

TOWN OF IPSWICH
MASSACHUSETTS

WATER RULES AND REGULATIONS

The following regulations, until further notice, shall be considered a part of the contract with every person who uses municipal water. (Ed note: unless otherwise indicated as having been adopted on a specific date as an amendment, these Regulations were adopted on December 20, 1978, and became effective on January 1, 1979.)

ARTICLE I
GENERAL

1. Purpose of Regulations

The Ipswich Water Division was created by a special act of the State Legislature, adopted by the Town in 1894, for the purpose of securing a community supply of water and providing the Town with such water for the promotion of the general health and welfare. To carry out this purpose, the Division acquires, controls, and maintains property (lands, structures, wells, reservoirs, mains, hydrants, piping, and other works and apparatus); employs personnel for the superintendence, maintenance, extensions of such works and structures, and the collection of revenues sufficient for its needs. Under the terms of the Town Charter, the Board of Selectmen assume all the powers and duties normally assigned by State Statute to the Water Commissioners. The Town Manager shall assume general supervision of the Water Division. Direct supervision of the Water Department shall be exercised by the Director of Utilities. The Water Division's operation and maintenance depends primarily upon revenues received from sales of water.

2. Definitions

- (a) A "service" is the length between the water main system and the individual consumer/user of water. It includes all piping, fittings, and connections to the curb cock.
- (b) A "main" is the length between the source of supply and a service or between the source of supply and a fire hydrant installed by and regularly maintained by the Town at Town expense.
- (c) An "extension" is an addition to the system of mains.
- (d) A "summer service" is a link between the main water system and an individual consumer/user that is supplied seasonal water.
- (e) An "individual consumer/user of water" is a customer provided water by purchase on a regular, intermittent, or stand-by basis.
- (f) An "entrance" is the link between a main and the curb cock or curb shut-off.
- (g) A "meter" is a mechanical device, approved by the Water Division, which is designed for and capable of measuring the flow and/or recording the quantity of water passing through a service to an individual consumer-user of water. (Effective October 9, 1981)

3. Jurisdiction

The water supplied is the sole property of the Division, and the installations to and including the meters are therefore assumed to be under jurisdiction of the Division. No person except an employee or those

authorized in writing by the Division shall be allowed to install, repair, or remove any pipe, fixture, or connection on the street side of the meter or equivalent dividing point. (See Massachusetts General Laws Chapter 165:11)

4. Maintenance of Services (Amended October 23, 1986)

- (a) Each consumer of water shall properly maintain his service from the curb cock to the meter, and shall be liable for any damages resulting from a failure to do so.
- (b) On existing services where the curb cock lies outside the street layout, the Division will maintain and repair the service from the main to the curb cock; the consumer will maintain and repair the service from the curb cock to the meter.
- (c) In the event there is a failure of the service between the main and the curb cock and the location of the curb cock is within the street layout, the Town shall bear the costs of materials, personnel, and equipment time, including reasonable overhead costs to renew the service from the main to and including a relocation of the curb cock beyond the property line and off the Town street layout. If the service needs replacement from the relocated curb cock to the foundation, the costs associated with that portion of the work shall be borne fully by the consumer.
- (d) In the event there is a failure of the service between the curb cock and the meter, and the location of the curb cock is the Town street layout, the Town and the consumer shall bear equally the costs of materials, personnel, and equipment time, including reasonable overhead costs to renew the service to the extent necessary from the main to and including a relocation of the curb cock beyond the property line and off the Town street layout. If the service needs replacement from the relocation curb cock to the foundation, the costs associated with that portion of the work shall be borne fully by the consumer.
- (e) Scheduled repairs to or replacement of a lead or galvanized service, prompted by a customer's own initiative, shall be done only after a written permit is obtained from the Division in compliance with Article II; the expense for same shall be borne fully by the customer, and the customer shall further be required to remove and cap off the old service being discontinued from use at the main. In case of emergency, repair work may be done without a written permit having been obtained prior to the commencement of work; however, notification shall be made to the Division within one (1) workday, and the customer shall obtain a written permit prior to permanent backfilling of any such emergency work.
- (f) In no case will water be supplied through a single service to two (2) or more separate owners of a single property or to more than one dwelling. Services greater than two hundred feet (200') in length will require a meter pit off the edge of the street layout. Meter pit construction must be approved by the Water Division before construction commences. Service boxes off the Town street layout shall be constructed flush to finish grade.
- (g) The Water Division, at the Water Division's discretion, may, after receipt of a signed release of liability for any damages whatsoever by an individual customer or user of water, assist the individual consumer or user of water in effecting emergency repairs to his service pipe on private property. (See Appendix III)

5. Access to Private Property

The Division shall have free access to all premises supplied with municipal water for the purpose of examination and repair of meters, pipes, and fixtures, and to determine any misuse of the water or any other acts contrary to the intent of these Regulations.

6. Use of Water Supply

No water user shall supply water to a party not entitled to its use, except by written permit.

7. Restriction on Use of Water (Amended April 3, 2017)

The Town reserves the right to restrict the use of water as it deems necessary to ensure an adequate supply of water for drinking and fire protection and to protect the quality and quantity of water in local aquatic habitats such as ponds, rivers and wetlands and to ensure compliance with the Water Management Act.

The restriction of water use shall be guided by the Drought Management Plan, incorporated herein as Appendix VII. The Water Commissioners, Water Director or Town Manager may declare a Restriction of Water Use as authorized in Chapter 220, Article II of the General Bylaws.

Declared Water Restrictions shall be progressive in nature based on drought conditions. Exceptions to the restrictions may be suspended as necessary to further reduce water use.

Outdoor water uses not subject to restrictions or bans are those required:

- (a) for health or safety reasons;
- (b) by regulation;
- (c) for the production of food and fiber;
- (d) for the maintenance of livestock; or
- (e) to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees and greens, or irrigation by plant nurseries or agricultural operations as necessary to maintain stock or establish new plantings, wash equipment to prevent damage and/or maintain performance, pest management and plant cooling).

During declared Water Restrictions, the following practices shall be permitted:

- (a) irrigation of public parks and recreation fields between the hours of 7:00 p.m. and 6:00 a.m.;
- (b) irrigation of lawns, gardens, flowers and ornamental plants by means of hand-held hose between the hours of 7:00 p.m. and 6:00 a.m.

During declared Water Restrictions the following practices shall be prohibited:

- (a) irrigation of lawns via any system other than hand held hose or bucket;
- (b) washing of vehicles, except to meet core function of a business as described in (e) above;
- (c) washing of exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply paint, preservatives, stucco, pavement or cement; and
- (d) filling or refilling of swimming pools.

Further restrictions on outdoor water use beyond those detailed herein may be imposed as necessary.

The following outdoor water uses are subject to review and approval by the Town, through its Board of Water Commissioners or their designee:

- (b) irrigation to establish replanted or re-sodded lawn or plantings during the months of May and September; and
- (c) irrigation of newly planted lawns (seeded or sodded) in the current calendar year for homes or businesses newly constructed in the previous twelve months.

During a declared Water Ban, all outdoor water uses shall be prohibited.

The Town of Ipswich General Bylaws Chapter 220, Article II “Outdoor Water Use” and Massachusetts General Laws Chapter 165:11 and 111:171 are incorporated herein as Appendix I.

8. Use of Hydrants

The use of a hydrant, public or private, for other than fire purposes, will not be allowed without a written permit from the Division. Maintenance and repairs of privately-owned hydrants shall be the responsibility of the owner.

9. Water Shut-off

The Division reserves the right, whenever it deems necessary (for installation, maintenance, or to enforce compliance of these regulations), to shut off the water in whole or in part without notice. The Division shall assume no responsibility for damages resulting from such action by the Division. The Division reserves the right to restrict or restrain water use consistent with any policy adopted by the Division pursuant to applicable Town By-Laws. (Note passage of water use restriction and restraint By-Law by the May 1978 Annual Town Meeting)

10. Safety Devices

All hot water boilers shall be equipped with suitable safety devices, as required by State law, to prevent injury when water is being shut off or drawn off. The Division shall not assume responsibility for any damages caused by failure to comply with the above requirements.

ARTICLE II
CONSUMER/USER SERVICES

1. Application for Water

All applications for water must be made at the Division Office and be signed by the owner of the premises supplied. Such application shall constitute a contract between the Water Division and the applicant, his heirs and assigns. All applications for the use of water in new construction shall be made at the same time as the building permit is applied for. (See Appendix II)

(a) Installation of New Service; Water Taps:

The petitioner shall have the complete connection installed by an approved private contractor. The Town shall make service taps up to and including those 1” in diameter, subject to the payment in advance of a fee as set forth in a schedule herein below; in the event the service tap is greater than 1” in diameter, it shall be installed by an approved private contractor under on-site direction by the Water Division. The contractor shall make application for a street opening permit at the office of the Public Works Department. The contractor shall: perform all the work on both private and Town property; supply all materials not furnished by the Town; and perform all excavation (including ledge), backfilling, patching (temporary and permanent) and any other work which the Water Division determines is necessary to complete the service installation.

Tap for Water Service

(Fee to be in addition to fees set forth in subsection (b) of this section)

Less than 1” equal to 1” diameter:	\$200.00
Greater than 1” diameter:	Tap to be performed by a private contractor and paid directly by applicant

(Amended effective October 26, 1989)

(b) Application Charges; Meter Installation and Inspection Charges:

In order to reimburse the Water Division for the capital costs of development of the public water supply system, each applicant must pay a \$500 application charge (in addition to the tap-in charge and the meter installation and inspection charge) all payable in advance to the Town Treasurer/Collector; said application charge shall be assessed to an applicant seeking to connect to the water system, but shall not be assessed for the installation of a second water service to a structure designed solely for standby fire suppression.

The applicant must also pay a base two hundred dollar (\$200) fee in advance to the Town Treasurer/Collector for the materials, labor, and inspection for a 5/8” meter installation, subject to additional incremental charges as may apply for the cost of a larger diameter meter as prescribed in the last paragraph of this Section.

The Water Division Manager shall determine the size, type, and make of meter to be installed. All meters shall be the property of the Town of Ipswich Water Division. The Town shall supply, install, and seal all meters. The applicant shall be responsible for all costs necessary to effect installation of the meter.

An applicant for a new service serving a new building or an addition, which service shall remain unmetered during construction, shall, in addition to the application charges, deposit with the Treasurer, in advance, one year's annual rate billed quarterly for unmetered deep water service; upon installation of the meter and outside register by the Division, they shall receive a refund on a calendar day pro-rata basis, and shall thenceforth be billed for service at the normal metered rates.

Foundation permits and/or building permits will not be issued by the Building Inspector until application for water has been made.

In the event the Water Division Manager determines that the meter size shall be greater than 5/8" diameter (up to and inclusive of a 1" diameter meter), the applicant shall be responsible for payment, in advance, of the incremental cost of said meter over the current Town bid price for a 5/8" meter, in addition to the base fee prescribed in the second paragraph of this Subsection. In the event the Water Division Manager determines that the meter size shall be greater than one inch (1") in diameter, the applicant shall be responsible for payment in advance to the Town Treasurer/Collector for the base fee prescribed in the second paragraph of this Subsection plus the costs for materials and contracted outside services for the installation of the meter and outside register. Every meter shall have a connection to the Town's automatic meter reading system, which shall be located, if at all possible, adjacent to the electric meter. (Amended effective October 1, 1996; subsection (c) deleted July 27, 1989)

2. Installation of a Larger Service or Entrance

Requests for the installation of a larger service and/or entrance, because of increased consumption, will be treated as a new application for water at the owner's expense.

3. "Public Ways" shall include only roads which have been accepted by Town Meeting, are currently being maintained by the Town, and which are suitable for the free and unobstructed passage of wheeled motor vehicles and pedestrians. "Public Ways" shall not be deemed to include any body of water, rivers and/or streams. (Effective January 13, 1983)

4. Fee Schedule

All fees referenced in these regulations are amended as set forth in Appendix VI. (Effective October 1, 2014; section 4 added August 18, 2014)

ARTICLE III
EXTENSIONS

1. Applications

Applications for extensions to the existing system shall be filed in writing with the Water Division by the person or persons requesting such extension. No supply main of less than 8" diameter shall be installed. In the event the application calls for an extension within an unaccepted way, the application must be accompanied by a conveyance of Title to the work (in a form as contained in Appendix V to these Regulations and incorporated herein). The specifications for extensions are incorporated herein under Article V.

2. Approval

Such application shall be submitted to the Town Manager with a cost estimate prepared by the Water Division and a recommendation for action by the Water Division. The Town Manager shall then forward the application with his recommendation to the Board of Water Commissioners for approval or disapproval.

3. Charges

- (a) Main installation in accepted Town streets shall hereinafter be installed on a 50-50 percentum cost-sharing basis, with the applicant paying one half the cost and the Town the remainder, given Town Meeting appropriation for the extension, or entirely at the applicant's expense absent a Town Meeting appropriation therefor. In the former instance, the applicant shall deposit his money with the Town Treasurer/Collector before materials shall be ordered or work commenced; alternatively, the abutters shall be assessed betterments in accordance with MGL Chapter 40, Section 42G-I, inclusive, as amended, and MGL Chapter 80, as amended, and said betterment shall be recorded before materials shall be ordered or work commenced. In the latter instance, work shall be undertaken only in accordance with the procedures set forth in subsection (b) below. All ledge excavation cost shall be borne entirely by the petitioner in either instance, and in the former instance shall be considered as a separate, additional expense. (Effective January 13, 1983)
- (b) New main installation on streets which have not been accepted shall be the responsibility of the applicant or the abutters who shall bear 100% of the installation cost. All materials used and all labor performed on such installations shall conform to specifications contained in Article V herein. The tapping sleeve and gate valves shall be installed in existing mains by the Contractor under the supervision of the Water Division, and the installer shall be billed for labor and any materials used, including pressure testing repairs, etc., that may be required, for a period of 60 days. After this period the Town shall assume all responsibility for the maintenance of the installation. (Effective January 13, 1983)
- (c) Replacement main installations for inadequate existing mains on streets which have not been accepted shall hereinafter be installed on a 50-50 percentum cost-sharing basis, with the applicant(s) or the abutter(s) paying one half the cost and the Town the remainder, given Town Meeting appropriation for the replacement installation, or entirely at the applicant's (s') or abutter's (s') expense absent a specific Town Meeting appropriation therefor. In the latter instance, work shall be undertaken only in accordance with the provisions of Section (b) above.

In the former instance, the applicant(s) or abutter(s) shall deposit his (their) money with the Town Treasurer/Collector before materials are ordered or work commenced; or alternatively, the applicant(s)/abutter(s) shall be assessed betterments in accordance with MGL Chapter 40, Sections 42G-I inclusive, as amended, and MGL Chapter 80, as amended, and said betterments shall be recorded before materials shall be ordered or work commenced. (Sections (a), (b), and (c) effective January 13, 1983)

4. Installation for the Good of the System

The Division, for the good of the system, may install mains in ways where there is not water or inadequate water, and nothing in these Regulations shall be construed as preventing the Division from doing so. Application for water from such an extension must comply with the extension policy and shall be for the entire street frontage of the applicant's property. (The Division reserves the right to specify which of the policies as outlined in Section 3(a) or 3(b) of this Article shall apply to any particular installations.)

ARTICLE IV
SUBDIVISION EXTENSIONS

1. Application

The application for the installation of water service in a subdivision shall be filed in writing with the Water Division by the subdivider or his authorized agent, consistent with the rules and regulations of the Town Planning Board. No supply mains of less than 8" diameter shall be installed.

2. Minimum Pressure and Fire Flow - Single Unit Residential

A proposed extension to serve single unit residential structures shall have as a design goal sixty-five pounds per square inch of static pressure and a fire flow of 1,500 gallons per minute for a period of at least two hours with a minimum residual pressure of twenty pounds per square inch. Each hydrant on the extension shall not cover in excess of 150,000 square feet. Pro forma hydrostatic pressure and flow calculations based on the flow and pressure characteristics of the water system at the proposed tie-in point shall be performed by a registered professional Water Manager. Should these calculations indicate that the design goals will not be met, a second set of pro forma calculations must be made based on a statement of the future condition of the water system at the tie-in point as provided by the Town Water Manager. This set(s) of calculations will be made available to the Board of Water Commissioners. If the present conditions do not allow achievement of the stated design goals but the future conditions do, then the extension appropriate to the future condition will be required as a condition for approval. (Effective February 8, 1982)

Should approval be granted for an extension in which the present condition of the system does not permit the achievement of the above-stated design goal, then the party requesting the extension will be required to have on file at the Registry of Deeds, as attachments to the deeds for each of the individual parcels of land to be served by the extension, a statement that reads: "Minimum static pressure and fire flow as recommended by the Ipswich Water Commissioners and Fire Chief are not met by the water distribution system serving this parcel." As a further condition on this approval, the Water Commissioners may require additional unspecified measures to be taken by the developer to assure improved and/or adequate fire protection. (Effective February 8, 1982)

All costs associated with the determinations and/or registration filings shall be borne by the applicant. (Effective February 8, 1982)

ARTICLE V
WATER MAIN AND SERVICE SPECIFICATIONS

1. General

Water pipe shall be of the type, kind, size and class as shown on the plans or as directed. The pipe shall be laid on a firm foundation with tight joints and properly protected in a trench excavated and backfilled in accordance with these specifications and accompanying plans and as directed by the Water Division.

2. Kinds of Pipe

Pipe for the construction of water mains shall be cast iron, ductile iron, or polyvinyl chloride pressure (PVC) pipe. (Effective July 7, 1983)

3. Materials

(a) Cast Iron Pipe:

Cast iron pipe shall be centrifugally cast in either metal or sand-lined molds and shall conform in all ways to either USA Standard A21.6 (AWWA C106-62) or A21.8 (AWWA C108-62) or latest revision thereof for Cast Iron Pipe centrifugally cast in metal molds or sand-lined molds. Cast iron pipe shall have a minimum thickness class of class 22 for pipe twelve inches (12”) in diameter and under, and class 23 for pipe over twelve inches in diameter. Cast iron pipe shall be pressure class 150 unless otherwise specified.

(b) Cast Iron Fittings:

Cast iron fittings shall conform to USA Standard A21.10 (AWWA C110-64) for Cast Iron Fittings 2 inches through 48 inches and shall be of a pressure rating class of class 250. Joints on cast iron fittings shall be of the same type as the cast iron or ductile iron piping with which they are incorporated.

(c) Ductile Iron Pipe:

Ductile iron pipe shall be centrifugally cast in either metal or sand-lined molds and shall conform in all ways to USA Standard A21.51 (AWWA C151-65) for Ductile Pipe centrifugally cast in metal molds or sand-lined molds. Ductile iron pipe shall have a minimum thickness class of class 52 unless specified otherwise.

(d) Cement Mortar Lining for Water Pipe and Fittings:

All metal water pipe and fittings shall be cement-lined in accordance with the requirements of USA Standard A21.4 (AWWA C104-64) or latest revision thereof for Cement Mortar Lining for Cast Iron Pipe and Fittings for water.

(e) Cast Iron and Ductile Iron Pipe Joints:

(1) Push-On Joints - Push-on joints shall be of the type equal to “Tyton Joint” as manufactured by the United States Pipe and Foundry Company or “Super Bell Tite Joint” as manufactured by James B. Clow and Sons, Inc., or equivalent. Pipe shall be jointed in accordance with the manufacturer’s instructions, and any appurtenant materials used in completing the connection, such as lubricants and rubber gaskets, shall be obtained from the same manufacturer as the pipe. In any case, rubber gaskets incorporated into the joint shall conform to USA Standard A21.11 (AWWA C111-64, ASTM C443-60T) or latest revision thereof. Lubricants used shall be manufactured for the express purpose of lubricating the parts of the joint in assembly. The lubricant shall be nontoxic, shall not

support the growth of bacteria, and shall have no deteriorating effects on the gasket or the pipe. It shall not impart any taste or odor in a pipe that has been flushed and disinfected in accordance with these specifications.

- (2) Mechanical Joints - Mechanical joints shall conform to the requirements of USA Standard A21.11 (AWWA C111-64). Each joint shall consist of an integrally cast bell and exterior flange having cored or drilled bolt holes, a rubber ring gasket, follower gland and nuts and bolts. Rubber gasket and lubricant shall conform to the requirements established in subsection 3. (e)(1) of this Article. The follower gland shall be from the same manufacturer as the pipe or fitting and shall be brought up to the flange evenly by first partially tightening the bolts and then firmly tightening opposite bolts with a torque wrench in accordance with the manufacturer's specifications. Only bolts furnished with the mechanical joint pipe or fitting shall be used and shall be high-strength corrosion resistant alloy with tee head and hexagon nut.

(f) Polyvinyl Chloride Pressure Pipe (PVC):

Polyvinyl Chloride Pressure pipe (PVC) and couplings shall be Class 150 or Class 200. All Pipe and couplings shall be manufactured and tested in accordance with AWWA C900-81 (or latest issue) specifications entitled "AWWA Standard for Polyvinyl Chloride (PVC) pressure pipe 4-inch through 12-inch for Water", including Appendix A entitled "AWWA Design Requirements and Criteria for PVC Water Pipe", and other applicable Appendices as issued. (Effective July 7, 1983)

- (1) Pipe couplings and joints shall be made using an elastomeric gasket. Solvent-cement couplings will not be permitted. Elastomeric gaskets shall conform with the requirements of ASTM F-477 (or latest issue). The bell end of the pipe shall be an integral part of the pipe designed to lock in the gasket. The bell section shall be adequate to withstand pressures not less than the pressure class rating of the pipe and meet the requirements of AWWA C900-81 (or latest issue). (Effective July 7, 1983)
- (2) Standard pipe lengths shall be 20 ft. plus or minus 1 inch. Up to 15 percent of the total footage may be furnished in random lengths but not less than 10 feet long. (Effective July 7, 1983)
- (3) Fittings for PVC Pipe - Fittings for PVC water pipe may be either cast iron or ductile iron. Jointing of the PVC pipe to fittings shall use rubber gaskets conforming to ANSI/AWWA c111/A21.11-80 or latest issue and as recommended by the manufacturer. Where required or as directed by the manufacturer, adaptors shall be used. Joint gaskets for PVC pipe shall not be used with cast iron or ductile iron fittings unless approved by the Town. (Effective July 7, 1983; subsequent subsections (h)-(r) were relettered (i)-(s).)

(g) Valves:

- (1) Gate Valves - Gate valves shall be iron body bronze mounted, double disc, parallel seal, mechanical joint, for underground use, wrench operated, nonrising stem, "O-ring" seal to the requirements of AWWA Specifications C500-71. Valves shall be equal to type used presently by the Town of Ipswich. Valve shall be designed for a water working pressure of 200 pounds per square inch and a water test pressure of 400 pounds per square inch. Gate valves shall have a 2-inch nut for wrench operation, and the operating nut shall have an arrow cast in the metal indicating the direction of opening. Valves shall "OPEN

LEFT". Valves shall have maker's initial, pressure rating and a year of manufacture cast on the body.

- (2) Butterfly Valves - Use of butterfly valves on 12-inch class 100 and on 8-inch class 200 PVC pipe may require an adaptor to allow the valve disc clearance from the pipe.
(Effective July 7, 1983)

(h) Valve Boxes:

Valve boxes shall be equal to type currently used by Town of Ipswich and shall be provided for each underground valve. Valve boxes shall be heavy pattern cast iron, cast in two or three telescoping sections of sliding construction and of such lengths as will provide, without full extension, the required cover. The lower section shall be belled or domed at the bottom to fit over the valve nut. The upper section shall fit over the lower section and shall be flanged at its base to provide proper bearing. Covers shall be at least 6 inches in diameter, shall fit flush with the top, shall have the word "WATER" cast thereon in raised letters, and shall be slotted for easy removal. Valve boxes shall be of good quality cast iron, free from all defects in material and workmanship, and shall be coated with coal-tar pitch enamel or other approved coating. Valve boxes shall be suitable for the size valve on which they are used and shall weigh at least 100 pounds with cover.

(i) Curb Boxes:

Curb boxes shall conform to the specifications for valve boxes except that, for curb boxes for service lines 1 inch and under, a buffalo-type cast iron curb box with 2 1/2 inch shaft will be used; for service lines between 1 1/4 and 2 inches, a 4 1/4 inch shaft with arch base will be used; for service lines over 2 inches, a 5 1/4 inch shaft will be used.

(j) Service Connections:

- (1) Service connections shall consist of piping, corporation stops, curb stops and curb boxes. Corporation stops installed in asbestos cement water pipe will require the use of a Smith-Blair repair service clamp, double strap or equal. All corporation cocks will have Type CC threads. Piping for service connections shall consist of annealed copper tubing Type K soft and shall conform to the requirements of ASTM Standard B88. No foreign copper tubing will be allowed. Minimum allowable size for service connections shall be 3/4 inch. Services shall be extended from the main to the lot line or to the curb cock, whichever is further. Corporation cocks will be Mueller H-15008 metal gripper and double face gasket or equal. Curb stops will be Mueller H15219 with drains or equal. Taps in the main for services shall be made only in the top one-half section to prevent the introduction of sediment into the service. Curb cocks shall be located in the center of the grass plot or on the property line or as directed by the Water Division. Corporation stops installed in PVC pipe may be directly tapped into pipe 6-inch or larger, or using service clamps or saddles of a type recommended for use with PVC pressure pipe. Cutting tools for tapping shall be of a type suitable for PVC pressure pipe. Direct taps shall use corporation stops with AWWA threads. All other requirements set forth in Article V Subsection 3(1) of these regulations shall be conformed to. (The last four sentences effective July 7, 1983)

- (2) Before any services are installed, the contractor shall furnish the Water Division, for its approval, a list of all materials and their manufacturer, together with model and/or catalog number and, if necessary, shall furnish a sample for inspection by the Division.

- (3) Suitable fittings for the installation of a water meter shall be provided on all services. Meters and outside registers shall be installed by the Water Division only. A Ford Ball valve HB-34 or equal shall be installed by the contractor on the water main side of the meter.
- (4) Materials used for service connections from the curb cock to the building are the responsibility of the contractor except that at least ten (10) feet of Type K copper tubing shall be installed from the ball valve to the outside of the foundation.
- (5) Service connections shall be buried at least four and one half feet. In ledge or rocky soil, service connections shall be bedded and covered by at least six inches of sand. No underground electrical, gas or sewer service shall be constructed within five feet of the service connection between the water main and the curb cock.

(k) Tapping Sleeves and Valves:

No contractor shall be allowed to tap any water main owned by or presently used by the Water Division without the express written permission of the Water Division. If permission is obtained, the contractor shall employ an approved tapping sleeve and gate valve of compatible manufacture and make the tap under the direction of a representative of the Water Division, in accordance with the manufacturer's instructions for installation. The use of tapping sleeves and gate valves which require a poured joint will not be permitted. Tapping sleeves shall be Rockwell 622 with mechanical gate or equal.

(l) Hydrants:

Hydrants shall be as manufactured by Darling B-50-B or B-62-B, or equal, with breakaway flange and shall comply with AWWA Standard Specification C502-65 for fire hydrants for water works services. They shall have 6 inch hub ends and 5 1/2 inch diameter clear opening at valves and shall open by turning to the left (counter-clockwise). Hydrants shall be of ample length for 6 feet of trench. They shall be provided with two 2 1/2 inch hose nozzles and one 4 1/2 inch pumper outlet with National Standard Fire Hose thread and chained caps. Operating nuts shall be AWWA Standard (pentagonal, measuring 1 1/2 inch point to flat). Hydrants shall be equipped with "O-Ring" packing. Hydrants shall be shop painted in accordance with AWWA Specifications. The breakaway flange shall be 2 inches above final grade. All hydrants shall be marked with a 2 inch minimum diameter pipe 9 feet in length. This pipe shall be set 3 feet into concrete between the hydrant and oncoming traffic and shall be painted red. (The first sentence effective July 7, 1983)

(m) Thrust Blocks:

Thrust blocks, where required, shall be of concrete and shall have a compressive strength of 3000 psi at 28 days. Blocking shall be placed between solid ground and the hydrant, bend or fitting to be anchored. Unless otherwise indicated or directed, the base and thrust bearing side of the thrust blocks shall be poured directly against undisturbed earth. The sides of thrust blocks not subject to thrust may be poured against forms. The area of bearing shall be as directed. Blocking shall be placed so that the fitting joints will be accessible for repair. Steel rods and clamps shall be protected by galvanizing or by coating with bituminous paint.

(n) Miscellaneous Metal Work:

Bends, hydrants, valves, and appurtenances shall be strapped and clamped where required and/or as directed. Steel bars, rods and plates shall be of structural steel. Straps, bridle rods, clamps, anchors, and such other parts shall be provided as directed and as approved. After installation,

all parts of the strapping and clamping devices shall be given two heavy coats of an approved coal-tar base protective coating.

(o) Plugs:

A plug, where permitted, shall be equipped with a 1 inch blow-off and gate box.

(p) Backfill:

- (1) The contractor shall furnish all materials and equipment and perform all incidental work necessary to backfill trenches for pipelines and appurtenances.
- (2) Common fill shall consist of mineral soil substantially free from organic materials, loam, wood, trash, and other objectionable materials which may be compressible or which cannot be properly compacted. Fill to one foot above the top of the pipe shall be screened gravel or sand. Above this point common fill with material up to 10 inches in its largest dimension may be used. Common fill shall have physical properties such that it can be readily spread and compacted. Snow, ice and frozen soil shall not be permitted. It is anticipated that, in most areas, material excavated from the trench will meet the requirements of common fill. Where excavated material does not meet the requirements, it shall be replaced with common fill obtained from other sources.
- (3) Granular fill shall consist of hard, durable stone and coarse sand, essentially free from frost, frozen lumps, loam and clay, well-graded, and containing no stone having any dimension greater than 3 inches. The grading of sizes and material shall be such that the gravel may be thoroughly consolidated. The grading shall conform to the following requirements:

(a)	Passing 3/8 inch sieve	70% maximum
(b)	No. 10 sieve	50% maximum
(c)	No. 200 sieve	5% maximum
- (4) Screened gravel shall consist of hard, durable particles of proper size and gradation, and it shall be free from sand, loam, clay, excess fines, and deleterious materials. The size of the particles shall be uniformly graded gravel such that not less than 95 percent of the particles will pass a 1/2 inch sieve and not more than 5 percent will pass a No. 4 sieve. Quality and gradation shall be acceptable to the Water Division.

(q) Pavement:

The Standard Specifications for Highways, Bridges and Waterways, as issued by the Commonwealth of Massachusetts, Department of Public Works, shall apply to materials and workmanship requirements for temporary and permanent pavements used to replace pavements removed or damaged during construction. Temporary and permanent pavement shall be Class I, Bituminous Concrete, Type I-1, conforming to Section 460 of the Massachusetts Standard Specifications referred to above.

4. Construction Methods

(a) General:

In unloading, storing, stacking and handling of pipe, fittings, valves or appurtenances, the contractor shall take special care to insure that his methods are consistent with methods employed by the manufacturer in the manufacture and shipping of the product. Insofar as possible, all heavy materials shall be carefully handled by the use of hoists or skidways to avoid shock or damage. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. It shall be the contractor's responsibility to inspect all shipments, and to replace or repair at his own expense any materials which have been damaged through his own negligence. Whenever possible, pipe shall be strung along the routes with the bell ends facing in the direction in which the work is to proceed.

(b) Trench Excavation:

The contractor shall excavate the trench to the lines and grades as directed by the Water Division. Special care shall be taken to protect existing underground utilities and support the sides of the trench to prevent movement, to include the use of sheeting, shoring and bracing. The contractor shall also be required to do all dewatering of the trench which may be necessary to insure that the trench bottom is firm and dry. If, in the opinion of the Water Division, unsatisfactory soil conditions exist at the required trench grade, the contractor may be required to excavate below normal trench grade until suitable foundation material is encountered. The excavation shall then be backfilled with screened gravel in 6-inch layers. Each layer shall be properly tamped and compacted until normal trench grade is obtained. The contractor shall make additional excavation, by hand or an approved mechanical method, at each bell location and of sufficient depth to insure that proper jointing methods may be applied. The contractor shall also make such additional excavations as may be necessary to provide for proper placement of concrete thrust blocks, valves, hydrants, stone for hydrant drains, services and other appurtenances as shown on the plans or as directed by the Water Division. All water main trenches shall be such that a minimum cover of 4 1/2 feet is provided over the pipe, except at gate valves where a minimum of 3 feet of cover shall be provided at the top of the valve bonnet. When ledge or rock is encountered at trench grade, the contractor shall excavate an additional 6 inches and backfill with screened gravel to pipe grade. Backfill shall be thoroughly compacted.

(c) Bedding the Pipe:

- (1) Cast Iron or Ductile Iron - The trench shall be prepared to receive the pipe in accordance with AWWA Standard Specification C600 for the installation of cast iron water mains. In general the bed shall be free from any large stones and of smooth and uniform surface. Any voids under the pipe shall be filled and thoroughly tamped so that the pipe is fully supported throughout its entire length. It is desirable that the bed be rounded out so as to form a cradle in advance of laying the pipe to prevent pipe movement. If so directed, the contractor shall lay the pipe on blank blocking and thoroughly tamp beneath the pipe to provide uniform bearing.
- (2) PVC Pressure Pipe - Bedding material for PVC pressure pipe shall consist of either gravel borrow or crushed stone. Gravel borrow shall conform to the Commonwealth of Massachusetts Department of Public Works Standard Specification for Highways and Bridges classification M1.03.0 Type C. Crushed stone shall conform to Massachusetts Standard Specification M2.01.4. The bedding material shall be carried to 1 foot above

the top of the pipe for the full width of the trench. The bedding material shall be compacted to not less than 95 percent of maximum density as determined in accordance with the requirements of Method D of ASTM Specification D1557-78. The minimum bedding thickness under the pipe shall be 6 inches. (Effective July 7, 1983)

(d) Laying the Pipe and Fittings:

The pipe shall be placed in the trench in accordance with the manufacturer's recommendations or by an approved method in such a manner as to insure that the pipe is not damaged. All pipe shall be thoroughly sound, dry and clean before laying, and the utmost of care shall be taken to insure that its condition is not altered when it is placed on the bed. A tight plug shall be installed once the pipe is in place to keep out groundwater and dirt. All work associated with laying the pipe shall conform to AWWA Standard Specification C600 wherever applicable and not in conflict with the provisions contained in these specifications. When the pipe is in place, screened gravel or sand, whichever is applicable, shall be placed in the trench and thoroughly compacted to the spring-line of the pipe. Under no circumstances shall blocking be permitted when laying PVC pipe. (Last sentence effective July 7, 1983)

(e) Installation of Valves and Hydrants:

- (1) Valves - The contractor shall install all valves and tapping sleeves and valves together with valve boxes, at the locations shown on the plans or as directed by the Water Division. In general, valves shall be installed as close as possible to plumb and in accordance with the applicable subsections 4(c) and 4(d) of this article, and in accordance with the manufacturer's recommendations. Valve boxes shall be installed at every valve location and shall be adjusted to the proper finished grade and set plumb and centered over the operating nut of the valve. The contractor shall exercise special care that the valve box is free of dirt and other obstructions and that the base does not rest on the valve bonnet. An earth cushion shall be provided between the bonnet and the base. After installation is completed, all valves shall be operated and then left in the closed position.
- (2) Tapping Sleeves and Valves - The contractor shall install tapping sleeves and valves in accordance with the applicable provisions of these specifications. In addition, before backfilling over any tapping sleeve, all exposed portions of any bolt used to hold the two halves of the sleeve together shall be heavily coated with two coats of Inertol #66 Special Heavy or approved equal bituminous paint. It shall be the contractor's responsibility to furnish the necessary tools and labor to make all approved taps of live mains.
- (3) Hydrants - Hydrant spacing shall be no greater than five hundred feet or as directed by the Fire Chief. The hydrant shall be set plumb and at the proper elevation with respect to final finished grade. The breakaway flange shall be set 2 inches above finish grade. The hydrant base shall be set on firm material and shall be adequately anchored by mechanical means or by concrete thrust blocks. The contractor shall place one-half cubic yard of selected 2-inch stone around the hydrant base for drainage purposes. Stone shall be placed to 6 inches above the hydrant drain. Hydrant locations shall be such that no part of the hydrant is within 1 foot of the curblin and no less than 20 feet from an intersecting street. Prior to any hydrant being tested under pressure, all hydrant laterals and mains shall be flushed to remove dirt, rocks, and foreign matter. Hydrant types shall be approved by the Town Water Manager. Each nozzle and pumper outlet shall be at least 18 inches above grade on the installed hydrant. Prior to acceptance by the Town, each

hydrant shall be flow tested and inspected for proper drainage. (Last three sentences effective February 8, 1982)

(f) Concrete Thrust Blocks:

Concrete thrust blocks shall be installed at all bends, fittings, dead ends and hydrants as shown on the plans or as directed by the Water Division. Concrete for thrust blocks shall consist of Class I cement concrete. The thrust block shall be formed in such a way that as much of the undisturbed earth on the trench wall and bottom will be incorporated into the forming as is possible. In making both the forms and the pour, special care shall be taken to insure that concrete is not poured in and around the joints of the pipes and fittings. In the event that other utilities or local conditions prohibit the use of thrust blocks, the contractor shall furnish and install mechanical thrust resisting devices, upon the approval of such devices by the Water Division. Mechanical thrust-resisting devices may be substituted for concrete thrust blocks and incorporated into the work if it is deemed to be more expeditious to do so provided, however, the device shall be at least equal in resistance to the thrust block and of a satisfactory design.

(g) Service Connections:

- (1) Corporation Stops - The contractor shall furnish and install all corporation stops at the locations as shown on the plans or as directed by the Water Division. The corporation stops shall conform to the requirements of subsection 3(l) (1) of this Article. The contractor shall be equipped with a tapping machine which will permit tapping of water mains under pressure and shall have a supply of combination drills and taps having a Mueller thread or equal. The tapping machine shall be rigidly fastened to the pipe, and the tap shall be made in the upper one-half of the pipe. The length of travel of the tap shall be so established that, when the stop is inserted and tightened with a 14 inch wrench, not more than 1 to 3 threads will be exposed on the outside. When a wet tap is made, the corporation shall be inserted with the machine still in place.
- (2) Copper Tubing - The contractor shall furnish and install copper tubing at the locations as shown on the plans or as directed by the Water Division. Copper tubing shall conform in all ways to subsection 3(l)(1) of this article. Excavation for services shall be to a minimum depth of 4 1/2 feet, and the contractor shall exercise special care to insure that the bottom is free from sharp rocks or ledge outcroppings. In placing the service in the trench, the contractor shall be careful that the copper tubing has no kinks or sharp bends and that the screened gravel, placed to a depth of 6 inches over and around the service, is free from large or sharp stones which may come in contact with the service.
- (3) Curb Cocks and Boxes - Curb cocks and boxes shall be furnished and installed by the contractor where noted on the plans or as directed by the Water Division. Materials under this section shall conform in all ways to subsections 3(k) and 3(l)(1) of this article. The contractor shall place compacted gravel around and below the curb cock to permit draining of the pipe through the waste opening. The curb box shall be set flush with the finish grade and shall be adjustable from 4 to 5 feet. The operating rod shall be a 30 inch rod.

(h) Hydrants, Valve Boxes, and Curb Boxes Removed and Reset:

If the contractor is directed by the Water Division to remove and reset a hydrant, valve box or curb box, he shall carefully excavate the structure to be removed, disassemble the item, relocate it, and then reassemble the item in its new location. Prior to their discontinuance, all items to be

removed and reset shall be checked by the Water Division to insure that they are in satisfactory condition. When the Division has satisfactorily determined that they are in good working order, they shall be installed in their new location in accordance with the same construction methods as for new hydrants, valve boxes and curb boxes.

(i) Hydrants, Valve Boxes and Curb Boxes Removed and Stacked:

If the contractor is directed by the Water Division to remove and stack hydrants, valve boxes, and curb boxes, he shall do so in accordance with the provisions of subsection 4(h) of this article except that, once the item is removed, it shall be stacked in a neat and orderly fashion in a location designated by the Water Division.

(j) Cleaning:

At the conclusion of the work, the contractor shall thoroughly clean all pipelines by flushing with water or other means to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period. Debris cleaned from the lines shall be removed from the low end of the pipeline. If, after this cleaning, obstructions remain, they shall be removed. After the pipelines are cleaned, if the groundwater level is above the pipe or the surface water level is above the pipe following a heavy rain, the Water Division shall examine the pipes for leaks. If any defective pipes or joints are discovered at this time, they shall be repaired by the contractor.

(k) Pressure Testing:

The contractor shall furnish the necessary equipment and labor for carrying out a pressure test and leakage test, as specified in AWWA C600, on the completed pipes. The hydrostatic pressure for the pressure test shall be maintained for at least 30 minutes, and the hydrostatic pressure for the leakage test shall be maintained for at least 60 minutes.

The amount of leakage permitted shall be in accordance with AWWA Specifications C600, current edition. If any leaks occur during either test, they shall be repaired to the satisfaction of the Water Division. The contractor shall make any taps and furnish all necessary caps, plugs, etc., as required in conjunction with testing the pipe. The contractor shall also furnish a test pump, gauges, and any other equipment required in conjunction with carrying out the hydrostatic test.

(l) Chlorination of Pipelines:

(1) Before being placed in service, all new water pipelines shall be chlorinated in accordance with AWWA C601, "Standard Procedure for Disinfecting Water Mains."

(2) Before any disinfecting procedures are initiated, the Water Division shall be advised of the contractor's intended methods, and no work shall be done until such methods are approved by the Water Division. The contractor shall provide all necessary tools, material, and labor for disinfecting the mains.

(3) The location of the chlorination and sampling points shall be determined by the Water Division in the field. Taps for chlorination and sampling shall be installed by the contractor. The contractor shall uncover and backfill the taps as required.

(4) The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then to introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for about 24 hours.

(5) Following the chlorination period, all treated water shall be flushed from the lines at their extremities and replaced with water from the distribution system. Bacteriological

sampling and analysis of the replacement water shall then be made by the Water Division or its agent in full accordance with AWWA Specification C601. The contractor shall be required to rechlorinate, if necessary, and the line shall not be placed in service until the requirements of the State Department of Environmental Protection are met.

- (6) Special disinfecting procedures shall be used in connections to existing mains and where the method outlined above is not practical.

(m) Backfilling the Trench:

Upon installation of the pipe, the trench shall be backfilled and final restoration of the surface made. From the top of the bedding to a point twelve inches over the top of the pipe, screened gravel or sand, whichever is applicable, shall be placed in six inch layers and thoroughly compacted. Each layer shall be moistened and then compacted by rolling or by tamping with mechanical rammers or by hand tamping with iron tampers having a tamping face not exceeding twenty-five square inches in area. Special care shall be taken to insure that backfill around the pipe is adequately tamped.

The remainder of the backfill shall be common fill or granular fill and shall be placed in twelve-inch layers and compacted as specified above. Compaction for that portion of the trench twelve inches above the top of the pipe shall be to 90% of maximum density, as determined in accordance with Method D of ASTM specification D1557-78. The use of jetting or flooding to obtain a necessary compaction for bedding of the pipe will not be permitted. (Last two sentences effective July 7, 1983)

Whenever a loam or gravel surface exists prior to cross-country excavations, it shall be removed, conserved, and replaced to the full original depth. In some areas, it may be necessary to remove excess material during the cleanup process, so that the ground may be restored to its original level and condition. If the contractor prefers not to store loam or topsoil, he shall replace it with loam or topsoil of equal quality and in equal quantity.

In freezing weather a layer of fill shall not be left in an uncompacted state at the close of a day's operations. Fill shall not be placed on snow, ice, or frozen uncompacted soil, nor shall snow, ice, or frozen soil be incorporated in any fill. At the close of each day's operations, the surface of the compacted fill shall be rolled or otherwise smoothed to eliminate any ridges or mounds.

(n) Compaction Control:

- (1) The contractor will make compaction tests as directed by the Town in accordance with ASTM D1556-64 (1974) as the work progresses to determine the degree of compaction being attained. Corrections for oversize stones larger than 3/4-inch in size shall be made in accordance with ASTM "Procedure for Testing Soils", suggested method for correcting maximum density and optimum moisture content of compacted soils for oversize particles. (Effective July 7, 1983)
- (2) Any corrective work required as a result of such tests, such as additional compaction or a decrease in the thickness of layers, shall be performed by the contractor. (Effective July 7, 1983)
- (3) Compaction control tests will be made at no expense to the Town and by a testing laboratory approved by the Town. (Section (n) effective July 7, 1983; former sections (n)-(q) were relettered (o)-(r).)

(o) Restoring Trench Surface:

- (1) Where the trench occurs adjacent to paved streets, in shoulders, sidewalks, or in cross-country areas, the contractor shall thoroughly consolidate the backfill and shall maintain the surface as the work progresses. If settlement takes place, he shall immediately deposit additional fill to restore the level of the ground. In and adjacent to streets and highways, if the top 24-inch layer is unsuitable for use as subgrade or shoulder material, the contractor shall remove this layer and provide granular fill for the subgrade.
- (2) The surface of any driveway or any other area which is disturbed by the trench excavation and which is not a part of the paved highway shall be restored by the contractor to a condition at least equal to that existing before work began.
- (3) In sections where the water main passes through grassed areas, the contractor shall, at his own expense, remove and replace the soil or shall satisfactorily loam and seed the surface. The depth of the loam replaced shall be at least equal to that removed by the contractor in his trenching operations, but in no event shall it be placed less than 6 inches in depth.

(p) Pavement Replacement:

- (1) The contractor shall furnish all labor, material, equipment and incidentals necessary to replace all paved areas damaged by his operations.
- (2) The contractor shall, after pipe laying and backfilling operations are completed, and after a 12-inch gravel sub-base is shaped and compacted, place the pavement.
- (3) The contractor shall be required to hose clean all road surfaces after backfilling and before any surfacing, but in no case shall pavement be placed until the trench material is dry.
- (4) The contractor shall maintain pavement during the guarantee period of two years and shall promptly refill and repave areas which have settled or are otherwise unsatisfactory for traffic.
- (5) The contractor shall furnish and spread calcium chloride on disturbed surfaces to allay dust conditions. Calcium chloride shall conform to AASHO M-144.
- (6) No permanent pavement shall be placed within 90 days after completion of backfilling, unless permitted to do so in writing by the Town of Ipswich Department of Public Works. Repaving may be delayed for a longer time if the said Department of Public Works so directs.
- (7) Temporary pavement shall be 1 1/2 inch thick bituminous concrete. Temporary pavement shall be maintained until replaced by permanent pavement.
- (8) If points of settlement or holes appear in the temporary pavement, the contractor shall repair the same within three days of notification by the said Department of Public Works.
- (9) Permanent pavement to be placed over the width of the trench shall be 2 1/2 inches of bituminous concrete, laid in two courses: a 1 1/2 inch binder course, and a 1 inch wearing course. Temporary pavement shall be removed, and the sub-base shall be prepared by thoroughly compacting and shaping the sub-base to the required grade and cross-section, and the edge of the old pavement shall be trimmed to a smooth straight line and tack coated.

Immediately prior to laying the binder course, the trimmed edges shall be stable and unyielding, free of loose or broken pieces, and all edges shall be thoroughly broomed and

coated with an approved asphalt tack coat. Prior to placing wearing course, the binder course shall be broomed and tack coated.

If directed by the Ipswich Department of Public Works, permanent pavement of a thickness greater than 2 1/2 inches shall be placed. Material and placement shall conform to the above specifications, and thicknesses shall be as specified by the Town.

(q) Cross Connections:

Cross connections must conform to Section 22 of the Drinking Water Regulations of Massachusetts, current edition, as issued by the Commonwealth of Massachusetts Department of Environmental Protection.

(r) Ties:

Ties for the accurate location of all gate valves, curb cocks, tees, elbows, etc., shall be supplied by the contractor to the Water Division. Dead-end house services shall be marked with a 2-inch pipe at the terminal of the service. This pipe shall protrude 3 feet above ground level.

ARTICLE VI
WATER METERS

1. Installation

The Water Division shall install meters and outside registers on all services. All applicants for water shall make available a suitable location and shall install fittings for such meters. Any individual consumer/user of water who refuses or fails to allow the Water Division to install meters and/or connect to the Town's automatic meter reading system on any service shall be subject to Civil and/or Criminal prosecution for such refusal and/or failure and shall pay to the Water Division any expenses, costs, and legal fees incurred by the Water Division in compelling such installation. (Last sentence effective October 9, 1981)

Any person who wishes to have a separate water meter installed to measure water usage for outside irrigation and/or other (unsewered) purposes shall apply to the Department together with an application and meter installation fee of \$200, and shall re-arrange his/her building's plumbing system to accommodate the second meter in a secure, all-weather location in accordance with "Sketch II CRITERIA FOR INSTALLATION ONLY OF SECONDARY IRRIGATION METERS", said sketch being attached to these Regulations and incorporated herein. Each secondary meter installed pursuant to this paragraph shall have a telephone dial-up or another automated reading device used by the Water Division, and shall be installed by the Water Division staff. The Division reserves the right to read on a daily basis the primary and secondary meters of any customer having a secondary irrigation meter, if the Division feels that the circumstances so warrant.

(Second paragraph added September 9, 1996, effective October 1, 1996)

2. Free Access

The property owner or consumer must keep such meters accessible for reading and inspection at all times. If there is an obstruction, the Town shall contact the owner in writing to clear the obstruction; if the obstruction is not cleared, estimated usage charges shall be assessed until the obstruction is cleared, and then a retroactive billing adjustment shall be made.

3. Damages

The owner of the property served by water shall be responsible for payment of any and all reasonable expenses incurred by the Division in replacing a meter damaged, in the judgment of the Water Manager, either by obvious vandalism or negligence. (Amended effective July 27, 1989)

4. Tests for Accuracy

Any customer on a metered service shall be entitled to an examination and test of his meter to determine the accuracy of same. A written application shall be accompanied by a \$3 charge which shall be returned if the meter is found to register more than 2% over the actual amount of water used. Also the percent of overcharge for a year prior to the date of the test shall be credited to the customer's account. The charge will be forfeited as payment for removing, testing, and replacing if the meter does not register over the 2% as above, and the customer shall also be charged with the proper additional amount that he should have been charged or should have paid. (Refer to MGL Chapter 40, section 39 (I.)

5. Replacement Meters

A customer having a meter which is: (a) greater than twenty-five years old; or (b) has ceased to operate or is found faulty under a test for accuracy conducted as set forth in Section 4 above, shall have his/her meter replaced at the expense of the Water Division (provided said meter has not been damaged due to obvious vandalism or negligence).

6. Unmetered Services

All unmetered year-round customers shall be ordered to engage a plumber at their own expense to fit their plumbing for a meter. In the event such customer fails to prepare for meter installation, the unmetered year-round water service rate shall be applied prospectively to the date of metering. (NOTE: First sentence amended July 27, 1989; balance amended September 9, 1996, to be effective October 1, 1996)

7. Water meters shall be installed or removed only by or under the supervision of Water Division personnel. (Amended October 26, 1989)

ARTICLE VII
PAYMENT OF BILLS

1. Billing

Bills for water service shall be rendered at the convenience of the Division and shall be payable upon receipt by the customer.

2. Rate Schedule and Charges

All charges shall be billed in accordance with the schedule of rates and charges in Article VIII hereinbelow.

3. Payment

All bills due to the Division for water and services are payable at the Office of the Town Treasurer/Collector. Checks and money orders shall be made payable to the Town of Ipswich Water Division.

4. Inoperative or Unread Meters

When a meter fails to register the consumption or is not read by the Water Division, a quantity shall be estimated based on previous consumption patterns, and a charge shall be so billed.

5. Water Not Used

All water passing through a meter shall be charged for, whether used or wasted.

6. Discontinuance of Service

No allowance shall be made for the non-use of water service, unless official notice is given and the service is shut off by the Division. A service charge shall be billed for shutting off an individual service.

7. Unpaid Bills

Unpaid bills shall become property tax liens per Massachusetts General Laws, Chapter 40, Section 42A as amended.

8. Liability for Charges

All bills shall be rendered to the recorded owner or to his authorized agent if the written notice of the appointment of said agent is on file with the Division. Owners of property shall be held liable for the charges to tenants.

9. Transfer of Accounts

A minimum semi-annual charge shall be made which is payable for any portion of semi-annual use. In the event of transfer of ownership of the premises, the seller notify shall the Division of such transfer; otherwise, the seller shall remain liable for charge incurred by the premises until notice is received. The semi-annual bill covering the period in which such notice is received shall be issued to the seller only on water used prior to said notice. The new owner shall receive a bill for the semi-annual minimum plus any overage for his portion of use.

10. Bills Not Received

Failure of an owner to receive a bill does not relieve him from the obligation of its payment, nor from the consequences of nonpayment.

11. Occupant Meter Readings

If the meter reader fails to find access to the building, he shall leave a postcard for the occupant to take his own reading and mail to the Division. If this card is not received in time for billing, the account shall be billed in accordance with Article VI, Section 4. When the meter is read again, the difference between the sum of the billed amounts and the bill for the actual reading shall be charged or credited.

ARTICLE VIII
RATES

1. Summer Use Rates

There shall be an unmetered summer use rate of \$800 per season (Patriot's Day to Columbus Day) per unit. (Amended effective April 1, 1995)

When a customer requests a meter, it shall be installed for a fee as set forth in Article II, Section 1(b) of these regulations. Winter storage, fall removal and spring installation fees to such customers requesting these services shall be \$50/year for each succeeding year.

Summer service customers who drain their services, remove and hang up their meters, and re-install in the spring, shall be exempt from the \$50 storage and maintenance fee. However, should a summer service customer opt to perform the draining, removal, storage and spring re-installation on his own and the meter becomes damaged, said customer shall bear the full expense for repair or replacement of the damaged meter. (The second and third paragraphs amended effective October 26, 1989)

Metered summer services shall be billed for the period Patriot's Day to Columbus Day on the same rates and charges as year-round customers, on a billing frequency to be determined by the Water Manager. (The second, third and fourth paragraphs effective November 1, 1984)

2. Unmetered Year-Round Rates

There shall be an unmetered year-round water service rate of \$1,600 per year. (Amended effective October 1, 1996)

3. Turn-On and Shut-Off Charges

No person except Water Division personnel shall be permitted to turn on or shut off water at the curb cock. There shall be a \$25 service charge for requests by customers (not prompted under Article I, Section 7(e) above) for turning on or shutting off water services and for final water meter readings. Such requests shall be made twenty-four hours in advance to the Water Division office only. Customer failure to meet an appointment resulting in a repeat service call shall occasion an additional \$25 fee per repeat service call. Customers having shallow summer services are permitted to turn on and shut off their own services, at their own risk for damages, and accordingly shall not be billed the standard \$25 turn-on and shut-off fees at the open and close of the summer season. (Last sentence effective November 1, 1979) (Fees increased to \$25 effective October 26, 1989)

4. Sprinkler and Fire Hose Charges

There shall be a \$200 per year standby service and inspection charge for sprinkler systems payable July 1st. There shall be a \$75 per year fire hose standby service charge payable July 1st. (Amended effective October 26, 1989)

5. Normal Charges for Metered Year-Round Rates

The monthly metered rates for each service shall be as follows:

- (a) Summer Residential Rate \$12.50 per 100 cu. ft.
(May 1 – September 30, 2017)
- (b) All Other User Charges – Base Rate \$8.33 per 100 cu. ft.

(Amended effective May 1, 2017)

6. Discounts

To be eligible for a discount on water service, all charges on the account must be current. If so eligible, a discount of 10% shall be permitted for payment of water service charges within twenty-one (21) days of issuance of a bill. (Section 7. effective April 1, 1983)

7. Interest Charges

Interest charges to the maximum percentage permitted under Massachusetts General Laws, Chapter 40, Section 42A, as amended, shall be assessed on unpaid balances from the thirty-first (31st) day following the date of billing and shall be added to the next quarterly billing. In addition to said interest charges, there shall be a service charge on water liens as set forth in the following schedule:

<u>Unpaid Balance</u>	<u>Water Lien Service Charge</u>
\$ 1.01 - \$ 50.00	\$ 20.00
\$ 50.01 - \$100.00	\$ 30.00
\$100.01 - \$150.00	\$ 40.00
\$150.01 - \$200.00	\$ 50.00
\$200.01 - \$250.00	\$ 60.00
\$250.01 and over	\$100.00

(First paragraph of Section 7. effective April 1, 1983) (Schedule of Water Lien Charges effective March 29, 1990)

8. Disconnected or Tampered

Upon discovery that a water meter has been disconnected or tampered with, there shall be a flat charge of \$300.00 which shall be assessable for each billing period it remains disconnect, said charge to be in addition to estimated usage charges billed in accordance with Article VII, Section 4, of these regulations. (Added effective October 26, 1989)

9. Hydrant Maintenance Charges

There shall be an annual hydrant maintenance charge of \$25.00 per hydrant, payable to the Water Division. The provisions of this section shall apply to hydrants on private ways (payable by third parties), as well as to hydrants on public ways (payable by the Town). (Added effective April 1, 1995)

ARTICLE IX
MISCELLANEOUS PROVISIONS

1. Contractors installing water main extensions pursuant to applications approved under Article III or IV of these Regulations shall be required, as a precondition to the Division's issuance of approval, to execute an Indemnity Agreement (attached in Appendix IV of these Regulations and incorporated herein) and to file with the Public Works Director Certificates of Insurance in accordance with the requirements of the: (a) Commonwealth of Massachusetts General Laws, with respect to Workers' Compensation; and of (b) Town of Ipswich STREET OPENING PERMIT REGULATIONS. (Amended effective March 29, 1990)

2. Street Opening Permits; Notification Requirements

- (a) Prior to the commencement of work within the public way, the contractor shall obtain a street opening permit from the Department of Public Works, pursuant to Town By-Laws Chapter XII Section 5(c), and file therewith a bond as assurance that the road shall be properly restored to Town standards; this bond shall remain in effect for a duration of two years after completion of the work. No permit to install a new main or service shall be issued between December 15th and March 15th of the succeeding year except in emergency situations determined by the Director of Public Works.
- (b) The Water Division shall be notified by the contractor at least two working days prior to the commencement of the work.
- (c) Upon completion of the work, water shall not be turned on by the contractor, nor shall the water be turned on by the Water Division until the work has been approved by said division. (Amended effective March 19, 1990)

3. Use of Explosives

When the use of explosives is necessary for the prosecution of the work, the contractor shall observe the utmost care not to endanger life and property. All explosives shall be stored in a secure manner, and all such storage places shall be clearly marked, "DANGEROUS - EXPLOSIVES" and shall be in the care of competent watchmen at all times. The method of storage and handling explosives and highly inflammable materials shall conform with all State laws and regulations pertaining thereto. The contractor shall obtain all necessary permits relating to the storage and use of explosives.

4. Barricades, Warning Signs, and Traffic Control

The contractor shall, at all times and at his own expense, provide, place and erect all necessary barricades and warning signs and furnish and keep lighted all lights necessary mutually to protect the work, traffic, pedestrians and animals. He shall also furnish at his own expense a sufficient number of watchmen at all times to protect the work.

Whenever it is deemed necessary, in the opinion of the Chief of Police, to direct traffic around work areas within the public way, the contractor shall, at his own expense, obtain the services of a policeman at such times as may be designated.

The contractor shall be held responsible for all damage to the work due to any failure of signs.

5. As-Built Plans

Upon the completion of a main extension performed pursuant to an application under Article III or IV of these Regulations, the contractor shall file with the Water Division one reproducible as-built plan of said extension, which plan shall be at a scale of 1" = 40' and shall show the accurate location of all water mains, gate valves, tees, reducers, plugs, services, hydrants, and metes and bounds of all easements conveyed to the Town.

ARTICLE X
VIOLATION; PENALTIES; SEVERABILITY

1. Any person found to be in violation of any provision of these Regulations shall be served by the Town with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. Within the time period stated in such notice, the offender shall permanently cease all violations.
2. Any person who shall continue any violation beyond the time limit provided in Section 1. hereinabove shall be guilty of a misdemeanor and, on conviction thereof, shall be fined in an amount not exceeding three hundred (\$300) dollars for each day of violation, or such other higher penalty as may be prescribed by law.
3. *In the alternative, these Regulations may be enforced pursuant to the provisions of Massachusetts General Laws Chapter 40, Section 21D, and GENERAL BY-LAWS OF THE TOWN OF IPSWICH, CHAPTER XVII, NONCRIMINAL DISPOSITION OF CERTAIN VIOLATIONS, Section 4. Applicable By-Laws, Rules or Regulations., Subsection C. Rules and Regulations.*
4. These Regulations are severable; the invalidity of any section, clause, sentence or portion thereof shall not affect the validity of any other part of these Regulations which can be given effect without such invalid part or parts.

APPENDIX I

TOWN OF IPSWICH BY-LAWS

§220-2 OUTDOOR WATER USE

§ 220-2. Authority

This By-law is adopted by the Town under its police powers pursuant to the Home Rule Amendment of the Massachusetts Constitution, Article LXXXIX, to protect public health and welfare and pursuant to its powers under M.G.L. c.40, §§21 et seq. and implements the Town's authority to regulate water use pursuant to M.G.L. c. 41, §69B. This by-law also implements the Town's authority under M.G.L. c. 40, §41A, conditioned upon a declaration of water supply emergency issued by the Department of Environmental Protection under G.L. c. 21G, §15-17.

§ 220-3. Purpose

The purpose of this by-law is to protect, preserve and maintain the public health, safety and welfare whenever a Restriction or Ban of Water Use is declared, by ensuring an adequate supply of water for drinking and fire protection and to protect the quality and quantity of water in local aquatic habitats such as ponds, rivers and wetlands. This purpose will be accomplished by providing for the imposition and enforcement of any duly implemented restrictions, requirements, provisions or conditions on water use imposed by the Town in accordance with this by-law, the Town of Ipswich Water Rules and Regulations and/or by the Department of Environmental Protection under its state law authorities.

§ 220-4. Applicability

All users of the public water supply system and users of private water sources, exclusive of stormwater harvested and stored in tanks or cisterns, shall be subject to this by-law.

§ 220-5. Definitions

Agriculture shall mean farming in all its branches as defined at M.G.L. c. 128, § 1A.

Department shall mean the Massachusetts Department of Environmental Protection (DEP).

Drought Management Plan shall mean the Town of Ipswich Drought Management Plan, Appendix VII of the Town of Ipswich Water Rules and Regulations.

Person shall mean any individual, corporation, trust, partnership, association, agency or authority, or other entity and any officer, employee, group or agent of such persons.

Restriction or Ban of Water Use shall mean a Restriction or Ban of Water Use declared by the Board of Water Commissioners or their designee, pursuant to § 220-6 of this by-law.

State of Water Supply Emergency shall mean a State of Water Supply Emergency declared by the Department of Environmental Protection under M.G.L. c.21G, §15-17.

Town shall mean the Town of Ipswich.

Water Customers shall mean all persons using the public water supply irrespective of that person's responsibility for billing purposes for use of the water.

Water Sources shall mean all municipal water sources, all private wells, waterways, ponds, rivers and wetlands, excluding harvested stormwater.

Water Users shall mean all persons using water within the Town, including private water sources.

Water Rules and Regulations shall mean the Town of Ipswich Water Rules and Regulations.

§ 220-6. Restriction or Ban of Water Use Declaration

The Town, through its Board of Water Commissioners or its designee authorized to act as such, may restrict or ban the use of water as set forth in Article I, Section 7 of the Water Rules and Regulations. Upon notification to the public that water use is being restricted or banned, no person shall violate any provision, restriction, requirement or condition of the declaration. The Water Commissioners may designate the Water Director or Town Manager to declare a Restriction or Ban of Water Use at any time that conditions warrant. Public notice of a Restriction or Ban of Water Use shall be given under § 220-8 (a) of this by-law before it may be enforced.

§ 220-7. Declaration of a State of Water Supply Emergency

Upon notification to the public that a declaration of a State of Water Supply Emergency has been issued by the DEP, no person shall violate any provision, restriction, requirement, condition of any order approved or issued by the DEP for the purpose of bringing about an end to the State of Water Supply Emergency.

§ 220-8. Public Notification of Restriction or Ban of Water Use Declaration; Notification of DEP

- a) Public Notification of Restriction or Ban of Water Use Declaration – Notice to the public of all provisions, including all restrictions, requirements and conditions imposed by the Town as part of Restriction or Ban of Water Use Declaration shall be made as soon as possible, but no later than 48 hours following the declaration by press release and posting on the Town's website. The Town may also notify the public using other means determined to be appropriate including signage on roadways, cable TV, telephone, email, emergency communication system, etc.
- b) Public Notification of a State of Water Supply Emergency – Notice to the public of all provisions, including all restrictions, requirements and conditions imposed by a State of Water Supply Emergency declared by the DEP shall be made by press release and posting on the Town's website. The Town may also notify the public using other means determined to be appropriate including signage on roadways, cable TV, telephone, email, emergency communication system, etc. This notice shall be provided as soon as possible, but no later than 48 hours after the public water system receives notice of the DEP's declaration of a State of Water Supply Emergency.

- c) Any restriction imposed under § 220-6 or § 220-7 or in the DEP's State of Water Supply Emergency or Order shall not be effective until notification to the public is provided. Submittal of MassDEP's form "Notification of Water Use Restriction" shall be provided to the DEP within 14 days of the effective date of the restrictions, per MassDEP regulations (310 CMR 22.15(8)).

§ 220-9. Termination of a Restriction or Ban of Water Use Declaration; Notice

A Restriction or Ban of Water Use may be terminated by a majority vote of the Board of Water Commissioners or by decision of their designee upon a determination by either or both of them that the conditions requiring the Restriction or Ban of Water Use no longer exist. Public notification of the termination of a Restriction or Ban of Water Use shall given in the same manner as is required in § 220-8 (a) for notice of its imposition.

§ 220-10. Termination of a State of Water Supply Emergency; Notice

Upon notification to the Town that the declaration of a State of Water Supply Emergency has been terminated by the DEP, the public will be notified of the termination in the same manner as is required in § 220-8 (b) for notice of its imposition.

§ 220-11. Penalties

The Town through its Water Commissioners or its designee including the Water Director or Town Manager and/or local police may enforce this by-law. Any person violating this by-law shall be liable to the Town in the amounts listed below:

- 1) First violation: Warning;
- 2) Second violation: \$ 50;
- 3) Third violation: \$ 100;
- 4) Fourth and subsequent violations: \$ 300.

Each day of violation shall constitute a separate offense. Fines shall be recovered by complaint before the District Court, or by non-criminal disposition in accordance with section 21D of chapter 40 of the general laws. For purposes of non-criminal disposition, the enforcing person shall be any police officer of the town or the water superintendent or the superintendent's designee. If a State of Water Supply Emergency has been declared the Water Commissioners may, in accordance with G.L. c. 40, s. 41A, shut off the water at the meter or the curb stop.

§ 220-12. Severability

The invalidity of any portion or provision of this by-law shall not invalidate any other portion or provision thereof.

§ 220-13. Controls on In-Ground Irrigation Systems

The Water Commissioners may regulate the registration, specifications, installation and monitoring of in-ground irrigation systems and appurtenances for all water users.

(Amended May 10, 2017)

MASSACHUSETTS GENERAL LAWS

CHAPTER 165, SECTION 11:

Whoever unlawfully and intentionally injures, or suffers to be injured, a water meter belonging to a city, town, district or company engaged in supplying water, or prevents such meter from duly registering the quantity of water supplied through it, or hinders or interferes with its proper action or just registration, or attaches a pipe to a main or pipe belonging to a city, town, district or company without the consent of the same, unless it passes through a meter set by such city, town, district or company, shall be punished by a fine of not more than one hundred dollars or by imprisonment for not more than one year, or both.

CHAPTER 111, SECTION 171:

Whoever willfully deposits excrement or foul or decaying matter in water used for domestic water supply, or upon the shore thereof within five rods of the water, shall be punished by a fine of not more than fifty dollars or by imprisonment for not more than one month. A police officer or constable of a town where such water is wholly or partly situated, acting within the limits of his town, and any executive officer or agent of a water board, board of water commissioners, public institution or water company furnishing water or ice for domestic purposes, acting upon the premises of such board, institution or company and not more than five rods from the water, may without a warrant arrest any person found in the act of violating this section and detain him until a complaint can be made against him therefor. But this section shall not interfere with the sewage of a town or public institution, or prevent the enrichment of land for agricultural purposes by the owner or occupant thereof.

APPENDIX II

APPLICATION FOR WATER
IPSWICH WATER DEPARTMENT

Date: _____

The undersigned desires a supply of water at the following location:

Property Location

To be used for the following purpose:
Domestic () Fire Sprinkler ()

The applicant agrees to comply with the Town of Ipswich Water Rules and Regulations and understands that this application constitutes a contract between the signed, their heirs, assignees and the Town of Ipswich Water Department.

WORK DONE BY PRIVATE CONTRACTOR: The applicant is to have the complete connection installed by an approved private contractor. The Town may make 1-inch taps, and the applicant must pay the tap-in charge in advance. The contractor must apply for a street opening permit at the office of the Department of Public Works. The contractor will do all the work on private and Town property; supply all materials not furnished by the Town; do all excavation (including ledge), backfilling, patching (temporary and permanent) and any other work necessary to complete the connection.

APPLICATION AND INSPECTION CHARGES: The applicant must pay in advance, to the Water Department, an application fee, meter and inspection fee and tap fee, if applicable, in accordance with Appendix VI of the Town of Ipswich Water Rules and Regulations. The Water Department will determine the size, type and make of meter to be used. All meters will be the property of the Town of Ipswich Water Department.

Applicant's Signature (Print Last Name)

Applicant, Address (Print)

Property Owner (Print Last Name)

Property Owner's Address (Print)

Water Manager's Approval

Application Charge	Tap-In Charge	Inspection Charge	Miscellaneous Charge	Total Charge

Town of Ipswich Water Department
272 High Street, P.O. Box 151
Ipswich, MA 01938

Phone: (978) 356-6635 Fax: (978) 356-6634

Revised October 2014

APPENDIX III

TOWN OF IPSWICH
WATER DIVISION
TOWN HALL
IPSWICH, MASSACHUSETTS

I (we) _____, owner or lessee
of the property at _____,
hereby give permission to officers, employees or agents of the Town of Ipswich Water Division to enter
upon said premises for the purpose of installing, replacing and/or repairing the water service pipe or
pipes. The expense incurred for work performed by the Town on private property shall be allocated in
accordance with the provisions of Article I, Section 4. of these Regulations. It is understood and agreed
that the Town of Ipswich is hereby released from all liability for any damage resultant of such work.

In witness whereof the following signature is affixed this _____ day of
_____, 19_____.

Witness:

(Date) _____

(Amended October 23, 1986)

APPENDIX IV

INDEMNITY AGREEMENT - WORK IN PUBLIC WAYS

In consideration of the promise of the Inhabitants of the Town of Ipswich, a body corporate, in the county of Essex, hereinafter called the Town, to accept the work hereinafter described (provided it is completed in a workmanlike manner) and of the promise of the Town to service, maintain, and use the said work and for other valuable consideration, the receipt whereof is hereby acknowledged,

hereinafter called the Indemnitor, covenants and agrees that it will indemnify and save harmless the public officials of the Town both in their individual and official capacity, and the said Town from any claims or damages or judgments for personal injury or death, or for property damage of any kind sustained by any person or persons whomsoever, arising out of the performance of the said work.

The Indemnitor further covenants and agrees that it will take over the defense of, and pay all of the expense of the defense of, any suit at law or in equity brought by any person or persons whomsoever, on account of such claims.

The Indemnitor agrees to furnish, and herewith does furnish, a certificate of paid insurance for public liability with limits for injuries to persons and to property as specified in Article IX, Section 1 of the Regulations of the Town's Water Division, said insurance to be for the protection of all persons (except employees engaged in the said work) who may have claims for personal injuries or death or for property damage arising out of the negligence of the Indemnitor or its services or agents or independent contractors engaged in the said work.

The Indemnitor further agrees to furnish, and herewith does furnish, a certificate of paid-up workmen's compensation insurance for the protection of all employees of the Indemnitor, or of independent contractors performing the said work, against injuries arising out of, and in the course of, their employment upon the said work.

The Indemnitor shall not be liable under this agreement for any claims for occurrences after it has obtained a written acceptance of the said work from the said Town.

IN WITNESS WHEREOF, the Indemnitor has hereunto affixed its hand and seal this _____ day of _____, 19_____ .

APPENDIX V

CONVEYANCE OF TITLE

In consideration of the promise of the Inhabitants of the Town of Ipswich, hereinafter called the Town, acting through its duly authorized officials, to accept the work hereinafter described, if it is performed satisfactorily to the said Town and in consideration of the promise of the Town to maintain, use and repair the said work after it has been accepted, and for other valuable consideration, the receipt whereof is hereby acknowledged, the undersigned hereby agrees to assign, release and convey and transfer to the said Town, all the right, title and interest that it may have in the said work, said assignment to take place within () days after the said work is completed to the satisfaction of the Water Division.

Moreover, in the event the work is to be performed in an unaccepted way, the undersigned further agrees to convey a utility easement to the Town prior to the commencement of work.

The undersigned also acknowledges and agrees that the Town is under no obligation, either expressed or implied, to pay for the said pipe line or for any of the expense of installing the same.

IN WITNESS WHEREOF, the undersigned has hereunto affixed its hand and seal this
_____ day of _____, 19_____.

APPENDIX VII

DROUGHT MANAGEMENT PLAN

Final Report

Town of Ipswich

Drought Management Plan

May, 2002

TABLE OF CONTENTS

1. INTRODUCTION

- 1.1. WATER SOURCES
- 1.2. DEMAND HISTORY
- 1.3. EXISTING DROUGHT MANAGEMENT PLAN

2. DATA MONITORING/DROUGHT INDICATORS

- 2.1. GROUND WATER SOURCES
- 2.2. SURFACE WATER SOURCES
- 2.3. STORAGE TANKS
- 2.4. IPSWICH RIVER FLOWS
- 2.5. PRECIPITATION

3. DROUGHT STAGES

- 3.1. STAGE 1-NORMAL
- 3.2. STAGE 2-MILD
- 3.3. STAGE 3-MODERATE
- 3.4. STAGE 4-SEVERE
- 3.5. STAGE 5-EMERGENCY

4. DROUGHT MITIGATION MEASURES

- 4.1. DROUGHT ACTION LEVELS
- 4.2. PUBLIC EDUCATION
- 4.3. PRICING
- 4.4. WATER AUDITS

APPENDIX A: WATER DEPARTMENT PUMPING RECORDS 1988-2001 **A1**

APPENDIX B: PRECIPITATION DATA & CHART 1978-2001 **B1**

APPENDIX C: RESERVOIR SYSTEM RECHARGE DATA **C1**

APPENDIX D: EXISTING WATER RULES AND REGULATIONS **D1**
RESTRICTION ON USE OF WATER

1. INTRODUCTION

The Town of Ipswich provides potable water to approximately 4,500 homes and businesses throughout the 33 square mile town. Since 1994, Ipswich has exceeded its registered withdrawal of 0.64 MGD in the Parker River Basin by more than 100,000 gallons. Between 1995-1999, Ipswich exceeded its registered volume of 0.20 MGD in the Ipswich River Basin by more than 100,000 gallons. In December 1999, Ipswich submitted to DEP a new Water Management Act (WMA) Permit application to increase its authorized water withdrawal from the Parker River Basin. The violations above prompted issuance of an Administrative Consent Order by the Department of Environmental Protection (DEP) in May 2000. This Plan has been developed to fulfill requirements associated with the WMA permit application.

1.1 WATER SOURCES

The Town of Ipswich utilizes ground and surface water sources within the Parker River Basin as well as ground water sources within the Ipswich River Basin. The authorized withdrawal from the Parker River Basin is 0.98 MGD (Permit # 9P2-3-16-144.01, 5/24/2002). The WMA registered withdrawal from the Ipswich River Basin is 0.20 MGD. All water sources are managed daily through use of a SCADA system.

PARKER RIVER BASIN

Dow Reservoir

This is the primary water source for the town. The usable storage volume of the reservoir is 53.1 million gallons (MG) (total storage of 64 MG), with a drainage area of 0.88 mi². Water from Bull Brook Reservoir can be transferred to Dow through a 36-inch diversion pipe. Water is pumped from Dow to the Ipswich Water Treatment Plant.

Bull Brook Reservoir

The usable storage volume of this reservoir is 27.4 MG, with a drainage area of 3.64 mi². Water from this reservoir is transferred to Dow Reservoir by gravity through a 36-inch diversion pipe. The Reservoir System Firm Yield was determined as part of a water treatment plant Feasibility Study for Treatment Facility by Camp Dresser & McKee Inc. (CDM) in 1984. For the 1/20-year drought, this was determined to be 0.8 MGD.

Browns Well

This is a 24-inch gravel packed well approximately 51 feet deep. It is located on High Street (Rte. 133) roughly 50 feet north of the roadway. The maximum daily withdrawal rate is 0.49 MGD.

Mile Lane Well

This is a 12-inch gravel packed well approximately 48 feet deep. It is located on Mile Lane, south of Rte. 133. The maximum daily withdrawal rate is 0.15 MGD.

IPSWICH RIVER BASIN

Winthrop Well #1

This is a 36-inch gravel packed well, 28 feet deep. This well is connected to a wellfield of 18, 1 ½-inch diameter wells. The well is pumped to waste monthly and is utilized as a reserve during peak demand due to high iron and manganese. The maximum daily withdrawal rate is 0.5 MGD. (UPDATE: This well is now inactive)

Winthrop Well #2/3

Winthrop #2 is a 12-inch gravel developed well, 56 feet deep. Winthrop #3 is a 12-inch gravel developed well, 65 feet deep, located 80 feet from Winthrop #2 and used as an alternate to #2. These wells operate as a single source, with a maximum daily withdrawal rate of 0.23 MGD.

Essex Road Well

This is a 24-inch gravel packed well, 40 feet deep, connected to wellfield of 3, 8-inch diameter gravel developed wells, with depths ranging 30-34 feet. The maximum daily withdrawal rate is 0.23 MGD.

Fellows Road Well

This is an 18-inch diameter gravel developed well, 73 feet deep. The maximum daily withdrawal rate is 0.36 MGD.

1.2 DEMAND HISTORY

In the late 1990’s water demand was rising toward 500 MG annually. Through an extremely successful leak detection survey in 1999 combined with ongoing meter replacement and other conservation efforts, the Ipswich Water Department has averaged a 15% reduction in demand from 1999 to 2001.

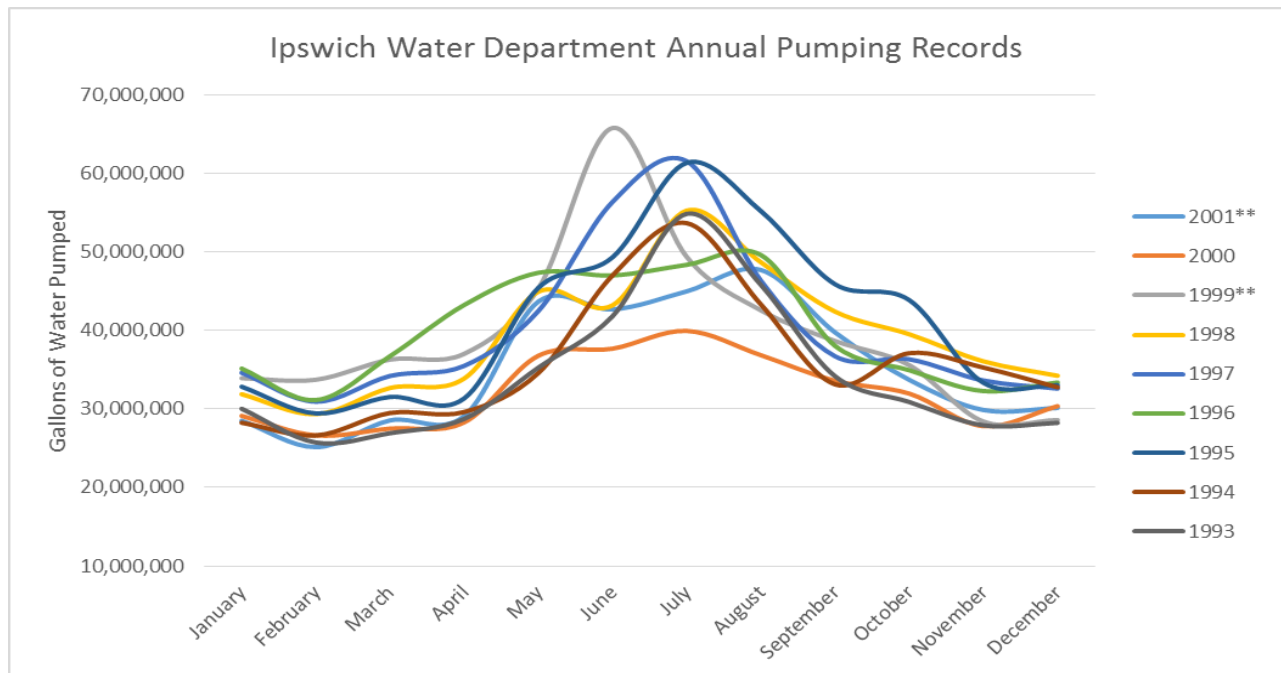


Chart 1

Another key success to note is that the sharp increase in demand during the summer months has decreased significantly in 2000 and 2001 (see chart 1). The increase during this period is attributed to residential outside water use. Commercial water usage averaged 14% of total consumption in 2000 and 2001, and as Chart 2 below illustrates, does not fluctuate significantly with the seasons. The total consumption follows the trend of residential use, with little impact from the commercial customers in town.

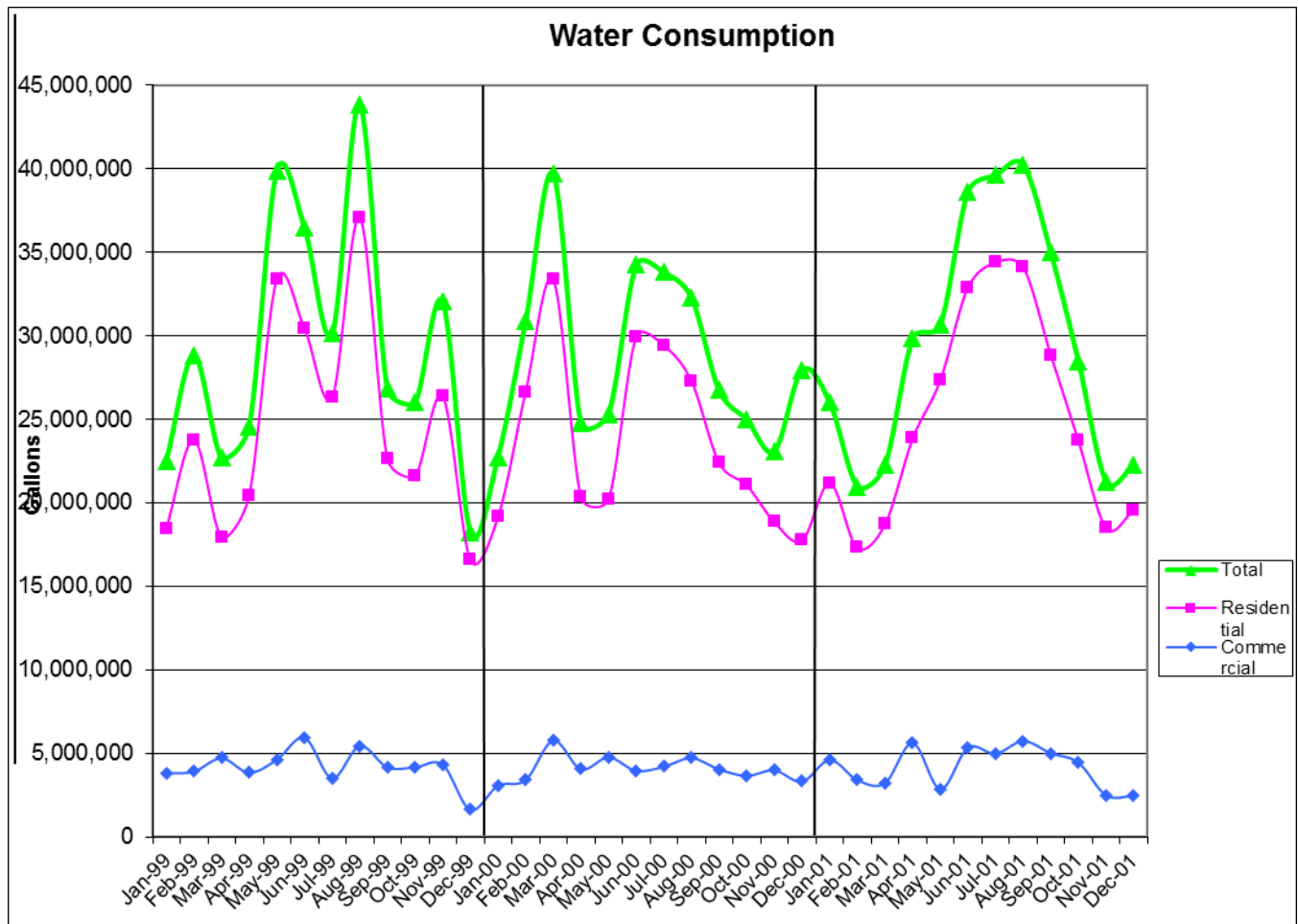


Chart 2

1.3 EXISTING DROUGHT MANAGEMENT PLAN

Ipswich currently manages and reacts to drought conditions based on reservoir storage levels in the Bull Brook and Dow Reservoirs, as described in the Town of Ipswich Water Rules and Regulations, Article 1, section 7. Two thresholds exist for determining water restrictions or a full water ban. At a combined reservoir storage of 46 MG, mandatory restrictions on outdoor water use go into effect. If storage drops to 36 MG a complete ban on all outdoor water use will be issued. Water bans were declared in 1995,

1997, 1999 and 2001. The town has reduced consumption significantly since 1999, however drought conditions remain a problem during summer and fall seasons of abnormally low precipitation.

2. DATA MONITORING/DROUGHT INDICATORS

The current drought management plan responds to drought conditions based solely on surface water storage. This method triggers a response to a drought as it is occurring. The Water Department monitors several key parameters that are important in establishing appropriate drought stages. These will be used to determine the potential of a drought and formulate new thresholds to manage a drought appropriately.

2.1 GROUND WATER SOURCES

All six ground water sources are connected to the Water Department SCADA system. The system allows the operators at the water treatment plant to monitor pumping rates and drawdown levels of all the wells in real-time. The SCADA system is also programmed to operate the wells as system demand fluctuates.

2.2 SURFACE WATER SOURCES

Water level readings are taken at both reservoirs daily by measuring the distance from an established point of known elevation to the water level. Conversion charts are then used to calculate storage at each reservoir. The SCADA system is used to record raw water flows into the treatment plant and treated water pumped into the distribution system.

2.3 STORAGE TANKS

The water system also contains three storage tanks with a total capacity of 4.5 MG. The storage volumes are measured by the SCADA system in real-time.

Pinefield Tank – 1 MG capacity
Town Hill Tank – 3 MG capacity
Plover Hill Tank – 0.5 MG
capacity

2.4 IPSWICH RIVER FLOWS

The Water Department is notified by the Ipswich River Watershed Association (IRWA) when river flow goes below 9.6 cubic feet per second (cfs). Streamflow data recorded by the United States Geological Survey (USGS) from stream gaging station 01102000 near Willowdale Dam outside of Ipswich is available on the internet at <http://ma.water.usgs.gov/ipswich>. There has been no clear connection between river flows and Ipswich sources' behavior during a drought, therefore the streamflow will not be used to determine drought stages. However, streamflow is useful in understanding the regional drought situation.

2.5 PRECIPITATION

Precipitation is measured daily at the Ipswich Wastewater Treatment Plant located on Fowlers Lane. Historical records are excellent and include daily precipitation and monthly averages. Monthly totals are compared to monthly reservoir storage and pumping totals to approximate recharge of the reservoir system.

3. DROUGHT STAGES

Reservoir storage is the primary indicator in determining drought stages, however, a secondary indicator is necessary to give advanced warning of the risk of drought. With six wells available to supplement demand, the sources can be managed in such a way that reservoir storage can remain high even when many communities are in the preliminary stages of a drought. Historically the greatest concern of drought is between June and September.

The reservoir system has exceptional recharge capabilities with adequate precipitation. Due to the small size of the reservoirs, the system rebounds quickly with a series of rain events, while other systems remain in drought conditions through a much slower recharge process. Precipitation plays a pivotal role in determining the seriousness of a drought, making it the second indicator in determining drought stages.

Five drought stages have been developed based on normal reservoir storage conditions. Local precipitation records will be continually evaluated. Precipitation will be used to adjust the drought stage classification. Precipitation will be evaluated from January 1-July 1. If the total precipitation is 10% below the 24-year historical average for this period (25.7 inches) on July 1, the stage will be increased by one level of urgency. The precipitation will again be evaluated on August 1. If the total is 10% below the historical average for the period of January 1-August 1 (29.2 inches), the stage will be increased by an additional level of urgency.

The Water Manager will determine the drought stage based on information from Water Treatment Plant operators and rainfall data. All town departments, the Water Commissioners and the media will be notified once a drought stage is declared.

3.1 STAGE 1 - Normal

Stage 1 represents normal operating conditions, with a total reservoir storage capacity 90-100% of *Normal Conditions* as shown in Figure 3-1. This percent range takes into account normal, seasonal variations in storage.

3.2 STAGE 2 – Mild

Stage 2 goes into effect when reservoir storage capacity is 75-90% of *Normal Conditions*.

3.3 STAGE 3 – Moderate

Stage 3 takes effect when reservoir storage capacity is 60-75% of *Normal Conditions*.

3.4 STAGE 4 – Severe

Stage 4 takes effect when reservoir storage capacity is 40-60% of *Normal Conditions*.

3.5 STAGE 5 – Emergency

Stage 5 takes effect when reservoir storage capacity is below 40% of *Normal Conditions*.

Rev3A - Jan 27, 2003

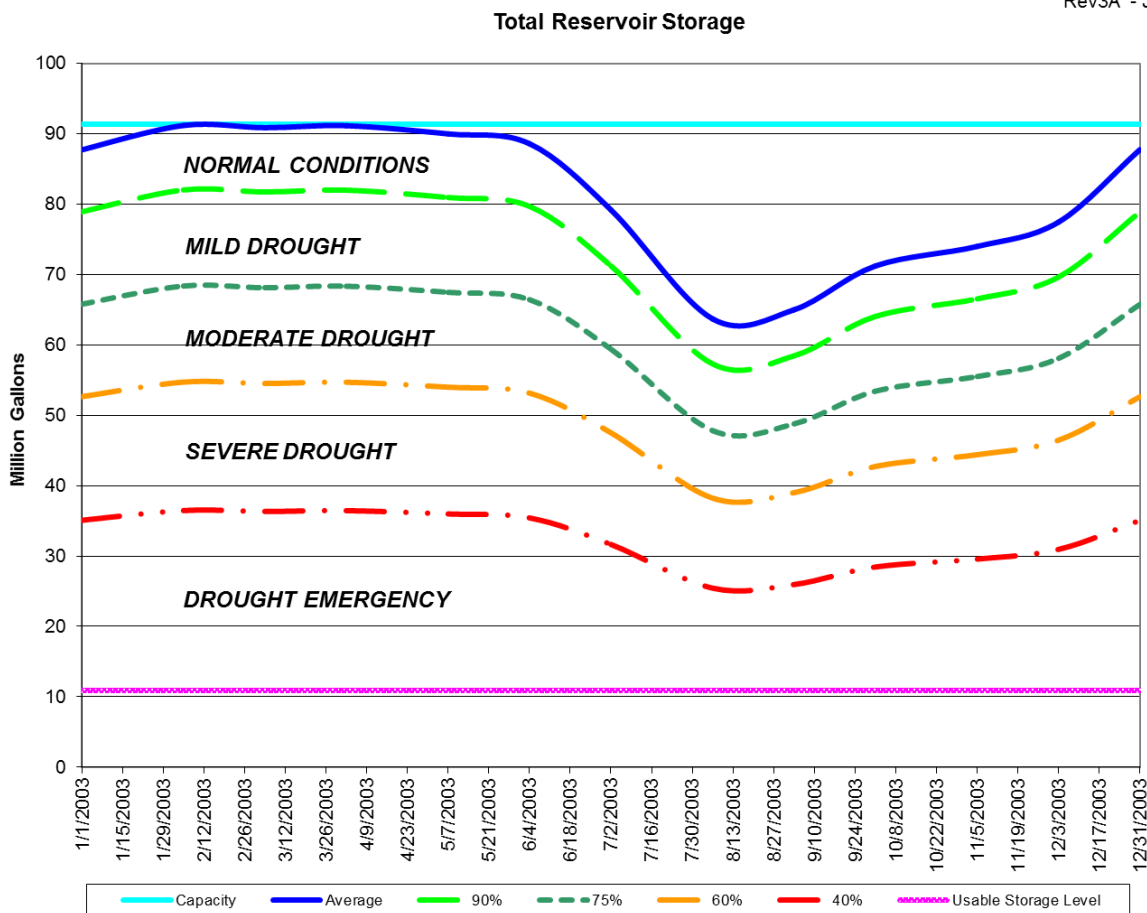


Chart 3

4. DROUGHT MITIGATION MEASURES

4.1 DROUGHT ACTION LEVELS

The following is a list of actions to be taken by the Water Department during the various drought stages.

Normal

- Begin public education campaign to increase awareness of water use and supply. Education programs begin in May regardless of drought conditions.

Mild

- Increase public education efforts.
- Voluntary water restrictions are enacted as described in Appendix D.

Moderate

- Increase public education. Keep public informed of drought status and what is required of the consumer during each stage.
- Mandatory water restrictions are enacted. Restrictions are enforced by Water Department drive-by.

Severe

- All outside water use is banned. Enforcement by Water Department and Police Department.

Emergency

- Operate Winthrop Well #1. (UPDATE: This is no longer an option)
- Investigate possibility of purchasing water from Hamilton through interconnection.

4.2 PUBLIC EDUCATION

Early May is an important time to educate the public on conservation and drought management. Storage is typically at capacity and monthly demand has historically increased by more than 20% from April to May.

The Utilities Department sends a quarterly newsletter to all its' customers, with the spring issue focusing on water conservation tips, the status of the system and an announcement for the Annual Open House at the Water Treatment Plant. In recognition of Drinking Water Week, the Water Department increases its' public awareness campaign with articles in the local newspaper, personnel conduct information sessions at the local elementary schools and host a poster contest. The week culminates with the Open House.

Throughout the summer months the Water Department will utilize the local newspaper to heighten awareness on drought conditions and demand reduction. Customers are educated on what they can do individually to reduce water use. Updates on the status of the water sources and an explanation of the drought stages should also be publicized regularly, particularly nearing the summer months. The Water Department also posts informative water conservation tips on its website www.ipswichma.gov as well as drought conditions.

4.3 *PRICING*

The Water Department is examining the possibility of creating a summer pricing scheme to manage summer demand. As previously stated, the increase in demand during summer months is attributed to residential outdoor watering. To decrease the spike that occurs during the summer, new rates would be established for customers who have a certain percent increase in use in the summer months from the winter months. January consumption would establish a baseline for each customer. During the summer, May to September, monthly consumption would be compared with January consumption and a percent increase or decrease would be calculated. Three tiers will be established, for instance, 0-24% increase, the rate would remain the same as the winter months, 25-49% increase, the rate would be higher, 50+% increase, and the rate would be even higher. This pricing structure is being evaluated to determine the effectiveness and is not adopted at this time. It is anticipated that it will be adopted, with modifications, within two years.

4.4 *WATER AUDITS*

The Water Department offers residential water audits free of charge to customers who suspect they are wasting water throughout their home and property. As shown in Chart 2, commercial water use does not fluctuate seasonally as residential water use. If a commercial customer does show a significant, unexplained increase in consumption, the Water Department will work closely with them to determine the cause and possible solutions.