that used by a 5/8" meter.

Fees for meters larger than 5/8" will be calculated as the fee for a 5/8" meter times the following factors:

Meter Size	Meter Factor[1]	Average Daily Flow-Gals.[2]
5/8"	1.0	300
3/4"	1.0	300
1"	2.5	750
1.5"	5.0	1,500
2"	8.0	2,400
3"	16.0	4,800
4"	25.0	7,500
6"	50.0	15,000
8"	80.0	24,000

With excess capacity cost per gallon quantified, the calculation of the systems expansion fee may proceed. The SEF is a function of the excess capacity cost per gallon multiplied by the average residential flow as determined by the County. This may be expressed by the following formula:

SEF = Excess Capacity Cost/Gallon **x** Avg. Residential Flow

D. Determination of SEF Fee

The actual amount of the systems expansion fee will be determined at the time that off-site improvements are approved by the County and will remain in effect for a fifteen (15) year period following dedication of said facilities to the County by agreement.

[1] Proposed Water and Sewer connection charges for Charles County, MD. Ernst & Young Report dated February 4, 1992.

[2] Industry standard for various meter sizes as adopted by the County.

PART VI - ALLOCATION

6.0 POLICY ON THE ALLOCATION OF WATER SUPPLY & SEWERAGE TREATMENT CAPACITY

ADOPTED: 6/28/94

6.1 PURPOSE

Title 9, Subtitle 5, (Environment Article) of the Annotated Code of Maryland, enables county comprehensive water and sewerage plans to provide for the orderly expansion of community and multi-use water supply and sewerage systems in a manner consistent with applicable county and local comprehensive plans. The statutory authority and regulatory requirements, as codified in the Code of Maryland Regulations (COMAR) 26.03.03, provide the basis for the establishment of allocation policies for water supply and sewerage services.

Further, the Charles County Commissioners recognize the value of such a policy and that this water supply and sewerage allocation policy is adopted in the best interest of the County. The Water and Sewer Allocation Policy presented herein is designed to:

A. Provide for public knowledge regarding available capacity in public water and wastewater facilities;

B. Establish a procedure for fair and equitable allocation of available capacity for public water and wastewater systems in such a manner as to protect the public health, safety, comfort, welfare, and water quality of the County;

C. Establish a method by which available capacity is calculated and allocated, and to assure that adequate capacity is available over time;

D. Establish the priority by which available water and wastewater capacity is apportioned;

E. Responsibly plan for the future growth of Charles County in accordance with the County's land use and growth management goals and objectives, as established in the Comprehensive Plan;

F. Wisely manage Charles County's water supply and sewerage treatment resources and to prevent the depletion of underlying water-bearing aquifers or the over-commitment of available sewer treatment capacity; and

G. Provide for the administrative procedures, and guidance for the allocation of water and sewer service in a reasonable, fair, and equitable manner.

6.2 APPLICABILITY

The following policy applies to all multi-use water supply and distribution systems and wastewater collection and treatment facilities owned, operated, and maintained by the Charles County Commissioners or for which the County acts as controlling authority. These include the following systems:

A. Water Supply and Distribution Systems

(1) Development District

(a) Waldorf
(b) Bryans Road
(c) Laurel Branch
(d) Eutaw Forest
(e) Strawberry Hills
(F) Bensville
(G) Brookwood Estates

(2) Outside of Development District

(a) Benedict
(b) Bel Alton
(c) Avon Crest
(d) Ellenwood
(e) Mariellen Park
(f) Newtown Village
(g) Mt. Carmel Woods
(h) Chapel Point Woods
(i) Spring Valley
(j) Cliffton-on-the-Potomac
(k) Oakwood
(l) Swan Point
(M) Beantown Park

B. Sewerage Collection and Treatment Systems

(1) Development District

(a) Mattawoman

(2) Outside of Development District

(a) Mt. Carmel Woods
(b) Cliffton-on-the-Potomac
(c) Cobb Island
(d) Swan Point
(E) Bel Alton

The Charles County Commissioners may incorporate future public water supply and sewer systems into this policy upon their dedication to the County. However, such systems should be consistent with the policies and intent of the Comprehensive Plan.

6.3 ALLOCATION OF AVAILABLE CAPACITY

A. An allocation shall be required for any project within a designated County water supply or sewerage service area, which requires public water or sewer treatment or both.

B. An allocation may be made only if facilities are in-place, under construction, shown in the current CIP program, or bonded for construction.

C. The County Commissioners have determined that it is in the best interest of the citizens of Charles County that allocation targets for available capacity be established for each water or sewer system subject to these regulations. These allocation targets are beneficial to the County and assure that the County does not over-allocate its water and wastewater resources. These allocation targets are established as part of this policy and contained in Appendix "J" for all water supply and sewerage treatment systems owned, operated, and maintained by the Charles County Commissioners. These targets may not be exceeded by the operating agencies of the County. Allocation may not be made for a system under moratorium.

On August 1, of each calendar year, the chief officials of the Charles County Departments of Planning and Growth Management and Public Works, and the Environmental Health Division of the County Health Department may submit a recommendation to the County Commissioners to amend these allocation targets as shown in Schedule A. The recommendations may also provide additional data concerning the available capacities for each system subject to this policy. Recommendations on whether a moratorium should be established, maintained, or under what conditions a moratorium should be lifted may also be made. These recommendations should be made in conformance with existing County ordinances and regulations and provide for the continued health, safety, welfare, and comfort of the citizens of Charles County. Upon receipt of these recommendations, the County Commissioners determine if an amendment to this Water Supply and Sewerage Treatment Allocation Policy is in the best interest of the citizens of Charles County. If an amendment is warranted, the County Commissioners will conduct a public hearing on the matter as part of the County's regular February 15 Water and Sewer Plan amendment cycle.

D. The County Commissioners, upon adoption of this policy, establish a bulk allocation system for the apportionment of water and sewer capacity. It is the intention of the County Commissioners to allocate capacity for multi-use water supply and sewerage systems under their ownership, operations, or maintenance. Capacity amounts are allocated based on the "Available Capacity" of that system as established in Schedule A of this policy. Available capacity is segregated into discreet amounts of reserve bulk allocations and standard bulk allocations.

Reserve bulk allocation is a discretionary percentage apportioned by the County Commissioners, and as a guideline should not exceed 5% of total allocations. The remaining percentage of the available capacity shall be considered bulk allocation. The County Commissioners may, at their discretion, adjust the percentage of allocatable capacities for residential, commercial, industrial, etc.

E. Unless otherwise specified through a supplemental policy, allocation of capacity shall be made on a first-come, first-served basis. Allocation amounts may not exceed the allocation targets and guidelines as established as 'Schedule A' of this policy. The allocation amounts shall be based on the operating data of the facilities. The Commissioners may not allocate under this policy if the available capacity is 15% or less of the rated capacity. The allocation of systems is regulated by a supplemental policy if this is the case, which enables the County to manage the remaining portion.

F. Where a supplemental policy exists, or at the discretion of the County Commissioners, the following order of priority shall be given to the allocation of available water supply and sewerage treatment capacity:

(1) Subject to maintaining the allocation targets as identified in this policy, the County Commissioners may allocate water supply and sewerage treatment capacity based on the following priority system.

(a) Reserved bulk allocations: A discretionary amount of bulk allocation apportioned by the County Commissioners. The Commissioners must specify discreet amounts of allocation and specific projects. Reserved bulk allocation is apportioned according to the following order of priority:

(i) Failing water supply or failing septic areas within designated service areas, including areas where service is petitioned from the County from residents, as well as public health hazard areas as is determined by the County Health Officer;

(ii) Affordable Housing project; and

(iii) A capital improvement project listed in the County's adopted CIP program for funding and implementation.

(b) Standard Bulk allocations: These allocations are apportioned by the Department of Planning and Growth Management, as designated by the County Commissioners, in the following order of priority:

(i) Existing residential, commercial, or industrial uses abutting distribution lines within designated service areas;

(ii) In-fill development of existing recorded lots which abut

distribution lines within designated service areas;

(iii) Commercial and industrial projects, if in conformance with the Comprehensive Plan.

(iv) Those properties with preliminary plat approval granted by the Charles County Planning Commission. These properties shall be designated as "W-3" for water allocations and "S-3" for sewer allocations on the Water and Sewer Plan maps and listed on the Charles County Allocation Eligibility List. If applicable, capital improvement projects necessary to provide service to these areas must be made within the first three years of the County's adopted CIP program; and

(v) New residential and non-residential projects for water and sewer allocation service for which allocation has not yet been made.

6.4 ALLOCATION PROCESS

A. An allocation shall be required for any residential, commercial, industrial, institutional, or governmental project within a designated service area which requires either public water or public sewer service or both. Areas available for allocation shall be designated by at least a "W-3" category for water service and a "S-3" category for sewer service as shown in the Comprehensive Water and Sewerage Plan, and its accompanying maps.

B. The application process shall use forms provided by the County.

C. These application forms shall include, but not be limited to, the following information:

(1) Location;
(2) Specific address, plus location, description and tax and parcel numbers for the subject property.
(3) Name, address and telephone number of developer, builder or owner
(4) Type of project, with Tax Identification Number
(5) Area of project property in square feet and acreage
(6) Number of lots or units to be developed, and type of unit(s)
(7) Phasing Plan or number of units to be constructed per year
(8) Projected water demand (with basis for projection and connection data).
(9) Projected sewage flow (with basis for projection and connection data).
(10) Date application is filed.
(11) Signature of applicant.
(12) Action taken (granted, conditioned, denied, amount of allocation, number limitations, date action taken, signature of acting official, time limitations, time extensions or other changes).

D. The Director of Planning and Growth Management, or his designee, is authorized to approve allocations for water supply and/or sewer service in conformance with this policy, and in the manner established in the "Administrative Procedures for the Allocation of Water and Sewer Capacity".

6.5 TRANSFERS OF ALLOCATIONS

A. A water and/or sewer allocation may be transferred from one developer or builder to another developer or builder for the same project subject to the same conditions and time limit as the original allocation. A water and/or sewer allocation is granted for a specific site plan or subdivision and may not be transferred to another project.

B. A grant of special exception, zoning reclassification or change of use of any project does not entitle a person, corporation or public entity to an allocation, or an increase in a previous allocation, of water and/or sewer capacity. If a grant of special exception, zoning reclassification or change of use within a part of any project reduces the water and/or sewer capacity needed for that project, the excess allocated capacity may be transferred within the remainder of that project but may not be transferred to another project within the service area. Said excess allocated capacity, if not transferred within a specific project, shall be duly allocated to the project next in line on the priority listing.

C. All requests for a transfer of allocation shall be made in writing to the County with reasons given for the need for a transfer. The County shall set appropriate fees for the transfer of water and/or sewer allocations. The Charles County Commissioners may elect to decline such a request for a transfer of allocation if such request is deemed to be not in the best interest of the health, safety, welfare, or convenience of the citizens of Charles County.

6.6 TIME LIMIT ON ALLOCATIONS

A. Whenever preliminary plans, site plans or other planning Commission reviews are part of a project, an allocation will not be granted until the plans have been approved or the review has been completed. Any allocation granted after the adoption of this policy shall be valid for a period of eighteen (18) months from the date granted. One extension of time may be granted for a period not exceeding eighteen (18) additional months. Such request for an extension of time shall be made in writing to the County with reasons given for the need for the extension. Regardless of the existence of a valid utility permit, an allocation becomes void if the project for which it was granted is not available for hook-up within the applicable time period. The County shall set appropriate fees for the extension of time for water and/or sewer allocations. The Charles County Commissioners may elect to decline such a request for an extension of time if such request is deemed to be not in the best interest of the health, safety, welfare, or convenience of the citizens of Charles County. Any period of time attributable

to County government processing of an extension of time limit, transfer of allocation or other change shall not be counted as part of the time limit of the allocation.

6.7 SUPPLEMENTAL SERVICE AREA POLICIES

The policies pertaining to specific water supply and sewerage treatment service areas provide additional guidelines and regulations for the allocation of water and sewer resources. In areas where the foregoing policy and the supplemental policy conflict, the supplemental policy shall prevail. Supplemental Policies immediately follow this general policy. However, the systems requiring a supplemental policy are listed below and include:

A. Waldorf Water System

B. Bryans Road Water System

C. Mattawoman Sewer System

D. Cobb Island Sewer System

E. Cliffton-on-the-Potomac Sewer System

F. Swan point system

6.8 SEVERABILITY

If any section, subsection, sentence, phrase, or portion of these Regulations is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed a separate, distinct, and independent provision and said holding shall not affect the validity of the remaining portion of these regulations; it being the intent of the County Commissioners of Charles County that these regulations shall stand, notwithstanding the invalidity of any section, subsection, sentence, clause, phrase or portion thereof.

A. Supplemental Policy: Mattawoman Sewer System

The County Commissioners of Charles County established the following policy in the best interests of the County. The Mattawoman Sewer Service Area corresponds to the area delineated in the Comprehensive Plan as the Development District. This area is planned to receive 75% of the County's future growth by 2010. The Comprehensive Plan establishes a target growth rate of 2.5% for the Development District. Further, the County Commissioners upon adoption of this policy do establish that:

(1) Sewer allocations shall be approved for a target of 800 new residential units per year, cumulatively, within the sewer service area.

(2) Un-utilized or forfeited sewer allocations may be carried over from year-to-year if the 800-unit target is not reached. An un-utilized or forfeited allocation may be carried over for a maximum of three (3) years.

(3) Sewer allocations for commercial, business park, or industrial zoning, as consistent with the Comprehensive Plan and Zoning Ordinance are not allocated under the policy, but under foregoing general policy. However, the County Commissioners may, at this discretion, add commercial, business park, or industrial uses to the residential uses regulated by this policy.

(4) Residential sewer allocations shall be granted in the order in which projects appear on the Water and Sewer Allocation Eligibility List. The maximum number that any project may receive in the first 18 months and in any calendar year is as follows:

For Residential-High Density zone: 75 units
For Residential-Medium Density zone: 60 units
For Residential-Low Density zone: 50 units

In Planned Residential Development, Mixed-Use, and Planned Mobile Home zones, annual allocation may be granted based on an equivalent density. The project allotments stated above may be supplemented in an amount not to exceed an additional 25% of the total number of units for which the project was approved by the Planning Commission. In no circumstances, however, may a single project receive 50% or greater of the target allocations as set by the Commissioners for that year. Projects shall be placed on this list in the order which they receive preliminary subdivision or site plan approval from the Charles County Planning Commission. If two or more projects receive preliminary approval on the same date, the order of position shall be determined by the order which the projects were originally submitted for review. The list shall be maintained by the Department of Planning and Growth Management.

(5) Sewer allocations may be granted for single family residential projects containing less than six lots upon request of the property owner. No more than 25 such lots shall be approved in any calendar year. No individual, project, or corporation may receive allocations for more than five lots in any 2 year period under this provision.

(6) Allocation Approval Process

(a) Before seeking approval for a sewer allocation to serve a residential project, the applicant shall have obtained preliminary approval of a subdivision plan or site plan from the Charles County Planning Commission and be placed on the Water and Sewer Allocation Eligibility List.

(b) Within one week of the effective date of this policy and each August 15 thereafter, the Department of Planning and Growth Management shall notify by certified mail the owners of the residential projects on the Water and Sewer Allocation Eligibility List of their opportunity to apply for allocations.

(c) The Department of Planning and Growth Management shall allow those residential projects currently on the Water and Sewer Allocation Eligibility List 30 calendar days from the date of the notice to apply for allocations.

(d) The Department of Planning and Growth Management shall notify all applicants by certified mail within 15 calendar days after the application closing date what action has been taken on the applications.

(e) The applicant shall have 60 calendar days from the date of notification of approval to make a deposit of 20% of the current sewer connection fees on lots or units for which allocation is sought. The allocation shall be granted upon payment of the 20% deposit. Failure to pay the 20% deposit within the 60-day period shall result in forfeiture of the allocation.

(f) Within 18 months of the date of the grant of an allocation, the applicant (or successor or assignee) shall record the final site plan or subdivision plat for the subject project. Failure to do so shall cause a forfeiture of the allocation and 50% of the deposit.

(g) At the time of final site plan or plat approval, the applicant shall pay an amount equal to 50% of the sewer connection fees in effect at that time for the number of lots or units recorded, less the amount of the initial deposit. Thereafter, upon recordation of the final subdivision plat, the allocation shall be irrevocable.

(h) The remaining portion of the then current sewer connection fee shall be paid at the time the utility permit is issued for each lot or unit. The amount of the remaining portion shall be computed based upon the sewer connection fee in effect at the time of utility permit application less any previous deposits.

(i) The applicant may request an extension beyond the 18-month period if he can show substantial development progress and that delays are beyond his control and not his fault.

(j) No application will be accepted for an allocation on a project that has had a previous allocation forfeited until the expiration of one year after the end of the 18-month period.

(k) When an allocation is forfeited, the resultant number of units shall be offered to those applicants whose allocation requests have been denied during the most recent application cycle as a result of insufficient allocations.

(l) If an application for allocation of units within a project does not cover all units within the project, the remaining units shall retain the same priority as the original project for allocations in subsequent years.

(m) Approval of an allocation for a portion of a site plan or subdivision project in no way assures the future availability of sewer capacity on demand or service for lots or units other than those with approved allocations.

B. Supplemental Policy: Cobb Island Sewer System

This policy establishes supplemental regulations for use of the Cobb Island sewer system and outlines the method in which sewer allocation will be allocated for that system. The Cobb Island public sewer system is an innovative/alternative treatment process in that it is a lagoon and spray field/land application system and therefore has specific operating parameters. This policy is intended to address the allocation issues in the Cobb Island Sewer Service Area.

(1) Service Area

The Cobb Island sewer system is not to be expanded beyond its present limits, as is consistent with the Cobb Island 201 Facilities Plan. The sewer service area is further delineated on the Comprehensive Water and Sewerage Plan Maps, which reinforce the Water and Sewer Plan text. The attached Appendix "A-1" illustrates the boundaries of the Cobb island sewer service area.

(2) Allocation of Available Capacity

Effective October 3, 1996, the County Commissioners of Charles County will be authorized to allocate sewer connections equivalent to 27,000 gallons per day (gpd), or one hundred eighteen (118) equivalent dwelling units (EDU) for residential, and 9 EDU allocations set aside for the new Cobb Island Fire Department building. The County Commissioners find, and the Maryland Department of the Environment has agreed, that there is a sufficient capacity in the system to accommodate these allocations. Therefore, it is the determination by the Charles County Commissioners that the Cobb Island Sewer System has reached a stable state, with all outstanding allocations being utilized. The County has acted in good faith with the Maryland Department of the Environment, and submits all required operational reports, and dutifully makes improvements at the Cobb Island facility, and the facility is operating in accordance with the NPDES Permit.

(3) Bulk Allocation System

Allocation of sewer capacity will be made according to the following bulk allocations. The bulk allocation system supersedes the system found in the general policy and applies only to the Cobb Island facility.

Capacity will be allocated in the following manner:

(a) Public health hazard, as is established by the Director of Environmental Health, Charles County Division, Health Department. All such properties have connected to the sewer system;

(b) Existing residential units which are situated on recorded lots. All such properties have connected to the sewer system or have orders issued by the Charles County Health Department;

(c) The remaining 20 equivalent dwelling units (EDU) of sewer allocations, reserved for new commercial connections, have been assigned to new residential connections. Based on a request submitted by the Cobb Island Fire Department, the County Commissioners reserved 9 EDU allocations for a new Cobb Island Fire Department building and converted the remaining 11 EDU allocations for residential connections.

The County Commissioners reserve the right to redistribute the sewer allocations because of demand or in an emergency situation.

(4) Allocation Approval Process

Upon being placed on the "Cobb Island Sewer Allocation List", the PGM department will determine the specific order of allocations and will make appropriate recommendations and be prepared to present these in an open and public forum for the County Commissioners' consideration if necessary and/or upon request of the applicant.

The approval process for sewer allocations will be as follows:

(a) Prior to receiving sewer allocation, an applicant must be placed on the "List". The "List" will be established based on criteria described in Section 6.8.B.4.a through 4.c.

(b) Upon meeting all the criteria under Section 6.8.B.4, the applicant is notified of tentative allocation approval. The applicant has thirty (30) calendar days to pay 50% of the current sewer connection fees less the application fee (20% of the sewer connection at time of application as required under Section 6.8.B.4). Failure to pay the deposit within the 30 day time period will result in forfeiture of the tentative allocation. Any forfeited allocation will be offered to the next property owner, or corporate entity, on the "List".

(c) The fee for commercial projects will be determined by the equivalent meter size required for that development based on the number of fixtures.

(d) Sewer allocations are valid for an 18 month period from the date of approval; 24 months if it is commercial. A building permit must be issued within 6 months of receiving the allocation; nine (9) months if it is commercial. The applicant must begin work for the lot which received allocation within 6 months of receiving the building permit; nine (9) months if it is commercial.

(e) Failure to meet any deadline will be considered as condition to void the allocation and will also result in losing 1/2 of the paid connection fees. Building permit review fees will not be returned. Allocations forfeited will be granted to applicants based on their position on the "List".

(f) After this period, the allocations will be voided and forfeited by the applicant. The County reserves the right to re-allocate any forfeited allocation. If a property owner or corporate entity is granted an allocation which was forfeited, that subject property owner, or corporate entity, must pay 50% of the current sewer connection fee applicable at the time less any previously credited payments.

(g) Allocations will be offered to properties that do not abut a sewer line only after all projects that abut a sewer line that were on the "List", or those properties that were denied placement on the "List", are offered allocation.

(h) The remaining portion of the current sewer connection fee will be paid at the time the utility permit is issued for each lot or commercial development.

The maximum amount of allocations which can be granted to an individual or corporate entity is equal to one (1) equivalent dwelling unit per buildable lot as established in Section 6.8.B.4.a); five (5) EDU's if it is a commercial project located on appropriately zoned property.

(5) Time Extension

The County Commissioners reserve the right to consider all extensions of time for issuance of a building permit as well as the time period for commencing with the construction of the dwelling.

(6) Cobb Island/Swan Point Agreement

The interconnection with the Swan Point facility will be regulated by the "General Conditions" as previously agreed to by Charles County and the Maryland Department of the Environment. The County agrees:

(a) To maximize the use of the Cobb Island Land Treatment System as originally planned;

(b) To prepare a performance report on the Cobb Island spray fields after two years of operation to determine its actual capacity. (this requirement has been met); and

(c) That the Cobb Island sewerage facilities are to be used up first, up to the rated capacity of the facility. Once the capacity of the Cobb Island Waste Water Treatment facility is fully utilized, the Swan Point Treatment facility may be used to treat excess Cobb Island flows. This is necessary as there are undeveloped lots in the Cobb Island Sewer area. The Cobb Island Wastewater Treatment facilities have a combined capacity to the existing development and new development. Thus, the interconnection with Swan Point will be used on a regular basis to serve new homes at full build-out of the service area in accordance with Maryland Department of the Environment approval. In addition, should an emergency occur such that flows will need to be diverted from the Cobb Island facility to the Swan Point facility, this may be done on a temporary basis only until the flows could be accommodated at the Cobb Island facility. Whenever Swan Point is utilized for Cobb Island sewer flows (either on a continuing basis or on an emergency basis), such utilization will be reported to the Maryland Department of the Environment in the monthly operating reports for the swan point facility.

(7) Transfer of Allocations

A sewer allocation may be transferred from one owner or corporate entity to another owner or corporate entity with the same conditions and time limit as the original allocation. An allocation is granted for a specific lot(s) and may not be transferred to another project.

C. Supplemental Policy: Cliffton-on-the-Potomac System

The Cliffton-on-the-Potomac sewerage system is currently under a sewer capacity moratorium. There is insufficient treatment capacity within the Cliffton treatment facility, and additional capacity is not available at this time. Therefore, the County Commissioners direct that no further allocation of sewer capacity be granted, and that no further sewer systems be connected to the Cliffton-on-the-Potomac system. This moratorium may be lifted upon the expansion of the Cliffton-on-the-Potomac plant to accommodate additional sewer treatment capacity and an increase in the rated capacity of the Cliffton plant by the Maryland Department of the Environment. The priority of allocations will determined at that time.

In the interim, the Charles County Commissioners have determined it to be in the best interest of the county to allow lots of record in Cliffton as of October 16, 2000, to perform percolation tests. If the property is approved for on-site sewage disposal, an On-site Sewage Disposal system (OSDS) can be installed on the lot, thereby allowing the development of the lot. The Commissioners are requiring lots with approved OSDS to complete an interim sewer agreement. An interim sewer agreement states that the OSDS will be used on an interim basis and when capacity becomes available in the sewage treatment plant, the lots will be required to connect to the sewer system and abandon the OSDS.

Any new developed lots will be required to connect to the public water system and will need to obtain allocations. Lot owners will be responsible for connecting to the public water system and providing any necessary road improvements. If the lots front a road that is not owned by the County, there will need to be a signed agreement stating that the road is unimproved and not in the County's transportation plan for improvements. All other County, State, and Federal regulations still apply to the building permit process.

D. Supplemental Policy: Waldorf Water System

The Waldorf Water System serves the most intensely developed area of the County. This intensity of use is expected to continue into the future. Therefore, the County Commissioners adopt this policy with the intent of managing this resource for its long-term use. The policy is stated as follows:

(1) That the Waldorf Water Service Area shall not be expanded beyond the limits of the Development District, as delineated by the Zoning Ordinance maps, or the Waldorf Water Zone, as delineated on the Water and Sewer Plan maps. Exceptions may be made in an emergency situation to correct a failing system.

(2) The rated capacity of the system shall be determined by the combined production capacity of the wells serving the Waldorf system less the capacity of the largest producing well, divided by a peaking factor in accordance with the Code of Maryland Regulations (COMAR) 26.03002. The final system flow limit is the rated capacity of the entire system or the

Maryland Department of the Environment Ground Water Appropriation Permitted amount, whichever is less. Future additional capacity can be incorporated if the project is included in the CIP funding program list for the next 1 to 3 years.

Further, the Department of Planning and Growth Management shall utilize the findings of the Water and Sewer Allocation Committee dated March 8, 1985, to calculate maximum supply, peaking factors, system average flow limit, and final allocation limit.

A quarterly report on the status of allocation within the Waldorf Water Service Area is available from the Department of Planning and Growth Management.

(3) Sewer allocations for commercial, business park, or industrial zoning, as consistent with the Comprehensive Planning and Zoning Ordinance are not allocated under the policy, but under foregoing general policy. However, the County Commissioners may, at this discretion, add commercial, business park, or industrial use to the residential uses regulated by this policy.

(4) Residential water allocations shall be granted in the order in which projects appear on the Water and Sewer Allocation Eligibility List. The maximum number that any project may receive in the first 18 months and in any calendar year is as follows:

For Residential-High Density zone: 75 units
For Residential-Medium Density zone: 60 units
For Residential-Low Density zone: 50 units

In Planned Residential Development, Mixed-Use, and Planned Mobile Home zones, annual allocation may be granted based on an equivalent density. The project allotments stated above may be supplemented in an amount not to exceed an additional 25% of the total number of units for which the project was approved by the Planning Commission. In no circumstances, however, may a single project receive 50% or greater of the target allocations as set by the Commissioners for that year. Projects shall be placed on this list in the order which they receive preliminary subdivision or site plan approval from the Charles County Planning Commission. If two or more projects receive preliminary approval on the same date, the order of position shall be determined by the order which the projects were originally submitted for review. The list shall be maintained by the Department of Planning and Growth Management.

(5) That applicants for water service under this policy may be required to participate in the County's fire protection, distribution line looping, the Urban Core infrastructure enhancement program, and the adequate public facilities provisions (when adopted) - dependent on the size of the project and location of the project within the service area. This may require on-

site improvements, as is consistent with the best interests of the County. If a project will adversely affect existing infrastructure, the applicant shall make all necessary on-site and off-site improvements.

(6) That future water resources shall be derived primarily from the Patapsco and the Patuxent aquifers. Further, water usage of the Magothy aquifer is restricted, except on a short-term contingency basis with the approval of the Maryland Department of the Environment.

(7) Existing shallow wells within the Waldorf Water Service Area are encouraged to cease operation and to become incorporated into the Waldorf public water system. Replacement of existing wells is permitted within the service area.

(8) Allocation Approval Process

(a) Before seeking approval for a water allocation to serve a residential project, the applicant shall have obtained preliminary approval of a subdivision plan or site plan from the Charles County Planning Commission and be placed on the Water and Sewer Allocation Eligibility List.

(b) Within one week of the effective date of this policy and each August 15 thereafter, the Department of Planning and Growth Management shall notify by certified mail the owners of the residential projects on the Water and Sewer Allocation Eligibility List of their opportunity to apply for allocations.

(c) The Department of Planning and Growth Management shall allow those residential projects currently on the Water and Sewer Allocation Eligibility List 30 calendar days from the date of the notice to apply for allocations.

(d) The Department of Planning and Growth Management shall notify all applicants by certified mail within 15 calendar days after the application closing date what action has been taken on the applications. Notification of potential water allocation may correspond with notification for potential sewer allocation.

(e) The applicant shall have 60 calendar days from the date of notification of approval to make a deposit of 20% of the current water connection fees on lots or units for which allocation is sought. The allocation shall be granted upon payment of the 20% deposit. Failure to pay the 20% deposit within the 60-day period shall result in forfeiture of the allocation.

(f) Within 18 months of the date of the grant of an allocation, the applicant (or successor or assignee) shall record the final site plan or subdivision plat for the subject project. Failure to do so shall cause a forfeiture of the allocation and 50% of the deposit.

(g) At the time of final site plan or plat approval, the applicant shall pay an amount equal to 50% of the water connection fees in effect at that time for the number of lots or units recorded, less the amount of the initial deposit. Thereafter, upon recordation of the final subdivision plat, the allocation shall be irrevocable.

(h) The remaining portion of the then current water connection fee shall be paid at the time the utility permit is issued for each lot or unit. The amount of the remaining portion shall be computed based upon the water connection fee in effect at the time of utility permit application less any previous deposits.

(i) The applicant may request an extension beyond the 18-month period if he can show substantial development progress and that delays are beyond his control and not his fault.

(j) No application will be accepted for an allocation on a project that has had a previous allocation forfeited until the expiration of one year after the end of the 18-month period.

(k) When an allocation is forfeited, the resultant number of units shall be offered to those applicants whose allocation requests have been denied during the most recent application cycle as a result of insufficient allocations.

(l) If an application for allocation of units within a project does not cover all units within the project, the remaining units shall retain the same priority as the original project for allocations in subsequent years.

(m) Approval of an allocation for a portion of a site plan or subdivision project in no way assures the future availability of water capacity on demand or service for lots or units other than those with approved allocations.

E. Supplemental Policy: Bryans Road Water System

The County Commissioners, upon adoption of this policy, enact a water allocation policy for the area served or planned to be served by the Bryans Road water system. The policy is enacted to:

(1) Manage the water resources of the Bryans Road area in a manner consistent with the existing water users and future development patterns; as establish in the Charles County Zoning Ordinance; and

(2) Prevent the depletion of aquifers underlying the Bryans Road area, in accordance with the State's groundwater appropriation permit program and polices contained within this Comprehensive Water and Sewerage Plan.

Further, the County Commissioners have determined that:

(a) The service area may not be expanded beyond the limits of the Development District, unless such extension is necessary to correct a public health situation.

(b) The rated capacity of the system shall be determined by the contained production capacity of the wells serving the Bryans Road system minus the capacity of the largest producing well, in accordance with the Code of Maryland Regulations (COMAR) 26.03.02.

(c) The County Commissioners are given authority under this supplemental policy to require interconnection of the system in an area corresponding to the area delineated on the Comprehensive Water and Sewerage Plan maps, which accompany this document.

(d) The priority system established under Paragraph IV (F) shall apply in this policy. Further, the County Commissioners are given the authority to suspend the issuance of future service connections for a specified period and may place the area under a water service connection moratorium should circumstances warrant. If such section is taken, the County Commissioners should plan, or implement plans for future improvements to augment the systems.

(e) The County Commissioners have determined that, in accordance with the findings of the Bryans Road Water Study, that certain provision should occur for the future of the system.

(i) That a system of coordinated wells be established strategically located in the Bryans Road area;

(ii) Water for public uses shall be derived from deep aquifers;

(iii) Water withdrawal shall not exceed the amounts stated in the Bryans Road Water Study; and

(iv) The County Commissioners shall seek a long-term water supply strategy for the area. These strategies, may include but are not limited to, connection with the Washington Suburban Sanitary Commission, interconnection with the Waldorf System, or by other alternatives.

F. Supplemental Policy: Swan Point

Through 2006, the swan point sewage treatment plant has been limited by a treatment capacity of 70,000 gallons per day (gpd). A bulk sewer allocation for the community was issued to the original developer based on the docket 250 developer agreement to expand the treatment plant. In 2004, the NPDES permit was expanded to accommodate proposed growth in the swan point development, totaling 600,000 gpd. Allocation of treatment capacity will be granted as a bulk sewer allocation for the residential and commercial units within the Swan Point development up to 530,000 gpd of capacity. Allocations of up to 70,000 gpd will be granted to applicants outside of the swan point development through the County's supplemental allocation procedures. Currently, the plant has been upgraded to a capacity of 300,000 gpd with allocations of up to 35,000 gpd to be granted to applicants outside of the Swan Point development a flow factor of 230 gpd per sfd has been designated for allocating capacity in the Swan Point sewer system.

The groundwater appropriation permit (gap) for the swan point community was amended in 2006 to 500,000 gpd. a flow factor of 230 gpd per sfd has been designated for allocating capacity in the swan point water system.

6.9 POLICY ON THE ALLOCATION OF RECLAIMED EFFLUENT SUPPLY

The Charles County public effluent system is serviced by several small treatment plants and one large treatment plant, which has a total capacity of 20 mgd. In concurrence with water conservation provisions, utilizing reclaimed effluent for industrial and/or outdoor use is allowed in accordance with the following policy.

A reclaimed effluent purchase agreement between the county commissioners of Charles County (Commissioners) and the purchaser must be developed and signed for the use of Mattawoman WWTP reclaimed effluent, unless the bulk allocation requirements as described in section 6.9D below are met. The Mattawoman WWTP currently discharges 10.8 mgd of reclaimed effluent during the non-peak season, (October-March) according to Charles County Department of Public Works report entitled "wastewater flows, county operated systems, fiscal year 2008".

A. Existing Purchase Agreements

A reclaimed effluent purchase agreement between the County Commissioners of Charles County (Commissioners) and Panda Brandywine, L.P. was signed on September 13, 1994 for use of up to 2.7 mgd of the Mattawoman WWTP reclaimed effluent, with and expected average usage of 1.5 mgd. a sixteen inch reclaimed effluent supply line was designed and sized to supply 3.0 mgd to transport the reclaimed effluent from the Mattawoman WWTP to the Panda Brandywine, L.P. facility located in Prince George's County, as shown in Appendix “k”. The average usage is 0.5 mgd per Department of Public Works report for FY 2009.

Therefore, the available reclaimed effluent supply to be allocated is 1.5 mgd (total

design capacity less the average usage). Of the 1.5 MGD available to allocate, only 0.3 MGD will be for "firm" users (total design capacity less the amount granted to Panda). The remaining 1.2 MGD will be for "non-firm" users. Allocation of reclaimed effluent to firm or non-firm users will be determined based on type of use and availability. A bulk allocation of 0.010 mgd for firm users and 0.040 for non-firm users has been set aside for Prince Georges County. Please see section 1.0 for definitions on firm and non-firm users. Currently, Panda Brandywine, L.P. is actually using an average of 0.5 mgd.

B. Allocation of Available Reclaimed Effluent

The Commissioners have the right to permit and construct connections to the reclaimed effluent supply line so as to make available reclaimed effluent for the Commissioners and other users. Allocations will be granted consistent with the bulk allocations as detailed in Section 6.9.D of this Ordinance. All authorization of reclaimed effluent supply will require a legal agreement between the County Commissioners and the user of the reclaimed effluent. The agreement shall contain language acknowledging that the purchaser has priority over the use of the amount of reclaimed effluent per the agreement with Charles County Commissioners and that service for Non-Firm users may be interrupted.

C. Bulk Allocations (Priority)

The available bulk allocations are determined by the agreement referenced in Section 6.9 of this Ordinance. The Director for the Planning and Growth Management Department (PGM) will recommend to the Commissioners the bulk allocation amount as needed. The bulk allocations guidelines for distribution are as follows:

Bulk Allocation	Firm	Non-Firm
County Commissioner/Fireflow Project	10.00%	40.00%
Commercial/Industrial Project	6.67%	26.67%
Agriculture Use	1.33%	5.33%
Irrigation	1.33%	5.33%
P.G. County	0.67%	2.67%
Total	20.00%	80.00%

D. Allocation Approval Process

(1) Before seeking approval for allocation, the applicant shall have approved construction drawings as issued by the County.

(2) An allocation application must be completed by the person seeking connection to the reclaimed effluent supply line. Detailed information on the specific use of the reclaimed effluent and the estimated demand will be required. Furthermore, the applicant will have to indicate if their request is for Firm or Non-Firm usage.

(3) Within 15 days of receiving the application, the County shall notify all applicants of the decision concerning the request to utilize the reclaimed effluent.

(4) Decisions on approving allocation requests will be based on the following criteria:

(a) Availability of overall reclaimed effluent capacity.

(b) Availability of bulk reclaimed effluent capacity.

(c) Intended use and possible impact to the County systems.

(5) Upon receiving notification of tentative allocation approval, the applicant has 60 days to pay a deposit equivalent to one year's reclaimed effluent purchase costs which will be calculated using the reclaimed effluent demand figures provided on the application form. For Firm users, the applicant must pay a deposit equivalent to two (2) years reclaimed effluent purchase costs within sixty (60) days. The deposit will be returned to the applicant if the reclaimed effluent service is terminated within two (2) years of service.

(6) Upon payment of the deposit, a final allocation will be granted.

E. Termination of Service

If for any reason the owner fails to pay the necessary user and operation and maintenance fees specified under Section 6.9.G, the County may terminate service. Thirty (30) day notification will be provided prior to service being cut off by the County.

Users can request termination of service by notification in writing. If the termination is completed within two (2) years of commencing service, the applicant will be refunded the paid deposit. This will permit those requests that are classified as "temporary" more flexibility in using the reclaimed effluent and discourage the use of the County's domestic water system. This would apply to major construction projects, temporary industrial uses, etc.

F. Reclaimed Effluent Usage Fee

The following methodology will be used to calculate the monthly usage fee for all users of the reclaimed effluent:

(1) Purchase Fee: $8.00/1,000 gallons used

(2) O & M Fee: 25% estimated O & M cost for providing reclaimed effluent

The total usage fee equals the sum of (1) and (2) above.

Please note that item (1) is subject to change on an annual basis. See the latest Fees and Charges Schedule for the current Purchase Fee.

G. Terms of Allocation Agreements

(1) Allocation of the reclaimed effluent will be good for a twelve month period upon which connection to the reclaimed effluent supply line must be completed. Failure to connect within the twelve month period will result in forfeiture of the allocation and return of 50% of the deposit.

(2) A statement concerning the purchaser's priority to their respective reclaimed effluent supply will be included in all agreements and acknowledgment of the possibility of service being interrupted for Non-Firm users.

(3) The applicant will be required to furnish a meter, valve, backflow preventer and other equipment in accordance with the requirements of the County for connection to the reclaimed effluent supply line.

(4) All pipelines constructed which are transporting the reclaimed effluent must be marked in accordance with the requirements of the County.

PART VII - FRONT FOOT ASSESSMENT

7.0 POLICY OF FRONT FOOT ASSESSMENT

Properties which abut a County-built water and/or sewer line may be subject to a front foot benefit assessment as provided for in the Code of Charles County Maryland Chapter 97, Article "I", Section "H".

7.1 DETERMINING THE AMOUNT OF FRONT FOOT MEASUREMENT

A. The County will determine the front-foot charge from record plats, deeds or other available information of the property and complete the Notice of Front-Foot Assessment Form. (See Appendix “L”)

B. The method of measurement as indicated in Appendix "M" will be utilized for the purpose of measuring for front foot charges.

7.2 APPEAL PROCESS

A. Within thirty (30) days from the date of the notice of front-foot assessment, the property owner must make a written appeal to the County.

B. The appeal must include the record plat of the owners property and a written explanation of the objection to the front foot assessment.

C. After review the County will send a written decision of the appeal to the property owner. The decision will be considered final.

7.3 LEVY AND/OR ABATEMENT

A. Upon elapse of the thirty day appeal period or the rendering of a decision to an appeal the County will forward a completed Levy/Abatement form to the County Treasurer for the assessment to be placed on the property tax roll. (see Appendix "N")

PART VIII - DESIGN CRITERIA

8.0 GENERAL

This section is to offer appropriate guidance to the public for basic water and sewer design criteria and reference to current construction specifications, which shall include those contained within this ordinance, the Charles County Standard Specifications for Construction Manual, the Charles County Water and Sewer Detail Manual**,** the Charles County Plan Preparation Package, the Maryland State Plumbing Code, the Maryland Department of the Environment, the Code of Maryland Regulations (COMAR)**,** Pipeline Design for Water and Wastewater, Recommended Standards for Wastewater Facilities (commonly known as the "Ten States Standards"), Recommended Standards for Water Works (commonly known as the "Ten States Standards") and any other Local, State or Federal agency governing water and sewer design and/or construction.

8.1 WATER MAINS

A. General Requirements

(1) Water plans submitted for review and approval to the County will not be required to include the standard details on the plans. The plans however must include a table, on the cover sheet, listing by detail number and name all water details which are applicable to the project. In cases where the County has no adopted standard detail for a specific construction method, the engineer must submit a special detail to the County Water & Sewer Engineer for review and approval. Once approved, the special detail shall be placed within the plans with notes in plan and profile on all applicable sheets referring to the special detail.

(2) Lines that serve two or more properties will be dedicated to the County.

B. Demands

The design engineer who is responsible for the extensions of the distribution mains shall follow the guidelines in this manual for the derivation of design flows. The calculation of water demands will usually require extension of the average daily rate for the facility, application of a peaking factor to derive the maximum daily rate, then addition of the fire flow requirement. System losses have been accounted for in the peaking factors. (See Appendix **"**O")

C. Hydraulic Computations

(1) General

The hydraulic design of water mains shall be in accordance with Pipeline Design for Water and Wastewater, ASCE, 1992 (or latest edition) and the additional guidelines and criteria in this ordinance. Computations shall be submitted for all water designs and shall include average and peak

demands, fire demand, and future requirements. Design computations for all components of the water system shall be submitted.

(2) Design Flows and Residual Pressures

Service connections, distribution mains and transmission mains shall be sized based on the following design flow rates and residual pressures:

Maintain a minimum residual pressure of 20 psi for peak hourly flow and maximum daily flow plus fire flow at ground level anywhere in the system

AND

Maintain a minimum residual pressure of 65 psi for average daily flow at the service connection.

In some locations, the main size will be determined by the flow rate required to refill a storage facility which may be more critical than the above requirements or by main sizes shown in the Comprehensive Water and Sewer Plan. (See Appendix "O")

(3) Flow Velocities

Although the flow velocities and direction may vary considerably in distribution mains, there are upper and lower velocity bounds that indicate to the design engineer that design weaknesses may exist. The following is a useful guideline:

- Peak flow velocities shall not be greater than 7 feet per second.

(4) Hazen-Williams "C" and Minor Losses

The total head loss at the point of discharge for design flows shall be the sum of both frictional and minor losses. The elevation difference between the source and discharge point shall be algebraically added to the total head losses.

Head losses for new pipes shall be computed using the nomograph in Appendix "P" and the following coefficients:

TYPE	PIPE DIAMETER	HAZEN-WILLIAMS "C"
SERVICE CONNECTIONS		
Copper	3/4" - 3"	130
PVC	3/4" - 4"	130
DIP	3"	100
DISTRIBUTION MAINS		
PVC	4" - 8"	120
PVC	8" - 12"	130
DIP	4" - 8"	100
DIP	10" - 12"	110
DIP	16" - 24"	120
TRANSMISSION MAINS		
All Material	16" - 20"	120
All Material	24" and larger	130

Minor losses due to fittings and valves shall be included as equivalent lengths of pipe as shown in Appendix **"Q"** or as fractional losses in velocity head as described in Pipeline Design for Water and Wastewater, ASCE, 1992 (or latest edition) or other hydraulics texts.

D. Distribution Mains

(1) General

(a) Extensions to distribution mains will normally be on a grid basis with interconnecting nodes at street intersections. Lines are to be "looped" to the maximum extent possible to provide redundancy and to avoid dead ends in the system. If looping cannot be provided in accordance with the County request, then written justification shall be provided to the County for review and approval. Approval of the justification shall be determined on a case by case basis.

(b) Ductile iron pipe and restrained joints, in accordance with the County Standard Specifications for Construction Manual and Standard Detail Manual, shall be used for jack and bore carrier pipe.

(c) Water mains terminated for future extension shall have a fire hydrant and valve provided as specified in Section 8.1.D.8.b.iii such valves must be anchored to allow removal of the fire hydrant for extension upon closing.

(d) Flag Lot Water Utilities

(i) For a two (2) flag lot maximum, service laterals will be provided off of the main and include a curb stop and box or meter vault at the right-of-way or easement line. Water service for each lot shall be located on each side of the driveway. Adequate easements are to be provided on both sides of the water service and must extend outside of the common access easement if necessary. The water service must be constructed in conjunction with the main from the curb stop & box to the building lot and capped closed for future connection. The end of the service should be marked in accordance with the County Standard Detail Manual. Extension of the service as indicated above will prevent problems associated with the construction of the driveway prior to the construction of all water services.

(ii) For three (3) or more flag lots, provide an extension of the water main to the last lot and terminate with a valve and fire hydrant. Provide service connections to all adjacent lots, with curb stop & boxes or meter vault located at the easement line. Adequate easements are to be provided on both sides of the water main and services and must extend outside of the common access easement if necessary.

(e) Where water distribution mains are extended to accommodate future development, they shall be extended across the full frontage of the property being served or constructed to the property line of all adjacent properties for future looping or extension.

(2) Residential Subdivision (New and Existing)

The water distribution system for residential areas where fire protection is to be provided shall meet the following criteria:

(a) Maximum length of dead end 8 inch main shall be 1500 feet.

(b) Dead ends shall be minimized by providing looping wherever practical.

(3) Commercial and Industrial

The water distribution mains for commercial and industrial areas where fire protection is to be provided shall meet the following criteria:

(a) Minimum size shall be 8 inch, except for fire hydrant leads of less than 200 feet and service connections.

(b) Maximum length of dead end 8 inch main shall be 800 feet.

(c) Maximum length of dead end 10 inch main shall be 1200 feet or as approved by County engineer.

(d) Dead ends shall be minimized by providing looping wherever practical.

(e) Where design flow rates exceed 1500 GPM, hydraulic computations shall be provided for dead end mains.

(4) Location

(a) New Subdivisions - In new subdivisions, distribution mains shall be located five (5) feet from the centerline of the street right-of-way, generally on the side of the street toward high ground. Distribution mains shall be located within the pavement area wherever possible, no less than two (2) feet from the edge of the existing or proposed gutter pan.

(b) Existing Developments (Closed Section Roads) - In existing developments with curbs, distribution main location shall generally be the same as in new subdivisions. The location of other existing and proposed utilities shall be fully considered.

(c) Existing Developments (Open Section Roads) - In existing developments without curbs, distribution mains shall generally be located four feet outside of the edge of pavement, except that the distribution main shall not be located under a future curb. The location of other existing and proposed utilities shall be considered.

(d) Parks and Public Rights-of-Way - Where location of distribution mains would require the removal of or damage to trees within parks or public rights-of-way, design engineers shall obtain approval from the appropriate State or Federal agencies for distribution main alignment and trees to be removed.

(e) Easements - All distribution main utility easements widths shall be in accordance with latest plan preparation package. No other utilities or structures will be allowed in the distribution main utility easement without written County approval.

(f) Distribution mains may be designed on a curved alignment to reduce the number of bends. Along curves, the water main may be deflected at each joint within one half the limits established by the manufacturer.

(5) Sizing

(a) Distribution mains shall be sized to provide the required design flow rate and residual pressures as detailed in Section 8.1.B & C.

(b) Mains serving fire hydrants and services shall be a minimum of 8 inches, except where a 6 inch reduction is needed for a terminal hydrant. Place a 6x8 inch reducer before the hydrant valve for permanent settings and after the valve for lines to be extended in the future.

(6) Cover

Normal cover over distribution mains shall be 3'-6", except at crossings over utilities where a minimum cover of 3'-0" or a maximum cover of 9'-0", may be allowed.

In new subdivisions, cover shall be measured from the final grade of the street.

In existing roads or unpaved streets, a future profile grade shall be obtained from the County. If such a profile grade is not available, the design engineer shall submit a proposed profile grade for approval by the County. If the future profile grade is at or below the existing grade, cover shall be measured from the future profile grade; if the future profile grade is above the existing grade, cover shall be measured from the existing grade.

In areas outside of existing or planned streets, cover shall be measured from existing grade. The design engineer shall thoroughly investigate, and make suitable allowances for likely changes to existing topography. Such changes include future erosion of stream beds or grading of lots.

(7) Clearance

Clearances between water mains and other utilities shall be measured from outside of pipe to outside of pipe.

(a) General

The following design factors must be considered in providing adequate separation:

- Materials and types of joints for water and sewer pipe
- Soil conditions
- Service and branch connection into the water main and sewer line
- Compensating variations in horizontal and vertical separations
- Space for repair and alterations of water and sewer pipes

- Location of manholes
- Disturbance of the bedding of the water mains or other utilities

(b) Parallel Installation

A horizontal distance of at least 10 feet shall separate water mains and sewers mains. The distance shall be measured outside of pipe to outside of pipe. In cases where a 10 foot separation is not practical, deviation may be allowed on a case-by-case basis subject to County and/or State approval, if supported by data from the design engineer. Such deviation may allow a horizontal separation of a minimum of 5 feet with at least a six (6) foot vertical clearance or closer installation provided that the sewer main be encased in concrete ten (10) feet each side of the water main. If horizontal separation is less than 10 feet, then compaction requirements shall conform to the same as with the road right of way. This is to protect the interest of the other utility's bedding.

(c) Crossings

Where water mains and sanitary sewers must cross, there shall be a vertical separation of 18 inches between the bottom of the water main and the top of the sanitary sewer. This vertical separation must be maintained horizontally for a distance of 10 feet. The 10 foot distance is to be measured as a perpendicular distance from the sewer to the water line.

(d) Exceptions

When it is impossible to obtain the proper horizontal or vertical separation as stipulated above, both the water and sewer mains shall be constructed of ductile iron pipe. Other types of pipe with equal or greater integrity may be used at the discretion of the County. These installations shall be pressure tested to assure water tightness before backfilling. Where a water main must cross under a sewer pipe, additional protection of the water main shall be provided. The County shall be consulted to discuss the use of double casing or concrete encasement of the sewer and/or water main.

(e) Utilities other than Sanitary Sewer

Water mains shall have a minimum clearance of one (1) foot where crossing utilities other than sanitary sewers.

(8) Appurtenances

Where it is not feasible for distribution mains to be located within the pavements, they shall be located wholly within the grass plot or wholly within the grass plot between the curb and sidewalk. On private roads and parking areas valve boxes are to be located outside of parking areas. Valves boxes will not be allowed in sidewalk.

(a) Valves and Vaults

Mains 4 inch to 16 inch shall have valves of the same size as the main. All valves larger than 16 inches shall have bevel gears and enclosed gear case and be constructed within a valve vault. The valve vault or valve road box type and size to be used with any size or type of valve shall be as shown in the standard detail manual.

(b) Provide Valves for Isolation at:

(i) 2000 foot intervals (maximum) on straight/non-intersecting runs**.** Valves shall be provided on water mains between intersecting runs for isolation purposes.

(ii) A maximum of 75 services/dwellings units isolated at once.

(iii) After the last service. Also prior to the terminus of the line excludes permanent settings allowing future extension without service disruption to users.

(iv) Provide valves on all sides of tees and crosses, with the exception of hydrant tees which will require one.

(v) On water mains at any arterial and major collector road crossings, creek crossings, railroad crossings, and transmission pressure gas mains, valves to be on each side of the crossing.

(vi) Existing water mains where there are no isolation valves between two proposed extensions. The isolation valve is needed on the water main between the extensions to allow for maintenance on the main while providing water supply to the development.

(c) Fire Hydrants

(i) General

Fire hydrants on private property (example: shopping centers, industrial complexes, commercial sites, townhouse or apartment complexes) shall be dedicated to the County with the water lines serving the fire hydrants and the water system being dedicated to the County.

Fire hydrants shall be installed as shown in the Standard Detail Manual. Hydrants shall not be located within 10 feet of sanitary sewers or storm drains.

All hydrants not meeting Substantial Completion Acceptance will have an "Out of Service" disk placed on one or more of the nozzles most visible to traffic.

(ii) Hydrant Spacing

(A) Commercial and Industrial Areas

- Maximum Spacing - 300 feet as supply hose is laid from motorized fire apparatus.

(B) Multi-family residential areas including but not be limited to townhouses, duplexes and other multi-plex dwellings, condominiums, apartments, etc.

- Maximum spacing - 300 feet as supply hose is laid from motorized fire apparatus.

(C) Single Family Detached Residential and flag lots

- Maximum hydrant spacing shall be four hundred (400) feet as measured along an improved roadway.

(D) Fire hydrants on roadways divided by an island separator shall alternate from side to side and meet the spacing requirements described in section 8.1.(d)(8)(c)(ii)(c).

(E) General Locations

- In all areas not specified in section 8.1.d.c.ii.a, b & c above the maximum fire hydrant spacing shall be eight hundred (800) feet. For divided highways every other hydrant shall be located on opposite sides of the divided highway and maintain eight hundred (800) feet on each side of the

highways. If divided highways are abut to commercial or residential buildings, the spacing must comply with the above section 8.1.d.c.ii.a, b & c.

(iii) Hydrant Location

(A) Commercial and Industrial Areas

- Building sprinkler/standpipe connections must be shown on plans and not more than 100 feet from the nearest hydrant as hose is laid from a motorized fire apparatus. The route to the hydrant shall not be obstructed by fencing, trees and shrubs, significant elevation changes, or other obstacles that would delay fire department operations.

- The sprinkler/standpipe connection for use by the fire department shall be located within 20 feet of the primary entrance to the building or a location approved by the first due fire department. Should a building have multiple entrances on the primary entrance side, (e.g. - a one story building with multiple business entrances) the connection shall be centered on the primary entrance side of the building. The primary entrance of a building is defined as that entrance used by the majority of a building's occupants and/or the public.

- The fire department sprinkler/standpipe connection will be labeled with a white reflective sign. The reflective sign will have \ 8 inch red reflective letters reading "FDC". Below the "FDC" lettering, a reflective 6" icon of a siamese connection (Y) for sprinklered building, or a 6" reflective hose reel icon for buildings with a standpipe system shall be placed. Buildings with both sprinklers and a standpipe system will have both icons on the reflective sign. The sign shall be located directly above the FDC and be clearly visible as the building is approached from the street. It should be located at least 8 feet above the ground and clear of all vegetation and other obstructions.

- Locate pumper connections outside of fenced areas.

- No portion of the building shall be more than 300 feet away from the nearest hydrant, or as approved by the County in cooperation with the local fire department.

- No portion of a commercial building shall be located further than 300 feet from a hydrant unless a variance is granted by the county engineer. One consideration for the variance approval will be the support of the local fire chief for this request.

- Building "Fire Department Connection" (FDC) must be shown on plans and not more than 100 feet from the nearest hydrant. The location of the FDC shall be on the front of the building within 50 feet of the main entrance. If the building has several entrances (ie, strip business malls) the FDC shall be in the middle of the building. Also the FDC shall be labeled with a reflective sign with the letter.

  FDC and an icon of a Siamese Connection (Y). This sign shall be located directly above the FDC and be clearly visible as the building is approached from the street. It should be at least 8 feet above the ground and clear of all vegetation and other obstructions.

  When water mains and hydrants are installed prior to the buildings being designed it may require additional fire hydrants and main upsizing to meet the required spacing, flow, or pressure requirements.

(B) Multi-family residential areas including but not be limited to townhouses, duplexes and other multi-plex dwellings, condominiums, apartments, etc.

- No portion of the building shall be more than 300 feet away from the nearest hydrant.

(C) General Locations:

- Locate hydrants at all intersections to provide easier access and fire fighting capabilities for the fire department.

- Locate hydrants adjacent to property lines (where applicable) to avoid conflicts with driveways.

- Locate hydrants at the terminus of all lines.

- Hydrants shall be located so that parking is not allowed within 15 feet on either side of the hydrant.

- Locate hydrant such that the 4.5 inch connection to face the roadway or drive aisle.

- Locate hydrants no further than 10 feet from a roadway curb line or shoulder edge.

- The location of additional hydrants utilized to meet the fire flow requirement cannot be such that hose will be laid across a minor arterial or higher classification roadway.

- Locating the hydrant in pinch point where roadways will be blocked by a pumper connection to the hydrant shall be avoided.

- Fire hydrants located within public parking lot areas shall be placed on island outcrops that separate parking spaces so that they are fully visible to approaching fire apparatus.

- Fire hydrants located on roadways and within parking lots shall be accessible by an all weather road surface capable of supporting the weight of fire apparatus.

(D) Single family flag lots detached residential. All flag lots of single family resident shall be within 400 feet of a hydrant.

(IV) Hydrant Color Coding

The following color designations are based on National Fire Protection Association (NFPA) standard 291 as well as a local amendment to NFPA standard. These color

designations shall be based on the available fire flow measured at 20 psi residual pressure under normal conditions.

Fire Flow (gpm)	Color	Reflective tape on
1,500 or Greater	Blue	Around bonnet flange
1,000 – 1,499	Green	Around bonnet flange
500 - 999	Orange	Around bonnet flange
All hydrant barrels shall be painted Yellow		

When the fire flow less than 500 gpm, the hydrant bonnet and all nozzle caps shall be painted red.

At the time the system becomes substantially completed the developer/contractor shall install white reflective tape on around bonnet flange.

During inventory process Department of Public Works will test the fire flow and color code the hydrant according to the above table. Note that it is not County responsibility for the painting of all hydrant barrels. Also the County is not responsible for painting all bonnet and nozzle caps for hydrant fire flow less than 500 gpm.

(d) Tapping Sleeve and Valves

Tapping sleeves and valves on ductile iron pipe mains to serve as line valves shall be used for all connections 8 inches and larger in size to any existing main where more than 10 domestic services would be shut off during installation of a standard tee. The main being tapped may be the same size as the proposed main or tapping valve, but the tapping cutter shall be 1/4 inch or more undersized. Use of mechanical joint sleeves may be permitted only upon written consent of the County and will be considered only where the pipe being tapped is ductile iron pipe. Valve boxes or vaults for tapping sleeves shall be sized in accordance with the County Standard Detail Manual.

(e) Blow-offs and Air Release Valves

A blow-off shall be installed at the low point of mains in accordance with the Standard Detail Manual. Hydrants will serve as blow-offs at the end of mains. Hydrants shall be installed at the end of mains to be extended in the future. Air release valves shall be installed at prominent peaks on long distribution mains where there are no service connections. Air release valves will generally

not be required for distribution mains. Where required, air release valves shall be installed in accordance with the Standard Detail Manual.

(9) Materials

All distribution mains and fittings shall be in accordance with the Standard Specifications for Construction Manual.

(10) Installation

Installation of all distribution mains and appurtenances shall be in accordance with the Standard Specifications for Construction Manual. Such requirements shall be noted in the specifications and on the drawings.

(11) Existing hydrant relocation and reuse will only be allowed if the hydrant is less than 7 years old. If hydrant is greater than 7 years old, the hydrant shall be replaced and the existing hydrant conveyed to the County.

E. Transmission Mains

(1) Location

The approximate location of transmission mains shall be based on a computerized network analysis by the design engineer, which meets with County approval. This analysis shall indicate the beginning and ending points of the main and the major distribution system intersecting nodes. The design engineer shall select an alignment which satisfies the approximate location as determined in the analysis while taking into consideration length of pipe, number and type of fittings, public or private property, construction and maintenance access, future road widening, horizontal and vertical alignment changes, flood prone areas, subsurface conditions, and existing and future utility interferences. All water utility easements shall be 20 feet minimum width. No other utilities or structures will be allowed in the water easement without the County's written approval.

(2) Sizing

The sizing of transmission mains shall be based on the computerized network analysis by the design engineer or any previously approved studies, as to be determined by the County.

(3) Cover

Normal cover for transmission mains shall be 3.5 feet, except where existing utilities are crossed, where the minimum will be 3 feet. Maximum cover will be 9 feet, except where authorized by the County.

(4) Clearances

See distribution mains Section 8.1.D.7.

(5) Hydraulics

System hydraulic gradient, static and residual pressures, velocities, and flow direction will be provided by the County if established. If not established the design engineer shall submit a proposal to the County for review and approval. The design engineer will analyze transient pressures in transmission mains and provide written results to the county for review. In most cases, the transient pressure analysis will be limited to pipelines of finite length for line rupture and sudden valve closure. The computation methodology is detailed in Pipeline Design for Water and Wastewater, ASCE, 1992 or later edition**;** see also Pumping Station Design, 3rd Edition (or later), 2006, by Garr M. Jones.

(6) Appurtenances

(a) Valves and Vaults

All valves larger than 16 inch shall be placed in a standard concrete vault in accordance with the Standard Detail Manual and Standard Specifications for Construction Manual.

(b) Air and Vacuum Release Valves

The proper ventilation of transmission mains is very important. Trapped air pockets can significantly reduce the capacity of the mains as well as cause increased pumping heads and corresponding higher pumping costs. Valve sizing and location shall be evaluated during design and coordinated with valve manufacturer. The following guidelines shall be used to locate air and vacuum release valves:

- Peaks in profiles
- Abrupt increase in downward slope
- Abrupt decrease in upward slope
- Long ascents - 1500 foot to 3000 foot intervals
- Long descents - 1500 foot to 3000 foot intervals
- Long horizontals - 1**5**00 foot to 3000 foot intervals
- Pumps - On the discharge pipe as close as possible to the check valve

- System side of the check valve.
- Valves - High point of large valves or bypass piping and downstream of large pressure reducing valves
- Shop drawings of manufacturer shall be provided to county for acceptance prior to installation.

(7) Materials

The pipe material class of transmission mains shall be selected based on its corrosion resistance, strength against internal and external pressures, hydraulic characteristics, installation conditions, and economics and be in accordance with the Standard Specifications for Construction Manual.

(8) Installation

Installation of all service connections and appurtenances shall be in accordance with the Standard Specifications for Construction Manual. Such requirement shall be noted in the specifications and on the drawings.

F. Service Connections

(1) Location

Water house or building connections shall be constructed with a curb stop and/or meter vault box to the right-of-way/property/easement line for all lots within a proposed development unless otherwise approved by the County engineer. All adjacent lots which are not part of the proposed development, but are to be served by the water line shall be shown on the plans. Water service laterals, including curb stops & boxes or meter vault, are to be provided to the right-of-way/property/easement lines for all existing dwellings fronting a new water main. Twin services may be placed on the property line separating the two houses in single family, detached house subdivisions.

All piping shall be arranged in accordance with the County Standard Detail Manual.

(2) Sizing

The minimum sizing for any service connections shall be 1 inch. For larger homes and other buildings, larger connections are required. Provide water meter sizing computations for meter sizing per Appendix **"**R**"**.

Sizing for commercial, industrial and institutional meters shall be based on Appendix "R".

(3) Cover

Cover over service lines shall be as indicated in the Standard Details Manual and measured from finished grade.

(4) Clearances

(a) Parallel to Sewer House Connections

Water house services shall ordinarily be placed 10 feet horizontally and 1 foot vertically over and from the sewer house connections. In cases where this is not achievable, deviation may be allowed on a case by case basis subject to County and/or state approval. Such deviation may allow a horizontal separation of 1.5 feet with at least a 6 foot vertical clearance (sewer being placed on the bottom). If schedule 40 PVC solvent weld pipe is utilized for the sewer house connection a 1.5 foot horizontal separation with at least a 1 foot vertical clearance (sewer being placed on the bottom) may be allowed if a passing pressure test with 10 foot of head of water or equivalent taken in the presence of a County representative is achieved.

(b) Crossing Storm Drains or other Utilities

Water house and building connections crossing storm drains and other utilities (existing or future) shall have a minimum clearance of 12 inches from these utilities.

(5) Cross Connections

Cross connections shall not be permitted or allowed to continue. No cooling water or condensate may be returned to the potable water supply line. All interconnections shall be approved by the County and other appropriate reviewing authorities. On-site private wells must be properly abandoned (per MDE guidelines) prior to public service activation.

(6) Appurtenances

Backflow prevention devices shall be located in accordance with section 3.17 and resolution #2005-20 and the Standard Detail Manual.

(7) Installation

Installation of all service connections and appurtenances shall be in accordance with the latest County Standard Specifications for Construction and Detail Manuals. Such requirement shall be noted in the specifications on the drawings.

(8) Booster Pumps

Booster pumps are not permitted for any individual service, without prior

county approval. If a booster pump is installed on any individual service, the service will require protection with a reduced pressure principle backflow preventer.

(9) PRV'S

When pressure in the water main exceeds 80 psi, an approved pressure reducing valve at the customer's expense, complying with ANSI/ASSE 1003 shall be installed to limit pressures on fixtures to less than 80 psi. Pressure reducing valves may cause a closed system requiring thermal expansion devices. Where pressure reducing valves are installed and the downstream piping is not rated for the maximum upstream pressure, a pressure relief valve shall be installed downstream of the pressure reducing valve at the customer's expense.

G. Structural Considerations

(1) Buttresses and Anchors

At all fittings which achieve a change in pipeline direction, such as tees, fire hydrants, valves (as needed) bends and dead ends, thrust restraint is necessary. Restrained joints and/or anchorage blocks are two means of achieving thrust restraint. The design engineer shall decide what is appropriate for each particular situation based on an analysis of such factors as soil conditions, clearance requirements, constructability, future expansion and cost.

Under normal soil conditions, fittings up to 36 inch diameter shall be buttressed or anchored as provided for in the Standard Details Manual. In the event the soils will not bear 3000 pounds per square foot, the design engineer shall design buttresses or anchorages appropriate to the situation.

(2) Restrained Joints

If the soils at the project site are unusually poor, or other factors such as cost, space limitations, or future construction so indicate, restrained pipe joints shall be designed. The joint restraint may be either Field Lock Gaskets harnesses or mechanical joints with retainer glands for mains and valves up to 16 inch diameter. Restrained joint types for larger mains and valves shall be approved by the County prior to proceeding with design. The design shall account for test pressures, surge from sudden valve closures, poly encasement (wrap) soil frictional resistance and effect of groundwater as a minimum.

(3) Jacking and Tunneling

Where mains are being designed to cross railroads, State highways, County roads, or other roads, on which service cannot be interrupted, the water main shall be installed in a sleeve, tunneled or jacked under the road. The sleeve size, material, and method of tunneling or jacking shall be approved by the owner of the road or the railroad being crossed.

The sleeve diameter shall be sufficient to permit the proper positioning of the water main within the sleeve. Water mains installed in sleeves shall have restrained joints throughout the length of the sleeve. The annular void between the main and the sleeve shall be completely filled with grout or County approved casing spacers with end caps at the ends of the casing.

Water mains installed in sleeves shall be equipped with sufficient valves to isolate the sleeved section. A valve at each end is required.

(4) Design Loads and Piping Design

The design engineer shall submit calculations necessary to support the selection of the type and class of pipe indicated on the drawings.

The calculations may account for the following:

- Vehicle or railroad loads (h-20, e-80, etc.)
- Pipe loading factors (dead, live, impact)
- Internal pressure (static, dynamic, surge)
- Installation trench configuration

(5) Corrosion Protection

If soil tests or inspection of existing utilities in the project area reveals evidence of, or potential for, corrosion, the County shall be notified of the condition. Should the County deem it necessary, the design engineer shall design suitable galvanic and/or cathodic corrosion protection measures using AWWA Controlling Corrosion within Water Systems, 1978 or latest edition.

(6) Curves and Deflections

Gradual changes in pipeline direction may be achieved by joint deflection in accordance with the manufactures recommendations. Curvature shall only be allowed for lines constructed of ductile iron pipe. The joint deflection for DIP sizes 3" through 12" shall not exceed 3.5 degrees. The joint deflection for DIP size 14" through 20" shall not exceed 1.5 degrees. The joint deflection for dip sizes 24" through 48" shall not exceed 1.0 degrees.

H. Testing and Disinfection

The contract documents shall provide for hydrostatic testing of newly laid mains as described in the County's Standard Specifications for Construction Manual. Hydrostatic tests shall be performed for pressure retention and leakage. Disinfection shall be done in accordance with the Standard Specification for Construction Manual.

I. Abandonment Procedures

Abandoned service connections shall be cut and plugged at the service main, and the meters removed and provided (delivered) to the County to salvage, if their condition permits reuse. Distribution mains that are to be abandoned shall be plugged at the point of abandonment and on each side of any existing valves, and the valves and hydrants removed and salvaged if their reuse appears practical. Any necessary buttresses or anchorage required shall be designed in accordance with the Standard Detail Manual and this Ordinance.

J. Water Pumping, Treatment and Storage

A detailed presentation of design criteria for pumping, treatment, and storage facilities shall be in accordance with the requirements of W&S Ordinance section 8.2, the needs of the county, and the recommendations in Pumping station design, 3rd edition (or latest), 2006, by Garr M. Jones. The sizing of water pumping and storage facilities will be in accordance with Appendix **"**O**"**.

8.2 MINIMUM DESIGN GUIDELINES AND REQUIREMENTS FOR WATER FACILITIES

A. GENERAL

(1) In addition to the criterion contained herein, the design of water pumping facilities, well houses, and water towers shall meet the requirements of all relevant guidelines issued by the Maryland Department of the Environment (MDE) or shall be exceeded where specified by the County. The following additional manuals shall be consulted and applied to the design with the approval of the County:

(a) American Water Works Association (AWWA) Standards.

(b) Recommended Standards for Water Works, also known as the "Ten State Standards", latest edition.

(c) "Pumping Station Design", 3rd edition (or later), 2006, by Garr M. Jones

(2) All aspects of the facility shall maximize operator safety. The facility shall be designed to operate reliably and efficiently with a minimum of

attention and have provisions for easy access and maintenance. Equipment shall be selected on the basis of durability, availability of replacement parts, standardization, efficiency, and ease of maintenance and repair.

(3) The pumping/storage facility shall be designed for the maximum build out conditions of the service area as approved by the county using flows approved by the County.

B. Design

(1) Planning Period

Water pumping/storage facility design conditions shall, at minimum, accommodate a 20-year planning horizon. For all pumping/storage facilities, consideration shall be given to future upgrade flexibility necessary to accommodate design conditions beyond the normal planning horizon. This is especially important for larger facilities.

(2) Hydraulic Analysis

Refer to section 8.1 and Appendix "o" for water pumping/storage facility sizing requirements. A service area map and tabulation of the design flow shall appear on the plans. The map and tabulations shall show initial and ultimate service areas.

Water facilities must satisfy the hydraulic conditions of the system. A complete hydraulic analysis of each water pumping and storage facility is required. During the study phase, the designer shall consult with the County for the requirements of the hydraulic analysis. At a minimum, the designer shall perform 24 and 48 hour extended period computer simulations using average day demand, maximum day demand and peak hour demand for both current and full development conditions. Fire flows shall be analyzed during maximum day rate for both initial and full development conditions.

The hydraulic analysis shall be presented in a clear, logical and easy to understand format and shall relate to the proposed construction drawings. If construction drawings are not available at the time of the analysis then scale drawings shall be prepared with street names to locate the proposed system.

(3) pump and system curves

The designer shall show pump and system curves on the plans to scale. System curve characteristics for each design condition shall be determined by the Hazen Williams formula for piping head loss in conjunction with the County water model.

The pump selection shall be reviewed for both the initial and maximum design year conditions.

The following pump and system curves shall be shown on the plans:

(a) System curve for peak hour demand for the design year.

(b) System curve for maximum day demand plus fire flow for the design year.

(c) System curve for average day demand for the design year.

(d) System curve for average day demand for the initial year of station operation.

(e) Pump curve for single pump operation and multiple pump operation where station has three or more pumps.

In addition, the designer shall list next to the curves the pump design criteria including pump motor horsepower, efficiency, npsh at design points and rpm. Pump and system curves shall be shown for new water main conditions. Hazen-Williams "C" factors used in evaluating pump and system curves shall be in accordance with the guidelines given in section 8.1 “hydraulic calculations”.

(4) Number of Pumps

Water pumping facilities shall be capable of pumping the maximum day demand with the largest single pump out of service.

(5) Pump Selection Criteria

Avoid applications where pumps must operate in an adverse area of their performance curve. Design for maximum efficiency at the operating point. Examples would be pumps operating at very low flows and high heads, near shutoff heads or "runout" conditions. These conditions can result in excessive hydraulic loading or cavitation damage to impellers, casings and shafts, rapid bearing and mechanical seal wear and high vibration. Under no circumstances shall a pump be specified operating outside of its recommended range.

(6) Variable Frequency Drives (VFDS)

The use of VFDS or other methods to achieve minimum flow conditions below the full speed operating range of the pumps shall be approved by the county. If VFDS are used, multiple speed performance curves shall be shown.

(7) Water Hammer

The potential impact of water hammer under usual and unusual circumstances (power outages, etc.) shall be evaluated. If the combined effects of static head and water hammer (using a safety factor of 1.1) do not exceed the weakest piping system component working pressure, no special provisions need to be included to control water hammer. Where the maximum water hammer pressure (using a safety factor of 1.1) exceeds the weakest piping system component working pressure, the designer shall strengthen those elements affected, reevaluate pipe size and velocities or select an appropriate device to

control water hammer. No pressure vessel/surge tank type devices will be acceptable.

C. Design Criteria for Water Facilities

(1) Site Design

(a) Location: Water facilities shall be located near the areas to be served. Natural screening and remoteness of the site shall be primary elements of site selection wherever possible. Where pump stations are sited in proximity to developed areas, the architecture shall be compatible with the surrounding area. Building aspects such as generator exhaust and ventilation fan noises shall be considered. Similarly, building setbacks shall be considered to provide minimal impact to neighboring properties.

(b) Land acquisition: land required for facilities, including necessary vehicular access routes to an existing or proposed public roadway shall be owned in fee simple by the county. As part of this process, a boundary survey of the property is required together with a record plat and a metes and bounds description of the parcel unless otherwise approved by the county attorney. In determining the space requirements for the facility, particular attention should be given to the width provided for the access road to insure adequate space for grading and drainage within the access road right-of-way. Sufficient room shall be provided for future maintenance of wells, tanks, towers, and generators. Vehicle access shall be provided with adequate turning radii for well rigs, truck-mounted cranes and other large equipment that might be expected to be on site.

(c) Topography: Adjacent areas potentially served by the water facility must also be considered. Water facility site selection shall also be compatible with suitable site access and soil capability with respect to land grading in conjunction with site development. Existing contours and other topography shall be shown for the entire site including a 100-foot minimum width outside of the proposed property boundary on all sides. Contour interval shall be two-foot, unless otherwise approved by the county engineer.

(d) Floodplain: water facilities shall be sited to remain operational and permit access during a 100-year return frequency flood. Building top slab elevation shall be set a minimum of two-feet above the 100-year floodplain elevation. The access road shall be above the 100-year floodplain elevation.

(e) Wetlands: Avoid direct impacts wherever possible and minimize impacts to wetland buffer areas. Buffer areas include 25 feet beyond non-tidal wetlands.

(f) Grading: water facility grades shall prevent local ponding and provide positive drainage away from all structures and site. The site shall be a minimum of 1 foot above the surrounding area. Slopes on site shall be

generally limited to no less than 1 percent and no greater than 4 percent. Stone surfaces around paved areas shall provide proper site drainage at slopes 10 percent or less. Land grading outside of the water facility perimeter fence shall not exceed 3 to 1 slopes; 4 to 1 slope maximums are desirable. Lesser slopes wherever possible are preferred. Site grading design shall be compatible with slope stability for the soils encountered. Slope stabilization shall be appropriate for the degree of slope and soil conditions. The use of retaining walls on or immediately adjacent to the water facility site is not permitted. Provide for adequate drainage and conveyance for the discharges of the control valves, blow-offs, roof drains, and condensers as well. There shall never be a situation where roof drains flow across walkways, roadways, or parking areas.

(g) Site Security: Water facility sites shall be fenced with black vinyl coated chainlink fencing eight (8) feet tall, black vinyl coated post and black hardware, and a 16-foot wide locking gate for vehicle access. The fence is to include three (3) strands of barbed wire around the top. Additional property line fencing may be required as determined by the county engineer. Buildings shall have exterior lighting controlled by motion detectors and provided with an entry alarm connected to the station SCADA.

(h) The area within the fencing, and two (2) feet beyond the fence is to be covered with a minimum of six (6) inches of no. 57 crushed stone over a weed barrier film. No proposed grassed areas are allowed.

(i) Paving: water facility sites shall have P-4 paving section in accordance with table 2.07 of the road ordinance and include a minimum of two parking spaces. The site shall have sufficient room to allow AASHTO WB-40 access to equipment by maintenance trucks. An access road to the water facility site shall have P-2 paving section in accordance with table 2.07 of the road ordinance. The width of the pavement shall be 20-feet wide with 2-foot gravel shoulders. The maximum grade for the access road shall not exceed 5%. The cross slope shall be in accordance with standard detail R/2.16.

The access road and site shall support a minimum AASHTO WB-40 turning radius. The site shall also include a WB-40 turn-around area. Access roads shall be used exclusively for facility maintenance and access.

(j) Sidewalks: 4 feet wide in accordance with the road ordinance/detail manual, are to be provided between buildings and/or structures and from paved areas to buildings and structures for access of equipment, dollies, etc.

(k) Sediment Control: a sediment control plan shall be provided and approval obtained from the Charles Soil Conservation District (SCD).

(l) At least two test borings shall be taken at the building location to determine soil types, rock, water table elevations, soil bearing values, etc. standard penetration tests shall be taken at intervals not to exceed five (5) feet. Borings shall be taken to a depth of not less than fifteen (15) feet below the bottom of the proposed structure. Borings shall be taken deeper as necessary, depending on soil conditions.

(m) Station Sign: A permanent sign shall be provided at each facility stating the station name, street address and emergency telephone number. The sign must meet Charles county 911 addressing system.

(n) Yard hydrants and hose bibs shall be provided for wash down, maintenance, and sanitation purposes.

(2) Structures

(a) Design/Architectural Standards: Water facilities shall be architecturally compatible with surrounding structures and shall not have slate roofs. Water facility buildings shall be pre-cast concrete and shall be designed to be vandal-proof. Roof shall be precast concrete gable type. There shall be no exposed woodwork on the outside of the building. All exterior woodwork shall have a vinyl or aluminum coating. The facility shall have a lightning protection system. Provisions shall be made in the structure for traversing bridge cranes of adequate capacity to facilitate the removal of pumps, motors, valves and all other related heavy equipment. Doors shall be 16-guage steel with deadbolts and locks keyed to the county standard. Doors shall be located and/or situated so that they are not affected by rain runoff from the roof. Exterior lights shall be vandal proof, wall-mounted, energy-efficient controlled by motion detectors and an on-off switch. Facilities shall be provided with outside non-freeze hose bibbs. Ventilation openings shall be protected with aluminum louvers with birdscreens. The building shall conform to all Charles county building codes and zoning regulations.

(i) Pump Room

Pumps and piping shall be located above pump room floor at a height sufficient to connect to suction/discharge piping. Parallel suction and discharge headers shall be provided. Pumps shall be of the horizontal style placed on individual concrete bases. Floors shall be sloped to floor drains piped to a sump. The minimum floor slope toward the sump shall be 1/4 inch per foot. Water shall not pool in any areas of the floor. Each water pump shall have a floor drain located next to it. Pump baseplate drains shall be piped to adjacent floor drains. A building sump with sump pump and piping shall be provided. The pump room shall be furnished with a service sink with both hot and cold water, and inside hose bibb.

a) Adequate room is required for working around and above equipment. A minimum of three (3) feet of clearance between equipment and walls shall be provided.

b) All electrical and control equipment shall be located at least three (3) feet above the floor.

c) Locate all auxiliary equipment above ground in an appropriate building which allows safe and efficient all-weather, all-hour, electrical and mechanical maintenance, including but not limited to motor controls, blowers, meters, etc.

d) A restroom shall be provided with toilet, lavatory, on-demand hot water heater, towel dispenser, soap dispenser and mirror onsite as determined on a case by case basis based on the anticipated number of man-hours of operation and the remoteness of the site.

(ii) Water Service

A minimum of 1-inch diameter metered potable water source shall be provided for wash down, maintenance, and sanitation purposes. The service shall include a backflow preventer. The water service line shall provide a minimum of 30 gallons per minute to the emergency shower with a minimum residual pressure of 35 psi.

(iii) Control Room

Electrical equipment shall be located above grade in a control room that is designed with adequate space to accommodate future upgrades.

(iv) Generator Area

A separate generator area shall be provided for housing the emergency generator and fuel tank. The generator slab/ floor shall be located a minimum of two (2) feet above the 100-year flood elevation. If the generator is in a room, it shall have a roll-up metal garage door for access and shall be equipped with a floor drain located outside the fuel spillage containment area, piped to the building sump. The generator area shall be supplied with hose bibb, hose rack and 50 feet of rubber hose.

Alternatively, the generator may be installed outdoors in a separate, self-contained, sound attenuated enclosure on a concrete pad of sufficient size for the generator and maintenance access.

(v) Heating and Ventilation

The building shall be heated by electric unit heaters with integral thermostats sized to maintain a minimum inside temperature of 40 Degrees Fahrenheit. Provide cooling as necessary to maintain air

temperatures below 95 Degrees Fahrenheit inside electrical devices. Ventilation shall be by means of wall mounted exhaust fans with backdraft dampers operated by thermostats and freezestats and intake louvers with motor operated dampers.

Ventilation shall be designed for a minimum of six (6) air changes per hour. Each room shall have a dedicated exhaust fan(s). Ventilation shall be sufficient to remove heat generated by the pump motors and controls. Provisions shall be made to ensure against condensation forming on controls and other major items of equipment.

(3) Equipment

(a) Yard Valves: Yard valves shall be buried resilient seat gate valves complying with the standard specifications with operating nut and roadway valve box at grade.

(b) Station Bypass: Water facilities shall be provided with bypass connections in the form of two (2) fire hydrants, one on each side of the suction and discharge lines of the station. Hydrants shall be labeled suction and discharge, respectively. The hydrants shall be located adjacent to the parking area and shall be no more than 50 feet apart for easy setup of temporary pumps for pump around capability.

(c) Interior Piping: All interior water piping shall be dip, class 53, with flanged fittings. Flanges shall be integrally cast on pipe or factory assembled screwed-on with proper bonding compound. Manifolds shall include flexible couplings for make-up and for expansion and contraction of the piping system. Flexible couplings shall be provided on the suction and discharge of each pump. Arrangement of piping and equipment within the station shall be made with adequate space for maintenance, repair, removal or replacement of equipment, as well as to safeguard personnel working in the station. a minimum of three (3) feet of clearance between equipment and walls shall be provided. Depending on the size of the equipment and piping, greater clearances may be needed. Piping shall be adequately supported. Control and instrumentation piping shall be copper or stainless steel. Chemical feed piping shall be clear PVC.

Provide color coding for piping in accordance with the standard specifications for construction manual.

(d) Interior Valves: Each water pump shall have isolation valves to permit the removal or maintenance of the pumps without affecting the operation of the remaining pumps. Isolation valves shall be resilient seated gate valves. Valves larger than 16-inch shall have geared operators with handwheels. Handwheels shall be marked with an open arrow. Each pump shall have a hydraulically operated, time adjustable pump check service valve to prevent backflow through inoperative pumps. In accordance with the criteria for water hammer control, pump check service valves shall be of

the type and strength required to eliminate water hammer damage. Surge relief valves shall also be provided on the suction and discharge headers of the station and piped to the nearest storm drain system.

(e) Pressure Gauges: Pressure gauges for direct reading of line conditions shall be placed on both the suction and discharge of each pump, on the main discharge header piping after the last pump, and on the suction header as it enters the building. Pressure gauges shall be oil-filled type, have a minimum 3½-inch diameter face and be equipped with snubbers. Pressure gauges shall be installed and configured such that the gauge can be isolated and the gauge piping be drained. Accuracy shall be to within 0.5% of pressure. Pressure gauges shall have a range such that the normal operating pressure is near the middle of the gauge.

(f) Flow Metering: All water pumping facilities shall have a county approved water meter. A 7-day chart recorder and 4-20 MA output to the SCADA system, with totalizer, and indicator recorder in units of gpm shall also be provided.

(g) Transfer Pumping Units: All water pumps shall rotate clockwise as viewed from the motor end. Pump bearings shall have a minimum 100,000 hours abma-10 bearing life. Pump motors shall operate on, 3 phase, 60 cycle electrical service and at a speed no higher than 1780 rpm. Pump discharge velocities shall be between 5 and 15 feet per second. Pump inlet pressure shall be maintained at a sufficient level to avoid cavitation. Pump motor horsepower shall be sufficient to prevent motor overload under all possible conditions. Water pumps and motors shall be suitable for continuous duty. All pumps shall be factory witness tested and approved prior to shipment. Water pumps shall meet the requirements of the hydraulic institute for vibration. pumps shall be one of the following types:

- in-line split case (horizontal)
- end suction (horizontal)

The pump casing/volute, impeller, seal housing and motor housing shall be of cast iron construction. Impeller shall be cast iron or bronze. The pump's casing and impeller shall be fitted with replaceable hardened bronze or stainless steel wear rings to maintain sealing efficiency between the volute and the impeller. At the county's option, other pump materials may be required to suit a particular application.

Pumps shall have the following additional features:

(i) Stainless steel shaft.

(ii) NSF approved fusion bonded epoxy coating (interior).

(iii) Flexible shaft coupling and removable OSHA-compliant shaft guard.

(iv) Mechanical shaft seals cooled and lubricated by the pumped fluid.

(v) Premium efficiency motors shall be specified (where commercially available) for all three-phase pump motors.

(4) Electrical and Controls

(a) Electrical Design: All electrical designs and components shall be in strict accordance with all applicable national and county code requirements. Electrical design shall be such that phase out protection shall be provided so that the power will automatically switch off in the event of a loss of any one phase. Incoming electrical service shall be underground with electric meters installed outside the building. the electrical plans shall include, but not be limited to, the following:

(i) DESIGN report shall provide the correspondence with the Charles County local power company showing the consultant's load breakdown along with the local power company's assessment of the voltage available, their ability to serve the project, and the availability of a second independent source of power. Specific local power company permission to use across-the-line starters or requirement for reduced voltage starters is required.

(ii) In addition to the proposed wiring diagrams, provide a narrative of the control sequence scenario which clearly explains the operational intent.

(iii) Complete plan layout indicating all conduit, wire sizes and equipment locations including lighting and other appurtenances. Incoming electrical service on the site shall be underground and within concrete encased conduits.

(iv) Installation details of equipment that are wall mounted, or suspended from the ceiling or otherwise required for clarity.

(v) Single line diagrams incorporating all electrical components required for operation of the facility.

(vi) Complete lighting schedule noting model, size, location and installation data as well as appurtenances. Vandal proof exterior lighting shall be provided. Interior and exterior quartz lighting, separately switched, for maintenance purposes including auxiliary dc safety lighting is to be provided. Minimum lighting levels shall be 15 foot candles for stairways, 50 foot candles for operation, and 100 foot candles for electrical and mechanical maintenance.

(vii) complete control and scada diagrams.

(viii) elevation of control panels with equipment and mounting dimensions and notes identifying each component.

(ix) complete circuit breaker schedule indicating size and identifying each circuit.

(x) ventilation schedule noting fan size, operating conditions, location, model, installation data, etc. the ventilation schedule shall also outline louver data including size, material, fixed or motorized.

(xi) Secondary power facilities and alarm equipment shall be designed so that they may be manually activated for periodic maintenance checks to ensure proper operation.

(xii) Provide a legend of all symbols used for the above.

(xiii) Power for the station shall be 480 volts, three phase.

(xiv) IEC electrical components shall not be utilized. For replacement compatibility and availability, only full sized NEMA UL listed electrical devices shall be used regardless of any equivalent UL ratings of IEC devices.

(xv) Lockable safety disconnect switches are to be provided for all rotating equipment. Use lockable knife-switches rather than remote lockable start/stop button stations.

(xvi) Provide "push-to-test" type indicator lamps with screw-in type bulbs. Use of 120mb type bulbs is prohibited.

(xvii) Permanent, in-place, volt/amp meters are required for each pump or major piece of equipment.

(xviii) Due to compatibility and standardization needs, provide only "Square-D", "Furnas", or "Cutler-Hammer" electrical equipment; no alternatives allowed.

(xix) Use "Square-D", or County approved equal, Class 8501 Type "K" plug-in style relays to the maximum extent possible where appropriate. Provide integral power indicating lamps in the relays. The only exception to this should be where current requirements exceed contact ratings. Use plug-in style relays for timers, alternators, and latching as well. Octal or square relays are equally acceptable, although eight-pin octal relays are preferred. Use "Square-D" Type KP12P14 or KP13P14 or County approved for DPDT or 3PDT respectively.

(xx) Provide non-resettable elapsed time meters for all rotating equipment. Meters are to be in hours and tenths of an hour, not minutes. Provide an elapsed time meter for parallel operation of main

pumps; e.g. a meter for pump #1, pump #2, and pumps #1 and #2 together.

(xxi) A weather proof red exterior "Trouble Light" for visual indication of equipment failures/problems is to be provided. A horn is not to be provided.

(b) Lightning and surge protection: the designer shall provide lightning and surge protection at the water facility. The lightning and surge protection shall comply with the latest editions of all applicable codes and standards. Provide phase failure and phase reversal protection for all equipment. A single phase condition shall not destroy motors, transformers, relays, etc. should the second source of power fail to take over.

(c) Backup Power: All water pumping facilities shall be provided with emergency generators with automatic transfer switches as described in MDE guidelines. Emergency generators shall be sized to maintain full station operation. Emergency generators shall be diesel driven with fuel storage on the underside of the generator in a belly tank or outside the building in an above ground storage tank. Fuel spillage protection shall be provided. Tank size shall be suitable for a minimum of 24 hours of generator operation at full load. Generators shall be mounted on vibration spring isolators. When emergency generators are located inside a building, they shall be mounted with a fuel tank fill connection to the outside. Generator engine exhaust shall be provided with a critical grade silencer and piped to the outside of the control building. Generator exhaust shall face away from nearby neighbors. if this is not possible, a baffle wall shall be constructed in front of the generator exhaust to deflect the noise.

(d) control/scada system: a complete and operable control/scada system shall be provided per county standard specifications for construction.

(5) painting and coating

all exposed piping, pump equipment and appurtenances including all structures shall be painted per county standard specifications for construction.

(6) disinfection

all piping, pumps and appurtenances shall be disinfected prior to placing in service in accordance with applicable awwa standards.

(7) safety

(a) Appropriate emergency eye wash facilities shall be provided whenever chemical handling is proposed. the need for emergency fountains and showers, the design/configuration thereof, and their locations shall be in accordance with the most current edition of the ten states standards and the applicable requirements of MOSH and the county safety officer. As a

minimum, the eyewash fountains shall be supplied with water of moderate temperature, 50 to 90 degrees fahrenheit, suitable to provide 15 to 30 minutes of continuous irrigation to the eyes. As a minimum, the emergency showers shall be capable of discharging 30 gallons per minute of water at moderate temperature and at a minimum pressure of 35 psi.

(b) Appropriately designed dielectric rubber floor mats are to be provided for insulation at all motor controls for personnel safety. If water on the floor is a possibility, the design must eliminate such water. A situation of motor control maintenance in wet or unsafe conditions is unacceptable.

D. Production Wells

(1) General

The design professional is directed to section 02555 "production wells" of Charles County's Standard Specifications for Construction, and the following:

(a) General Well Appurtenances - The following well appurtenances are required:

(i) A pitless adapter shall be provided.

(ii) A sampling tap shall be provided for raw water sampling within the well house piping.

(iii) Adequate control switches, etc., for the pumping equipment shall be provided.

(iv) A water meter is required to determine water production for each well and the meter shall be located upstream of the well blow-off.

(v) The well casing shall extend at least 12 inches above the concrete floor or apron surrounding the well and above the 100-year floodplain elevation.

(vi) Adequate support for the well pump and drop pipe shall be provided.

(vii) Each well casing shall be equipped with a drawdown gauge, airline, and appurtenances for measuring the change in the elevation of the water level in the well and a conduit for level transducer from the well to the well house.

(viii) Wellhead protection shall be provided.

(b) Submersible Pumps: where a submersible pump is used, the top of the casing shall be effectively sealed against entrance of water under all conditions of vibration or movement of conductors or cables.

(c) Discharge Piping: The discharge piping shall be provided with separate means to pump (blowoff) water of unsatisfactory quality to a point away from the groundwater source and toward the stormwater management system, but shall not be directly connected to a sewer. the discharge line shall:

(i) Have control valves located above the pump well house floor,

(ii) Be protected against freezing,

(iii) Be valved to permit testing and control of each well,

(iv) Have watertight joints.

(v) Have all exposed valves protected,

(vi) Have erosion protection at the point of waste discharge.

(d) Well apron surrounding the well shall meet the following requirements:

(i) Be minimum 3,500 psi concrete with adequate reinforcement meeting standard specs for construction,

(ii) Be a minimum of six inches in thickness,

(iii) Extend a minimum of three feet in all directions from the well,

(iv) Slope at least 1/4 inch per foot towards a screened four-inch floor drain to atmosphere.

E. Potable Water Storage Facilities

(1) General

The materials and designs used for finished water storage structures shall provide stability and durability as well as protect the quality of the stored water. Steel and concrete structures shall follow the most current available American water works association (AWWA) standards concerning steel and concrete tanks, standpipes, reservoirs, and elevated tanks except as may be modified herein.

(a) Location of finished water storage facilities

(i) The bottom of ground level reservoirs, storage tanks and standpipes should be placed a minimum of two feet above the 100-year flood elevation.

(ii) Buried tanks are not permitted.

(iii) The site shall be large enough to permit construction of the facility, maintenance for painting and have a right-of-way to the nearest public road.

(iv) All sites shall have electrical service providing a minimum of 480 volts/3 phase power.

(b) Obstructions to Air Navigation

(i) For structures within a 4 nautical mile radius of a public-use airport, the design professional shall be governed by the latest revision of comar; shall contact the Maryland Aviation Administration (MAA) office of regional aviation assistance; and shall complete the appropriate Federal Aviation Administration (FAA) form as required by the Federal air regulations and deliver the completed form to the MAA.

(ii) For structures within a 4 nautical mile radius of a military airport submit to the FAA.

(c) Safety - The safety of employees shall be considered in the design of the storage structure. As a minimum, such matters shall conform to pertinent building codes, laws, and regulations of the area where the storage structure is constructed.

(i) Ladders, ladder guards, balcony railings, and safe location of entrance hatches shall be provided.

(ii) Elevated tanks with riser pipes over eight inches in diameter shall have protective bars over the riser opening inside the tank.

(iii) Ladders must meet the minimum requirements of osha 29 cfr part 1910.

(iv) Requirements for safety belts and harnesses shall be included in the specifications.

(v) Lighting, pumps and cathodic protection system equipment shall meet the requirements of the national electric code. Lights shall be led.

(d) Drains

(i) No drain on a water storage structure shall have a direct connection to a sewer or storm drain.

(ii) All finished water storage structures shall be equipped with separate drains discharging to the atmosphere. Drainage of finished water storage structures to the distribution system through inlet/outlet piping shall not be allowed.

(e) Freezing - All finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents, shall be designed to prevent freezing which will interfere with proper functioning.

(f) Internal Catwalk - Every catwalk over finished water in a storage structure shall have a solid floor with raised edges so designed that shoe scrapings and dirt will not fall into the water**.**

(2) Storage Tanks

(a) Types of Tanks Permitted:

(i) Ground level shall be glass-lined steel bolted tanks.

(ii) Welded steel, single pedestal spheroid elevated tanks shall be used for up to 1,000,000 gallons.

(iii) Composite concrete/steel tanks shall be used for any tank 1,000,000 gallons and greater.

(iv) All tanks must meet the latest AWWA standards.

(v) All tanks shall provide a mounting system for cellular antennas and county SCADA equipment.

(vi) Exceptions to the above must be given in writing by the County engineer.

(b) Welded Steel Tanks - Design shall follow the provisions of AWWA standard D100, "Welded Steel Tanks for Water Storage" modified as follows:

(i) Tanks should be designed for seismic zone 0.

(ii) All permanent attachments to the tank shall be made prior to the hydrotest.

(iii) The alternative design basis presented in AWWA D100 will not be used unless approved by the county engineer.

(iv) Aluminum dome roofs shall be used only by approval of the county engineer.

(v) Tanks shall be provided with remote level sensing and recording equipment with telemetry to the Mattawoman WRF control building.

(vi) The design professional will specify that the contractor will furnish at a minimum, the information listed in AWWA D100, forward, paragraph iii.b.1. or iii.b.2. as appropriate.

(vii) Silt stops are not required for welded steel tanks.

(viii) Disinfection shall be performed by the contractor in accordance with section 8.2.e.5.a of this manual.

(c) Factory-Coated Bolted Steel Tanks - Design shall follow the provisions of AWWA standard D103, "Factory-Coated Bolted Steel Tanks" modified as follows:

(i) Tanks shall be designed for seismic zone 0.

(ii) Coatings for bolted tanks are usually proprietary, and each tank manufacturer is different. The coating shall, therefore, be a consideration in the selection of a manufacturer.

(iii) Foundations shall be installed by the contractor.

(iv) Foundation selection in AWWA D103, section 11.4, shall be based on site soil conditions.

(v) Aluminum dome roofs shall be used only by approval of the County engineer.

(vi) Silt stops are not required for factory-coated bolted steel tanks.

(vii) Tanks shall be provided with remote level sensing and recording equipment with telemetry to the Mattawoman WRF control building.

(viii) Disinfection will be performed by the contractor in accordance with section 8.2.e.5.a of this manual.

(ix) The design professional will specify that the contractor will furnish, at a minimum, the information listed in AWWA D103, forward, paragraph iv.

(3) Coatings and Linings for Steel Tanks

Selection of coating and lining systems for steel tanks shall follow the provisions of AWWA standard d102, "Coating Steel Water Storage Tanks", modified as follows:

(a) Use outside coating system no. 6 except the Dry Film Thickness (DFT) of the system selected should be a minimum of 9 mils.

(b) Use inside coating system no. 2, paint 2, except the dry film thickness (DFT) of the system selected should be a minimum of 13 mils.

(c) Roller application is the preferred method of application.

(d) Dry film thickness (DFT) is the preferred method to determine acceptability.

(e) The design professional shall specify that the contractor submit an affidavit of compliance that all materials and work comply with the applicable requirements of AWWA standard d102.

(f) The design professional shall list in the project specifications all Federal, State and Local regulations regarding environmental issues.

(g) The design professional shall specify that the contractor will furnish for approval submittals for the coatings manufacturer to include, but not be limited to, application method, materials, and material safety data sheets.

(4) Cleaning

All finished water storage facilities shall be cleaned to remove all dirt and loose materials prior to disinfection of the structure. Only potable water shall be used to clean and rinse the water storage facilities. All equipment including brooms, brushes, spray equipment, and workmen's boots shall be disinfected before they are used to clean the storage facilities.

(5) Disinfecting and Testing

(a) Disinfection - All potable water storage facilities shall be satisfactorily disinfected in accordance with AWWA standard c652, chlorination method 1, using calcium hypochlorite, prior to being placed in operation. The disinfection of the storage facilities shall be repeated until it is determined, by bacteriological testing, that the water is free of coliform bacteria.

(b) Testing - Testing of the water following disinfection shall be performed in accordance with AWWA standard c652.

(6) Cathodic Protection

If, at the direction of the county engineer, cathodic protection is required the design shall follow the provisions of AWWA standard D104, "automatically controlled, impressed current cathodic protection for the interior of steel water tanks", modified as follows:

(a) The design professional shall retain the services of a NACE international (National Association of Corrosion Engineers) certified corrosion engineer to design the cathodic protection system.

(b) The design professional shall specify that the contractor shall furnish an affidavit of compliance for all applicable provisions of AWWA D104.

(c) The design professional shall use the type a - ir drop-free potential measurement system.

(d) Long life anodes with a minimum life of 20 years shall be specified.

(e) The anode suspension system shall be a buoyant spider-type rope system with a design life of 20 years, minimum.

(7) Flexible membrane lining and floating cover materials

Design shall follow the provisions of AWWA standard D130, "flexible-membrane-lining and floating-cover materials for potable water storage", modified as follows:

The design professional shall specify that the contractor furnish an affidavit of compliance for all installed materials.

(8) Distribution Storage

(a) Pressure Variation - The maximum variation between high and low water levels in finished water storage structures which float on a distribution system should not exceed 30 feet or as approved by county engineer. Large diameter, shallow depth reservoirs are preferable over small diameter, deep depth reservoirs.

(b) Level Controls - Adequate controls shall be provided to maintain levels in distribution system storage structures at all times.

A telemetering system and recording equipment shall be provided, to Mattawoman WRF control building, for the transmission and recording of storage levels in the distribution system.

(i) Altitude valves or equivalent controls may be required for subsequent structures on the system.

(ii) Overflow, low level and pump malfunction warnings or alarms shall be transmitted to the Mattawoman WRF control building.

Pressure Tanks - pressure tanks shall not be used for distribution storage systems. Pressure tanks may be used for small community systems if approved by the county.

8.3 SEWER MAINS

A. General

(1) Sewer plans submitted for review and approval to the County will not be required to include the standard detail on the plan. The plans however must include a table, on the cover sheet, listing by detail number and name all sewer details which are applicable to the project. In cases where the County has no adopted standard detail for a specific construction method, the engineer must submit a special detail to the County Water & Sewer Engineer for review and approval. Once approved, the special detail shall be placed within the plans with notes in plan and profile on all applicable sheets referring to the special detail.

(2) Lines that serve two or more properties will be dedicated to the County.

(3) Lines terminated for future shall end with a manhole and a one (1) foot temporary capped stub.

(4) Computations shall be shown on the plans in accordance with Chapter 2, 1.J, Technical Bulletin: M-DHMH-EHA-S-001 Edition "Design Guidelines for Sewer Facilities", State of Maryland.

(5) Provide concrete encasement for protection of sewer mains per State Health Standards/Maryland Department of the Environment requirements as they relate to the vicinity of other utilities. Concrete encasement is also to be provided where SDR-PVC mains have less than a 2 foot clearance under storm drains, C-900-PVC and ductile iron mains have less than a 1 foot clearance under storm drains, under stream crossings, and on a case by case basis as determined by the County.

(6) Ductile iron pipe and restrained joints, in accordance with the County Standard Specifications for Construction Manual and Standard Detail Manual, shall be used for jack and bore carrier pipe.

(7) Ductile iron pipe with VITON or NBR rubber gaskets is required if gasoline storage is within 100 feet of the lines or if there is the presence of petroleum products within the soil.

(8) Sewer mains are to be constructed to the property line of all adjacent properties for future extension. If the adjacent property is designated as commercial, industrial or subdivided, the main extension should be sized appropriately.

(9) The repaving of roads shall be in accordance with the County Standard Specifications for Construction Manual and Standard Detail Manual.

B. Collector Sewers

(1) Design Basis

A sewage collection system shall be designed, to service the potential development of the sewerage service area at full build out based on the zoning ordinance permitted densities and current design criteria. Systems shall also be designed to connect with existing trunk lines or sub-interceptors at existing stub-outs wherever feasible. Whenever cost-effectiveness permits, the construction may be programmed in stages to accommodate both present and future needs. Special attention shall be paid to the depth of sewers adjacent to drainage ways such that the sewer is deep enough to accept flow from both sides of the drainage way. Sufficient cover over the sewer is required to prevent adverse affect on the drainage way.

(2) Existing Development

In developed areas, the basis for the flow projection shall be the actual number of single or multi-family homes, apartments units, various types of businesses, etc., present in the drainage area as determined by field count. An allowance shall be made for undeveloped areas as described below. Unless field investigations give reason to choose a different number, it shall be assumed that 2.83 persons reside in each dwelling unit. If there is strong evidence from field investigations that sufficiently less than 2.83 persons reside in each dwelling unit in the drainage area and that this condition will persist throughout the design period, the County will consider using a smaller number for design.

(3) Future Development

In small undeveloped areas, the basis for flow projection shall be the maximum number of residential units per acre according to current zoning regulations. This applies to residential or mixed residential/commercial zones. It shall be assumed that 2.74 persons will reside in each dwelling unit. In the case of small undeveloped portions of commercial or industrial zones, design flows shall be based on the land use consistent with current zoning regulations which would provide the most likely maximum sewage flow.

In large, undeveloped areas, the average daily flow for a given zoning classification shall be as given in Appendix "S", flow generation rates by zoning classification.

(4) Average Daily Flow

The average daily flow for collector sewers is based on the population and land use inventories and projections described above. Appendices "T" and

"U" are compilations of average daily flow generation rates for various types of establishments. The flow from each existing establishment shall be based on Appendix "T" when the number of persons using the facility can be determined or on Appendix "U" when only the gross area of the facility can be determined. The average daily flow shall be the sum of the flows projected for the existing or ultimate land use of each lot or parcel in the service area. In the case of largely undeveloped service areas, the average daily flow shall be based on Appendix "S", as described in Section 8.3.B.3.

Average daily flows given in the appendices for industrial facilities are for domestic-type flows only. Flows generated by industrial processes must be determined on a case-by-case basis.

(5) Peak Domestic Flow

The peak domestic flow is the average daily domestic flow peaked in accordance with the curve entitled "Diagram for Converting Average Daily Domestic Flow to Peak Flow" (Appendix "V").

Peak commercial or industrial flow is the average daily commercial or industrial flow peaked in accordance with a factor determined by evaluation of historical data for the commercial or industrial facilities and the periods in which these flows are generated. If historic peaking data for these facilities is unavailable, the average daily domestic flow, average daily commercial flow, and average daily industrial flow may be combined and then peaked using the curve in Appendix "V".

When evaluating and designing sewers that convey flow discharged from pump stations, the peak flow calculation for each downstream sewer section from the point of discharge, shall include the design pumping rate of the pump station within the calculation.

(6) Infiltration and Inflow

In the evaluation and design of sewers both future and existing**,** a minimum infiltration rate of 400 gallons/acre of service area per day shall be used. A higher rate of infiltration may be justified if there is evidence of poor soil conditions, high groundwater table, or deteriorated SHC's.

New non-sanitary connections to sanitary sewers are strictly prohibited

(7) Design Hydraulic Flow

The design hydraulic flow shall be the sum of the peak flows determined as described in Section 8.3.B.5, the infiltration rate determined as described in Section 8.3.B.6, and any industrial flows.

C. Interceptor Sewers

Determination of design hydraulic flows for interceptor sewers shall be generally as outlined for collector sewers. Interceptors which carry flows from a significant number of older collectors may have infiltration rates far in excess of 400 gallons/acre/day. ASCE manuals on Engineering Practice No.37 (WPCF MOP-9) and No. 60 (WPCF MOP FD-5) should be consulted for further information on computation of design flows for interceptor sewers. In all cases, the design hydraulic flows shall be approved by the County prior to proceeding with sewer design.

D. Hydraulic Criteria

(1) Collector Sewers

(a) Size

The size of the sewer shall be sufficient to carry the previously discussed design hydraulic flow with the hydraulic gradient coincident with or slightly below the crown of pipe. Size shall be determined by the relationship Q = VA, where:

Q = quantity of sewage in cubic feet per second (design flow). All flow calculations shall be expressed in GPM, GPD, MGD and CFS.

V = velocity in feet per second
A = required cross section area of conduit in square feet

(b) Velocity

Velocity shall be determined by the manning formula:

$$V = \frac{1.486}{n} R^{2/3} S^{1/2}$$

n = coefficient of roughness as indicated in Appendix "W"

S = slope in feet per foot

R = hydraulic radius - area divided by wetted perimeter

Minimum velocities of 2.5 feet per second shall be provided. Minimum velocities shall be determined based upon present average sewage flow. Appendix "X" (Mannings Formula Solutions) shows required slopes for various velocities with pipes flowing full. Appendix "Y" (Hydraulic Elements of Circular Section) indicates hydraulic elements of pipes flowing partially full.

Where velocities greater than 15 feet per second are attained, provisions shall be made to protect against erosion and displacement by shock. If practical, suitable drop manholes shall be provided to reduce steep slopes so as to thereby limit the velocities in pipes and manholes. When drop manholes are impractical for reduction of velocities, the sewer shall be ductile iron or other abrasion resistant material as approved by the County.

(2) Interceptor Sewers

(a) Size

Interceptor sewers shall be sized to carry the design hydraulic flow when two-thirds full (i.e., the maximum hydraulic grade line will be at [D/d -] d/D = 0.67 per Appendix "Y"

(b) Velocity

Velocities in interceptor sewers shall be as presented in Section 8.3.D.1.b.

(3) Force Mains

(a) General

(i) The design of a wastewater force main must be coordinated with the design of the wastewater pumping station. The proposed alignment and profile of the force main shall depict the changes in force main elevations and strive to achieve a vertical profile that rises continuously from the pumping station toward the transition manhole. The need for air and vacuum relief valves shall be evaluated and minimized as much as possible by adjusting the force main profile to minimize high points. The system curve for the force main, showing the total energy losses associated with the range of possible pumping rates, shall be developed and provided on the plans.

(ii) HGL profiles shall be developed for the various flow scenarios planned for the pumping station using the system curve for the force main. All HGL profiles shall be provided on the plans separately from the standard force main design profiles and shall indicate hydraulic gradients, flows, force main velocities, design friction coefficients, existing ground, proposed pipe invert elevations and all other pertinent data.

(b) size

(i) Force main size shall be based on the required pipe's maximum carrying capacity to convey the design flow rate within the

required velocities per section 8.3.d.(3).(c), while minimizing life cycle, construction, maintenance, and operational costs. The minimum force main size shall be four (4) inches.

(ii) The Hazen-Williams (HW) equation shall be used for calculating friction losses in force mains. Minor losses at transitions and bends shall also be added in the determination of the total energy losses. the hw coefficient of roughness ("C" factors) for force mains shall be as follows:

Material	"C" factor
DIP (new)	140
DIP (design)	120
DIP (old)	100

The Hazen-Williams factors indicated are representative of long-term design values for the system. The designer shall check all pump station and force main selections for the anticipated lower headlosses (higher C value representing new conditions) and higher headlosses (lower C value representing old conditions) to ensure the satisfactory operation throughout the design life of the system.

(iii) The static head shall be based on the difference in vertical elevations between the lowest "normal pump stop" level in the wet well and the point the force main discharges to the gravity sewer or at the highest point along the system, whichever is higher.

(c) Velocity

Forcemain design velocities shall be a minimum of 2.5 feet per second and a maximum of 5.0 feet per second.

(d) Water Hammer

The design professional shall prepare a complete study of each force main design in conjunction with the related pumping station. A written detailed analysis along with supporting plans and calculations shall be submitted to the county for approval prior to completion of the design and the contract drawings. This analysis shall include, but is not necessarily limited to the following:

(i) Transient pressures due to water hammer and the effect of these pressures on the entire system.

(ii) Investigation of the pipeline profile to determine the possibility of water column separation.

(iii) Reverse rotation characteristics of the pumps.

(iv) Shut-off characteristics of the proposed pump control valves.

(v) A graphic solution of the transient pressures combined with the total system characteristics.

(vi) Substantiation for the use of surge valves, when necessary, listing recommended size and computed discharge pressures. The maximum transient pressure plus the static head shall not be greater than the working pressure strength of the pipe and associated appurtenances.

(e) Hydrogen Sulfide Control

The design at a minimum, shall address hydrogen sulfide control as follows:

(i) In areas where hydrogen sulfide is a concern the designer shall minimize the number of drop manholes to the maximum extent possible (i.e. drops downstream of force main discharge).

(ii) All interior surfaces and inverts of sanitary sewer manholes including the transition manhole shall be coated with a hydrogen sulfide resistant material per county specifications. The coverage of protection shall be from either a force main or grinder pump discharge to the first downstream manhole or within 400 feet whichever is greater. In addition, hydrogen sulfide protection shall be provided where turbulence may be caused due to a drop manhole, severe pipeline slopes or any other sources of turbulence within a sewer system. Protection must be provided to all surfaces exposed to the sulfides. All applications of specialized coatings and liners are subject to the review and approval of the county engineer. See the standard specifications for all coating and lining material requirements.

(iii) The design shall also address odor control and may warrant additional corrosion control measures if high concentrations of hydrogen sulfide are expected. The designer shall provide an evaluation of the system and indicate the measures proposed to address odor and corrosion control.

E. <u>System Layout Criteria</u>

(1) Collector Sewers

(a) Horizontal Layout

(i) General

Collector sewers shall be laid on tangents only. All changes of direction and connections to other collector sewers shall be accomplished at manholes. In laying out the sewer, the design engineer shall take into full account such factors as environmental impact, maintenance of traffic, maintenance of existing utility services, constructability, and system maintenance, and shall produce the overall most cost-effective design.

(ii) New Subdivisions

In new subdivisions, collector sewers shall be located five (5) feet from the centerline of the street right-of-way, generally on the side of the street toward low ground. Collector sewers shall be located within the pavement area wherever possible, no less than five (5) feet from the face of existing or proposed curb. Where it is not feasible for manholes to be located within the pavements, they shall be located wholly within the grass plot or wholly within the grass plot between the curb and sidewalk. On private roads and parking areas manholes are to be located outside of parking areas. Manholes will not be allowed in sidewalk.

(iii) Existing Developments (Closed Section Roads)

In existing developments with curbs, sewer location shall generally be the same as in new subdivisions. The location of other existing and proposed utilities shall be fully considered.

(iv) Existing Developments (Open Section Roads)

In existing developments without curbs, collector sewers shall generally be located four (4) feet outside of the edge of pavement, except that the sewer shall not be located under a future curb. The location of other existing and proposed utilities shall be considered.

(v) Parks and Public Rights-of-Way

Where location of sewer would require the removal of or damage to trees within parks or public rights-of-way, design engineers shall obtain approval of the state department of forestry for sewer alignment and trees to be removed.

(vi) Easements

All sewer utility easement widths shall be in accordance with latest Plan Preparation Package. No other utilities or structures will be allowed in the sewer utility easement without written County approval.

(b) Profile Layout

(i) Grades

Grades shall be such as to require the least excavation while satisfying minimum and maximum velocity requirements, clearances, and depth requirements discussed hereinafter. All collector sewers shall be on tangent grades with required breaks in grade accomplished in manholes.

(ii) Depth

In developed areas, sewer inverts shall be a minimum of 2' + H below the basement elevations, where H = length of house lateral connection between the sewer and the point of connection to the existing house sewage system, or stack, multiplied by the required house connection slope. For houses without basements, sewers shall be a minimum of 2' + H below the first floor elevations. In all cases, sewer depth shall be sufficient to meet criteria established for house connection, depth, grade, and clearance.

Sewers at stream crossings shall be constructed with a minimum of three feet of cover between the pipe and stream invert. At all stream crossings, the design engineer shall consider such items as flotation, stream meandering and scouring, and infiltration; and shall include protective measures for such in the design.

(iii) Upstream of Pumping Stations

Protection of private property from collection system surcharges where a plumbing drainage system is subject to backflow of sewage from the public sewer or private disposal system, suitable provision shall be made to prevent overflow in the building.

In order to insure that surcharges in the collection system and/or pumping station failures will not result in sewage backing up into basement and first floor plumbing fixtures of nearby residences, the design of all [pumping station] collection systems shall:

(A) Determine the rim elevation of the next upstream manhole in the public sewer from the building.

(B) For projects having basement service, all basement elevations lower than the manhole frame and cover established in Section 8.[2]3.E.1.b.iii.A above shall be identified. fixtures and/or drain inlets subject to backflow and flooding from blocked or restricted public sewers shall be protected by a backwater valve. such situations include those where fixtures and/or drains are located above the crown level of the public sewer at the point of connection thereto but are below the overflow level of the public sewer.

(C) For projects or portions of projects having first floor service only, first floor elevations lower than the manhole frame and cover established in 8.3.E.1.b.iii.A above shall be identified and protected by a backwater valve.

(D) All vacant lots having a ground elevation lower than the manhole frame and cover established in 8.3.E.1.b.iii.A above shall be identified.

(iv) Gravity Service not to be provided

Sewer project plans shall clearly label any improved lots for which gravity service is not to be provided. Any recommendation for not providing gravity service is to be documented, with the reasons therefore, by the design engineer to the County for approval. For lots where it is determined that gravity service is not available, a note shall be placed on the drawings as follows:

"A grinder pump is required for sewer service to this lot. The grinder pump and associated low pressure sewer system shall be owned, operated, maintained, and replaced by the property owner."

(c) Clearances of other Utilities

(i) Interactive Considerations

In general, existing utilities have prior right to maintain their location. The existence and location of such utilities must be considered when designing new sewers. Clearance shall be measured between outside of pipes. Design engineers shall investigate clearance between sewer and

other utilities, both existing and future.

(A) General

The following design factors must be considered in providing adequate separation:

- Materials and type of joints for water and sewer pipes
- Soil conditions
- Service and branch connection into the water main and sewer line
- Compensating variations in horizontal and vertical separations
- Space for repair and alterations of water and sewer pipes
- Location of manholes

(B) Parallel Installation

A horizontal distance of at least 10 feet shall separate water mains and sewers. The distance shall be measured edge to edge. In cases where a 10 foot separation is not practical, deviation may be allowed on a case-by-case basis subject to County and State approval if supported by data from the design engineer. Such deviation may allow closer installation provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.

(C) Crossings

Where water mains must cross sanitary sewers, building drains or storm drains cross, there shall be a vertical separation of 18 inches between the bottom of the water main and the top of the sanitary sewer, building or storm drain. This vertical separation must be maintained horizontally for a distance of 10 feet. The 10 foot distance is to be measured as a perpendicular distance from the sewer, building or storm drain to the water line.

(D) Exceptions

When it is impossible to obtain the proper horizontal or vertical separation as stipulated above, both the water and sewer lines shall be constructed of ductile iron with mechanical joints. Other types of pipe and joints with equal or greater integrity may be used at the discretion of the County. Thermoplastic pipe may be used with mechanical or solvent weld joints. These installations shall be pressure tested to assure water tightness before backfilling. Where a water main must cross under a sewer, additional protection of the water main shall be provided. The County shall be consulted to discuss the use of double casing or concrete encasement of the sewer and/or water main.

(ii) Separation of Utilities and Sewer Manholes

No utilities shall pass through any part of a sewer manhole.

(iii) Clearances at other Utilities

Sewers shall have a minimum of 12 inches clearance from drains, gas mains, and other unspecified utilities. If 12 inches cannot be maintained at crossings, provide encasement of sewer for the width of the utility trench.

(d) Appurtenances

(i) Manholes

(A) Details are shown in the Standard Details Manual. The designer shall use these standards as required to meet the design situation and shall designate the type of each manhole on the drawings.

(B) Manholes and vaults are to be constructed two (2) feet above finished grade in flood plains and non-maintained areas.

(C) Maximum spacing for manholes on sewers less than 18 inches in diameter shall be 400 feet; 500 feet for sewers 18 to 27 inches in diameter; and 600 feet for sewers larger than 27 inches.

(D) Line manholes shall be used at all changes of pipe size, grade, alignment, or connections of two or more sewers. A minimum drop of 0.10' between influent and effluent inverts shall be used at line

manholes.

(E) Interior coating of manholes shall be as specified in the Charles County Standard Specifications for Construction Manual.

(ii) Frames and Covers

(A) Provide a bolt-down frame & cover for all manholes in flood plains and non-maintained areas in accordance with the County Standard Detail Manual.

(B) Water tight frames and covers are to be provided for manholes within flood plains, ditches or other areas of collecting or passing water.

(c) All manhole frames and covers that are not bolt-downs, shall be fitted with manhole cover inserts/liners to minimize the amount of inflow and sediment that enters the sewer system. The inserts shall be installed upon "substantial completion".

(e) Structural Considerations

(i) Soil Conditions / Foundations

Where extremely poor soil conditions, such as running sand, material with high organic content, etc., are anticipated; design engineers shall secure soil samples and discuss the analysis of the samples with the County. In all cases, a proper foundation shall be provided for pipes. Where pipes are to be placed on fill, ductile iron pipe shall be placed on timber pile bents unless special measures satisfactory to the County are taken to consolidate the fill.

(ii) Grades / Anchors

Sewers designed on slopes of 20 percent or greater shall have anchorages in accordance with the Standard Details Manual as follows:

20% - 34% - 36' center to center (max.)

35% - 50% - 24' center to center (max.)

greater than 50% [+] - 16' center to center (max.)

(iii) Under Drains

Where there is evidence of spring heads or a high groundwater table in the area of the proposed sewer, under drains shall be provided and shown on the drawings.

(iv) Depth and Loading

Minimum and maximum permissible depths and loadings for pipes of the various types and classes shall be in accordance with the Standard Specifications for Construction Manual and the manufacturers' recommendations and bedding requirements. Manufacturers' data shall be submitted as part of the plan submittal.

(f) Venting

The design engineer shall indicate the method of proposed ventilation of gravity sewers if other than manhole top openings.

(2) Interceptor Sewers

There shall be no service connections made directly to interceptor sewers. All service connections shall be made at manholes. Once the interceptor has been installed, no new manholes may be constructed over interceptor sewers.

(a) Horizontal Layout

Interceptor sewers generally follow streams or the valley of a drainage area. They shall be located so as to best serve the drainage area. Special caution is required to insure the proper location of manholes for future connection of collecting sewers.

All sewers, especially interceptor sewers shall be laid with straight horizontal and vertical alignment between manholes. Horizontal and/or vertical curves shall not be employed on gravity sewer mains.

(b) Profile Layout

Grade requirements shall generally be as described for collector sewers in Section 8.3.E.1.b.i. The depth of interceptor sewers is not directly controlled by lot and house elevations. The depth of interceptor sewers shall be sufficient to allow connection of all existing and foreseeable future collector sewers within the service area served. In general, the top of the sewer elevation should be a minimum three and one-half feet (42") lower than the stream bed and have six feet of cover where possible.

Sewers at stream crossings shall be constructed with a minimum of

three and one-half feet (42") of cover between the pipe and stream invert. At all stream crossings, the design engineer shall consider such items as flotation, stream meandering and scouring, and infiltration; and shall include protective measures for such in the design.

(c) Clearances at other Utilities

The requirements for horizontal and vertical clearances between interceptor sewers and other utilities shall be the same as those for collector sewers. See Section 8.3.E.1(c).

(d) Appurtenances

(i) Manholes

Manhole requirements for interceptor sewers shall be the same as those for collector sewers, Section 8.3.E.1(d)i, with the following modifications:

- Manholes will be required where collector sewers join the interceptor.
- Precast concrete manholes constructed in these areas shall meet the standard ASTM C478 criteria.

(ii) Frames and Covers

Frame and cover requirements for interceptor sewers shall be the same as those for collector sewers, Section 8.3.E.1(d)ii.

(e) Structural Considerations

Structural considerations shall be the same as for collector sewers. See Section 8.3.E.1(e).

(3) Force Mains

(a) layout

Force mains shall be located within public rights-of-way or easements

(b) Material

Force main material shall be ductile iron.

(c) Profile

Ideally, the force main shall be designed without intermediate high

points and with the top of the force main being below the hydraulic grade line at the minimum pumping rate so that air release valves will not be needed. If the elimination of high points is not feasible or if the design requires long, relatively flat vertical alignments, the design may require air release and air and vacuum valves.

Blowoffs along 4-inch and larger force mains are required where the force main contains a depressed section between two high points.

Continuous uphill pumping is preferred for a force main, where the force main discharge point to the gravity sewer is at a higher elevation than the rest of the system, so as to keep the force main full.

Force mains with intermediate high points above the gravity sewer discharge point can create partial vacuum conditions in the force main under circumstances such as draining conditions that occur due to intermittent pumping or when the hgl profile drops below the pipeline profile. The designer shall provide appropriate air release and air vacuum valves to protect the force main against damage under these conditions.

Downhill pumping is prohibited.

All force mains shall have a minimum 3.5-foot depth of cover. In street rights-of-way cover shall be measured from the top of the force main to the proposed grade, or in cases when the proposed grade is above the existing ground surface, the depth of cover shall be measured from the existing ground line. In easements across private property, future development in the area shall be given consideration when developing the force main profile and possible future development grades shall be evaluated to ensure that the minimum depth of cover is met.

The top of the force main and its appurtenances shall generally be designed to be lower than the HGL. If the top of the force main is above the HGL, then the fm should be lined with protecto 401 or better for a sufficient distance to eliminate H_2S corrosion.

(d) clearance

Sanitary force mains paralleling water mains shall have a minimum clearance of 10 feet horizontally and shall be a minimum of 1.5 feet below water main.

Sanitary force mains shall have a minimum of 1 foot vertical clearance when parallel to or crossing other utilities.

Clearance shall be measured from the outside diameter of the pipes.

(e) appurtenances

(i) Pipe Deflections

Force mains may be curved by deflecting the alignment at the joints. Deflection at the joints shall not exceed one half the maximum as set forth by the manufacturer of the pipe used.

(ii) Air release and air/vacuum release valves

Valves shall be constructed per county specifications and details. The following guidelines shall be used to locate air and vacuum release valves:

- Peaks in profile
- Abrupt increases in downward slopes
- Abrupt decreases in upward slopes
- Long ascents – 1,500 ft. to 3,000 ft. intervals
- Long horizontal – 1,500 ft. to 3,000 ft. intervals
- At pumps – on the discharge pipe as close as possible to the check valve
- At large valves or bypass piping

The air and vacuum release valve vault will be vented above ground as shown on the standard details. Odor control measures, such as soil odor filters, may be required by the department if air release valves are located near populated areas. Air release valve bypasses may be required at the county's option. Intakes for vacuum valves shall be above the 100-yr flood elevation to allow proper operation of the valve during flood conditions.

(iii) Blowoff Valves

Shall be located at all low points along the force main per county standard details manual.

(iv) Isolation Valves

Shall be located at intervals and crossings as stated under section 8.1.d.(8).(b).(i) & 8.1.d.(8).(b).(v) and at air/vacuum/blowoff valve locations.

(f) Structural Considerations

(i) Pipe Loading

Minimum and maximum permissible depths and loadings for pipes of the various types and classes shall be in accordance with county standard details and the manufacturers' recommendations and bedding requirements. Manufacturers' data shall be submitted as part of the plan submittal.

(ii) Anchorages

Force main design shall have anchorages in accordance with the standard details manual.

(g) Test

Leakage tests shall be in accordance with the procedures outlined in the latest county specifications.

F. Grinder Pumps/Pressure Sewer Systems/Step Systems

Alternative wastewater systems will be reviewed on a case by case basis, but will not be considered as a method of providing sewer service that could otherwise be furnished by conventional gravity systems (including pumping stations). Unless otherwise agreed to grinder pumps are to be privately operated and maintained and must adhere to the County Standard Specifications for Construction Manual.

G. Sewer House Connections

(1) Location

The County-owned portion of house connections shall be built to the right-of-way/property/easement line for all lots within proposed developments. All adjacent improved lots which are not a part of the proposed development, but which front and may be served by the service line, shall have the sewer service laterals, including cleanouts, constructed to the right-of-way/property/easement lines. Twin sewer house connections shall be allowed and encouraged. Service lines for house connections shall not be connected directly to interceptor sewers.

(2) Size

Connections to large buildings such as apartments or factories shall be designed and sized in accordance with the criteria previously presented for collector sewers. The minimum connection size for buildings shall be six (6) inch diameter from the main to the clean-out and four (4) inch from the clean-out to the building.

(3) Materials

House and building connections shall be in accordance with the latest County Standard Specifications for Construction Manual.

(4) Appurtenances

Clean-outs shall be provided on all house and building connections at the right-of-way/property/easement line. Clean-outs shall be shown and constructed in accordance with the latest County Standard Specifications for Construction Manual and Standard Detail Manual.

(5) Grades

House and building connections shall be designed such that service is provided for all lots to the mid-point of the lot at a two percent (2%) minimum grade, unless otherwise approved by the County. The maximum grade shall be six (6) percent. House and building connections may have

a one percent minimum grade as determined by the County on a case by case basis. Minimum cover at the right-of-way/property/easement line shall be 42 inches. Where storm drains have been designed, or have not been installed, house connections shall have a minimum cover within the street right-of-way of 6.5 feet.

(6) Clearance

(a) Parallel to Water House Service

Sewer house services shall ordinarily be placed 10 feet horizontally and 1 foot vertically under and from the water house connections. In cases where this is not achievable, deviation may be allowed on a case by case basis subject to County and/or state approval. Such deviation may allow a horizontal separation of 1.5 feet with at least a 6 foot vertical clearance (sewer being placed on the bottom). If schedule 40 PVC solvent weld pipe is utilized for the sewer house connection a 1.5 foot horizontal separation with at least a 1 foot vertical clearance (sewer being placed on the bottom) may be allowed if a passing pressure test with 10 foot of head of water or equivalent taken in the presence of a County representative is achieved.

(b) Crossing Storm Drains or other Utilities

Sewer house and building connections crossing storm drains and other utilities (existing or future) shall have a minimum clearance of 12 inches from these utilities.

(7) Structural Considerations

Structural considerations shall be the same as for collector sewers. See Section 8.3.E.1(e).

H. Grease Interceptors

(1) Are required for all food preparation facilities.

(2) To be located outside the building and constructed in accordance with the County Standard Detail Manual.

(3) Shall be sized for a minimum capacity of 2,000 gallons.

(4) To be shown in plan and profile with inverts and elevations.

I. Oil and Flammable Liquids Separators

Oil and flammable liquids separators are required in accordance with COMAR requirements.

J. Flag Lot Sewer Utilities

(1) For a two flag lot maximum, service laterals will be provided off of the main and include a clean-out at the right-of-way or easement line. Sewer service for each lot shall be located on each side of the driveway. Adequate easements are to be provided outside of the common access easement if necessary. The sewer service must be constructed in conjunction with the main from the clean-out to the building lot and capped for future connection. The end of the service should be marked in accordance with the County Standard Detail Manual. Clean-outs are to be provided every 75 feet and at the end of the lateral. Extension of the service as indicated above will prevent problems associated with the construction of the driveway prior to the construction of all sewer services.

(2) For three (3) or more flag lots, provide an extension of the sewer main to the last lot and terminate with a manhole. Provide service connections to all adjacent lots, with clean-outs located at the easement line. Adequate easements are to be provided on both sides of the sewer main and services and must extend outside of the common access easement if necessary.

8.4 MINIMUM DESIGN GUIDELINES AND REQUIREMENTS FOR WASTEWATER PUMPING STATIONS & RELATED FACILITIES

A. General

(1) In addition to the criterion contained herein, the design of wastewater pumping stations and related facilities shall meet the requirements of the 1978 edition of the State of Maryland "Design Guidelines for Sewage Facilities" or shall be exceeded where specified by the County. The

following additional manuals shall be consulted and applied to the design with the approval of the County:

(a) Water Environment Federation Manuals of Practice.

(b) Recommended Standards for Sewage Works, **(**latest edition) also known as the "Ten State Standards".

(c) "Pumping Station Design", 3rd edition (or latest), 2006, by Garr M. Jones

(d) "Design and Construction of Sanitary and Storm Sewers", 1969 by ASCE (MOP NO. 37) and WPCF (MOP NO. 9).

(e) "Odor Control in Wastewater Treatment Plants", 1995, WEF (MOP NO. 22) AND ASCE (MOP NO. 82)

(2) All aspects of the facility shall maximize operator safety. The facility shall be designed to operate reliably and efficiently with a minimum of attention and have provisions for easy access and maintenance. Equipment shall be selected on the basis of durability, availability of replacement parts, standardization, efficiency, and ease of maintenance and repair.

(3) The pumping station shall be designed for the maximum build out conditions of the wastewater pumping station service area as approved by the County using flows approved by the County.

B. Hydraulic Computations

(1) Design Hydraulic Flow Rate

Wastewater pumping stations shall satisfy the design hydraulic flow rate. Refer to Section 8.3.B & C.

A drainage area map and tabulation of the design flow shall appear on the plans. The map and tabulations shall show initial and ultimate drainage areas and wastewater flows.

(2) Wastewater Composition

Wastewater composition can vary widely depending upon the proportion of design flow generated by non-domestic users. Non-domestic user wastewater composition shall be investigated and the results included in the Engineering Report provided to the County Engineer. Adequate consideration and all necessary provisions shall be taken to ensure that wastewater pumping station equipment and materials are suitable for the anticipated composition of the wastewater. Consultation with the County Engineer is required in the event that the wastewater composition affects standard material and equipment requirements.

(3) Number of Pumps

Wastewater pumping stations shall be capable of pumping the design hydraulic flow rate with the largest single pump out of service.

(4) Wetwell Sizing

A minimum cycle time of 15 minutes is to be provided. Wet well capacity (in gallons) from pump on to pump off shall be of 4 times the capacity of the largest pump (in gallons per minute) for pumping stations with a three pump arrangement or greater, the minimum cycle time of 15 minutes shall be provided for each pump. Larger pumps may require cycle times greater than 15 minutes to satisfy motor manufacturer requirements.

(5) Hydraulic Analysis

Wastewater pumping stations must satisfy the hydraulic conditions of the system. The designer shall perform a complete hydraulic analysis of each wastewater pumping station. the hydraulic analysis shall consider potential impacts on existing force mains, gravity sewers and pumping stations when the new pumping station is added to the system. See section 8.3 “sewer mains,” for force main design requirements and analyses that must be performed in conjunction with the pumping station design.

Wastewater pumping stations shall be designed to operate at the appropriate discharge head and flow rate without the need for throttling valves or flow restriction devices.

(6) pump and system curves

System curve (head vs. flow) characteristics shall be determined by the Hazen- Williams formula for piping head loss. The pump/system curve shall be shown on the plans to scale. The pump/system curve shall show the following information at a minimum:

- Static head
- System curves for both new, design, and existing system conditions
- Pump curve – include single and multiple pump performance curves. If VFDS are used, multiple speed performance curves shall be shown.
- Pump horsepower, efficiency and rpm
- Pump manufacturer’s published recommended range of operation

Pump / system curves shall be shown for single pump operation, as well as for multiple pump operation in stations having three or more pumps. Hazen-Williams "C" factors used in evaluating pump and system curves shall be in accordance with the guidelines given in section 8.3 “hydraulic calculations,” of this manual for various pipe materials.

(7) Water Hammer

The potential impact of water hammer under usual and unusual circumstances (power outages, etc.) shall be evaluated. If the combined effects of static head and water hammer (using a safety factor of 1.1) do not exceed the weakest piping system component working pressure, no special provisions need to be included to control water hammer. Where the maximum water hammer pressure (using a safety factor of 1.1) exceeds the weakest piping system component (all piping, fittings, thrust blocks, and other appurtenances) working pressure, strengthen those elements affected, reevaluate pipe size and velocities or select an appropriate device to control water hammer. No pressure vessel/surge tank type devices will be acceptable.

(8) Pump Selection Criteria

Provide proper wet well design and suction line design per hydraulic institute standards to avoid cavitations. The designer shall perform a Net Positive Suction Head Available (NPSHA) analysis and include this information in the pump specification.

The NPSHA shall be calculated for the expected design flows and shall exceed the pump manufacturer's requirements by an added margin of safety of not less than five (5) feet. Pumps shall be selected to have their maximum efficiency at the operating design point. Under no circumstances shall a pump be specified to operate outside of its published recommended range under new through old system operating conditions. Examples would be pumps operating at very low flows and high heads, near shutoff heads, or "runout" conditions (maximum possible flow rate of the pump). These conditions can result in excessive hydraulic loading or cavitation damage to impellers, casings and shafts, rapid bearing and mechanical seal wear, and high vibration. The designer shall avoid the selection of pumps whose curves are flat (i.e. small changes in head resulting in large changes in flow rate).

C. Types of Wastewater Pumping Stations and Selection

Charles County wastewater pumping stations are divided into two categories, large (500 gpm and greater), and small (less than 500 gpm). The types of stations allowed are described below along with acceptable selection criteria. Station selection shall be determined by the County.

(1) Large pumping stations

Conventional: This type of pumping station is defined here as pumping stations in which the wet well and dry well structures are assembled or constructed on site and are typically used forflows 500 gpm and greater. The preferred method of construction is for the contractor to use pre cast concrete sections. However, if the configuration or sizes would make this

unfeasible then cast-in-place concrete sections will be permitted with the approval of the County. To help prevent overflows and maintain continuous operation during maintenance procedures, pumping stations shall have divided wetwells. Dry wells, including their superstructure, shall be completely separated from the wet wells. To facilitate differential settling or unforeseen movement, flexible joints shall be placed in the piping between all structures. All of the piping, valves, wiring and controls are assembled on-site by the contractor. Conventional wastewater pumping stations shall be engineered to meet the requirements of these guidelines, as well as any supplemental guidelines imposed by the County engineer on a case-by-case basis. These stations will have a wet well/dry well configuration and be of pre-cast or cast-in-place concrete construction. Conventional pumping stations shall be designed as long term (greater than 30 years) facilities. The design of conventional stations shall include room for anticipated expansion. The following guidelines and features shall be incorporated in the design of these stations:

(a) Site Design

(i) Location: wastewater pumping stations shall be located as far as possible from populated areas. Natural screening and remoteness of the site shall be primary elements of site selection wherever possible. Where pumping stations are sited in proximity to developed areas, the architecture of the station shall be compatible with the surrounding area. Predominant wind direction for potential odor dispersion and building aspects such as generator exhaust and ventilation fan noises shall be considered. Similarly, building setbacks shall be considered to provide minimal impact to neighboring properties.

(ii) Land acquisition: land required for pumping stations, including necessary vehicular access routes to an existing or proposed public roadway shall be owned in fee simple by the county. As part of this process, a boundary survey of the property is required together with a record plat and a metes and bounds description of the parcel. In determining the space requirements for the facility, particular attention shall be given to the width provided for the access road to ensure adequate space for grading and drainage within the access road right-of-way and easy access for maintenance and delivery trucks.

(iii) Topography: sewers tributary to wastewater pumping stations commonly dominate site selection. Adjacent drainage areas potentially served by the wastewater pumping station must also be considered. Wastewater pumping station site selection shall also be compatible with suitable site access, drainage, and soil capability with

respect to land grading in conjunction with site development. Existing contours and other topography shall be shown for the entire site including a 100-foot minimum width outside of the proposed property boundary on all sides.

Contour interval shall be two-foot, unless otherwise approved by the county engineer.

(iv) Floodplain: wastewater pumping stations shall be sited to remain operational and permit access during a 100-year return frequency flood. All top slab elevations of structures shall be set a minimum of two-feet above the 100 - year floodplain elevation. The access road shall be above the 100 – year floodplain elevation.

(v) Wetlands: avoid direct impacts wherever possible and minimize impacts to wetland buffer areas. buffer areas include the first 25 feet beyond non-tidal wetlands.

(vi) Grading: wastewater pumping station site grades shall prevent local ponding and provide positive drainage away from all structures and site. The site shall be a minimum of 1 foot above the surrounding area. Slopes on site shall be generally limited to no less than 1[%] percent and no greater than 4 percent. Stone surfaces around paved areas shall provide proper site drainage at slopes 10 percent or less. Land grading outside of the wastewater pumping station perimeter fence shall not exceed 3 to 1 slopes; 4 to 1 slope maximums are desirable. Lesser slopes wherever possible are preferred. Site grading design shall be compatible with slope stability for the soils encountered. Slope stabilization shall be appropriate for the degree of slope and soil conditions. the use of retaining walls on or immediately adjacent to the wastewater pumping station site is not permitted. There shall never be a situation where roof drains flow across walkways, roadways, or parking areas.

(vii) Pump-around Connection: a pump around configuration shall be provided for the use of portable pumps to prevent overflows during maintenance or repair of the pumping station. a manhole shall be provided within the fenced area of the station immediately upstream of the wet well. A device for isolation purposes (stainless steel sluice gate) shall be provided in the upstream manhole or on the influent sewer within the wet well. The force main will be provided with a connection on the outside of the pumping station for portable pumping from the upstream manhole directly to the force main. As an alternative, a partitioned

wet well can be utilized such that the wastewater can be directed to either of the pump intakes while allowing safe maintenance of the opposite side of the wet well or intake. Enough room shall be provided on the pump site to park the portable pump while allowing vehicle access to the wet well and dry well. The pump-around connection shall provide the capability to launch [PIGS] pipe cleaning devices, which shall require the pump-around diameter to be the same size as the force main and with an "increaser" to the next nominal size of pipe and a spool-piece whose length is 2 times the diameter of the force main. (example: a 6" force main needs a 6" pump-around line with a 6x8 increaser and a 12-inch long spool-piece.)

(viii) Pumping stations shall not be located directly downstream of any stormwater management facility discharge. Grading shall direct stormwater away and around the access road and site to an area downstream for treatment and/or further conveyance

(ix) Sediment Control: A sediment control plan shall be provided and approval obtained from the Charles Soil Conservation District (SCD).

(x) At least two test borings shall be taken, one at the proposed wetwell location and one at the proposed drywell/building structure to determine soil types, rock, water table elevations, soil bearing values, etc. standard penetration tests shall be taken at intervals not to exceed five (5) feet. Borings shall be taken to a depth of not less than fifteen (15) feet below the bottom of the proposed structure. Borings shall be taken deeper as necessary, depending on soil conditions.

(xi) Site Security: Pumping station sites shall be fenced with black vinyl coated chainlink fencing eight (8) feet tall, black vinyl coated post and black hardware, and a 16-foot wide locking gate for vehicle access. The fence is to include three (3) strands of barbed wire around the top. Additional property line fencing may be required as determined by the county engineer. The pumping station building shall have exterior lighting controlled by motion detectors. The building shall be provided with an entry alarm connected to the station SCADA.

(xii) Paving: Pumping station sites shall have P-4 paving section in accordance with table 2.07 of the road ordinance and include a minimum of two parking spaces. The site shall have sufficient room to allow AASHTO WB-40 access to

equipment by maintenance trucks (boom and vacuum trucks). An access road to the pumping station site shall have P-2 paving section in accordance with table 2.07 of the road ordinance. The width of the pavement shall be 20-feet wide with 2-foot gravel shoulders. The maximum grade for the access road shall not exceed 5%. The cross slope shall be in accordance with Standard Detail R/2.16.

The access road and site shall support a minimum AASHTO WB-40 turning radius. The site shall also include a wb-40 turn-around area. Pumping station access roads shall be used exclusively for pumping station maintenance and access.

(xii) Sidewalks, 4 feet wide in accordance with the road ordinance/detail manual, are to be provided between buildings and/or structures and from paved areas to buildings [or] and structures for access of equipment, dollies, etc.

(xiii) Station Sign: A permanent sign shall be provided at each pumping station stating the station name, street address and emergency telephone number. The sign must meet Charles County 911 addressing system.

(xiv) Yard hydrants and hose bibs shall be provided for wash down, maintenance, and sanitation purposes.

(b) Structures

All structures shall be set such that the top slab elevation is a minimum of one foot above finished grade.

(i) Wet well design: wet wells shall be considered a hazardous environment, classified as NEC class I, division I for explosive gases. Wet wells shall be designed and constructed to be as hazard free as possible, and corrosion resistant materials shall be used throughout. All materials and equipment used in wet wells shall meet NEC class I, division I standards, with the exception of control floats. Wet wells shall not exceed 25 feet in depth.

a. Structure: Wastewater pumping station wet wells shall be constructed of precast concrete. Wastewater pumping station wet wells shall consist of reinforced concrete base slabs, riser sections/walls and top slabs. Wet wells shall have an interior epoxy coating and exterior elastomeric membrane waterproofing. The bottom of the wet well shall be grouted to a minimum slope of one to one to the

hopper bottom and pump suction inlet. The horizontal area of the hopper bottom shall not be greater than necessary for proper installation and function of the inlet. Slope the hopper bottom between the inlets if necessary to prevent deposition of material between the inlets. Wet wells for pumping stations greater than 1.5 mgd design hydraulic flow shall be of the self-cleaning trench type design. Wet wells shall be adequately designed to prevent flotation. The wet well size and depth shall be as required to accommodate the influent sewer, as well as pump suction submergence as recommended by hydraulic institute standards and manufacturer requirements. The required working volume and preferred intervals between influent sewer and control elevations shall be determined as follows:

Wet wells shall be designed for a minimum pump cycle time of 15 minutes as defined by the following formula:

$T = 4V/Q$

Where:

T = pump cycle time (time between pump starts) in minutes

V = volume of wet well between the lead pump start and pump stop elevations, in gallons

Q = pump rate of the lead pump, in gallons per minute

The detention period for wastewater in the wet well shall not exceed 30 minutes at the average flow rate for the initial, intermediate and ultimate design years. When initial average flows are insufficient to actuate the pumps within a 30-minute period, temporary removable appurtenances shall be placed in the wet well or the adjustable floats for pump start shall be lowered. Wet wells shall be deep enough to accommodate the control elevation points.

b. Access: Wet well access shall be through a top slab opening with aluminum hatch cover and frame. Hatch shall be sized to utilize the top slab area to the maximum extent possible to facilitate removal of equipment and cleaning/maintenance of wetwell. The hatch shall also be

designed to the same loading as the top slab. In no instance, shall the access hatch be less than 36- inch by 36-inch.

c. Ventilation: wet wells shall be provided with a separate ventilation system and shall be sized to provide a minimum of 30 complete air changes per hour. In addition to manual control, time clock operation of fans shall be provided to allow a minimum of two (2) complete air changes per hour.

Ventilation shall be accomplished by the introduction of fresh air into the wet well under positive pressure. The fan shall be installed outdoors. The fan assembly and housing shall be corrosion-resistant and weatherproofed. The entrance hatch to the wet well shall be provided with a limit switch to energize the fan whenever the hatch is open. The fan shall be direct drive.

(ii) Dry well design: Dry wells shall consist of precast concrete construction. Dry wells shall have exterior elastomeric membrane waterproofing.

The dry well floor shall be sloped to a sump. A sump pump with piping to the wet well shall be provided and sump pump alarms are required. Sump pump piping shall contain a check valve to prevent siphoning from the wet well. The pump suction isolation valve shall have a hand wheel with an operating stem extending up to the control room. The hand wheels shall be marked with an open arrow. a surge relief valve, if required, shall be placed on the discharge header before the pipe leaves the station. Surge relief piping shall be piped to the wet well.

a. Access: dry well access shall be via a staircase with all necessary landings and handrails per OSHA requirements. Stairs are to be provided with appropriate landings in lieu of ladders with cages. Hatch and ladder access and circular stairs are prohibited. Equipment hatches for the pumps shall be located in the top slab and directly above the pumps. Traversing monorails with cranes of adequate capacity shall be provided above the dry well to facilitate removal of the pumps, motors, valves and all other related equipment. Grating (catwalks) shall be provided in the dry well to facilitate access to all piping without climbing over pipes, equipment, etc. grating, where used shall be structurally sound for the loads to be applied during maintenance and removal of equipment.

b. Ventilation: Dry wells shall be provided with a separate ventilating system and shall be sized to provide a minimum of 10 complete air changes per hour. In addition to manual

control, time clock operation of fans shall be provided to allow a minimum of four (4) complete air changes per hour.

Ventilation shall be accomplished by the introduction of fresh air into the dry well under positive pressure. the dry well ventilation system shall under no circumstances be connected to the wet well ventilation system and shall be away from any source of contamination.

Ventilation shall be automatically activated whenever the dry well lighting is energized and/or the access door is opened and the station is occupied by personnel.

c. Dual sump pumps shall be provided for redundancy. Alternation shall be accomplished by means of a manual h-o-a selector switch rather than electrical alternators.

d. To facilitate pump draining without flooding the building, pump intakes shall be drainable directly to the sump through piping or a channel drain.

(iii) Influent Manhole: One influent manhole collecting all of the gravity sewers that flow to the pumping station shall be provided. The influent manhole shall be located on the pumping station site. A gravity sewer shall carry wastewater from the influent manhole to the wet well. The influent manhole shall be capable of being isolated from the pumping station wet well by a sluice gate as required in section 8.4c(1)(a)(vii).

(iv) Pumping station building design/architectural standards: pumping stations shall be architecturally compatible with surrounding structures and shall not have slate roofs. Pumping station buildings shall be of pre-cast concrete and shall be designed to be vandal-proof. Roof shall be precast concrete gable type. Wood or asphalt shingles are not permitted. There shall be no exposed woodwork on the outside of the building. All exterior woodwork shall have a vinyl or aluminum coating. The pumping station shall have a lightning protection system. Provisions shall be made in the structure for traversing bridge cranes of adequate capacity to facilitate the removal of pumps, motors, valves and all other related heavy equipment. The pumping station doors shall be 16-gauge steel with deadbolts and locks keyed to the county standard. Doors shall be located and/or situated so that they are not affected by rain runoff from the roof.

The building shall be a minimum of 10 feet by 12 feet and shall include a work bench and wall cabinets for storage.

The finished floor and all electrical equipment shall be located at least two feet above the 100-year flood elevation. Ventilation openings shall be protected with aluminum louvers with bird screens. Floors shall be sloped (minimum slope shall be ¼ inch per foot) to floor drains piped to the influent manhole or wet well. The building floor shall be higher than the top elevation of the wet well. The building shall be furnished with a service sink with both hot and cold water, on-demand hot water heater, outside non-freeze hose bibb, and small desk with chair. a restroom shall be provided onsite as determined on a case by case basis based on the anticipated number of man-hours of operation and the remoteness of the site. The building shall conform to all Charles County building codes and zoning regulations.

a. Control Room

Electrical equipment shall be located above grade in a control room above the dry well. The control room shall be designed with adequate space to accommodate future upgrades.

b. Toilet Room

In some instances, a toilet room shall be provided with toilet, lavatory, on-demand hot water heater, towel dispenser, soap dispenser and mirror.

c. Water Service

A 1-inch diameter metered potable water source shall be provided for wash down, maintenance, and sanitation purposes. The service shall include a backflow preventer. The water service line shall provide a minimum of 30 gallons per minute to the emergency shower with a minimum residual pressure of 35 psi.

d. Heating and Ventilation

The building shall be heated by electric unit heaters with integral thermostats sized to maintain a minimum inside temperature of 40 degrees fahrenheit. Provide cooling as necessary to maintain air temperatures below 95 degrees fahrenheit inside electrical devices. Ventilation shall be by means of wall mounted exhaust fans with backdraft dampers operated by thermostats and freezestats and intake louvers with motor operated dampers. Ventilation shall be designed for a minimum of six (6) air changes per hour. Provisions shall also be made, if applicable, to ensure against condensation forming on controls and other major items of equipment.

(c) Equipment

(i) Screening & Grit Removal: Coarse bar screens are to be provided ahead of the pumps to protect equipment from rags, cans, bottles, sticks, etc. Grit removal will be required in areas where the County has experienced or expects a collection of grit and debris as determined by the County engineer. The pumping station shall include provisions for the installation of a grinder/macerator that may be installed at a later time by the county. This includes determining the correct size unit, and ensuring that sufficient electric service is provided to operate the grinder/macerator. This shall also include the furnishing and installation of lifting hoist, access hatch, sliding guide rails, and associated mounting hardware.

(ii) Provide built-in lifting equipment rated for the expected loads. The equipment should be capable of transporting the equipment to the exterior of the building for loading onto service trucks.

(iii) Yard Valves: Yard valves shall be buried gate valves complying with the county's standard specifications and details for construction with operating nut and roadway valve box at grade.

(iv) Interior Piping: All interior wastewater piping shall be dip, class 53, with flanged fittings. Flanges shall be integrally cast on pipe or factory assembled screwed-on with proper bonding compound. Manifolds shall include flexible couplings for make-up and for expansion and contraction of the piping system.

Flexible couplings shall be provided on the suction and discharge of each pump.

(v) Arrangement of piping and equipment within the station shall be made with adequate space for maintenance, repair, removal or replacement of equipment, as well as to safeguard personnel working in the station. A minimum of three (3) feet of clearance between equipment and walls shall be provided. Depending on the size of the equipment and piping, greater clearances may be needed. Piping shall be adequately supported. Control and instrumentation piping shall be copper or stainless steel.

Provide color coding for piping in accordance with the standard specifications for construction manual.

(vi) Valves: each wastewater pump shall have isolation valves on the suction and discharge to permit the removal or maintenance of the pumps without affecting the operation of the remaining pumps. Valves shall be gate type per county standard specifications for construction. To prevent valve fouling locate the suction gate valve a minimum three (3) feet ahead of the reducers. In addition to the valving normally utilized within the pumping station provide an additional exterior isolation valve on each pump suction line between the wet well and dry well**.** The pumping station isolation valve shall be provided with a handwheel, extension stem and operating nut to allow access from the control room floor. The handwheel shall be marked with an open arrow. Each pump shall have a hydraulically operated, time adjustable pump check service valve or a swing check valve to prevent backflow through inoperative pumps. in accordance with the criteria for water hammer control, pump check service valves shall be of the type and strength required to eliminate water hammer damage. Pump isolation or check valves shall not be located in the wet well. Spring type, oil cushioned surge relief valves, when required, shall be provided on the discharge header of the station and be piped to the wet well.

(vii) Pressure Gauges: Pressure gauges for direct reading of line conditions shall be placed on both the suction and discharge of each pump and on the main discharge header piping after the last pump. Pressure gauges shall be oil-filled type, have a minimum 3 ½-inch diameter face and be equipped with snubbers and diaphragms. Pressure gauges shall be installed and configured such that the gauge can be isolated and the gauge piping be drained.

Accuracy shall be to within 0.5% of pressure. Pressure gauges shall have a range such that the normal operating pressure is near the middle of the gauge.

(viii) Flow metering: all wastewater pumping stations shall have polyurethane lined magnetic type flow meters with a replacement spool piece or bypass line provided to enable the pumping station to operate when the meter is being serviced.

Magnetic flow meters shall be provided with grounding rings and isolation valves. Accuracy shall be to within 1% of flow. All flow meters shall have an adequate straight run of pipe both upstream and downstream of the meter in accordance with the manufacturer's recommendations. A seven (7) day circular chart recorder with totalizer and indicator recorder in units of gpm shall also be provided.

(ix) Pumping units: wastewater pump suction and discharge shall be 4-inch minimum diameter. All wastewater pumps shall rotate clockwise as viewed from the motor end. Wastewater pumps shall be centrifugal non-clog solids handling pumps capable of passing a hard 3-inch sphere as well as stringy material and meet all requirements of MDE.

The pump bearings shall have a minimum 100,000 hours abma-10 bearing life. The pump motors shall operate on 480 volt, 3 phase, 60 cycle electrical service and at a speed no higher than 1780 rpm. The pump motor horsepower shall be sufficient to prevent motor overload under all possible conditions. The pumps shall meet the vibration performance specifications of the Hydraulic Institute (HI). All wastewater pumps shall be factory witness tested and approved prior to shipment. All wastewater pumps must pass an on-site vibration test performed by an independent vibration testing company prior to acceptance. Wastewater pumps and motors shall be suitable for continuous duty. pumps shall be of the types listed below.

a. Dry well wastewater pumps (conventional and package stations only): pumps shall be of the dry pit submersible design. The pump casing/volute, impeller, support base, suction elbow, seal housing/motor adapter and motor housing shall be of cast iron construction. The pump's casing and impeller shall be fitted with replaceable hardened stainless steel wear rings to maintain sealing efficiency between the volute and the impeller. At the option of the county engineer, other pump materials may be required to suit a particular application. Each pump discharge volute casing and suction elbow shall be provided with an inspection and clean out opening.

b. Dry pit submersible wastewater pumps shall have the following additional features:

1) One piece backhead and motor adapter with impeller adjustment cap screws.

2) Solid full diameter stainless steel shaft with no shaft sleeve or solid large diameter high strength alloy steel shaft with stainless steel shaft sleeve having a tapered end with a keyway to receive the impeller.

3) Double mechanical shaft seals cooled and lubricated by potable water through a cleanable seal filter assembly and provided with a mechanical seal vent with petcock. Oil cooled may be provided with the approval of the County engineer.

4) Premium efficiency motors shall be specified (where commercially available) for all three-phase pump motors dry pit submersible wastewater pumps shall be designed for continuous operation in air for application in a dry well. The motors for dry pit applications shall be capable of a minimum of eight (8) starts per hour in air.

The pumps/motors shall also be designed to function continuously in a submerged condition should the dry well become flooded. Motor cooling shall be via cooling water jacket, submersible-rated air-over motor cooling fan or positively forced oil cooling. Variable drive units shall be provided when feasible.

(d) Electrical and Controls

(i) Electrical Design: All electrical designs and components shall be in strict accordance with all applicable national and county code requirements. Electrical design shall be such that phase out protection shall be provided so that the power will automatically switch off in the event of a loss of any one phase. Incoming electrical service shall be underground with electric meters installed outside the pumping station building. The electrical plans shall include, but not be limited to, the following:

(xxii) Design report shall provide the correspondence with the Charles County local power company showing the consultant's load breakdown along with the local power company's assessment of the voltage available, their ability to serve the project, and the availability of a second independent source of power. Specific local power company permission to use across-the-line starters or requirement for reduced voltage starters is required.

(xxiii) In addition to the proposed wiring diagrams, provide a narrative of the control sequence scenario which clearly explains the operational intent.

(xxiv) Complete plan layout indicating all conduit, wire sizes and equipment locations including lighting and other

appurtenances. Incoming electrical service on the pumping station site shall be underground and within concrete encased conduits.

(xxv) Installation details of equipment that are wall mounted, or suspended from the ceiling or otherwise required for clarity.

(xxvi) Single line diagrams incorporating all electrical components required for operation of the facility.

(xxvii) Complete lighting schedule noting model, size, location and installation data as well as appurtenances. Vandalproof exterior lighting shall be provided. Interior and exterior quartz lighting, separately switched, for maintenance purposes including auxiliary DC safety lighting is to be provided. Minimum lighting levels shall be 15 Foot Candles for stairways, and 100 Foot Candles for operations and maintenance.

(xxviii) Complete control and SCADA diagrams, including panel and instrument diagrams.

(xxix) Elevation of control panels with equipment and mounting dimensions and notes identifying each component.

(xxx) Complete circuit breaker schedule indicating size and identifying each circuit.

(xxxi) Ventilation schedule noting fan size, operating conditions, location, model, installation data, etc. the ventilation schedule shall also outline louver data including size, material, fixed or motorized.

(xxxii) Secondary power facilities and alarm equipment shall be designed so that they may be manually activated for periodic maintenance checks to ensure proper operation.

(xxxiii) Provide a legend of all symbols used for the above.

(xxxiv) Power for the station shall be 480 volts, three phase.

(xxxv) IEC electrical components shall not be utilized. For replacement compatibility and availability, only full sized NEMA UL listed electrical devices shall be used regardless of any equivalent UL ratings of IEC devices.

(xxxvi) Lockable safety disconnect switches are to be provided for all rotating equipment. Use lockable knife-switches rather than remote lockable start/stop button stations.

(xxxvii) Provide "push-to-test" type indicator lamps with screw-in type bulbs. Use of 120mb type bulbs is prohibited.

(xxxviii) Permanent, in-place, volt/amp meters are required for each pump or major piece of equipment.

(xxxix) Due to compatibility and standardization needs, provide only "Square-D", "Furnas", or "Cutler-Hammer" electrical equipment; no alternatives allowed

(xl) Use "Square-D", or County approved equal, Class 8501 Type "K" plug-in style relays to the maximum extent possible where appropriate. Provide integral power indicating lamps in the relays. The only exception to this should be where current requirements exceed contact ratings. Use plug-in style relays for timers, alternators, and latching as well. Octal or square relays are equally acceptable, although eight-pin octal relays are preferred. Use "Square-D" Type KP12P14 or KP13P14 or County approved for DPDT or 3PDT respectively.

(xli) Provide non-resettable elapsed time meters for all rotating equipment. Meters are to be in hours and tenths of an hour, not minutes. Provide an elapsed time meter for parallel operation of main wastewater pumps; e.g. A meter for pump #1, pump #2, and pumps #1 and #2 together.

(xlii) A weather proof red exterior "Trouble Light" for visual indication of equipment failures/problems is to be provided. A horn is not to be provided.

(xliii) Provide a junction pedestal(s) near, but outside, the wet well for power, lighting, and control cables leading to the wet well. Provide gas tight connections. No junction boxes are allowed inside the wet well. Gas tight lighting is to be provided inside the wet well.

(ii) Lightning and Surge Protection: The Designer shall provide lightning and surge protection at the wastewater pumping station. The lightning and surge protection shall comply with the latest editions of all applicable codes and standards. Provide phase failure and phase reversal protection for all equipment. A single phase condition shall not destroy motors, transformers, relays, etc. should the second source of power fail to take over.

(iii) Backup Power: All pumping stations shall be provided with emergency generators with automatic transfer switches as described in MDE guidelines. At the discretion of the county, a

diesel driven permanent standby pumping system may be required in lieu of an emergency generator. The generator area shall be located a minimum of two (2) feet above the 100-year flood elevation. Emergency generators shall be sized to maintain full station operation. Emergency generators shall be diesel driven with fuel storage on the underside of the generator in a belly tank or outside the building in an above ground storage tank. Fuel spillage protection shall be provided. Tank size shall be suitable for a minimum of 24 hours of generator operation at full load. Generators shall be mounted on vibration spring isolators. When emergency generators are located inside the pumping station building, they shall be mounted with a fuel tank fill connection to the outside. Generator engine exhaust shall be provided with a critical grade silencer and piped to the outside of the control building. Generator exhaust shall face away from nearby neighbors. If this is not possible, a baffle wall shall be constructed in front of the generator exhaust to deflect the noise. If the generator is located outside, its enclosure shall be acoustically lined.

(iv) Control/Scada: A complete and operable control/scada system shall be provided per county standard specifications for construction.

(e) Painting and Coating

All exposed piping, pump equipment and appurtenances including all structures shall be painted per county standard specifications for construction.

(f) Miscellaneous

(i) Odor Control: An odor control system shall be provided when required by the county engineer. The type of odor control system to be used at a particular station must be approved by the county engineer prior to design. Odor control systems shall be designed to mitigate odors from the wet well and influent manhole.

Acceptable methods include, but are not limited to: Carbon adsorption (air scrubbing), chemical addition at the wet well or influent manhole, and soil odor filters.

Wastewater pumping stations should be designed to minimize the possible formation of odors by limiting wet well detention times and avoiding turbulence in manholes and wet wells which cause odors to be released.

(ii) Hydrogen Sulfide Control: See section 8.3.d.(3).(e).

(g) Safety

(i) Gas detection and annunciation shall be provided for the dry well in the form of low explosive levels, and oxygen level as a minimum.

(ii) Appropriate emergency eye wash facilities shall be provided whenever chemical handling is proposed for the pumping station. The need for emergency fountains and showers, the design/configuration thereof, and their locations shall be in accordance with section 57.29 of the most current edition of the ten states standards for wastewater facilities and the applicable requirements of MOSH and the county safety officer. As a minimum, the eyewash fountains shall be supplied with water of moderate temperature, 50 to 90 degrees fahrenheit, suitable to provide 15 to 30 minutes of continuous irrigation to the eyes. As a minimum, the emergency showers shall be capable of discharging 30 gallons per minute of water at moderate temperature and at a minimum pressure of 35 psi.

(iii) Appropriately designed dielectric rubber floor mats are to be provided for insulation at all motor controls for personnel safety. If water on the floor is a possibility, the design must eliminate such water. A situation of motor control maintenance in wet or unsafe conditions is unacceptable.

(2) Small Pumping Stations

Design criteria for small wastewater pumping stations shall be the same as for conventional stations described above except where specifically stated otherwise.

(a) Submersible: Submersible stations are defined as stations where the pumps are "submerged" in the wet well. Because the pumps operate under water in the wet well, there is no need for a separate pump room. Guide rails enable the pump to be raised and lowered into place without requiring entry by personnel under normal circumstances. Submersible stations shall not be used for wet well depths greater than 25 feet.

(i) Pumping station configuration: submersible pumping stations shall be designed with an equipment hatch in the top slab for pump removal, nonsparking guide rails and manway hatch. Pumps shall be of the wet pit submersible type. The pumping station building shall contain all mechanical, electrical, and control equipment and a toilet room as described in the preceding sections of this chapter. The wet well and pumps shall be located adjacent to the pumping station building. The emergency generator shall be located outside of

the pumping station building in a weatherproof, sound insulated enclosure.

(ii) Wet well design: submersible pumping station wet wells shall be designed for pre-cast concrete construction. Wet well coating and design features shall be the same as described for conventional pumping stations.

(iii) Wet pit submersible wastewater pumps: Pump volute, impeller and motor housing shall be of cast iron construction. Pumps shall be centrifugal non-clog solids handling pumps capable of passing a hard 3-inch sphere as well as stringy material and meet all requirements of MDE. The pump volute casing and impeller shall be fitted with replaceable stainless steel wear rings to maintain sealing efficiency between the pump volute and impeller. At the county engineer's option, other special pump materials may be required for a particular application. The motor shaft shall be a single piece heat-treated high strength alloy steel or high strength stainless steel having a tapered end with keyway to receive the impeller. All nuts, bolts and screws shall be stainless steel. The motor shall be class f insulated (minimum) and sealed from the pump by independent double mechanical seals.

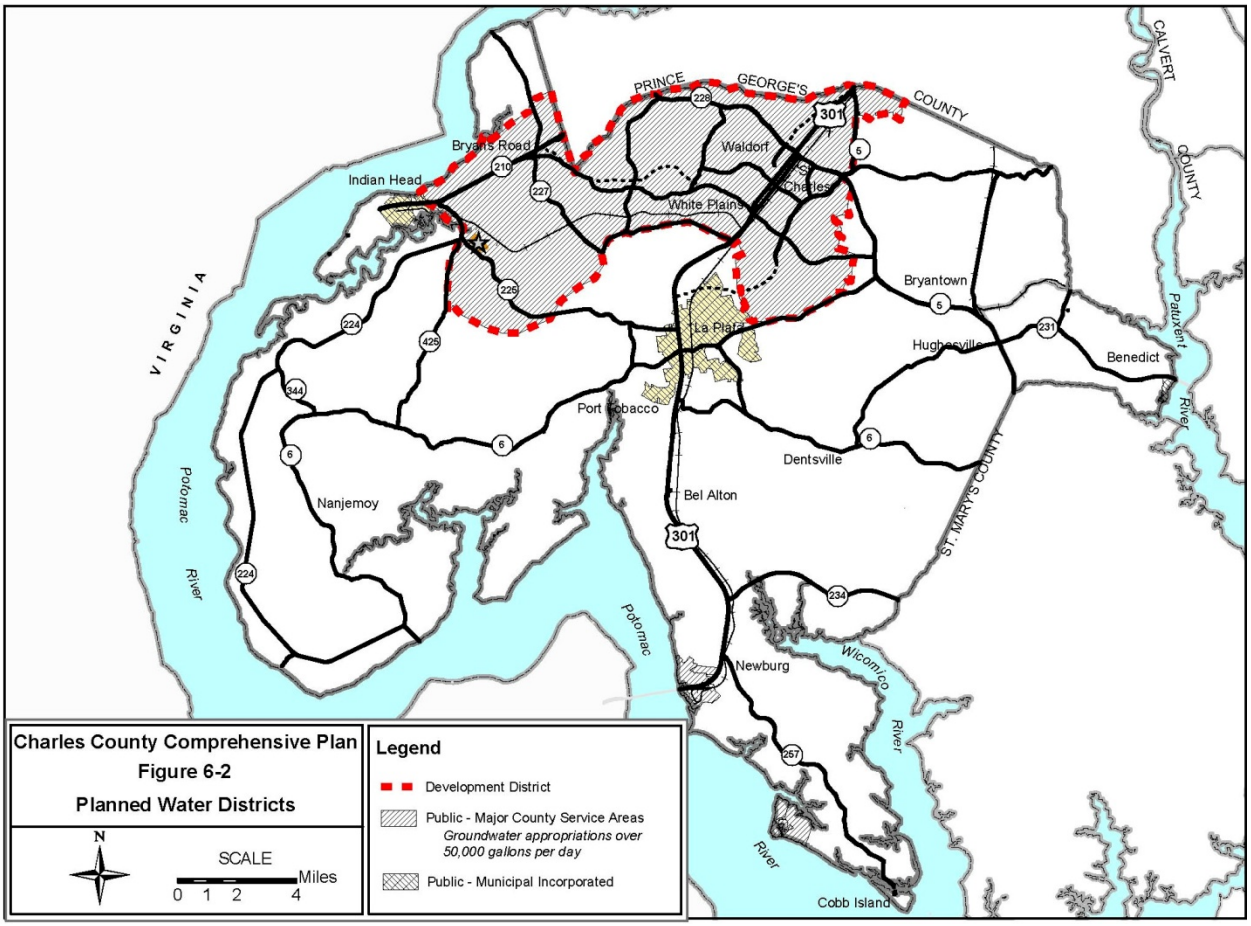
The upper and lower mechanical seal shall run in an oil chamber. the upper seal shall be a stationary tungsten-carbide seal with rotating carbon ring. The lower seal shall be one stationary and one positively driven rotating tungsten-carbide ring. All mating surfaces where watertight sealing is required shall be machined and fitted with a rubber o-ring. The machining of mating surfaces shall provide metal to metal bearing on sealing surfaces without crushing the o-ring.

(iv) Influent grinder/macerator: The wetwell or influent manhole shall be designed to accommodate an influent wastewater grinder/macerator (grinder) along with a bypass screening mechanism. The influent grinder shall be of the vertical twin rotor type and be located in either the influent manhole or in the wet well. The influent grinder shall be capable of being lifted out of the wet well or manhole by means of stainless steel guide rails without entering through an adequately sized access hatch. The pumping station shall include provisions

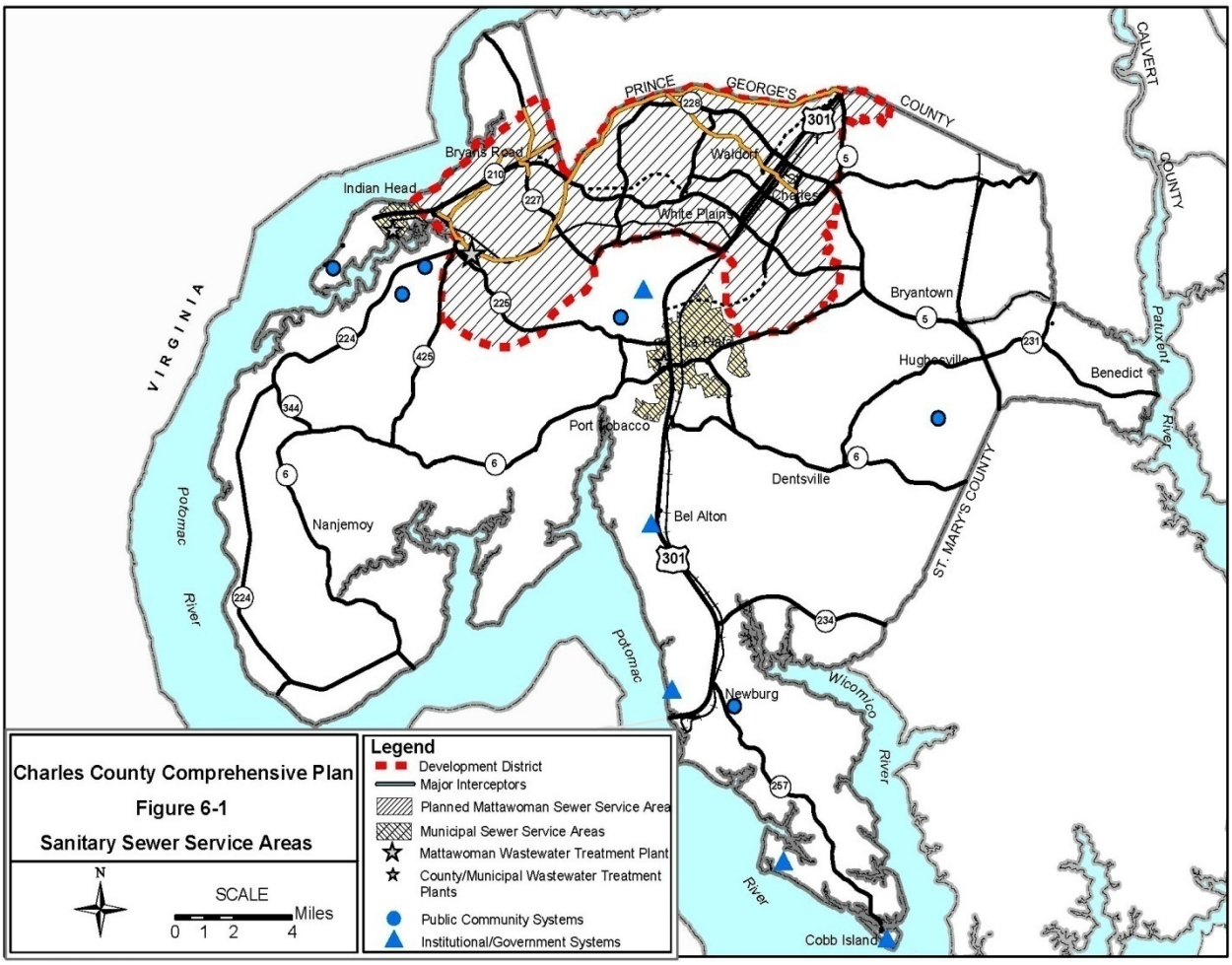
for the installation of a grinder/macerator that may be installed at a later time by the county. This includes determining the correct size unit, and ensuring that sufficient electric service is provided to operate the grinder/macerator. This shall also include the furnishing and installation of lifting hoist, access hatch, sliding guide rails, and associated mounting hardware.

(v) Electrical and controls: Shall meet the same requirements for conventional pumping stations.

APPENDIX "A"


PRINCE GEORGE'S COUNTY
CALVERT COUNTY
VIRGINIA
Bryans Road
Indian Head
Waldorf
White Plains
La Plata
Bryantown
Hughesville
Benedict
Port Tobacco
Dentsville
Bel Alton
Nanjemoy
Newburg
Cobb Island
ST. MARY'S COUNTY
Potomac River
Patuxent River
Wicomico River
Charles County Comprehensive Plan
Figure 6-2
Planned Water Districts
N
SCALE
Miles
0 1 2 4
Legend
Development District
Public - Major County Service Areas
Groundwater appropriations over 50,000 gallons per day
Public - Municipal Incorporated

APPENDIX "A-1"


PRINCE GEORGE'S COUNTY
CALVERT COUNTY
VIRGINIA
Bryans Road
Indian Head
Waldorf
La Plata
White Plains
Bryantown
Hughesville
Benedict
Port Tobacco
Dentsville
Bel Alton
Nanjemoy
Newburg
Cobb Island
ST. MARY'S COUNTY
Potomac River
Patuxent River
Wicomico River
Charles County Comprehensive Plan
Figure 6-1
Sanitary Sewer Service Areas
SCALE
Miles
0 1 2 4
Legend
Development District
Major Interceptors
Planned Mattawoman Sewer Service Area
Municipal Sewer Service Areas
Mattawoman Wastewater Treatment Plant
County/Municipal Wastewater Treatment Plants
Public Community Systems
Institutional/Government Systems

APPENDIX "B"

Building Permit Number _____ Utility Permit Number _____

Charles County Government
Department of Planning and Growth Management
P.O. Box 2150, La Plata, Maryland 20646
Utility Permits (301) 645-0726 Metro (301) 870-3935 ext. 726 Building Permits (301) 645-0692

APPLICATION FOR WATER AND/OR SEWER UTILITY SERVICE

Owner's Name:_____ Phone:_____ Date:_____

Address:_____ City, State:_____ Zip Code:_____

Location of Property: Address:_____ City:_____

Lot Number:_____ Subdivision Name:_____

Type of Service (□ all that apply): □ Water □ Sewer □ New □ Repair □ Commercial □ Residential

Water: Size line required _____ Length of pipe _____ Meter Size _____

Type of Pipe (□ one): □ Type "K" Copper □ D.I.

P.R.V. Required? □ Yes □ No Backflow Preventer? □ Yes □ No

Sewer: Size line required _____ [P.V.C. Schd 40 is required for pressure/vacuum sewers, or if sewer lateral is within 50 feet of a well.]

Type of Pipe (□ one): □ P.V.C. SDR-35 □ C.I.P. □ D.I.P □ P.V.C. Schd 40 □ P.V.C. SDR-21

For Office Use Only

Water Connection Fee	$_____
Credited Water Fee	$_____
Sewer Connection Fe	$_____
Credited Sewer Fee	$_____
Water Only Inspection Fee	$_____
Sewer Only Inspection Fee	$_____
Meter Inspection Fee	$_____
W/S Inspection Fee	$_____
Developer Surcharge Fee	$_____
Water Meter Fee	$_____
Total	$_____

Approved and Accepted:
By:_____ Date:_____

Entered in computer:_____

White - file Yellow - customer Gold - Inspector

NOTICE

An application for Utility Service shall automatically become null and void if the approved water/sewer utility service is not commenced within six (6) months after a permit is issued. Furthermore, an application for water/sewer utility service will be considered abandoned if, after the date of filing, the application is not approved or issued within six months. The connection and inspection fees will be refunded less an administrative fee as determined by the County.

Utility permits approved after May 15, 1996, must adhere to the County's Standards and Specifications for Construction Manual.

Owner's Signature:_____

Master Plumber's Name (print):_____

Master Plumber's Signature:_____

MD. License No.:_____

Business Name:_____

Phone Number:_____

APPENDIX "C"

CHARLES COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
WILLIAM A. SHREVE, SR., DIRECTOR

HYDRANT METER RENTAL CONTRACT
TERMS AND CONDITIONS

1. **HYDRANT METERS ISSUED BY CHARLES COUNTY GOVERNMENT ARE FOR USE IN CHARLES COUNTY ONLY. USE OF THESE METERS OUTSIDE OF CHARLES COUNTY WILL RESULT IN FORFEITURE OF THE ENTIRE DEPOSIT, CANCELLATION OF THE AGREEMENT AND RECOVERY OF THE METER.**

2. **IN CASE OF DROUGHT OR REQUIRED RESTRICTED WATER USAGE, YOU WILL BE NOTIFIED TO CEASE USING WATER FROM ALL HYDRANTS UNTIL FURTHER NOTICE. YOU WILL NOT BE CHARGED THE MONTHLY RENTAL FEE DURING THIS TIME.**

3. **APPLICANTS MUST HAVE SUFFICIENT NEED AND PROVIDE JUSTIFICATION TO BE ELIGIBLE TO HAVE A HYDRANT METER.**

4. **AN INITIAL DEPOSIT OF $1,759.00 IS REQUIRED UPON THE EXECUTION OF THIS CONTRACT FOR A 3" METER; OF WHICH $879.50 IS NON-REFUNDABLE; THE REMAINING $879.50 IS REFUNDABLE UPON RETURN OF THE METER IN GOOD WORKING CONDITION.**

5. **AN INITIAL DEPOSIT OF $488.00 IS REQUIRED UPON THE EXECUTION OF THIS CONTRACT FOR A 1" METER; OF WHICH $244.00 IS NON-REFUNDABLE; THE REMAINING $244.00 IS REFUNDABLE UPON RETURN OF THE METER IN GOOD WORKING CONDITION.**

6. **ONLY HYDRANTS LOCATED ON THE WALDORF/WHITE PLAINS, BRYAN'S ROAD AND SWAN POINT SYSTEMS ARE AVAILABLE FOR USE. USAGE AT ALL OTHER LOCATIONS IS PROHIBITED.**

7. **USE OF ANY HYDRANT METER, NOT ISSUED BY CHARLES COUNTY, OR USE OF A FIRE HYDRANT WITHOUT A HYDRANT METER CONSTITUTES THEFT AND ALL VIOLATORS WILL BE PROSECUTED TO THE EXTENT OF THE LAW.**

8. **A RENTAL CHARGE OF $15.00 PER MONTH, OR PORTION OF A MONTH (1 MONTH MINIMUM) WILL BE ADDED TO THE CURRENT WATER USE CHARGE AS ESTABLISHED ANNUALLY BY THE COUNTY COMMISSIONERS. THE CURRENT RATE EFFECTIVE JULY 1, 2007 IS $2.65 PER 1,000 GALLONS.**

9. **METERS MUST BE BROUGHT TO THE MATTAWOMAN WASTEWATER TREATMENT FACILITY ADMINISTRATIVE OFFICE FOR READING UPON WRITTEN NOTIFICATION, APPROXIMATELY EVERY SIX MONTHS.**

10. **INVOICES ARE PAYABLE WITHIN 30 DAYS OF INVOICE DATE. FAILURE TO PAY IN FULL WITHIN 30 DAYS OF THE INVOICE DATE WILL RESULT IN FORFEITURE OF THE ENTIRE DEPOSIT, CANCELLATION OF THE AGREEMENT, AND RECOVERY OF**

THE METER.

11. **SCHEDULED READINGS OR RETURNS THAT ARE LATE WILL BE BILLED ONE ADDITIONAL MONTH RENTAL CHARGE. FAILURE TO BRING THE METER IN BEYOND ONE MONTH OF A SCHEDULED READING OR RETURN DATE WILL RESULT IN FORFEITURE OF ENTIRE DEPOSIT, CANCELLATION OF AGREEMENT AND RECOVERY OF THE METER.**

12. **EQUIPMENT TO WHICH WATER IS BEING LOADED MUST PASS APPROPRIATE INSPECTION. THE COUNTY RESERVES THE RIGHT TO INSPECT THE BACKFLOW PREVENTION SYSTEM FOR PROPER OPERATION AND MAY WITHDRAW ALL APPLICABLE PERMITS AT ANY TIME IF THE BACKFLOW PREVENTION SYSTEM IS FOUND TO BE DEFECTIVE OR INOPERATIVE.**

13. **THE RENTED METER BECOMES THE RESPONSIBILITY OF THE INDIVIDUAL, PARTNERSHIP, FIRM OR CORPORATION SHOWN ON THE ISSUE FORM. LOSS OR DESTRUCTION OF A METER AND/OR WRENCH WILL RESULT IN FULL FORFEITURE OF DEPOSIT AND CANCELLATION OF AGREEMENT.**

14. **ALL RENTALS WILL INCLUDE A HYDRANT WRENCH UNLESS RENTER ALREADY OWNS ONE.**

15. **USE OF ANY WRENCH OTHER THAN A FIRE HYDRANT WRENCH TO OPERATE A FIRE HYDRANT IS PROHIBITED.**

16. **THE AMOUNT OF DEPOSIT IS EQUAL TO THE COST OF METER REPLACEMENT (AND WRENCH IF REQUIRED) AND IS SUBJECT TO PERIODIC ADJUSTMENT.**

17. **RENTER WILL BE CHARGED FOR ANY REPAIRS TO METERS OR HYDRANTS DUE TO DAMAGE OR MISUSE ON THEIR PART.**

18. **RENTER WILL BE RESPONSIBLE FOR OBTAINING ANY ADAPTER, OR ATTACHMENTS THAT MAY BE NEEDED.**

19. **HYDRANT METERS ARE NOT TO BE LEFT UNATTENDED. <u>ANY HYDRANT METER LEFT UNATTENDED WILL BE CONFISCATED AND WILL RESULT IN FULL FORFEITURE OF DEPOSIT AND CANCELLATION OF AGREEMENT</u>.**

20. **ALL QUESTIONS OR CONCERNS SHOULD BE DIRECTED TO (301) 609-5606.**

21. **THE COUNTY RESERVES THE RIGHT TO REFUSE, CANCEL OR CHANGE THE TERMS OF THIS CONTRACT AT ANYTIME. IF THE HYDRANT METER IS RECOVERED BY CHARLES COUNTY FOR VIOLATION OF ANY OF THESE TERMS AND CONDITIONS, THE COUNTY COMMISSIONERS MUST APPROVED THE APPLICATION PRIOR TO THE ISSUANCE OF ANOTHER METER.**

22. **RENTER IS RESPONSIBLE FOR USING AN ASSE 1013 REDUCED PRESSURE PRINCIPLE ASSEMBLY AND SUPPORT TO BE USED IN CONJUNCTION WITH THE HYDRANT METER. FAILURE TO USE THE REDUCED PRESSURE PRINCIPLE ASSEMBLY AND HYDRANT METER IS A VIOLATION OF THIS CONTRACT AND WILL RESULT IN FORFEITURE OF ENTIRE DEPOSIT, CANCELLATION OF THE AGREEMENT, AND RECOVERY OF THE METER.**

23. **RENTER IS RESPONSIBLE FOR PROVIDING THE COUNTY WITH A BACKFLOW**

ASSEMBLY TEST REPORT UPON INSTALLATION OF THE ASSEMBLY AND ANNUALLY THEREAFTER. THE COUNTY RETAINS THE RIGHT TO REQUEST TEST REPORTS ON A MORE FREQUENT BASIS IF NEED BE.

24. **HYDRANT METERS WILL BE DIRECTLY CONNECTED TO THE HYDRANT FOLLOWED BY THE RPZ, NO OTHER FORM OF CONNECTION WILL BE ACCEPTED.**

25. **A LATE FEE OF 10% OF CURRENT BILL, PLUS 3% OF ANY ARREARS AMOUNTS WILL APPLY.**

26. **CHARLES COUNTY WILL SUPPLY A CERTIFIED BACKFLOW PREVENTION ASSEMBLY WITH A 1" METER FOR A SHORT TERM RENTAL OF 7 DAYS OR LESS. THE RENTER WILL BE CHARGED FOR THE REPLACEMENT OF THE BACKFLOW PREVENTION ASSEMBLY SHOULD IT BE LOST, STOLEN OR DAMAGED WHILE IN THE POSSESSION OF THE RENTER. ALL DEPOSITS STILL APPLY.**

27. **UNDER NO CIRCUMSTANCES SHOULD A CONNECTION OF ANY KIND BE MADE TO A PURPLE (RECLAIMED WATER) HYDRANT.**

IN OBTAINING A HYDRANT METER, I UNDERSTAND AND AGREE TO THE TERMS AND CONDITIONS AS STATED ABOVE.

NAME OF INDIVIDUAL/COMPANY_____
ADDRESS_____
EMAIL ADDRESS_____
PHONE NUMBER _____

SIGNATURE _____ **DATE** _____

PRINT NAME_____

COUNTY USE ONLY

AUTHORIZED BY:_____ DATE:_____

METER #_____ HYDRANT WRENCH ISSUED ( ) YES ( ) NO

READING OUT: 1"

						0

READING OUT: 3"

					0	**0**

AMOUNT OF DEPOSIT:_____

DATE RETURNED:_____

RECEIVED AND INSPECTED BY:_____

GATE VALVE:_____

WRENCH:_____

READING IN: 1”

						0

READING IN: 3”

					0	**0**

5310 HAWTHORNE ROAD LA PLATA, MARYLAND 20646 (303) 609-7400 OR 753-8270 FAX : (301-609-7413

EQUAL OPPORTUNITY COUNTY JUST SAY NO TO DRUGS

APPENDIX "D-1"

SCHEDULE OF WATER AND SEWER CHARGES FOR RESIDENTIAL STRUCTURES IN EXISTENCE AS OF 10/19/88

Water Connection Charges

Width of Right-of-Way

Meter Size	50' and under	51'-75	76'-100'	101'-125'	126'-200
5/8"	$ 427	$ 534	$ 748	$ 961	$ 1,388
3/4"	640	800	1,120	1,440	2,080
1"	1,066	1,333	1,866	2,399	3,465
1 1/2"	2,133	2,667	3,733	4,800	6,933
2"	3,413	4,267	5,973	7,680	11,093
3"	7,465	9,332	13,064	16,797	24,262
4"	10,665	13,332	18,664	23,997	34,662
8"	34,127	42,659	59,723	76,786	110,913

WATER Inspection Fee.....$10

Sewer Connection Charges

5/8"	$ 1,613	3/4"	$ 2,420	1"	$ 4,033	1 1/2"	$ 8,066
2"	12,906	3"	28,232	4"	40,332	8"	129,061

SEWER Inspection Fee.....$16

Procedure to obtain water and sewer connections:

1. There must be water or sewer mains available. You can check this by calling the County.

2. If these facilities are available, you must apply for connection on application forms which may be obtained at the County.

3. The application must be filled out and signed by both the property owner and registered master plumber.

4. A check payable to the Charles County Commissioners covering the connection charge and inspection fee must accompany application.

5. The County will build the connection from the mains in the street to your property line. The registered master plumber must extend the connection from the property line to your house.

APPENDIX "D-2"

SCHEDULE OF WATER AND SEWER CHARGES FOR RESIDENTIAL STRUCTURES BUILT AFTER 10/19/88 AND FOR ALL COMMERCIAL AND INDUSTRIAL STRUCTURES

(See Charles County Current Year Fee Schedule)

All charges shown in the Fee Schedule are for the actual number of feet of service lateral (rounded to the nearest foot) installed.

PROCEDURE TO OBTAIN WATER/SEWER CONNECTIONS:

1. There must be water/sewer mains available. You can check this by calling the County.

2. If these facilities are available, you must apply for connection on application forms which may be obtained at the County.

3. The application must be filled out and signed by both the property owner and a registered Master Plumber.

4. A check payable to the County Commissioners covering the connection charge and inspection fee must accompany application.

5. The registered Master Plumber will build residential connections unless different arrangements are directed by the County. Commercial and industrial service laterals where needed shall be installed by the owner.

CLAIMS FOR REFUNDS

1. Claims for refunds for connection fees paid in a greater amount than that set forth in this Appendix A-2 shall be governed by Section 9-710 through 9-713 of Article 24 of the Annotated Code of Maryland and shall be subject to the requirement in Section 9-724 of Article 24 that a claim for refund may not be filed after 3 years from the date the fee was paid.

2. Nothing herein shall be construed to extend the period of limitations set forth in Section 9-724 of Article 24.

[Commodity User Charge

A commodity user charge, as established in the current year Fee Schedule, will be levied quarterly, and will come under separate identification as part of the regular quarterly water and sewer bill.]

Account Maintenance Fee

An account maintenance, fee as established in the current year Fee Schedule, will be rendered with each quarterly billing to compensate for the costs associated with the billing of water and sewer customers.

APPENDIX "E"

DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT

CERTIFICATE OF SUBSTANTIAL COMPLETION

Distribution to: Developer/Owner
Engineer
Contractor
Inspector
Other

PROJECT:
(Name, address)

ENGINEER:

DEVELOPER/OWNER:

CONTRACTOR:

TO: CHARLES County
DEPARTMENT OF
PLANNING &
GROWTH MANAGEMENT

APPROVED PLANS:

DATE OF ISSUANCE:

PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The work performed under this contract has been reviewed and found to be substantially complete. The date of Substantial Completion of the project, or portion thereof designated above is hereby established as which is also the date of commencement of applicable warranties required by the approved plans, except as stated below.

DEFINITION OF DATE OF SUBSTANTIAL COMPLETION:

"The date of Substantial Completion of a project, or specified part of a project is the date accepted by the County, following submission of a Certificate of Substantial Completion by the developer when the construction is sufficiently completed, in accordance with the approved plans, so that the project or specified part of the project can be utilized for the purpose for which it was intended."

A list of items to be completed or corrected by the Developer/Owner, prepared by the County and verified and amended by the Developer/Owner or Engineer and the Contractor is attached. The failure to include any items on such list does not alter the responsibility of the Developer/Owner to complete all work in accordance with the approved plans.

The date of commencement of warranties for items on the attached list will be the date of Final Completion Acceptance unless otherwise agreed to in writing.

Substantial Completion Form

The Developer/Owner will complete or correct the work on the list of items attached hereto by _____.

_____ _____ _____
Developer/Owner By Date

The Owner/Developer shall complete the remaining work in accordance with the Development Agreement.

_____ _____ _____
Developer/Owner By Date

The County accepts the work or designated portion thereof as substantially complete and will assume full operation thereof at _____on _____.
place date

_____ _____ _____
County By Date

The responsibility of the County and the Developer/Owner for security, maintenance, heat, utilities, damage to the work and insurance shall be as follows:

County - Heat & Utilities

Developer - Security, maintenance, damage to the work (other than that caused by normal operation), and insurance.

(NOTE: - Developer's/Owner's legal and insurance counsel should determine and review insurance requirements and coverage. Developer/Owner shall secure consent of surety company, if any.)

APPENDIX "F"

CERTIFICATE OF FINAL COMPLETION

ACCEPTANCE

DEVELOPER/OWNER
NAME & ADDRESS

On the basis of my daily observation, review of the work during construction, and final inspection of the central water and sewer system located at **NAME OF PROJECT & PROJECT NUMBER**, I am hereby satisfied that the work has been completed according to the plans and specifications approved by the Charles County Department of Planning and Growth Management.

[WATER AND SEWER ENGINEER II]
INSPECTIONS SUPERINTENDENT Date

CC: UTILITY TECHNICIAN
SUPPORT STAFF SUPERVISOR
[CHIEF OF UTILITIES] **DIRECTOR OF PUBLIC WORKS**
RIGHT-OF-WAY AGENT II
CHIEF OF [DEVELOPMENT SERVICES] **CPIS**
FILE (2)

APPENDIX "G"

GUARANTEE FORM

Pursuant to, and in consideration of the benefits received by virtue of the following Project:

Project No:

The undersigned does hereby guarantee to the Charles County Commissioners hereafter called the County, its successors, or assigns, that the materials and workmanship in the product, or products, furnished to the County pursuant to the terms of the agreement be free from any defects for a period of one year from the date of Final Completion Acceptance unless otherwise agreed to in writing, therefore by the County. In the event any defects shall become apparent within one (1) year from date of Final Completion Acceptance, the undersigned does agree to repair the same within 30 days of the mailing of written notice.

In the event such repairs shall not be commenced within 25 days of the mailing of such notice, or the work is of an emergency nature the County shall have the right to repair or have repaired the offending product(s) at the sole cost and expense of the undersigned.

_____
Signature of Contractor or
Qualified Officer of Firm

_____
Signature of Developer/Owner

APPENDIX "H"

DEDICATION AGREEMENT

THIS DEDICATION AGREEMENT, Made this day of 19 , by hereinafter referred to as OWNER and the COUNTY COMMISSIONERS OF CHARLES COUNTY, MARYLAND, a public body corporate and politic, hereinafter referred to as the COUNTY.

WHEREAS, in accordance with the terms of a certain Agreement concerning Water and Sewer facilities between the Owner and COUNTY, dated , 19 , the Owner agreed that in connection with its development of a subdivision or project known as

located in the Election District of Charles County, Maryland, it would construct the necessary water and sewer lines and appurtenances hereinafter referred to as the Facilities, and

WHEREAS, the plans for the Facilities have been Approved by the COUNTY, and

WHEREAS, the Owner has constructed the Facilities at its expense, and

WHEREAS, the COUNTY has agreed to accept the aforesaid Facilities, without cost, as of the date of this Agreement, and

WHEREAS, the COUNTY by accepting title to the aforesaid Facilities agrees to maintain same and integrate the Facilities into its public system, accepting full responsibility for all maintenance, operational and other costs.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH: That for and in consideration of the Sum of One Dollar ($1.00) paid by the parties hereto to each other, receipt of which is hereby acknowledged, and of the premises, the mutual covenants and agreements herein undertaken, the said parties hereto agree as follows:

1. That the Owner by execution of this Agreement, does hereby convey title to said Facilities to the COUNTY free and clear of all liens and encumbrances, and does further agree that it will execute any and all deeds necessary to convey to the COUNTY all easements for lines that now exist, and does further agree to grant such further easements for sewer and water mains, without charge, as may be determined by the COUNTY in its sole discretion, in order to serve the entire property of the Owner or connect same to other lines owned, or to be built, by the COUNTY or anyone.

2. That the Owner agrees to supply to the COUNTY all available information concerning the testing and operation of the Facilities and warranties concerning the equipment in connection with this Agreement.

3. From and after date of the signing of this Agreement by the COUNTY, the COUNTY shall be entitled to collect all fees of any nature for the operation of the Facilities on the subject site and agrees to become fully responsible for the maintenance of the system and service to the existing users.

4. The Owner hereby warrants that it is the sole owner of said Facilities and that there are no outstanding liens against same, and does further indemnify and hold harmless the said COUNTY against any and all claims in any manner relating to its ownership, installation, or cost of the pipes and equipment covered by this Agreement.

5. The parties to this Agreement mutually agree that it shall be binding upon their respective heirs, personal representatives, successors or assigns:

(Name of Development Company)

ATTEST:

_____ BY: _____
(Type name of signatory)

ATTEST: COUNTY COMMISSIONERS OF
CHARLES COUNTY, MARYLAND

_____ _____
PRESIDENT

STATE OF , COUNTY OF , TO WIT:

I HEREBY CERTIFY, that on this day of 20 , before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared of, a Maryland Partnership, and duly acknowledged the aforegoing Agreement to be the act of said

WITNESS my hand and Notarial Seal.

_____
NOTARY PUBLIC

My Commission Expires: _____

STATE OF MARYLAND, COUNTY OF CHARLES, TO WIT:

I HEREBY CERTIFY, that on this day of 20 , before me, the subscriber, a Notary Public of the State and County aforesaid, personally appeared , President of the COUNTY COMMISSIONERS OF CHARLES COUNTY, MARYLAND, and duly acknowledged the aforegoing Agreement to be the act of said body corporate.

WITNESS my hand and Notarial Seal.

_____
NOTARY PUBLIC

My Commission Expires: _____

APPENDIX "I"

OFF-SITE REIMBURSEMENT EXAMPLE

(to be defined)

APPENDIX "J"

ALLOCATION TARGETS

PART I -WATER SUPPLY AND DISTRIBUTION SYSTEMS (ALL UNITS ARE IN MGD)

SYSTEM NAME	APPROPRIA -TION PERMIT (2)	CURRENT PUMPAGE (3)	CURRENT COMMITMENT S	AVAILABLE CAPACITY TARGET
WALDORF (4)(5)	8.2469(1)	5.740763	1.193665	1.312472
BRYANS ROAD (4)	0.513 (2)	0.259512	0.089755	0.163733
STRAWBERRY HILLS	0.1200 (2)	0.092565	0	0.027435
BENEDICT	0.0560 (2)	0.019442	0	0.036558
CHAPEL POINT WOODS	0.800 (2)	0.023446	0.001468	0.055086
CLIFTON-ON-THE POTOMAC	0.0850 (2)	0.043701	0.006500	0.034799
HUNTERS BROOKE	0.116 (2)	0.043324	0.001840	0.070836
SWAN POINT	0.500 (2)	0.052311	0.033100	0.414589

NOTES: **1,2,3) A QUARTERLY REPORT WHICH SUPPLEMENTS THIS APPENDIX "K" IS AVAILABLE FROM THE CHARLES COUNTY DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT.**

4) A SUPPLEMENTAL POLICY APPLIES TO THIS SYSTEM.

5) THE BENSVILLE WATER SYSTEM WAS INTERCONNECTED INTO THE WALDORF WATER SYSTEM (THE BENSVILLE WATER SYSTEM INCLUDES BENSVILLE 1&2, DUTTON'S ADDITION, EUTAW FOREST, AND LAUREL BRANCH).

ALLOCATION TARGETS

PART II -SEWERAGE COLLECTION AND TREATMENT SYSTEMS (ALL UNITS ARE IN MGD)

SYSTEM NAME	PERMITTED CAPACITY (1)	CURRENT FLOWS (2)	CURRENT COMMITMENTS	AVAILABLE CAPACITY TARGET
MATTAWOMAN (2)(3)	20.00	11.502215	3.050519	5.447266
CLIFTON-ON-THE-POTOMAC	0.0700	0.038488	0	NONE (4)
COBB ISLAND (2)(3)	0.158	0.062442	0	NONE (6)
SWAN POINT (2)(5)	0.300	0.052929	0.035318	0.211753

NOTES:

1) **PERMITTED CAPACITY IS TAKEN FROM THE CURRENT MARYLAND DEPARTMENT OF THE ENVIRONMENT NPDES PERMIT FOR SIGNIFICANT INDUSTRIAL USER.**

2) **A QUARTERLY REPORT WHICH SUPPLEMENTS THIS APPENDIX "K" IS AVAILABLE FROM THE CHARLES COUNTY DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT. THE STATED "CURRENT FLOWS" ARE FISCAL YEAR AVERAGE EFFLUENT FLOWS FROM THE CHARLES COUNTY DEPARTMENT OF UTILITIES - WASTEWATER FLOWS - COUNTY OPERATED SYSTEMS CALENDAR YEAR OF 2009.**

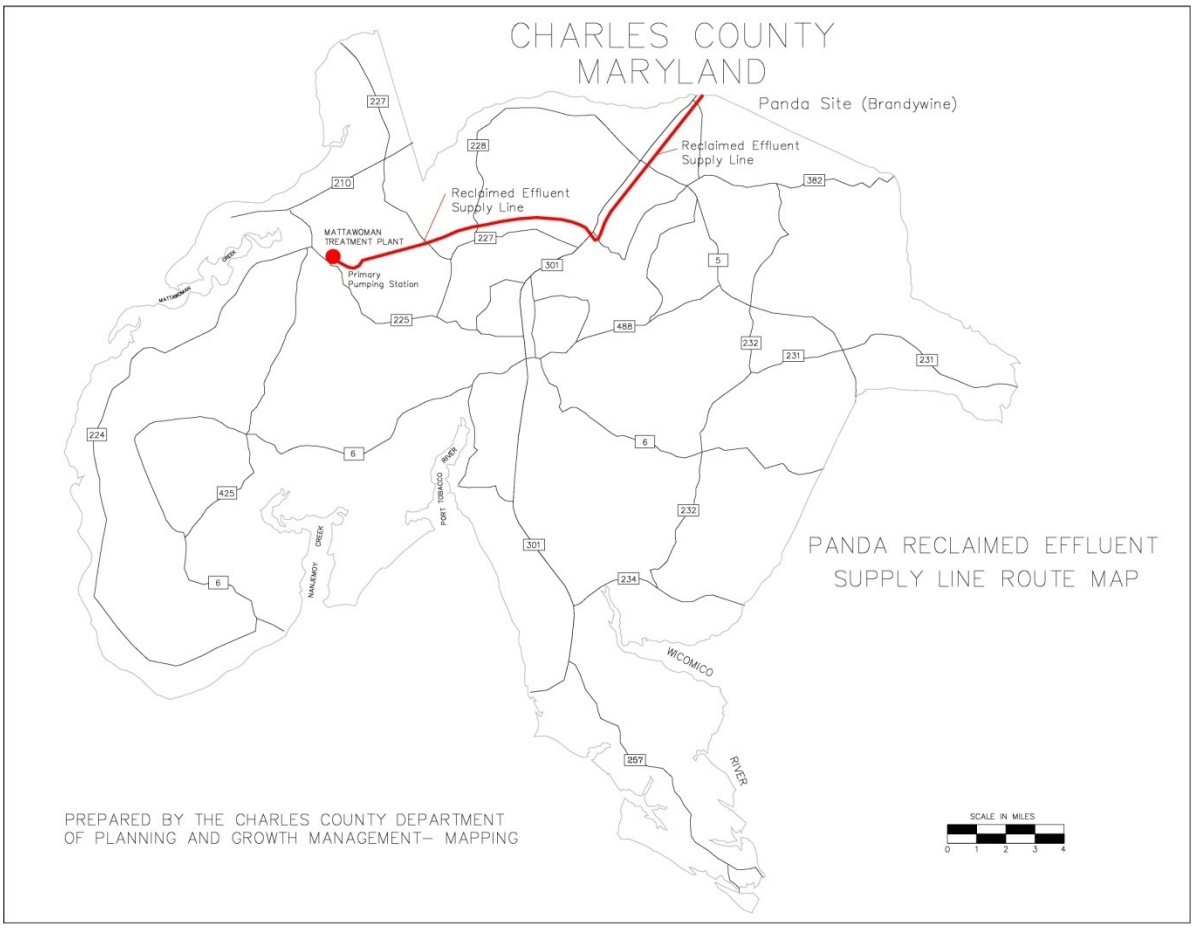
3) **A SUPPLEMENTAL POLICY APPLIES TO THIS SYSTEM.**

4) **THE ALLOCATABLE CAPACITY OF THE CLIFFTON WWTP IS CURRENTLY UNDER REVIEW.**

5) **DEVELOPER AND COUNTY HAVE RECONSTRUCTED THE SWAN POINT WWTP TO 300,000 GPD FOR PHASE I, WITH AN ULTIMATE CAPACITY OF 600,000 GPD.**

6) **COBB ISLAND WWTP IS FULLY ALLOCATED BASED ON THE PERMITS GRANTED BY MDE.**

APPENDIX "K"


CHARLES COUNTY
MARYLAND
Panda Site (Brandywine)
Reclaimed Effluent
Supply Line
Reclaimed Effluent
Supply Line
MATTAWOMAN
TREATMENT PLANT
Primary
Pumping Station
227
228
210
382
301
5
225
488
232
231
231
224
6
6
425
232
301
234
6
WICOMICO
RIVER
257
PANDA RECLAIMED EFFLUENT
SUPPLY LINE ROUTE MAP
PREPARED BY THE CHARLES COUNTY DEPARTMENT
OF PLANNING AND GROWTH MANAGEMENT– MAPPING
SCALE IN MILES
0 1 2 3 4

APPENDIX "L"

NOTICE OF FRONT FOOT BENEFIT BILLING ASSESSMENT

CHARLES COUNTY DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT
PO BOX 2150
LA PLATA, MARYLAND 20646

☐ ANNUAL LEVY NOTICE ☐ SEMI-ANNUAL LEVY NOTICE

DIST	MAP	GRID	PARCEL	USE	DEED REFERENCE		DATE OF NOTICE			LEVY YEAR BEGINING		
					LIBER	FOLIO	MONTH	DAY	YEAR	MONTH	DAY	YEAR

Notice is hereby given that the property described heron binds upon a street, road, lane, alley or right-of way in which a water and/or sanitary sewer has been placed and is now subject to an annual Front Foot Benefit Assessment.

The subject property has been classified as _____ in accordance with the Rules and Regulations of the Charles County Department of P&GM. The annual assessment levied upon the subject property under current regulations is $ _____ based on a front footage of _____ Feet, computed at _____ per foot.
$ _____

This assessment will be billed to you in July, 2005 and thereafter will be billed annually with the real property tax billing. The amount of the front foot assessment is subject to change after public notice and public hearing per the Charles County Water and Sewer Ordinance.

If you desire to protest this assessment, you must do so on or before 30 days from the date of this notice, in writing, addressed to the Department of P&GM, P.O. Box 2150, La Plata, Maryland 20646. Upon receipt of a protest of the assessment, you will be notified of a hearing which will be scheduled.

PROPERTY DESCRIPTION (LOCATION)

_____

_____

TAX ACCOUNT

_____

TO:

_____

_____

_____

_____

HEARING

_____ (DATE) _____ (TIME) _____ (HEARING OFFICER)

ASSESSMENT FOR:
☐ WATER
☐ SEWER
☐ BOTH

IF YOU HAVE ANY QUESTIONS CONCERNING THIS ASSESSMENT PLEASE CALL THE CHARLES COUNTY DEPARTMENT OF PLANNING AND GROWTH MANAGEMENT.
(301) 645-0635 OR (301) 870-3935.

APPENDIX "M"

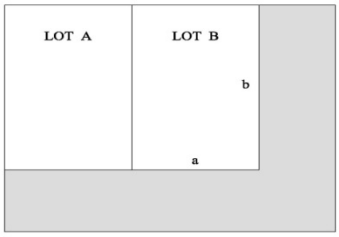
FRONT FOOT BENEFIT
METHOD OF MEASUREMENT

WHERE:
$ = Assessment (Dollar Amount)/Linear Foot
FF = Total Front Foot Assessed (on taxes)
a = Width of lot A
=Street
= Easement

Straight Front Abutment:

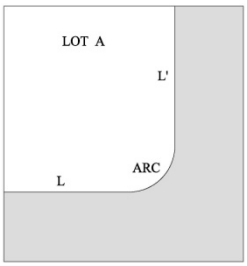
FF = a x $

Corner Abutment:



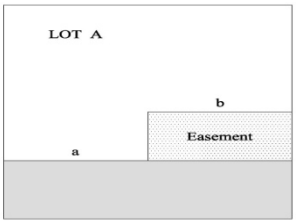
Where Lot B is on a street corner
FF = (a + b)/2 x $

Rounded Corner Abutments:



FF = (L' + L + ARC)/2 x $

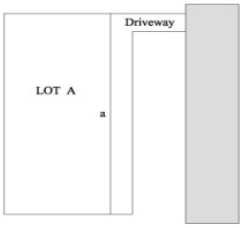
Abutment With Easement:



Where the water/sewer line abuts property A. This only applies at the time of connection when the easement is for a water/sewer line. Otherwise, Lot A will only be assessed for the width of length "a".

FF – (a + b) x $

Irregular Lot Frontage (Flag Lot):



FF= a x $

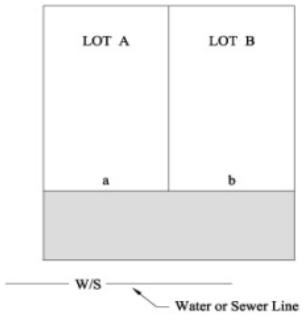
Cul-de sac Abutment:

Where:

R is the width of the Building Restriction Line

F = BR x $

Partial Abutment:



Where the water/sewer line does not abut the entire width of Lot B, the property owner is charged a front foot equal to "b".

Lot A
FF = a x $

Lot B
FF = b x $

APPENDIX "N"

SEMI-ANNUAL LEVY JANUARY 1, 20__

ADD TO EXISTING ACCOUNT _____

ENTER A NEW ACCOUNT _____

NAME _____

DESCRIPTION OF PROPERTY _____

REASON FOR ADDITION _____

ADD SEWER FRONT FOOT _____AT _____

TOTAL SEMI-ANNUAL ASSESSMENT _____

FULL YEAR ASSESSMENT IS:

SEMI-ANNUAL LEVY JANUARY 1, 20_

ADD TO EXISTING ACCOUNT _____

ENTER A NEW ACCOUNT _____

NAME _____

DESCRIPTION OF PROPERTY _____

REASON FOR ADDITION _____

ADD SEWER FRONT FOOT _____AT _____

TOTAL SEMI-ANNUAL ASSESSMENT _____

FULL YEAR ASSESSMENT IS:

APPENDIX "O"

WATER SYSTEM DESIGN CRITERIA

FOR SYSTEMS WITH ELEVATED OR GROUND STORAGE

AVERAGE DAILY FLOW (ADF)	FLOW FACTOR
Single Family	260 GPD/du
Townhouses	202 GPD/du
Duplex	202 GPD/du
Apartment	173 GPD/du
Commercial:	
Neighborhood (CN)	2000 GPD/du
Business Park (BP)	4000 GPD/du
Community (CC)	6400 GPD/du
Central Business (CB)	7500 GPD/du
Industrial/Institutional	* GPD/du
* Industrial/Institutional flow factors for engineering design should be based on actual type of proposed use; using fixture flow factors (AWWA M22) or other established flow factors (MDE or WSSC).	

PEAKING FACTOR (PF)	
0-100 units	4.0
100-500 units	3.5
500-1000 units	3.0
1000-2000 units	3.0 PF = 2.5 for developments with a min. of 10% non-residential EDU.
> 2000 units	2.5 PF = 2.0 for developments with a min. of 10% non-residential EDU.

MAXIMUM DAILY FLOW (MDF)	
	MDF = ADF x PF

PEAK HOURLY FLOW (PHF)	
	3.0 x Maximum Daily Flow (MDF)

FIRE FLOW (FF)	
Single Family	1,000 GPM for 2 Hours
Apartment/Townhouses	1,500 GPM for 2 Hours
Industrial/Commercial	2,000 GPM for 2 Hours
High Risk Industrial	4,000 GPM for 2 Hours

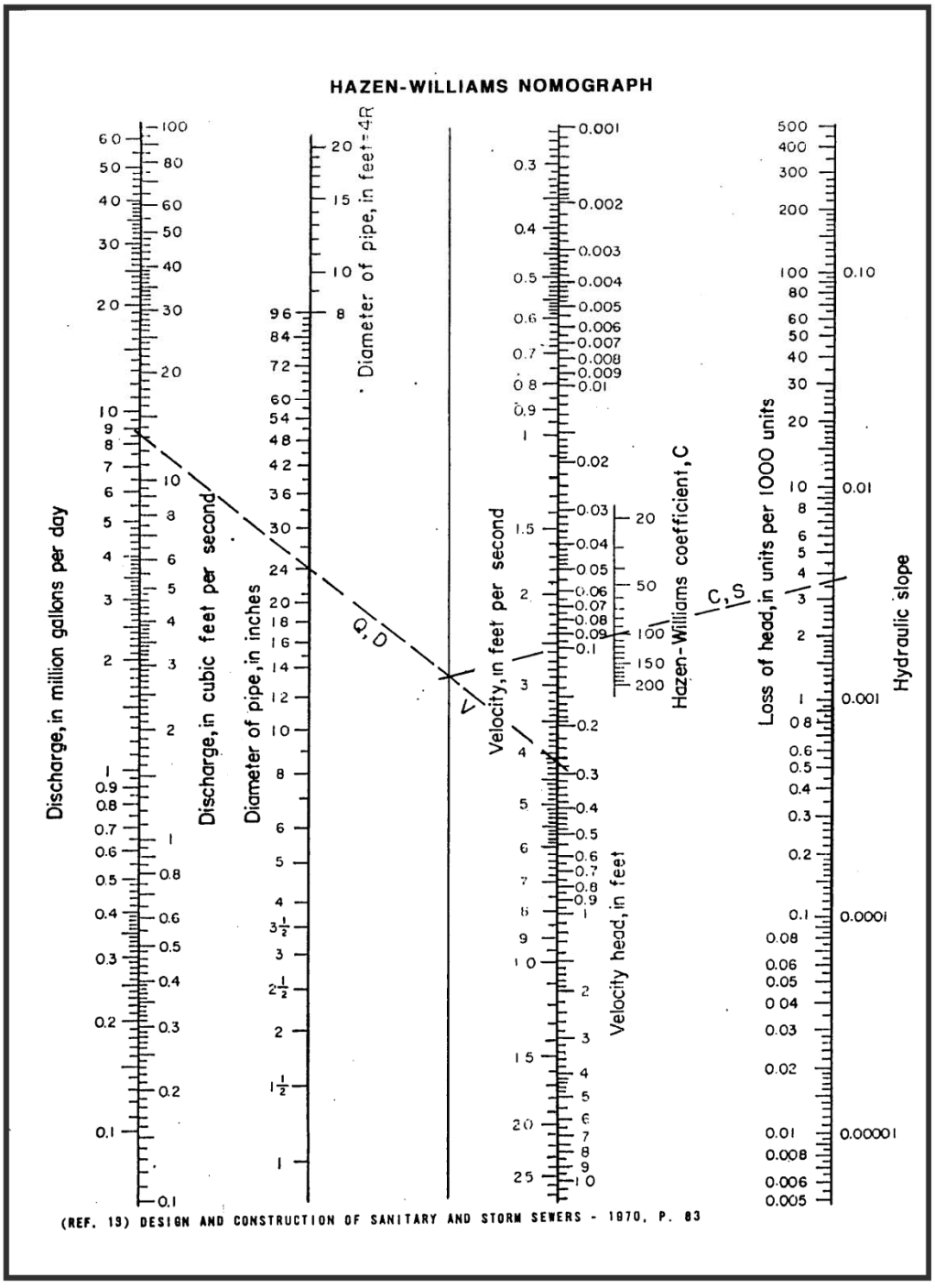
WATER STORAGE	
Volume	1 day Average Daily (domestic) Flow (ADF) + Fire Flow

WATER DISTRIBUTION	
Pipe Flow is largest of:	Peak Hourly Flow (PHF), or Maximum Daily Flow(MDF) + Fire Flow, or Tank refilling rate where appl. based on system layout
* Conversions from daily flow to hourly flow based on a 24 hour day. Pipes to be designed to provide a minimum residual pressure of 20 psi for Peak Hourly Flow and Maximum Daily Flow plus Fire Flow, and 65 psi for Average Daily Flow	

WELL CAPACITY	
Supply Rate for all wells must equal;	Maximum Daily Flow(MDF) + Fire Flow resupply = (MDF + FF)/1080 min/day
and with the largest well out of service must equal	Average Daily Flow(ADF) + Fire Flow resupply = (ADF + FF)/1080 min/day
* Conversion from daily flow to hourly flow is based on well pumps running a max. of 18 hours/day	

APPENDIX "P"

HAZEN-WILLIAMS NOMOGRAPH



APPENDIX "Q"

MINOR LOSSES OF HEAD IN EQUIVALENT LENGTHS

NATURE OF RESISTANCE	LOSS IN PIPE DIAMETER
Angle Valve	
Open	170
Check Valve	
Swing Type, Open	80
Gate Valve	
Wide Open	7
1/4 Closed	40
1/2 Closed	200
3/4 Closed	850
Globe Valve	
Open	340
Standard Elbow	32
Long Swing Elbow	20
45-Degree Elbow	15
Tee	
Flow Through Run	20
Flow Side to Run or Run to Side	
No Throat	65
With Throat	45
Lateral	45
Sudden Contraction	
d/D = 1/4	15
d/D = 1/2	12
d/D = 3/4	7
Sudden Enlargement	
d/D = 1/4	32
d/D = 1/2	20
d/D = 3/4	7

APPENDIX "R"

WATER CONNECTION AND METER SIZING

WATER SERVICE

1) **COMAR applies to the lines and fixtures on the Premises:** COMAR 09.20.02.01(205)

2) On-Site lines are sized in accordance with COMAR 09.20.11.14 - "Procedure in Sizing the Water Distribution System".

3) The MAXIMUM VELOCITY is 10 Feet Per Second: COMAR 09.20.11.14A

4) The MINIMUM WHC SIZE is 1" based on an average 27 F.U. per dwelling as currently being constructed BUT the absolute minimum is 3/4" (COMAR 09.20.11.13A). This means that some older or substantially smaller buildings could make do with 3/4" from a velocity standpoint; pressure could still be a problem during summer demands. NOTE that 10 FPS is exceeded in 3/4" Type 'K' copper at 13 GPM (or 18 F.U.).

5) The Water Distribution System is based on the MINIMUM pressure available and the MAXIMUM DEMAND. COMAR 09.20.11.14C,G

6) PRV's are required where the street main pressure exceeds 80 PSI. COMAR 09.20.14H

7) PRIVATE vs. PUBLIC OCCUPANCY: Private is where people live; Public is everything else. COMAR 09.20.02.01(133,135)

8) **Note the BASIC PRINCIPLES in COMAR 09.20.01 Chapter 01.**

9) PROTECTION OF THE PUBLIC WATER SUPPLY is of paramount importance: EPA requires water purveyors to provide potable water to the 'TAP'. The "RATES, RULES, and WATER AND SEWER ORDINANCE" forbids furnishing water to any premises where any possibility exists of the mingling of the Public supply with any other fluid [W&S Ord. Sec. 3.13.B]. In addition, CROSS CONNECTION CONTROL is required in COMAR 09.20.11.04 & .05.

10) Backflow Preventers are required on FIRE SPRINKLER SYSTEMS as they are non-potable and may be pressurized to 150 PSI or more during a fire from a non-potable, perhaps contaminated, supply. COMAR is silent on the direct subject of fire protection; however, these systems are covered under COMAR 09.20.11.05(35). These can be a potentially extreme hazard.

11) Water Meters are sized on the demand; service lines are sized on velocity and pressure. Never size the meter for pressure loss.

APPENDIX "R" - CONTINUED

WATER METER SIZING

1) Using TABLE 1, which is taken from COMAR 09.20.11.13B(1), tabulate all fixtures as public or private per COMAR definitions.

2) Determine Total Fixture Units: multiply the number of fixtures (Column #3) by the Fixture Units (Column #4) for each type of fixture. Total the Fixture Units. (Column #5)

3) Obtain the demand in gallons per minute (GPM) from Table 2 or COMAR table 09.20.11.13B(2): Select the column corresponding to the predominance of Flush Tanks or Flush Valves and read the demand in GPM based on the Fixture Unit total determined in #2 above. The predominance of Flush Valves vs. Flush Tanks shall be determined on the basis of the greater gallons per minute required - not the number of physical fixtures or the number of Fixture Units.

4) On Table 1, add in any continuous demands (in GPM) such as irrigation, boilers, etc. on the line marked 'CONTINUOUS'.

5) Select the water meter size from Table 2 from the 'METER SIZE' column at the GPM corresponding to the demand. This meter size is generally adequate for normal applications with little or no continuous demand. If there is a continuous demand such as with boilers, irrigation, etc., then 30% per cent of the maximum capacity will be the controlling criteria. The maximum allowable continuous demands are shown for displacement meters sized through 2 inch per AWWA Manual of Practice Number M22.

NOTE: The procedure described above is the one used by the County; however, it must be recognized that the final determination of meter size and type rests with the County and may not *coincide exactly with the foregoing 'presumptive' sizing* procedure.

MAXIMUM CONTINUOUS	
Meter	gpm
5/8	6.00
3/4	9.00
1	16.50
1-1/2	30.00
2	38.00

APPENDIX "R" – CONTINUED

SIZING THE WATER SUPPLY SYSTEM

TABLE 1

	Col. 1 FIXTURE	Col. 2 TYPE OF SUPPLY CONTROL	Col. 3 QUANTITY	Col. 4 FIXTURE UNITS	Col. 5 TOTAL
PRIVATE OCCUPANCY	BATHROOM GROUP	Flush Tank for Closet		6	
	BATHROOM GROUP	Flush Valve for Closet		8	
	BATHTUB	Faucet		2	
	CLOTHES WASHER	Faucet		2	
	COMBINATION FIXTURE	Faucet		3	
	DISHWASHER	1/2" Connection		2	
	DISHWASHER	3/4" Connection		3	
	HOSE BIBS	1/2" Connection		2	
	HOSE BIBS	3/4" Connection		3	
	KITCHEN SINK	Faucet		2	
	LAUNDRY TRAYS (1 TO 3)	Faucet		3	
	LAVATORY	Faucet		1	
	SEPARATE SHOWER	Mixing Valve		2	
	SHOWER HEAD	Mixing Valve		2	
	WATER CLOSET	Flush Tank		3	
	WATER CLOSET	Flush Valve		6	
PUBLIC OCCUPANCY	BATHTUB	Faucet		4	
	CLOTHES WASHER	Faucet		4	
	DISHWASHER	1/2" Connection		4	
	DISHWASHER	3/4" Connection		6	
	HOSE BIBS	1/2" Connection		4	
	HOSE BIBS	3/4" Connection		6	
	HOSE BIBS	1" Connection		10	
	KITCHEN SINK	Faucet		4	
	LAVATORY	Faucet		2	
	SERVICE SINK	Faucet		3	
	SHOWER HEAD	Mixing Valve		2	
	URINAL-PEDESTAL	Flush Valve		10	
	URINAL-STALL OR WALL	Flush Tank		3	
	URINAL-STALL OR WALL	Flush Valve		5	
	WATER CLOSET	Flush Tank		5	
	WATER CLOSET	Flush Valve		10	

TOTAL _____ F.U.

** _____ GPM

* - Add CONTINUOUS demand: IRRIGATION, etc. + _____ GPM

TOTAL _____ GPM

* - For supply outlets likely to impose continuous demands, estimate continuous supply separately and add to total demand for fixtures.

** - From Demand Table

watmtr02.123

APPENDIX "R" - CONTINUED

METER SIZING TABLE

Page No. 1 TABLE 2 - FIXTURE UNITS TO DEMANDS; METER

Flush Tanks F.U.	Flush Valves F.U.	METER SIZE	GPM	Head losses in PSI per 100 Ft C=130 3/4"	1"	1-1/2"	2"	3"	4"
6	-	5/8"	5	4.55	1.11	0.16	0.04	0.01	0.00
7	-	5/8"	6	6.38	1.56	0.22	0.06	0.01	0.00
9	-	5/8"	7	8.48	2.07	0.30	0.08	0.01	0.00
10	-	5/8"	8	10.86	2.65	0.38	0.10	0.01	0.00
12	-	5/8"	9	13.51	3.30	0.48	0.12	0.02	0.00
13	-	5/8"	10	16.42	4.01	0.58	0.15	0.02	0.00
15	-	5/8"	11	19.59	4.79	0.69	0.18	0.02	0.01
17	-	5/8"	12	23.02	5.62	0.81	0.21	0.03	0.01
18	-	5/8"	13	26.70	6.52	0.94	0.24	0.03	0.01
20	-	5/8"	14	+	7.48	1.08	0.28	0.03	0.01
22	-	5/8"	15	+	8.50	1.23	0.31	0.04	0.01
23	-	5/8"	16	+	9.58	1.38	0.35	0.04	0.01
25	-	3/4"	17	+	10.72	1.54	0.40	0.05	0.01
27	-	3/4"	18	+	11.92	1.72	0.44	0.06	0.01
28	-	3/4"	19	+	13.17	1.90	0.49	0.06	0.02
30	-	3/4"	20	+	14.48	2.09	0.53	0.07	0.02
32	-	3/4"	21	+	15.85	2.28	0.59	0.07	0.02
34	-	3/4"	22	+	17.28	2.49	0.64	0.08	0.02
36	-	3/4"	23	+	18.76	2.70	0.69	0.09	0.02
38	-	3/4"	24	+	20.30	2.93	0.75	0.09	0.02
40	-	1"	25	+	+	3.16	0.81	0.10	0.02
43	-	1"	26	+	+	3.39	0.87	0.11	0.03
45	10	1"	27	+	+	3.64	0.93	0.12	0.03
48	11	1"	28	+	+	3.89	1.00	0.13	0.03
50	12	1"	29	+	+	4.15	1.06	0.13	0.03
53	14	1"	30	+	+	4.42	1.13	0.14	0.04
57	15	1"	31	+	+	4.70	1.20	0.15	0.04
60	16	1"	32	+	+	4.98	1.28	0.16	0.04
63	18	1"	33	+	+	5.28	1.35	0.17	0.04
67	19	1"	34	+	+	5.58	1.43	0.18	0.04
70	20	1"	35	+	+	5.88	1.51	0.19	0.05
73	22	1"	36	+	+	6.20	1.59	0.20	0.05
77	23	1"	37	+	+	6.52	1.67	0.21	0.05
80	25	1"	38	+	+	6.85	1.75	0.22	0.05
83	27	1"	39	+	+	7.19	1.84	0.23	0.06
87	28	1"	40	+	+	7.53	1.93	0.24	0.06
90	30	1-1/2"	41	+	+	7.89	2.02	0.25	0.06
94	32	1-1/2"	42	+	+	8.25	2.11	0.26	0.07
98	34	1-1/2"	43	+	+	8.61	2.21	0.28	0.07
102	35	1-1/2"	44	+	+	8.99	2.30	0.29	0.07
107	37	1-1/2"	45	+	+	9.37	2.40	0.30	0.07
111	39	1-1/2"	46	+	+	9.76	2.50	0.31	0.08
116	41	1-1/2"	47	+	+	10.16	2.60	0.33	0.08
120	43	1-1/2"	48	+	+	10.56	2.70	0.34	0.08
124	45	1-1/2"	49	+	+	10.97	2.81	0.35	0.09
129	47	1-1/2"	50	+	+	11.39	2.92	0.37	0.09
133	49	1-1/2"	51	+	+	11.82	3.03	0.38	0.09
138	51	1-1/2"	52	+	+	12.25	3.14	0.39	0.10
142	54	1-1/2"	53	+	+	12.69	3.25	0.41	0.10
147	57	1-1/2"	54	+	+	+	3.36	0.42	0.10
151	60	1-1/2"	55	+	+	+	3.48	0.44	0.11
156	63	1-1/2"	56	+	+	+	3.60	0.45	0.11
160	66	1-1/2"	57	+	+	+	3.72	0.47	0.11
165	69	1-1/2"	58	+	+	+	3.84	0.48	0.12
170	71	1-1/2"	59	+	+	+	3.96	0.50	0.12

Page No. 2 TABLE 2 - FIXTURE UNITS TO DEMANDS; METER & LINE SIZE

Flush Tanks F.U.	Flush Valves F.U.	METER SIZE	GPM	Head losses in PSI per 100 Ft. C=130 3/4"	1"	1-1/2"	2"	3"	4"	6"
74	-	1-1/2"	60	+	+	+	4.09	0.51	0.13	0.02
77	-	1-1/2"	61	+	+	+	4.21	0.53	0.13	0.02
80	-	1-1/2"	62	+	+	+	4.34	0.55	0.13	0.02
84	-	1-1/2"	63	+	+	+	4.47	0.56	0.14	0.02
87	-	1-1/2"	64	+	+	+	4.61	0.58	0.14	0.02
91	-	1-1/2"	65	+	+	+	4.74	0.59	0.15	0.02
94	-	1-1/2"	66	+	+	+	4.88	0.61	0.15	0.02
98	-	1-1/2"	67	+	+	+	5.01	0.63	0.15	0.02
102	-	1-1/2"	68	+	+	+	5.15	0.65	0.16	0.02
106	-	1-1/2"	69	+	+	+	5.30	0.66	0.16	0.02
110	-	1-1/2"	70	+	+	+	5.44	0.68	0.17	0.02
114	-	1-1/2"	71	+	+	+	5.58	0.70	0.17	0.02
118	-	1-1/2"	72	+	+	+	5.73	0.72	0.18	0.02
122	-	1-1/2"	73	+	+	+	5.88	0.74	0.18	0.03
126	-	1-1/2"	74	+	+	+	6.03	0.76	0.19	0.03
130	-	1-1/2"	75	+	+	+	6.18	0.78	0.19	0.03
134	-	1-1/2"	76	+	+	+	6.33	0.79	0.20	0.03
138	-	1-1/2"	77	+	+	+	6.49	0.81	0.20	0.03
142	-	1-1/2"	78	+	+	+	6.65	0.83	0.21	0.03
146	-	1-1/2"	79	+	+	+	6.80	0.85	0.21	0.03
150	-	1-1/2"	80	+	+	+	6.96	0.87	0.22	0.03
154	-	2"	81	+	+	+	7.13	0.89	0.22	0.03
158	-	2"	82	+	+	+	7.29	0.91	0.23	0.03
162	-	2"	83	+	+	+	7.46	0.94	0.23	0.03
167	-	2"	84	+	+	+	7.62	0.96	0.24	0.03
171	-	2"	85	+	+	+	7.79	0.98	0.24	0.03
176	-	2"	86	+	+	+	7.96	1.00	0.25	0.03
180	-	2"	87	+	+	+	8.13	1.02	0.25	0.03
184	-	2"	88	+	+	+	8.31	1.04	0.26	0.04
189	-	2"	89	+	+	+	8.48	1.06	0.26	0.04
193	-	2"	90	+	+	+	8.66	1.09	0.27	0.04
198	-	2"	91	+	+	+	8.84	1.11	0.27	0.04
202	-	2"	92	+	+	+	9.02	1.13	0.28	0.04
207	-	2"	93	+	+	+	9.20	1.15	0.28	0.04
211	-	2"	94	+	+	+	+	1.18	0.29	0.04
216	-	2"	95	+	+	+	+	1.20	0.30	0.04
220	-	2"	96	+	+	+	+	1.22	0.30	0.04
225	-	2"	97	+	+	+	+	1.25	0.31	0.04
231	-	2"	98	+	+	+	+	1.27	0.31	0.04
238	-	2"	99	+	+	+	+	1.30	0.32	0.04
244	-	2"	100	+	+	+	+	1.32	0.33	0.05
250	-	2"	101	+	+	+	+	1.35	0.33	0.05
256	-	2"	102	+	+	+	+	1.37	0.34	0.05
261	-	2"	103	+	+	+	+	1.40	0.34	0.05
267	-	2"	104	+	+	+	+	1.42	0.35	0.05
272	-	2"	105	+	+	+	+	1.45	0.36	0.05
278	-	2"	106	+	+	+	+	1.47	0.36	0.05
283	-	2"	107	+	+	+	+	1.50	0.37	0.05
289	-	2"	108	+	+	+	+	1.52	0.38	0.05
294	-	2"	109	+	+	+	+	1.55	0.38	0.05
300	-	2"	110	+	+	+	+	1.58	0.39	0.05
306	-	2"	111	+	+	+	+	1.60	0.39	0.05
313	-	2"	112	+	+	+	+	1.63	0.40	0.06
319	-	2"	113	+	+	+	+	1.66	0.41	0.06
325	-	2"	114	+	+	+	+	1.68	0.41	0.06

3"@ 129 GPM

Ful-Vu Pul-Pruf Protector RF3-11 Lightweight

APPENDIX "S"

BASIS FOR WASTEWATER FLOW PROJECTIONS BY ZONING FOR UNDEVELOPED OR PARTIALLY DEVELOPED AREAS

RESIDENTIAL ZONING	BASE USE	ZONING DESCRIPTION	DU/AC (Base)	DU/AC (Clustr)	BSF/DU	BSF gpd/AC (Base)	BSF gpd/AC (Clustr)
AC	SFD	Agricultural Conservation	0.20	0.40	260	52	104
RC	SFD	Rural Conservation	0.33	0.40	260	86	104
RR	SFD	Rural Residential	1.00	1.22	260	260	317
RV	SFD	Village Residential	1.80	3.40	260	468	884
RL	SFD	Low Density Residential	1.00	3.97	260	260	1,032
RM	TH	Medium Density Residential	3.00	6.66	202	606	1,345
RH	APT	High Density Residential	5.00	13.00	173	865	2,249
RO	SFD	Residential/Office	1.00	3.97	260	260	1,032

COMMERCIAL ZONING	ZONING DESCRIPTION	BSF gpd/ac
RO	Residential/Office	1,000
CN	Neighborhood Commercial	2,000
CC	Community Commercial	2,000
CB	Central Business	3,000
CV	Village Commercial	2,000
BP	Business Park	4,000
IG	General Industrial	2,000
IH	Heavy Industrial	4,000

FLOATING ZONING	BASE USE	ZONING DESCRIPTION	DU/AC (Base)	DU/AC (Clustr)	BSF/DU	BSF gpd/AC (Base)	BSF gpd/AC (Clustr)
PRD	SFD	Planned Residential Development	1.75	3.50	260	455	910
PRD	TH	Planned Residential Development	4.00	8.00	202	808	1,616
PRD	APT	Planned Residential Development	7.00	14.00	173	1,211	2,422
MX	SFD	Mixed Residential Development	1.75	3.50	260	455	910
MX	TH	Mixed Residential Development	4.00	8.00	202	808	1,616
MX	APT	Mixed Residential Development	7.00	14.00	173	1,211	2,422
PMH	SFD	Planned Mobile Home Park	5.00	10.00	260	1,300	2,600
PUD	MIX	Planned Unit Development	3.50	10.00	260	910	2,600
WPC	MIX	Waterfront Planned Community	3.00	8.00	260	780	2,080

APPENDIX "T"

FLOW PROJECTION BASED UPON GALLONS PER PERSON PER DAY

TYPE OF ESTABLISHMENT	GALLONS PER PERSON PER DAY (UNLESS OTHERWISE NOTED)
Cottages and small dwellings with seasonal occupancy	50
Country clubs (per resident member)	100
Country clubs (per non-resident member present)	25
Dwellings:	
Boarding houses	50
additional for non-resident boarders	10
Luxury residences and estates	150
Multiple family dwellings (apartments)	60
Rooming houses	40
Single family dwellings	75-100
Factories (gallons per person, per shift, exclusive of industrial waste)	35
Hospitals (per bed space)	350
Hotels with private baths (2 persons per room)*(is this per room?)*	60
Hotels without private baths*(is this per 2 persons per room?)*	50
Institutions other than hospitals (per bed space)	125
Laundries, self-service (gallons per wash, i.e. per customer)	50
Mobile home parks (per space)	250
Motels with baths, toilet and kitchen wastes (per bed space)	50
Motels (per bed space)	40
Picnic Parks (toilet wastes only) (per picnicker)	5
Picnic Parks with bathhouses, showers and flush toilets	10
Restaurants (per seat)	25
Restaurants (toilet and kitchen wastes per patron)	10
Restaurants (kitchen wastes per meal served)	3
Restaurants, additional for bars and cocktail lounges	2
Schools:	
Boarding	100
Day, without gyms, cafeteria or showers	15
Day, with gyms, cafeteria and showers	25
Day, with cafeteria, without gyms or showers	20
Service stations (per vehicle served)	10
Swimming pools and bathhouses	10
Theaters:	
Movie (per auditorium seat)	1
Drive-in (per car space)	5
Travel Trailer Parks without individual water and sewer hookups (per space)	50
Travel Trailer Parks with individual water and sewer hookups (per space)	100
Workers:	
Construction (at semi-permanent camps)	50
Day, at schools and offices (per shift)	15

FROM THE LATEST STATE OF MARYLAND "DESIGN GUIDELINES FOR SEWER FACILITIES"

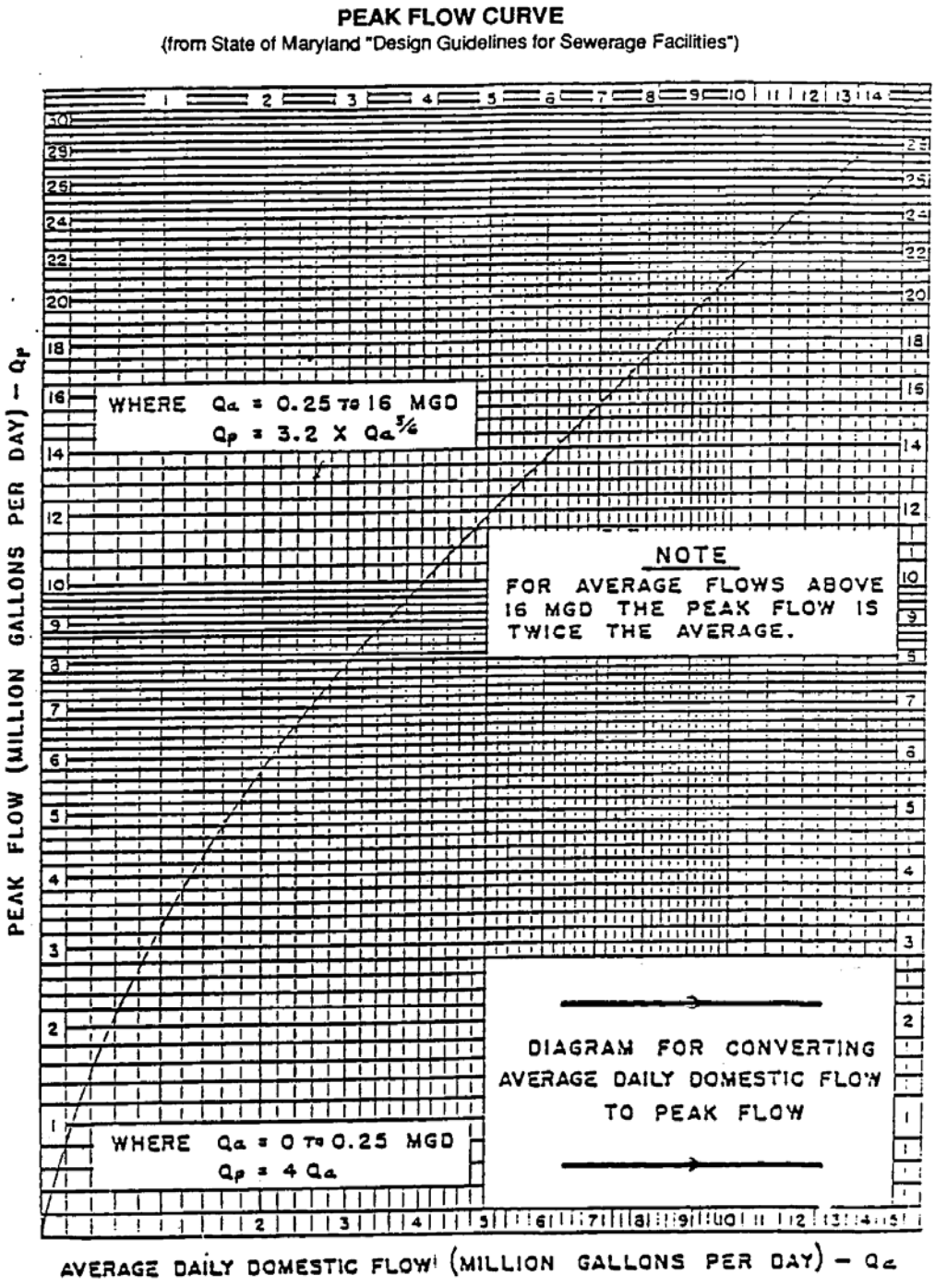
APPENDIX "U"

GUIDING FACTORS FOR FLOW PROJECTION RELATED WITH COMMERCIAL ESTABLISHMENTS, PUBLIC SERVICE BUILDINGS OR DWELLING UNITS

Office Buildings	Gross Sq. Ft. x 0.09 = gpd
Medical Office Buildings	Gross Sq. Ft. x 0.62 = gpd
Warehouses	Gross Sq. Ft. x 0.03 = gpd
Retail Stores	Gross Sq. Ft. x 0.05 = gpd
Supermarkets	Gross Sq. Ft. x 0.20 = gpd
Drug Stores	Gross Sq. Ft. x 0.13 = gpd
Beauty Salons	Gross Sq. Ft. x 0.35 = gpd
Barber Shops	Gross Sq. Ft. x 0.20 = gpd
Department Store with Lunch Counter	Gross Sq. Ft. x 0.08 = gpd
Department Store without Lunch Counter	Gross Sq. Ft. x 0.04 = gpd
Banks	Gross Sq. Ft. x 0.04 = gpd
Service Stations	Gross Sq. Ft. x 0.18 = gpd
Laundries and Cleaners	Gross Sq. Ft. x 0.31 = gpd
Laundromats	Gross Sq. Ft. x 3.68 = gpd
Car Wash without Wastewater Recirculation Equipment	Gross Sq. Ft. x 4.90 = gpd
Hotels	Gross Sq. Ft. x 0.25 = gpd
Motels	Gross Sq. Ft. x 0.23 = gpd
Dry Goods Stores	Gross Sq. Ft. x 0.05 = gpd
Shopping Centers	Gross Sq. Ft. x 0.18 = gpd

APPENDIX "V"

PEAK FLOW CURVE



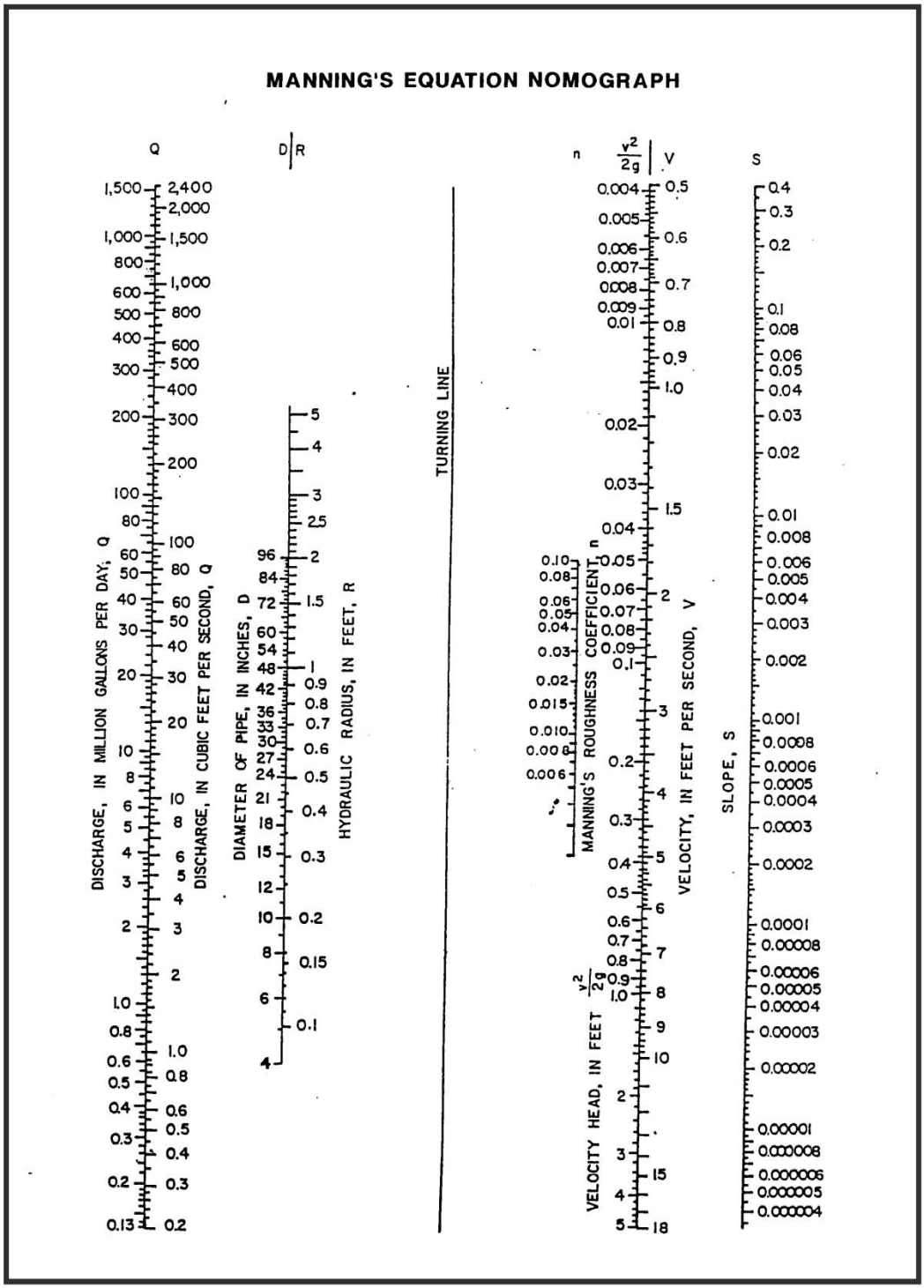
APPENDIX "W"

MANNINGS COEFFICIENT OF ROUGHNESS ("n")

TYPES OF PIPE	"n"
PVC	0.011
DIP (cement lined)	0.013
XVCP	0.013
RCP	0.015
PCCP	0.015

APPENDIX "X"

MANNING EQUATION NOMOGRAPH



APPENDIX "Y"

HYDRAULIC ELEMENTS GRAPH