

2022

NSARB 2022-001
NSARB 2022-002
NSARB 2022-003

Nova Scotia Aquaculture Review Board

Between:

TOWN POINT CONSULTING INC.

APPLICANT

- and -

**MINISTER OF NOVA SCOTIA DEPARTMENT OF FISHERIES AND
AQUACULTURE**

PARTY

- and -

**MARY JO MACDONALD, PATRICK MACDONALD, LUCY
MACDONALD, RICHARD WILGENHOF, ALENA
WILGENHOF, SIAN NEWMAN-SMITH, RICK TURNER,
ROWAN MCLEAN, PETER BOWLER, COLLEEN BOWLER<
FRIENDS OF ANTIGONISH HARBOUR, SHEILA
MACKINNON HUDON, WILLIAM HUDON, MAY GORING,
MANFRED GORING, ANTIGONSH HARBOUR WATERSHED
ASSOCIATION, ROD BRADY, MIKE MACDONALD, BILL
BROPHY, TIM BROPHY, DUNCAN BROPHY, DARYL
BEATON, and BRENDON DOYLE.**

INTERVENOR GROUPS ONE and TWO

- and -

**MARK GENUIST, STEPHEN FEIST, and THE COMMUNITY LIASION
COMMITTEE**

INTERVENOR GROUP THREE


**Affidavit of Michael MacDonald
Sworn on May 19, 2023**

I, Michael MacDonald, of Antigonish, in the Province of Nova Scotia affirm as follows:

1. I have personal knowledge of the evidence affirmed in this Affidavit except where otherwise stated to be based on information and belief.

2. I state, in this Affidavit, the source of any information that is not based on my own personal knowledge, and I state my belief of the source.
3. I am an Intervenor of the first Intervenor Group ("First Intervenors") in this proceeding.
4. In my experience as an engineer, I underwent training in and obtained experience on how to use Geographic Information Systems ("GIS") software, as a tool for mapping, spatial analysis, survey analysis and data analysis.
5. I have prepared several maps of Antigonish Harbour using GIS software called Quantum GIS ("GIS Maps"). This software creates, analyzes and maps publicly available data onto satellite GPS.
6. I have authored a report detailing how I used GIS software to prepare the GIS Maps. My report is attached hereto as **Exhibit "A"**.
7. My qualifications that enable me to understand and use GIS software to create data and map integration are set out in my Curriculum Vitae attached hereto as **Exhibit "B"**.
8. Based on my education, training and experience my areas of expertise is in engineering and the utilization of GIS software such as Quantum GIS to integrate third party datasets, in order to create accurate integrated maps.
9. The Report attached to this affidavit as **Exhibit "A"** represents my professional opinion as an engineer with respect to the GIS Maps.

AFFIRMED at Antigonish, Province of
Nova Scotia, this 19 day of
May 2023, before me:



Emily Hunter
Barrister
Province of Nova Scotia

EMILY HUNTER
A Barrister of the Supreme
Court of Nova Scotia

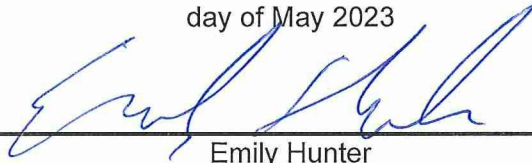


Mike MacDonald

2022

NSUARB 2022-001
NSUARB 2022-002
NSUARB 2022-003

This is Exhibit "A" referred to in the Affidavit of
Michael MacDonald sworn to before me this 19th
day of May 2023



Emily Hunter
Barrister of the Supreme Court of Nova Scotia

EMILY HUNTER
A Barrister of the Supreme
Court of Nova Scotia

Subject: Geographic Information System (GIS) and QGIS

A Geographic Information System (GIS) is a powerful software tool that allows us to capture, store, analyze, and present geospatial data. By combining maps with attribute data, such as land use or environmental factors, GIS provides a comprehensive view of specific locations or areas. It enables users to visualize and interpret spatial relationships and patterns through data input, editing, analysis, and visualization tools. With GIS, users can gain valuable insights into geographic phenomena, identify patterns, and make informed decisions.

In the context of the hearing, all the maps were generated using QGIS (Quantum GIS), a reliable and widely used software product in the GIS field. QGIS is an open-source GIS software that offers robust functionalities for mapping, data analysis, and geoprocessing. It has gained a reputation for stability, flexibility, and reliability, and is widely adopted by professionals, researchers, and GIS enthusiasts.

Although QGIS is more commonly used by government organizations, educational institutions, and small to medium-sized businesses, several larger companies have also embraced QGIS for their geospatial needs.

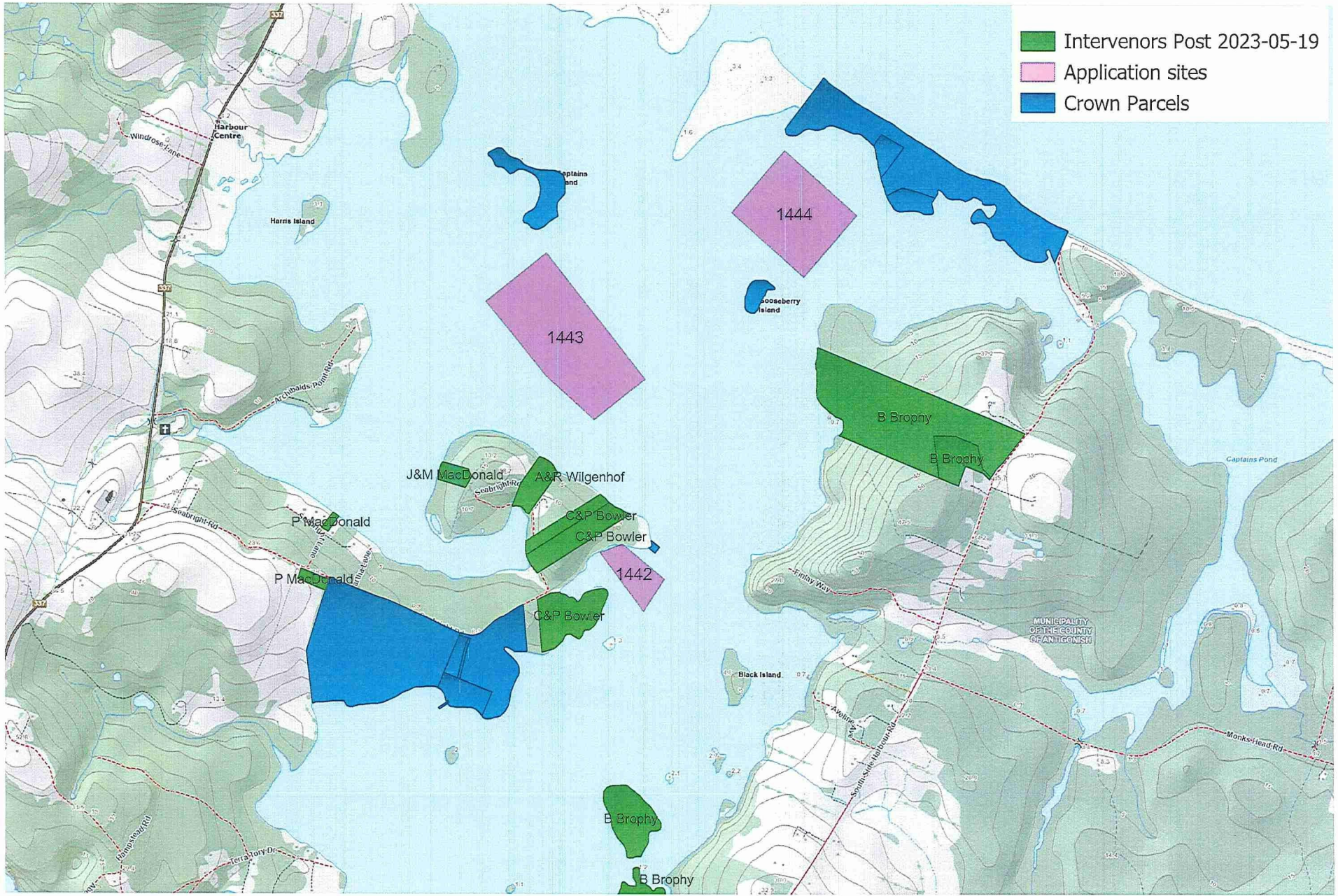
The data used for many of the maps in the hearing came directly from reliable sources. For example, the nautical chart with water depths originated from the Department of Fisheries and Oceans, and the Nova Scotia base map was obtained from Service Nova Scotia and Internal Services. However, there were instances where specific information had to be manually entered. Below is a description of the maps and the data source.

1. Attached to my report is Map "A," which displays the witness intervenors' property location. The map was created by extracting and highlighting their properties from the Nova Scotia properties overlay. The data source is the Nova Scotia government webserver:
https://gis7.nsgc.gov.ns.ca/arcgis/rest/services/PLAN/PLAN_NSPRD_NoLabels_UT83/MapServer/0

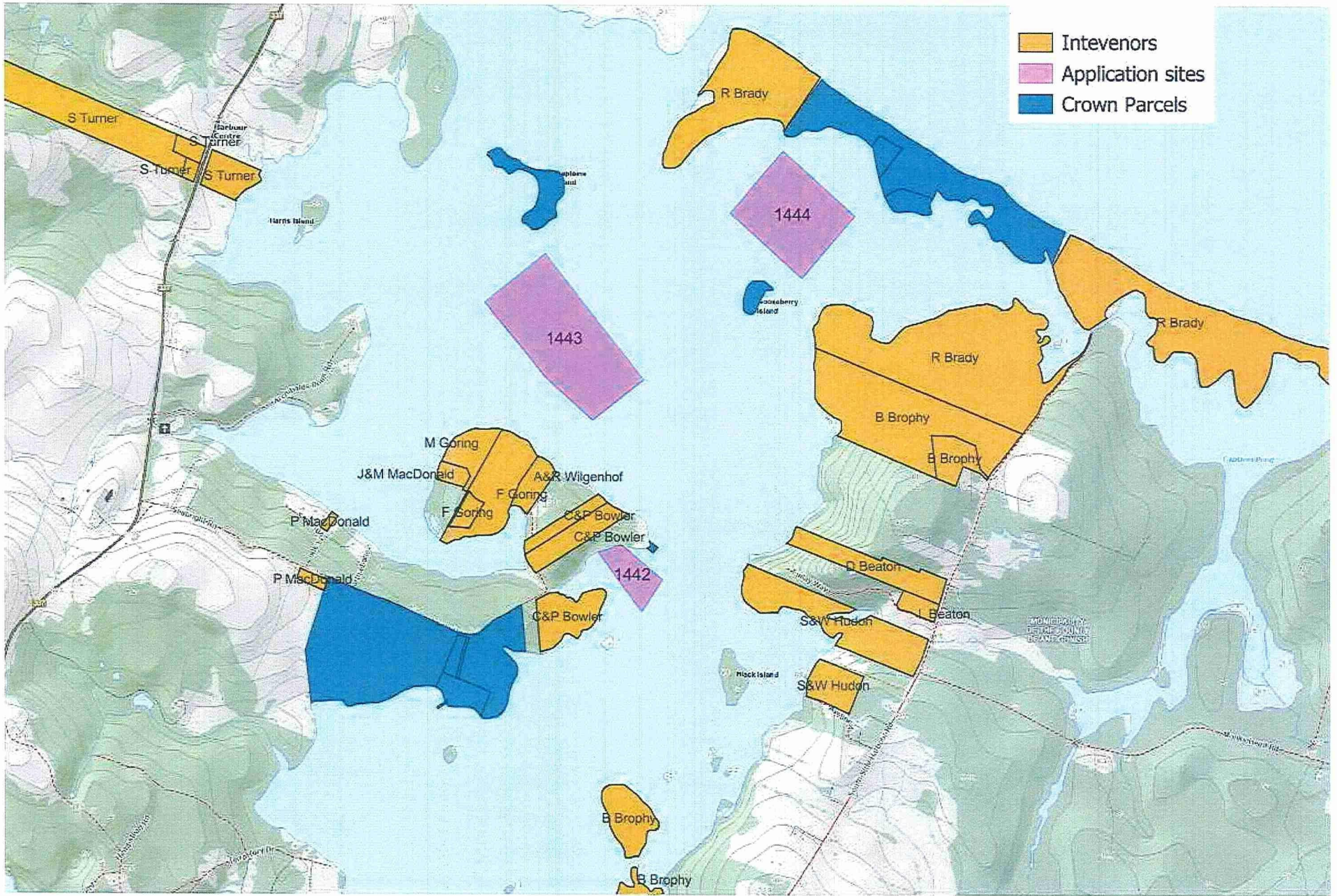
2. Map "B" shows all intervenors and was created by extracting and highlighting their properties from the Nova Scotia properties overlay. The data source is the Nova Scotia government webserver:
https://gis7.nsgc.gov.ns.ca/arcgis/rest/services/PLAN/PLAN_NSPRD_NoLabels_UT83/MapServer/0
3. Map "C" shows the two navigation channels of Billy Brophy & other fishermen, and the navigation channel of Richard Wilgenhof. The data for Bill Brophy's navigation channel was manually entered by me and verified by Mr. Brophy. The data for Mr. Wilgenhof's navigation channel was manually by me entered and based on the data he provided to Nav Canada. The background map is from the Nova Scotia government webserver:
https://nsgiwa.novascotia.ca/arcgis/rest/services/BASE/BASE_NSODB_10k_UT83/MapServer
4. Map "D" shows the Lease sites overlaid on a navigation chart (#4446) which indicates the depth of the water at various points along the sites. The Source of the navigation chart is the Department of Fisheries and Oceans. The website is:
<https://inter-j01.dfo-mpo.gc.ca/registry-registre/clients/purchaseInfo-infoAchat?id=87699>
and a copy of the website is attached to Map "D"
5. Map "E" is the location of the CAMP data sampling sites. The data for these sites came from the DFO website:
<https://open.canada.ca/data/en/dataset/c4474517-3d9b-e581-a6e2-e95273f2058e>
6. Map "F" is the Dunns Beach protected area. The data came from the Dept of Land and Forests by email which is attached to Map "F".
7. Map "G" is Significant Habitat Map produced by the Nova Scotia Government. The source of the data is the Nova Scotia government webserver:
<https://nsgi.novascotia.ca/gdd/>
https://nsgiwa.novascotia.ca/arcgis/rest/services/BIO/WLD_ProvLandScapeViewer_UT83/MapServer/3
8. Map "H" is the Locations of piping plover sightings from 2017-2022. The data was downloaded from Nature Counts to a database where the data was summarized for Antigonish County and added to the MAP. The website is:
<https://naturecounts.ca/nc/default/searchquery.jsp?what=saved>
A summary of the data table is attached to Map "G"

9. Map "I" is the distance from the Intervenor's to the closest lease site. This was created by drawing a line from the intervenor's property to the closest lease site and then using the GIS to measure the distance.
10. Map "J" is site #1444 with a buffer of 300m around it. The buffer was drawn using the GIS software.
11. The Wind Speed chart is attached as "Chart 1". It was created by downloading historical data from 3 weather stations. Two of the locations are Environment Canada Stations at Tracadie NS, and Caribou Point, NS. The last station is a private station located at Jimtown in Antigonish County. The information was loaded into a database and analyzed, sorted and extracted based on wind speeds greater than 95km/h. The table reflects the event date and speed of the wind which met the selection criteria. The data sources are listed below.

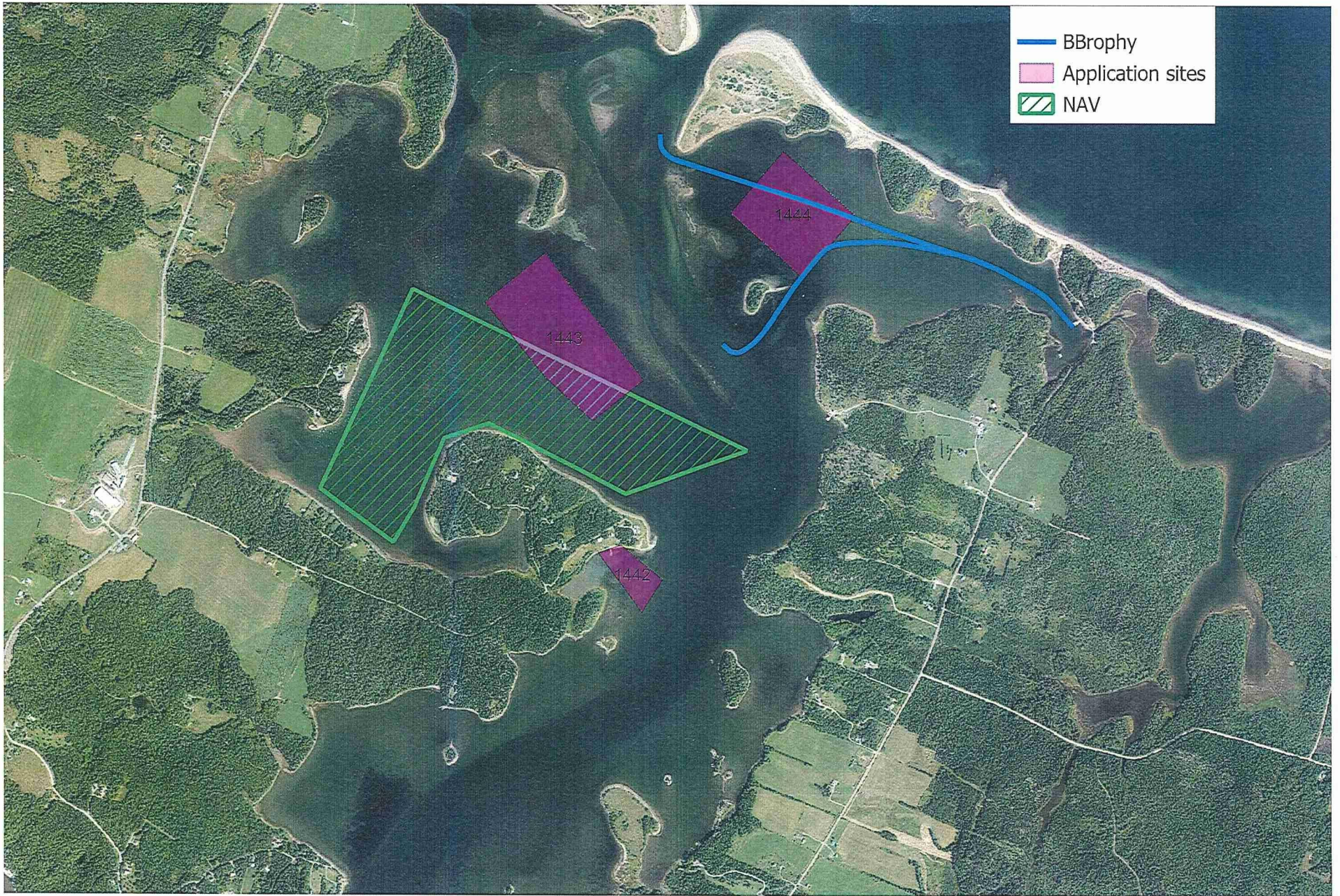
Tracadie	https://climate.weather.gc.ca/climate_data/daily_data_e.html?StationID=41575
Caribou Point	https://climate.weather.gc.ca/climate_data/daily_data_e.html?StationID=8990
Jim Town	L. Jewkes , Jimtown NS excel file: Jimtown Weather Database.xls



MAP A



MAP B



MAP C

Fisheries and Oceans Canada



- On the water
- Fisheries
- Science and research
- Ecosystems
- Species
- Aquaculture
- Regions

CHS Digital Data Portal → My Products → Product Info

CHS Digital Data Portal

- My Products
- Update Your Personal Information
- Help
- Logout (Mike Macdonald 1443926)

Feedback



Product Information

Return to My Products

Product

- Type: BSBv3 Individual Charts
- Name: RM-4446
- Description: Antigonish Harbour
- Price: \$12.00
- Agreement:

Order

- Dealer Employee: Valentina Oulyanova
- Dealer Email: info@mapsandmore.ca
- Dealer Company: Maps & More
- Transaction Code: 7417-3a60-ce59-02ab-cdfd-36542
- Copies: 1
- Order Date: 2023-03-15 14:40:54 EDT

Registrations

- Activation Date: 2023-03-15
 - Expiration Date: 2025-03-15

Downloads - 1

- 2023-03-15 14:48:09 EDT (version: 2007-06-18)

Charts - 1

Show all columns

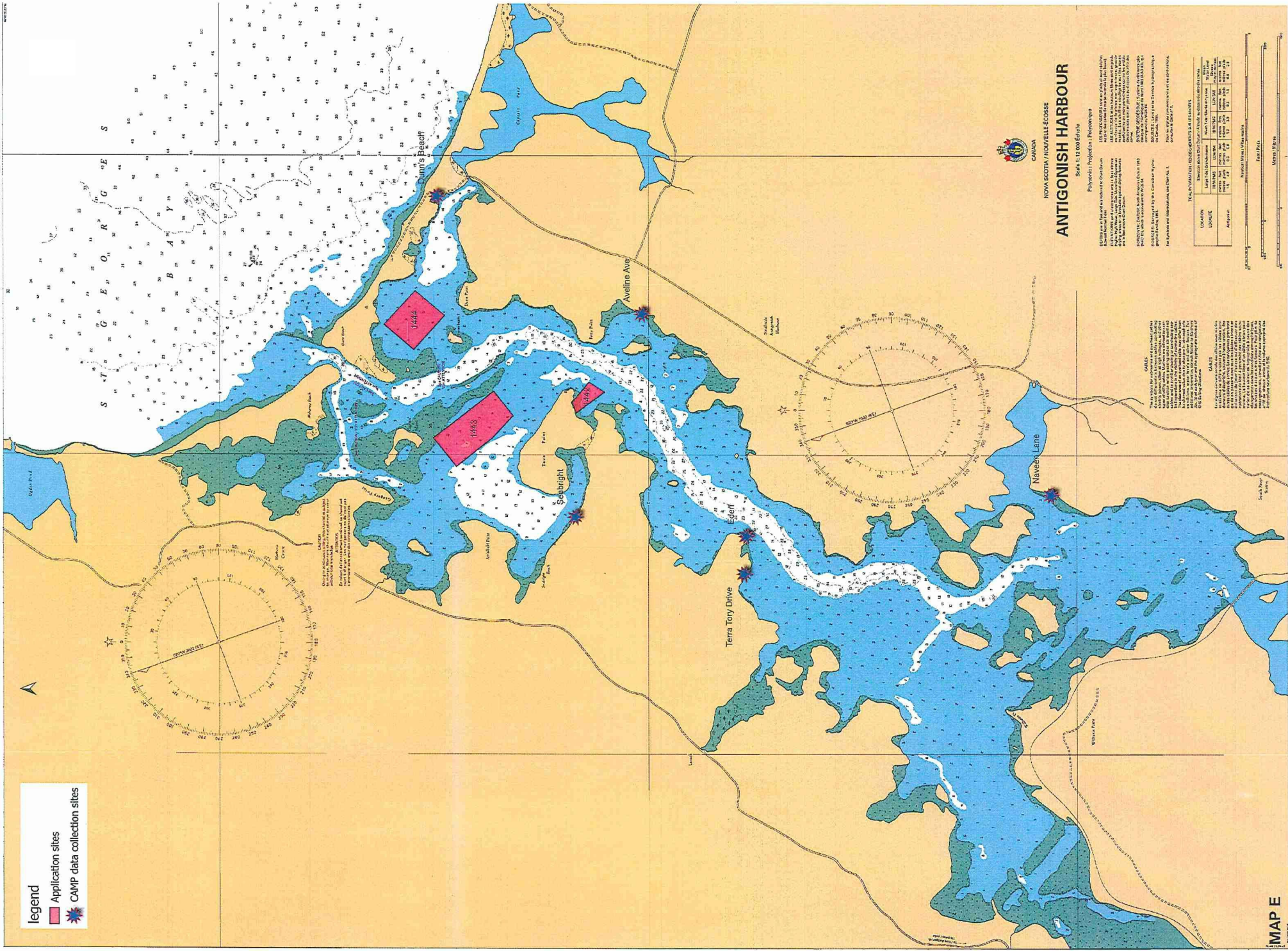
Filter items Showing 1 to 1 of 1 entries | Show 100 entries

Product: ↑↓	Number: ↑↓	Edition Date: ↑↓	Last Update: ↑↓
ANTIGONISH HARBOUR	RM-4446	2002-08-23	2007-06-18

* Unless otherwise specified, dates are presented in the following format: YYYY-MM-DD

Legend

- Application sites
- CAMP data collection sites



NOVA SCOTIA / NOUVELLE-ÉCOSSE
ANTIGONISH HARBOUR

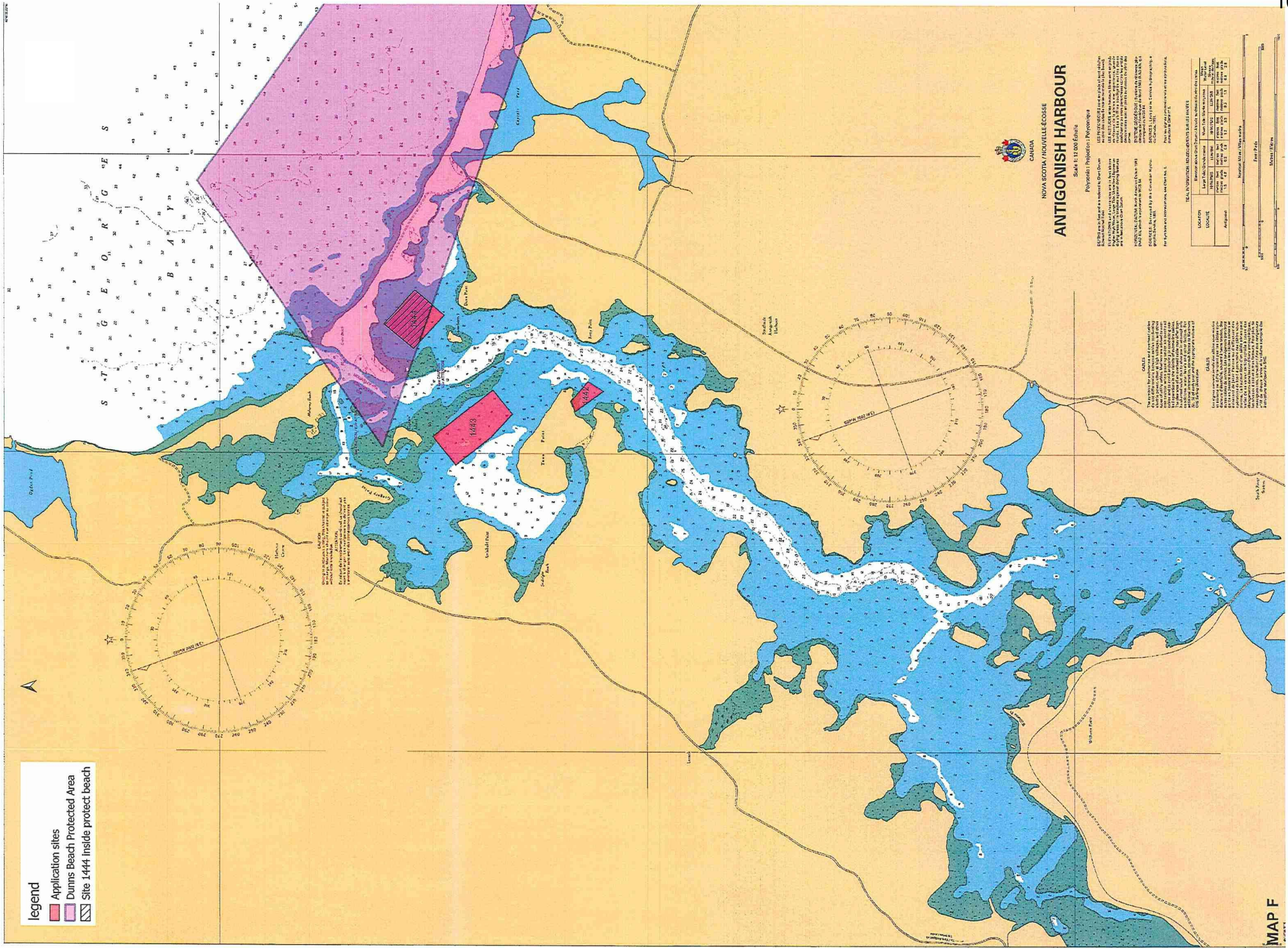
Scale: 1:100000

Projection: Polyconic - Polyconic

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TOTAL VOLUMETRIC COLLECTIONS BY DATE			
DATE	NUMBER OF COLLECTIONS	NUMBER OF SITES	NUMBER OF DATA POINTS
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2010-02-01	1	1	1
2010-03-01	1	1	1
2010-04-01	1	1	1
2010-05-01	1	1	1
2010-06-01	1	1	1
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NOTES
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Legend

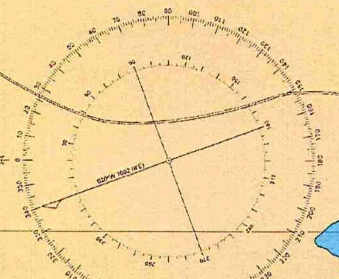
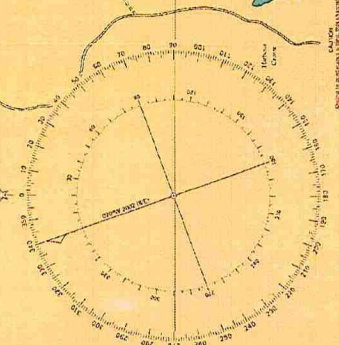
- Application sites
- Dums Beach Protected Area
- Site 1444 inside protect beach



CANADA
NOVA SCOTIA NOUVELLE-ÉCOSSE
ANTIGONISH HARBOUR

Scale: 1:10000 Equival
Projection: Polyconic
Datum: NAD 83
Units: Metres
Vertical Datum: Mean Sea Level
Horizontal Datum: NAD 83
Projection: Polyconic
Datum: NAD 83
Units: Metres
Vertical Datum: Mean Sea Level
Horizontal Datum: NAD 83
Projection: Polyconic
Datum: NAD 83
Units: Metres
Vertical Datum: Mean Sea Level
Horizontal Datum: NAD 83

LOCATION	DATE	PROJECT	STATUS
Antigonish Harbour	2010	Antigonish Harbour	Approved



NOTES
1. This chart is a reproduction of the original chart published by the Hydrographic Office of the United Kingdom in 1988. It is not to be used for navigation purposes.
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3. The chart is a reproduction of the original chart published by the Hydrographic Office of the United Kingdom in 1988. It is not to be used for navigation purposes.

----- Forwarded message -----

From: **Geldart, Derek** <Derek.Geldart@novascotia.ca>

Date: Mon, Mar 20, 2023 at 4:36 PM

Subject: RE: Corrdinates for Dunns beach

To: Mike MacDonald <[REDACTED]@gmail.com>

Hi Mike

Not my expertise, but try these to confirm they fall where expected

Point A

LATITUDE: N45° 39' 34.269596"

LONGITUDE: W61° 49' 12.440246"

Point B

LATITUDE: N45° 40' 19.269796"

LONGITUDE: W61° 50' 10.441521"

Point C

LATITUDE: N45° 41' 14.271179"

LONGITUDE: W61° 53' 57.448251"

Point D

LATITUDE: N45° 42' 6.270325"

LONGITUDE: W61° 52' 10.444083"

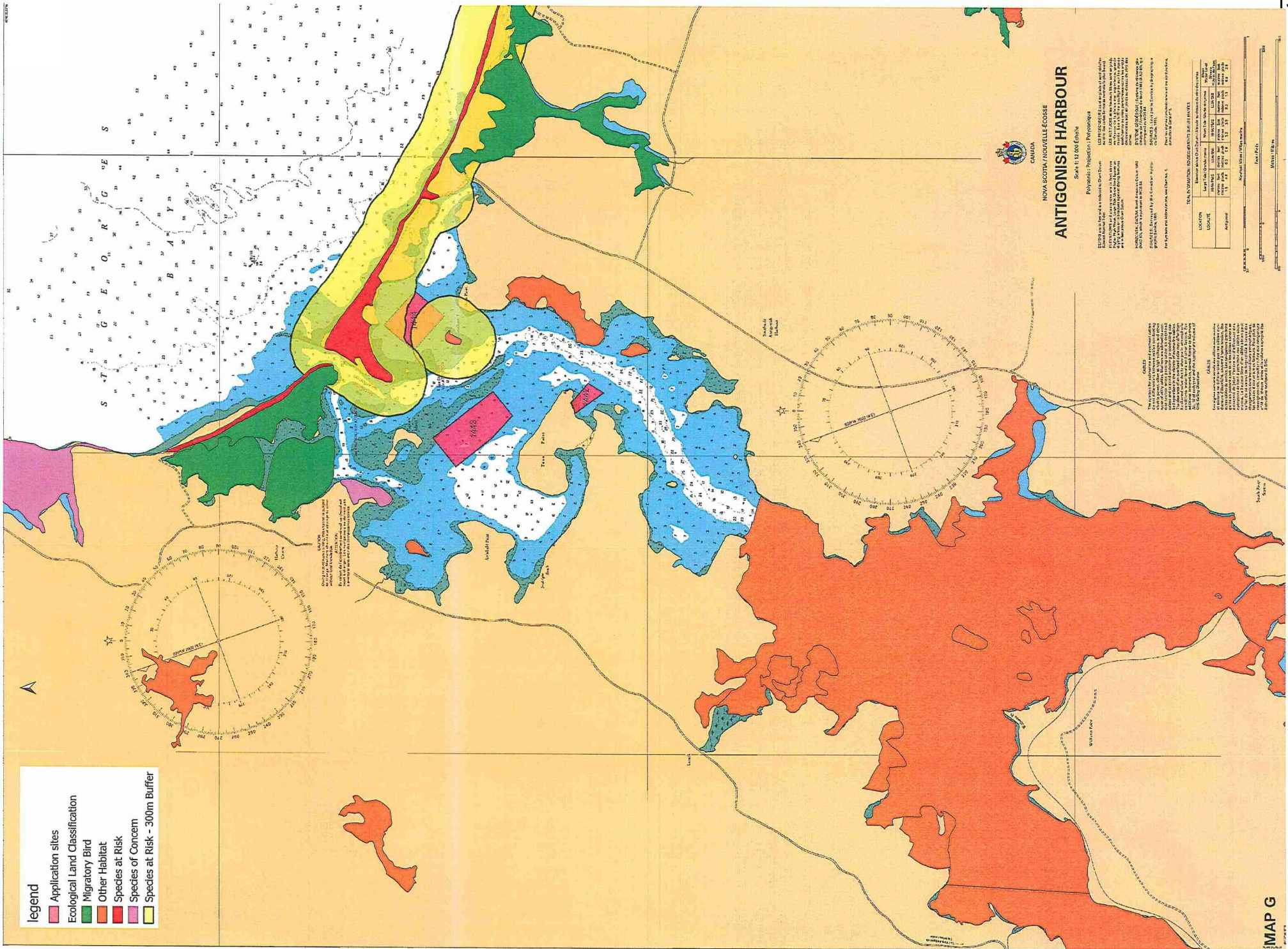
Point E

LATITUDE: N45° 40' 0.268955"

LONGITUDE: W61° 47' 57.43768"

Regards

Derek



Legend

- Application sites
- Ecological Land Classification
- Migratory Bird
- Other Habitat
- Species at Risk
- Species at Risk - 300m Buffer

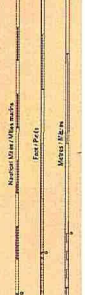
NOVA SCOTIA / NOUVELLE ÉCOSSE
ANTIGONISH HARBOUR

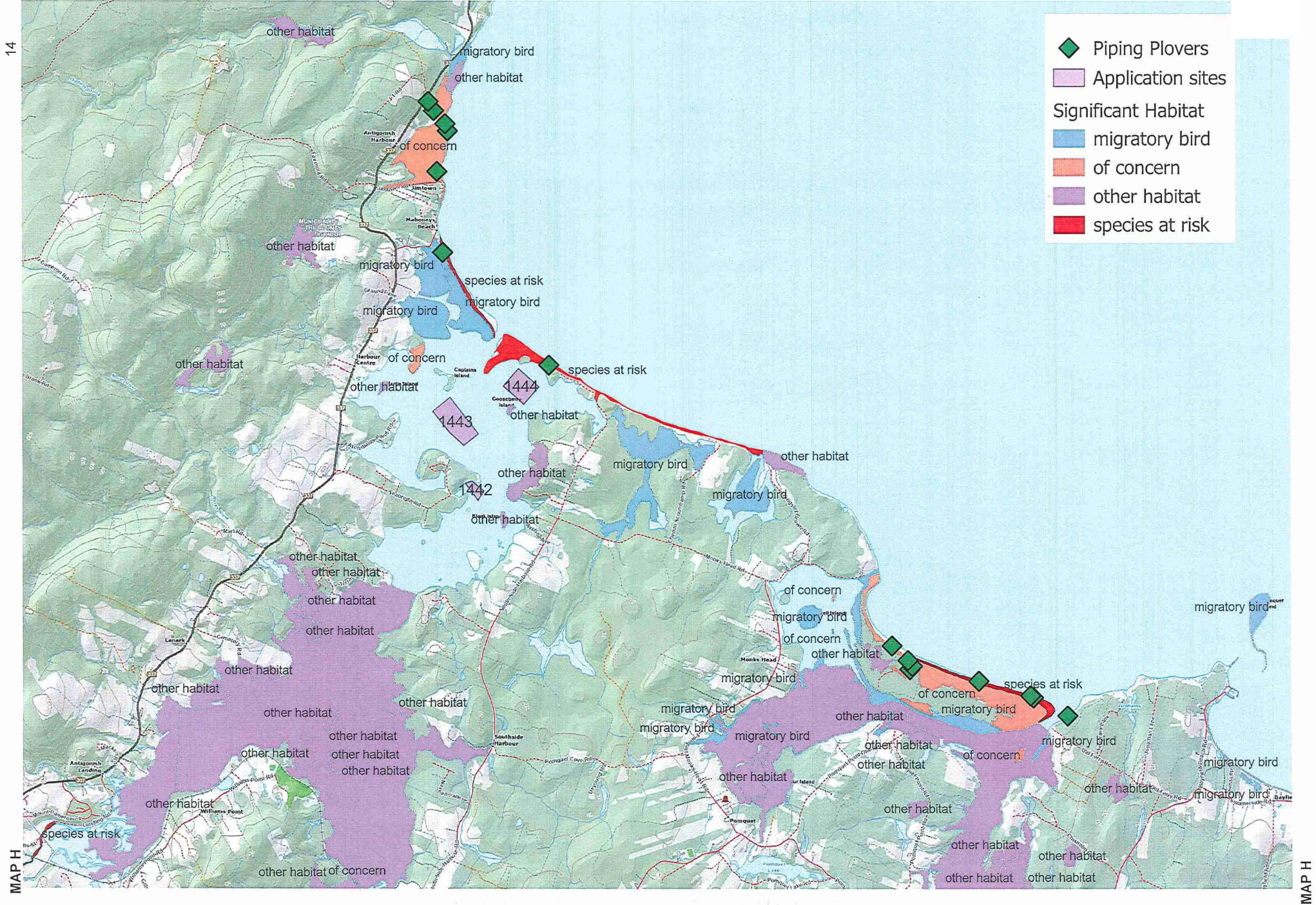
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 Projection: Polyconic

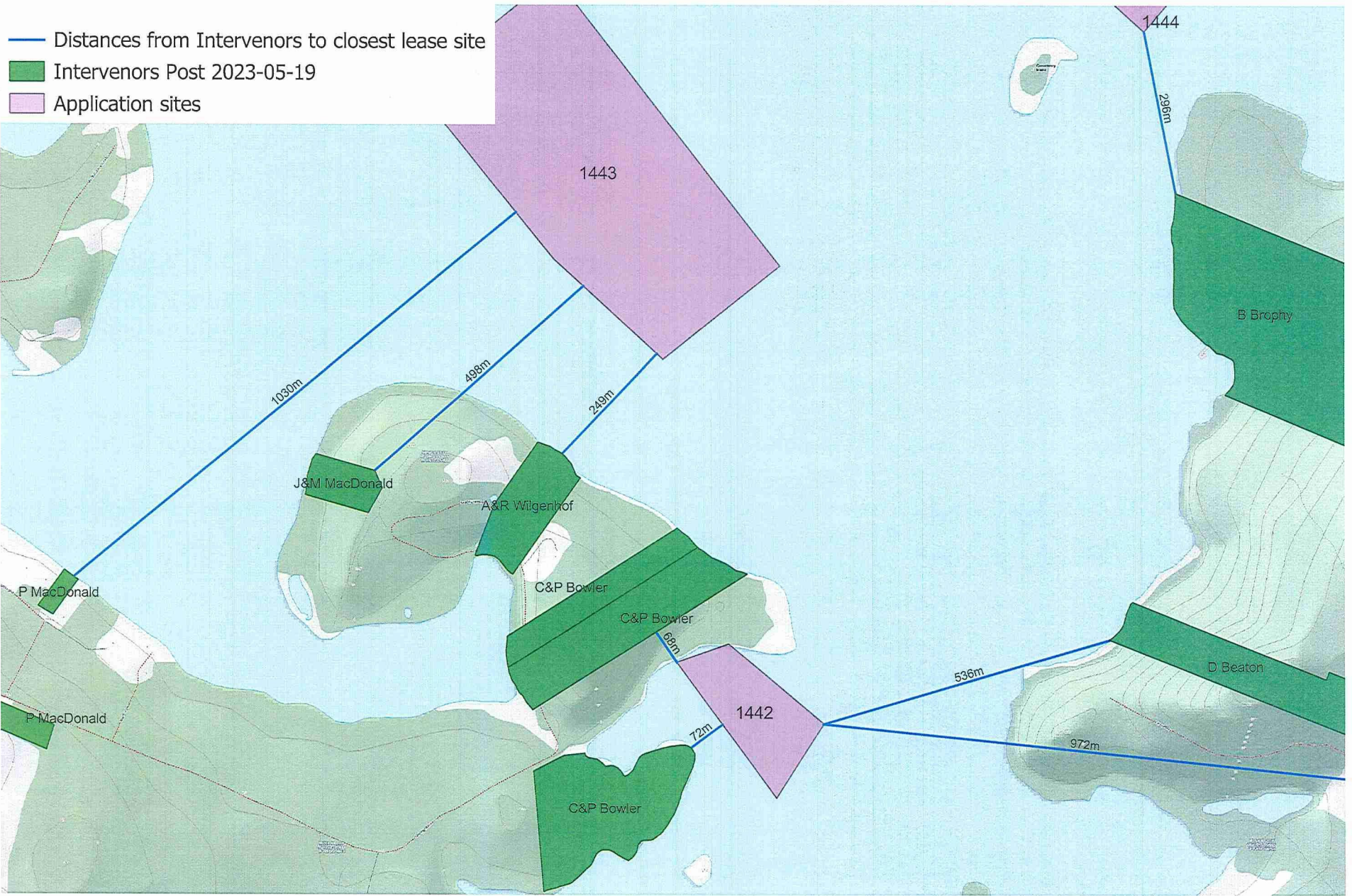
GENERAL NOTES:
 1. This map is a technical drawing and is not to be used for navigation.
 2. The map is based on the latest available data and is subject to change without notice.
 3. The map is not a substitute for a survey or other professional service.
 4. The map is not to be used for any purpose other than that for which it was prepared.
 5. The map is not to be used for any purpose other than that for which it was prepared.

TECHNICAL INFORMATION

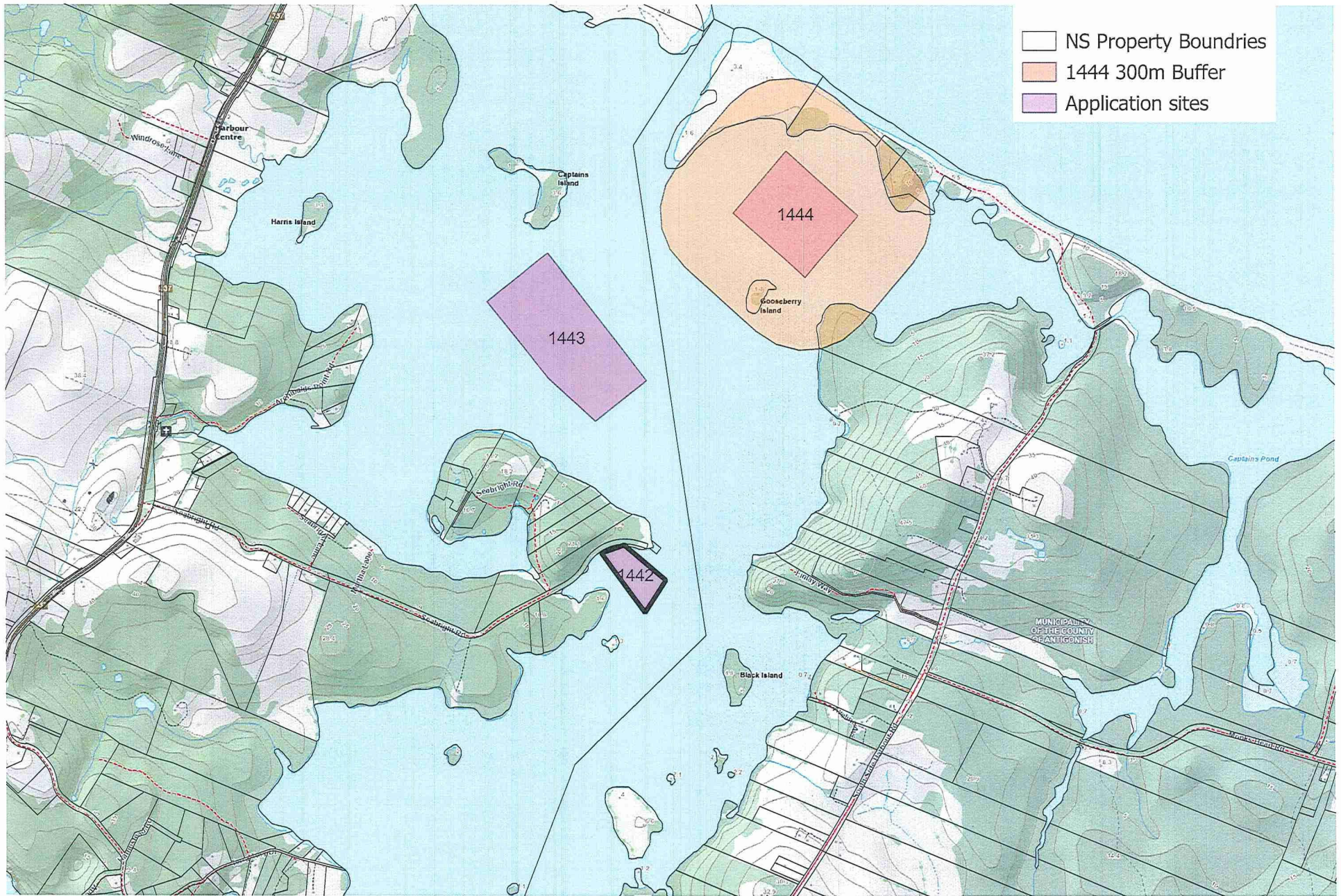
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Scale	1:12 000	Epochs	
Projection	Polyconic		
Map Date	2011		
Map No.	11111		
Map Title	Antigonish Harbour		
Map Author	Antigonish Harbour		
Map Date	2011		
Map No.	11111		
Map Title	Antigonish Harbour		
Map Author	Antigonish Harbour		







Distance from Intervenor to closest lease site. Rounded up to the nearest meter



MAP J

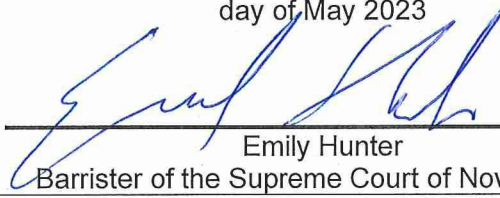
2022

NSUARB 2022-001

NSUARB 2022-002

NSUARB 2022-003

This is Exhibit "B" referred to in the Affidavit of
Michael MacDonald sworn to before me this 19th
day of May 2023



Emily Hunter

Barrister of the Supreme Court of Nova Scotia

EMILY HUNTER
A Barrister of the Supreme
Court of Nova Scotia

Michael MacDonald, P. Eng.

Antigonish, NS

@gmail.com

PROFESSIONAL EXPERIENCE

- Professional Projects / Retired 2020-
- Data analysis for DMD Economics 2020 -
- Nova Scotia Health Authority | *Halifax, NS* **2016 -2020**
Management Engineer 2016 -2020
- Provided project management and strategic support for process improvement initiatives undertaken by Telehealth, Primary Health Care, Mental Health and Addictions, Palliative care and the Cardiac Cath lab.
 - Lead an \$18 million dollar project to implement smart pump technology.
- IWK Health Centre | *Halifax, NS* **2007 - 2015**
Director of Engineering and Environmental Services 2010 - 2015
- Provided leadership, innovation and strategic planning to Plant Maintenance and Operations, Biomedical Engineering, Housekeeping, Protection Services, and Facilities Departments with an annual budget of \$18 million.
 - Collaborated with the Department of Health to upgrade and replace aging infrastructure and medical equipment.
 - Provided complex services to multiple, diverse and demanding clients through out the Health Centre.
 - Negotiated a performance-based housekeeping contract that aligned the service with Infection Control, CSA and Accreditation Canada standards.
 - Co-lead a \$4.0 million project that implemented smart pump technology in the Health Centre.
 - Completed various studies on energy usage and waste production within the facility.
 - Collaborated with teams to align services with the Health Centre strategic plan:
 - Streamlined waste that resulted in cost savings of \$60,000 annually.
 - Upgraded parking garage lights that resulted in cost savings of \$150,000 annually.
 - Increased training for Protections Services and Housekeeping staff which improved service quality.
 - Standardized infrastructure failures response procedures to ensure patient care was not impacted.
- Industrial Engineer** 2007 - 2010
- Managed process improvement initiatives including lab process improvement, admitting and registration redesign, clinic workload review, and specimen tracking improvements that resulted in significant cost savings and efficiencies.
 - Analyzed birth record population data by combining various data sets to determine staffing requirements for the Women's program.
 - Supported the H1N1 preparation by synthesizing data into daily reports to allow leadership to make better informed decisions.
 - Supported several change management projects that focused on creating strategic road maps for Patient Safety, Diversity & Inclusion, and Primary Care initiatives.
 - Collaborated with a team to create and deliver an internal "Lean" course that resulted in increased awareness and understanding of lean principles.
- Capital District Health Authority | *Halifax, NS* **2005 - 2007**
Sr. Management Engineer (contract)
- Worked on various projects that improved the quality and efficiency in the organization including clinic workload evaluations and process redesign.

Coordinator Primary/Secondary Care Quality Initiative (contract)

- Partnered with family physicians and specialists to improve the interface between primary and secondary care. These collaborative initiatives included:
 - Developed accountability guidelines for physicians and specialists that led to enhanced collaboration.
 - Developed a navigation toolkit for family physicians that led to improved patient access to care.
 - Collaborated with ER physicians to develop a DVT protocol tool that resulted in reduced wait times in the emergency department.

Ellipse Spatial Services / GTI | *Calgary, AB*
2005

1996 -**Consultant**

- Managed the digital collection of construction and as-built survey data for a gas pipeline (320 km) using GIS software.
- Developed an integrated data collection and reporting system for sawmill log purchasing that resulted in faster and more accurate payments for product.
- Integrated fisheries information from various sources into a Geographical Information System (GIS) that allowed for more efficient community decision making.
- Managed several dinosaur site surveys (GPS) for the Royal Tyrell Museum in Alberta that resulted in more effective research.

Volvo Canada Ltd. | *Halifax, NS*

1996**Project Engineer (contract)**

- Organized the material logistics for the "5 Door" product introduction.
- Provided efficient and value added manufacturing engineering support to the assembly process.
- Developed an improved system to store, update and report production standards.

Michelin Tires North America Ltd. | *Bridgewater, NS*

1989 - 1996**Maintenance Supervisor**

1994 - 1996

- Supervised 24 maintenance trades people (10,000 tires/day curing line).
- Managed a \$1.2 million maintenance budget.
- Developed the business case and spearheaded a \$1.5 million project to modernize the tire curing control system that was implemented throughout the organization.

Industrial Engineer

1989 - 1994

- Managed the implementation of a \$500,000 automatic wire tracking system that was later implemented throughout the organization.
- Coordinated production information, manpower requirements, production capacities and costs.
- Coordinated information preparation for Toyota and General Motors quality audits. This resulted in the plant becoming a qualified supplier to these companies.

EDUCATION**EDUCATION Dalhousie University (continuing education)**

C++ Programming

2007

C programming

2005

Memorial University of Newfoundland (continuing education)

Completed one year of computer science program

Technical University of Nova Scotia, | *Halifax, NS*

Bachelor of Engineering Degree (Industrial)

St Francis Xavier University | *Antigonish, NS*

Diploma in Engineering

PROFESSIONAL DEVELOPMENT

 Michael MacDonald, P. Eng.

902.471.4242 mikemacdon2@gmail.com

National Health Leadership Conference

2014

ASSOCIATIONS

Association of Professional Engineers of Nova Scotia

1980 -

Canadian Healthcare Engineering Society

2005 -

Antigonish Community Energy Cooperative

2017 -

VOLUNTEERING/COMMUNITY RELATIONS

Hope Cottage – Volunteer

2000 - 2017

APENS – Mentorship Program

2008 - 2017

CHES – (Canadian Healthcare Engineering Society)

2010 –2015

St Ninians Cemetery Care Company - Director

2019-