



APPLICATION FOR GREENHOUSE WATER SUPPLY/CONNECTION

Complete and submit this application to Kingsville Municipal Services

2021 Division Road North, Kingsville, Ontario, N9Y 2Y9
Telephone: (519) 733-2305 Fax: (519) 733-8108

NAME OF GREENHOUSE OPERATION: _____

ADDRESS: _____

CONTACT REPRESENTATIVE: _____

PHONE: _____ FAX: _____

An on-site fresh water reservoir system together with an automatic water flow control system will serve to reduce peak water demands on the water treatment plant and water distribution system. A fresh water reservoir system will only be effective if it is properly sized and operated to prevent a water shortage.

1. TYPE OF CROP: _____

2. MAXIMUM DAY PLANT WATER CONSUMPTION:

_____ Imp. Gallons per Plant per Day (Igpddd)

(Note that this maximum consumption rate would be experienced on only 5 - 10 days per year during the summer season when temperature and light intensity are at seasonal maximums).

3. PLANT DENSITY: _____ Plants per Acre (ppa)

4. IS THIS A NEW FACILITY: *Circle one* YES NO

OR
EXPANSION TO EXISTING FACILITY: *Circle One* YES NO

5. SIZE OF GREENHOUSE:

Existing _____ Acres Size applying for _____ Acres

Ultimate Future Size _____ Acres

6. LENGTH OF PEAK WATERING PERIOD: _____ Hours per Day

7. FRESH WATER RESERVOIR SYSTEM SIZE: _____ Imp. Gallons (Igal)

(Establish the minimum size of your on-site fresh water reservoir system by substituting the values entered herein into the reservoir sizing example at the end of this application.)

8. WHERE A FRESH WATER RESERVOIR SYSTEM IS BEING PROPOSED OR EXISTING, WHAT IS ITS STORAGE VOLUME BY:

a) Dimension _____ Igal b) Working Volume _____ Igal
(difference between low & high water level)

9. WILL AN AIR GAP BE PROVIDED ON THE RESERVOIR FILL LINE?
Circle One YES or NO
10. WILL AN AUTOMATIC LEVEL CONTROL/ALARM SYSTEM BE PROVIDED ON THE FRESH WATER RESERVOIR SYSTEM?
Circle One YES or NO
11. WATER PRESSURE AT BUILDING: Maximum _____ PSI Minimum _____ PSI
(The min. & max. water pressure values entered above will be used to size the modulating control valve and must be accurate. Pressure monitoring of over a period of time may be required and conducted by the Municipality of Leamington.)
12. ESTIMATED TOTAL NUMBER OF EMPLOYEES THAT WILL BE WORKING AT THIS FACILITY: _____ persons
13. ESTIMATED NUMBER OF EMPLOYEES THAT WILL BE HOUSED ON-SITE FROM ABOVE TOTAL: _____ persons
14. WHERE AVAILABLE, PROVIDE DRAWINGS SHOWING SITE PLAN, GREENHOUSE LAYOUT AND RESERVOIR SYSTEM LAYOUT WITH DETAILS. INDICATE DESIRED ROUTING OF WATER SERVICE CONNECTION *(where applicable)* AND DESIRED LOCATION OF WATER FLOW CONTROL SYSTEM.
15. Note that the above values will be used to evaluate and establish a water supply delivery rate to the proposed greenhouse facility. This rate shall be regulated by an automatic water flow control system together with an on-site fresh water reservoir system. Should water demands exceed those estimated herein and/or sufficient on-site fresh water storage is not provided, a local water shortage may occur.
16. My signature on this application authorizes the Town of Kingsville to forward this application to its Engineer to evaluate and determine water availability and the impact this development/expansion may have on the existing water supply & distribution system. As owner/operator, I acknowledge that I am responsible for all costs incurred by the Town to evaluate and establish such impact including associated requirements and conditions.
17. My signature also authorizes the Town of Kingsville to proceed with the design, tendering and construction of the "water service connection" to the described facility (where applicable), provided a water service connection is approved by the Town. I also grant authorization to the Town to proceed with the design of the water flow control system and ordering of major components for installation by the owner and acknowledge that I am responsible, as the owner, for all costs incurred by the Town.
18. My signature also authorizes the Town of Kingsville (or its agent) to lay the water service pipe from the street line to the meter chamber and/or interior wall of the building (where applicable), and further authorize the Town to enter upon my lands to complete this installation. I further acknowledge that the Town will carry out all future maintenance and repairs of the water service and all costs will be borne by me as owner. My signature also confirms that the water service pipe from the street line to the meter chamber and/or interior wall of the building will be under the control of the Town and all costs of repair and maintenance will be my responsibility as Owner.

19. My signature also authorizes the Town to proceed with the design of the water flow control system and ordering of major components (where deemed necessary) for installation by the owner and acknowledge that I am responsible, as the owner, for all costs incurred by the Town.
20. My signature also acknowledges pursuant to the provisions of this application that the Town of Kingsville, its employees, servants and agents shall not be responsible or liable for any loss or damage sustained directly or indirectly by reason of quality of or any variation in, interruption of or lack of continuity in the supply of water to be delivered hereunder or the failure to supply water or supply sufficient water to the stated consumer or by reason of construction, administration, operation, repair, replacement, or maintenance of the Kingsville Water Distribution System.

NAME OF APPLICANT: _____ DATE: _____
(Please Print)

SIGNATURE OF APPLICANT: _____

TITLE AND/OR POSITION: _____

OFFICE USE ONLY

1. DATE APPLICATION RECEIVED: _____ Initials: _____

2. STATUS:

3. UNION WATER SUPPLY SYSTEM:

Approved: _____ Rejected: _____ Date: _____ Initials: _____

Comments: _____

4. KINGSVILLE PLANNING DEPARTMENT:

Approved: _____ Rejected: _____ Date: _____ Initials: _____

Comments: _____

5. KINGSVILLE BUILDING DEPARTMENT:

Approved: _____ Rejected: _____ Date: _____ Initials: _____

Comments: _____

6. KINGSVILLE WATER DEPARTMENT:

Approved: _____ Rejected: _____ Date: _____ Initials: _____

Comments: _____

RESERVOIR SYSTEM SIZING EXAMPLE

Note: The numbers provided in this example have been gathered from and are generally supported by the local greenhouse industry. It is the responsibility of the individual greenhouse operator to determine the water requirements of its operation and complete the application accordingly. The Town of Kingsville and its agents accept no responsibility for the estimation or determination of individual water requirements.

TYPE OF CROP: Tomatoes
MAX. PLANT WATER CONSUMPTION: 0.6 Imperial gallon per plant per day (Igpmpd)
PLANT DENSITY: 10,000 plants per acre (ppa)

- Total water inflow into the proposed greenhouse development/expansion and fresh water reservoir system is to be regulated at one common location using an automatic water flow control system at a rate limiting total water delivery volume to the proposed total treatment capacity allocation over a 24-hour period

- **Daily Water Requirement per Acre:**

$$0.6 \text{ Igpmpd} \times 10,000 \text{ ppa} \times 1.0 \text{ acre} = 6,000 \text{ Imp. gallons per acre per day (Igpapd)}$$

- **Regulated Water Supply Rate:**

$$24 \text{ hours} = 1440 \text{ minutes (min)}$$

$$6,000 \text{ Igpapd} / 1440 \text{ min} = 4.16 \text{ Imp. gallons per minute per acre (Igpmpa)}$$

- Water is to be withdrawn from the fresh water reservoir system using on-site irrigation pumps over a typical 10-hour period. To account for peak demands, a 2-hour safety factor is to be added which will reduce the withdrawal time period to 8 hours.

- **Rate of Withdrawal from Fresh Water Reservoir System:**

$$8 \text{ hours} = 480 \text{ minutes, hence } 6,000 \text{ Igpapd} / 480 \text{ min} = 12.5 \text{ Igpmpa}$$

The difference between the rate of filling and rate of withdrawal will establish the working volume of the fresh water reservoir system required per acre of greenhouse. When the rate of withdrawal exceeds the rate of supply, the reservoir storage volume will be depleted.

In this example, all 6,000 Igpapd will be used over an 8-hour period. During this 8-hour period, the rate of withdrawal will exceed the rate of supply by 8.34 Imp. gallons per minute (Igpm).

$$12.5 \text{ Igpm withdrawal rate} - 4.16 \text{ Igpm supply rate} = 8.34 \text{ Igpm depletion rate}$$

Over a 480-minute (8-hour) period, the volume removed from the fresh water reservoir system will be 4,000 Igpa. $8.34 \text{ Igpm} \times 480 \text{ min} \approx 4,000 \text{ Igpa}$

This is the usable fresh water reservoir system volume required for normal operation. Applying a safety factor of 1.25 brings the required volume of on-site fresh water storage to approximately 5,000 Igpa ($4,000 \times 1.25 = 5,000$).

- **Minimum Size of Fresh Water Reservoir System**

Therefore, the minimum working volume of the fresh water reservoir system that must be provided is:

$$\text{Working Volume (Igal)} = \text{Number of Acres} \times 5,000 \text{ Igal per acre (Igpa)}$$

where the working volume is that volume between the high and low water level necessary to operate the pumping equipment. The water distribution system must also be capable of supplying water at a rate of 4.16 Igpmpa including a small component for domestic use. This rate must be controlled at one common location using an automatic water flow control system.