

Appendix B



Stantec

Stantec Consulting Ltd.
100-140 Ouellette Place, Windsor ON N8X 1L9

June 25, 2020
File: 165620102.217

Town of Kingsville
2021 Division Road North
Kingsville, Ontario, N9Y 2Y9

Attention: Mr. Andrew Plancke, CET
Director of Municipal Services

Dear Andrew:

Reference: Boem Berry Farms Inc.
Proposed 37.2 Acre Phase 4 Greenhouse Expansion
672 Road 2 East - Water Availability

We have examined the "Application for Greenhouse Water Supply/Connection" submitted by Mr. George Dekker of Boem Berry Farms Inc. (BBF) with regards to water availability, flow control and onsite storage in support of a proposed Phase 4 greenhouse expansion and report below.

BBF's application seeks the Town of Kingsville's (Town) approval to use municipal water to service a proposed 37.2-acre expansion to an existing 37.2-acre hydroponic strawberry greenhouse operation spread over several land parcels owned by BBF having Municipal No's 542, 556, 600, 672¹ & 672² Road 2 East all situated between Graham and Kratz Sideroad's as shown in the attached Figure-1.

The proposed 37.2-acre expansion represents Phase 4 of an overall 4 phase plan to expand to an ultimate 74.4 acres over several land parcels owned by BBF. As both water delivery and water treatment capacity cannot be reserved for future expansions or developments; consideration of future phases (if contemplated) have not been included in this assessment. Future phases (if contemplated) would require BBF to submit a new application at time of expansion with no assurances that additional water delivery and/or treatment capacity would be available.

Background

In December 2015, BBF applied and received water delivery and treatment approvals from the Town and Union Water Supply System (UWSS) to support their proposed initial 12-acre Phase 1 greenhouse development. As part of the approval, BBF was allocated a total water delivery capacity of 96,000 Imp. gallons per day (lgpd) from the Town and a water treatment capacity allocation of 96,000 lgpd from the UWSS at a regulated maximum inflow rate of 80 Imp. gallons per minute (lgpm) over 20 hours.

In 2017, BBF expanded their existing 12.4-acre greenhouse operation to 24.8 acres with the addition of Phase 2. No additional water treatment nor delivery capacity was requested nor allocated to support the expansion.

In October 2018, BBF applied and was approved for additional water treatment and delivery capacity to support a 12.4-acre Phase 3 greenhouse expansion to their existing 24.8-acre greenhouse operation for a total of 37.2 acres. As part of the approval, BBF was allocated an increased water treatment and water delivery capacity totaling 148,800 Imp. gallons per day (lgpd). This allocation was supplied at a regulated rate of 103 Imp. gallons per minute (lgpm) over 24 hours using an automatic water flow control system (WFCS) and onsite storage system. This capacity allowance was based on a projected maximum day water demand of 4,000 lgal per acre per day (lgpdpd).

The existing greenhouse operation is currently serviced with municipal water from a 150mm dia. water service connection (WSC) off the existing 600mm dia. Union trunk watermain running along Road 2 East. This WSC runs through a meter chamber at the property line and extends for approximately 75 meters prior to entering the existing warehouse building where it is fitted with a WFCS regulating inflow up to a



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maximum of 103 lgpm over 24 hours to limit total water delivery volume to the currently approved delivery allocation of 148,800 lgpd. The WFCS discharges into an above-ground fresh-water storage system comprised of three (3) tanks all located in the existing warehouse building having a total working capacity of approximately 229,000 lgal (76,300 lgal x 3 tanks).

Evaluation

Based on BBF's application and revisions thereto, the total expanded 74.4-acre greenhouse operation is to be used to grow strawberries having an overall projected maximum water consumption rate of up to 0.16 Imp. Gallons per plant per day (lgpppd) at a projected overall plant density of up to 25,000 plants per acre (ppa). This arrangement would result in a projected maximum day water demand of approximately 4,000 lgppd and a projected total maximum day water demand of approximately 297,600 lgpd.

To support the above projected total maximum day water demand would require that the municipal water distribution system be capable of delivering water at a regulated uniform rate of 206 lgpm over a 24-hour period to an on-site fresh-water storage system having a minimum working capacity of approximately 372,000 lgal.

Currently, the facility has an existing onsite fresh-water above-ground storage system with a reported total working capacity of approximately 229,000 lgal. Based on the above minimum storage requirement of 372,000 lgal, an additional 143,000 lgal of fresh-water storage working capacity will be required to support the Phase 4 expansion.

In accordance with municipal policies and bylaws controlling greenhouse operations, expansions and developments, the municipal water supply to the entire greenhouse development/operation shall be regulated using an automatic WFCS together with a properly sized onsite fresh-water storage system.

In addition, greenhouse operations are not to be spread out over multiple land parcels nor are land parcels to have multiple water service connections nor can the municipal water supply be redistributed across property lines by their respective landowners.

In this specific case, BBF will be required to merge and consolidate their five (5) subject lands parcels having Mun. No's 542, 556, 600, 672¹, 672² and corresponding PIN No's 751690087, 751690088, 751690089, 751690090, 751690091 into one (1) land parcel as a condition of the expansion and this review and any further approvals. During the course of this review, BBF has confirmed that the consolidation process for all five land parcels is currently underway.

BBF will also be required to disconnect and abandon the existing WSC's to the four (4) existing residential farmhouses and refeed them (if they are to remain) from the existing potable water supply within the existing warehouse building to avoid having more than one WSC per land parcel.

In addition, BBF will also be required to supply the new Phase 4 bunk house with potable water from the existing potable water supply within the existing warehouse building, all to the technical requirements and satisfaction of the Town.

Note that this assessment purposely ignores the benefit of any supplemental water that is or could be provided by on-site wells, rain-water collection systems and/or recycling initiatives due to reliability of supply issues. A mechanical breakdown, loss of water quality or quantity from onsite wells or bacteriological contamination from recycling leach water would require the municipal water system to be available as backup and capable of supplying the total projected water demand.



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Water Availability

➤ Water Treatment Capacity

BBF currently has a total water treatment allocation of 148,800 lgpd from the Union Water Supply System (UWSS) to support the existing 37.2-acre greenhouse operation. Based on a projected maximum total water demand of 297,600 lgpd to support the expanded greenhouse operation, an additional 148,800 lgpd of treatment capacity will be required from the UWSS.

An application for sufficient water treatment plant capacity to support the proposed expansion has been submitted to the UWSS by the Town and is currently under consideration. Final review and approval are on hold pending the submission and approval of this Engineer's report.

➤ Water Delivery Capacity

The expanded greenhouse operation would continue to draw water from the existing 600mm dia. Union trunk watermain running along Road 2 East.

With the aid of the UWSS hydraulic computer model using existing and future residential population projections, the existing 600mm dia. trunk watermain fronting the existing greenhouse operation along Road 2 East has sufficient unreserved capacity to deliver the increased 206 lgpm peak flow rate to support the expanded 74.4-acre greenhouse operation without having a significant impact on the remainder of the water distribution system.

➤ Water Service Connection

It is our opinion that the existing 150mm dia. WSC will be sufficient to deliver the projected regulated flow rate of 206 lgpm to the expanded 74.4-acre operation without experiencing a significant loss in pressure at the greenhouse structure and adequately service the expansion.

However, should fire protection be required by BBF and/or by the Chief Building Official (CBO), then a new 300mm dia. combination fire-main/wsc twinning will be required in accordance with the recommendations in the section below on "Fire Protection".

To service the expanded operation, the regulated flow rate setting on the existing WFCS will need to be increased from its current 103 lgpm set-point to a new proposed set-point of 206 lgpm; provided the existing WFCS is capable. Should it be found that the existing WFCS is not capable, then BBF will be required to upgrade the WFCS to the technical satisfaction of the Town.

In all cases, it will be BBF's responsibility to ensure that the design of the upgraded WFCS is carried out in coordination with the existing water service piping (or any new combination fire-main/wsc piping) to ensure proper operation can be achieved during both present and future scenarios to prevent a shortage of water to the greenhouse facility.

➤ Fire Protection

Specific requirements for fire protection have not been assessed in this report. Fire protection requirements are under the jurisdiction of Kingsville Building Services and its Chief Building Official (CBO). Consideration of any fire protection schemes using a fire-main concept would require a significantly larger municipal water supply and water service connection than that required to only supply the domestic & irrigational demands of the greenhouse.

With the aid of the UWSS hydraulic computer model, it was observed that the existing 600mm dia. Union trunk watermain along Road 2 East where it fronts the existing greenhouse operation has sufficient hydraulic capacity to provide fire-flows in excess of the minimum 2,000 lgpm recognized fire-flow threshold for greenhouse developments while maintaining the required min. 20 psi residual



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pressure benchmark in the remainder of the water distribution system during maximum day flow conditions.

To convey the min. 2,000 lpm fire-flow threshold onto private property would require that the existing 150mm dia. WSC be upgraded to a combination 300mm dia. fire-main/wsc fitted with multiple hydrants placed at strategic locations within the property.

Hence, the above water distribution system performance would need to be acknowledged when considering fire protection strategies and alternatives should fire protection be a requirement of the expansion and/or the CBO currently or in the future.

Recommendations

Based on the above considerations, it is our recommendation that,

“BBF be granted access to the municipal water distribution system on the existing 600mm dia. Union trunk watermain along Road 2 East to service the proposed 37.2-acre Phase 4 expansion to the existing 37.2-acre hydroponic greenhouse operation at 672 Road 2 East for a total acreage of 74.4-acres; and that granting of additional water treatment and water delivery capacity be contingent on all the following conditions”:

- 1. That BBF receive written approval from the UWSS for an additional 148,800 lpgd of water treatment capacity to supplement their current treatment allocation of 148,800 lpgd for a total water treatment capacity allocation of 297,600 lpgd, all to the satisfaction of the Town.*
- 2. That BBF receive written approval from the Town for an additional 148,800 lpgd of water delivery capacity to supplement their existing allocation of 148,800 lpgd for a total delivery capacity allocation of 297,600 lpgd, all to the satisfaction of the Town.*
- 3. That BBF execute a revised indemnity agreement with the Town with respect to “understanding of water availability” and “limits of liability” for the expanded 74.4-acre greenhouse operation.*
- 4. That BBF undertake to rework and modify the existing WFCS in the existing greenhouse operation to regulate total water inflow to a revised flow rate setpoint not exceeding 206 lpm to limit total water delivery volume to a revised total water treatment capacity allocation of 297,600 lpgd over a 24-hour period; all to the satisfaction and technical requirements of the Town.*
- 5. That BBF be responsible for ensuring that the design and construction of an upgraded WFCS to accommodate the new flow rate set-point of 206 lpm is carried out in coordination with the existing water service piping to ensure proper operation as applicable, all to the satisfaction and technical requirements of the Town.*
- 6. That BBF supplement their existing onsite fresh-water storage system having a reported total working capacity of approximately 229,000 lgal with an additional 143,000 lgal of fresh-water storage capacity for a total onsite fresh-water storage system having a minimum total working capacity of 372,000 lgal or greater to support the expanded facility; all to the satisfaction and technical requirements of the Town.*
- 7. That BBF register to have the five subject land parcels with Mun. No's 542, 556, 600, 672¹, 672² and corresponding PIN No's 751690087, 751690088, 751690089, 751690090, 751690091 merged and consolidated into one land parcel all to the satisfaction of the Town.*
- 8. That the existing four water service connections to the residential farmhouses at Mun. No's 542, 556, 600, 672 and 684 be disconnected, meter removed and line capped within their existing meter chambers at the property line after the land parcels are merged and consolidated and after the structures are decommissioned and demolished to make way for the new greenhouse expansion.*



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9. *That the proposed phase 4 bunk house be fed from the existing potable water supply within the existing warehouse building, all to the technical requirements and satisfaction of the Town.*
10. *That the Town and its Agents retain the right to enter onto private property to ensure that all the above conditions have been complied with.*
11. *Should BBF be granted access to the municipal water system to support the expansion irrespective of size, while abiding by all the conditions imposed above; then BBF shall be:*
 - a. *Given a time limit of 6 months to obtain a building permit from the Town for the proposed expansion corresponding to the size proposed herein from the date of municipal council and/or administration approval or the approval for water treatment capacity from the UWSS and water delivery capacity from the Town shall lapse;*
 - b. *Given a time limit of 12 months to implement the greenhouse conditions stated herein and use the availed water treatment & water delivery capacity from the date of issuance of a municipal building permit (subject to condition 1 above) or the approval for treatment capacity from the UWSS and delivery capacity from the Town shall lapse;*
 - c. *Advised that approval is issued to the applicant, landowner and property designated in the application and this report; and shall not be transferable to another property or to another applicant and/or landowner without the express written permission of the Town and the UWSS.*

Please contact me directly should you have any questions or concerns or require additional information.

Sincerely yours,

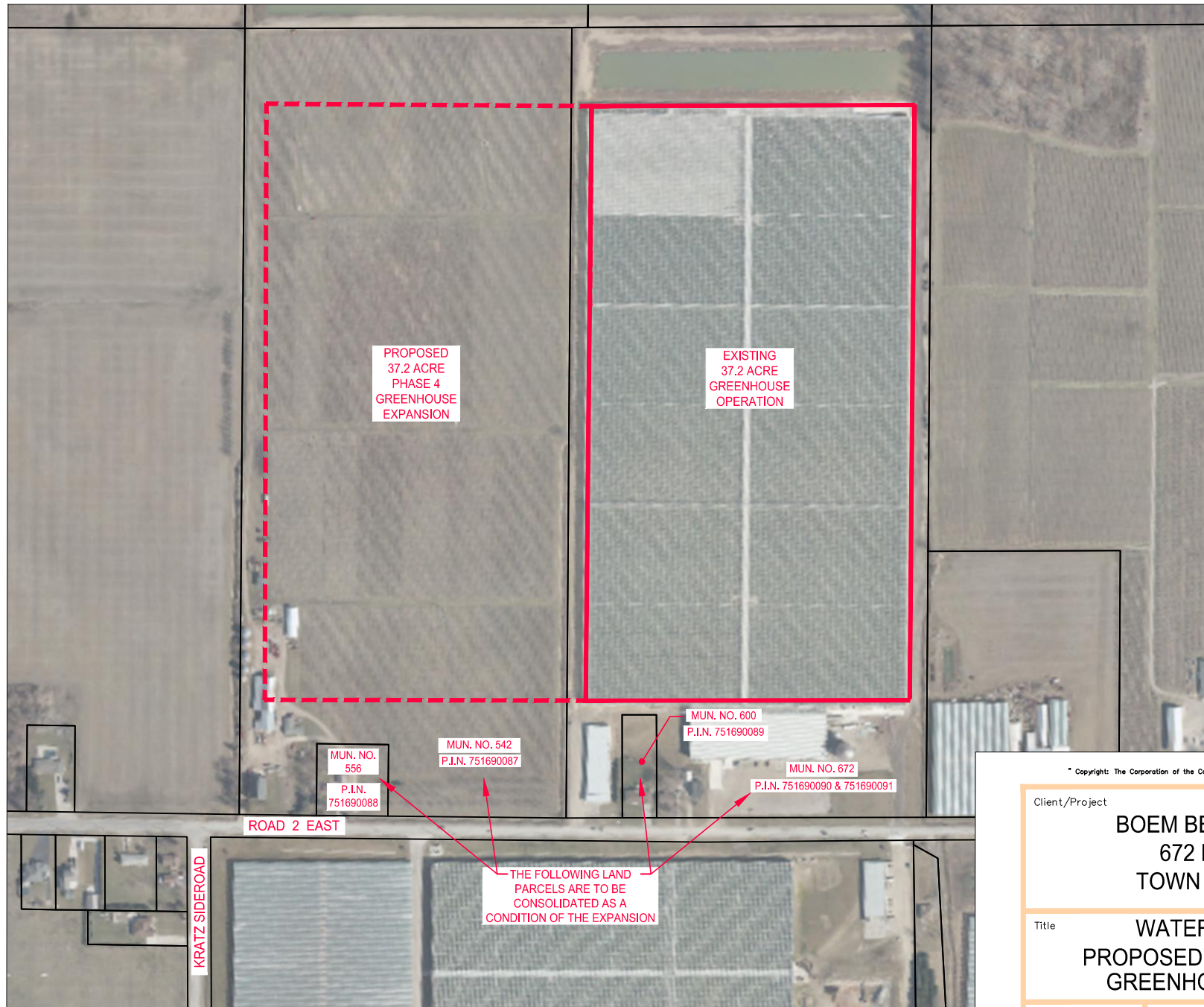
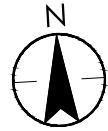
STANTEC CONSULTING LTD.

Tony Berardi, P.Eng.

Principal & Sector Lead, Water
Phone: 519-966-2250 x255
Fax: 519-966-5523
tony.berardi@stantec.com

Attachment: Figure 1

- c. Peter Valore - CBO & Manager of Building & Bylaw Services - Kingsville
Robert Brown - Manager of Planning Services – Kingsville
Katrina Brcic - Town Planner - Kingsville
Rodney Bouchard - General Manager of Union Water Supply System
Heide Mikkelsen, P.Eng. - Principal - NJ Peralta Engineering Ltd.
William LeBel, P.Eng. - Project Engineer - NJ Peralta Engineering Ltd.
George Dekker - Project Manager – Boem Berry Farms Inc..



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Client/Project

**BOEM BERRY FARMS INC.
672 ROAD 2 EAST
TOWN OF KINGSVILLE**

Title

**WATER AVAILABILITY
PROPOSED 37.2 ACRE PHASE 4
GREENHOUSE EXPANSION**

Scale

1:5,000

Project

165620102-217

FIGURE-1