

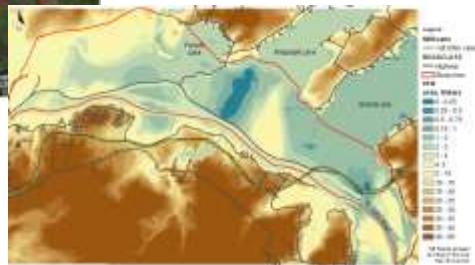


## TAKING THE HISTORICAL MAPS OF GRAND LAKE MEADOWS ONLINE

June 16, 2016 | McGrath.H., Stefanakis, E.  
CARTO 2016

# UNB

### Grand Lake Meadows



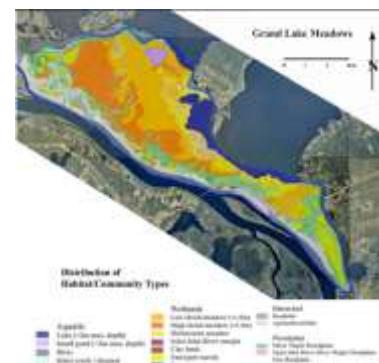
## Grand Lake Meadows

- ▶ Largest freshwater marsh/wetland in the province
- ▶ ‘Floodplain Wetland’ classification
  - ▶ In any given year, ~85% of area is inundated by seasonal floodwaters
- ▶ Diverse ecology and its abundant wildlife
  - ▶ The presence of Grand Lake
  - ▶ Extensive floodplains
  - ▶ The presiding water levels over the growing season
- ▶ Earliest recorded settlers (in the 1600s) were the Wolastoqiyik and Mi’kmaq peoples
- ▶ Class II Protected Natural Area (1990)
  - ▶ Limits use to low-impact recreation activities and traditional food gathering
- ▶ GLM Project Management Committee
  - ▶ To raise awareness of cultural and historical significance of this area

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## Previous research

- ▶ Catalog vascular plant species and characterize different habitats and plant communities (Nature NB)
- ▶ Fauna and Flora [Papoulias et al., 2006]
- ▶ Waterfowl and Tree species, [Zelazny, 2013]
- ▶ Extensive research regarding fish and bird species [Legere 2001]
- ▶ Archaeological study [Blair, 2004]
- ▶ ...



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## Research Question

- ▶ Can previously unknown information about Grand Lake Meadows be uncovered through the analysis of historical maps?

- ▶ **Objectives:**

- ▶ Review the historical map collections
  - ▶ Provincial Archives of New Brunswick
- ▶ Record the socio-economic and geomorphological changes of Grand Lake Meadows
  - ▶ (as documented by the historical map collections)
- ▶ Promote historical significance of Grand Lake Meadows
  - ▶ Web-based map mashup and educational content

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## Archives

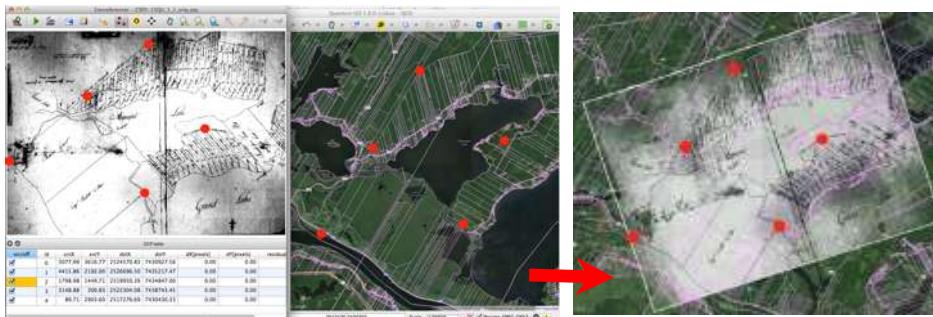
- ▶ Provincial Archives of New Brunswick (PANB)
  - ▶ "collects, preserves, and makes available" historical records for the province of New Brunswick
  - ▶ Predicted
    - ▶ Find historical maps dating back to 17th century
  - ▶ Classes:
    - ▶ Land Grant, Land grant survey plans, crown lands maps & plans, hydrographic, cadastral land grants, campsite petitions... town plot plans,
  - ▶ Actual
    - ▶ Nearer the end of the 18th century
    - ▶ (Earliest map in study area: 1785)
    - ▶ Majority of maps: [Land Grants](#)



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## Georeference

- Images georeferenced in Quantum GIS



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## Map Scan Coverage

[http://gaia.gge.unb.ca/GLM/en/map/map\\_imagekey\\_en.php](http://gaia.gge.unb.ca/GLM/en/map/map_imagekey_en.php)



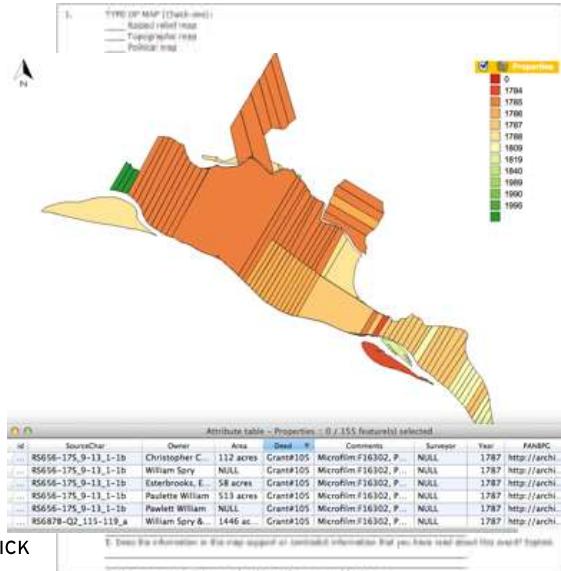
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## ID Features of Interest

### Map Analysis

#### Digitize

- ▶ Property boundaries and ownership
- ▶ Wetland
- ▶ Buildings
- ▶ Settler origin



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## Enrich Historical Map Findings

- ▶ Review previous research
- ▶ Discussion with local historians
- ▶ Data from PANB & Service New Brunswick (SNB)



**Provincial Archives of New Brunswick**  
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**RS656 :: Index to New Brunswick Land Grants, 1784 - 1997**

[Immediation](#) | [Help](#) | [Search Page](#)

[Return to previous page](#)

Name	MILLER, Henry
Volume	I
Page	9
Grant number	46
Recd	Saint John River
County	Quebec
Date	1786-06-10
Accompanying plan	No
Acre	150
Microfilm	F16302
Comment	With 12 Others

Other names on this grant (12):

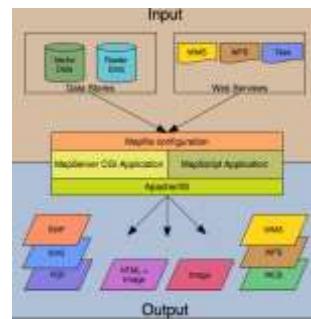
- BROOKS, Ebenezer 173 acres
- CHURCHILL, Nathaniel 250 acres
- CLEWETT, John James 184 acres
- ESTY, Zephaniah 117 acres
- HARRINGTON, Andrew 198 acres
- JOSLIN, Andrew 178 acres
- MICHENER, James 117 acres
- SCULPT, Peter 141 acres
- TISDALE, Ephraim 150 acres

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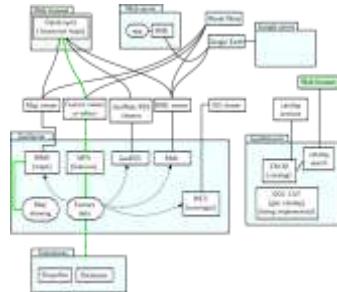
Link to PANB Website

# Map Mashups

- ▶ MapServer
  - ▶ Web Map Service
  - ▶ OpenLayers
  - ▶ jQuery  
  - ▶ GGE 5403
    - ▶ (Web Mapping and Geospatial Services)
    - ▶ Web Services)
  - ▶ GGE6408
    - ▶ (Geospatial Web)

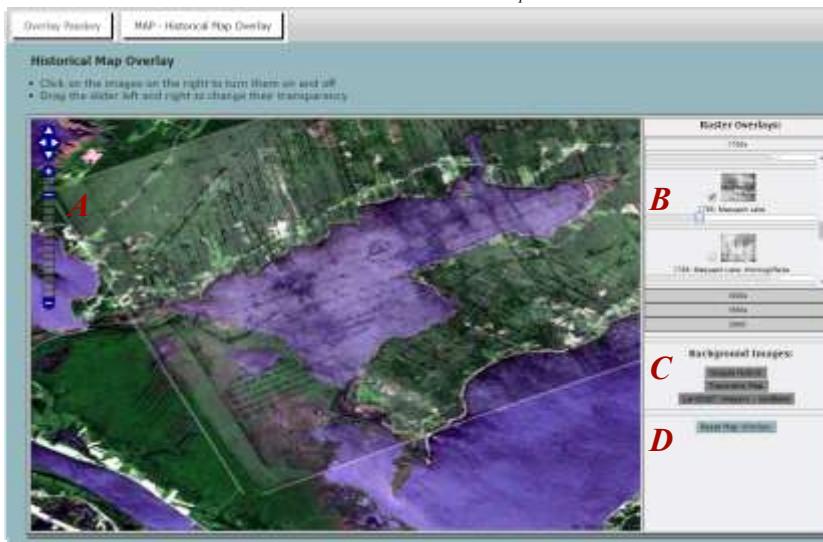


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# Historic Map Mashups

- A: Open Layers map window, default pan and zoom tools*
  - B: Toggle auxiliary data (images or digitized features via jQuery Accordion Panel)*
  - C: Background map choice*
  - D: reset Map*



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## Legend Components



```
<input type="checkbox" name="overlay" value="ckRS655343" id="msRS655343"
    onClick="toggleControl(this);">

<br>1932: French Lake to Maquapit Lake, Land Ownership
<div class="slider" id="slidRS655343"></div>
```

Image, thumbnail, checkbox, and description of layer to legend

**1****HTML**

```
function toggleControl(element){
    if(element.value == "ckRS655343"){
        RS655343.setVisibility(element.checked)
    } };
Add in collapsible and toggled layers: 1st argument = Name of the function. 2nd argument= If statement to define action.
3rd argument = Set default visibility of the element (set checkbox to empty)
```

**2**  
**HTML**

```
<script>
$(document).ready(function(){
    $( "#slidRS655343" ).slider({
        range: "min", animate: "fast",
        max: 100, value: 75,
        slide: function(event, ui) {
            RS655343.setOpacity(ui.value / 100);
            $( "#sliRS655343" ).val(ui.value );
        }
    });
</script>
Slider transparency script
```

**3****HTML**

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## WMS-T & Feature Information

```
function update_date() {
    var string = OpenLayers.Util.getElement('year1').value + "/" +
OpenLayers.Util.getElement('year2').value;
    DigProperty.mergeNewParams({'time':string});
}
// Function added to the script of HTML file for updating feature data based on date
```

**1****HTML**

```
#-----layer definition
NAME "DigSettlers"      METADATA
"wms_timeextent" "1700/2012"
"wms_timeitem" "Year"
"wms_timedefault" "1700"
"wms_enable_request" "*"
END
//WMS-T Metadata items required (and optional)
for WMS-T support in MapServer Mapfile
```

**2****Mapfile**

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## WMS-T & Feature Information

```
//get_feature_info select
map.events.register('click', map, function (e) {
    if (DigProperty.getVisibility()) {
        OpenLayers.Util.getElement('attr_data').innerHTML = "Retrieval of data...
Please wait...";
        var url = DigProperty.getFullRequestString({
            REQUEST: "GetFeatureInfo",
            EXCEPTIONS: "application/vnd.ogc.se_xml",
            BBOX: DigProperty.map.getExtent().toBBOX(),
            X: e.xy.x,
            Y: e.xy.y,
            INFO_FORMAT: "text/html",
            FONT: "c:/ms4w/fontlist/times.ttf",
            ENCODING: "utf-8",
            FEATURE_COUNT: 1,
            QUERY_LAYERS: DigProperty.params.LAYERS,
            WIDTH: DigProperty.map.size.w,
            HEIGHT: DigProperty.map.size.h });
        OpenLayers.Util.getElement('requestp').innerHTML =url;
        // to see the URL
        OpenLayers.loadURL(url, '', this, setHTML);    OpenLayers.Event.stop(e);
        else { OpenLayers.Util.getElement('attr_data').innerHTML = "Data Layer is not
activated"; } });
// Get feature info based on map selection
```

**1****HTML**

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## WMS-T & Feature Information

```
function setHTML(response) {
    OpenLayers.Util.getElement('attr_data').innerHTML =
    response.responseText;
}
// Get attribute data from .html file
```

2  
HTML

```
DATA
'C:\ms4w\Apache\htdocs\glm\Web_HistoricalMaps\shapes\DigSettlers.shp'
TEMPLATE
"C:\ms4w\Apache\htdocs\glm\Web_HistoricalMaps\shapes\Settlers.html"
// Link to template file in MapServer Mapfile
```

3  
Mapfile

Time: [Year]
Settler: [Settler]
Source Char: [SourceChar]
Comment: [Comment]
Source: [Source]

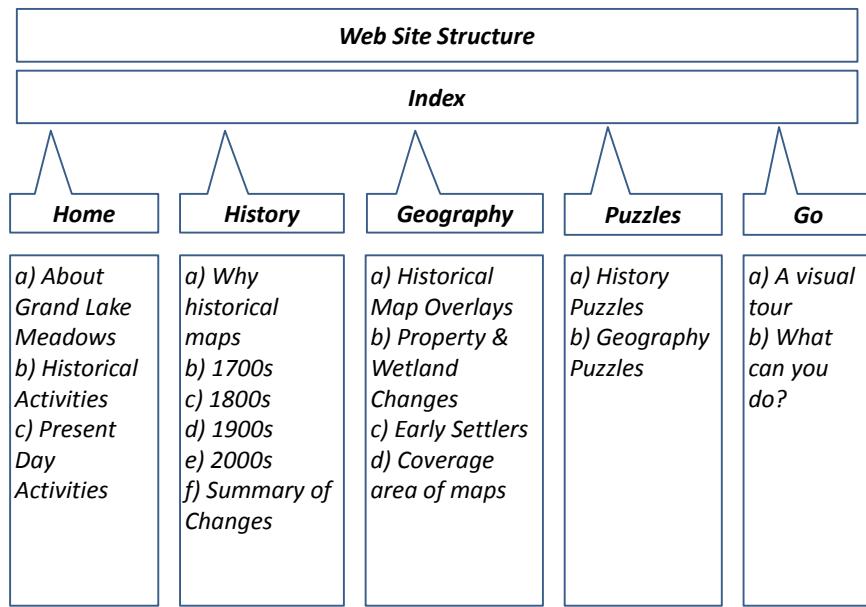
4  
HTML Doc

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## OpenLayers & KML



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## Educational Content

- ▶ Puzzles and Quizzes
  - ▶ Hypertext Preprocessor (PHP), Scalable Vector Graphics (SVG) & jQuery
- ▶ Teachers only section
  - ▶ Exercises based on Historical Thinking Project

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# History

**1700s in Grand Lake Meadows**

1700s Passkey | Historical map scans | Animated/Interactive maps | What do these images tell us? | 1700s history

**1700s Passkey**

Instructions:

Find the answers to the questions on this page to get your 1700s puzzle pieces and passkey.

The answers may be found on any of the tabs you see on this page: Historical Map Scans, Animated/Interactive, What do these images tell us?, or 1700s history.

With five correct answers you'll receive your 1700s Passkey and a completed puzzle piece.

Once you've collected all 5 History passkeys and puzzle pieces proceed to the [1700s PUZZLE](#) page to put all the pieces together.

**Questions:**

Q1. What was the main mode of transportation in 1700s?  
 A. Land  
 B. Sea  
 C. Flying  
 D. Running

Q2. What measurement units were used?  
 A. Miles  
 B. Kilometers  
 C. Feet  
 D. Yards

Q3. Why are there so many maps from 1700s?  
 A. Mistakes were made the first time.  
 B. N.B. B established as a separate colony.  
 C. Lands had to be registered in N.B.  
 D. None of the above

Q4. How were wetland areas described (2 words)?  
  
 E. True  
 F. False

Q5. Trees were used to indicate property corners:  
 G. True  
 H. False

**1700s - PASSKEY: "ARK"**

Q1. Result is correct  
Q2. Result is correct  
Q3. Result is correct  
Q4. Result is correct  
Q5. Result is correct

0 / Answers

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# PHP Quizzes

</p><h3>Questions:</h3>

<form action=".1700s\_qs.php" method="post">

Q1. What was the main mode of transportation in 1700s?  
 A  
 B  
 C  
 D

Q2. What measurement units were used?:<br />
<select name="q-2-a">
<option value=""></option>
<option value="A">Ounces</option>
<option value="B">Metres</option>
<option value="C">Feet</option>
</select><br />

Q3. Why are there so many maps from 1700s?:<br />
<select name="q-3-a" size="3">
<option value="A">Mistakes were made the first time.</option>
<option value="B">N.B. B established as a separate colony.</option>
<option value="C">Lands had to be registered in N.B.</option>
</select><br />

Q4. How were wetland areas described (2 words)?:<br />
  
 E. True  
 F. False

Q5. Trees were used to indicate property corners:<br />
 True</label><br />
 False</label><br />

</input type="submit" />

</form>

```

</p>
$answer1 = $_POST['q-1-a'];
$answer2 = $_POST['q-2-a'];
$answer3 = $_POST['q-3-a'];
$answer4 = $_POST['q-4-a'];
$answer5 = $_POST['q-5-a'];

$TotalCorrect = 0;
if ($answer1 == "D") { $TotalCorrect++; }
if ($answer2 == "C") { $TotalCorrect++; }
if ($answer3 == "B") { $TotalCorrect++; }
if ($answer4 == "Properties cannot be registered") { $TotalCorrect++; }
if ($answer5 == "True") { $TotalCorrect++; }

echo "<p>Your total score is $TotalCorrect / 5 correct!</p>";

```

```

<div style="border: 1px solid black; padding: 10px; margin-top: 10px;">


... go here to display the key correct ...



If $answer1 == "D" then "True" else "False" ...



If $answer2 == "C" then "Metres" else "Feet" ...



If $answer3 == "B" then "N.B." else "New Brunswick" ...



If $answer4 == "Properties cannot be registered" then "True" else "False" ...



If $answer5 == "True" then "True" else "False" ...



If $answer5 == "False" then "False" else "True" ...


```

# Puzzles

**History Puzzle**

**Passkey & Puzzle Compilation**

**Part 1**  
Enter in all your gathered Passkeys below to decode the puzzle pieces.  
**Passkeys:**

**Congratulations!**  
You have collected all the passkeys for this section.

**Part 2**  
Unscramble the letters in the 5x5 grid to solve the puzzle:  

A	Y	V	A	L	U	A	B	L	E	I	O
S	D	A	E	R	A	C	H	G	R	M	O
B	Z	L	T	C	R	X	I	O	W	M	N
N	O	U	I	R	E	K	A	P	S	C	
F	R	E	S	H	W	A	T	E	R	Y	

Find all the words in the image below. The words may be written forwards, sideways (backwards), up, down, or found diagonally.

**Geography Puzzle**

You collected 4 Passkeys (9 words total) in the Geography section of the website.  
If you are missing any passkeys, return to the [Geography](#) home page to collect them.

Find all the words in the image below. The words may be written forwards, sideways (backwards), up, down, or found diagonally.

**Passkey Puzzle**

**Part 2**  
Unscramble the letters in the 5x5 grid to solve the puzzle:  

A	R	O	R	R	A	A	R	O	N	S	A
R	O	R	R	A	A	R	O	N	S	A	S
O	R	R	A	A	R	O	N	S	A	S	R
R	O	R	R	A	A	R	O	N	S	A	R
A	R	O	R	R	A	A	R	O	N	S	A

**Geography Puzzle**

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**Passkey Puzzle**

**Part 2**  
Unscramble the letters in the 5x5 grid to solve the puzzle:  

A	Y	V	A	L	U	A	B	L	E	I	O
S	D	A	E	R	A	C	H	G	R	M	O
B	Z	L	T	C	R	X	I	O	W	M	N
N	O	U	I	R	E	K	A	P	S	C	
F	R	E	S	H	W	A	T	E	R	Y	

Find all the words in the image below. The words may be written forwards, sideways (backwards), up, down, or found diagonally.

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Find all the words in the image below. The words may be written forwards, sideways (backwards), up, down, or found diagonally.

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# Teachers Resources

User ID:  Password:  Save

### Teaching Resources

On these pages you will find exercises and suggestions for exercises which use the Historical Maps of Grand Lake Meadows and concepts from 23a. [Historical Thinking Project](#).

The six concepts of The Historical Thinking Project are:

- **Historical significance:** historical significance requires placing historical events and determining what elements are significant. The different ways to classify an event as "significant" is that it involves a wide range over a long period of time and affects a great number of people.
- **Cause and consequence:** cause and consequence can be thought of as determining the underlying or preceding conditions that led to the significant event.
- **Historical perspective—MAPING:** historical perspective—mapping is used to illustrate the timeline in understand the sequence of events from the 1800s to the 1900s. Assess student's ability to recognize historical perspective, where they attempt to state how the social, cultural, intellectual and emotional circumstances which shaped the lives of these individuals.
- **Continuity and change:** this station is one or more short focus on a series of interconnected events instead of a lot of events that result in a different series of the past and are often difficult to identify continuity and change.
- **Use of primary source evidence:** using primary source evidence is an important component in history, since the evidence represents during the time and place being investigated.
- **Historical dimensions of history:** the final historical thinking framework focuses on historical dimensions. While dimensions can be thought of as "What responsibilities do historians have and what does history tell us?" dimensions can also be thought of as "How does history affect us?"

**Exercises and files**

**1. Map Analysis Worksheet**

This worksheet can be used to have students identify features on a map and think about why certain features were included or excluded from a map. This worksheet can be used for any of the maps on this webpage and other maps external to this site. The exercise can be completed by individuals or in groups.

**2. Comparison: past and present**

Aerial photographs from the 1930s, 1940s and 1950s compared to the present day. Have the students compare the past aerial images to the present day ones to identify how the landscape and land use has changed over the years.

Have them think about and answer questions such as:

- Do buildings still exist?
- Are there new buildings?
- Is there evidence of farming?
- Evidence of transportation activity?
- Has the number of trees changed in each photo?

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## Conclusions



- To review the historical map collections held at the Provincial Archives and the University of New Brunswick



- Record the socio-economic and geomorphological changes of Grand Lake Meadows
  - (as documented by the historical collections)



- Promote historical significance of Grand Lake Meadows through development and deployment of a web based map mash-up and educational program

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## Thanks to:

- Grand Lake Meadows Project Management Committee for funding this research
- Dr. Stefanakis, Dr. Nichols, & Dr. Huskins
- Mary-Ellen Badeau, PANB
- Francesca Holyoke, Archives & Special Collections at Harriet Irving Library
- Siobhan Hanratty, Government Documents, Data and Maps, HIL
- Dominique Paradis-Lacey at Department of Natural Resources, Public Services

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