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North Okanagan Ground Water Characterization and Assessment (NOGWCA) Project: Database Development

Okanagan Basin Water Board
Ground Water Symposium, January 23rd, 2007
Trina Stewart, Ministry of Environment, Penticton



Database Development

Information Collection

- Reports, Data, Survey

Information Organization

- Aquifer Characterization



Information Collection

- Hydrogeological Reports
- Hydrometric Data
- Water Quality Lab Results
- Land Use Allocation Model (LUAM) Information
- Ground Water Survey



Hydrogeological Reports

300+ - Regional, Civic, Municipal and Water District
Offices in the Okanagan Valley (GAOB Project)

Those with Consent to Use can be accessed at the EcoCat Library
http://srmapps.gov.bc.ca/apps/acat/jsp/index_public.jsp

**allows distribution and sharing of professional ground water
information to the general public**

Hydrometric Data

- 3 data loggers at hydrometric stations along Deep Creek
- 100 year precipitation record from family in Spallumcheen
- static water level monitoring at 10 wells



for water budget development



Water Quality Lab Results

Electronic Monitoring System (EMS) – 15 Deep Creek sites, 22 wells

Interior Health Authority – 18 wells

Hydrogeological Reports – 8 wells

for characterizing aquifer chemistry

LUAM Information

- cadastral mapping of the North Okanagan Regional District and City of Vernon
- data sharing agreements
- collection of professional expertise
- workshop Nov. 2006 at NORD



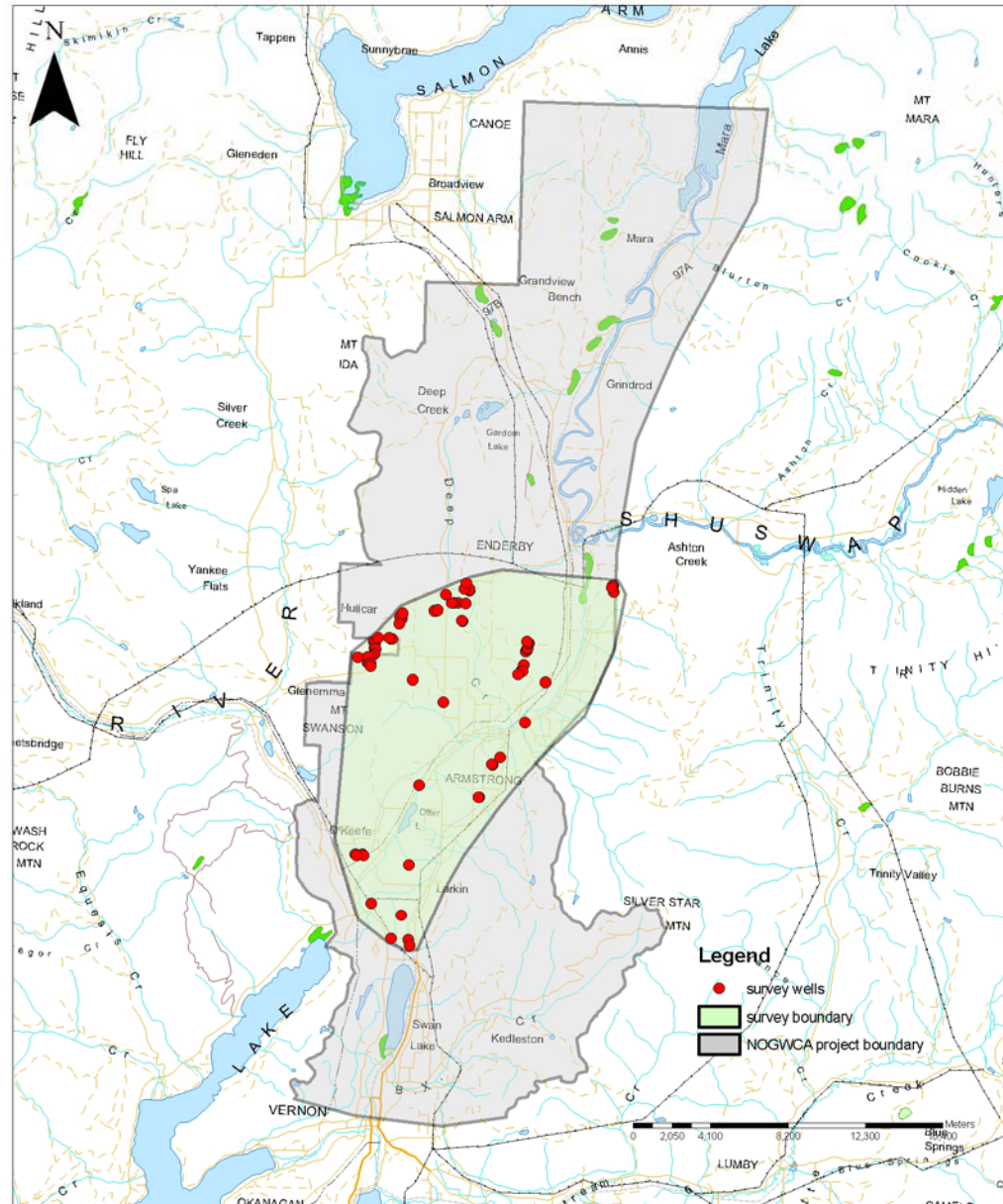
provides a science-based land use planning tool

Ground Water Survey

- September 2005 - March 2006
- 20 Irrigators Interviewed
- 77 wells
- area in which most of the ground water use occurs in Spallumcheen
- ground water quality, quantity, irrigation periods and crop type
- photographs and GPS locations documented

provides an overview of ground water resources in the Spallumcheen Township

NOGWCA Project Boundary, Survey Boundary and Survey Wells





Information Organization

Historical Wells

Aquifer Characterization

Spallumcheen A Aquifer (Aquifer 111)

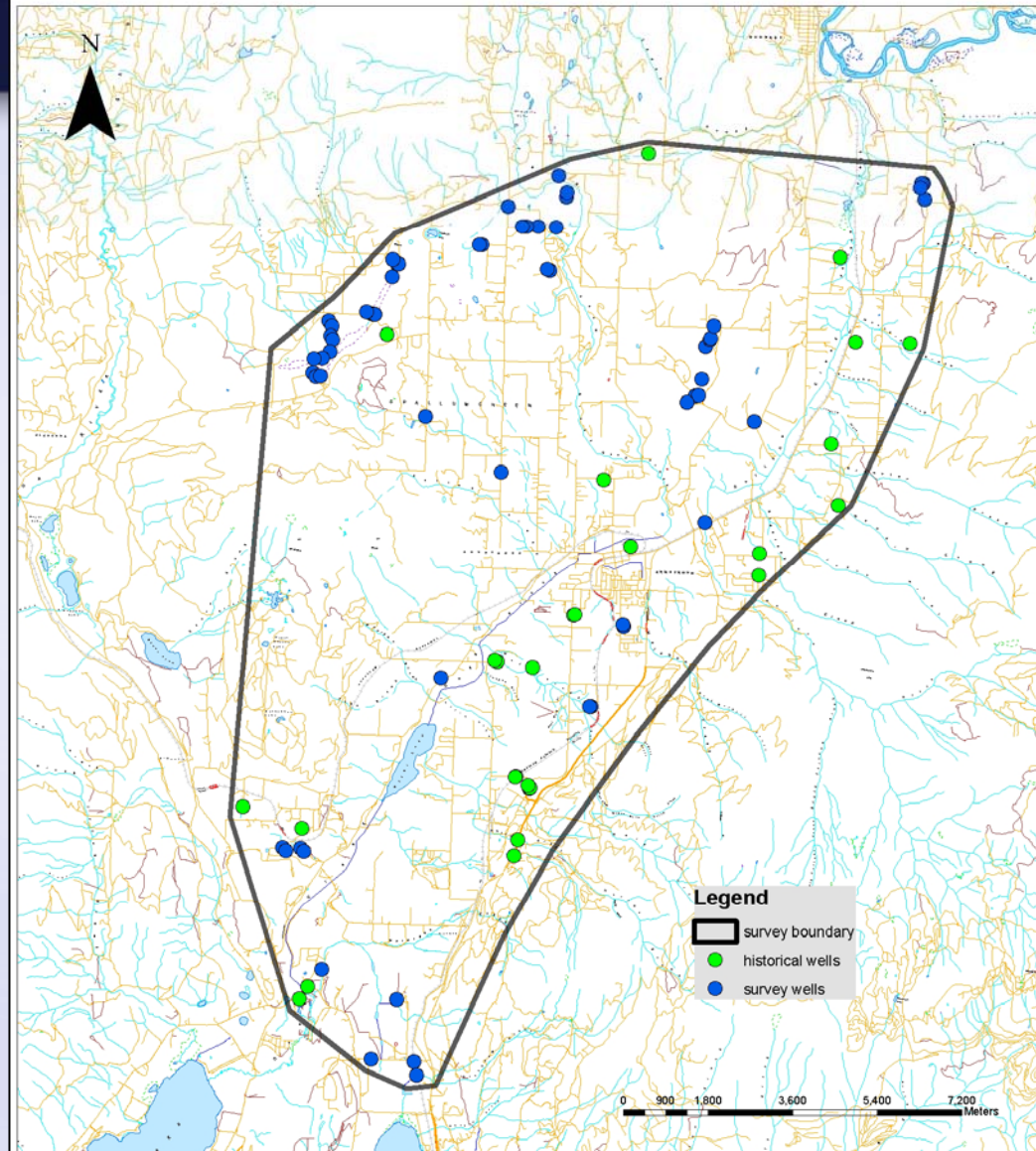
- Well Types
- Water Quality: ex. Nitrate

Historical Wells

- 31 Wells
- WTNs
- Water Quality (EMS)

Combined information from survey and historical data sets are used in aquifer characterization.

North Okanagan Ground Water Characterization and Assessment Project Survey Wells and Historical Wells

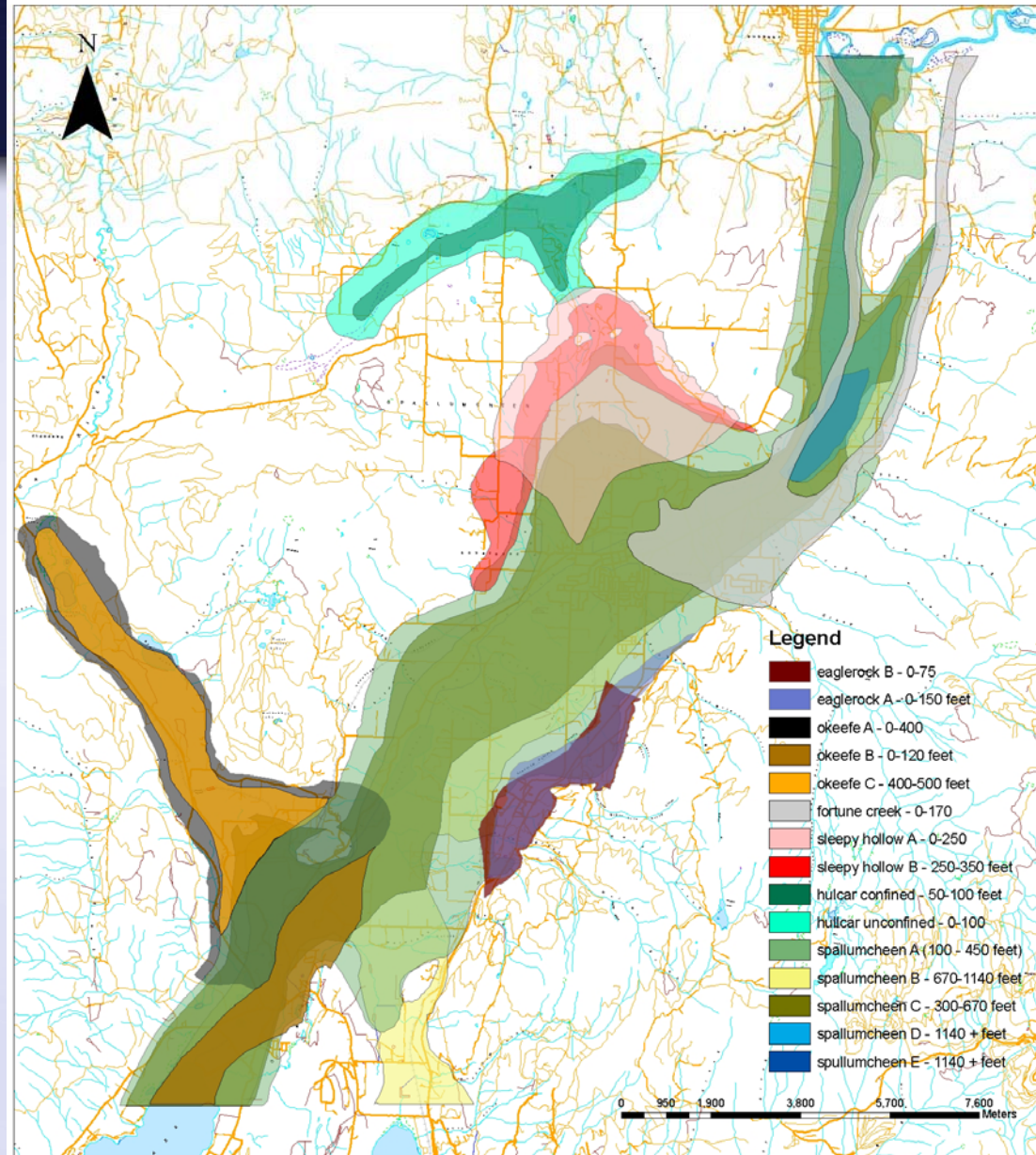


Aquifer Characterization

Map of Aquifer tops

- Conversion of dxf curve files developed by Greg Keller into shape files

Digital aquifer layers will be used in the development of a 3-D ground water flow model.

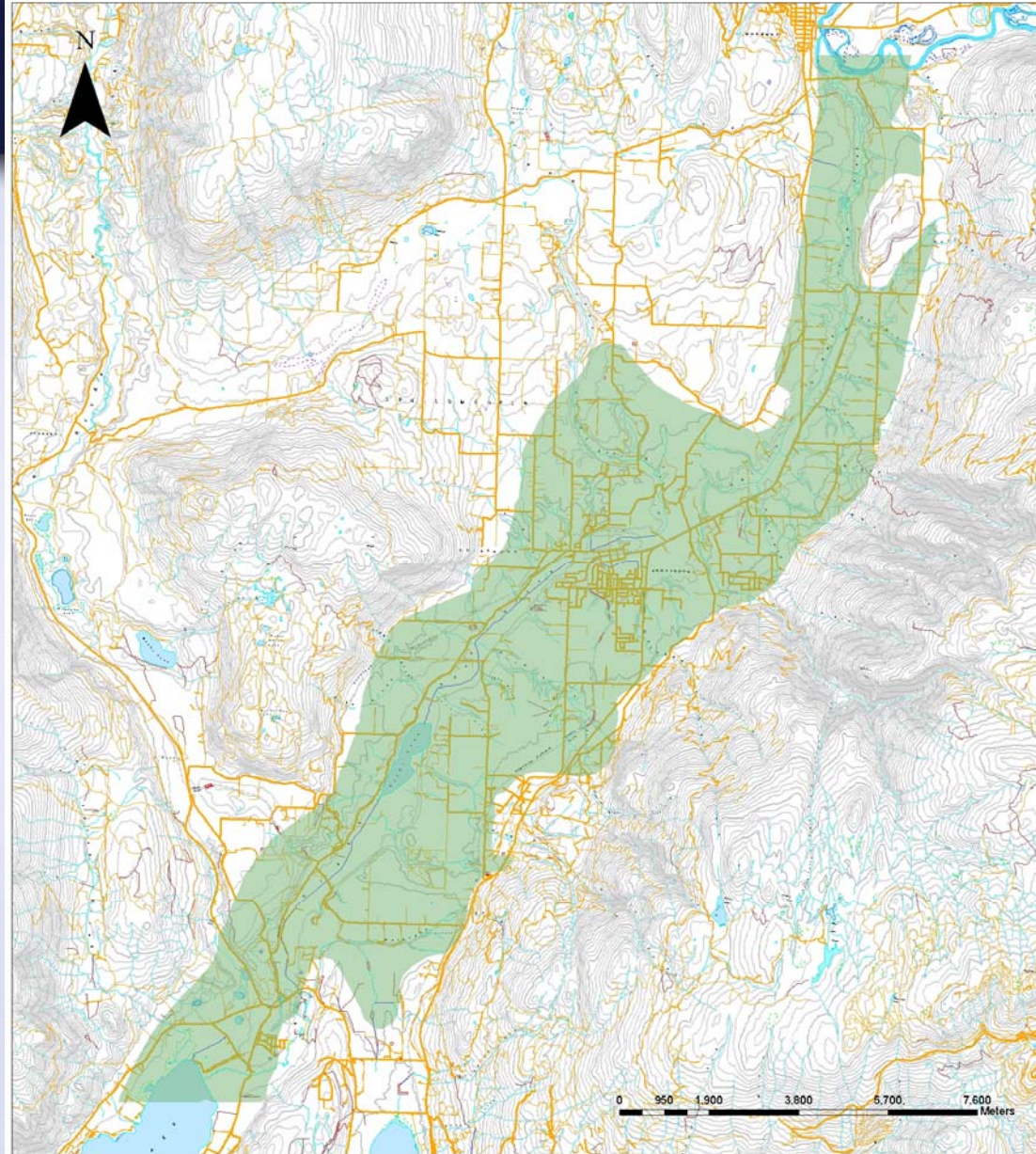


Spallumcheen A (111)

IIC, Moderate Productivity, Low Demand, Moderate Vulnerability

- main aquifer
- occurs at depths of 100 - 300ft
- fine sands and very fine sands of interbedded silts and clays
- 150-300 feet thick
- **confined** but continuous with surface aquifers along valley margins (Monahan, 2006)

Aquifer characterization layers can be incorporated into the LUAM.

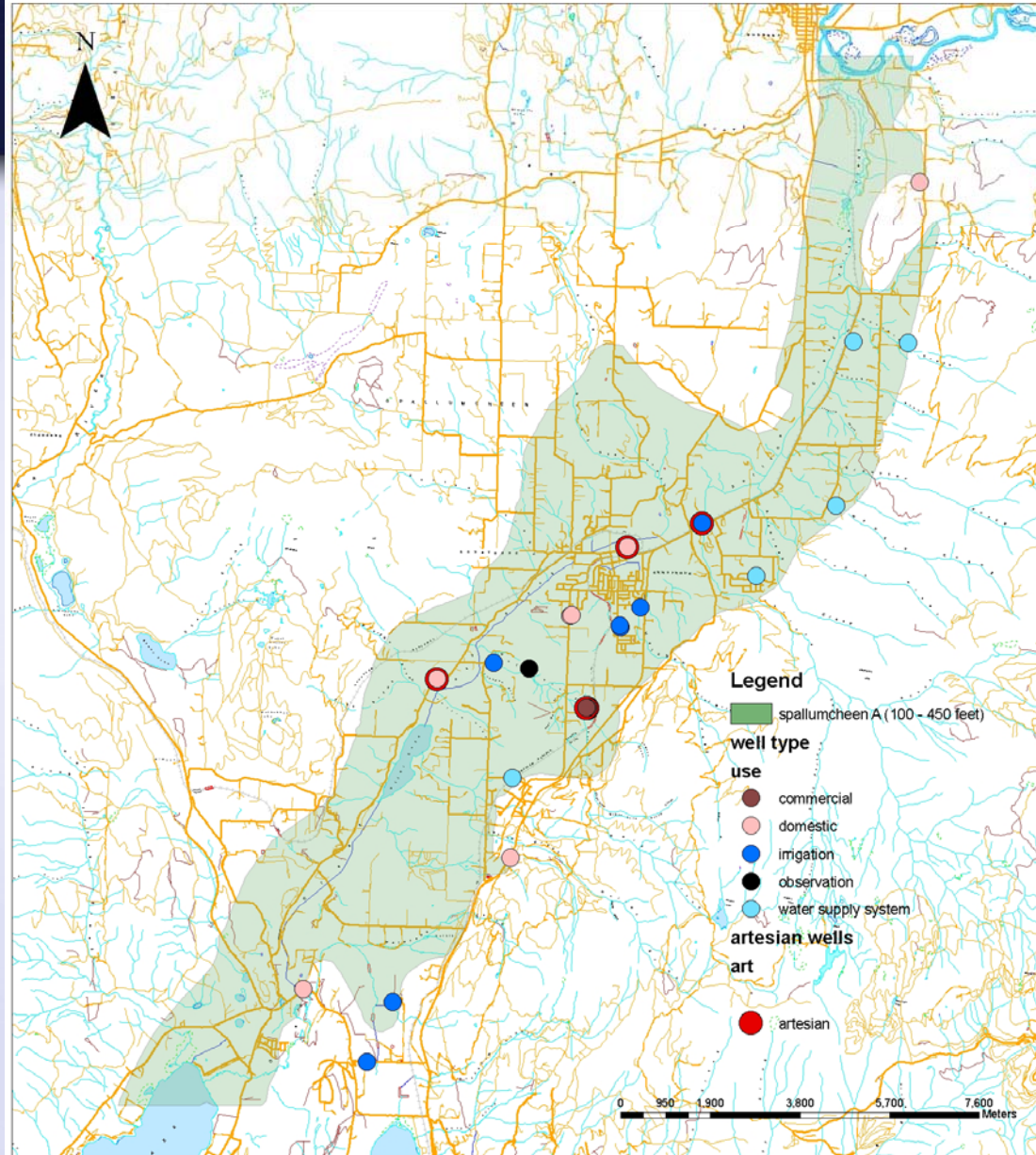


Spallumcheen A: Well Types

Type	Number
Irrigation	9
Domestic	7
Artesian	5
Observation	1
Water Supply System	5
Commercial	2

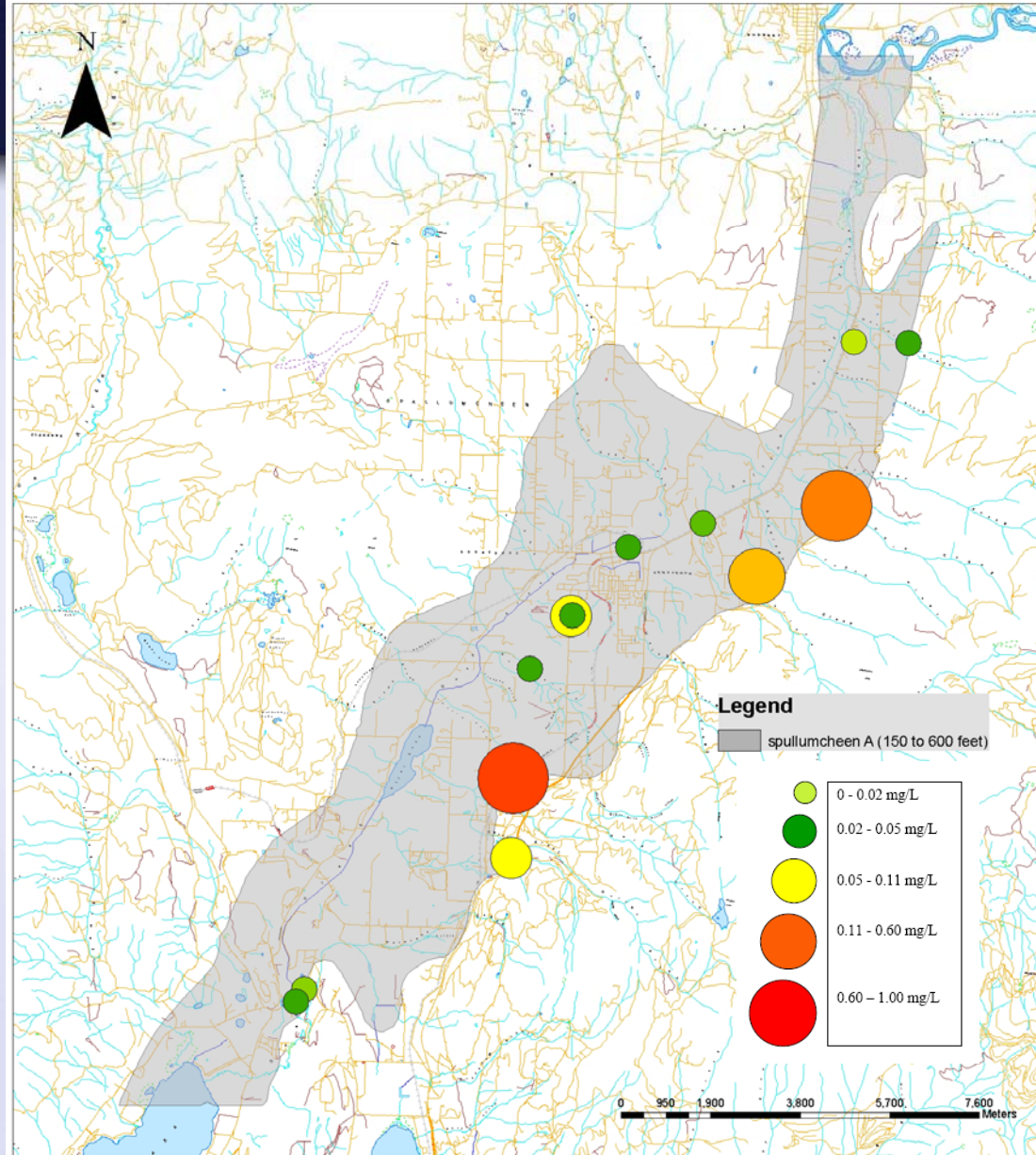
Spallumcheen A is the most used ground water resource for irrigation and has the most reported artesian wells, according to survey results and well logs.

North Okanagan Ground Water Characterization and Assessment Spallumcheen A: Well Types



Spallumcheen A: Nitrate-N	
Statistic	Value
Count	9
Min (mg/L)	0.002
Max (mg/L)	0.744
Drinking Water Guideline (mg/L)	10.0
Mean (mg/L)	0.227
Median (mg/L)	0.050

NO₃-N values are higher along the valley margins but are far below the drinking water guideline.





Information Considered for NO₃-N Analysis

Nitrate Trends

Soil Type

Spray Effluent Irrigation Locations

Irrigation Duration

Crop Type

Surface Nitrate Comparison

Septic Field Locations

(Work in progress)



In summary...

Information Collection and Organization:

An important and ongoing part of the Project.

Next Steps

Further analyze, model and report out on this information using the combined expertise of the professional geoscientists working with the NOGWCA Project and available databases.



Questions?