



PEI Agri Watershed Partnership



Background

- PEI WA and FA Initiative based on mutual interest to address on farm environmental issues
- Discussion in fall 2018, project identified in March 2019
- Committee Established in April 2019
- \$300k was initially granted, \$200k added in 19/20 budget
- Project completion Dec 2020



Committee Members

Mike Durant (Chair)	PEI Watershed Alliance
Dale Cameron	PEI Watershed Alliance
Greg Donald	PEI Potato Board
Robert Godfrey	PEI Federation of Agriculture
Kate MacQuarrie	Director, Forests, Fish and Wildlife, Environment, Water and Climate Change
Erin Taylor	Manager, Climate Change, Environment, Water and Climate Change
Carla Millar	Manager, Sustainable Agriculture, Agriculture and Land



Mandate

- ▶ The committee's mandate is formalized in its Terms of Reference:

The Mandate of the Watershed and Agriculture Steering Committee is to ensure efficient and effective implementation of the Watershed and Agriculture Project

The Project aims to increase capacity of watershed groups and the agricultural sector to identify and address farm-related environmental issues.



Overall Goals

- Reduction (ideally, elimination) of land-use-related fish kills
- Keeping soil on the land, and out of waterways
- Developing an industry standard of code of practice for agricultural cropping (efficient and effective)
- Build and support ongoing collaboration between Watershed Groups and the Agricultural sector



Major Activities

- Develop beneficial management practices (BMPs) for agricultural production.
- Identify barriers to implementation of these practices and recommend options for overcoming those barriers.
- Develop criteria for identifying on-farm high-risk environmental areas particularly in light of extreme weather events and a changing climate.
- Develop educational and/or communications materials highlighting key environmental risks, benefits of implementing BMPs, and the complex operational and financial realities faced by farmers.
- Provide technical and financial assistance to farmers willing to prepare and implement on-farm management plans that comply with the BMPs.
- Recommend to Government whether an alternative measures model should be developed and implemented to address regulatory issues related to agriculture and the environment.



Current Status

- ▶ Monthly Meetings
- ▶ Technical Working Group Established to address BMPs
 - ▶ Reviewed existing literature to identify BMPs that would have high or moderate impact on reducing (ideally preventing) fish kills and keeping soil out of waterways on PEI;
 - ▶ Classify each BMP selected as short, medium or long term and high or moderate impact;
 - ▶ Identify barriers to implementation of those BMPs; and
 - ▶ Suggest metrics for measuring the effectiveness of those BMPs as they are implemented
- ▶ Review completed in July



Current Status - continued

- The committee discussed risk factors and tools available to identify high-risk sites
- Review of available GIS data
 - the % of watershed with crops,
 - documented fish kill events since 1998,
 - % of crop land within 50 meter buffer of stream or wetland
- Need to identify other risk factors to help further refine high risk areas
- Professional Agrologist retained to assist in project delivery



Stakeholder Consultations

- Consultation on BMPs and Code of Practice
- Engagement with watershed community
 - Regional Sessions will be coordinated by the Watershed Alliance
 - Individual watershed groups may also be accommodated.
- Focused feedback sessions with farming community
 - 4 major facilitated sessions distributed across province in January
- Other opportunities to garner stakeholder feedback



BMPs to be discussed at stakeholder meetings

- Managing crop residues, reducing primary tillage in potato production
- Increasing the use of fall cover (cover crops after potatoes, maintaining some cover after grain harvest)
- Promote crop rotations that emphasize soil conservation and build soil health
- Managing surface roughness to reduce runoff (furrow damming)
- Utilizing technologies that improve crop protectant placement (plant vs. soil, band spraying)



BMPs to be discussed - continued

- Increased use of decision support tools for improving fungicide usage
- Increasing the use of soil conservation structures
- Maintaining soil conservation structures in optimal working order
- Identifying and stabilizing critical flowpaths
- Improved methods of stabilizing soil erosion structures (grass mixes more adapted to climate, increasing the stability of outlets)



BMPs to be discussed - continued

- ▶ High risk land retirement
- ▶ Increasing the buffer width where warranted by risk
- ▶ Improving the structure and nature of hedgerows
- ▶ Limit use of chlorothalonil until after row closure



Risk Assessment

- “Develop criteria for identifying on-farm high-risk environmental areas particularly in light of extreme weather events and a changing climate”.
- Steering Committee developed list of major risk factors for fish kills
- Factors were reviewed, categorized with suggested metrics
- Risk assessment methodology should be valid across all land uses and sensitive enough to allow ranking of similar sites.
- Currently conducting a comparison of known problem sites against risk assessment matrix to identify/verify which factors dominate
- Broader testing of the assessment methodology will follow
- Use the assessment as part of the selection process for the pilot field project areas



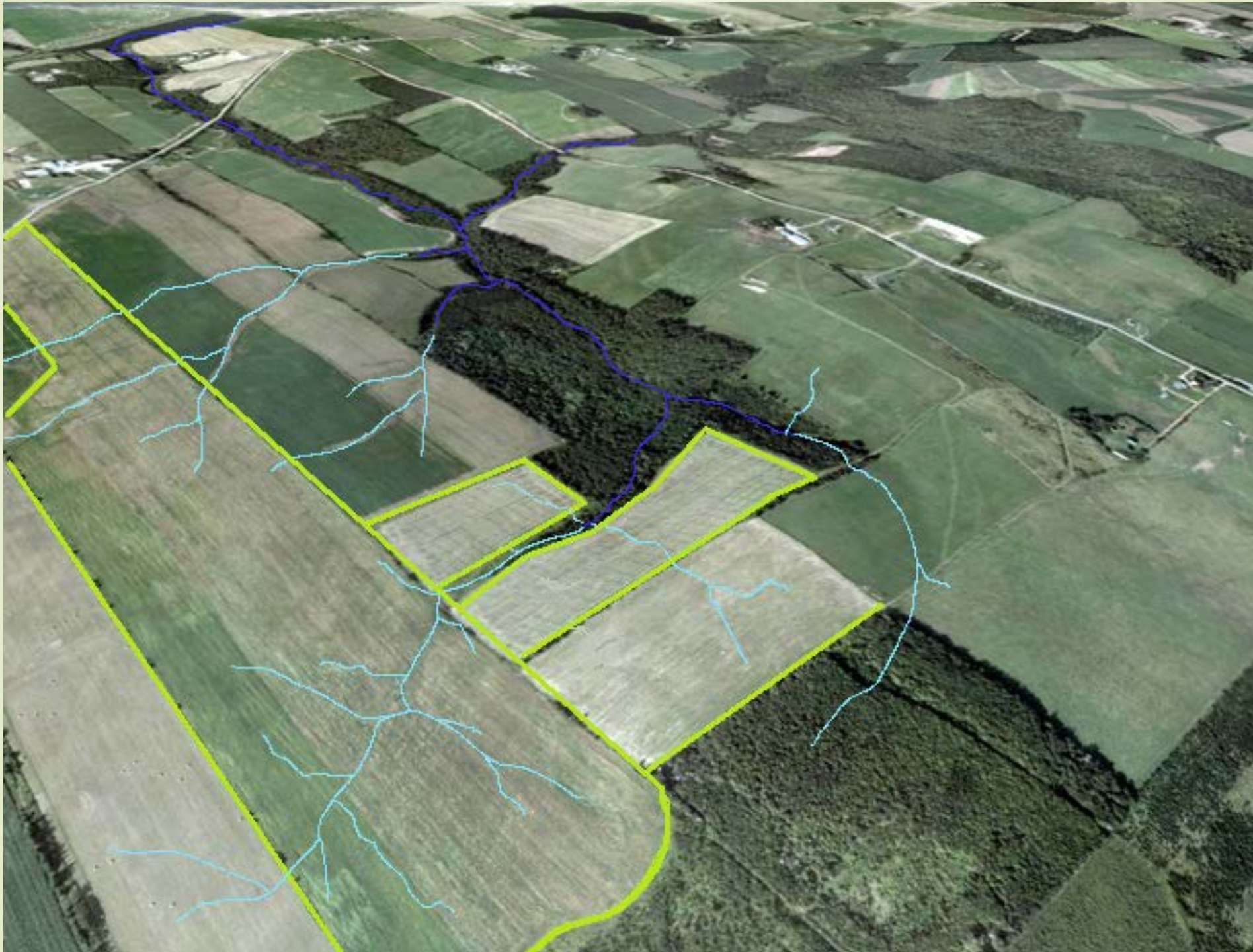
Key on-the-ground risk factors

1. CLIMATE - significant events (rainfall intensity, duration and distribution, timing of first major snowfall, timing of snow melt) **R erosivity data**
2. SOIL ERODIBILITY -Soil characteristics (structure, type, drainage, organic matter, compaction, etc.) **K erodibility factor**
3. TOPOGRAPHY - high slope/ long slopes **LS factor**
4. CONCENTRATED FLOWS - lack of permanent grass in hollows
5. LAND USE in the area (intensive agriculture / high percentage of ag land/crops with significant soil disturbance) **C factor (land cover factor from RUSLE)**
6. Location within watershed (i.e. high or low in the system)
7. LACK of soil conservation structures
8. DISTANCE to a watercourse
9. DISTANCE to ecologically sensitive areas aquaculture sites

Example of Test Data

CRITERIA	DP 079370	DP 0791436	DP 079371	DP 079575	DP 079373	DP 0041276	DP 011596	DP 0111284	DP 011650	DP 113627	DP 01021306	DP 0101478	DP 132766	DP 132749	DP 100967	DP 046749	DP 0691258	DP 069857	DP 076647	DP1821190	DP 086716	DP1011098	DP077299	DP 019462	DP 017642	DP 017688	DP 017688 T		
Discharge (cfs)	25.2	5.5	14.3	56.5	14.6	31.14	50.8	20.2	59.0	114.5	85.9	39.3	56.9	65.3	11.9	64.4	111.2	41.3	331.8	105.2	31.5	54.1							
A - RUSLE (t/ac)*	7.63	2.58	10.72	31.22	9.59	3.62	2.76	1.81	13.23	4.08	26.30	5.85	14.73	3.07	26.84	5.50	11.03	5.68	18.17	14.74	11.56	8.32							
R	84	84	84	84	84	80	80	80	80	84	84	80	94	94	84	84	84	84	84	94	84	84	84	80	80	80	80	80	
Tc - minutes	8.7	3.3	4.37	6.2	3.73	13	25.2	21	6.72	13	10	14.75	10.2	9.95	6.65	11	7.5	7.72	14	10.3	6.3	9.92							
Peak storm for Tc - in./hr 1:25 yr storm	3.93	5.9	5.9	5.11	5.8	3.46	2.5	2.48	5.12	3.34	3.75	2.9	4.33	4.72	5.2	3.7	4.72	4.33	3.34	3.74	6.3	3.93							
Runoff coefficient - CD	0.31	0.31	0.65	0.65	0.65	0.65	0.56	0.65	0.65	0.183	0.65	0.65	0.31	0.31	0.32	0.65	0.65	0.65	0.65	0.65	0.21	0.65	0.65	0.31	0.65	0.65			
K*	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
LS	1.577	0.534	0.831	2.42	0.743	0.295	0.225	0.147	1.077	1.38	2.038	0.476	1.02	0.567	2.08	0.426	0.855	0.44	1.408	1.021	3.91	0.645	2.12	0.344	0.424	0.394	0.769		
C factor*	0.18	0.18	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.11	0.48	0.48	0.48	0.18	0.48	0.48	0.48	0.48	0.48	0.48	0.11	0.48	0.48	0.11	0.48	0.48	0.48	0.48	
High slopes - % PEISU cleared land	12.68	0	0	7.4	0	0	0	0	4.6	0	0	0	0	0	16.7	0	0	0	0	0	23.9	0	0	0	0	0	0	0	0
Slope < 9% - S	4.68	3	3.8	5.8	3.7	1	0.8	0.34	3.9	3.58	5.34	1.78	3.14	2.5	5.1	1.8	3.08	1.7	3.57	3.12	7.8	2.9	5.05	1.3	1.7	1.64	4.12		
Long slopes maximum length of flow - L	1962	437	728	1408	581	1589	3215	1644	1274	3017	2494	2398	1980	1705	1446	1606	1328	1958	3161	1998	1662	1664	1653	1971	1849	1550	874		
Land use in catchment % wooded	0	0	0	6.8	0	0	0	0	0	0	0	0	0	4.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distance from catchment node to stream (ft)	50	1521	907	131	1168	1377	190	1736	58	20	88	603	278	250	138	53	20	1073	881	108	236	3206	1426	1799	1800	660	88		
% of catchment 200 m buffer	32.5	1	1	22	1	2.9	15.4	1	98.7	15.8	18.3	4.7	5.7	17.8	57.8	30	20.3	0	0	15.7	19.2	0	0						
Large field size - catchment area in acres	20.34	2.975	3.65	16.71	3.8	13.6	35.65	12.3	17.425	184	34.6	20.5	41.6	43.8	7	26.3	35.6	14.43	150.1	42.5	23.4	20.8	12.05	48.31	24.5	39.88			
Type of cropping CLUI2013	GRN	GRN	POT	POT	SOY	POT	POT/GRN	GRN	POT	PAS/GRN/HAY	POT	POT	POT	GRN	COR	GRN	POT/GRN	POT/HAY	POT/HAY	POT/HAY	GRN/HAY	POT	POT	PAS	POT	POT			
Presence of row crop	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	N			
Proximity to ecologically sensitive areas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Proximity to important aquaculture areas	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1			
Presence of soil conservation structures	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N			
Proximity Factor	1.5	0.1	0.6	1.4	0.3	0.1	1.4	0.1	1.5	1.5	1.5	0.9	1.3	1.3	1.4	1.5	1.5	0.5	0.7	1.4	1.3	0.1	0.1	0.1	0.1	0.9	1.5		
* Estimated value																													
	47	10	58	154	42	15	62	9	99	27	143	53	105	32	140	78	95	38	85	109	48	30	90	4	20	50	87		
	46.52	9.59	57.70	154.02	42.05	15.17	62.40	9.48	98.96	26.61	142.65	52.84	104.68	31.59	140.31	77.66	94.95	37.90	84.99	109.24	48.14	30.04	89.51	3.91	20				
	moderate	low	mod high	very high	moderate	low	mod high	low	high	mod low	very high	mod high	very high	mod low	very high	mod high	high	mod low	high	very high	moderate	mod low	HIGH	LOW	LOW	MOD HIGH	HIGH		





Test Unit:
small
catchment





New *BMP for Potato Production* Book

- Once feedback sessions are completed – information and refinements to BMP list will be incorporated into a 2020 version of the 1998 *Best Management Practices for Potato Production in PEI* Book
- Technical writer will be contracted
- Media firm engaged to do layout, update graphics and produce limited print run and searchable digital copies.



Field Management Pilot Project(s)

- Site specific plan identified by combination of risk assessment and consultation w/ watershed personnel/land owners, agri-environmental groups, stakeholders
- Develop appropriate measures to mitigate identified risks
- Demonstrate measures, but also highlight the cooperation between farming and watershed communities to address problem areas
- Explore potential research opportunities/collaborations to monitor effectiveness of various mitigations used in pilot
- Complete any earthworks associated with pilot project by June 2020

An aerial photograph of a vast agricultural landscape. The foreground and middle ground are dominated by large, rectangular fields of varying colors: vibrant green, golden-brown, and dark brown. These fields are separated by narrow, winding roads or paths. In the background, a long, straight road or canal stretches across the horizon under a clear blue sky with a few wispy clouds. The overall scene is a typical rural agricultural setting.

Thank you