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Date: June 9th, 2025
L&M Project: 1787-04

City of Prince George
1100 Patricia Boulevard
Prince George, BC, V2L 3V9

Attention: Bryce Deveau
Planner I

Reference: CP100218 & RZ100841 – 4330 Giscome Road
Supplemental Servicing Brief Letter

Dear Bryce,

In 2014 Radloff Engineering prepared a Civil Site Servicing Brief for the property located at 4330 Giscome Road. At that time, the property was undergoing a rezoning process to zone the property to its current zone of Z16: Blackburn Commercial. The 2014 Servicing Brief is enclosed with this letter.

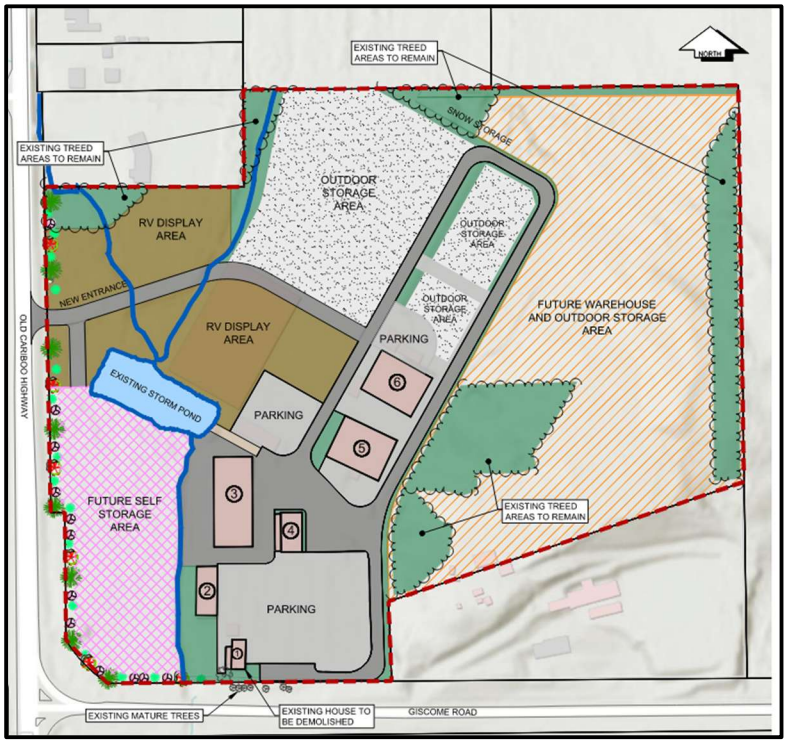

Exhibit 1: Conceptual Site Plan

On behalf of McWalter Consulting Ltd., L&M Engineering is pleased to submit this Supplemental

Servicing Letter to the 2014 Radloff Report in support of the new land use change applications RZ100841 and CP100218 for the subject property located at 4330 Giscome Road. The land use change applications propose to rezone the subject property from Z16: Blackburn Commercial to M2: General Industrial which permits Vehicle Sale, Major and Minor, Vehicle Repair, Major; and Vehicle Rental, Major and Minor. The subject property consists of 33.58 acres of land and was previously operated as a major greenhouse facility. The property is divided by a major drainage channel which is located within a protected legal right-of-way.

The primary motivation for the current land use change applications (RZ100841 &CP100218) is to facilitate the relocation of SMP RV Sales from its existing site on First Avenue (a City-owned property) to 4330 Giscome Road. In addition, the O'Brien Group has recently made an internal decision to consolidate all of its operations at the Giscome Road location. These operations include O'Brien Training, Bid Right Contracting, and Taylor Professional Driving.

The relocation of these businesses will occupy the majority of the site, requiring significant space for RV display and storage of logging equipment associated with Bid Right Contracting. As a result, the available area for future large-scale buildings on the property will be substantially reduced.

While the O'Brien Group has expressed interest in constructing additional warehousing in the southwest corner of the property, the form and scale of this potential development remain undefined. Possibilities range from a single large structure (similar to U-Haul on Highway 16 West) to a cluster of low-rise mini-storage buildings, such as those developed by Make Space along Highway 97.

1.0 SERVICING

1.1 Water Servicing

The original servicing report prepared by Radloff assessed the site based on full buildout under the Z16: Blackburn Commercial zoning. The analysis concluded that the existing 25mm and 50mm diameter water services would not be sufficient to meet the projected domestic water demand. As a result, the report recommended installing a new 100mm diameter water service from the existing 150mm water main on Giscome Road.

Since the 2014 rezoning, no additional buildings have been constructed on the property, and the site continues to operate adequately using the existing 25mm and 50mm services. However, should any new structures be developed, Radloff's original recommendation to install a new water service should be followed.

Additionally, the City of Prince George's water modelling indicated that the site could achieve an available fire flow of 258 L/s, which is greater than the City's fire flow requirement of 250 L/s.

1.2 Sanitary Servicing

The 2014 report concluded that the existing 100mm diameter sanitary service would be insufficient to support full site buildout. It recommended upgrading the service to a 200mm diameter line. This upgrade should be implemented if any new structures are added to the property.

1.3 Storm Servicing

The 2014 report recommended installing a 675mm diameter storm pipe between the on-site pond and the ditch along Giscome Road. This recommendation remains valid and should be implemented. Additionally, if future development occurs, the report advises that further stormwater modeling be conducted to ensure post-development flows are limited to pre-development rates.

2.0 SUMMARY

In summary, all recommendations outlined in Radloff Engineering's 2014 Civil Site Servicing Brief remain applicable and should be implemented at the building permit stage for any future structures added to the property.

Sincerely,
L&M ENGINEERING LIMITED
Prepared by:

PERMIT TO PRACTICE
NO 1002375

Tanner Fjellstrom, P. Eng.
Associate

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Radloff

Helping build a better tomorrow.

POLLYCO

Civil Site Servicing Brief

July 2014

Prepared For:
Pollyco Group
8508 206 Street
Langley, B.C.
V2Y 2B6

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. P. RADLOFF
12838
July 17, 2014

Radloff File #815-001-10-R2

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Table of Contents

1.0 INTRODUCTION

The proposed development lands encompass an area of 13.97 hectares (ha) and are located on the north east corner of the Giscome Road and Old Cariboo Highway intersection in the Blackburn area of the City of Prince George. The lands are bounded on the north by rural residential and undeveloped land, on the south by Giscome Road, on the East by rural residential and undeveloped land and on the west by the Old Cariboo Highway and Prince George Airport Authority lands.

Pollyco Group requested R. Radloff & Associates Inc. (RRAI) to prepare civil servicing designs for the proposed development. The assignment included the following:

- Review relevant materials to ensure designs meet the requirements of the City of Prince George Subdivision and Development Servicing Bylaw No. 7652.
- Water, sanitary sewer, and storm sewer service analysis & design.
- Model the existing systems and confirm existing service sizes meet the developments' needs.
- Recommend specific system improvements if necessary.

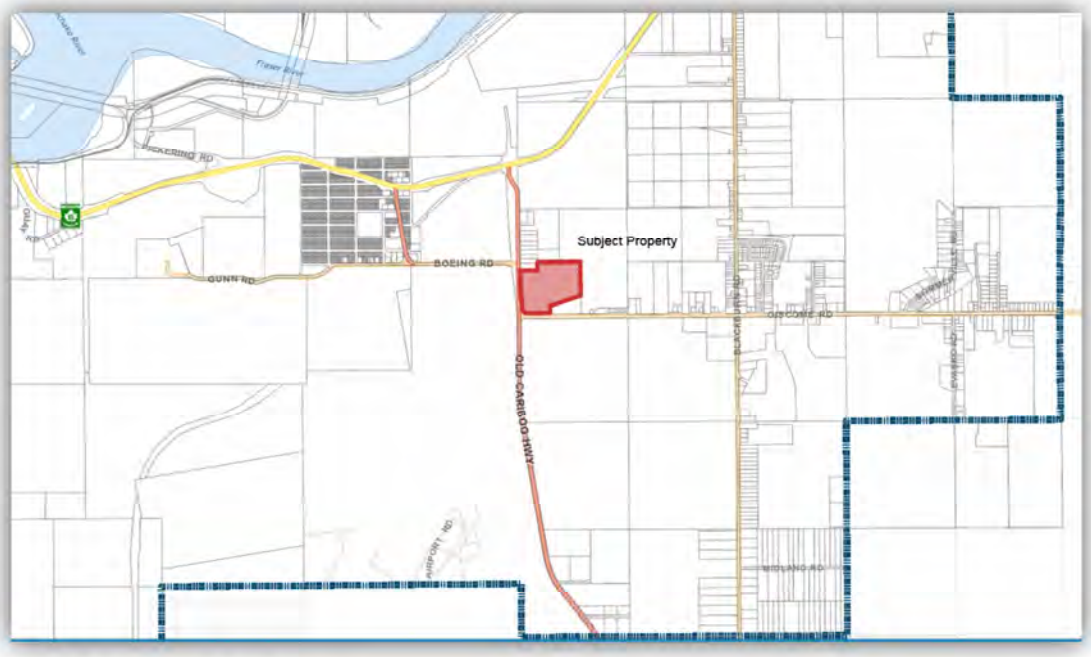

Figure 1: Location of Development

The property was previously developed as a greenhouse operation. Unfortunately, due to market forces and catastrophic snow damage to the greenhouses themselves the property has languished in a dilapidated condition for many years. At this time the owner desires to re-zone the property in order to support some commercial services and limited retail operations on the

site while, at the same time, providing a suitable buffer between the developed area and the existing homes to the north-west and south-east.

2.0 ZONING AND LAND USE

The property owner has made attempts to rejuvenate this property and encourage investment and redevelopment under the current zoning, unfortunately with little success. The home on the property is currently occupied and there is a licensed business providing driving instruction. (Fiddler Industry Driving Solutions).

We are requesting that Council re-designate and rezone the property to allow for a limited range of commercial services on a portion of the property. A unique zone (Z16) was prepared in consultation with City Planning staff which would enable some commercial services and retail along some of the road frontages and previously developed portions of the site (shown in Figure 2 : red and blue), while maintaining a suitable buffer between these future uses and existing homes to the north-west and south-east (shown in Figure 2 : green). The proposed commercial portions of the site amount to 7.87 ha, while the buffers cover 6.11 ha (44% of the site area).

Figure 2: Proposed Land Use

Note:	**Green represents Buffer :**	**Area = 6.11 hectares**
	Blue represents Commercial and Retail Uses :	**Area = 3.37 hectares**
	Red represents Ancillary Agricultural Uses:	**Area = 4.50 hectares**

The blue area of the site would include uses serving the travelling public including recreation, retail & services, while the red area would include ancillary agricultural uses. We believe that this range of uses is reflective of the important opportunity this site presents, as well as being sensitive to the surrounding residential and agricultural uses.

This property is also well situated, with excellent access to the Blackburn Neighbourhood to the east, the Prince George Airport to the south, and Downtown Prince George to the west. Interestingly, the this property is only 6.5 km from Downtown via Old Cariboo Highway and HWY 16 E, which is approximately the same distance that College Heights is to the Downtown (with much less traffic congestion), and it is significantly closer to the Downtown than the Hart which is approximately 10 km away.

3.0 TRAFFIC STUDY

The road and traffic impacts and issues associated with the proposed development have been addressed in a separate Traffic Impact Study prepared by McElhanney Consulting Services Ltd. The report has been reviewed by both the City of Prince George and the Ministry of Transportation & Infrastructure. The report will be provided separately.

4.0 SITE SERVICING

The parcel is situated in the Servicing Exempt Area shown on Schedule B of the Prince George Subdivision and Development Servicing Bylaw No. 7652, 2004. Therefore storm sewers, curb and gutter; underground power, communications and street lighting are not required.

The site is predominantly flat but there is a large ridge on the east side of the lot approximately 23m higher than the rest of the site. Both proposed commercial lots are primarily comprised of buildings and grasslands. A ditch runs through the property from north to south capturing the runnoff from the site and directing it toward Giscome Road. The site is currently serviced from Giscome Road with City water and sanitary mains. Figure 3 shows the existing municipal infrastructure in the area. A larger more detailed drawing can be found in Appendix C - Site Servicing Drawings.

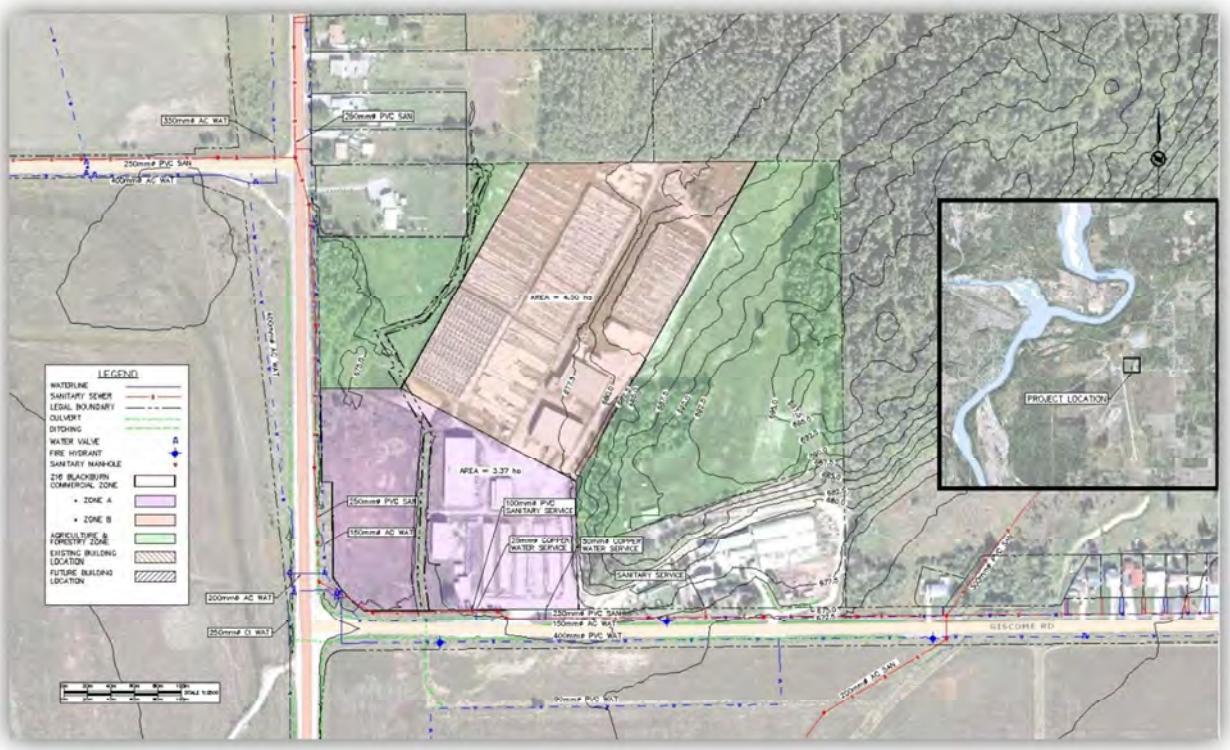

Figure 3: Existing Municipal Infrastructure.

5.0 WATERMAIN SERVICING

5.1 Water System

The proposed development is located in the City of Prince George Blackburn Pressure Zone. This zone is serviced by City Reservoir PW 823 which is located on a height of land adjacent to the Youth Correction Centre approximately 2.5 kilometers north west of the site. This reservoir has a storage capacity of 3.148 million litres (692,463 imperial gallons) and a top water level of 735 metres (geodetic). The static water pressure at the ground level of the service connection to the development (676m) is 579 kilopascals (83.6 pounds per square inch).

The site is serviced by a 150mm diameter (dia.) Asbestos Concrete (AC) watermain located in the Giscome Road right of way. It is paralleled by a 400mm dia. Polyvinyl Chloride (PVC) watermain located on the south side of the road. Two existing copper water services, 25mm and 50mm dia., currently provide water to the lot from the 150mm dia. main.

5.2 Design Criteria

Design criteria are based on the City of Prince George Design Guidelines. The maximum water demand for any new development is a combination of Maximum Day Demand (MDD) for domestic service plus the fire flow required to protect the structures.

In most cases, for a commercial development, the MDD is only a small percentage of the required fire flow demand.

5.3 Domestic Demand

An Equivalent Population is used to calculate the Average Day Water Demand (ADD) for a development, and is based on land use designation. The estimated demand for this development, based on the CPG Design Guidelines, as well as the criteria used to calculate this value, are listed below:

Average Day Water Demand (ADD) = 475 litres per capita per day (averaged over 365 days)

From Table 2.9.1 - Design Populations by Land Use Designations:

Local Commercial Land Use has a population equivalent factor of 60 People per Hectare(PPha)
Light Industrial Land Use has a population equivalent factor of 90 People per Hectare(PPha)

These density factors give an equivalent population of 607 people for the proposed development. The ADD is then determined by multiplying 475 litres by the equivalent population of 607 which results in 3.34 litres per second (lps).

Applying Table 3.1.1 - Peaking Factors, from the CPG Design Guidelines, for MDD for the Blackburn Pressure Zone (ADD x 2.5), to ADD results in a MDD of 8.35 lps or 501 litres per minute or 721,000 litres per day.

To provide the MDD of 8.35 lps to the site a new 100mm dia. service will need to be installed from the 150mm dia. AC main along Giscome Road and the existing 25mm and 50mm services will be removed.

The City water model results, analyzing this Domestic Demand plus Fire Flow, can be found in Appendix B.

5.4 Fire Flows

The CPG Design Guidelines state:

> Fire flow requirements shall be calculated in accordance with the "Water Supply for Public Fire Protection - A Guide to Recommended Practice", published by the Fire Underwriters Survey (F.U.S).
>
> For a site development where specifics of the proposed building structure are known, the Developer, his Architects and/or his Design Engineer shall be responsible for ensuring the availability within the City's distribution system, of the necessary fire protection for the proposed development as determined using Fire Underwriters Survey – "Water Supply for Public Fire Protection, a Guide to Recommended Practice, (1991) Part II".

Note that the *Water Supply for Public Fire Protection, a Guide to Recommended Practice* is an industry standard for the determination of fire flow requirements for building structures and is used Canada wide.

Since the specifics of the proposed building structures are not known at this time the minimum fire protection requirement by designated land uses will be applied.

When building specifics are determined the F.U.S fire flow results should be checked against this minimum number to ensure the capacity of system is adequate.

The CPG Design Guidelines Table 3.2.2 - Fire Flow Requirements, prescribes a fire flow of 250 lps for industrial land use. Adding the Maximum Daily Demand calculated above to the Fire Flow Demand results in a value of 8.35 lps plus 250 lps = 258.35 litres per second.

The City of Prince George has been requested to analyze the existing water system to confirm that adequate flows to the development are available.

Appendix A – City of Prince George Water Modeling Analysis provides information regarding the capability of the existing water system to deliver fire flow plus MDD flow to the site.

As can be seen, the existing hydrant located adjacent to the site, on the south side of Giscome Road (serviced from the existing 400mm dia. watermain), can deliver 305 lps @ 136 kPa (20psi). Therefore the existing water system can provide the required Maximum Day Demand plus Fire Flow to the site.

6.0 SANITARY SEWER SERVICING

The existing building is serviced by a 100mm dia. Polyvinyl Chloride (PVC) sanitary service that connects to the 250mm PVC main which runs along Giscome Road.

The projected sanitary flow for this development, based on the CPG Design Guidelines, as well as the criteria used to calculate this value, are listed below:

Domestic average daily flow = 380 litres per capita per day

From Table 2.9.1 "Design Populations by Land Use Designations",

Local Commercial Land Use has a population factor of 60 People per Hectare(PPha)
Light Industrial Land Use has a population factor of 90 People per Hectare(PPha)

Groundwater Infiltration and System Inflow Component = 11,200 litres per hectare per day

Peaking Factor (Harmon Equation) = 1+14/(4+√P)
Where P = Population in Thousands

Flow Rate (Manning Equation) = $Q(m^3/sec) = (AR^{(2/3)}S^{(1/2)})/n$

Using these factors, the projected flow for the development is 11.51 lps. The capacity of the existing 100mm service pipe is 7.31 lps. Therefore a new larger sanitary service is required.

The new 200mm dia. PVC sanitary service will be installed from the 250mm PVC main to the property line. The new service will have a capacity of 46.38 lps. See Appendix B for Computation Sheet.

The City of Prince George's PG Map Website shows that the existing 250mm sanitary main along Giscome Road has 21 lps of excess capacity; therefore there is adequate excess capacity in the sanitary mains downstream of the site to PW115 lift station located on Mackus Road.

7.0 STORM SEWER SERVICING

The original 13.97 ha lot is comprised of five catchment areas (Catchments 1-5), but receives drainage from three additional catchment areas that are made up of several nearby lots (Catchments 6, 7 & 8). These catchment areas drain into two different ditch networks. Catchments 1,2,4,5 & 7 drain into a ditch network that runs along the east side of Old Cariboo Highway and the north side of Giscome Road then crosses Giscome to enter a ditch that travels through 2288 Old Cariboo Highway. Catchments 3 & 6 drain into a ditch that runs eastward along the north side of Giscome Road. Catchment 8 drains into the ditch along the north side of

Boeing Road and along the west side of Old Cariboo Highway and crosses Old Cariboo Road and travels south through ditches into Catchment 1.

Figure 4 shows the site with the original drainage areas.

Figure 4: Existing Catchments.

A large majority of the stormwater from the catchments enters a pond in the southwest corner of Catchment 1. The proposed plan is to pipe the stormwater from the southeastern edge of the pond along the existing ditch running through the property and discharge it into the ditch along Giscome Road where it will enter a culvert under Giscome Road and travel into 2288 Old Cariboo Road.

Some assumptions made during the design of this piping were:

- The pond is an irrigation pond, not a stormwater detention pond, and therefore should not be used for attenuation of storm flows.
- The design would be under wet weather conditions, therefore the irrigation pond would full and flows in will equal flows out.
- The culvert underneath Giscome Road has a grade of 1.0% or higher.
- All elevations and grades have been taken from the City of PG Lidar Contours.
- Post development stormwater management will be designed in the subdivision stage to City of Prince George *Design Guidelines*.

The goal of this design is to provide assurance that the existing flows can be handled by piping within the existing City right-of-way from the irrigation pond to the Giscome Road ditch. This area can be used for parking and storage upon development. Another option would be to redirect the stormwater to the ditch along Old Cariboo Highway. This analysis is only preliminary and the proposed culvert/storm sewer is only a suggested solution for consideration at the time of a future subdivision or building permit. Figure 5 shows the property with the existing drainage right-of-way.

Figure 5: Property with Drainage Right-of-Way.

As seen in Figure 5, the right-of-way does not encompass the existing irrigation pond. This affirms the assumption that the irrigation pond was not used for attenuation of storm flows.

7.1 Design Parameters

Hydraulic models of the pre and post development conditions for the site were created using Autodesk Storm and Sanitary Analysis 2014 (SSA 2014). The program is capable of generating flow hydrographs from various sub catchments for given rainfall hyetographs. The model permits evaluation of sub catchment flows impact on pipe networks allowing the user to assess the necessary hydraulic capacity and size of each pipe.

The City of Prince George has the following levels of service for stormwater management:

- Minor systems will be designed to satisfy the 10 year design storm.
- Major systems will be designed to satisfy the 100 year design storm.

The City of Prince George's definition of a minor system includes storm sewer pipes, detention ponds, and open drainage ditches. The proposed development site meets this description of a minor system. Therefore, this design was based on the 10 year design storm.

Analysis of the overland flow due to a 100 year design storm will be completed at the subdivision stage of the development in accordance with the City of Prince George *Design Guidelines*.

Post development analysis at this time based on 100% site coverage would be overly conservative due to the uncertainty in proposed development site coverage. The analysis would have to be revisited upon subdivision stage to refine the analysis, therefore adding further costs to the developer.

7.1.1 Precipitation Data

City of Prince George (CPG) Design Guidelines precipitation data for 2, 5, 10, 25, 50, and 100 year design rainfall hyetographs (1 hour to 24 hour) was generated based on the Chicago distribution. The proposed development was evaluated for the 10 year event with durations from 1 - 24 hours. Based on this analysis the 24 hour duration design storm was determined to govern peak flow rates and total runoff volume for each catchment.

7.1.2 Hydrological Parameters and Catchment Areas

The Curve Number Method was developed by the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) formerly known as the Soil Conservation Service (SCS). The SCS runoff Curve Number (CN) is a parameter used in determining the approximate amount of runoff from an event in a given area. CN has a range from 30-100 where lower numbers indicate low runoff potential and more permeable soils. The CN values for the model were determined from Table 5.3.5.2.1 in the CPG Design Guidelines and compared to the reference "National Engineering Handbook Part 630 Hydrology", by the NRCS.

A summary of the size, CN value, and slope for each catchment is shown in Table 1.

Table 1 : Summary of Catchments

Description	Size (ha)	Existing CN Value	Average Existing Slope (%)
Catchment No.1	7.70	89	1.34
Catchment No.2	1.27	82	3.10
Catchment No.3	0.81	82	14.97
Catchment No.4	2.95	78	6.81
Catchment No.5	1.18	89	0.50
Catchment No.6	0.08	79	11.13
Catchment No.7	26.97	79	1.77
Catchment No.8	27.38	84	0.50
Total Catchment	**68.34**		

The CN values in Table 1 for each catchment area were based on the following:

- Catchment 1 – 50% buildings and gravel roadways, 50% grassy area,
- Catchment 2- 50% forested, 50% grassed area,
- Catchment 3- 90% grassed area, 10% forested,
- Catchment 4 – 66% buildings and gravel roadways, 33% forested/grassed area,
- Catchment 5 – 80% grassed area,20% forested,
- Catchment 6 - forested,
- Catchment 7 - 80% forested, 20% grassed area,
- Catchment 8 – grassed area.

7.2 Model Results

The model created using SSA 2014 generated the information to analyze the existing flows that would enter the ditch networks already in place as well as the necessary pipe sizes.

The peak flows, pipe size, and necessary grade for the proposed pipe network leaving the pond are shown in Table 2.

Table 2 : Pipe 1 Summary of Results

Event (yrs)	Existing Flow (m^3/s)	Pipe Size Required (mm)	Grade Required (%)
10	0.415	675	0.25

Because Catchments 4 & 5 do not enter the proposed pipe network, but rather enter at the culvert, the culvert will experience a higher flow than the pipe network. The peak flow within the culvert is calculated to be $0.435m^3/s$. The 600mm culvert has a capacity of $0.530m^3/s$, therefore it does not need to be replaced to handle the peak flow.

See Appendix C for the plan and profile of the proposed pipe network.

Analysis of the post development stormwater flows and necessary detention has not been completed as it will depend on the future development. This will be designed at the subdivision stage in accordance with the City of Prince George *Design Guidelines*. Therefore, the post development flows will be limited to the pre development flows. This results in no additional flow, so the proposed pipe size will be sufficient for post development flows as well.

8.0 SUMMARY

The city watermains adjacent to the property are capable of providing the required Max Day Demand plus Fire Flow to the hydrant servicing the site. The existing 25mm and 50mm water services to the site are not capable of providing the domestic demand, calculated based on land use, outlined in the CPG Design Guidelines. Therefore, to provided domestic demand a new 100mm service will be required.

The sanitary sewer mains on Giscome Road have adequate excess capacity for the proposed development. The existing 100mm sanitary service will need to be replaced with a new 200mm service to accommodate the proposed development.

A 675mm SDR35 pipe network at 0.25% from the pond to the Giscome Road ditch and the existing culvert under Giscome Road will handle the existing flows.

Post development stormwater management will be designed at the subdivision stage in accordance with the City of Prince George *Design Guidelines* to mitigate design costs to the developer.

This report has been prepared in accordance with the City of Prince George Subdivisions and Development Servicing Bylaw, the City of Prince George *Design Guidelines* and good engineering practices.

Prepared by:

David Franzmann, Jr. Technologist
R. Radloff & Associates Inc.

Reviewed by:

Bob Radloff, P.Eng
Principal, R. Radloff & Associates Inc.

Appendix A

City of Prince George Water Modeling Analysis

City of Prince George
UTILITIES DIVISION
505 – 4th Avenue, Prince George, BC, V2L 3H2
Telephone: (250) 561-7550 Fax: (250) 561-7519

Memo

To: Barry Woods
R. Radloff & Associates Inc.
Phone: 250-453-9690
Email: bwoods@radloffeng.com

Project: 2013-008

From: Kim Hattle, Engineering Assistant
Phone: 250-561-7563 Email: khattle@city.pg.bc.ca

Date: May 16, 2013

Subject: **Water Modeling – Project 2013-008 4330 Giscome Rd**
Re: 815-001-10
Total number of pages (including this sheet): 7 - Original **WILL NOT** follow by mail.

Barry Woods;

In response to your request for water modeling at 4330 Giscome Rd we ran the City's Core Water Model under Average Day, Maximum Day and Peak Hour conditions with the additional proposed demands of 3.3 lps, 8.25 lps and 14.03 lps respectively.

The results at computer Node 22227(location shown on the attached location map) from the 400mm water main are shown on the attached maps and flow curve.

Available fire flow during Max Day Demands at computer Node 22227 is approximately 305 lps @ 20psi. Note that the flows and pressures are at ground level. Static pressure at Node 22227 is 86.5 psi or 596 KPa.

Please call if you have any questions or require additional information.

Best regards;
Kim Hattle, AScT

CITY OF PRINCE GEORGE

Project 2013-008 - 4330 Giscome Rd
Node Location Map

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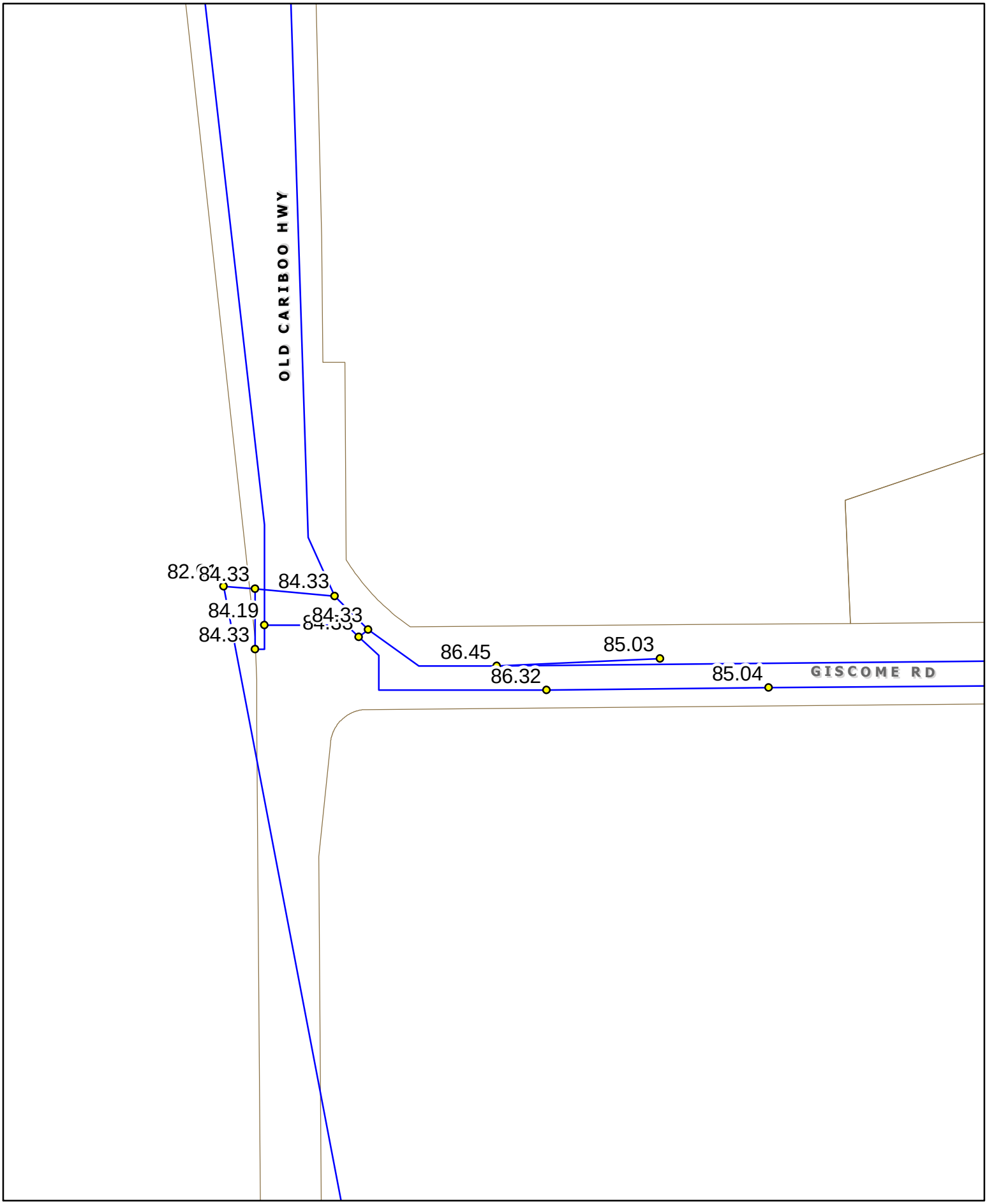

CITY OF PRINCE GEORGE

Project 2013-008 - 4330 Giscome Rd
Pressure in psi during Average Day Demand

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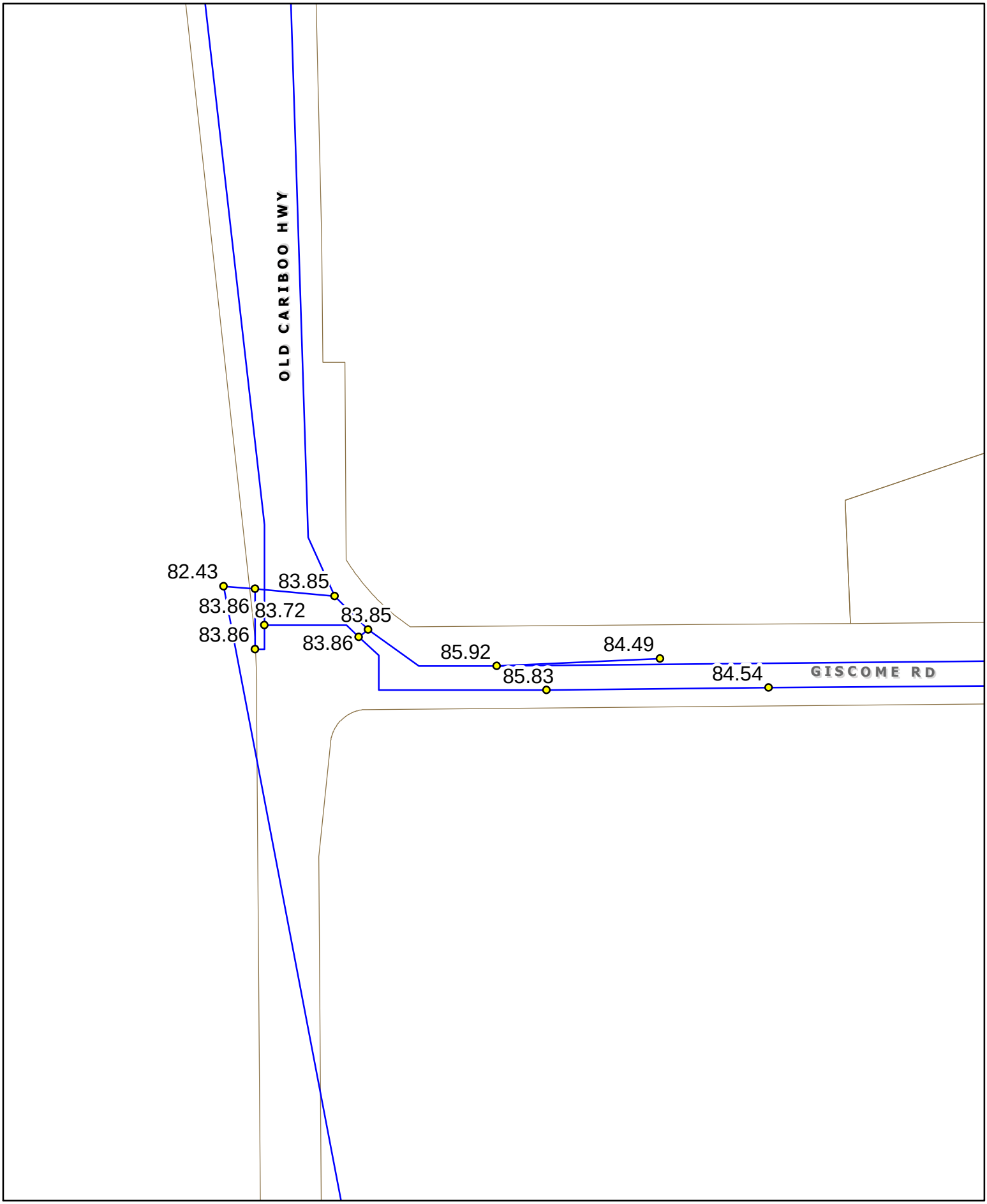

CITY OF PRINCE GEORGE

Project 2013-008 - 4330 Giscome Rd
Pressure in psi during Max Day Demand

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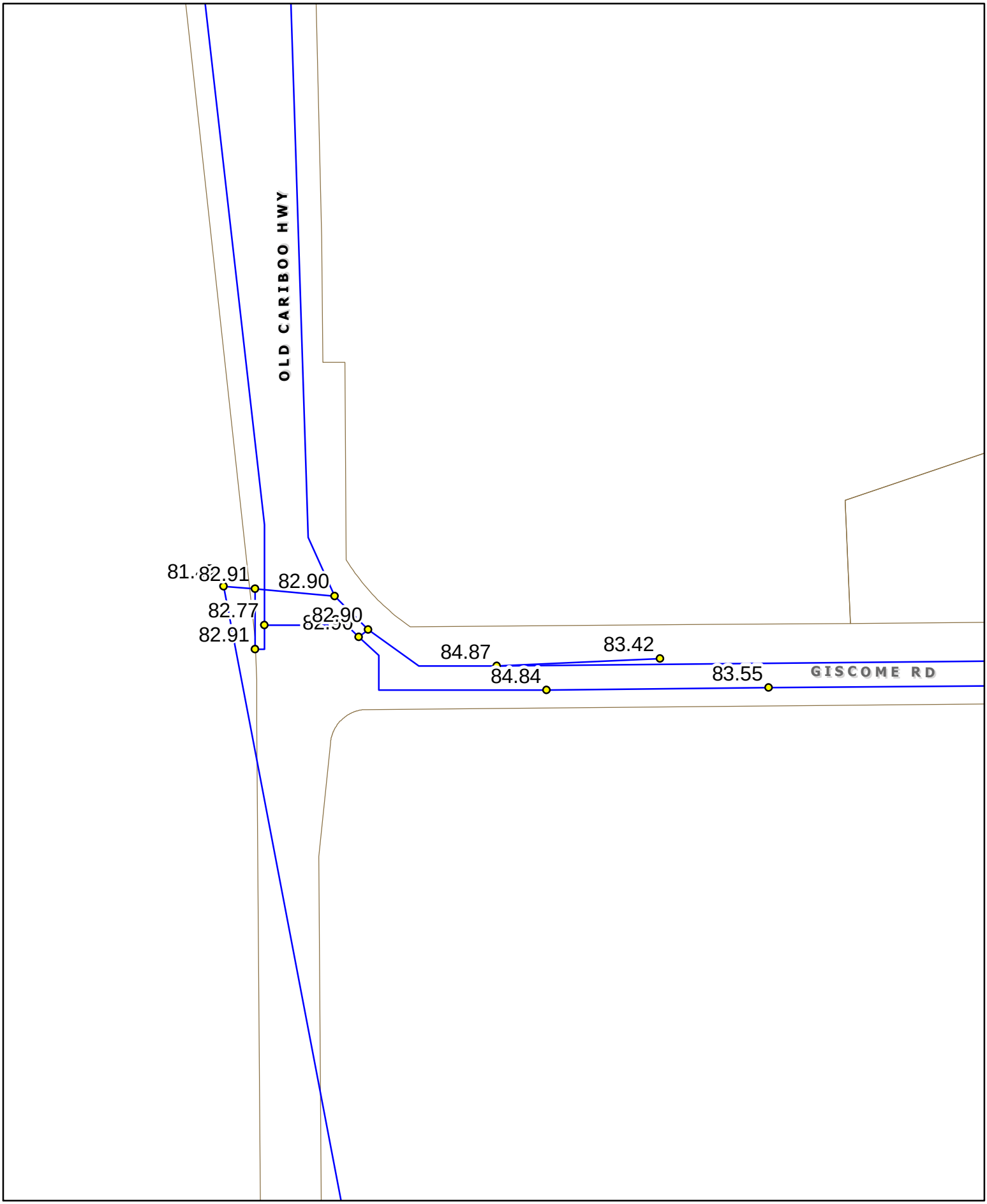

CITY OF PRINCE GEORGE

Project 2013-008 - 4330 Giscome Rd
Pressure in psi during Peak Hour Demand

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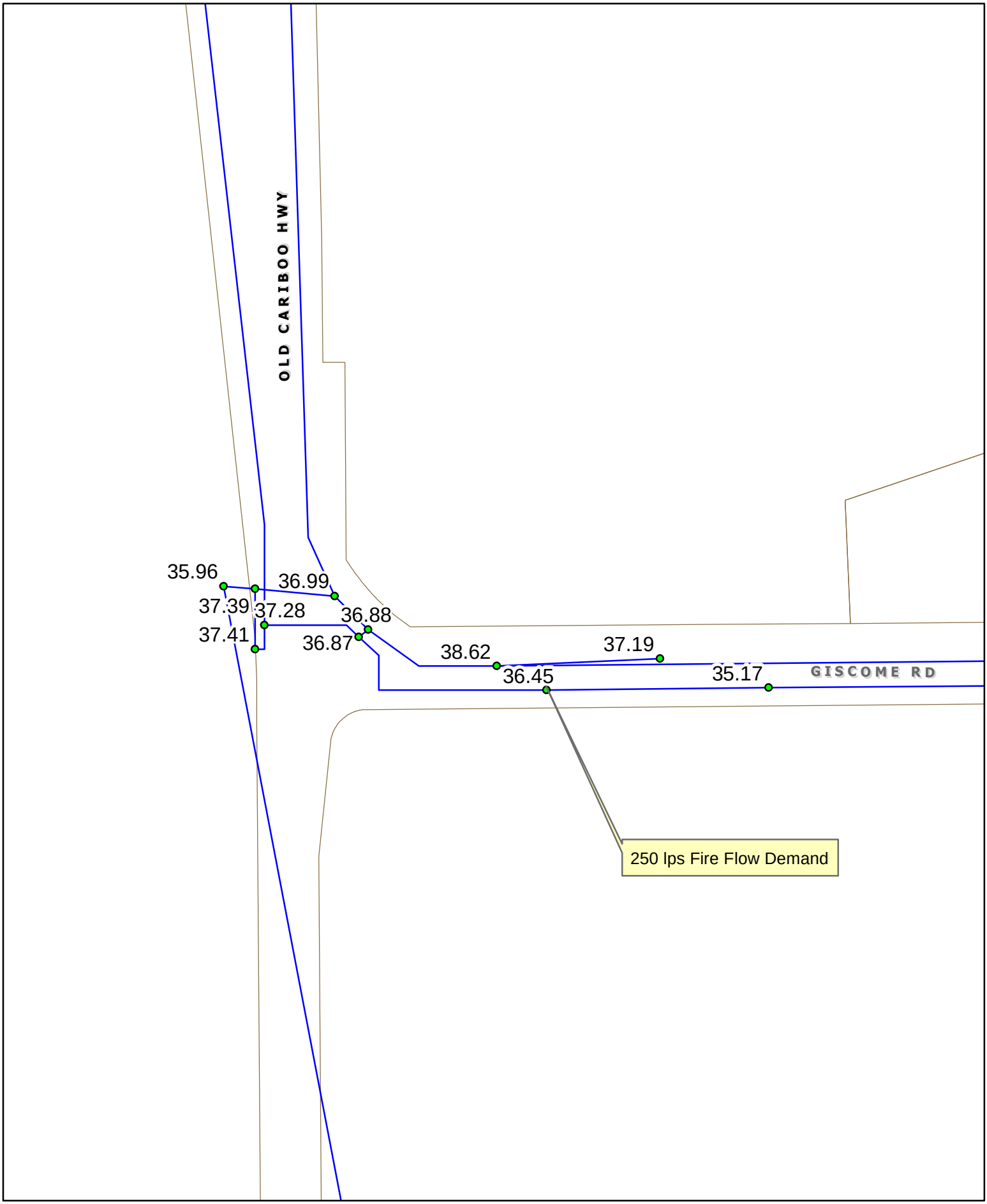

CITY OF PRINCE GEORGE

Project 2013-008 - 4330 Giscome Rd
Fire Demand During Max Day Demand

1:2,000

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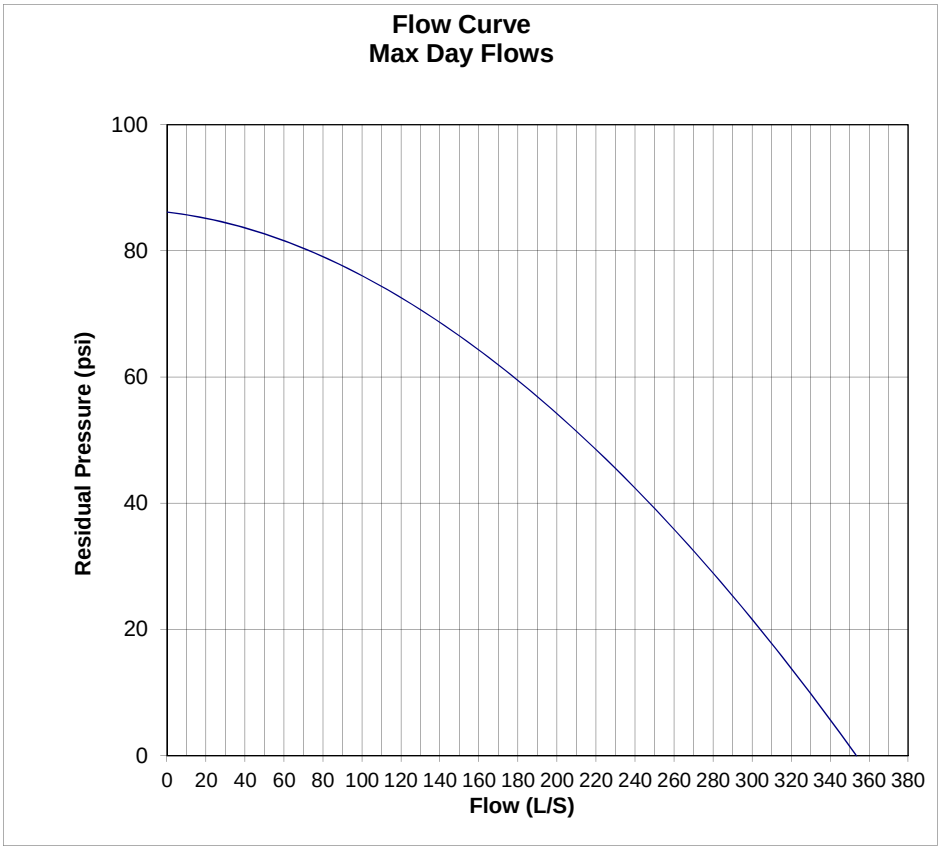
WATER MODELING - NODE 22227 - 4330 GISCOME RD
CORE MODEL - MAXIMUM DAY DEMANDS

Flow L/S	Pressure psi	Pressure kpa
0	86	594
15	85	589
30	84	583
45	83	574
60	82	563
75	80	550
90	78	535
105	75	519
120	73	500
135	70	480
150	67	459
165	63	435
180	59	410
195	56	383
210	51	354
225	47	324
240	42	292
255	38	259
270	32	224
285	27	187
300	22	149
315	16	109
330	10	68
345	4	25
353	0	0



Appendix B

Sanitary Sewer Computation Sheet

Radloff

SANITARY SEWER COMPUTATION FORM

PROJECT: Pollyco
PROJECT NUMBER: 815-001-10

COMPUTED BY: KEF
CHECKED BY: BW

Average Daily per Capita Flow: 380 l/cap/day
Infiltration Rate: 11200 l/ha/day

Density per Hectare (Commercial) = 60 (3.37 ha)
Density per Hectare (Industrial) = 90 (4.50 ha)

$Q(m^3/s) = (AR^{2/3}s^{1/2})/n$

Peak Factor by Harmon = 3.93 n= 0.013

SERVICE	MANHOLE		TRIBUTARY AREA		POPULATION			DESIGN FLOW			SEWER DESIGN					PROFILE		CHECK	
	FROM	TO	Increment Area (ha)	Total Area (ha)	Increment Population	Total Population	Peak Factor	Sewage Q l/sec	Infiltration Q l/sec	Total Q l/sec	SLOPE OF SEWER %	PIPE DIA mm	CAPACITY flowing full l/sec	VELOCITY flowing full m/sec	LENGTH m	INVERT upper end	INVERT lower end	CAPACITY (% FULL)	VELOCITY >0.61m/s
			4.50		405														
OLD	PL	Main	3.37	7.87	202	607	3.93	10.49	1.02	11.51	2.00%	100	7.31	0.93	1.5	-	-	157.6%	OK
NEW	PL	Main		7.87		607	3.93	10.49	1.02	11.51	2.00%	200	46.38	1.48	1.5	-	-	24.8%	OK

Appendix C

Site Servicing Drawings

350mmø AC WAT

250mmø PVC SAN

250mmø PVC SAN

400mmø AC WAT

400mmø AC WAT

AREA = 4.50 ha

AREA = 3.37 ha

250mmø PVC SAN

100mmø PVC SANITARY SERVICE

150mmø AC WAT

25mmø COPPER WATER SERVICE

50mmø COPPER WATER SERVICE

SANITARY SERVICE

200mmø AC WAT

250mmø CI WAT

250mmø PVC SAN

150mmø AC WAT

400mmø PVC WAT

90mmø PVC WAT

300mmø PVC SAN

200mmø AC SAN

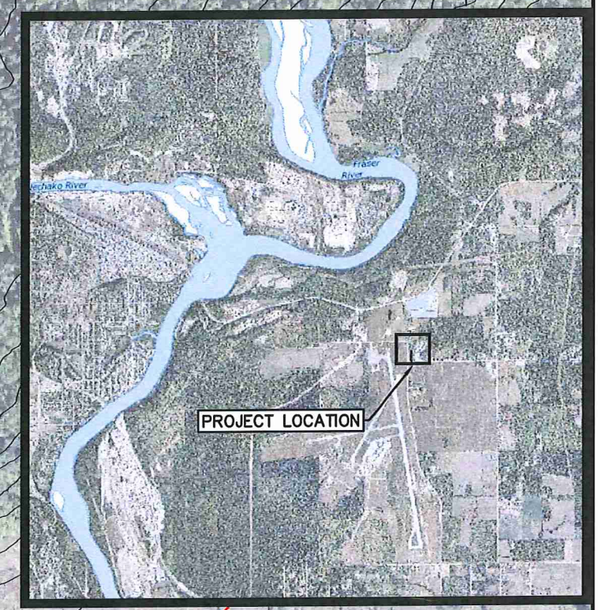
GISCOME RD

675.0
677.5
680.0
682.5
685.0
687.5
690.0
692.5
695.0
697.5

LEGEND

- WATERLINE
- SANITARY SEWER
- LEGAL BOUNDARY
- CULVERT
- DITCHING
- WATER VALVE
- FIRE HYDRANT
- SANITARY MANHOLE
- Z16 BLACKBURN COMMERCIAL ZONE
  - ZONE A
  - ZONE B
- AGRICULTURE & FORESTRY ZONE
- EXISTING BUILDING LOCATION
- FUTURE BUILDING LOCATION

0m 20m 40m 60m 80m 100m
SCALE 1:2500
0m 20m 40m 60m 80m 100m



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July 2, 2014

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DATE	DRAWING ISSUE	APPROVED

NO.	DATE	REVISION	BY	APPROVED

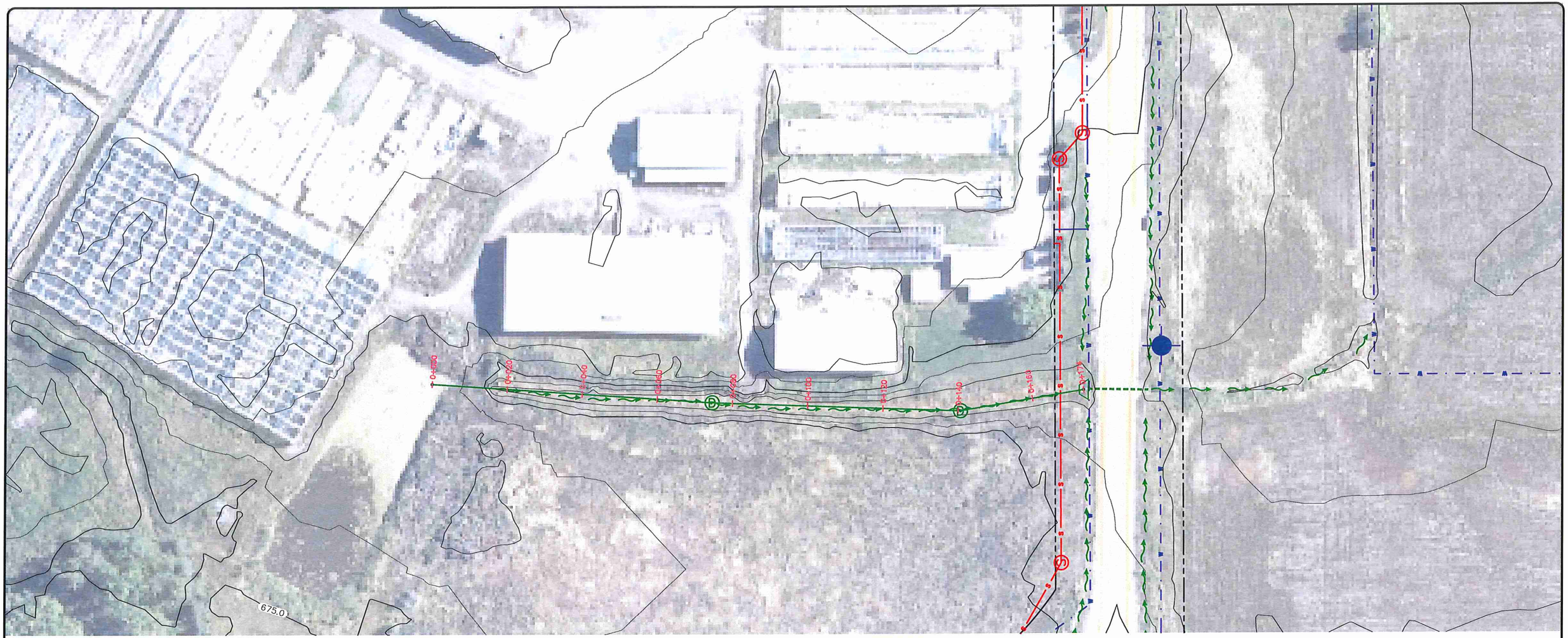
POLLYCO

SITE SERVICING

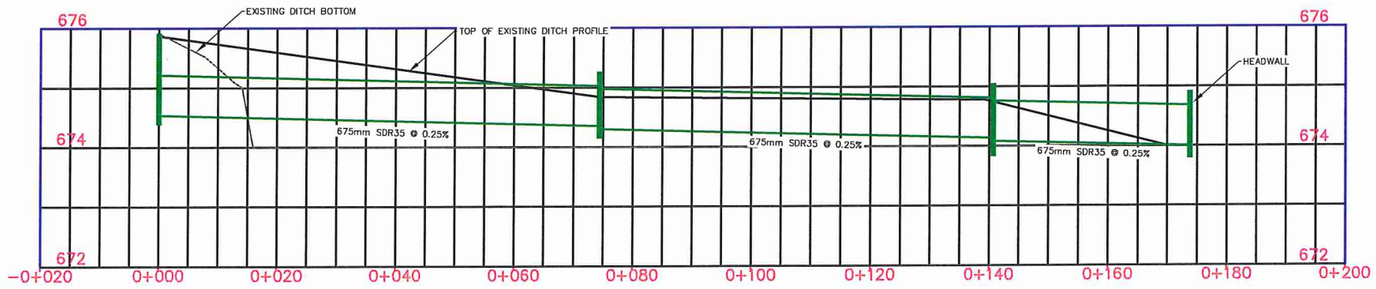
EXISTING INFRASTRUCTURE SITE PLAN

SCALE: HOR: 1:2500 VERT:

DESIGNED BY: KEF	FILE#: 815-001-03
DRAWN BY: JGC	DWG.# 815-001-03
CHECKED BY: KEF	SHEET C-01
DATE: MAY 2013	REVISION 0



Storm Sewer PROFILE



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POLLYCO
SITE SERVICING

PROPOSED STORM
PLAN/PROFILE
SCALE: HOR: 1:500 VERT: 1:50

DESIGNED BY: DJF	FILE#: 815-001-10
DRAWN BY: DJF	DWG.# 815-001-10
CHECKED BY: CEM	SHEET C-03
DATE: Mar 2014	REVISION 0

CATCHMENT 8

OLD CARIBOO HWY

CATCHMENT 7

CATCHMENT 2

CITY DRAINAGE RIGHT-OF-WAY

CATCHMENT 1

POND

CATCHMENT 3

CATCHMENT 5

CATCHMENT 4

CATCHMENT 6

GISCOME RD

GISCOME ROAD CULVERT

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3/7/2014

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DATE	DRAWING ISSUE	APPROVED

NO.	DATE	REVISION	BY	APPROVED

POLLYCO

SITE SERVICING

EXISTING CATCHMENTS

SCALE: HOR: 1:2500 VERT:

DESIGNED BY: DJF	FILE#: 815-001-03
DRAWN BY: DJF	DWG.# 815-001-03
CHECKED BY: CEM	SHEET C-04
DATE: JULY 2014	REVISION 0