

**CITY OF KELOWNA**  
**WATER REGULATION BYLAW NO. 10480**

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WHEREAS pursuant to the *Community Charter*, City Council may, by bylaw, regulate, prohibit and impose requirements in relation to the distribution, operation, connection and charge for use of potable water from the City of Kelowna Water Utility;

The Municipal Council of the City of Kelowna, in open meeting assembled, hereby enacts as follows:

**PART 1 - INTRODUCTION**

**1.1 Title**

1.1.1 This bylaw may be cited for all purposes as "Water Regulation Bylaw No. 10480".

**1.2 Interpretation**

1.2.1 In this bylaw,

**"Agricultural"** means land designated as an agricultural land reserve under the *Agricultural Land Commission Act, S.B.C. 2002, c. 36* as amended or replaced from time to time;

**"Approved Backflow Preventer"** means a mechanical device, assembly, or piping arrangement that when subject to backpressure or back siphonage will prevent Backflow, and is approved for use by the City.

**"Backflow"** means the flow of water or other substances back into any plumbing system connected to the City Water Utility.

**"Backflow Prevention Assembly Tester"** means a person who is approved by the City Engineer and holds a current certification from the British Columbia Water and Wastewater Association to test Approved Backflow Preventers.

**"Bare Land Strata Plan"** means a Bare Land Strata Plan as defined in the *Strata Property Act* as amended or replaced from time to time.

**"B.C. Building Code"** means the British Columbia Building Code 2006 as amended or replaced from time to time.

**"Beaver Lake Industrial Area"** means that area of lands legally described as Lots 1 to 28 inclusive, Section 2, Township 20, O.D.Y.D., Plan KAP57943 in the City.

**"Bulk Water Filling Stations"** means stations used for the provision of bulk water from the City Water Utility.

**"City"** means the City of Kelowna.

**"City Water Utility"** means the entire network of pipes, pumps, water treatment facilities, reservoirs, valves, hydrants, service lines, meters, and all other appurtenances or facilities that make up the City's water supply and distribution system.

**"Contaminant"** means any substance or matter in water which may render the water unfit for drinking according to guidelines and regulations of the Province of British Columbia.

**"Council"** means the elected Municipal Council of the City of Kelowna.

**"Cross Connection"** means any connection whereby the City Water Utility is connected, directly or indirectly to any device or source which may result in Backflow or Contaminants entering into any plumbing connected to the City Water Utility including bypass arrangements, jumper connections removable sections, swivel or changeover devices, or any other temporary, or permanent connecting arrangements.

**"Customer"** means any person, company, or corporation who has opened a Customer service account with the City for the purpose of being supplied water from the City Water Utility.

**"Customer Service Account"** means an account for invoice or billing purposes under the City's Utility Billing Customer Care Bylaw No. 8754 as amended or replaced from time to time.

**"Estimated Landscape Water Use"** means a calculation of the total water used for an outdoor landscape area in a given year, as calculated in accordance with Schedule "C" of this bylaw.

**"Fire Protection Use"** means the use of the City Water Utility exclusively for the purposes of providing a standby water service for fire protection.

**"Hydrant Use Permit"** means a permit issued for use of a fire hydrant for purposes other than fire protection and suppression.

**"Landscape Water Budget"** means the maximum allowable annual water usage for an outdoor landscape area, as calculated in accordance with Schedule "C" of this bylaw.

**"Manager"** means the person appointed by Council to manage and oversee the day-to-day operation of the City Water Utility, to represent the City on the Kelowna Joint Water Committee and along with other City staff to administer this bylaw.

**"Multi-Family Residential"** means housing in a single building or on a single property that contains three or more dwelling units.

**"Park and Non-ALR Farm Use"** means the use of the City's Water Utility exclusively for irrigating park, public green spaces and land classified as farm under the *Assessment Act*, R.S.B.C. 1996, c. 20 as amended or replaced from time to time that is not designated as an agricultural land reserve under the *Agricultural Land Commission Act*;

**"Private Service"** means pipes and other appurtenances on private property not installed or owned by the City and is used to convey water from the City Water Utility to the private property.

**"Property"** means any lot, block or other area in which land is subdivided.

**"Rate"** means the sum to be paid by a Customer for the quantity of water supplied by the City Water Utility, as measured by a Water Meter or as a fixed charge as provided by this bylaw.

**"Renovated Landscape Irrigation System"** means a re-construction of an outdoor landscape irrigation system, such that at least 50% of the irrigation piping in a landscape area is relocated or replaced, all cumulatively within the period of one year from the commencement of construction.

**"Smart Controller"** means an electric timing device that sends an electric signal for automatic valves to open or close based on estimates or measures of depletion of available plant soil moisture in order to operate an automatic landscape irrigation system, that replenishes water as needed while minimizing excess water use that meets the requirements of this bylaw.

**"Service Connection"** means the connecting line from the City Water Utility to the boundary of private Property, and includes all related pipes, shut-off valves and other appurtenances.

**"Strata Lot"** means a lot shown on a strata plan.

**"Temporary Use"** means the use of the City Water Utility from an existing Service Connection to be used temporarily for construction of a new building on commercial, industrial, institutional or residential properties.

“**Water Meter**” means an apparatus or device used for measuring the volume of water passing through it, and includes any accessories such as a remote reader device and the connecting cable.

“**Water Meter Pit**” means a chamber constructed underground, which is used to install a Water Meter or Approved Backflow Preventer.

“**Water Meter Setting**” means the plumbing, including pipes, valves and couplers that comprise the exact opening into which a Water Meter can be installed.

“**Water Quality Enhancement Reserve Fund**” means the reserve fund established by the City’s Water Quality Enhancement Reserve Fund Establishment Bylaw No. 8195.

## **PART 2 - WATER SERVICE**

### **2.1 Establishment of Water Service**

2.1.1 To the extent that the **City** has not already established the service of water supply, the **City** hereby establishes the service of supplying water to the **City** through the **City Water Utility** and operating, constructing, maintaining and regulating the **City Water Utility**.

2.1.2 The **City** may provide the service of water supply directly to its **Customers** or indirectly through another public authority, person or organization.

### **2.2 Operation of the City Water Utility**

2.2.1 The **Manager** is authorized to administer and oversee the day-to-day operation of the **City Water Utility** and administer and enforce this bylaw.

### **2.3 Application for Service Connection**

2.3.1 A **Property** owner must make application to the **City** to install a **Service Connection** to the **City Water Utility** in the form prescribed for that purpose by the **City**.

2.3.2 At the time of making the application referred to in section 2.3.1, the **Property** owner shall pay an installation fee equivalent to the estimated cost of installing the **Service Connection**, as determined by the **Manager**.

2.3.3 After completion of the installation of the **Service Connection**, the actual cost of the installation shall be determined by the **Manager** and any variation of more than 5% from the fee paid under section 2.3.2, shall be refunded by or be payable to the **City**, as applicable.

## 2.4 Construction of Service Connection

- 2.4.1 No person shall construct a **Service Connection** other than an employee of the **City**, unless the written consent of the **Manager** is first obtained.
- 2.4.2 After a **Property** owner's application for a **Service Connection** has been approved by the **Manager** and payment of the installation fee has been paid, the **City** shall install the **Service Connection** to the **Property** line.
- 2.4.3 Each **Property** shall have one **Service Connection**.
- 2.4.4 Despite section 2.4.3, all of the land shown on a strata plan other than a side-by-side duplex shall have only one **Service Connection**.

## 2.5 Construction of Private Service

- 2.5.1 A **Property** owner is responsible for the installation of a **Private Service**, at his or her sole cost.
- 2.5.2 Pipes for a **Private Service** greater than 50 mm in diameter shall be disinfected in accordance with the **City's** Subdivision, Development and Servicing Bylaw No. 7900 prior to the **City** turning water on to supply the **Private Service**.

## 2.6 Customer Service Account

- 2.6.1 Any person who obtains water from the **City's** Water Utility must have a **Customer Service Account** with the **City**. Any person who applies for a Building Permit on a vacant lot must establish a **Customer Service Account** with the **City**.

## 2.7 Turn On Of Water Supply

- 2.7.1 Applications for turning the supply of water from the **City Water Utility** shall be made in writing to the **Manager** and shall be accompanied by the fee set out in Schedule "B" of this bylaw.
- 2.7.2 Any person who applies to the **City** to turn the supply of water from the **City Water Utility** on for any new building shall provide to the **Manager**:
  - a) confirmation that a plumbing permit has been obtained from the **City**;
  - b) confirmation that the **Private Service** was satisfactorily tested, inspected and approved by the **City** including satisfactorily inspected by the **City** for connections and **Cross Connections** under section 4.2.5 of this bylaw; and
  - c) any other information the **Manager** may reasonably require.

## 2.8 Maintenance of On-site Works

2.8.1 Every Property owner shall keep all pipes, stop-cocks and other fixtures on their Property in good order and repair and protected from frost at their own expense, and when any premises is vacated the stop-cock on the inside wall of the premises shall be turned off by the departing Property owner.

## 2.9 Short Supply of City Water Utility

2.9.1 The **Manager** may at such times and for such length of time as is considered necessary or advisable by him or her, restrict or prohibit irrigation, yard and garden sprinklering, car washing and private pool filling to reduce water usage when the **Manager** considers water to be in short supply and every person shall abide by such restriction or prohibition.

2.9.2 The **City** may at such times and for such length of time as is considered necessary or advisable by **Council**, restrict or prohibit water uses when it considers water to be in short supply and every person shall abide by such restriction or prohibition.

## 2.10 Repairs of City Water Utility

2.10.1 The **Manager** may at times and for such length of time considered necessary by him or her restrict or prohibit water use for the purpose of maintaining, repairing, renovating, disinfecting or otherwise operating the **City Water Utility**.

## PART 3 - WATER METERS

### 3.1 Installation of Water Meters

3.1.1 A **Water Meter** shall be installed on each **Property** that receives the supply of water from the **City Water Utility**.

3.1.2 Despite section 3.1.1, only one **Water Meter** shall be installed for all of the land shown on a strata plan that receives the supply of water from the **City Water Utility** from the same **Service Connection**, except land shown on a **Bare Land Strata Plan**.

3.1.3 Despite section 3.1.1 and section 3.1.2, land shown on a strata plan that receives the supply of water from the **City Water Utility** from the same **Service Connection**, except land shown on a **Bare Land Strata Plan**, that is used for mixed residential and non-residential purposes shall have one **Water Meter** installed for the residential use and one **Water Meter** installed for the non-residential use.

3.1.4 Every **Water Meter** shall be installed by the **City**.

3.1.5 A **Property** owner is responsible for the installation of a **Water Meter Setting** and **Water Meter Pit**.

3.1.6 Every **Water Meter Setting** and **Water Meter Pit** shall be installed in accordance with the **City's** Plumbing Regulation Bylaw.

### 3.2 Ownership of Water Meter

3.2.1 All **Water Meters** and **Water Meter Pits** shall be provided by the **City** and remain the **Property** of the **City**.

### 3.3 Location of Water Meters

3.3.1 **Water Meters** must be located in a building as close as possible to the entrance point of the **Private Service** into the building unless otherwise approved by the **Manager**.

3.3.2 If a **Water Meter** is not located within a building, the owner of the **Property** must house the **Water Meter** in a **Water Meter Pit** in a location approved by the **Manager**.

### 3.4 No Upstream Drain

3.4.1 No drain valve, water bypass, branch line or any other type of fixture through which water may be taken shall be located upstream of a **Water Meter**.

### 3.5 Type of Water Meter

3.5.1 The **Manager** may determine and specify the type and size of **Water Meters** for each type of **Property** and use, considering the **Manager's** estimate of water consumption and other factors considered relevant by the **Manager**.

### 3.6 Rental Fee for Water Meter

3.6.1 Where a **Water Meter** is installed, the **Property** owner shall pay the rental fee set out in Schedule "B" to this bylaw for the **Water Meter** at the time of application for the supply of water by the **City Water Utility**.

### 3.7 Authority to Repair and Maintain Water Meter

3.7.1 The **City** has the authority to inspect, maintain, repair, replace and read **Water Meters**.

### **3.8 Access to Water Meter**

3.8.1 A **Property** owner must, at all reasonable times, provide adequate, convenient, and unobstructed access to the **City** for inspecting, repairing, maintaining, replacing and reading the **Water Meter**.

### **3.9 Protection and Damage to Water Meter**

3.9.1 A **Property** owner must provide adequate protection for the **Water Meter** against freezing, heat and other severe conditions that might damage the **Water Meter**.

3.9.2 If a **Water Meter** installed on a **Property** is destroyed, lost or damaged in any way, the **Property** owner shall pay the costs of repairs to or replacement of the **Water Meter**.

### **3.10 Activation**

3.10.1 The service of water supply to a **Property** from the **City Water Utility** shall not be activated until a **Customer Service Account** has been established.

### **3.11 Removal of Water Meter**

3.11.1 No person shall remove or in any way disturb a **Water Meter** except under the direction of the **Manager**.

3.11.2 Upon removal of the **Water Meter**, the **Water Meter** shall be returned to the **City**.

### **3.12 Irregularity of Water Meter**

3.12.1 If any breakage, stoppage or other irregularity in a **Water Meter** is observed by a **Property** owner, the **Property** owner shall notify the **Manager** immediately.

### **3.13 Water Meter Testing**

3.13.1 If a **Property** owner questions the accuracy of the record of a **Water Meter**, the **Property** owner may make a written request to the **City** and upon receipt of the Meter Testing Fee specified in Schedule "B", the **City** shall remove and test the **Water Meter**.

3.13.2 If the test performed under section 3.13.1 discloses an error in favour of the **Property** owner, the **Customer's** account will be adjusted by the amount of the inaccuracy for a period not exceeding 6 months and the **City** will return the Meter Testing Fee.



## **PART 4 - WATER QUALITY PROTECTION AND WATER CONSERVATION**

### **4.1 Cross Connections**

- 4.1.1 No person shall connect, cause to be connected or allow to remain connected any pipe, fixture, fitting, container, appliance or **Cross Connection**, in a manner which, under any circumstances, could cause or allow any part of the **City Water Utility** to become contaminated.
- 4.1.2 A **Property** owner must, at all reasonable times, provide adequate, convenient, and unobstructed access to the **City** for the purpose of inspecting the **Private Service** and any plumbing system and fixtures on the **Property** to identify any **Cross Connections**.
- 4.1.3 If the **Manager** determines that a connection or a **Cross Connection** exists in the **Private Service** which has the potential of contaminating the **City Water Utility**, the **Manager** may give written notice to the **Property** owner to correct the connection or **Cross Connection** or install an **Approved Backflow Preventer** at the expense of the **Property** owner within a specified time period.
- 4.1.4 Where the **Manager** determines that a connection or **Cross Connection** prohibited by this bylaw is an immediate risk to the **City Water Utility** or any person, or if a **Property** owner fails to correct any connection or **Cross Connection** as required by this bylaw, the **Manager** may order and undertake at the expense of the **Property** owner the disconnection of the **City Water Utility** to the **Property** without notice until such time as the connection or **Cross Connection** is corrected.

### **4.2 Installation and Inspection of Approved Backflow Preventer**

- 4.2.1 Every **Private Service** that is connected to the **City Water Utility** that is required under this Bylaw to have an **Approved Backflow Preventer** installed shall have the **Approved Backflow Preventer** installed in accordance with the **B.C. Building Code**.
- 4.2.2 Every **Property** owner shall, upon the installation of an **Approved Backflow Preventer** and annually thereafter, or more often as required by the **Manager**, have the **Approved Backflow Preventer** inspected and tested by a **Backflow Prevention Assembly Tester**. The results of all inspections and testing shall be submitted to the **Manager** within 30 days of the **Manager** requesting the **Property** owner to do so.
- 4.2.3 If any irregularity or malfunction in an **Approved Backflow Preventer** is observed by a **Property** owner, the **Property** owner shall repair or replace the **Approved Backflow Preventer** immediately.

4.2.4 The **Property** owner must display a tag in the form prescribed by the **City** for that purpose on the **Approved Backflow Preventer** showing when the **Approved Backflow Preventer** was last inspected and tested by a **Backflow Prevention Assembly Tester**.

4.2.5 The **City** will not activate the supply of water from the **City's Water Utility** to a **Property** until the **Private Service** and any plumbing system and fixtures on the **Property** has been inspected by the **City** for connections and **Cross Connections** prohibited by this bylaw and the **Private Service** and any plumbing system and fixtures on the **Property** is found to be in compliance with this bylaw.

### 4.3 Hydrant Use

4.3.1 Any hydrant used for purposes other than fire protection or suppression shall require a **Hydrant Use Permit** in the form prescribed for that purpose and a fee paid in the amount set out in Schedule "B".

4.3.2 The **Manager** may issue a **Hydrant Use Permit** for the purposes of:

- a) construction road compaction;
- b) construction dust control;
- c) construction water main testing;
- d) utility line flushing;
- e) wellpoint dewatering installation;
- f) road sweeping; or
- g) tanker truck filling.

4.3.3 The **Manager** may refuse to issue a **Hydrant Use Permit** where the issuance of a **Hydrant Use Permit** may result in a risk to the **City Water Utility**.

4.3.4 The **Manager** in issuing a **Hydrant Use Permit** may impose terms and conditions regarding the use of the hydrant as follows:

- a) the location of the fire hydrant that may be used;
- b) the type of fire hydrant that may be used;
- c) the dates and time when the fire hydrant may be used;
- d) the type of **Approved Backflow Preventer** required; and

- e) precautions to be taken in connecting to and using the fire hydrant.
- 4.3.5 An **Approved Backflow Preventer** must be installed by the **City** prior to any connection to a hydrant pursuant to a **Hydrant Use Permit**.
- 4.3.6 No person shall operate any hydrant or use water drawn from any hydrant pursuant to a **Hydrant Use Permit**, otherwise than in accordance with the terms and conditions of the **Hydrant Use Permit**.
- 4.3.7 At any time the **Manager** may cancel or suspend a **Hydrant Use Permit** issued pursuant to this Bylaw:
- a) if the **Manager** considers that the use of the hydrant may result in a risk to the **City Water Utility**; or
  - b) if the **Hydrant Use Permit** holder fails to comply with the provisions of this Bylaw or the terms and conditions of the **Hydrant Use Permit**.
- 4.4 **Landscape Water Conservation Report and Smart Controller Requirements**
- 4.4.1 No **Property** owner shall install or operate an outdoor landscape irrigation system, in such a manner that the **Estimated Landscape Water Use** for the outdoor landscape area exceeds the **Landscape Water Budget** as calculated in accordance with Schedule "C" of this bylaw.
- 4.4.2 A **Property** owner must make application to the **City** to install any new or **Renovated Landscape Irrigation System**.
- 4.4.3 Any **Property** owner who applies to the **City** to install an outdoor landscape irrigation system shall provide for approval to the **Manager** a Landscape Water Conservation Report, which shall be generally in the form set out in Schedule "C" of this bylaw. The Landscape Water Conservation Report shall include a completed Landscape Water Conservation Checklist of basic landscape and irrigation design and installation standards, and shall set out the calculations for the **Estimated Landscape Water Use** and the **Landscape Water Budget** of the proposed outdoor landscape irrigation system in accordance with Schedule "C" of this bylaw.
- 4.4.4 The **Manager** may refuse to approve the installation of an outdoor landscape irrigation system if the calculations in the Landscape Water Conservation Report show that the **Estimated Landscape Water Use** exceeds the **Landscape Water Budget**, or if the Landscape Water Conservation Checklist is not satisfactory. The **Manager** may accept a Landscape Water conservation Report in a form alternate to Schedule C in cases of applications for large scale renovated landscape irrigation systems (such as golf courses and schools), provided that the Report calculates to the satisfaction of the manager a

minimum 15% reduction in estimated landscape water use compared to pre-renovation conditions.

4.4.5 The requirements in section 4.4.1 to 4.4.4 shall not apply to:

- a) An outdoor landscape irrigation system on Agricultural properties within the ALR where the water being supplied is necessary in order to conduct farm use pursuant to the *ALR Use, Subdivision and Procedure Regulation*;
- b) An outdoor landscape irrigation system on farming properties outside of the ALR where water is being supplied for the primary production of farm products.
- c) An outdoor landscape irrigation system serving a landscape area not greater than 100 square metres.

4.4.6 No **Property** owner shall cause or permit water resulting from an outdoor landscape irrigation system to flow wastefully on to non-irrigated areas, walks, roadways or structures.

4.4.7 No **Property** owner shall install an outdoor irrigation system without an irrigation master shut off valve located outside the building accessible to the **City**.

4.4.8 Every irrigation master shut off valve that is required under this bylaw when closed shall stop the supply of water from the **City Water Utility** to the outdoor irrigation system and shall be capable of being closed and locked off by the **City**.

4.4.9 No **Property** owner required to submit a Landscape Water Conservation Report under section 4.4 of this bylaw shall cause or permit an automatic landscape irrigation system to operate contrary to the requirements of the approved Landscape Water Conservation Checklist.

4.4.10 No **Property** owner required to submit a Landscape Water Conservation Report under section 4.4 of this bylaw shall cause or permit an automatic outdoor landscape irrigation system to operate without a **Smart Controller** installed and operated that meets the following minimum performance requirements:

- a) Tested by the Irrigation Association Smart Water Application Technologies as a Climate-based **Smart Controller** or Sensor-based **Smart Controller** and results have been released by the manufacturer;
- b) Multiple start times per program/ day;
- c) 365 day calendar;
- d) Odd/ even or watering day scheduling option;

- e) Independent day scheduling options;
  - f) Water budgeting/ seasonal adjustment by percentage;
  - g) Rain delay;
  - h) Rain sensor/ Moisture sensor compatible;
  - i) Weather or evapotranspiration based - either using historical weather data, or real time weather data.
  - j) Installed and programmed according to the manufacturers specifications.
- 4.4.11 No **Property** owner shall cause or permit a **Smart Controller** to operate such that more water is used for outdoor landscape areas than the amount that would be indicated by the Irrigation Industry Association of British Columbia (IIABC) Irrigation Scheduling Calculator.
- 4.4.12 Every **Property** owner shall program and maintain **Smart Controllers** to adjust watering schedules automatically based on real or historic weather data. In cases where manual irrigation program adjustment is temporarily required, adjust water programming at least once per month between May and October, to follow the reference evapotranspiration measurements set out in Schedule "C" of this bylaw.
- 4.4.13 A **Property** owner must, at all reasonable times, provide adequate, convenient, and unobstructed access to the **City** for the purpose of inspecting and reading the **Smart Controller**.
- 4.4.14 The **Manager** may order a **Property** owner, in writing, to repair or replace any irregularity or malfunction in a **Smart Controller** within a specified time period.
- 4.4.15 If any irregularity or malfunction in a **Smart Controller** is observed by a **Property** owner, the **Property** owner shall repair or replace the **Smart Controller** within a 30 day period.
- 4.4.16 The **Manager** may shut off the supply of water to an outdoor landscape irrigation system, but not to the supply of water for domestic purposes, on any **Property** for any or all of the following reasons:
- a) failing to provide and obtain approval of a Landscape Water Conservation Report as required under section 4.4.3 of this bylaw;
  - b) exceeding the **Landscape Water Budget** under section 4.4.1 of this bylaw;
  - c) failing to install and operate a **Smart Controller** as required under section 4.4.9 of this bylaw; and

- d) failing to repair or replace any irregularity or malfunction in a **Smart Controller** within the time specified in the **Manager's** order under section 4.4.14.

4.4.17 The **Manager** must, prior to shutting off the supply of water to an outdoor landscape irrigation system, notify the persons affected of their right to make representations to **Council**, and may not shut off the supply of water unless **Council** has considered such representations and confirmed that the supply of water is to be shut off.

## **PART 5 -PROHIBITIONS**

### **5.1 Prohibition Against Contaminants**

5.1.1 No person shall introduce to, or allow to be introduced to the **City Water Utility**, any **Contaminant**.

### **5.2 Interference with City Water Utility**

5.2.1 No person shall, or permit any person to, tamper with, operate, damage or in any way interfere with any valves, fire hydrants, **Water Meters** or other component of the **City Water Utility**.

### **5.3 Connection to City Water Utility**

5.3.1 No person shall tap into or make a connection to the **City Water Utility** except authorized employees of the **City**.

### **5.4 Sale of Water and Use of Water Off Property**

5.4.1 No **Property** owner shall sell, dispose or otherwise give away water from the **City Water Utility** for use off their **Property**.

### **5.5 Waste of Water**

5.5.1 No person shall cause or permit water to be discharged from the **City Water Utility** for no useful purpose.

### **5.6 Demolition of Building**

5.6.1 No person shall demolish, move, remove or substantially alter any building connected to the **City Water Utility**, without first applying to the **City** to discontinue the water service to that **Property** and paying the applicable fee set out in Schedule "B".

## **PART 6 - CONDITIONS**

### **6.1 City Water Utility System Pressure**

6.1.1 The City does not guarantee water pressure, continuous supply or direction of water flow. The City reserves the right at any time, without notice, to change the operating pressure, to shut off water or to change the direction of flow. Neither the City, its officer, employees, nor agents shall be liable for any damage or other loss caused by changes in water pressure, shutting off water or change in direction of flow or by reason of the water containing sediments, deposits, or other foreign matter.

### **6.2 Limitation on Liability**

6.2.1 Nothing contained in this bylaw shall be construed to impose any liability on the City to provide water to any person or Property or to provide a continuous supply of water or water of any particular quantity or quality.

### **6.3 Conditions of Water Supply**

6.3.1 Any supply of water by the City is subject to the following conditions, in addition to other conditions in this bylaw:

6.3.2 the City is not responsible for the failure of the water supply as a result of any accident or damage to the City Water Utility;

6.3.3 the City is not responsible for any excessive water pressure or lack of water pressure;

6.3.4 the City is not responsible for any temporary stoppage of the water supply on account of alterations or repairs to the City Water Utility;

6.3.5 whether such arises from the negligence of any person in the employ of the City or another person, or through natural deterioration or obsolescence of the City Water Utility or otherwise.

### **6.4 Shut Off of Water Supply**

6.4.1 Applications for turning the supply of water from the City Water Utility off shall be made in writing to the Manager and shall be accompanied by the fee set out in Schedule "B" of this bylaw.

6.4.2 The Manager may shut off the supply of water to any Property for any or all of the following reasons:

a) a request to turn off or discontinue water service;

b) a shortage of water pursuant to section 2.9.1;

- c) maintaining, repairing, renovating, replacing, disinfecting or otherwise operating the **City's Water Utility**;
- d) non-payment of water **Rates** and charges under this bylaw;
- e) the period of time for the **Temporary Use** has expired; and
- f) an emergency that threatens the safety of the **City's Water Utility** or the public.

6.4.3 The **City** may shut off the supply of water to any **Property** for any or all of the following reasons:

- a) non-compliance with any provision of this bylaw; and
- b) shortage of water supply pursuant to section 2.9.

## 6.5 Notices of Water Shut Off

6.5.1 Where water supply is to be shut off for reason of non-payment of water **Rates** and charges or other non-compliance with any provision of this Bylaw, the **Manager** will give 30 days notice to the **Property** owner.

6.5.2 Where water supply is to be shut off for reason of non-compliance with any provision of this Bylaw, except the non-payment of water **Rates** and charges, the **City** will give the person affected the opportunity to make representations to **Council** in respect of such non-compliance.

6.5.3 Where water supply is to be shut off for reason of a shortage of water supply pursuant to sections 2.9.1 and 2.9.2, the **City** will give at least 7 days notice, but no notice will be given where safety of life or **Property** is at risk.

6.5.4 Where water supply is to be shut off for maintenance, repair, renovation, replacement, disinfection or other operation of the Water System, the **Manager** will give at least two working days notice for scheduled work, but no notice will be given where safety or life or **Property** is at risk.

6.5.5 Notice under section 6.4 may be given by one or more of the following:

- a) posting notice on the **Property**;
- b) providing notice on an invoice for the relevant **Customer Service Account**;
- c) mailing notice to the address supplied by the **Customer** or the address of the **Property**; and



- d) telephoning the **Customer** which may include speaking directly with the **Customer** or leaving a message at the telephone number supplied by the **Customer**.

6.5.6 The **City** is not responsible for any notice failing to reach a **Property** owner or other consumer of water prior to the shut off of water.

## **PART 7- RATES AND CHARGES**

### **7.1 Water Rates**

7.1.1 Every **Customer** shall pay to the **City** the applicable **Rates** and charges set out in Schedule "A" to this bylaw for the supply of water from the **City Water Utility**. The **Rates** and charges in Schedule "A" are hereby imposed and levied by the **City**, and all such **Rates** and charges shall be payable at the office of the **City** on or before the due date printed on the **City Water Utility** bill.

### **7.2 Temporary Use**

7.2.1 Upon application to the **City** a connection to the **City Water Utility** may be permitted solely for **Temporary Use** for a specified period of time determined by the **Manager**.

7.2.2 The applicant for the **Temporary Use** will pay to the **City** the **Rates** and charges for such use as set out in Schedule "A" to this bylaw.

7.2.3 Any person who applies to the **City** to turn the supply of water from the **City Water Utility** on for a **Temporary Use** shall provide to the **Manager**:

- a) confirmation that a building permit or a plumbing permit has been obtained from the **City**;
- b) confirmation that an **Approved Backflow Preventer** has been installed at the junction of the **Service Connection** and the **Approved Backflow Preventer** has been satisfactorily tested and inspected; and
- c) any other information the **Manager** may reasonably require.

7.2.4 Pipes for **Temporary Use** shall not be larger than 50 mm in diameter.

### **7.3 Fire Protection Use**

7.3.1 Upon application to the **City**, a connection to the **City Water Utility** may be permitted solely for **Fire Protection Use**. The **Property** owner will pay to the **City** the **Rates** and charges for such use as set out in Schedule "A" to this bylaw.

#### **7.4 Park and Non-ALR Farm Use**

7.4.1 Upon application to the **City**, a connection may be permitted to the **City Water Utility** solely for **Park and Non-ALR Farm Use**. The **Property** owner will pay to the **City** the **Rates** and charges for such use as set out in Schedule "A" to this bylaw.

#### **7.5 Bulk Water Filling Stations**

7.5.1 Upon application to the **City**, a person may purchase a card from the **City** to use the **Bulk Water Filling Stations**. The rates and charges for use of water from the **Bulk Water Filling Stations** shall be as set out in Schedule "A" to this bylaw.

#### **7.6 Water Quality Enhancement Reserve Fund Contribution**

7.6.1 Every **Customer**, except **Customers** in the **Beaver Lake Industrial Area**, shall pay to the **City** the applicable charges set out in Schedule "A" to this bylaw to be placed in the **Water Quality Enhancement Reserve Fund**.

#### **7.7 Customer Service Account Set-Up Fee**

7.7.1 Upon creation, each new **City Customer Service Account** shall include an account set-up fee, as set out in Schedule "B" to this bylaw.

#### **7.8 Interest**

7.8.1 Any money due and owing to the **City** under this bylaw shall bear interest at the **Rate** of 3.75% per annum calculated from the date on which the money was to have been paid.

#### **7.9 Taxes in Arrears**

7.9.1 All fees, **Rates** and charges set out in this bylaw not paid on or before the 31st day of December in any year shall be deemed to be taxes in arrear in respect of the properties served by the **City Water Utility** and such sum shall be recoverable as taxes under the *Community Charter*.

### **PART 8 - GENERAL**

#### **8.1 Inspection**

8.1.1 The **Manager** and any bylaw enforcement officer may enter on any **Property** at any reasonable time for the purpose of inspecting and ascertaining whether the regulations and requirements of this bylaw are being observed.

8.1.2 No person shall obstruct or interfere with the **Manager** or any bylaw enforcement officer in the performance of his or her duties or the exercise of his or her powers under this bylaw.

**8.2 Offence and Penalties**

8.2.1 Any person who contravenes this bylaw is liable upon summary conviction to a minimum fine of \$1000 and a maximum fine of \$10,000 and the cost of prosecution. Every day during which there is an infraction of this bylaw shall constitute a separate offence.

**8.3 Severability**

8.3.1 If any portion of this bylaw is held to be invalid by a court of competent jurisdiction, such invalidity shall not affect the validity of the remaining portions of this bylaw.

**8.4 Repeal**

8.4.1 City of Kelowna Water Regulation Bylaw, 1960, No. 2173, and all amendments thereto, are hereby repealed.

Read a first, second and third time by the Municipal Council this

Adopted by the Municipal Council of the City

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Mayor

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City Clerk

**SCHEDULE "A"**

**Water Rates and Charges**

Customers shall pay the following Rates and charges for water service:

**1. Residential Properties - Metered**

A combined monthly flat Rate charge plus consumption charge as follows:

Flat Rate charge of Six Dollars and Ninety-Four Cents (\$6.94) per month, plus a monthly consumption charge of:

First 30 cubic metres - \$0.275 per cubic metre,

Next 50 cubic metres - \$0.362 per cubic metre,

Next 45 cubic metres - \$0.548 per cubic metre,

Balance of cubic metres - \$1.097 per cubic metre.

**2. Residential Properties - Required to Have a Meter But Do Not**

A monthly flat charge of \$400.00.

**3. Commercial, Industrial and Institutional (collectively, "Non-Residential") Properties - Metered**

A combined monthly flat Rate charge plus a consumption charge as follows:

Flat Rate charge based on Water Meter size as follows:

<b>Meter Size</b>	<b>Monthly Flat Charge</b>
5/8" (15 mm)	\$ 9.55
3/4" (20 mm)	\$ 13.94
1" (25 mm)	\$ 18.51
1½" (37 mm)	\$ 39.02

2" (50 mm)	\$ 62.95
3" (75 mm)	\$ 148.84
4" (100 mm)	\$ 241.65
6" (150 mm)	\$ 509.35
8" (200 mm)	\$ 620.13

Plus a consumption charge of \$0.218 per cubic metre for all **Water Meter** sizes.

#### 4. Temporary Use

For Temporary Use:

8.4.1 For residential properties a monthly flat charge of \$9.55.

8.4.2 For non-residential properties and **Multi-Family Residential** properties a monthly flat charge of \$62.95.

#### 5. Fire Protection Use

For **Fire Protection Use** a monthly flat **Rate** charge of Sixteen Dollars and Twelve Cents (\$16.12) per month.

#### 6. Beaver Lake Industrial Area Properties

A combined monthly flat **Rate** charge plus a consumption charge for all properties within the **Beaver Lake Industrial Area** as follows:

Meter Size	Monthly Flat Charge
5/8" (15 mm)	\$ 9.55
3/4" (20 mm)	\$ 13.94
1" (25 mm)	\$ 18.51
1½" (37 mm)	\$ 39.02
2" (50 mm)	\$ 62.95

3" (75 mm)	\$ 148.84
4" (100 mm)	\$ 241.65
6" (150 mm)	\$ 509.35
8" (200 mm)	\$ 620.13

Plus a consumption charge of \$0.218 per cubic metre.

**7. Park and Non-ALR Farm Use**

For **Park and Non-ALR Farm Use**, a yearly flat **Rate** of Three Hundred Ninety-Three Dollars and Eighty-Five Cents (\$393.85) per acre per year whether a portion is irrigated or not. For farm land not designated as an **agricultural** land reserve the yearly flat **Rate** shall be based on the total assessed size of the **Property** classified as farm under the *Assessment Act*.

**8. Agricultural Properties**

For **Agricultural** properties, a yearly flat **Rate** of One Hundred Four Dollars and Forty-Five Cents (\$104.45) per acre per year based on the total assessed size of the **Property** designated as **agricultural** land reserve under the *Agricultural Land Commission Act* whether a portion is irrigated or not.

**9. Multi-Family Residential Properties - Land that is a Single Legal Entity**

A combined monthly flat **Rate** charge plus a consumption charge as follows:

Meter Size	Monthly Flat Charge
5/8" (15 mm)	\$ 7.69
3/4" (20 mm)	\$ 7.79
1" (25 mm)	\$ 14.71
1½" (37 mm)	\$ 30.63
2" (50 mm)	\$ 49.35

3" (75 mm)	\$ 138.27
4" (100 mm)	\$ 228.63
6" (150 mm)	\$ 480.55
8" (200 mm)	\$ 602.73

Plus a consumption charge of \$0.229 per cubic metre for all **Water Meter** sizes.

#### 10. Multi-Family Residential Properties - Land that is shown on a strata plan

A combined monthly flat **Rate** charge plus a consumption charge as follows:

Meter Size	Monthly Flat Charge
5/8" (15 mm)	\$ 7.69
3/4" (20 mm)	\$ 7.79
1" (25 mm)	\$ 14.71
1½" (37 mm)	\$ 30.63
2" (50 mm)	\$ 49.35
3" (75 mm)	\$ 138.27
4" (100 mm)	\$ 228.63
6" (150 mm)	\$ 480.55
8" (200 mm)	\$ 602.73

Plus a consumption charge of \$0.245 per cubic metre for all **Water Meter** sizes.

For land shown on a strata plan that receives the supply of water from the **City Water Utility** from the same **Service Connection**, except land shown on a **Bare Land Strata Plan**, the **City** may send a single invoice covering all **Strata Lots** and common **Property** to the strata corporation. If the **Rate** levied remains unpaid as of December 31 of the billing year, the **City** may allocate the total volume of water used among the **Strata Lot** owners on the basis of their unit entitlements and type of use, and determine the charges and penalties owing by the owner of each **Strata Lot**.

**11. Bulk Water Filling Station Use**

The cost of a card for use of the **Bulk Water Filling Stations** is \$20.00, non refundable.

For **Bulk Water Filling Stations**, a consumption charge of \$0.65 per cubic metre of water used.

**12. Water Quality Enhancement Reserve Fund Contribution - Metered**

All Customers, except those Customers in the **Beaver Lake Industrial Area**, shall pay an additional monthly flat charge, as follows:

Meter Size	Monthly Flat Charge
5/8" (15 mm)	\$ 1.32
1" (25 mm)	\$ 2.71
1½" (37 mm)	\$ 5.98
2" (50 mm)	\$ 9.68
3" (75 mm)	\$ 22.69
4" (100 mm)	\$ 37.52
6" (150 mm)	\$ 83.95
8" (200 mm)	\$ 210.87

**13. Water Quality Enhancement Reserve Fund Contribution- Required to Have a Meter But Do Not:**

A monthly flat charge as follows: \$2.71

**14. Water Quality Enhancement Reserve Fund Contribution - Water Uses That Do Not Require a Meter:**

A monthly flat charge as follows: \$2.71



## SCHEDULE "B"

### Water Meter Fees and Service Charges

#### 1. Water Meter Fees

Customers shall pay a Water Meter Fee at the time of application for water service as follows:

METER TYPE			
Meter Size	Standard	Turbine	Compound
5/8" x 3/4" (residential)	\$ 235.00		
3/4" (commercial)	\$ 245.00		
1" (commercial)	\$ 266.00		
1.5" (commercial)	\$ 534.00	\$ 1,015.00	
2" (commercial)	\$ 1,068.00	\$ 1,370.00	\$ 2,971.00
3" (commercial)		\$ 2,217.00	\$ 3,420.00
4" (commercial)		\$ 3,954.00	\$ 5,627.00
6" (commercial)		\$ 6,092.00	\$ 8,579.00
8" (commercial)		\$ 8,369.00	
4" Protectus fire service meter	\$ 6,670.00		
6" Protectus fire service meter	\$ 9,465.00		
8" Protectus fire service meter	\$ 14,933.00		

The Water Meter Fee for commercial meters includes the following components as applicable to each meter setting: specified meter, companion flanges, strainer,

gaskets, bolts, remote reading device and connecting cable all supplied and owned by the City.

The **Water Meter Fee** for commercial meters does not include the following: master control valve on service inlet and meter isolation valve downstream of meter, pressure reducing valve(s) (PRV's), pressure gauges, back flow prevention device and bypass piping and bypass valve all to be supplied and owned by the **Property** owner.

The **Water Meter Fee** for residential meters includes the following: **Water Meter**, meter setting fittings, installation of **Water Meter** within a 325 mm copper pipe run, supply of a remote reading device and connecting cable all of which will be supplied and owned by the **City**.

## 2. Service Fees

Customers will pay and will be invoiced on their **City Water Utility** bills for the following service fees:

Service	Fees
Set-up or transfer of service for every new billing account.	\$ 5.00
Water disconnect (shut-off) or connect (turn-on) during regular office hours	\$ 25.00
Emergency water disconnect (shut-off) or connect (turn-on) during off-hours	\$160.00
Shut-off or Turn-on Irrigation System (per section 4.4.16)	\$ 25.00

Both the transfer and water turn-on charge will apply if water is turned on and a new account is established.

Regular office hours shall mean the regular operating hours of the **City's Water Utility Services Branch**.

## 3. Hydrant Use Permit Fee

The fee for each **Hydrant Use Permit** shall be \$60.00 plus \$25.00 per day for each day of Hydrant Permit. The fee for a **Hydrant Use Permit** shall include the costs of providing, installing and removing **Approved Backflow Preventer**.

## SCHEDULE "C"

### Landscape Water Conservation Report Requirements

Schedule C provides the scope of information that is required in applications for new or renovated irrigation systems in the City of Kelowna Water Utility area. Applicants are required to submit three components for review and approval by the City:

1. Project and Applicant Identification
2. Landscape Water Conservation Checklist
3. Landscape Water Conservation Calculation Table

#### Project and Applicant Identification

Applicants shall provide a project name that clearly distinguishes the project from others in the City. City staff may assign an application number in addition to this project name.

Applicants may be the **Property** owner or an agent appointed by the **Property** owner with authority to commit the Owner to meet the requirements of the bylaw. Applicants shall provide their contact information and be available to liaise with the City throughout the design and landscape construction period.

#### Landscape Water Conservation Checklist

Applicants shall complete the attached Landscape Water Conservation Checklist to identify and confirm that the project will conform to current landscape and irrigation water conservation practices listed in the checklist. Applicants should use the Notes section to explain unchecked clauses, if any. The City may require additional information or refuse permit approval based on its review of the application checklist completion and comments.

#### Landscape Water Conservation Calculation Table

Applicants shall complete a Landscape Water Conservation Calculation Table. Applicants may choose from one of two methods: the Spreadsheet Method or the Manual Method.

**Spreadsheet Method:** A Landscape Water Conservation Calculation Spreadsheet will be made available from City staff to allow the applicant to enter project information which will enable the spreadsheet to calculate the **Landscape Water Budget (WB)**, the **Estimated Landscape Water Use (WU)**, and the difference between them.

The Landscape Water Conservation Calculation Spreadsheet embeds the formulas shown in this Schedule C, and is available in MS Excel format, separately. Applicants using the spreadsheet method may be able to refine values for Plant Factor (PF), Irrigation Efficiency (IE) and Reference Evapotranspiration (ET<sub>o</sub>), subject to approval of the City.

**Manual Method:** Using the attached Landscape Water Conservation Calculation Table as a model, applicants may manually fill in and calculate the **Landscape Water Budget (WB)**, the **Estimated Landscape Water Use (WU)**, and the difference between them.

In both bases the applicant needs to design and supply the areas of various landscape treatments and the cumulative total landscape area of the project. Projects below the minimum area stipulated in the Water Regulation Bylaw do not require an application or permit.

It is the responsibility of the Applicant or their representative(s) to create a calculation and installed system that meets the requirements of the Water Regulation Bylaw, including that the **Landscape Water Budget (WB)** must exceed the **Estimated Landscape Water Use (WU)** for the system design, installation and operation.

**Project and Applicant Identification**

<i>Project Name &amp; Address</i>		
<i>Name of Applicant</i>	<i>Telephone No.</i>	
	<i>Fax No.</i>	
<i>Title</i>	<i>Email Address</i>	
<i>Company</i>	<i>Street Address</i>	
<i>City</i>	<i>Province</i>	<i>Postal Code</i>

**Landscape Water Conservation Checklist**

- Install **Backflow** prevention devices to meet **City** of Kelowna standards to isolate the outdoor irrigation system from the potable water system.
- Group planting into 'hydrozones' of high, medium and low water-use plants or unirrigated/unwatered areas.
- Minimize mown turf areas that are high water use areas - ideally to 50% of the landscape area or less - substitute with areas of lower water use treatments like unwatered native woods or meadow, mulch, spaced wood deck, pervious paving.
- Provide adequate topsoil or growing medium of depth and quality to meet the BC Landscape Standard, published by the BC Society of Landscape Architects and the BC Landscape and Nursery Association. General minimum depths over poor subsoils are 150mm for lawn and 300mm for shrubs groundcover.
- Group irrigation circuits/zones into 'hydrozones' of high, medium, and low or unirrigated areas consistent with the landscape planting plan. Provide a separate irrigation valve for each irrigated hydrozone.
- Minimize use of high-volume spray heads, and employ drip or low volume irrigation where practical.
- When spray or rotor irrigation is used, design and install head to head coverage in accordance with manufacturer's specifications, and avoid overspray outside landscape areas.
- Ensure matched precipitation rates within all irrigation circuits.
- Design and install pipe and head layout so flow velocity does not exceed 1.5 m/s, and to minimize elevation change or pressure variation in circuits. Provide check valves to stop low head drainage.
- Ensure irrigation mainlines are proved leak-free with hydrostatic tests.
- Provide pressure regulating devices to ensure irrigation outlets are operating at the manufacturer's optimum pressure range.
- Install - and program to minimize water use - '**Smart Controllers**' to meet standards of the **City** of Kelowna Water Regulation Bylaw.
- Install an irrigation master shut-off valve (isolation valve) located outside the building in a location accessible to the **City** that when closed shall stop the supply of water from the potable water supply to the outdoor irrigation system and shall be capable of being closed and locked off by the **City**.

Applicant Notes on the Landscape Water Conservation Checklist

Signature:

Date:

# Landscape Water Conservation Calculation Table

Project Name/Address:

Applicant Name:

## Step 1: Measure Total Landscape Area (LA)

Insert area of site that will absorb water:  sq.m.

Note: INCLUDE BOULEVARD, and proposed lawn, plants, mulch, PERVIOUS decks. Do not include building areas, driveways, patios, decks or walks unless pervious.

Calculate Estimated Water Use (WU) for each Landscape Treatment  $WU = (ETo\ of\ 1000)((PF\ x\ HA/IE))/1000$  see Page 4

Step 2: Divide Into Landscape Treatments	Plant Factor (PF)	Irr Efficiency (IE)	Hydrozone Area (sq.m.) (HA)	% of Total LA	Estimated Water Use (cu.m.) (WU)
Note: each of the areas below are a 'HYDROZONE'					
<b>Unwatered Pervious Areas (not impervious paving)</b>					
Unwatered pervious mulch (e.g. stone, bark or sand)	N/A	N/A			N/A
Unwatered pervious deck (e.g. spaced wood deck)	N/A	N/A			N/A
Unwatered pervious paving (e.g. AquaPave, Rima Pave)	N/A	N/A			N/A
Unwatered naturalized meadow (e.g. wildflowers)	N/A	N/A			N/A
Unwatered naturalized area (e.g. existing natural area)	N/A	N/A			N/A
Other unwatered pervious area Specify:	N/A	N/A			N/A
Swimming or ornamental pool (use recirculating water)	1	1			
<b>Watered Planting Beds (shrubs or groundcover)</b>					
Low water use plants, high efficiency irrigation	0.3	0.9			
Low water use plants, low efficiency irrigation	0.3	0.7			
Moderate water use plants, high efficiency irrigation	0.5	0.9			
Moderate water use plants, low efficiency irrigation	0.5	0.7			
High water use plants, high efficiency irrigation	0.7	0.9			
High water use plants, low efficiency irrigation	0.7	0.7			
<b>Watered Mown Lawn Areas</b>					
Mown lawn, moderate efficiency irrigation	1	0.7			
<b>Special Landscape Areas (SLA)</b>					
Vegetable garden, high efficiency irrigation	1	0.9			
Vegetable garden, low efficiency irrigation	1	0.7			
Sports or playground Lawn, moderate efficiency irrigation	1	0.7			
Areas where non-potable water supplements irrigation	0.3	1			
<b>Totals</b>			= Total LA	=100%	=Total WU
Special Landscape Area (SLA) Subtotal					

Landscape Water Conservation Calculation Table (cont'd)

Project Name: \_\_\_\_\_

Applicant Name: \_\_\_\_\_

Step 3: Calculate & Compare Water Budget to Estimated Water Use		
Note: For Evapotranspiration (ETo) in Kelowna allow 1000 mm/yr		
Calculate Landscape Water Budget (WB) WB = $ETo[(1.0 \times \text{Total LA}) + (0.3 \times \text{Subtotal SLA})]/1000$	Show Calculations	Total WB (cu.m./yr)
Calculate Estimated Landscape Water Use (WU) WU = $ETo(PF \times HA/IE)/1000$	Calculate for each Landscape Type on Page 3, then sum into Total WU	Total WU (cu.m./yr)
Subtract Estimated Landscape Water Use from Landscape Water Budget (WB - WU) Result Must be greater than 0 Adjust landscape areas or planting/irrigation type to suit.	Notes	Difference (cu.m./yr)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Landscape Water Budget (WB)

The project's Landscape Water Budget shall be calculated using this equation:

$$WB = ETo[(1.0 \times LA) + (0.3 \times SLA)] / 1000$$

where:

WB = Maximum Landscape Water Budget (cubic metres per year)

\*ETo = Reference Evapotranspiration (use approx. 1000 millimetres per year in Kelowna, or more specific data from [www.farmwest.com](http://www.farmwest.com))

1.0 = ET Adjustment Factor (ETAF)

LA = Landscaped Area includes Special Landscape Area (square metres)

SLA = Portion of the landscape area identified as Special Landscape Area (square metres)

0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.3 - 1.0 = 0.3)

/1000 = divide total calculation by 1000 to convert to cubic metres/year

Estimated Landscape Water Use (WU)

The project's Estimated Water Use in the landscape is calculated using the following formula:

$$WU = ETo(PF \times HA/IE)/1000$$

where:

WU = Estimated Landscape Water Use per year (cubic metres per year)

ETo = Reference Evapotranspiration (use approx. 1000 millimetres per year in Kelowna, or more specific data from [www.farmwest.com](http://www.farmwest.com))

PF = Plant Factor

HA = Hydrozone area [high, medium, low and no water use areas] (square metres)

IE = Irrigation efficiency (minimum 0.7)

/1000 = divide total calculation by 1000 to convert to cubic metres/year

### Interpretation

**Landscape area:** means all of the planting areas, turf areas, pervious paving, water features and unirrigated pervious surfaces - such as existing or planted native vegetation, spaced wood deck, stone or organic mulch - in a landscape design plan subject to the **Landscape Water Budget** calculation. The landscape area does not include footprints of buildings or structures, impervious sidewalks, impervious driveways or parking lots, impervious decks or patios, other impervious hardscapes.

**Pervious:** means surfaces that allow water to soak into the underlying ground and do not create runoff when exposed to up to the mean annual rainfall.

**Impervious:** means surfaces that shed water and create runoff when exposed to rainfall events of 1 mm or greater.

**Special Landscape Area (SLA):** for all calculations, means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, and water features using recycled water, captured rainwater, or other non potable water source. For calculations in multiple family, park and playground areas, but not for single family lots, Special Landscape Area may also include areas dedicated to active play such as park lawns, sports fields, golf courses and where turf provides an intensively used playing surface.

**Water Feature:** means a designed element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas and swimming pools (where make-up water is supplied from the municipal potable system).

**Hydrozone:** means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

- Unirrigated pervious paving, spaced wood deck or other pedestrian, decorative or driveway surfacing that allows rainwater to soak into underlying ground without puddling shall be included in total landscaped area calculations and shall be in a no water use hydrozone.
- All water feature surface areas shall be included in the high water use hydrozone.
- Areas with temporary irrigation for a maximum 1 year plant establishment period shall be included in the no water use hydrozone.
- Individual hydrozones that mix high and low water use plants shall not be permitted.
- Individual hydrozones that mix plants of moderate and low water use or moderate and high water use may be allowed if:
  - Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor, or
  - If the plant factor of the higher water using plant is used for calculations.

**Plant factor or plant water use factor (PF):** means a factor, when multiplied by the Reference Evapotranspiration ( ETo) that estimates the amount of water needed by plants. For the purposes of these standards plant factor ranges are as follows as described in the "Watering" section on page 161 in Western Garden Book \*.

- Empty water droplet - Low water use = 0.3
- Half-filled water droplet - Medium/ moderate water use = 0.5
- 1, 2 or 3 full, water droplets - High water use = 0.7

\* Norris Brenzel, Kathleen, ed. *Western Garden Book Seventh Edition*. Menlo Park: Sunset Publishing Corporation, 2001.

**Irrigation efficiency (IE):** means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of these standards is 0.7, with the corresponding requirement that installations meet all the clauses in the Landscape Water Conservation Checklist and in the irrigation manufacturer's design and installation specifications.

**Evapotranspiration Rate:** means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

**Reference evapotranspiration (ET<sub>o</sub>):** means a standard measurement of environmental parameters which affect the water use of plants. ET<sub>o</sub> is given in millimeters per day, month or year and is an estimate of the evapotranspiration of a grass reference crop using a modified Penman Monteith equation, which is the standard method recommended by the UN Food and Agriculture Organization. Reference evapotranspiration is used as the basis of determining the **Landscape Water Budget** so the regional differences in climate can be accommodated. For purposes of calculations in the **City of Kelowna**, use 1000 litres/year, or the applicant may use more precise amounts derived from the Farmwest.com Evapotranspiration Calculator ([www.farmwest.com](http://www.farmwest.com)) for the location of the project in Kelowna (Airport, East Kelowna or South Kelowna).

**ET adjustment factor (ETAF):** means a factor of 1.0, that, when applied to a reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.71 is the basis of the plant factor portion of this calculation. For purposes of the ET adjustment factor, the average irrigation efficiency is 0.71. Therefore, the ET adjustment factor  $(1.0) = (0.71/0.71)$ .

- ETAF for special landscape area (SLA) shall not exceed 1.3.
- ETAF for existing, non-rehabilitated landscapes is 1.0