City of Quesnel

Drinking Water Quality Monitoring Program

Summary Report

January 2004

Introduction

In 2001, the Province of British Columbia enacted the Drinking Water Protection Act, which provided the Minister of Health with the authority to implement and enforce standards for water supply systems in British Columbia. In May 2003, regulations to be implemented under the Drinking Water Protection Act, were adopted by the legislature as the Drinking Water Protection Regulation. Historically drinking water quality within the City has been monitored in consultation with the Provincial Health Inspector. In light of the new regulations, the City of Quesnel has developed this comprehensive drinking water quality monitoring program to enhance present practices.

The purpose of this program is to:

- Develop a process to notify the Drinking Water Officer (DWO) of situations or conditions that render or could render the water unfit to drink;
- Implement a plan for collecting, shipping and analyzing water samples in compliance with the direction set by the DWO;
- Implement a plan for reporting monitoring results to the DWO and to water users;
- Ensure the safety of the supplied drinking water is in compliance with the regulation.

The City's water system is currently comprised of 5 operating groundwater wells, with a new well to come on line in 2004, that deliver water to a distribution system comprised of 8 reservoirs, 5 booster pump stations, 2 main PRV stations, and approximately 100 km of water main.

In addition the City also maintains one independent well on Sword Road in South Quesnel to provide water to the soccer fields. At present there is no treatment or disinfection provided to the water systems.

Monitoring Program

To ensure the delivery of safe drinking water, the City is required to monitor water quality at various locations. Locations have been chosen to gain an accurate understanding of the system water quality performance. These include the wells, reservoirs, and points within the distribution system.

The regulations require that the minimum number of water samples collected in any given month be at least 1 per thousand people served. For Quesnel, with a serviced population of approximately 12,000 people, 12 samples must be collected every month. The City program exceeds this requirement.

Below is a listing and description of the sampling locations. Please see the attached maps for a graphical representation.

Sampling Locations

Wells

Site	Location	Installed Capacity (L/s)	Description
W-A	Sword Rd at Carson Pit Rd		Soccer Field Well
W-3	Rolph St at Roddis Dr	53	
W-5	Hillborn Rd	76	
W-6	Rolph St at Robertson Ave	76	
W-7	Off North Fraser Dr	61	
W-8	Hillborn Rd		Back-Up Well to W-5
W-9	Carson Subdivision Flats	TBD	In Service Date 2004

Reservoirs

Site	Location	Size (m^3)	Material	Description
R-1	Hwy 97	4,546	Concrete with Partial Liner	Shadow Heights
R-2	Pinecrest Rd	2,273	Concrete	Pinecrest
R-3	Baker Dr	4,546	Concrete	Sugar Loaf
R-4	Abbott Dr	909	Concrete	Abbott #1
		909	Concrete	Abbott #2
R-5	Dragon Hill	2,273	Concrete	Dragon Hill
R-6	Tatchell Rd	909	Concrete	South Hills #1
		3,400	Steel	South Hills #2

Distribution System

Site	Location	Description
S-A	Airport	Airport
S-B	Carradice Rd	West Pine Fibreboard
S-C	Mills Rd	
S-D	Dixon St	Voyageur School
S-E	Marsh Dr	
S-F	Front St	Hospital
S-G	Lunn Ave	
S-H	Nason St	Park
S-I	W Fraser St	
S-J	N Star Rd	Dragon Hill Feed
S-K	N Star Rd	S. Quesnel Feed
S-L	Sanderson Rd	Service Connection
S-M	Maple Drive	Sandman Hotel

Sampling Frequency

Bi-Weekly (Distribution System)

Frequency:	Bi-Weekly – every other Tuesday between 10 a.m. and 2 p.m.
Sites:	Sample all sites once a month: First Week – S-A, S-C, S-E, S-G, S-I, S-L Third Week – S-B, S-D, S-F, S-H, S-J, S-K, S-M
Parameters:	Total coliforms, Fecal coliforms, HPCs, Turbidity, Temperature

Monthly (Reservoirs)

Frequency:	Monthly
Sites:	R-1, R-2, R-3, R-4 (2), R-5, R-6 (2)
Parameters:	Total coliforms, Fecal coliforms, Temperature

Monthly (Wells)

Frequency:	Monthly
Sites:	W-A, W-3, W-5, W-6, W-7, W-8, W-9
Parameters:	Total coliforms, Fecal coliforms, Temperature

Quarterly (Wells)	
Frequency:	Quarterly – first week of March, June, September, December
Sites:	W-A, W-3, W-5, W-6, W-7, W-8, W-9
Parameters:	Chloride, Nitrate, Nitrite, Temperature

Semi-annually (Distribution System)	
Frequency:	Semi-annually – first week of October and April
Sites:	S-C, S-L
Parameters:	Copper, Zinc, Lead, Iron, Vinyl Chloride, Manganese, Temperature

Annually (Wells)	
Frequency:	Annually
Sites:	W-A, W-3, W-5, W-6, W-7, W-8, W-9
Parameters:	Physical Tests: True Colour, Conductivity, Hardness, pH, Total Dissolved Solids, Turbidity Total Anions: Alkalinity, Bicarbonate, Carbonate, Hydroxide, Chloride, Fluoride, Nitrate/Nitrite, Sulphate Dissolved Metals: Calcium, Iron, Magnesium, Manganese, Potassium, Silicon, Sodium Total Metals: Aluminum, Arsenic, Antimony, Barium, Boron Cadmium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Selenium, Uranium, Zinc, Molybdenum, Phosphorus, Silver Microbiological: Total and Fecal Coliform Bacteria Aggressive Index Number (Saturometric Determination Number) Volatile Organic Compounds Temperature

Sampling Parameters

The sampling parameters used to evaluate drinking water are outlined in detail within the Guidelines for Canadian Drinking Water Quality which can be found at www.hc-sc.gc.ca/hecs-sesc/water/index.htm or by Contacting Health Canada at 604-666-2083. These guidelines outline all parameters that are used to assess water quality. These parameters can be grouped into three major categories: bacteriological parameters, chemical/physical parameters, and aesthetic parameters.

The BC Drinking Water Protection Regulation requires water quality analysis to include the bacteriological parameters total and fecal coliform bacteria or Escherichia Coli as well as any other parameter established by the Drinking Water Officer.

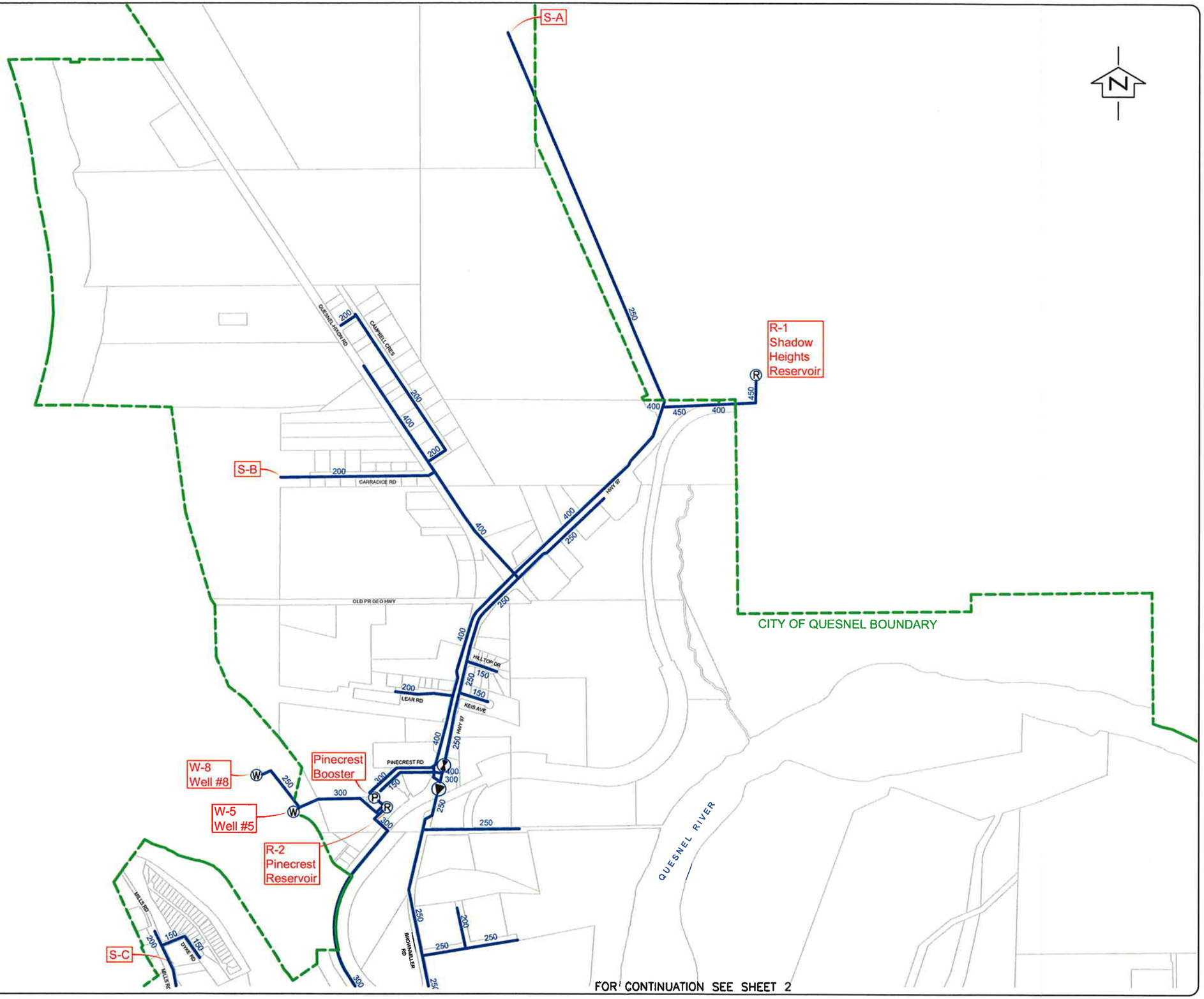
The City has chosen parameters in consultation with the Drinking Water Officer that are most relevant to the water system and are consistent with best practices employed in other regions of the province. The parameters address both health related and aesthetic issues in water quality.

Reporting

As required by the Drinking Water Protection Regulation, the City must also implement a plan for reporting monitoring results to the Drinking Water Officer and to the water users. On a monthly basis water quality results will be posted to the City Website (www.city.quesnel.bc.ca). In addition an annual report giving an overview of the program and outlining water monitoring results will be made available to all water users by June of the following year. Also included will be plans to address any parameters that did not meet standards or guidelines.

In the event that there is a complaint filed by a water user, records will be kept, and follow-ups will be made directly with the individuals affected. In the case of an emergency, the procedures outline in the City's Emergency Response Plan will be followed.

Should you have any questions or concerns regarding any of the above information, please contact the City of Quesnel at (604) 992-2111.



City of Quesnel

LEGEND:

- S-A — Distribution Water Quality Monitoring Site
- 300 — Water Main
- (P) — Pump Station
- (R) — Reservoir
- (W) — Well
- Pressure Reducing Station
- Valve Normally Closed
- City of Quesnel Boundary

WATER SYSTEM SCHEMATIC

MAP: 1 of 4

Date: November, 2003
Scale: N.T.S.
Job No. 1190.0073.01

Prepared by:
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FOR CONTINUATION SEE SHEET 1

FRASER RIVER

'EXCLUDED'

QUESNEL RIVER

S-C

W-7
Well #7

Healy Street
Booster

R-3
Sugar
Loaf
Reservoir

S-F

W-9
Well #9

S-H

S-D

Dawson
Street
Booster

Upplands
Booster

R-4
Abbott
Reservoirs

S-E

S-G

CITY OF QUESNEL BOUNDARY

FOR CONTINUATION SEE SHEET 3

FOR CONTINUATION SEE SHEET 4

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WATER SYSTEM SCHEMATIC

MAP: 2 of 4

Date: November, 2003

Scale: N.T.S.

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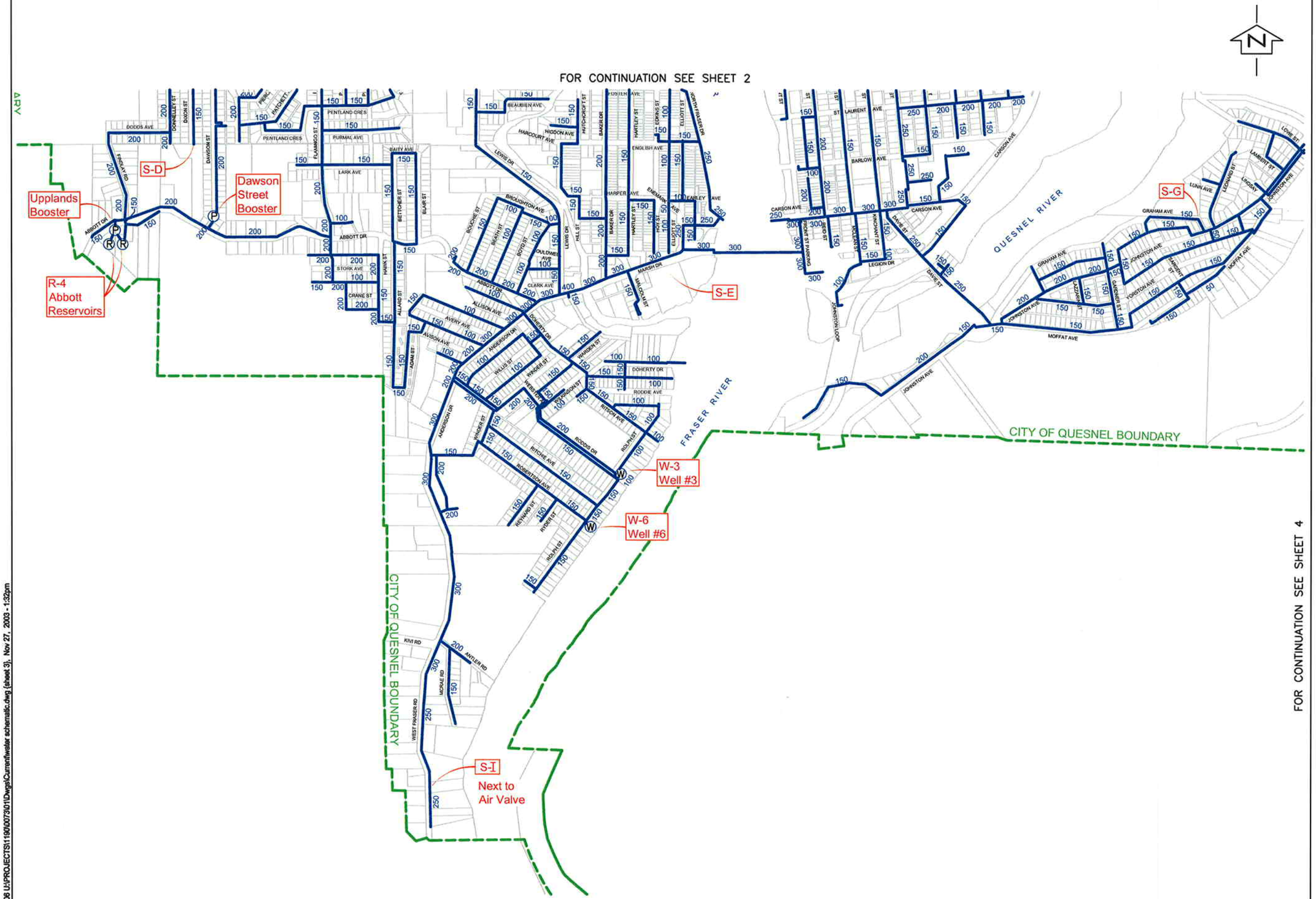

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WATER SYSTEM SCHEMATIC

MAP: 3 of 4

Date: November, 2003
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SEE INSET

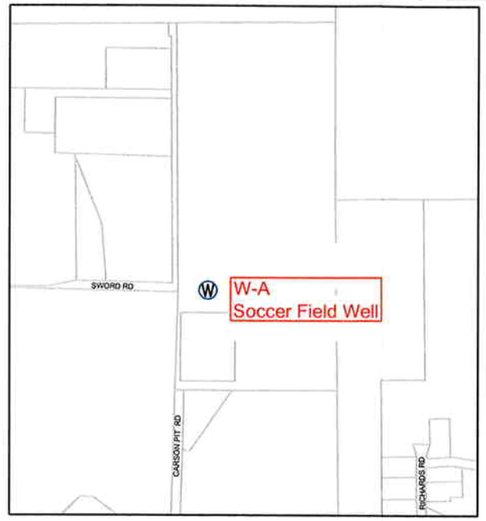
R-5
Dragon Hill
Reservoir

S-J (Dragon Hill)

North Star
Booster

S-K (South Hills)

FOR CONTINUATION SEE SHEET 2 AND 3



INSET

R-6
South Hills
Reservoirs

S-L

S-M

EXCLUDED

CITY OF QUESNEL BOUNDARY

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WATER SYSTEM SCHEMATIC

MAP: 4 of 4

Date: November, 2003
Scale: N.T.S.
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