



FISHER ENGINEERING LTD.

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Lower Coverdale, New Brunswick E1J 0A2
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July 22nd, 2021

File: DS370

Ms. Crystale Harty
Acting Director
Project Assessment Branch
Department of Environment
20 McGloin Street
PO Box 6000
Fredericton, NB E3B 5H1

Attention: Ms. Harty:

Re: New Make Up Water Wells at Magic Mountain, Moncton, NB

Enclosed is an electronic copy of the registration document for the above noted undertaking. Once an EIA file number is assigned, the fee will be paid on line.

If you have any questions or require further details, please do not hesitate to contact the undersigned.

A handwritten signature in black ink that reads 'Michael Fisher'. The signature is written in a cursive style with a horizontal line underneath it.

Michael Fisher, P. Eng.

MJF

Enclosures

cc: Ms. Rachelle Voisine, DELG, Rachelle.Voisine@gnb.ca
cc: Mr. John Jelly, Magic Mountain Ltd., wave@magicmountain.ca

EIA Registration Magic Mountain Water Park Ltd.

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EIA Registration Magic Mountain Water Park Ltd.

Pursuant to Section 5(2) of
The Environmental Impact Assessment Regulation 87-83
Clean Environment Act

1 The Proponent

Name: Magic Mountain Water Park Ltd.

Address: 150 Magic Mountain Road, P.O. Box 29095 RPO North End Moncton, NB
E1G 4R3

Primary Contact Executive Officer: John Jelly, (506) 857-9283,
wave@magicmountain.ca

Principal Contact Person for Purposes of EIA:
John Jelly, (506) 857-9283 and
Michael Fisher, Fisher Engineering Ltd. (506) 863-1991.

Property Ownership: Same as Proponent

2 The Undertaking

Name: Magic Mountain Water Park Ltd.

Project Overview: This project involves the use of two recently drilled wells for the purpose of make up water within the existing water park. The owner had two wells drilled on the subject property in 2020 by Hawkes Well drilling. Since that time, it came to the attention of DELG that the wells were drilled and subsequently, the proponent was requested to register the project.

Purpose/Rationale/Need: The subject property has been the site of a water park facility since it opened back in 1987. The park is connected to the city of Moncton municipal water supply; however, the proponents are trying to reduce operating costs especially in the off season. The recently constructed wells would be used for makeup water in the offseason, washing of the property during after hours, etc. The water that would be withdrawn from the wells would not be mixed with the potable water taken from the City that is used by the public.

Project Location: The subject property is located at 150 Magic Mountain Road in Moncton, New Brunswick, see attached Figure 1. The subject property is currently the site of Magic Mountain Water Park. Service New Brunswick identifies the parcel as PID

70171350 and is located within the City limits of Moncton. The subject property covers an approximate area of 4.88ha.

Siting Considerations: The project location was chosen because of the existing facility and proximity to existing building infrastructure on site.

The land is zoned Tourism and Recreation Zone (TR), which allows for the existing development.

The site is easily accessible off Magic Mountain Road.

The existing development area on the project site does not fall within 30m of a coastal marsh or provincially significant wetland, refer to attached GeoNB figures in appendix A. There are no regulated wetlands located within 30m of the site.

Physical Components and Dimensions of the Project: The existing site plan is attached. Currently the development area is completely developed with a water and amusement park (Magic Mountain). In 2020, the proponent retained the services of Hawkes Well Drilling to drill two wells on the subject property with the goal to provide make up water to the park. Pictures of the site are attached.

The existing site is connected to the City of Moncton municipal water and sanitary systems.

Construction Details:

There is no construction associated with this project. The proponent had previously installed the wells and infrastructure, piping to the adjacent buildings. The proponent would like to use the new wells starting in the 2021 offseason (fall 2021).

Operation and Maintenance Details: The proponent's existing facility and the proposed apartment will require a daily groundwater withdrawal rate that exceeds 50m³/day. A hydrogeological evaluation of the existing wells that were drilled in 2020 for the proposed makeup water was identified by NBDELG as being required for this project.

The hydrogeological program will follow the NBDELG Water Supply Assessment Guideline. The program will consist of performing a 48 hr pump test on both existing wells. The pumping tests will be completed in August 2021 when groundwater recharge rates are low, which will allow for determining the long-term sustainability of the aquifer. Pumping test will be conducted as outlined in the guideline.

Based on the well drillers estimated safe yields, of 15 and 30igpm from the two wells, this will be the targeted pumping rates. Step tests will be completed at the start of the hydraulic testing to establish the preferred pumping rate for the long-term test.

A WSSA application to complete the hydrogeological assessment for these two wells is attached is Appendix C.

Project Related Documents: The proponent provided the well logs and analytical data from the work completed in 2020.

3 Description of the Existing Environment

Physical and Natural Features:

- The entire property is currently developed. There are no plans for construction at this time associated with this registration.
- Based on a topographic survey of the site, surface elevation across the site ranges from 100m down to 80 metres above mean sea level.
- Surface water drainage across the site is to the south into the road side ditch of Magic Mountain Road.
- Shallow groundwater flow across the property is expected to follow the local topography, which slopes southward. Deeper groundwater likely flows in a more northeasterly direction aligned with regional faults. The area to the south and west that could potentially contribute groundwater to the study area is occupied by the Moncton zoo, golf course, commercial development and vacant land.
- The regional bedrock geology is mapped as late Carboniferous stratified rock belonging to the Pictou Group, which is a subbasin of the Maritimes Carboniferous Basin. Mapping indicates that within the Pictou Group, the site may fall within the Richibucto Formation, which consists mainly of grey sandstone (Rivard et al. 2003).
- The Richibucto Formation has been described as one of the more productive sandstone formations in the province and has been described as a good aquifer throughout the Moncton basin. The majority of the domestic wells drilled in this formation generally yield 20+ igpm (Carr, 1959).
- There are no municipal wells, municipal wellfields, or protected watersheds within 500 metres of the subject site. Surrounding properties rely on a combination of municipal water and private wells to supply potable water. Within 500 metres of the subject site there are approximately 23 permanent residents. The neighbouring zoo attraction owned by the City of Moncton is also connected to the municipal water system for public use. They also currently have two wells that they use for the animals and site cleaning so that they do not have to rely 100% on their own municipal water.
- There were no regulated wetland identified on the GEONB mapping near the subject property boundary. A copy of the GeoNB mapping is attached.

The following are some of the references and personnel that were contacted and used in order to gather information regarding the physical and natural features of the subject and surrounding properties.

1. Environment Canada Species at Risk website - <http://www.sararegistry.gc.ca>
2. Canadian Species at Risk. Committee on the Status of Endangered Wildlife in Canada. Web site: <http://www.cosewic.gc.ca>
3. Canadian Wildlife Service website - <http://www.naturecanada.ca>
4. Department of Environment Government website – designated wellfields - <http://www.gnb.ca/0009/0371/0001/0003.html>, and protected watersheds - <http://www.gnb.ca/0009/0371/0004/0003.html>.

Cultural Features: None observed or reported on the subject site or adjacent properties.

Existing and Historic Land Uses: Historical information was obtained through a review of historical aerial photos (1944, 1953, 1963, 1976, 1982, 2001, 2011, 2020). According to the proponent, the subject property has been developed since 1987. Construction of the water park started in 1986 and was officially opened in 1987. The water park was a complement to the already existing Moncton zoo and Magnetic Hill attractions. Aerial photos show the vacant land prior to the 2001 aerial photo.

4 Summary of Environmental Impacts

As stated previously, there are no construction activities proposed for this project, the two existing wells were previously drilled in 2020. The potential impacts are associated with the proposed pumping and long-term impacts on the aquifer. Hydraulic testing is proposed and the water source supply assessment application is attached.

5 Summary of Proposed Mitigation

With no proposed construction activities, mitigation measures are not required. The hydraulic study will provide details on any requirements on the wells, ie. Flow restrictions, treatment etc. These will be presented if required in the hydraulic report prepared upon completion of the water study.

6 Public Involvement

The following stakeholders will be contacted directly via a letter in order to obtain input on the project:

- Elected officials, the City of Moncton, residents bordering the subject property that are not on municipal water, and First Nations representatives.

The letter will outline the scope of the project and will include a schematic of the site. Contact information for any comments will also be provided. The public will be given thirty days to provide comments. Once the comments have been received, a report will be prepared regarding the public's input. The report will be submitted within sixty days of project registration

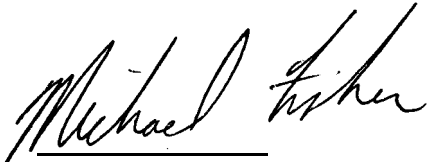
7 Approval of the Undertaking

Approvals will be required from the following authorities: New Brunswick Department of Environment prior to being able to withdrawal more than 50m³/day from the existing onsite wells.

8 Funding

No applications for a grant or loan of capital funds from a government agency have or will be submitted. Magic Mountain Water Park Ltd. will be funding the project.

9 Signature



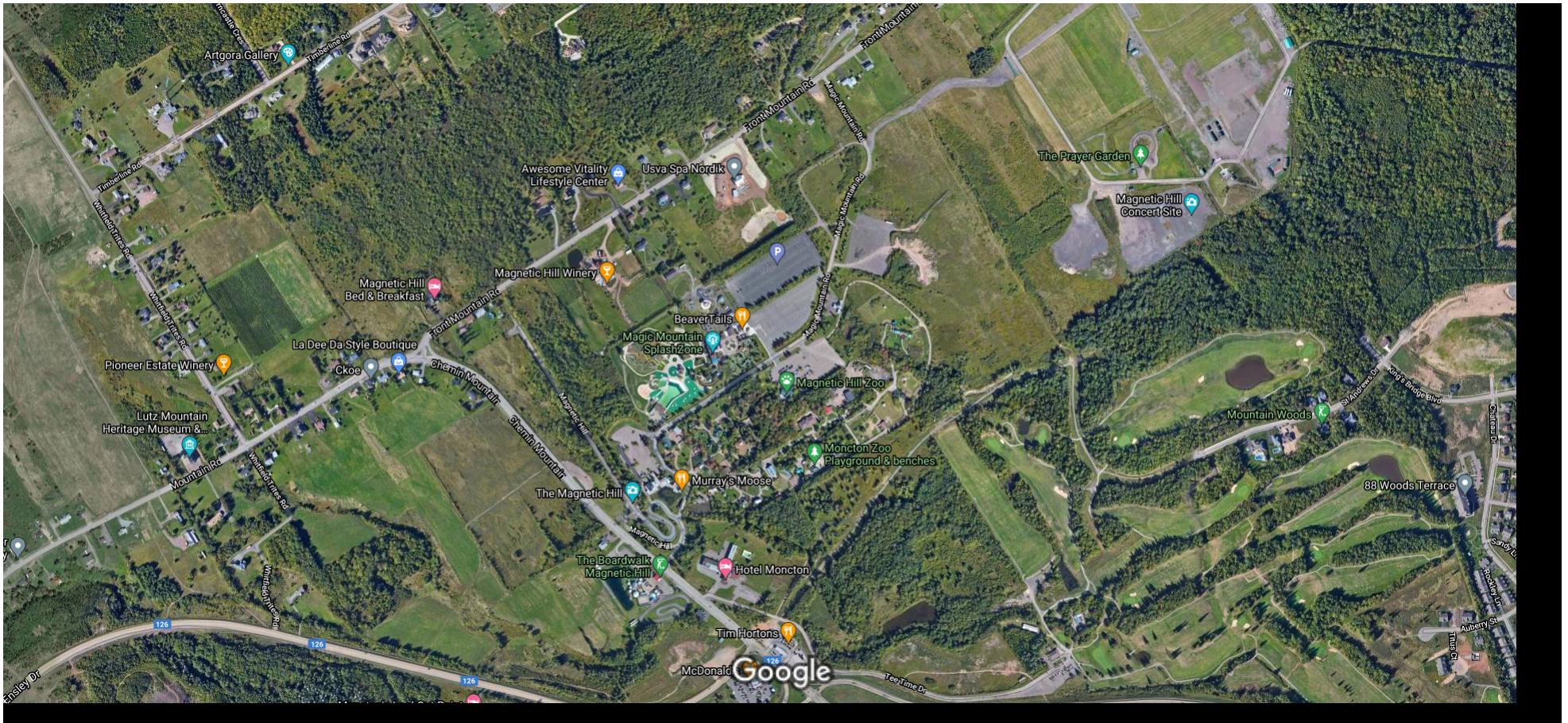
Michael Fisher, P.Eng

July 22nd/2021
Date

DS370/EIA registration.doc

APPENDIX A

FIGURES



Imagery ©2021 CNES / Airbus, Maxar Technologies, Map data ©2021 100 m

Figure 1: Site Location Showing Surrounding Development



Properties located along Front Mountain Road have private water wells for potable water

Existing Winery Property and well location to be used for monitoring.

Existing Residential well to be used for monitoring.

Existing well PW1

Existing well PW2

Moncton Zoo is connected to the municipal water system and also has two existing wells for animal and cleaning usage.

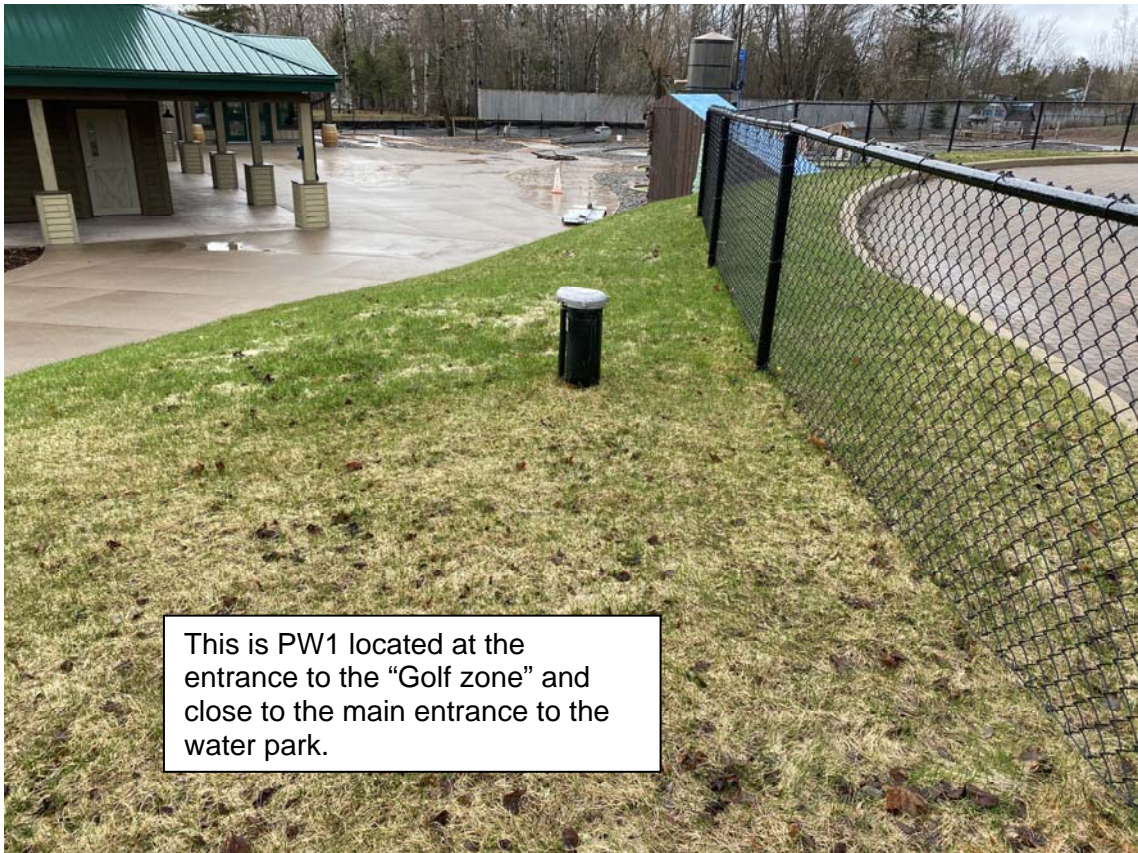
Properties located along Mountain Road are connected to the municipal water system

Properties located along Mountain Road are connected to the municipal water system

Figure showing existing wells on the subject property and the two adjacent wells to be monitored during hydraulic testing. Aerial Photo from Google Earth.

APPENDIX B

ADDITIONAL DOCUMENTATION



This is PW1 located at the entrance to the "Golf zone" and close to the main entrance to the water park.



This is PW2 located at the western portion of the property.

APPENDIX C

WASA APPLICATION

**Water Supply Source Assessment
Step One Application
Magic Mountain Ltd.,
Moncton NB**

**Pursuant to Section 3(5) of
The Water Quality Regulation 82-126
Clean Environment Act**

Please answer the following questions:

1) Name of proponent: Magic Mountain Ltd.

2) The proposed water supply is to be used for what purpose?

Proposed water supply is for make up water in pools especially during the off-season periods.

3) Required water quantity (in m³/day):

There is no set amount required as the proponent would like to use the wells if needed. Well drillers safe yield from the two wells is 30igpm and 15 igpm. The goal would be to enable the wells to be pumped at those estimated safe yield amounts without affecting aquifer.

4) List alternate water supply sources in area (including municipal systems):

The property is currently provided potable water from the City of Moncton as is the neighbouring Moncton Zoo development and Boardwalk development located off Magnetic Hill Road. There is no intent to eliminate the City of Moncton potable water supply, the goal is to be able to use these wells to provide make up water to the pools especially during the off-season times.

5) Outline proposed work schedule:

The two existing wells (PW1 and PW2) were previously drilled in 2020 by Hawkes Well Drilling. If conditions permit (i.e. minimal recharge conditions) a 48 hr pump test will be performed in the late summer of 2021 on each well. Surrounding wells will be monitored. A step test will be completed on both wells at the start of the hydraulic testing to determine an appropriate pumping rate. Reporting will be completed once the pumping test is performed.

A map showing the existing well locations is attached along with the well drillers report.

6) Discuss area hydrogeology as it relates to the project requirements:

Regional bedrock mapping indicates that the surrounding area straddles several contact points between two main bedrock units. There is reportedly a fault that traverses the site in a northeast/southwest orientation. The Berry Mills Fault appears to be located just north of the subject property. The regional bedrock geology is mapped as late Carboniferous stratified rock belonging to the Pictou Group, which is a subbasin of the Maritimes Carboniferous Basin. Mapping indicates that within the Pictou Group, the site falls within the Richibucto Formation, which consists mainly of grey multistoried sandstone interstratified with red-mudrock dominated sequences (Rivard et al. 2003).

North of the fault, the bedrock unit is mapped as belonging to the Hillsborough Formation consisting of polymictic conglomerate, sandstone, and mudstone. (Johnson and Peter, 1997).

Surficial geology maps indicate that the area is underlain by late Wisconsinan age morainal sediments consisting of hummocky, ribbed and rolling ablation till some lodgement till, minor silt, sand, gravel, and boulders generally 0.5. to 3.0m thick (Rampton, 1984).

The Richibucto Formation has been described as one of the more productive sandstone formations in the province and is the best aquifer within Moncton Map-Area (Carr, 1959). The majority of the domestic wells drilled in this formation generally yield 20+ igpm (Carr, 1959).

Available domestic well logs received from the NBDELG database within a 500m radius of the site are summarized in the attached Table 1. Well yields range from 181.6 L/min (40igpm) to 45.4 L/min (10igpm) with a median yield of 90.8 L/min (20igpm). Well depths range from 142 to 27.4m. Details of the two wells drilled on the subject property in 2020 was provided via the well drillers report. The wells are 54.8 and 60.9m deep with estimated safe yields of 68.1 L/min and 136.2L/min. The two wells recently drilled on the subject property are similar construction to surrounding wells.

7) Identify any existing pollution or contamination hazards within a (minimum) 500 m radius of the proposed drill targets. If groundwater use problems (quantity or quality) have occurred in the past, then these should be identified. Historical land use that might pose a contamination hazard (i.e. tannery, industrial, disposal, etc.) should also be flagged:

Approximately 23 residential properties are located within a 500 m radius of the two wells that are located on private water wells. There are a few additional properties on Mountain Road; however, those are connected to the City of Moncton municipal water supply. The adjacent property to the north is the site of a winery. The Magnetic hill winery has it's well located near Front Mountain Road. According to the owner, they are permitted to apply pesticides on their fields; however, in the last ten years they have applied a herbicide to the crops twice.

Water quality in the area overall is generally good. Elevated levels of iron, manganese and Turbidity have been encountered at concentrations above their Health Canada drinking water guidelines in groundwater wells within 500m of the subject property. One of the surrounding wells has elevated sodium and chloride. Groundwater samples were collected from the two wells on the subject property in 2020 following the installation. Turbidity and

manganese levels were elevated in both samples with lead also being reported above potable water guidelines. As a follow up, the proponent was given permission to turn on PW1 for several hours to allow for the collection of a follow up sample. This was completed on June 21, 2021. The follow up sample from PW1 had an acceptable lead concentration of 0.3ug/L. Both the manganese and turbidity levels also decreased in the follow up sample. This is not surprising as turbidity levels typically decrease with extended use. Groundwater samples will be collected during the pumping test and analyzed for the potable water package as recommended in the WSSA guideline.

8) Identify any watercourse(s) (stream, brook, river, wetland, etc.) within 30 m of the proposed drill targets.

There are no watercourses or mapped wetlands within 30 m of the existing two well locations. GeoNB mapping was used to assist in locating any potential wetlands.

9) Identify site supervisory personnel involved in the source development (municipal officials, consultants and drillers):

The source development consultant is FISHER ENGINEERING LTD.

10) Attach a 1:10000 map and/or recent air photo clearly identifying the following:

- **proposed drill targets (existing wells)**
- **domestic or production wells within a 500 m radius from the existing well to be tested.**
- **any potential hazards identified in question 7**

Refer to the attached Figure.

11) Attach a land use / zoning map of the area (if any). Superimpose drill targets on this map.

The proposed development falls within the City of Moncton Planning Area. The subject property is zoned TR – Tourism and Recreation zone, which allows the existing recreational entertainment complex. The locations of the existing wells have been superimposed on the attached City zoning map.

12) Contingency plan for open loop earth energy systems

No open loop earth energy systems are proposed for this development, not applicable.

Enclosures

DS370/Water Supply Source Assessment Application.doc



Properties located along Front Mountain Road have private water wells for potable water

Existing Winery Property and well location to be used for monitoring.

Existing Residential well to be used for monitoring.

Existing well PW1

Existing well PW2

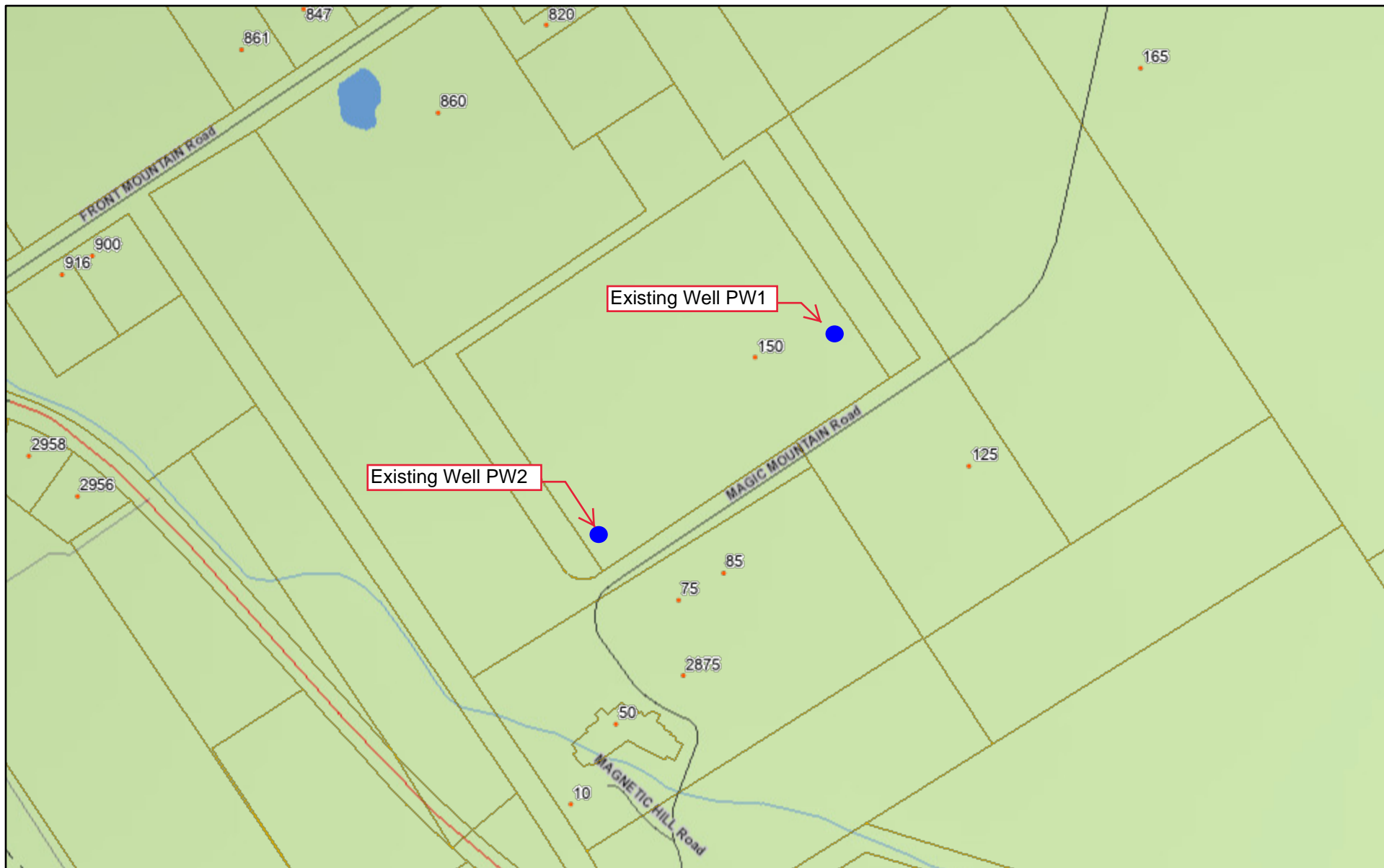
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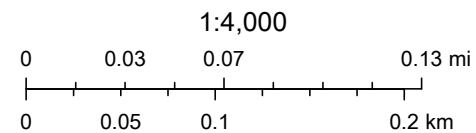
Figure showing existing wells on the subject property and the two adjacent wells to be monitored during hydraulic testing. Aerial Photo from Google Earth.

GeoNB Map Viewer



7/21/2021, 11:09:24 AM

- Civic Addresses
- Property Assessment
- parcels
- Large Scale / Grande échelle



Department of Environment & Local Government/Ministère de

GeoNB

This map is a graphical representation which approximates the size, configuration and location of features. This map is not intended to be used for legal descriptions or to calculate exact dimensions or area.

Section of Current City of Moncton Zoning Map

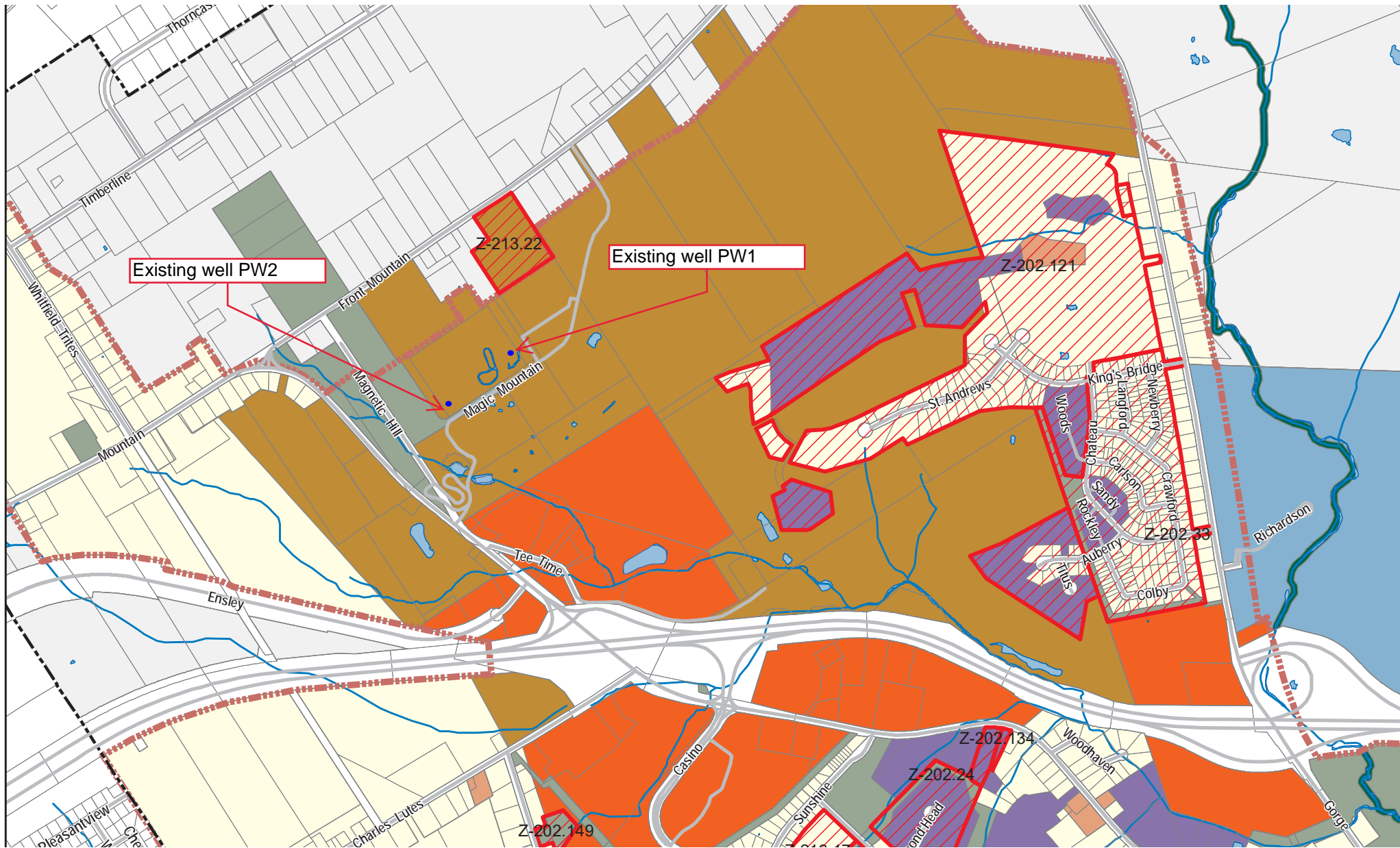


Table 1 Well Log Summary, 500m Radius PID 70171350

Report Number	Well	Casing	Rock	Yield	Rock Type
	Depths (ft)			igpm	
1039	135		10	10	Shale
1061	105		10	10	Shale
8470	210	20	4	15	Conglomerate
8863	100	40	10	40	Conglomerate
13663	125	40	3	30	Conglomerate
13664	285	40	2	15	Conglomerate
13665	465	40	2	20	Conglomerate
13666	465	40	2	30	Conglomerate
18319	400	40	12	30	Conglomerate
26276	350	40	10	20	Shale
26277	185	40	12	20	Conglomerate
36625	380	227	8	20	Conglomerate
37197	140	70	65	30	Sandstone
39845	90	44	42	10	Shale
91305800	125	40	10	20	Conglomerate
PW2	180	39	6	30	Sandstone
PW1	200	39	12	15	Sandstone

Max	465	227	65	40
Min	90	20	2	10
Average	232	53	13	21
Median	185	40	10	20

OFFICE USE ONLY FIELD NO.	HEALTH CODE	LAB NO.	SAMPLE RECEIVED DATE YR MO DAY	SAMPLE RECEIVED BY:	Well # PW2
	HEALTH OFFICE	EVENT NO.			

TESTING VOUCHER INFORMATION MANDATORY FOR WATER TEST
SEE BACK FOR DETAILS PLEASE PRINT
INFORMATION INCLUDED HEREIN SHOULD BE THE WELL OWNER AT TIME OF SAMPLING

P.I.D. NO. 70171350 WELL I.D. NO. 61328

FIRST NAME _____ LAST NAME _____
ADDRESS (MAIL RESULTS TO) _____
CITY/TOWN/VILLAGE _____ PROV. _____ POSTAL CODE _____
DAYTIME PHONE _____ FAX NO. _____
TEL. NO. _____ SAMPLE COLLECTED YR MO DAY HR MIN AM PM

WELL OWNER INFORMATION
INFORMATION INCLUDED HEREIN SHOULD BE THE WELL OWNER AT TIME OF DRILLING
FIRST NAME _____ LAST NAME _____
ADDRESS Magic Mountain
150 Magic Mountain Rd
CITY/TOWN/VILLAGE Moncton PROVINCE NB POSTAL CODE E1G4V7
WELL LOCATION: SAME AS ABOVE OR CIVIC NUMBER STREET NAME

DO YOU NEED A SAMPLE FOR YOUR MORTGAGE?
IF YOU WISH THE RESULTS TO BE RELEASED TO A MORTGAGE INSTITUTION PLEASE INCLUDE THE FOLLOWING CONTACT INFORMATION:
ATTENTION OF: _____
TEL NO. _____ FAX NO. _____

CITY/TOWN/VILLAGE _____ WELL PAID FOR BY PROVINCIAL DEPT. OF _____
WELL ON RESERVE? YES NO WELL ALREADY TAGGED? YES NO OLD WELL I.D. _____

SIGNATURE OF WELL OWNER _____

DRILLER'S LOG *

FROM (FT.)	TO (FT.)	COLOUR	ROCK TYPE
Ground Level	0	Red	Clay
6	32	Red	Conglomerate
32	57	Red	Sandstone
57	103	Red	shale
103	114	Brown	Sandstone
114	168	grey	Sandstone
168	180	Red	shale

WAS THE COST OF THIS WELL FINANCED BY NB HOUSING?
YES NO

WELL / WATER USE:
INDUSTRIAL ABANDONED DOMESTIC
EXPLORATORY MUNICIPAL MONITORING
HEAT PUMP OBSERVATION OTHER

TYPE OF WORK COMPLETED: NEW WELL DEEPENED
OTHER: _____

METHOD:
CABLE TOOL ROTARY OTHER _____

CASING INSTALLED:
LENGTH OF CASING ABOVE GROUND: 1 FT. _____ IN.
STEEL: 6 IN DIAM. FROM 0 FT. TO 39 FT.
PVC: _____ IN DIAM. FROM _____ FT. TO _____ FT.
SLOTTED _____ IN DIAM. FROM _____ FT. TO _____ FT.
SCREENS: TYPE: _____ SLOT SIZE _____
_____ IN DIAM. FROM _____ FT. TO _____ FT. DRIVE SHOE: YES NO

SETBACKS: SEE BACK FOR DETAILS SEPTIC TANK (1) NA FT. SEPTIC TANK (2) _____ FT. FIELD (2) _____ FT. FIELD (1) NA FT.
*RIGHT OF WAY OF ANY PUBLIC ROAD (1) _____ ROAD (2) _____
CENTER OF ROAD (1) 150 (2) _____
SETBACKS MEASURED _____ (NEW CONSTRUCTION)
APPROXIMATE SETBACKS AS INDICATED BY HOMEOWNER (EXISTING CONST.)

FLOWING WELL? YES NO IF YES - RATE: 0.25 igpm (approx.)

AQUIFER TEST: METHOD: AIR BAILER PUMP
INITIAL WATER LEVEL: 0 FT. BELOW TOP OF CASING
PUMPING RATE 30 igpm DURATION: 1 hrs. _____ min.
FINAL WATER LEVEL: 5 FT. BELOW TOP OF CASING
ESTIMATED SAFE YIELD: 30 igpm

WELL GROUTED? YES NO
FROM _____ FT. TO _____ FT. GROUT TYPE: _____
DRILLING FLUIDS USED: YES NO
TYPE: _____

IF INSUFFICIENT SPACE PLEASE USE ADDITIONAL SHEETS

TOTAL WELL DEPTH: 180 FT. DEPTH TO BEDROCK: 6 FT.
WATER BEARING 1 6 igpm AT 54 FT. 2 24 igpm AT 155 FT.
FRACTURE ZONES: 3 _____ igpm AT _____ FT. 4 _____ igpm AT _____ FT.

PUMP INSTALLATION: INSTALLED NOT INSTALLED
PUMP INTAKE SETTING: _____ FT. BELOW TOP OF CASING (Recommended)
PUMP TYPE: SUBMERSIBLE JET TURBINE
OTHER _____
WELL DISINFECTED? YES NO
TYPE _____

DRILLER'S COMMENTS _____

DRILLING COMPANY: Hawker Well Drilling
COMPLETION DATE: 20.06.04 YR. MO. DAY
LICENSE NO.: 354

G.P.S. (OPTIONAL)

I CERTIFY THAT THE WELL HEREIN DESCRIBED HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE WATER WELL REGULATION UNDER THE NEW BRUNSWICK CLEAN WATER ACT.

Signature of Driller _____ Signature of Helper _____

- WHITE - NBELG
- BLUE - Homeowner / Voucher
- YELLOW - Homeowner
- PINK - Drilling Company

KEEP THIS REPORT WITH YOUR IMPORTANT DOCUMENTS

OFFICE USE ONLY

FIELD NO.

HEALTH CODE LAB NO.
HEALTH OFFICE EVENT NO.

SAMPLE RECEIVED DATE
YR MO DAY

DRILLER'S REPORT

SAMPLE RECEIVED BY:

Well # PW1

TESTING VOUCHER INFORMATION MANDATORY FOR WATER TEST

SEE BACK FOR DETAILS PLEASE PRINT
INFORMATION INCLUDED HEREIN SHOULD BE THE WELL OWNER AT TIME OF SAMPLING

FIRST NAME LAST NAME

ADDRESS (MAIL RESULTS TO:)

CITY/TOWN/VILLAGE PROV. POSTAL CODE

DAYTIME PHONE FAX NO.

TEL. NO. SAMPLE COLLECTED YR MO DAY HR MIN AM PM

DO YOU NEED A SAMPLE FOR YOUR MORTGAGE?
IF YOU WISH THE RESULTS TO BE RELEASED TO A MORTGAGE INSTITUTION PLEASE INCLUDE THE FOLLOWING CONTACT INFORMATION:

ATTENTION OF:

TEL NO. FAX NO.

SIGNATURE OF WELL OWNER

WAS THE COST OF THIS WELL FINANCED BY NB HOUSING?
YES NO

WELL / WATER USE:
INDUSTRIAL ABANDONED DOMESTIC
EXPLORATORY MUNICIPAL MONITORING
HEAT PUMP OBSERVATION OTHER

TYPE OF WORK COMPLETED: NEW WELL DEEPENED

METHOD:
CABLE TOOL ROTARY OTHER _____

CASING INSTALLED:
LENGTH OF CASING ABOVE GROUND: 1 FT. IN.
STEEL: 6 IN DIAM. FROM 0 FT. TO 39 FT.
PVC: _____ IN DIAM. FROM _____ FT. TO _____ FT.
SLOTTED _____ IN DIAM. FROM _____ FT. TO _____ FT.

SCREENS: TYPE: _____ SLOT SIZE _____
_____ IN DIAM. FROM _____ FT. TO _____ FT.

DRIVE SHOE:
 YES NO

SETBACKS: SEE BACK FOR DETAILS SEPTIC TANK (1) NA FT.
SEPTIC TANK (2) _____ FT. FIELD (2) _____ FT. FIELD (1) NA FT.
*RIGHT OF WAY OF ANY PUBLIC ROAD (1) _____ ROAD (2) _____
CENTER OF ROAD (1) 200 (2) _____
SETBACKS MEASURED _____ (NEW CONSTRUCTION)
APPROXIMATE SETBACKS AS INDICATED BY HOMEOWNER (EXISTING CONST.)

FLOWING WELL? YES NO IF YES - RATE: _____ igpm (approx.)

AQUIFER TEST: METHOD: AIR BAILER PUMP
INITIAL WATER LEVEL: 5 FT BELOW TOP OF CASING
PUMPING RATE 15 igpm DURATION: 1 hrs. _____ min.
FINAL WATER LEVEL: 50 FT. BELOW TOP OF CASING

ESTIMATED SAFE YIELD: 15 igpm

WELL GROUTED? YES NO
FROM _____ FT. TO _____ FT. GROUT TYPE: _____

DRILLING FLUIDS USED: YES NO
TYPE: _____

DRILLER'S COMMENTS

DRILLING COMPANY: Hawker Well Drilling

COMPLETION DATE: 200603 YR. MO. DAY

LICENSE NO. 354

G.P.S. (OPTIONAL)

I CERTIFY THAT THE WELL HEREIN DESCRIBED HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE WATER WELL REGULATION UNDER THE NEW BRUNSWICK CLEAN WATER ACT.

Signature of Driller

Signature of Helper

P.I.D. NO. 70171350 WELL I.D. NO. 61327

WELL OWNER INFORMATION

INFORMATION INCLUDED HEREIN SHOULD BE THE WELL OWNER AT TIME OF DRILLING

FIRST NAME LAST NAME
Magic Mountain

ADDRESS
150 Magic Mountain Rd

CITY/TOWN/VILLAGE PROVINCE POSTAL CODE
Moncton NB E1G4U7

WELL LOCATION: SAME AS ABOVE OR
CIVIC NUMBER STREET NAME

CITY/TOWN/VILLAGE WELL PAID FOR BY PROVINCIAL DEPT. OF _____

WELL ON RESERVE? YES NO WELL ALREADY TAGGED? YES NO OLD WELL I.D. _____

DRILLER'S LOG *

FROM (FT.)	TO (FT.)	COLOUR	ROCK TYPE
Ground Level	3	Brown	fill
	3	Brown	Sandstone
	12	Red	Conglomerate
	65	Red	shale
	65	Red	shale
	125	Red	shale
	125	Brown	Sandstone
	143	Brown	Sandstone
	143	Grey	Sandstone
	178	Red	shale
	178	Red	shale
	200	Red	shale

IF INSUFFICIENT SPACE PLEASE USE ADDITIONAL SHEETS

TOTAL WELL DEPTH: 200 FT. DEPTH TO BEDROCK: 12 FT.

WATER BEARING 1 4 igpm AT 50 FT. 2 2 igpm AT 110 FT.

FRACTURE ZONES: 3 6 igpm AT 150 FT. 4 3 igpm AT 125 FT.

PUMP INSTALLATION: INSTALLED NOT INSTALLED

PUMP INTAKE SETTING: 165 FT. BELOW TOP OF CASING (Recommended)

PUMP TYPE: SUBMERSIBLE JET TURBINE

OTHER _____

WELL DISINFECTED? YES NO

TYPE: chlorine

- WHITE - NBELG
- BLUE - Homeowner / Voucher
- YELLOW - Homeowner
- PINK - Drilling Company

KEEP THIS REPORT WITH YOUR IMPORTANT DOCUMENTS

Water Quality Results, 500m Radius of PID 70497763

Parameter	DWQG	unit	Sample									PW2 (2020)	PW1 (2020)	PW1 (2021)
			<0.025	<0.025	<0.025	0.12	<0.025	<0.025	<0.025	<0.025	0.027			
Aluminum		mg/L	<0.025	<0.025	<0.025	0.12	<0.025	<0.025	<0.025	<0.025	0.027	0.002	0.04	0.021
Alkanity		mg/L	114	106	165	94.4	94.4	109	272	110	105	180	131	130
Arsenic	10	µg/L	<1.5	<1.5	1.5	<1.5	<1.5	<1.5	2.2	<1.5	1.6	<1	1	<1
Boron	5	mg/L	0.04	0.032	0.019	<0.01	0.042	0.011	0.047	<0.01	<0.2	0.019	0.032	0.018
Barium	1	mg/L	0.096	0.096	0.409	0.242	0.181	0.087	0.621	0.087	0.051	0.304	0.148	0.138
Bromine	10	mg/L	<0.1	<0.1	1.53	<0.1	<0.1	<0.1	0.383	<0.1	<0.1	0.05	0.03	
Calcium		mg/L	37.8	35.1	76.2	34.1	28.9	45.3	193	42.8	13.5	79.2	51.8	59.9
Cadmium	5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.01	0.09	<0.01
Chloride	250	mg/L	2.93	1.59	89	4.86	3.08	2.11	502	38.1	34.6	85.3	63.7	68.5
Conductivity		µS/cm	254	245	616	218	215	274	2010	357	427	643	468	489
Chromium	50	µg/L	15	15	14	10	12	<10	18	16	<10	<1	<1	<1
Copper	1000	µg/L	<10	<10	<10	39	<10	<10	19	<10	74	<1	162	1
E-coli			Ab	Ab	Ab	Ab	Ab	Ab	Ab	Ab				
Fluoride	1.5	mg/L	0.348	0.121	<0.1	<0.1	<0.1	0.122	<0.1	<0.1	0.539	0.22	0.36	0.19
Iron	0.3	mg/L	0.067	0.028	1.32	0.067	0.02	<0.01	0.902	0.77	0.745	0.17	0.07	0.54
Hardness		mg/L	110	103	225	100	85.8	136	596	147	38.6			
Potassium		mg/L	0.44	0.36	1.2	0.5	0.5	0.4	1.9	0.9	0.283	1.54	1.13	1.22
Magnesium		mg/L	3.68	3.8	8.44	3.64	3.29	5.58	27.7	9.72	1.2	13.7	10.3	11.1
Magnesium	0.02	mg/L	0.182	0.149	4.1	<0.005	<0.005	<0.005	1	1.2	0.025	0.053	0.207	0.155
Sodium	200	mg/L	10.1	7.59	21.6	4.66	13.3	5.43	151	11.4	74.2	22.6	18.7	19.5
Nitrite		mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
Nitrate		mg/L	<0.05	<0.05	<0.05	0.25	<0.05	0.15	0.1	0.1	0			
Nitrite + Nitrate	10	mg/L	<0.05	<0.05	<0.05	0.3	0.07	0.2	0.1	0.15	<0.05	0.06	0.17	<0.05
Lead	10	µg/L	1	1.1	1.3	<1	<1	<1	7.3	2.8	1.7	<1	32.1	0.3
pH	6.5-9.0		7.91	7.96	7.08	7.71	8.17	8.06	7.57	7.13	8.36	8	7.9	8
Antimony	6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.4	<1
Selenium	10	µg/L	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	1.9	<1	<1	<1
Sulphate	500	mg/L	14.7	11	4.31	4.38	9.42	15	16.9	10.7	47.6	13	10	11
TDS	500	mg/L	138.92	123.6	305.54	110.55	115.71	140.38	1058.6	182.4		326	238	263
Titanium		µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1			
Turbidity	1	µg/L	0.4	0.21	3.19	1.8	<0.2	<0.2	6.9	3.35	4.8	1.4	21.9	8.9
Uranium	20	µg/L	<0.5	0.6	6.1	1.7	3.7	3.3	4.2	3.5		6.8	2.5	3.9
Zinc	5000	µg/L	10	5	13	8	<5	<5	9	<5	<10	<0.001	1.14	0.01

DWQG - Canadian Council of Ministers of the Environment Drinking Water Quality Guidelines.

Value does not meet applicable guideline

Report ID: 400823-IAS
Report Date: 05-Jul-21
Date Received: 21-Jun-21

CERTIFICATE OF ANALYSIS

for
Fisher Engineering Ltd
P.O. Box 2663
Moncton, NB E1C 8N6

rpc

921 College Hill Rd
Fredericton NB
Canada E3B 6Z9
Tel: 506.452.1212
Fax: 506.452.0594
www.rpc.ca

Attention: Michael Fisher

Project #: DS370

Location: M.M.

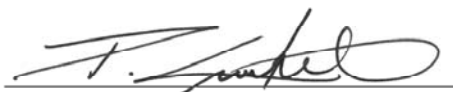
Analysis of Potable Water

RPC Sample ID:						400823-1
Client Sample ID:						DW #1
Date Sampled:						21-Jun-21
Analytes	Units	RL	MAC	AO		
Alkalinity (as CaCO ₃)	mg/L	2	-	-	130	
Chloride	mg/L	0.5	-	250	68.5	
Colour	TCU	5	-	15	< 5	
Conductivity	µS/cm	1	-	-	489	
Fluoride	mg/L	0.05	1.5	-	0.19	
Nitrate + Nitrite (as N)	mg/L	0.05	10	-	< 0.05	
pH	units	-	-	-	8.0	
Phosphorus	mg/L	0.02	-	-	< 0.02	
r-Silica (as SiO ₂)	mg/L	0.1	-	-	12.0	
Sulfate	mg/L	1	-	500	11	
Total Organic Carbon	mg/L	0.5	-	-	0.5	
Turbidity	NTU	0.1	-	-	8.9	
Calculated Parameters						
Hardness (as CaCO ₃)	mg/L	0.2	-	-	195	
TDS (calc)	mg/L	-	-	500	263	
Saturation pH (5°C)	units	-	-	-	7.8	
Langelier Index (5°C)	-	-	-	-	0.25	

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit; MAC = Maximum Acceptable Concentration; AO = Aesthetic Objective

Guidelines are from Guidelines for Canadian Drinking Water Quality.



Peter Crowhurst, B.Sc., C.Chem.
Director
Inorganic Analytical Chemistry



Matthew Norman
Senior Chemist
Inorganic Analytical Chemistry

POTABLE WATER CHEM

Report ID: 400823-IAS
 Report Date: 05-Jul-21
 Date Received: 21-Jun-21

CERTIFICATE OF ANALYSIS

for
 Fisher Engineering Ltd
 P.O. Box 2663
 Moncton, NB E1C 8N6



921 College Hill Rd
 Fredericton NB
 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Michael Fisher

Project #: DS370

Location: M.M.

Analysis of Metals in Potable Water

RPC Sample ID:					400823-1
Client Sample ID:					DW #1
Date Sampled:					21-Jun-21
Analytes	Units	RL	MAC	AO	
Aluminum	mg/L	0.001	-	-	0.021
Antimony	mg/L	0.0001	0.006	-	< 0.0001
Arsenic	mg/L	0.001	0.01	-	< 0.001
Barium	mg/L	0.001	2	-	0.138
Boron	mg/L	0.001	5	-	0.018
Cadmium	mg/L	0.00001	0.007	-	< 0.00001
Calcium	mg/L	0.05	-	-	59.9
Chromium	mg/L	0.001	0.05	-	< 0.001
Copper	mg/L	0.001	2	1	0.001
Iron	mg/L	0.02	-	0.3	0.54
Lead	mg/L	0.0001	0.005	-	0.0003
Lithium	mg/L	0.0001	-	-	0.0066
Magnesium	mg/L	0.01	-	-	11.1
Manganese	mg/L	0.001	0.12	0.02	0.155
Mercury	mg/L	0.000025	0.001	-	< 0.000025
Molybdenum	mg/L	0.0001	-	-	0.0011
Nickel	mg/L	0.001	-	-	< 0.001
Potassium	mg/L	0.02	-	-	1.22
Selenium	mg/L	0.001	0.05	-	< 0.001
Sodium	mg/L	0.05	-	200	19.5
Strontium	mg/L	0.001	7	-	0.610
Thallium	mg/L	0.0001	-	-	< 0.0001
Uranium	mg/L	0.0001	0.02	-	0.0039
Vanadium	mg/L	0.001	-	-	0.010
Zinc	mg/L	0.001	-	5	0.010

Report ID: 400823-IAS
Report Date: 05-Jul-21
Date Received: 21-Jun-21

CERTIFICATE OF ANALYSIS

for
Fisher Engineering Ltd
P.O. Box 2663
Moncton, NB E1C 8N6

rpc

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Fax: 506.452.0594
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Methods

<u>Analyte</u>	<u>RPC SOP #</u>	<u>Method Reference</u>	<u>Method Principle</u>
pH	4.M03	APHA 4500-H ⁺ B	pH Electrode - Electrometric
Alkalinity (as CaCO ₃)	4.M43	EPA 310.2	Methyl Orange Colourimetry
Chloride	4.M44	APHA 4500-CL E	Ferricyanide Colourimetry
Fluoride	4.M30	APHA 4500-F- D	SPADNS Colourimetry
Sulfate	4.M45	APHA 4500-SO ₄ E	Turbidimetry
Nitrate + Nitrite (as N)	4.M48	APHA 4500-NO ₃ H	Hydrazine Red., Derivativization, Colourimetry
r-Silica (as SiO ₂)	4.M46	APHA 4500-SI F	Heteropoly Blue Colourimetry
Carbon - Total Organic	4.M38	APHA 5310 C	UV-Persulfate Digestion, NDIR Detection
Turbidity	4.M06	APHA 2130 B	Nephelometry
Colour	4.M55	APHA 2120 Color (A,C)	Single Wavelength Spectrophotometry
Conductivity	4.M04	APHA 2510 B	Conductivity Meter - Electrode
Trace Metals	4.M01/4.M29	EPA 200.8/EPA 200.7	ICP-MS/ICP-ES
Mercury	4.M52	EPA 245.1	Cold Vapor AAS

Report ID: 355204-IAS
 Report Date: 19-Jun-20
 Date Received: 08-Jun-20

CERTIFICATE OF ANALYSIS

for
 Magic Mountain
 150 Magic Mountain Rd
 Moncton, NB E1G 4V7



921 College Hill Rd
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 Canada E3B 6Z9
 Tel: 506.452.1212
 Fax: 506.452.0594
 www.rpc.ca

Attention: Magic Mountain
Project #: HZ: 01

Analysis of Potable Water

RPC Sample ID:					355204-1	
Client Sample ID:					150 Magic Mountain Rd Well ID 61327	
Date Sampled:					8-Jun-20	
Analytes	Units	RL	MAC	AO	Result	Alert
Alkalinity (as CaCO ₃)	mg/L	2	-	-	131	
Ammonia (as N)	mg/L	0.05	-	-	< 0.05	
Bromine	mg/L	0.01	-	-	0.03	
Chloride	mg/L	0.5	-	250	63.7	
Colour	TCU	5	-	15	< 5	
Conductivity	µS/cm	1	-	-	468	
Fluoride	mg/L	0.05	1.5	-	0.36	
Nitrate + Nitrite (as N)	mg/L	0.05	10	-	0.17	
pH	units	-	-	-	7.9	
Phosphorus	mg/L	0.02	-	-	< 0.02	
Sulfate	mg/L	1	-	500	10	
Turbidity	NTU	0.1	-	-	21.9	
Calculated Parameters						
Hardness (as CaCO ₃)	mg/L	0.2	-	-	172	
TDS (calc)	mg/L	-	-	500	238	
Saturation pH (5°C)	units	-	-	-	7.8	
Langelier Index (5°C)	-	-	-	-	0.09	

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit; MAC = Maximum Acceptable Concentration; AO = Aesthetic Objective

Guidelines are from Guidelines for Canadian Drinking Water Quality (February 2017).

Peter Crowhurst, B.Sc., C.Chem.
 Director
 Inorganic Analytical Chemistry

Krista Skinner
 Chemical Technician
 Inorganic Analytical Chemistry

Report ID: 355204-IAS
 Report Date: 19-Jun-20
 Date Received: 08-Jun-20

CERTIFICATE OF ANALYSIS

for
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 Tel: 506.452.1212
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 www.rpc.ca

Attention: Magic Mountain
Project #: HZ: 01

Analysis of Metals in Potable Water

RPC Sample ID:					355204-1	
Client Sample ID:					150 Magic Mountain Rd Well ID 61327	
Date Sampled:					8-Jun-20	
Analytes	Units	RL	MAC	AO	Result	Alert
Aluminum	mg/L	0.001	-	-	0.040	
Antimony	mg/L	0.0001	0.006	-	0.0014	
Arsenic	mg/L	0.001	0.01	-	0.001	
Barium	mg/L	0.001	1	-	0.148	
Boron	mg/L	0.001	5	-	0.032	
Cadmium	mg/L	0.00001	0.005	-	0.00009	
Calcium	mg/L	0.05	-	-	51.8	
Chromium	mg/L	0.001	0.05	-	< 0.001	
Copper	mg/L	0.001	-	1	0.162	
Iron	mg/L	0.02	-	0.3	0.07	
Lead	mg/L	0.0001	0.01	-	0.0321	X
Lithium	mg/L	0.0001	-	-	0.0061	
Magnesium	mg/L	0.01	-	-	10.3	
Manganese	mg/L	0.001	-	0.05	0.207	!
Molybdenum	mg/L	0.0001	-	-	0.0013	
Nickel	mg/L	0.001	-	-	0.023	
Potassium	mg/L	0.02	-	-	1.13	
Selenium	mg/L	0.001	0.05	-	< 0.001	
Sodium	mg/L	0.05	-	200	18.7	
Strontium	mg/L	0.001	-	-	0.583	
Thallium	mg/L	0.0001	-	-	< 0.0001	
Uranium	mg/L	0.0001	0.02	-	0.0025	
Vanadium	mg/L	0.001	-	-	0.002	
Zinc	mg/L	0.001	-	5	1.14	

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Guidelines are from Guidelines for Canadian Drinking Water Quality (February 2017).

Report ID: 355203-IAS
 Report Date: 19-Jun-20
 Date Received: 08-Jun-20

CERTIFICATE OF ANALYSIS

for
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 150 Magic Mountain Rd
 Moncton, NB E1G 4V7



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Attention: Magic Mountain
Project #: HZ: 01

Analysis of Potable Water

RPC Sample ID:					355203-1	
Client Sample ID:					150 Magic Mountain Rd Well ID 61328	
Date Sampled:					8-Jun-20	
Analytes	Units	RL	MAC	AO	Result	Alert
Alkalinity (as CaCO ₃)	mg/L	2	-	-	180	
Ammonia (as N)	mg/L	0.05	-	-	< 0.05	
Bromine	mg/L	0.01	-	-	0.05	
Chloride	mg/L	0.5	-	250	85.3	
Colour	TCU	5	-	15	< 5	
Conductivity	µS/cm	1	-	-	643	
Fluoride	mg/L	0.05	1.5	-	0.22	
Nitrate + Nitrite (as N)	mg/L	0.05	10	-	0.06	
pH	units	-	-	-	8.0	
Phosphorus	mg/L	0.02	-	-	< 0.02	
Sulfate	mg/L	1	-	500	13	
Turbidity	NTU	0.1	-	-	1.4	
Calculated Parameters						
Hardness (as CaCO ₃)	mg/L	0.2	-	-	254	
TDS (calc)	mg/L	-	-	500	326	
Saturation pH (5°C)	units	-	-	-	7.5	
Langelier Index (5°C)	-	-	-	-	0.49	

This report relates only to the sample(s) and information provided to the laboratory.

RL = Reporting Limit; MAC = Maximum Acceptable Concentration; AO = Aesthetic Objective

Guidelines are from Guidelines for Canadian Drinking Water Quality (February 2017).

Peter Crowhurst, B.Sc., C.Chem.
 Director
 Inorganic Analytical Chemistry

Krista Skinner
 Chemical Technician
 Inorganic Analytical Chemistry

Report ID: 355203-IAS
 Report Date: 19-Jun-20
 Date Received: 08-Jun-20

CERTIFICATE OF ANALYSIS

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 Fax: 506.452.0594
 www.rpc.ca

Attention: Magic Mountain
Project #: HZ: 01

Analysis of Metals in Potable Water

RPC Sample ID:					355203-1	
Client Sample ID:					150 Magic Mountain Rd Well ID 61328	
Date Sampled:					8-Jun-20	
Analytes	Units	RL	MAC	AO	Result	Alert
Aluminum	mg/L	0.001	-	-	0.002	
Antimony	mg/L	0.0001	0.006	-	< 0.0001	
Arsenic	mg/L	0.001	0.01	-	< 0.001	
Barium	mg/L	0.001	1	-	0.304	
Boron	mg/L	0.001	5	-	0.019	
Cadmium	mg/L	0.00001	0.005	-	< 0.00001	
Calcium	mg/L	0.05	-	-	79.2	
Chromium	mg/L	0.001	0.05	-	< 0.001	
Copper	mg/L	0.001	-	1	< 0.001	
Iron	mg/L	0.02	-	0.3	0.17	
Lead	mg/L	0.0001	0.01	-	< 0.0001	
Lithium	mg/L	0.0001	-	-	0.0061	
Magnesium	mg/L	0.01	-	-	13.7	
Manganese	mg/L	0.001	-	0.05	0.053	!
Molybdenum	mg/L	0.0001	-	-	0.0006	
Nickel	mg/L	0.001	-	-	< 0.001	
Potassium	mg/L	0.02	-	-	1.54	
Selenium	mg/L	0.001	0.05	-	< 0.001	
Sodium	mg/L	0.05	-	200	22.6	
Strontium	mg/L	0.001	-	-	0.630	
Thallium	mg/L	0.0001	-	-	< 0.0001	
Uranium	mg/L	0.0001	0.02	-	0.0068	
Vanadium	mg/L	0.001	-	-	0.002	
Zinc	mg/L	0.001	-	5	< 0.001	

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