Public Meeting

Class C Environmental Assessment Study for Construction of a New Well #1C

Wednesday, August 6, 2025
West Grey Council Chambers
7:00 p.m.

22-037

WELCOME

- Please sign on sheet provided.
- Please take a comment sheet and provide your comments.

Study Purpose/Problem Statement

- The Municipality of West Grey completed “Durham Water and Wastewater Treatment System Capacity Assessment” in 2021.
- The report established that Water Works is approaching the plant’s rated capacity and risk of running out of capacity.
- The existing water supply wells yield is on the decline.
- The threat to water supply in sufficient quantity.
- Significant water losses from watermains.
- Per provincial guidelines, West Grey must undertake steps to increase supply.

Durham Water Works Facts

Rated Capacity 3,011 m³/day (460 Igpm)

Permit to Take Water Information:

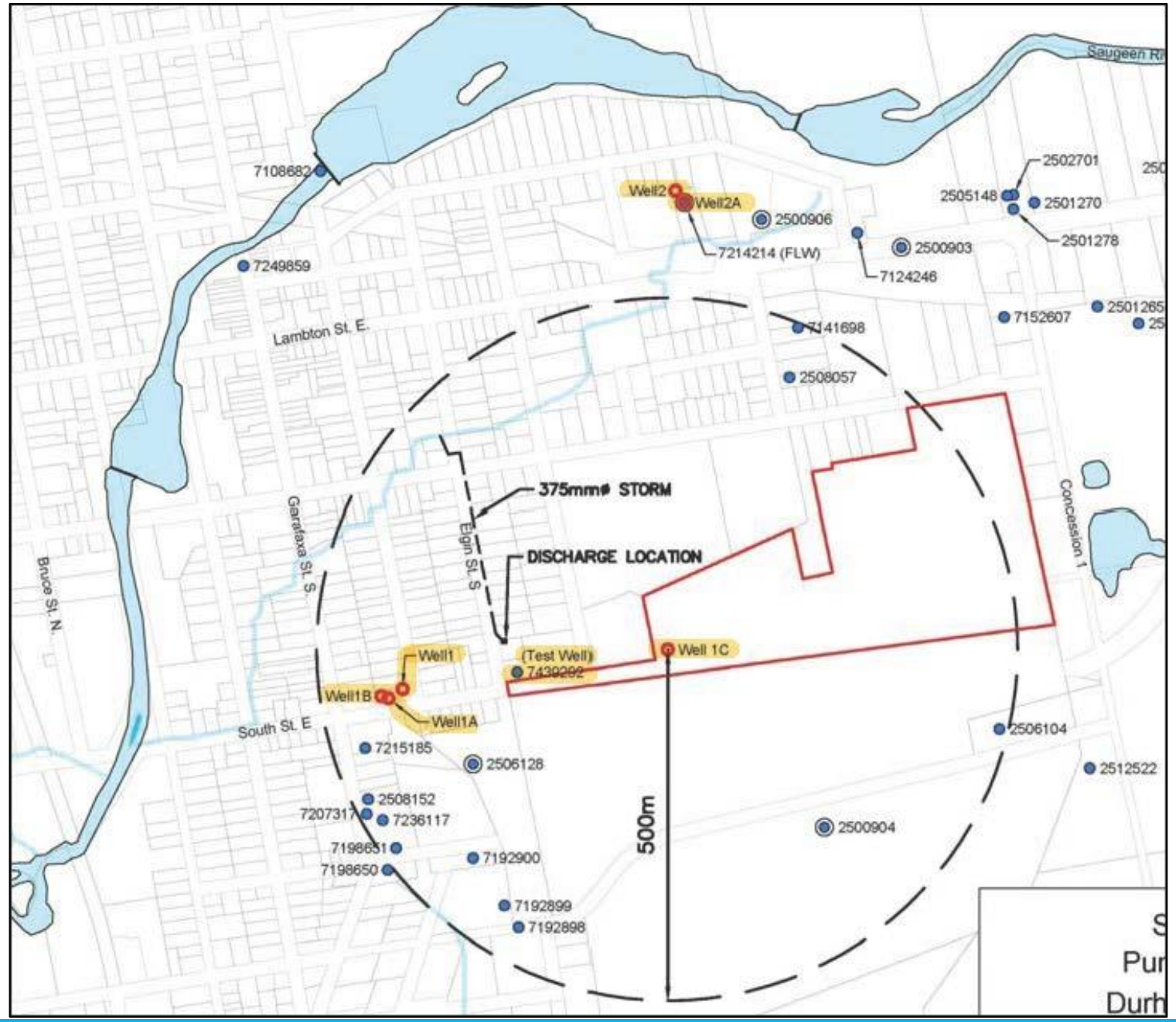
Well #1B	1,375 m³/day (210 Igpm)
Well #2	1,636 m³/day (250 Igpm)
Well #2A	1,636 m³/day (250 Igpm)

Note: Any combination of well operations must not exceed 3,011 m³/day limit.

Rated Capacity Utilization

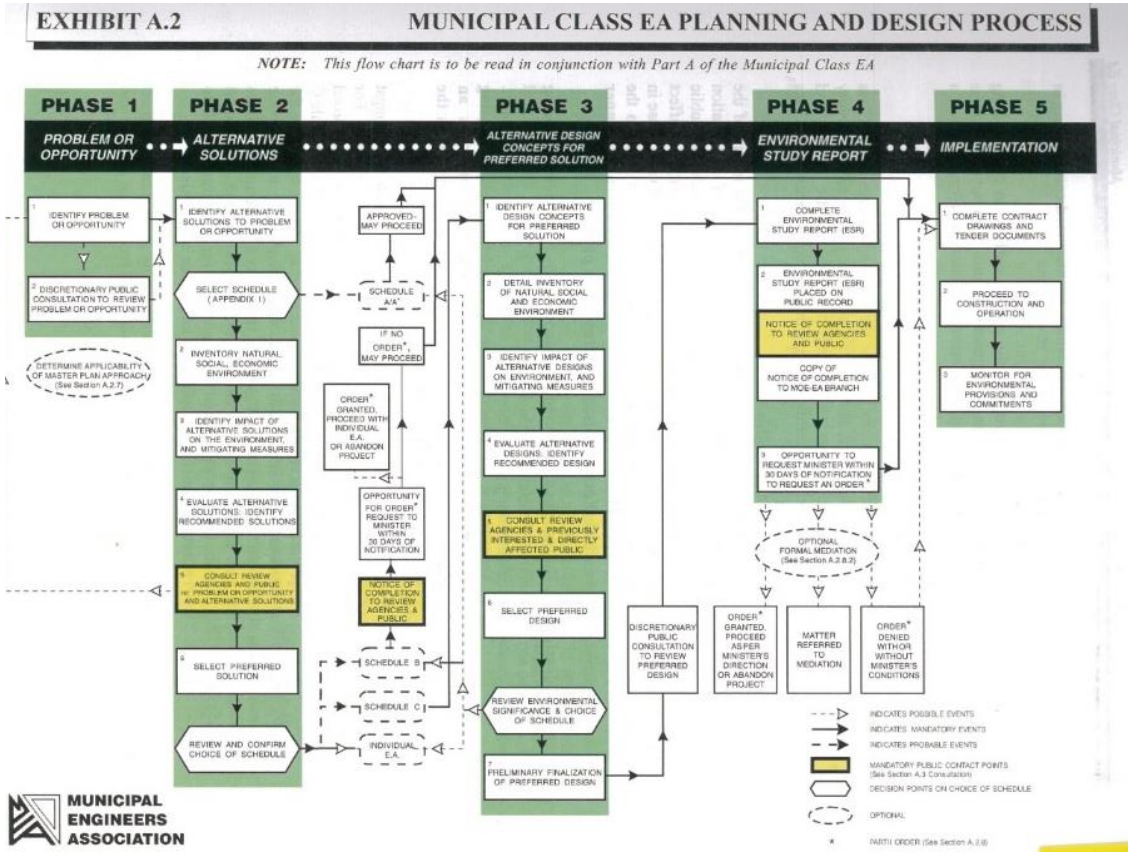
Year	Max Day (m^3/day)	% Capacity Utilization
2013	1603	53.2
2014	2289	76.0
2015	2157	71.6
2016	1455	48.3
2017	1309	43.5
2018	1470	48.8
2019	1482	49.2
2020	1591	52.8
2021	1399	46.5
2022	1756	58.3
2023	1352	44.9
2024	1192	39.6
Rated Capacity of Water Works:	**3,011 m^3/day**	

MUNICIPALITY OF
West Grey
nestled in nature



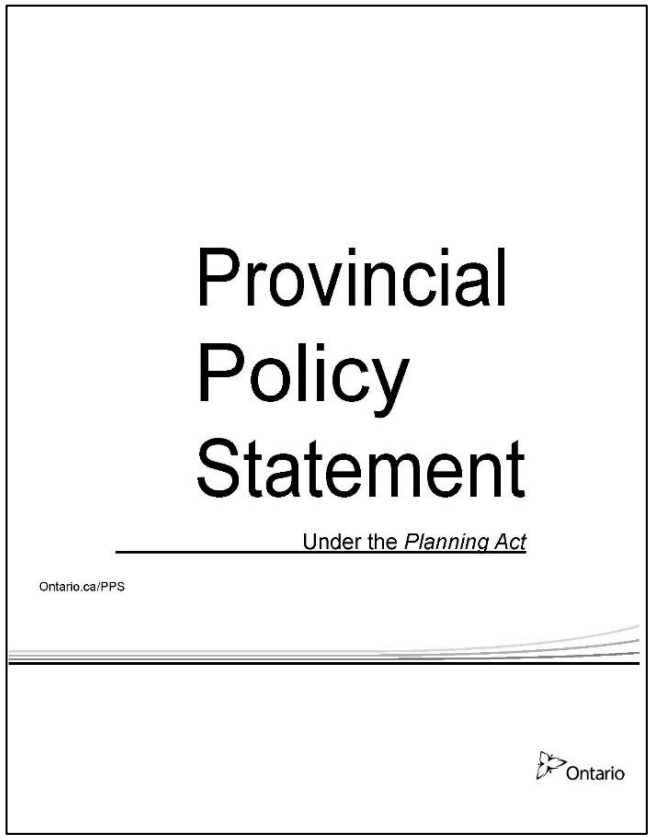
Overview of Class EA Study Process

- Address water treatment capacity requirements by:
  - Completing a systematic evaluation of alternatives
  - Considering advantages and disadvantages including net environmental effects; and
  - Providing clear documentation that describes decision making.
- Following Schedule C
- Requires completion of Phase 1, 2, 3 & 4
- Will file ESR for 30-day review



Population Forecast Planning Considerations

- Need to comply with Provincial Policy Statement.
- Ensure Sustainable growth within Durham.
- Growth forecast is due to subdivision applications.
- Draft Plan approval issued.
- Typically, 20-year projection/planning period.
- Target water treatment and supply capability is:
  - ± 2,180 m³/day increase in capacity.
  - Amounts to 42% increase.



Description of Alternative Solutions

Alternative # 1: Do Nothing

- No improvements or changes would be undertaken to address problem statement.
- Rated Capacity of Water Works will eventually be exhausted.
- This alternative represents what would likely occur if none of the alternative solutions were implemented.
- Irresponsible to “Do Nothing”.

Alternative # 2: Limit Growth

- Does not address problem of significant watermain losses.
- Maintain existing WW and associated distribution system in existing condition and limit future growth.
- No increase in serviced population.
- Requires a change to municipal planning documents.

Alternative # 3: Reduce Water Losses and Improve Conservation

- Continue to utilize current WTP and distribution system.
- Address “water loss from distribution system”.
- Aggressively implement existing water conservation measures.
- Enforce lawn watering restrictions.
- Difficult to find water loss location(s).
- Several streets with cast iron watermain.
- A long-term solution.

Alternative # 4: Increased Water Supply from Existing Well(s)

- Hydrogeological investigation to determine if existing well(s) can supply more water.
- If yes, obtain permits and approval from MECP.
- Increase treatment equipment capacity as needed to match increased water supply.
- Investigation did not support this alternative.

Alternative # 5: Construct New Water Supply Well and Associated Treatment Plant

- Drill new water well for additional water supply, preferably near existing water treatment building locations.
- Construct new or upgrade existing water treatment equipment and building.
- Procure new land(s) as needed.

Alternative # 5: Construct New Water Supply Well and Associated Treatment Plant…Continued

- Undertake detailed hydrogeological investigation to ensure long-term water supply capabilities.
- Connect to existing water distribution network.
- Risks are associated with new drilled well capability of supplying adequate quantity, or water quality not complying with ODWS.
- Relatively easier method to add additional treatment capacity.

Alternative #6 - Construct New Surface Water Supply Source Intake and Associated Treatment Plant

- Saugeen River is a potential water supply source.
- Surface water sources are more prone to contamination and have more variable water quality.
- Suitable location and river water intake needed, after obtaining approvals.

Alternative #6: Construct New Surface Water Supply Source Intake and Associated Treatment Plant…Continued

- Need raw water pumping station to supply water to treatment plant.
- Treatment process shall be more complex and expensive.
- Construct new WTP building or expand existing treatment plant building and connect to existing water distribution networks.

Alternative #6: Construct New Surface Water Supply Source Intake and Associated Treatment Plant…Continued

- Existing plant building shall not have room to accommodate new treatment equipment.
- Operators need to remain on guard during period of water quality changes during spring and fall and take timely corrective steps. Highly skilled operation is required.

Alternative #6 - Construct New Surface Water Supply Source Intake and Associated Treatment Plant…Continued

- Obtain PTTW and also complete Source Water Protection Study.
- Capital Project Cost is anticipated to be highest among all alternatives.
- Timeline for this alternative is anticipated to be much longer than other viable alternatives.

Alternative #7 - Treated Water Supply from Another Water Works in West Grey or Adjacent Municipality

- Will require approval from County and neighbouring municipality that could supply water.
- West Grey has Neustadt WW, but with insufficient spare capacity to support Durham's needs.
- Require construction of long watermains, associated booster pumping system and re-chlorination facility(ies).
- Hanover is another Water Works that may be able to spare supply but is at a significant distance.

Screening of Alternative Solutions

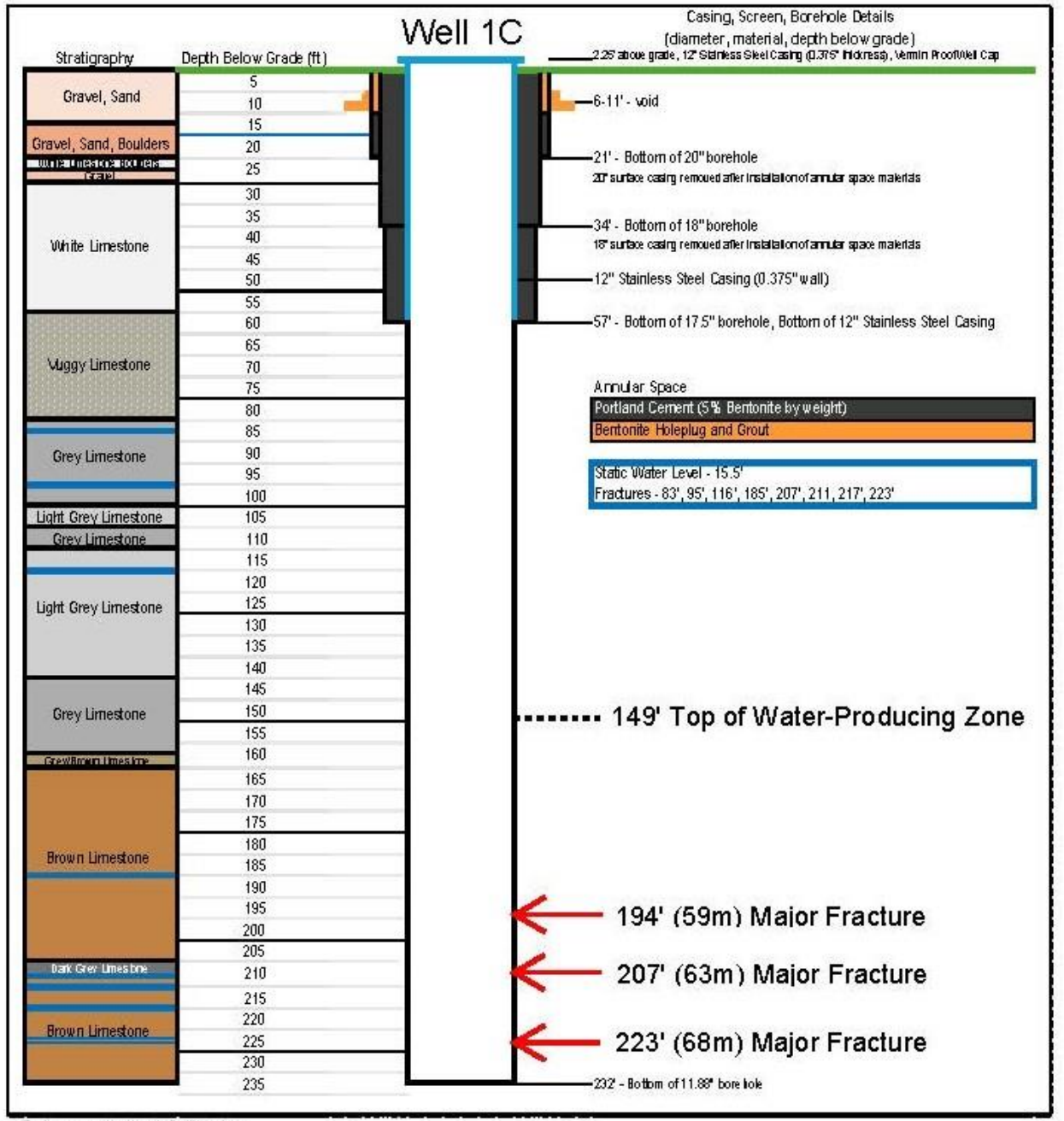
ALTERNATIVE	DECISION	RATIONALE FOR NOT CARRYING FORWARD
1. Do nothing.	✓	Carried forward – must be considered.
2. Limit growth.	X	Screened – does not address the problem.
3. Reduce water loss and improve conservation.	✓	Carried forward-must be considered in conjunction with additional water supply(ies).
4. Increased water supply from existing well(s).	X	Desktop assessment confirmed insufficient additional supplies.
5. Construct new groundwater supply source and associated treatment plant.	✓	Carried forward – feasible alternative.
6. Construct new surface water supply source and associated treatment plant.	X	Screened – addresses the problem but time consuming and expensive and with operational challenges.
7. Treated water supply from another Water Works in West Grey or adjacent Municipality.	X	Screened – not a feasible alternative.

New Well Construction Program

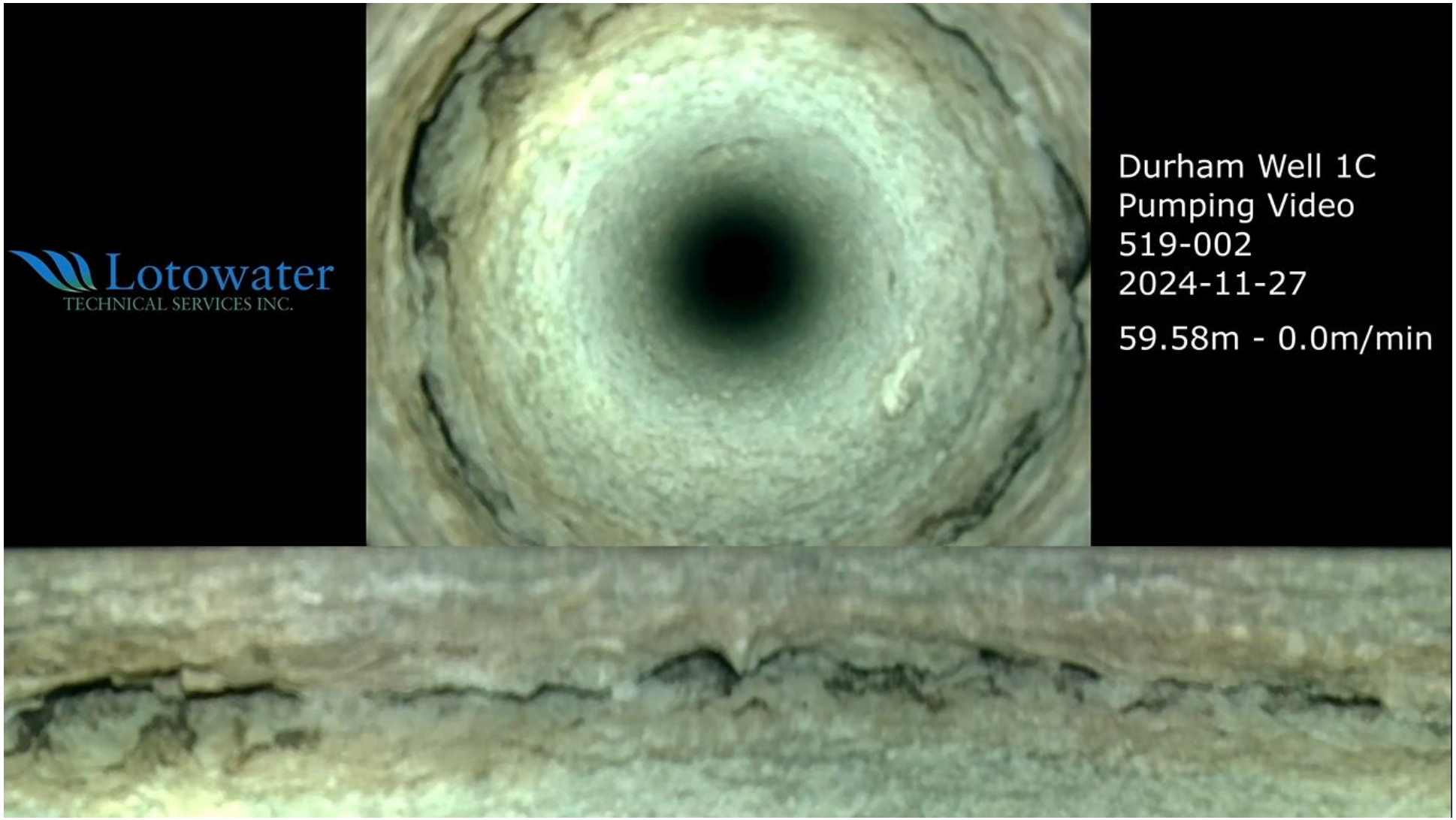
- Search began for a new well.
- New well location narrowed down to Rockwood Terrace site.
- Drilling and well construction took place in October and November 2024.
- 12-inch diameter well completed in bedrock at 71 m (232 ft) depth, similar to other municipal wells.
- Downhole testing indicated virtually all inflow to the well occurred below a depth of 45 m (149 ft).
- More than 80% of inflow come from three major fractures, at depths of 59, 63, and 68 m.

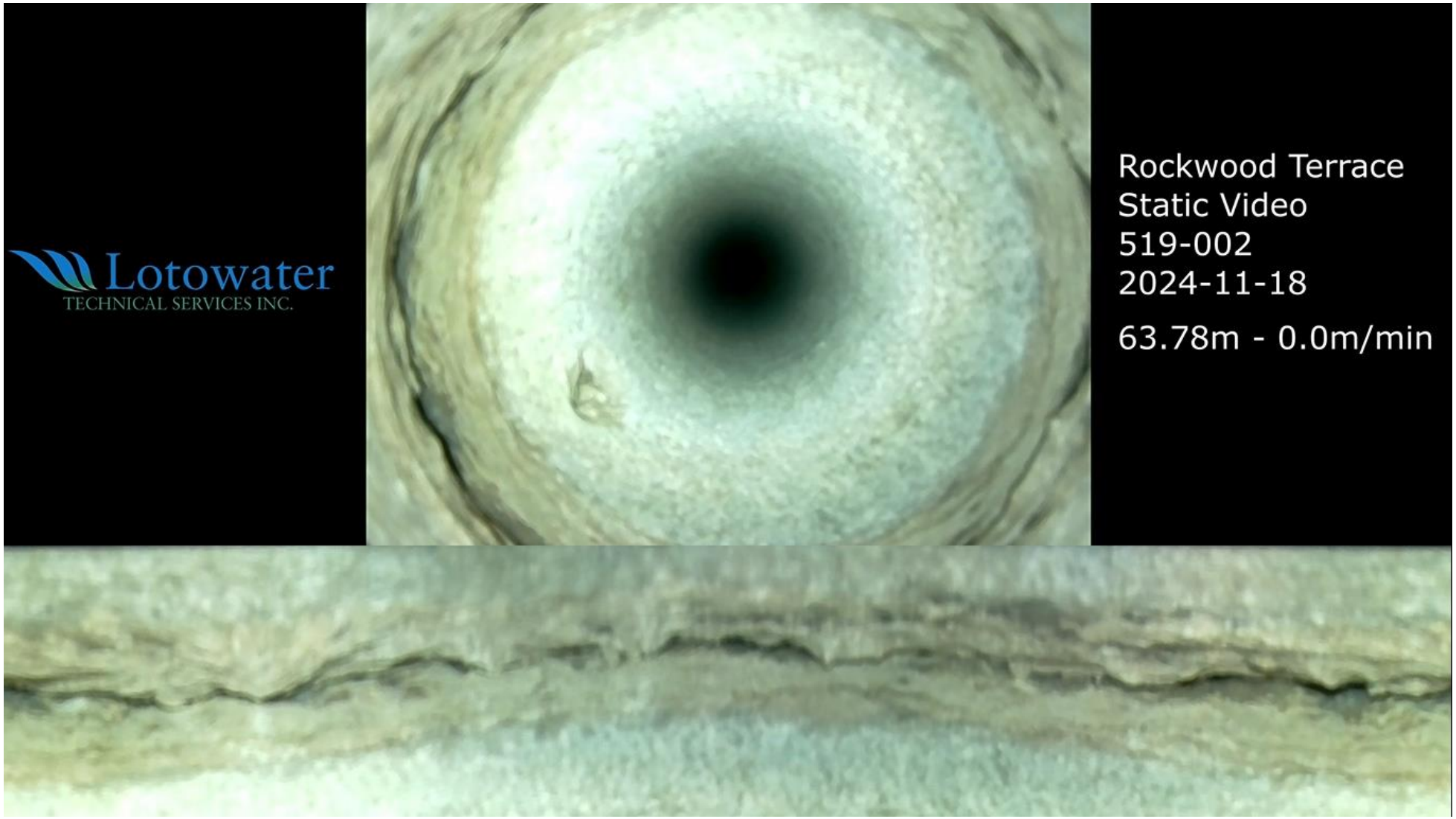

0
50
100
Metres
N
SADDLER STREET EAST
ROCK STREET
KINGARDINE STREET SOUTH
ELGIN STREET SOUTH
ALBERT STREET SOUTH
GARAFAXA STREET SOUTH
SITE OF NEW ROCKWOOD TERRACE LONG TERM CARE FACILITY
WELL 1C
2022 TEST WELL
WELL 1
WELL 1B
WELL 1A
SOUTH STREET EAST
Well 1C Location Plan and Land Use
Hydrogeological Assessment
New Durham Well 1C
Municipality of West Grey
Design: WBB
Drawn: TDL
APPROVED: WBB
Date: AUG. 2025

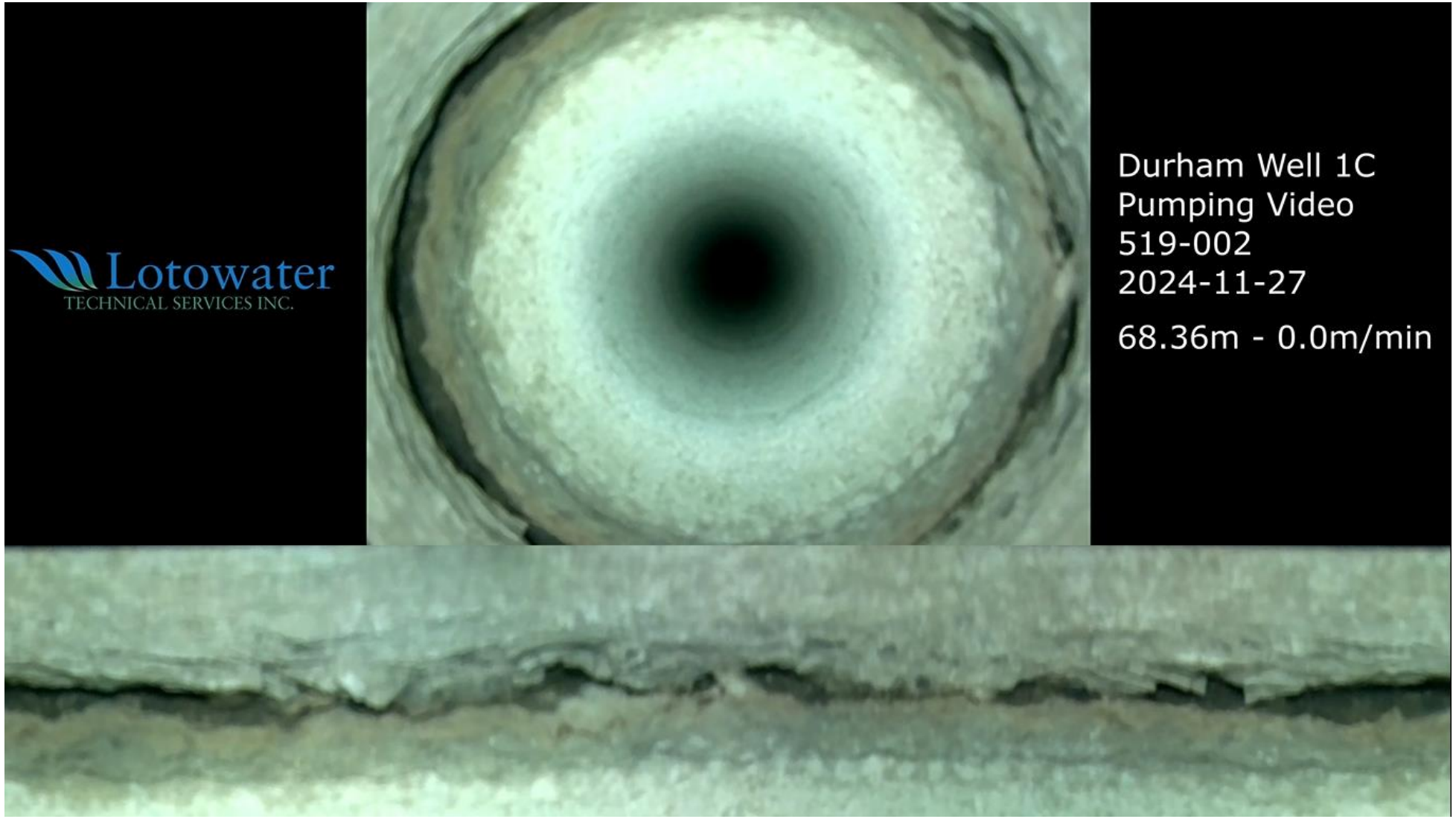
MUNICIPALITY OF West Grey
nestled in nature



Reference: Aardvark Drilling Inc.

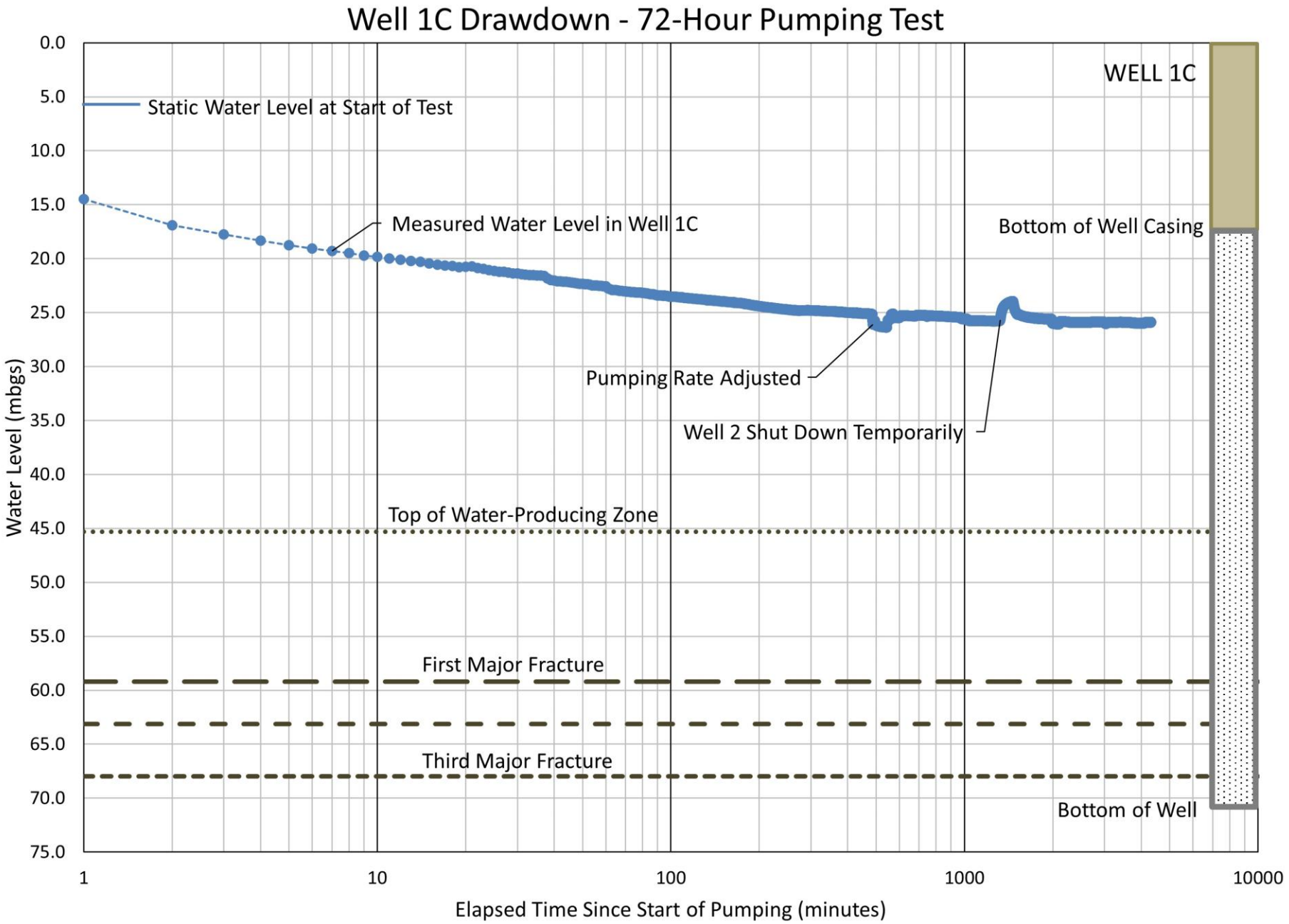

Lotowater
TECHNICAL SERVICES INC.
Durham Well 1C
Pumping Video
519-002
2024-11-27
59.58m - 0.0m/min

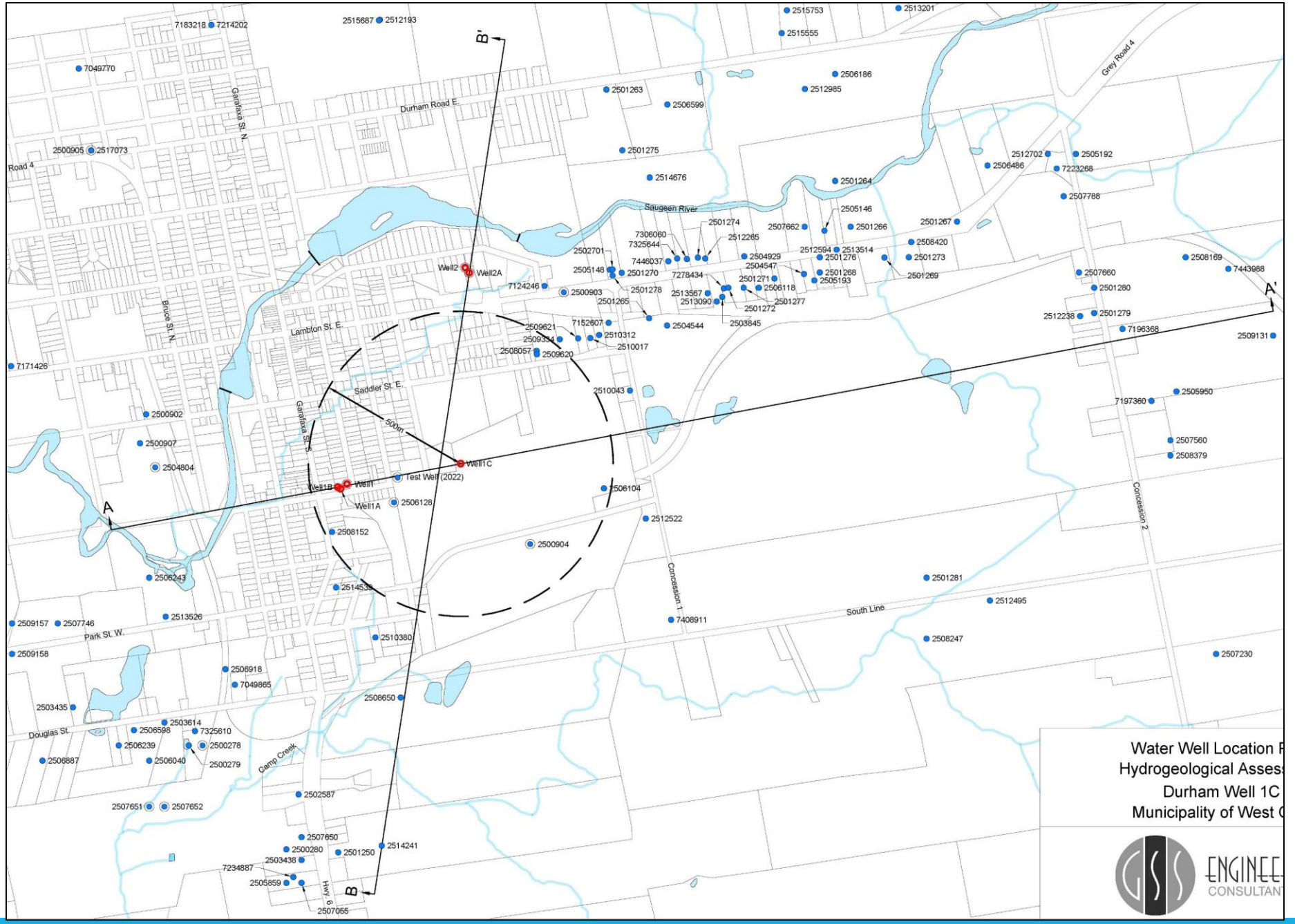

Lotowater
TECHNICAL SERVICES INC.
Rockwood Terrace
Static Video
519-002
2024-11-18
63.78m - 0.0m/min

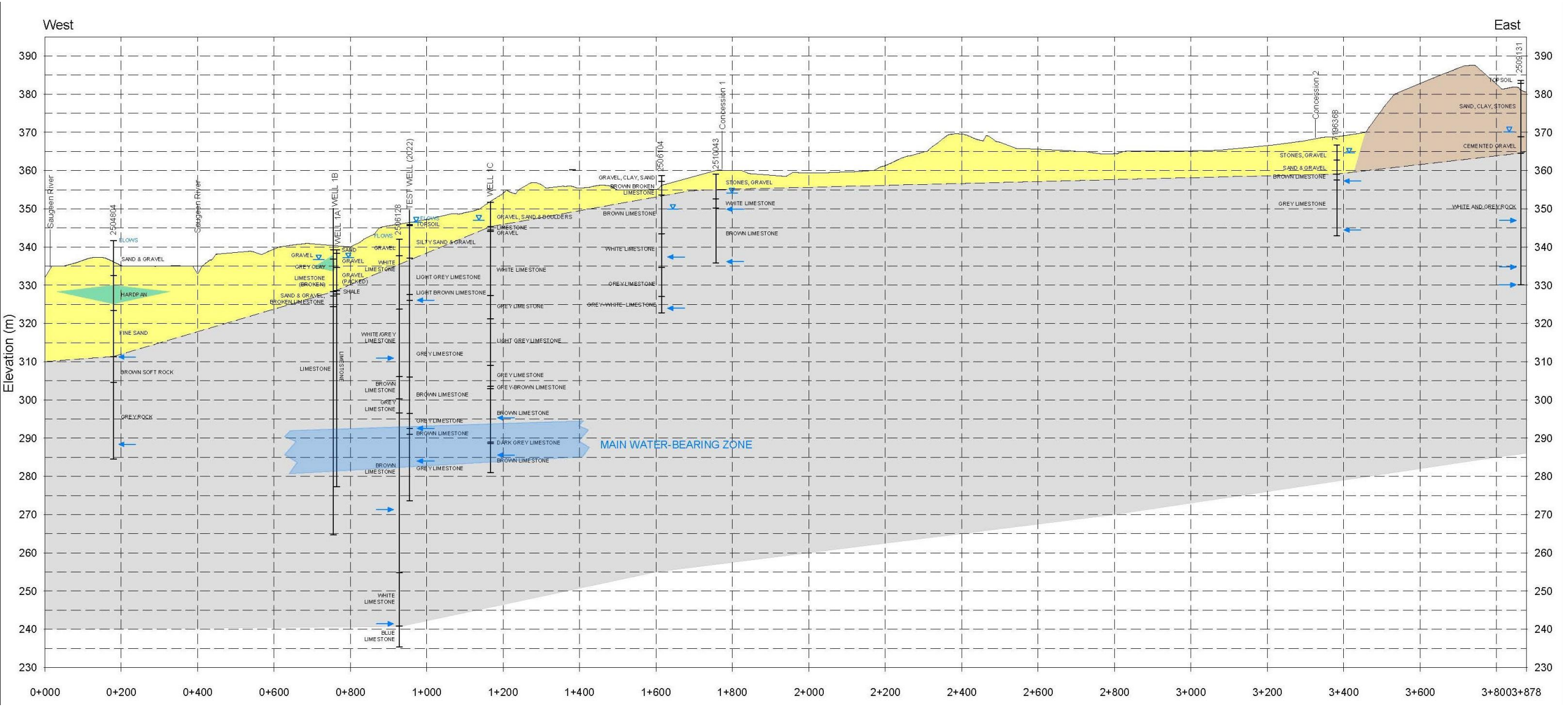

Lotowater
TECHNICAL SERVICES INC.
Durham Well 1C
Pumping Video
519-002
2024-11-27
68.36m - 0.0m/min

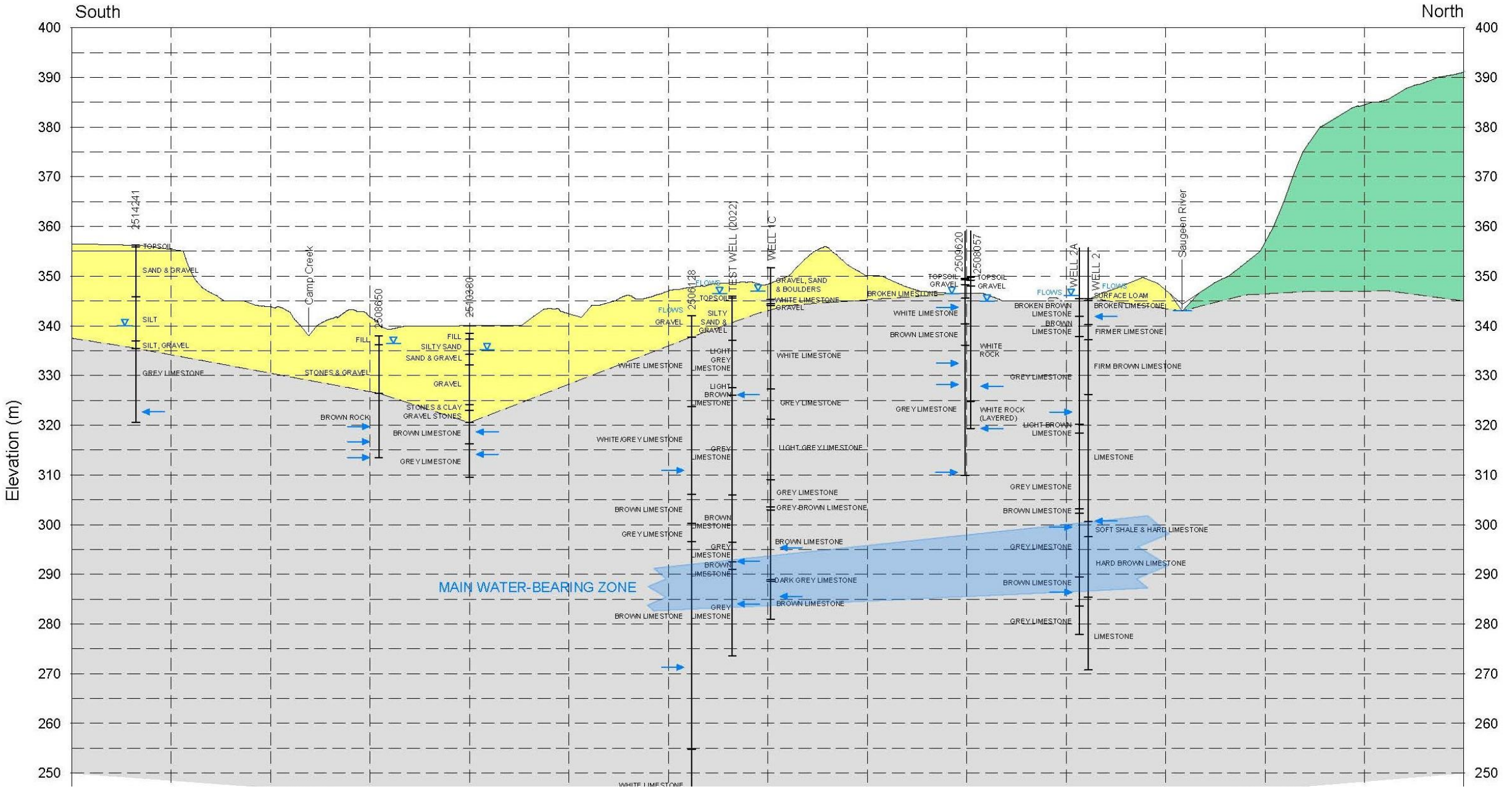
New Well Construction Program…Continued

- Long-term (72-hr) pumping test of Well 1C carried out in December 2024.
- Water levels continuously monitored in Well 1C, 2022 test well, and existing municipal wells.
- Notices distributed to nearest private well owners on Saddler St. E. and Concession 1 prior to test.
- No complaints of interference with private wells were received.
- Well records indicated that private wells obtained water from shallower zones in the bedrock.


Well 1C Drawdown - 72-Hour Pumping Test
WELL 1C
Static Water Level at Start of Test
Measured Water Level in Well 1C
Bottom of Well Casing
Pumping Rate Adjusted
Well 2 Shut Down Temporarily
Top of Water-Producing Zone
First Major Fracture
Third Major Fracture
Bottom of Well
Water Level (mbgs)
Elapsed Time Since Start of Pumping (minutes)
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
45.0
50.0
55.0
60.0
65.0
70.0
75.0
1
10
100
1000
10000


Durham Road E.
Grey Road 4
Saugeen River
Lambton St. E.
Saddler St. E.
Garafraxa St. N.
Garafraxa St. S.
Bruce St. N.
Concession 1
Concession 2
South Line
Park St. W.
Douglas St.
Camp Creek
Hwy. 6
500m
Well1
Well1A
Well1B
Well1C
Well2
Well2A
Test Well (2022)
A
A'
B
B'
Water Well Location
Hydrogeological Assess
Durham Well 1C
Municipality of West


West
East
Elevation (m)
Saugeen River
Saugeen River
2504804
WELL 1A
WELL 1B
TEST WELL (2022)
2506128
WELL 1C
2506104
2510043
Concession 1
Concession 2
1963&B
2509131
FLOWS
SAND & GRAVEL
HARDPAN
FINE SAND
BROWN SOFT ROCK
GREY ROCK
GRAVEL
GREY CLAY
LIMESTONE (BROKEN)
SAND & GRAVEL, BROKEN LIMESTONE
SAND
GRAVEL
WHITE LIMESTONE
SHALE
LIMESTONE
TOPSOIL
SILTY SAND & GRAVEL
GRAVEL
LIMESTONE GRAVEL
LIGHT GREY LIMESTONE
LIGHT BROWN LIMESTONE
WHITE/GREY LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
WHITE LIMESTONE
BLUE LIMESTONE
GRAVEL, SAND & BOULDERS
WHITE LIMESTONE
GREY LIMESTONE
LIGHT GREY LIMESTONE
GREY LIMESTONE
GREY-BROWN LIMESTONE
BROWN LIMESTONE
DARK GREY LIMESTONE
BROWN LIMESTONE
GRAVEL, CLAY, SAND
BROWN BROKEN LIMESTONE
BROWN LIMESTONE
WHITE LIMESTONE
GREY LIMESTONE
GREY-WHITE LIMESTONE
STONES, GRAVEL
WHITE LIMESTONE
BROWN LIMESTONE
MAIN WATER-BEARING ZONE
STONES, GRAVEL
SAND & GRAVEL
BROWN LIMESTONE
GREY LIMESTONE
TOP SOIL
SAND, CLAY, STONES
CEMENTED GRAVEL
WHITE AND GREY ROCK
390
380
370
360
350
340
330
320
310
300
290
280
270
260
250
240
230
0+000
0+200
0+400
0+600
0+800
1+000
1+200
1+400
1+600
1+800
2+000
2+200
2+400
2+600
2+800
3+000
3+200
3+400
3+600
3+8003+878


South
North
Elevation (m)
400
390
380
370
360
350
340
330
320
310
300
290
280
270
260
250
2514241
TOPSOIL
SAND & GRAVEL
SILT
SILT, GRAVEL
GREY LIMESTONE
Camp Creek
2508650
FILL
STONES & GRAVEL
BROWN ROCK
BROWN LIMESTONE
GREY LIMESTONE
2510380
FILL
SILTY SAND
SAND & GRAVEL
GRAVEL
STONES & CLAY
GRAVEL STONES
2506128
FLOWS
GRAVEL
TOPSOIL
SILTY SAND & GRAVEL
WHITE LIMESTONE
LIGHT GREY LIMESTONE
LIGHT BROWN LIMESTONE
GREY LIMESTONE
WHITE/GREY LIMESTONE
BROWN LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
TEST WELL (2022)
GRAVEL, SAND & BOULDERS
WHITE LIMESTONE GRAVEL
WHITE LIMESTONE
GREY LIMESTONE
LIGHT GREY LIMESTONE
GREY LIMESTONE
GREY-BROWN LIMESTONE
BROWN LIMESTONE
DARK GREY LIMESTONE
BROWN LIMESTONE
WELL 1C
2509620
TOPSOIL
GRAVEL
BROKEN LIMESTONE
WHITE LIMESTONE
BROWN LIMESTONE
WHITE ROCK
GREY LIMESTONE
GREY LIMESTONE
2508057
TOPSOIL
GRAVEL
WHITE ROCK (LAYERED)
LIGHT BROWN LIMESTONE
WELL 2A
FLOWS
BROKEN BROWN LIMESTONE
BROWN LIMESTONE
WELL 2
FLOWS
SURFACE LOAM
BROKEN LIMESTONE
FIRMER LIMESTONE
FIRM BROWN LIMESTONE
GREY LIMESTONE
LIMESTONE
GREY LIMESTONE
BROWN LIMESTONE
SOFT SHALE & HARD LIMESTONE
GREY LIMESTONE
HARD BROWN LIMESTONE
BROWN LIMESTONE
GREY LIMESTONE
LIMESTONE
Saugeen River
MAIN WATER-BEARING ZONE

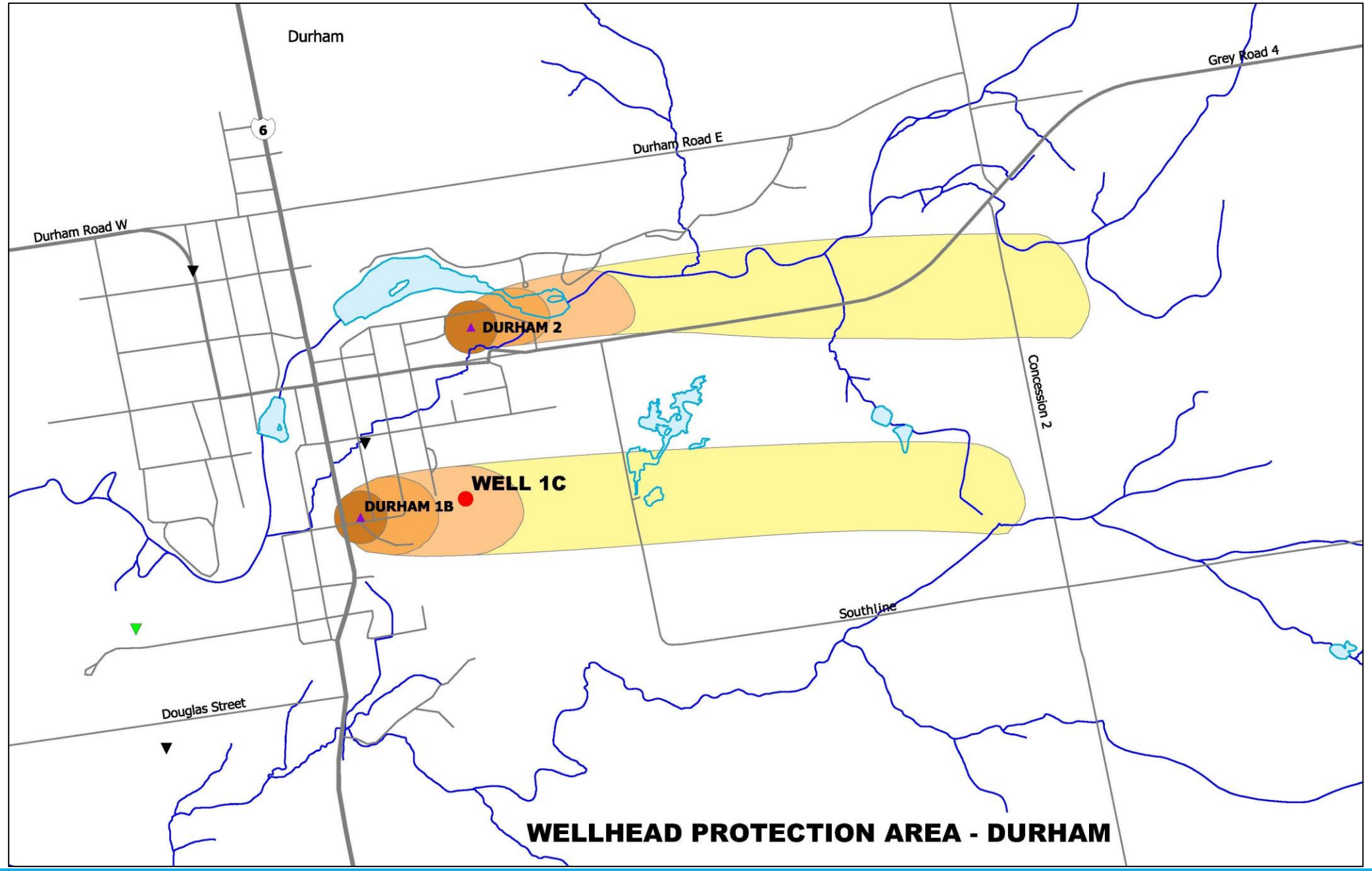
New Well Construction Program…Continued

- Monitoring showed strong hydraulic connection between Well 1C and Wells 2, 2A; subdued connection with Well 1B.
- Testing indicated Well 1C will sustainably yield water at the test rate of 2,160 m^3/day (330 Igpm).
- Alternative #5 meets Problem Definition Requirements.
- Alternative #5 is the Preliminary PREFERRED SOLUTION.

New Well Construction Program…Continued

Next Steps for Well 1C

- Complete hydrogeological assessment report to support application for Permit to Take Water.
- Update existing wellhead protection area under source water protection program, as necessary.


Durham
6
Durham Road E
Durham Road W
Grey Road 4
DURHAM 2
WELL 1C
DURHAM 1B
Concession 2
Southline
Douglas Street
WELLHEAD PROTECTION AREA - DURHAM

Water Treatment

- Water quality is similar to Well #2 and #2A.
- Raw water can be treated at Well #1B or #2 pumphouse.

Factors to Be Considered:

- Distance/length of raw watermain.
- Raw water quality issue during travel to pumphouse.
- Ability to accommodate additional equipment in pumphouse.
- Standby power.
- Site space restriction.

Alternative Design Concepts for Preferred Solution

Design Concepts include:

A) Construct new WTP building at Well #1C location.

B) Treatment of raw water at existing treatment plant at:

(i) Well #2 pumphouse, or

(ii) Well #1B pumphouse.

Design Concepts Highlights: Alternative A

- Will require new treatment plant building
- Building to accommodate cartridge filter, UV reactor
- New diesel generator for backup power.
- New PLC and control equipment.
- Most expensive Alternative.

Design Concepts Highlights: Alternative B

- Irrespective of Well #2 or Well #1B pumphouse raw watermain construction required.
- Expansion of treatment building is required.
- Additional cartridge filter and UV reactor are needed
- SCADA/PLC upgrades.
- Associated civil, electrical and mechanical upgrades

Design Concepts Highlights: Alternative B(i): Well #2 Pumphouse

Less desirable Alternative due to:

- Long length of raw watermain.
- Raw watermain construction is very expensive due to tearing apart of several existing streets.
- Possible raw water quality issues due to water stagnation.
- No room at site to expand building.

Design Concepts Highlights: Alternative B(ii): Well #1B Pumphouse

More desirable Alternative due to:

- Shorter length of raw watermain.
- Lesser or no issues due to water stagnation.
- Raw watermain construction relatively less expensive due to shorter distance.
- Lesser or no issues due to water stagnation.

Design Concepts Highlights: Alternative B(ii)…Continued

- Majority of construction on new road access to Rockwood Terrace
- Only one (1) existing street block will be disrupted.
- Building site is tight but better than Well #2 pumphouse site.

Screening of Alternative Design Concepts for Preferred Solution

ALTERNATIVE1.	DECISION	RATIONALE FOR NOT CARRYING FORWARD
Alternative A: New WTP Building	X	Most expensive option, but feasible.
Alternative B(i): Accommodate at Well #2 Pumphouse	X	Feasible but much more expensive than B(ii)
Alternative B(ii): Accommodate at Well #1B Pumphouse	✓	Feasible and least expensive
1. Do Nothing	✓	Carried forward-must be considered
2. Reduce Water Loss and Improve Conservation	✓	Carried forward – must be considered in conjunction with Alternative B(i)

Evaluation of Screened Alternative Design Concepts

Due to the advantages of Alternative B(ii), this Alternative was evaluated further for impact on:

- Public Health and Safety
- Natural Environment
- Social/Cultural/Legal Jurisdictional
- Economic/Financial
- Technical

Evaluation Criteria

Public Health and Safety

- Ability to comply with Provincial ODWQS

Natural Environment

- Potential effects to natural environment (air, land, water)
- Environmentally Sensitive Area
- ANSI (Areas of Natural & Scientific Interest)

Evaluation Criteria:
Natural Environment…Continued

- Woodlots
- Creeks
- Wetlands
- Wildlife and birds
- Vegetation
- Air Quality
- Groundwater

Evaluation Criteria…..Continued

Social/Cultural/Legal Jurisdictional

- Conformity with local, county and Provincial policies and guidelines:
  - Official Plan
  - Zoning by laws
  - Provincial Policy Statement
  - MECP Policies
- Potential Private Wells Interference

Evaluation Criteria:
Social/Cultural/Legal Jurisdictional…Continued

- Compatibility with Cultural/Heritage/Agricultural Resources:
  - Heritage Sites
  - Agricultural Lands
  - Archaeology, Native land claims and Indian Affairs
  - Aesthetics
  - Property requirements including negotiations and agreements

Evaluation Criteria ….Continued

Technical

- Capability, reliability, flexibility
- Utilization of existing infrastructure
- Operating complexity
- Construction issues-on and off site
- Approvals, implementation requirements

Evaluation Criteria ....Continued

Economic/Financial

- Capital cost
- Annual O & M costs

Evaluation of Alternative Solutions

Shortlist Alternative Solution	Public Health & Safety	Natural Environment	Evaluation Summary
	Ability to comply with ODWO, License & Permits	Potential Effects for Natural Environment:	Least Preferred ● ↓ ● Most Preferred ●
<u>Alternative 1</u> Do Nothing	✶ Non-Compliance if Growth Continues	✶ None	●
<u>Alternative B(ii)</u> New Groundwater Supply Well with Existing Well #1B Pumphouse	✶ Can comply with Ontario Drinking Water Standards	✶ Impact on Aquifer, <u>but</u> per Provincial Approval	●

Evaluation of Alternative Solutions…Continued

Shortlist Alternative Solution	Social/Cultural/Legal Jurisdictional		Evaluation Summary
	Conformity with local, county, provincial planning policies & guidelines	Potential land use impacts & cultural/heritage/agricultural resources	
<u>Alternative 1</u> Do Nothing	Incompatible with: ✶ Municipal goals and ✶ Provincial policies		●
<u>Alternative B(ii)</u> New Groundwater Supply Well with Existing Well #1B Pumphouse	Will Meet: ✶ Provincial Policies ✶ MECP License & Permit	✶ Interference with Well #2 and #2A	●

Evaluation of Alternative Solutions…Continued

Shortlist Alternative Solution	Technical			Evaluation Summary
	Capability, Reliability, flexibility	Implementation & Operability	Construction Issues & Approvals	
<u>Alternative 1</u> Do Nothing	* Cannot meet capacity requirements	* None	* No construction impact	
<u>Alternative B(ii)</u> New Groundwater Supply Well with Existing Well #1B Pumphouse	* Will meet water supply requirements * Provides source redundancy	* Maximizes existing infrastructure use * Plant operation will not change significantly	* Construction impact limited to site * Some traffic impact * Construction impact minimal (with proper mitigation measures * Approvals under West Grey control	

Evaluation of Alternative Solutions…Continued

Shortlist Alternative Solutions	Public Health & Safety and Natural Environment	Social/Cultural Legal Jurisdictional	Technical	Overall
Alt # 1	●	●	●	●
Alt # B(ii)	●	●	●	●

PRELIMINARY RECOMMENDED ALTERNATIVE B(ii)

Involves:

- Construction of raw watermain from Well #1C to #1B pumphouse.
- Standby power for Well #1C from #1B pumphouse diesel generator.
- Chlorination facility at Well #1C pumphouse.
- Additional cartridge filter and UV reactor for Well #1C.

Also:

- Continue program to reduce watermain losses.

Thank You
Comment Sheets
Questions?????