

**Lake Major Watershed Advisory Board****Meeting Notes**

March 12, 2020 – 2:00 p.m.

Lake Major Water Treatment Plant Boardroom

**Attendees:**

Mike E. Allen (MA), Source Water Planner.....Nova Scotia Environment  
 Sherry Bernard (SB), Lake Loon/Cherry Brook Development Assoc. (LLCBDA).... Community Representative  
 Spencer Colley (SC), (*Chair*), East Preston Ratepayers Association.....Community Representative  
 Andrew Faulkner (AF), Development Officer/Principal Planner.....Halifax Regional Municipality  
 Barry Geddes (BaG), (*Secretary*), Watershed Manager.....Halifax Water  
 Bill Golding (BiG) (sitting for MS), Forest Technician.....Waverley DLF  
 Dawn MacNeill (DM), Protected Areas Coordinator.....Nova Scotia Environment  
 Anna McCarron (AM), (*Vice Chair*) Source Water Planner .....Halifax Water  
 Colin Waddell (CW), Superintendent Water Supply Plants.....Halifax Water

**Regrets:**

Reid Campbell (RC), Director of Water Services.....Halifax Water  
 Rev. Wayne Desmond (WD), North Preston Ratepayers Association.....Community Representative  
 Julie Ernst (JE), Lake Major.....Community Representative  
 Bernie Matlock (BM), P. Eng.....Nova Scotia Environment  
 Mark Shaw (MS), Crown Land Technician.....NS Department of Lands and Forestry (DLF)

***1. Attendance and Introductions:***

- AM distributed copies of:
  - i. Meeting Agenda;
  - ii. DRAFT October 17, 2019 Meeting Minutes;
  - iii. Source Water Protection Report – Lake Major Excerpt – 2019

**Meeting called to order by Chairman (SC):**

- Regrets/Absentees listed above;

[Note: *Mark Shaw, Crown Land Technician for NS Department of Lands and Forestry (DLF) replaced Jason MacIntosh on the Board. Bill Golding, Forest Technician, Waverley DLF Office, sat in for Mark who was not able to attend this meeting.*]

- No quorum;
- Halifax Water staff reviewed the Water Supply Plant (WSP) safety plan in event of an incident during the meeting.

## 2. Review of Meeting:

## Action

### a. Agenda:

- adopted without additions from the Board; and

### b. Minutes – October 17, 2019:

- not approved due to lack of quorum.

**Action: Approve October 17, 2019 Meeting Minutes at next meeting.**

All

## 3. Unfinished Business:

### a. Dams Update (BG/CW):

- Lake Major Dam:
- The dam safety review process, conducted every 7 years per the [Canadian Dam Association's Dam Safety Guidelines](#), found the Lake Major dam required repairs;
- Before construction on the new dam began, short-term emergency measures were applied to hold back the water flow;
- a dam replacement plan was created; construction began in June 2018 and was completed the fall of 2019;
- the new Lake Major dam is a sawtooth pattern (labyrinth) design that is able to hold back 800 linear feet of surface area, much more than a linear design is able to; and is the only one of its kind in Atlantic Canada;
  - at the main part of the new dam, the water level height is 19.5 meters; and a maximum 21.5 metres at the saddle dam;
  - designed for a 1-100 year rain event with more capability to maintain flow downstream using a mechanical gate that opens during low flow periods, whereas the old dam used stop logs – a manual process – to regulate flow; it also accommodates climate change impacts;
- old dam was susceptible to beaver interference, which the new one is not;

**Q:** *How much did the dam raise the lake? Does it impact the Wilderness Area? (DM)*

**A:** The new dam raised the lake water level approximately half a metre (0.5 m), which does not impact the Wilderness Area. However, a private land flooding easement was created with a landowner because of the rise in shoreline water levels.

**Q:** *Will there be an increase in the alewives (fish species)?*

**A:** No. They are very fickle in terms of migration patterns. They spawn in the Lake Major tributaries and run to the Lake beginning mid-May. Their settlement location varies.

- The only work left to do regarding the dam replacement is to remove a house on a shoreline property, which must be done during the flush-out period in spring or fall.

#### i. East Lake Dam:

- through the dam safety review, it was determined that this dam had some leakages;
- there is concern it could topple;
- this dam consists of a concrete spillway and an earthen embankment that is designed to hold a higher flow, and has some complications;
- There are two options: either rehabilitate the dam, or take it out; the latter option is

more complicated;

- the new Lake Major (LM) dam provides half the capacity that the East Lake (EL) flow gave because the added height of the new dam holds more water; therefore, the EL dam does not provide as important a function now, i.e., to provide more water in times of low water in LM; however, we still may need flow from EL;

**Q:** Does EL control some of the flow into LM? (MA)

**A:** Yes. With the old LM dam, the ability to control EL's flow was very important for ensuring that enough water could flow over the fish ladder at the LM dam. The intake to the WSP is in relatively shallow water, so during times of drought, there is a risk that the intake pumps won't work properly. Part of LM's infrastructure plan is to put the intake into deeper water to provide more control over water quantity during dry periods, as well as better water quality. (BaG)

- Halifax Water's senior executive will decide what is in store for the EL dam, based on the dam safety assessment report;
- There is no timeline to determine the EL dam's fate.
- BG showed a video of the changes since the old dam was in place as well as the changes in landownership. One of the landowners saw the first dam being built and wanted to stay around to see the second one built, which was fulfilled. The video also showed the creation of the new dam installation.

**b. Hidden Driveway Signs:**

- Two hidden driveway signs were installed two months ago by HRM, with guidance from Halifax Water:
  - one sign was required, based on the principles of HRM's [Integrated Mobility Plan](#), which includes its Traffic Control Practices and Warrants, guide for traffic coming from North Preston; and
  - another was installed at the community's request for traffic coming from Lake Major (Westphal);

AF to determine who could find out about a sign to warn oncoming traffic.

**Action: remove from Agenda**

SB arrived to the meeting.

Complete  
**AM**

**c. Lake Major Regulations:**

ii. On-site Sewage Disposal Systems (OSSDS) notifications to Halifax Water:

- asking to be notified of all OSSDS applications was triggered by *Protected Water Area (PWA)* development activity permits and applications that included OSSDS;
- Halifax Water is now receiving automatic notification of all HRM OSSDS applications from NSE;
- most OSSDS applications have been in water supply areas other than in LM's;
- it is important for Halifax Water to know where OSSDS installations are being proposed to help Halifax Water assess risks to the source water supply;

Halifax Water will consider how it will accept notification of OSSDS approvals and notifications via the generic email address.

Complete

**Action: Remove from Agenda.**

iii. Swimming in Long Lake:

**Complete**

- Item deferred – North Preston representative (WD) not available for comment.

**Action: WD will go back to the North Preston Ratepayers Association to discuss writing a letter requesting designating a swimming area in Long Lake. The letter must be addressed to Halifax Water and circulated to Board members for review and comment.**

**Action**

**Deferred  
WD/HW**

**d. Municipal (wastewater) service extension in Lake Loon/Cherry Brook:**

- BaG contacted the Director of Regulatory Services at Halifax Water regarding the process of extending wastewater services to Lake Loon/Cherry Brook;
- BaG sent SB an email on March 4 with contact information on how to go about asking for service extensions, but SB did not receive it;
- Halifax Water has no control overextending water services, it's an HRM-led process;
- extending service boundaries involves the following, among many other factors:
  - amending the Bylaw and/or servicing maps through HRM's planning division; and
  - conducting a study of the number of homes and frontage for pipe infrastructure, for example;
- if approved, residents are responsible for the cost of the service extension to the area through the Local Improvement Charge established and administered by HRM;

**Q: Are they judging it by footage? (SB)**

**A: That is determined through the engineering study. (AF)**

- an exception to the normal service extension process occurs when there is an environmental issue that necessitates servicing; however, even then it is usually a cost-share agreement;
- landowner costs can be paid through cost-sharing, grants, property taxes, subsidies, or a formula;
  - it is too early to know what Lake Loon/Cherry Brook servicing costs would be;
- a study is required first and even then it is not immediately listed as a project;
  - there are also no assurances an area would immediately get on the study list;
- there are many factors to consider when extending service boundaries, including cost, council approval, etc.

**Q: Is this staying on the agenda? (DM)**

**Discussion:**

- The next Agenda item is regarding the letter of support for this issue; at last meeting we left it on the agenda until the LLCBDA expresses their desires. (AM)
- First, the LLCBDA needs to do its own analysis, starting with BG's email; (SB)
- Involving the councillors is step one, to provide advice and answer questions; (AM)
- [Akoma](#) Centre is looking at developing the NS Home for Coloured Children and wants water services brought to the community; could partner in this exercise (SB/SC);
- failing septic systems is a risk to the watershed; having water services helps protect the water supply; the Bundy Lane development application triggered this item (BaG/AM);

- The LMWAB would write a letter of support if it benefits the watershed;

A: Keep on the Agenda.

Halifax Water to contact SB about a presentation to the Cherry Brook community to provide a better understanding on what is entailed in municipal sewage system development.

**Action: The Board supports sending a letter to HRM and Halifax Water, at the request of the LLCBDA, in support of extending municipal services into the Lake Loon/Cherry Brook area of the watershed, as a means of reducing the risk of contamination from OSSDS to the water supply.**

Action

Complete

**Pending  
response from  
LLCBDA**

**e. Nova Scotia Lands Montague Mines Remediation:**

- Intrinsic Team consultants have been commissioned by Nova Scotia Lands to create a [Conceptual Closure Study for the Historic Montague Mines Tailings Area](#) that will provide a basis for developing reclamation strategies to reduce the risks associated with arsenic and mercury levels as well as mitigate current acidic conditions and potential acidification of tailings of the old Montague Mines area in the future through a proposed 3-phased construction project;
- The purpose of the Study is to determine whether it should be cleaned up, or capped, or left alone or some other solution;
- the Study defines three proposed construction phases (see *Figure 1* on page 10):
  - the first is at the mine site, on Crown land-only high priority areas, which is outside the Lake Major (LM) watershed area;
  - construction phases 2 and 3 are in tailings areas within the LM watershed areas;
  - Greyed area (see *Figure 3* on page 11) is Crown Land in Phase 2;
  - Parts of Phase 2 (low priority on and off Crown Land areas) and parts of phase 3 (off Crown lands) could affect the LM watershed area (see *Figure 2* on page 10), especially through Flat Barren Brook (see *Figure 4* on page 11), which splits in two directions, one flowing through Construction Phase 2 and the other through Construction Phase 3, before they merge and drain into Lake Major;
- Intrinsic is working with Halifax Water to identify potential negative impacts the exploratory, or construction activity may pose on the LM water supply;
- Intrinsic proposes installing monitoring wells (see *Figure 3* on page 11) to sample for arsenic and mercury to determine whether those chemicals could be released if the area is disturbed during proposed construction;
  - C means core samples; PZ means piezometer which provides samples of shallow groundwater near the water table and somewhat below the water table, to determine the water quality down the road if the area is disturbed;
- BaG recently visited the proposed construction phase sites in the Lake Major watershed area with the consultants:
  - some of the areas will be left undisturbed because they are sufficiently vegetated, indicating that there is not a high level of contamination (arsenic and mercury); also, disturbing the area could unearth contaminants;
- Halifax Water is concerned about Phase 2 construction in the watershed: if the area is disturbed, there would be free flow into the lake through Flat Barren Brook that could lead to an increase in arsenic levels in the lake, if contained in the runoff;

- CW and BaG will be involved in guiding where the core samples will occur;
  - allowing drill rigs on top of contaminated soil is an intrusive exercise that could have undesirable consequences for the watershed;
  - Halifax Water provided Intrinsik with its [Best Management Practices](#) (BMP) and requested that hand tools be used instead of drill rigs to get down into the water table to determine the contamination levels there;
- BaG and CW have visited the watershed sites with the consultant and drill riggers to do a follow-up field review;
  - More discussions to follow;

**Q:** *What is the vintage of the mining activity? (MA)*

**A:** Mining at Montague Mines was carried out continuously from 1865 to 1928. (Intrinsik)

- Intrinsik still needs to determine the status of the PWA wetlands:
  - a wetland inside a PWA is considered a Wetland of Special Significance (WSS), as defined in the [Nova Scotia Wetland Conservation Policy](#);
  - disturbing WSS require Ministerial approval;
- since 2008, Halifax Water has been gathering surface water data monthly – when the creek runs – at Flat Barren Brook, the results of which we can share with the consultants;

**Q:** *When you are gathering samples are you seeing any increase in Arsenic?(SB)*

**A:** The numbers are pretty flat – they are stable. (BaG)

Send link to Montague Mines Reclamation Report to Board members.

Complete

#### **4. New Business:**

##### **a. Source Water Protection Plan Report:**

The first 9 pages of the SWPP Report is the general report and the last few pages (10-13) are specific to the Lake Major watershed area:

- Advisory Board meetings: Per the Terms of Reference, we have met twice a year;
- Lake Major Newsletter: We used to publish two Lake Major Newsletters per year, but we are cutting that back to one per year due to resource constraints;
- N. Preston Days: a community and commercial clean up with HRM, Halifax Water and the Councillor resulted in a successful clean-up;
- Upper Governor Road: was developed as an alternate route and never used as intended; i.e. development, so there are no lights or houses to deter unauthorized and illegal activities from occurring;
  - Halifax Water installed surveillance cameras along the road;
  - suspicious activity is reported to the RCMP;
- Salvage yard: under the Land Use Bylaw, a non-conforming use salvage yard spilled outside the boundary and needed to be reined-in;
  - the issue has been dealt with, the landowner has complied with the bylaw regulations and monitoring of activity continues;
- Land Swap: Halifax Water has been working on a 1000-acre land swap for the last 8-9 years; there is a checkerboard pattern of landownership between NSE, DLF and

Halifax Water on either side of Lake Major; a land swap would put provincial ownership on the east side of the lake and Halifax Water ownership on the west;

- staff-changes slowed the progress of this land swap;
- for conservation purposes and for DLF, the land swap would alleviate the various regulation enforcement inefficiencies currently in play and allow all parties to conduct enforcement more efficiently;
- for example, increased recreational activity in the Spider Lake area, through Halifax Water lands, needs to be curtailed; the land swap would help to facilitate Halifax Water's ability to enforce regulations there;
- Forest management: conducting any forestry activity over 50 acres requires a forest management plan, according to provincial forestry regulations. BaG showed a 4-year timescale of forestry activity conducted inside the watershed area, but the cut area was just under 50 acres. The family owns the land and wants to harvest wood to create building lots for family who wish to develop there. Halifax Water shared its BMPs and the PWA regulations and will continue to monitor that location.
- Mining Exploration: two (2) new mining exploration licenses were issued in 2019. These were submitted just after May 2019:
  - The company provided a land access form to Halifax Water this year, where the details of the company were revealed. Halifax Water only wants to ensure the explorers have the correct protection procedures in place. Mineral exploration is permitted with landowner permission to access the land they wish to explore.
- Montague Mines: Already discussed.
- LM water quality: (CW)
  - Water Quality is improving in terms of organic colour, which continually increased after hurricane Juan in 2003 due to leaching of organics from blown over trees, until values crested in 2013-2014. They continue to subside indicating the watershed has healed. Less colour means fewer chemicals required to treat the water.
  - However, we have encountered issues in the water supply plant (WSP) due to increased Total Organic Carbons (TOC). Enhanced monitoring is being conducted to determine the contributing factors. The cause is probably due to higher water levels around the shoreline, causing more organisms to float into the Lake; what was at the shoreline after the hurricane, such as dead wood is now washing into the lake due to the higher water level around the shoreline caused by the new dam. Additional products are being added to the water treatment process to make the water clearer;

**Q:** *Would the new Lake Major dam structure change the mixing pattern of the lake? (MA)*

**A:** It is more likely to slow down the mixing rather than the other way around. Also, the increase in retention time can change the biological make-up of the lake, giving more time for organisms to grow and more issues for balance; the turnover of the lake is more in terms of minutes and seconds than previously. That would be averaged over the year. Right now, there is probably not much difference.

- 2.5 million dollars has been spent for water treatment chemicals, over and above the general operating costs for energy and residuals, to treat the water over the past 10 years from the impacts of Juan, which is a significant impact to

operations;

- a more robust monitoring program helps us make better asset decisions for the health of the water quality;
- the challenge for water treatment is a more robust water treatment program;
- pH in 1999 was 5.2; now it is 5.4 and 5.6; every one-point magnitude amounts to 300-fold over that period, which affects the chemical additives that are needed to treat the water.

**Action**

**Action: If changes are needed to the report please forward them to BaG before March 30.**

**All**

- A couple of the parameters listed in the SWPP report Appendix required changes to micrograms per litre, which satisfies DM's previous request to correct them.

**b. Logo**

- Halifax Water underwent a new branding exercise;
- Halifax Water communications and AM experimented with adding Halifax Water's branding with some of our community watershed committees/board letterhead, minutes and other publications, but found that doing so confused recipients of letters from the Committees/Boards as to the origins of the letters/newsletters. Halifax Water is a separate entity from the Committees/Boards – it is only one or two voices among many representatives who site on the board.
- Each Committee/Board will maintain their distinct logo, letterhead, etc., with no Halifax Water logo or branding included, to maintain the distinction;
- Newsletter format reflects the Board's/Committee's identity as well;

**Q: Is updating the LMWAB logo something that the Board wants to update? (AM)**

**A: Yes. Change the contact information on the logo and for the newsletter.**

**AM**

**Action: Update logo as described.**

**5. Landowner Questions/Update**

**a. Crown:**

- No questions or updates.

**b. Halifax Water**

- No questions or updates.

**c. Private**

- No questions or updates.

**6. Education Update:**

**a. Arnold D. Johnson Sr. Water Resources Award Update:**

- The A.D. Johnson Sr. Award is an opportunity for the recipient to have summer employment with Halifax Water, and \$3600 is awarded to full time students enrolled in the Engineering Technology Program;
- Members of the Board are notified when it goes out into the newsletters;
- Information about the award is also sent to the Black Education Association, to North Preston Community and Black Cultural centres;
- WD said at last meeting that the students don't often enroll in that kind of



programming;

**Q:** *Is there another way to partner and give a talk about the benefits of the job that includes a tour of the facility? (CW)*

**A:** That's a good idea. (All)

**A:** Now would be a good time to spark an interest. While the land clarification titles process is going on, along with provincial Justice and HRM who have members from various committees on this committee.

**A:** Target African NS students by contacting each school, each school district – go through the coordinator at Auburn High and Cole Harbour Schools.

**A:** A Career Fair is another avenue: Job fairs are held at the YMCA and employment Centre on the Akoma home property. They have rented out space there that look for jobs and employment, especially targeting African NS Youth. Rebecca Skeet is the director at the YMCA. They are renting space at Akoma.

**Action:** Find out and target the program's promotion, which could go so far as to arrange a tour after a presentation.

**Action:** Set up a time for another tour of the Lake Major facility for the Board members.

**Action:** Continue to provide reminders of ADJ Award application deadlines.

- Leave on agenda to remind community of its availability.

**b. Lake Major Newsletter Update:**

- Topics for next newsletter:
  - SB profile (picture);
  - Water Quality Taste Test (Lake Major came in 3<sup>rd</sup> Place in an Atlantic Canada);

**7. Municipal Update:**

- Nothing to report.

**8. Election of Officers:**

- Next election of officers – Fall 2020 – at next meeting.

**9. Next Meeting Date/Time:**

- Thursday October 8, 2020 – 2:00 – 4:00 p.m.

**10. Adjournment:**

- 3:45 p.m.

CW offered the committee to view the Control Room screen to see the dam operation, which the members did, until 4:00 pm.

**Action**

**AM**

**AM/BD/CW**

**AM**

*Respectfully submitted by AM*

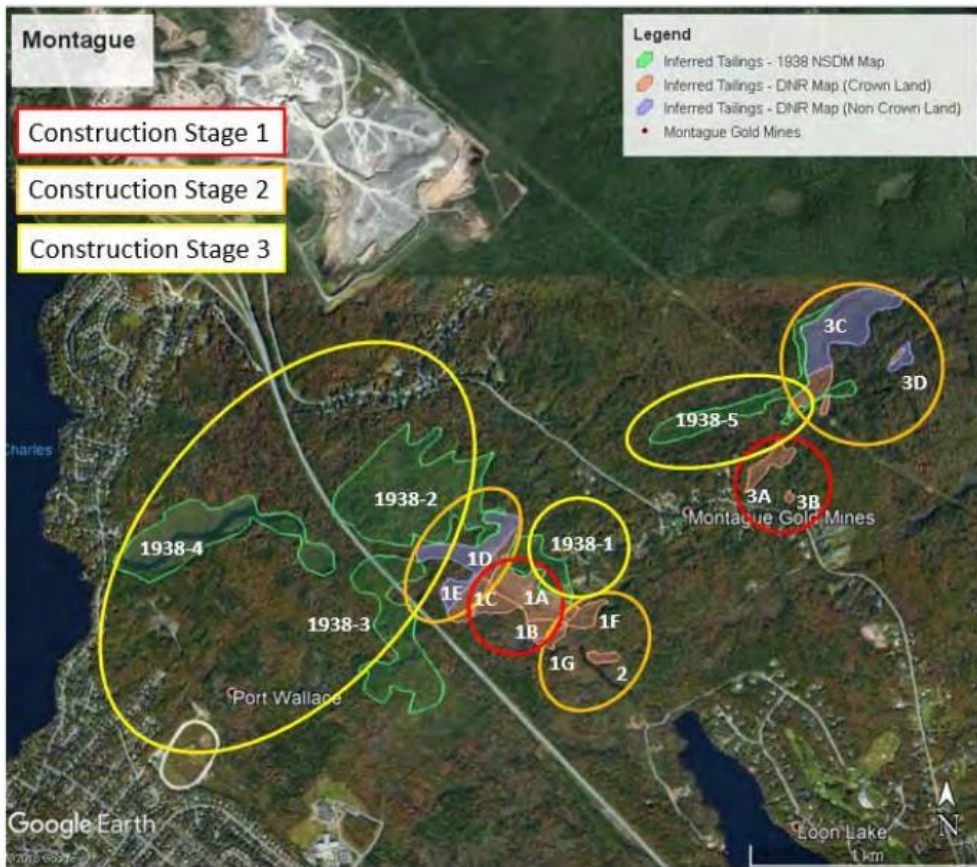


Figure 8-2: Construction Stage 3 – Off Crown Land Areas

Figure 1 (above): Phases of Montague Mines Construction

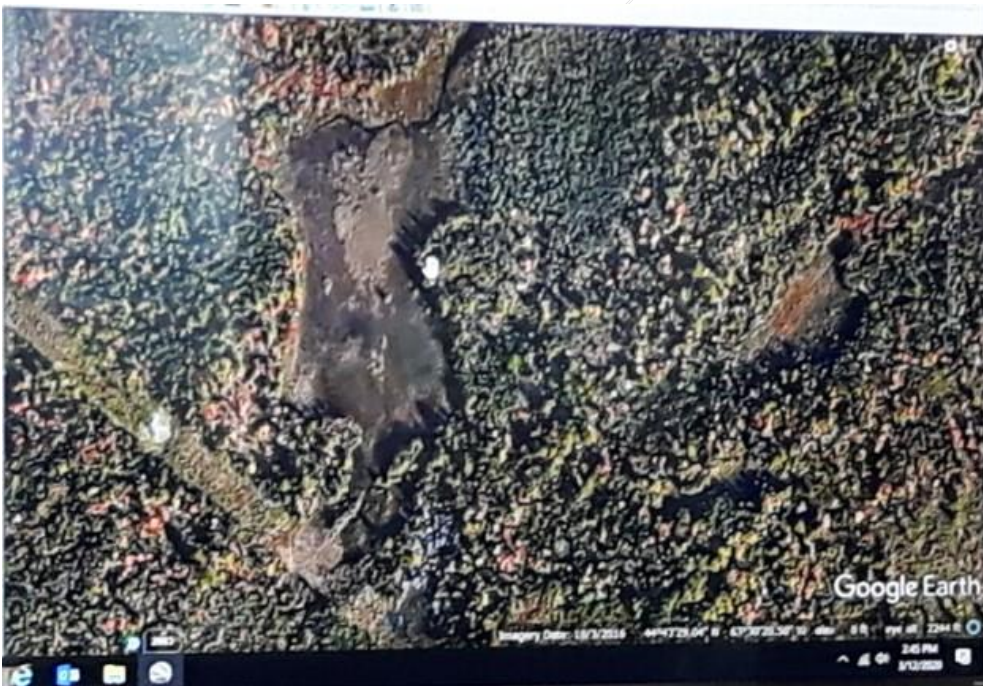


Figure 2 (above): Montague Mine Core Sample Test Area of Focus for the LMWAB (Phase 2)

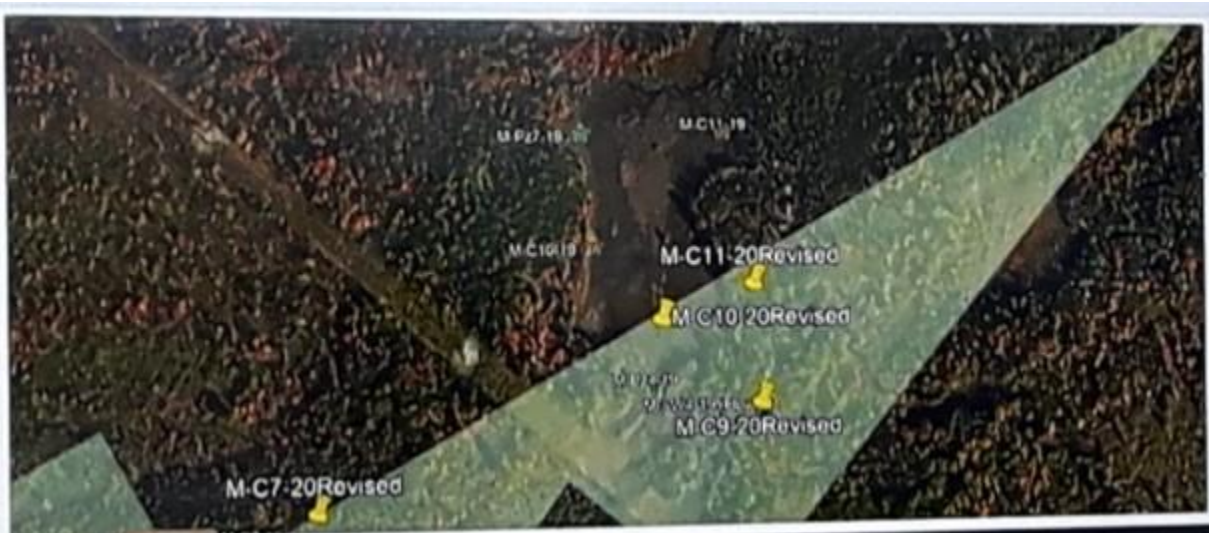


Figure 3 (above): Monitoring Well Sites



Figure 4: Location of Flat Barren Brook (Barry is pointing at).