Catfish Creek Conservation Authority

Flood Watch and Warning Plan

SEPTEMBER 2024

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Flood forecasting and warning

2. (1) An authority shall provide programs and services to support its functions and responsibilities related to flood forecasting and warning as set out in subsection (2).

(2) The authority's functions and responsibilities with respect to flood forecasting and warning mentioned in subsection (1) are the following:

1. Maintaining information on surface water hydrology and the areas within the authority's area of jurisdiction that are vulnerable to flooding events.
2. Developing operating procedures for flood forecasting and warning, including flood contingency procedures to ensure continuity of an authority's operations in respect of flood forecasting and warning.
3. Maintaining a stream flow monitoring network that, at a minimum, includes stream flow gauges available as part of the provincial-federal hydrometric network and, where the authority considers it advisable, includes additional local stream flow gauges.
4. Monitoring of weather and climate information, snow surveys and observed water levels and flows utilizing local, provincial and federal data sources.
5. Analysis of local surface water hydrologic conditions related to flood potential and risk, including flood forecasting, to understand and quantify the response and potential impacts within watersheds to specific events and conditions.
6. Communications to inform persons and bodies that the authority considers advisable of the potential or actual impact of flood events in a timely manner.
7. Provision of ongoing information and advice to persons and bodies mentioned in paragraph 6 to support,
   i. emergency and flood operations during a flood event, and
   ii. documentation of flood events.

Primary Responsibilities
Local Scale
Conservation Authorities

Under the *Conservation Authorities Act*, Conservation Authorities (CAs) are required to provide programs and services related to the risk of natural hazards that are prescribed in regulation (O. Reg. 686/21 'Mandatory Programs and Services').

This regulation is made under the Act and prescribes the programs and services that CAs are required to carry out in relation to Flood Forecasting and Warning (FFW) in their respective jurisdictions. CAs have an integral role in FFW including the following responsibilities:

- Assist the MNRF in the delivery of the FFW program in areas within their jurisdiction.
- Monitor weather forecast information and observed water levels and flows within their jurisdiction, utilizing both local and provincial resources.
- Maintain a local monitoring network, data collection and flood warning systems; and
- Where owned or authorized under agreement; monitor, operate and maintain water control structures such as dams, channels, dikes and erosion control structures in accordance with established operating plans.
- Provide on-going analysis and knowledge of current and forecasted local watershed and river conditions and flood potential within their jurisdiction.
- Receive flood messages from and maintain communication with the SWMC.
- Issue flood messages to the municipalities and media within their jurisdiction as per respective flood message distribution lists.
- Provide advice to their member municipalities in response to flooding.
- Maintain awareness of the status of the provincial response to a flood emergency through consultation with the Ministry of Natural Resources and Forestry (MNRF) District Emergency Response Coordinator; and
- Following consultation with member municipalities, advise the MNRF District Emergency Response Coordinator when the flood emergency ceases to exist.
- Other such functions and responsibilities as may be required under O. Reg. 686/21.

Catfish Creek Conservation Authority Staff Responsibilities

Flood Coordinator (General Manager)

It is essential that the on duty lead flood watch supervisor is available for flood related communications at all times during a flood event.

a) Compile real-time stage and discharge data using the Water Survey Canada gauge, Catfish Creek at Sparta (02GC018).

b) Issue appropriate Watershed Statements, Watches and Warnings to Municipal Emergency Co-ordinators, media and applicable agencies.

c) Maintain communications with Authority staff responsible for flood monitoring information and data.

d) Maintain communications with the Municipal Emergency Coordinator.

e) When required notify the Municipal Emergency Coordinator regarding the commencement of ice management activities at the Port Bruce Harbour.

f) When requested by the on duty Municipal Emergency Coordinator communicate with the Port Bruce harbour ice breaking/removal contractor regarding the management of ice breaking activities.

g) Administer all media and general public inquires.

h) Verify a constant and current record of all communications is maintained at the Authorities center of operations.

i) Maintain up-to-date/current records of all flood related communications with CCCA staff, Malahide staff, contractors and flood relevant communication with citizens.

j) When required monitor ice conditions on the Catfish Creek commencing at Jamestown Bridge downstream to the Port Bruce harbour.

Flood First Alternate (Water Management Technician)

It is essential that the on duty lead flood watch supervisor is available for flood related communications at all times during a flood event.

a) Assume the Flood Coordinators' responsibilities as required.

b) Compile real-time stage and discharge data using the Water Survey Canada gauge, Catfish Creek at Sparta (02GC018).

c) Issue appropriate Watershed Statements, Watches and Warnings to Municipal Emergency Co-ordinators, media and applicable agencies.

d) Maintain communications with Authority staff responsible for flood monitoring information and data.

e) Maintain communications with the Municipal Emergency Coordinator.

f) When required notify the Municipal Emergency Coordinator regarding the commencement of ice management activities at the Port Bruce Harbour.

g) When requested by the on duty Municipal Emergency Coordinator communicate with the Port Bruce harbour ice breaking/removal contractor regarding the management of ice breaking activities.

h) Administer all media and general public inquires.

i) Verify a constant and current record of all communications is maintained at the Authorities center of operations.

j) Maintain up-to-date/current records of all flood related communications with CCCA staff, Malahide staff, contractors and flood relevant communication with citizens.

k) When required monitor ice conditions on the Catfish Creek commencing at Jamestown Bridge downstream to the Port Bruce harbour.

Flood Second Alternate (Planner)

It is essential that the on duty lead flood watch supervisor is available for flood related communications at all times during a flood event.

a) Assume the Flood Coordinators' responsibilities as required.

b) Compile real-time stage and discharge data using the Water Survey Canada gauge, Catfish Creek at Sparta (02GC018).

c) Issue appropriate Watershed Statements, Watches and Warnings to Municipal Emergency Co-ordinators, media and applicable agencies.

d) Maintain communications with Authority staff responsible for flood monitoring information and data.

e) Maintain communications with the Municipal Emergency Coordinator.

f) When required notify the Municipal Emergency Coordinator regarding the commencement of ice management activities at the Port Bruce Harbour.

g) When requested by the on duty Municipal Emergency Coordinator communicate with the Port Bruce harbour ice breaking/removal contractor regarding the management of ice breaking activities.

h) Administer all media and general public inquires.

i) Verify a constant and current record of all communications is maintained at the Authorities center of operations.

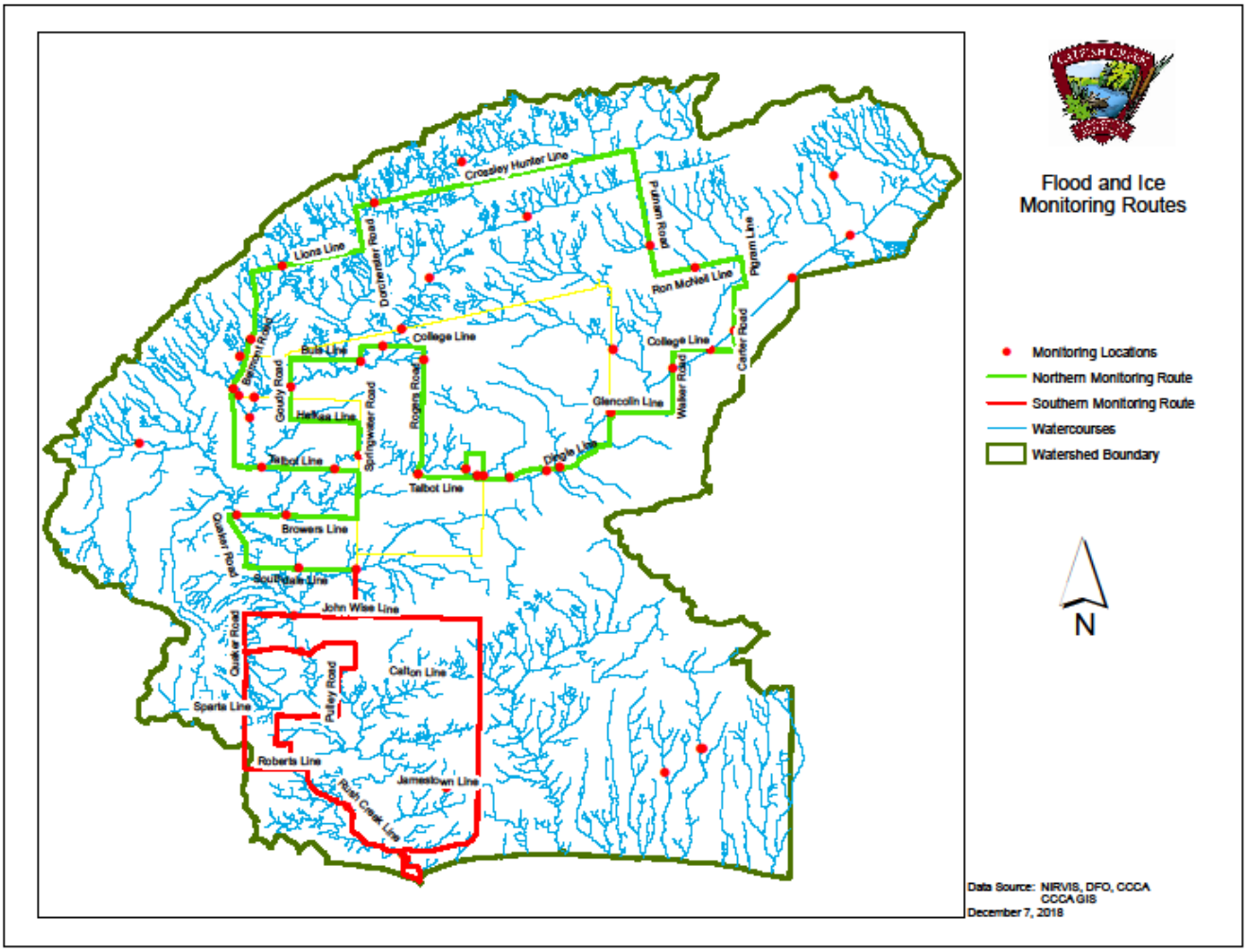
j) Maintain up-to-date/current records of all flood related communications with CCCA staff, Malahide staff, contractors and flood relevant communication with citizens.

k) When required monitor ice conditions on the Catfish Creek commencing at Jamestown Bridge downstream to the Port Bruce harbour.

Flood Additional Staff (all other available/required CCCA staff)

a) When river ice is present, during a flood event, additional staff will patrol the Flood Monitoring Routes, and visually observe channel flow conditions within the watershed.

Catfish Creek Flood Monitoring Routes



b) As required additional staff will assist to monitor channel flow conditions on the reach of Catfish Creek beginning at Jamestown Bridge to and including Port Bruce.

c) Maintain up to the minute record of all flood related communications with CCCA staff, Malahide staff, contractors and flood relevant communications with residents.

d) Manage Springwater Dam if required.

e) Report all of the aforementioned information to the on duty Flood Coordinator.

Media (Program Support Assistant, Financial Services Coordinator)

a) Update CCCA websites with Current Watershed Conditions as required.

b) Update CCCA social media with regard to all flood activities.

c) Invite watershed residents and others to share flood and/or high water pictures through social media.

Catfish Creek Conservation Authority Responsibilities

Authority staff will maintain a visible presence within the Catfish Creek watershed at all times during high water concerns and flood emergencies. The fundamental goal of the Conservation Authority staff is to provide CCCA partner municipal emergency staff with data and information to enable sufficient lead-time to allow emergency procedures to promote resident safety safeguard flood prone areas and minimize flood related damage.

During all high water concerns and flood emergencies the Conservation Authority will record with photos any related pertinent information.

Record Keeping

Immediately after issuing all Watershed Statements, Watches, Warnings, and All Clear Statements save the electronic files in S:Peter\Watershed Outlook Watch Warning Statements (may change time to time). Record time of issue in your Flood Monitoring Field Book.

During the flood Watch and Warning Statements, Water Survey Canada Hydrometric Station data will be recorded in the on duty lead flood watch administrators' field book. All flood related communications will be recorded by the communicator in their flood field book for later compilations.

Field observations will be recorded on site by the observer with a pencil in a waterproof notebook initially, and when time permitting electronically compiled and reported to the on duty lead flood watch administrator. After the Watershed All Clear Statement has been issued the on duty lead flood watch administrator will include all field observations in an electronic file, specific to the flood watch at hand.

All staff responsible for flood monitoring are required to maintain a current and comprehensive diary of their activities and observations during an event.

All field and office observations will be compiled into a formal electronic flood report immediately following the flood event. Photos are required whenever possible.

Internal Authority Communications (i.e. Radios)

If and when required the on duty lead flood watch administrator will organize an internal emergency information area at the Authority's administration office. Field flood watch information will be communicated through the Authority's mobile radio system or mobile cell phone to the on duty lead flood watch administrator for further assessment. Alternative modes of communication include landline telephone, cell phones or when required returning to the office for debriefings.

On every flood watch occasion, prior to staff stepping out of the truck, they will relay to the on duty lead flood administrator that they are stepping out of the truck, their location and time. For continuity and safety reasons upon returning to the truck you will again relay to the same applicable flood staff that you have returned and the time.

Confirmation of communication from the receiving flood staff is mandatory at all times. This series of checks is intended to provide the on duty lead flood watch administrator and associated staff with a location and time of the observer in case of a mishap.

When staff has exited the truck, they are required to report back to the on duty lead flood watch administrator or associated staff within 5 minutes of exiting. In case of emergencies staff are required to carry a hand held radio with them at all times when out of the truck. For safety

reasons any deviation from the outlined route will require notification to the emergency control centre or on duty lead flood watch administrator and associated staff.

Ice Monitoring

The Ice Monitoring Program is designed to sample, identify and clarify the significance of in channel ice sources that may have the potential to cause possible future (freshet) ice jams and associated flooding within the Catfish Creek watershed and the Hamlet of Port Bruce.

Since ice monitoring is always a safety concern, discretion with regard to walking on the ice will be left up to the discretion of the ice monitoring team. Always keep in mind the potential hazards of walking on ice. **DO NOT** walk on the ice if **YOU** feel that it is hazardous.

Ice monitors will record in their field books information appropriate to describing the ice conditions at the monitoring location, such as; ice thickness, ice quality, extent of ice cover, degree of roughness, decay of ice, weather conditions at time of survey, etc.

As the ice develops, ice-monitoring locations will be assessed each Monday morning.

During ice melt and subsequent break-up, the ice monitoring locations will be visually checked whenever deemed necessary. The lower flood-monitoring route will be checked on an event-scheduled basis. To ensure continual information regarding ice conditions and stream flow characteristics during flood monitoring, the lower reach of the Catfish Creek from Jamestown to the Port Bruce harbor needs to be assessed for ice jamming. For safety reasons, two staff members are to complete the ice monitoring circuits at all times.

Degree Days

The US Army Corps of Engineers assumes that ice thickness will be reduced by about 3.7mm per warming (Celsius) degree-day. Warming degrees are the number of degrees above zero that an average sustained daily temperature is for a 24-hour period. For example, an average of 5 degrees C is 5 warming degrees. Therefore, a temperature of 1 degree C for a sustained 24-hour period would melt the ice by 3.7 mm.

However, remember that this form of heat transfer is convective. As warm air blows over the surface of the ice, it constantly renews the heat source at the boundary layer. Consequently, a moderate wind is required for this principle to work. In addition, the temperature is unlikely to be the same all day. To determine the warming degree-days one must integrate the degrees above zero over the whole day.

- **Degree-days** is the difference in the maximum temperature minus the minimum temperature (e.g. High of +6°c. and low of –1°c).
- Caution should be exercised when 10-degree days have been reached.
- 10mm of precipitation in a 24 hours period.
- Deterioration of river ice conditions, specifically at Jamestown.

Authority Assistance During a Municipal Flood Emergency Declaration

Springwater Dam Operation

The on duty lead flood watch administrator and additional staff will monitor water levels in the Springwater Reservoir. Additional staff will be responsible for stop log adjustments at the request of the on duty lead flood watch administrator. All dam activities will be documented by the Conservation Areas Supervisor in the Springwater Dam Log Book (located in the Conservation Areas Supervisor's office, blue binder).

Port Bruce Harbour Ice Breaking Operations

Authority staff will identify the most favorable time to implement pre freshet ice breaking operations at the Port Bruce harbour.

The fundamental goal of ice breaking at the harbour is to provide as much lead-time as possible to assure that the Port Bruce harbour is ice-free prior to the commencement of the spring freshet and riverine ice migration through the harbour.

When possible ice breaking time of commencement is based on the following seven-day weather forecast items and watershed conditions:

- temperature increase and duration
- snow depth and water equivalency
- precipitation intensity and duration
- storm intensity and duration
- pre-storm stream water level at Sparta Gauge (Southdale Road at bridge)
- forecast storm duration rate of precipitation and forecast water level increases
- seasonal watershed characteristics such as frozen soils
- riverine and Port Bruce harbour ice thickness and type
- Lake Erie water levels and ice cover.

Due to flood emergencies limiting the time window when ice-breaking operations are required and achievable during flooding the start of ice management breaking activities are to be explicitly communicated to the on duty Municipal Emergency Coordinator or team member immediately and prior to issuing a Watershed Statement. CCCA staff are to continue attempting to contact a Municipal Emergency contact by telephone until such contact is made and the management information is communicated.

To assist staff with determining the appropriate timing window for ice breaking operations please refer to section ***CCCA Flood Watch and Warning Guidelines***.

Equipment Maintenance (tuck flood watch kits x 2)

Two Authority pick-up trucks will be outfitted with a flood watch truck kit. The required pick-up truck flood monitoring equipment is outlined below. These items should be set aside in plastic toolbox containers for easy access. After each flood event, staff will ensure that flood emergency kits contain the following:

- hand held radio (*park radios are to be charged and available at all times for flood monitoring*)
- truck flashing warning light (yellow)
- flares
- first aid kit

- high vis-vests
- flashlight
- rope
- matches
- waterproof notebook
- pencils
- camera
- shovel
- one pair of binoculars.

In addition to the aforementioned equipment, each truck will have available handout literature regarding flood preparedness and CCCA flood contact information.

When not in use, these kits will be clearly identified and stored in a secure area of the Authorities administration office. These truck kits will be inventoried prior to flood season (December 1).

At all times the Conservation Authority pick-up, trucks will maintain a supply of the CCCA flood information guides for communication dissemination.

Emergency Power Supply

In the event of a power failure, Authority radio communications will fail. A suitably charged 12-volt emergency automotive battery booster will ensure communication links are maintained. An automotive, radio communications battery, should be maintained and stored at the Authority administration office.

Additionally, the Authority's gas-powered generator should receive regular maintenance to make sure it will operate if required.

CCCA Flood Watch and Warning Guidelines

The fundamental goal of flood forecasting and flood communication statements such as Outlooks, Watches and Warnings is to provide our partner municipalities with sufficient flood notification lead time to act according to the notifications.

Flood forecasting and communication statements are based on storm intensity and duration, precipitation intensity and duration, temperature increase duration, pre-storm stream water level, storm duration rate of water level increases, seasonal watershed characteristics such as frozen soils, riverine and Port Bruce harbour ice thickness and type, snow depth and water equivalency, Lake Erie water levels and ice cover.

To assist with determining the appropriate statement, staff will evaluate the following information:

1. Provincial Flood Watches or Warnings issued by the Ministry of Natural Resources and Forestry (MNRF), Surface Water Monitoring Centre.

2. Government of Canada Weather Alerts.

3. Precipitation exceedance rates:

Hurricane Hazel Precipitation Rates				
Hours	6	12	18	24
Precip. (mm)	12	24	36	48

Flood Forecast Precipitation Rates			
Hours	24 (summer)	24 (winter)	30
Precip. (mm)	50	25	60

Conservation Authorities Act Flood Event Standards			
Hours	36	42	48
Precip. (mm)	73	123	285

4. Potential of combined forecast precipitation and snow water equivalency surface runoff to exceed Hurricane Hazel 6, 12 and 18-hour precipitation rates.

5. The combined present stage, rainfall and snow water equivalency potential to exceed a discharge rate at the Catfish Creek at Sparta (02GC018) gauge of 39.2 m^3/sec (1.47m stage).

6. Measured ice on Catfish Creek at Port Bruce greater than 15.25cm (6.0 in), Catfish Creek discharge below average, may indicate that ice transported downstream has the possibility of jamming.

7. GIS modelling, the distance inland (elevation) that Lake Erie water levels have the risk to impede channel flows.

8. Present Lake Erie ice thickness and concentration in the area off shore of Port Bruce.

9. Government of Canada, Marine Weather forecast for Lake Erie, sustained wind speed and direction potential to push outlying lake ice into the harbour.

10. London Airport Daily Weather Data, precipitation.

Based on the above flood forecasting data and extrapolated GIS information the CCCA is obligated to issue an appropriate watershed statement (e.g. **Flood Warning**) for the CCCA Low Lying Flood Prone Areas around waterways within the Authorities administrative boundary.

Watershed Flood Communication Statement Meanings

To be consistent with the wording used by weather agencies, the Ministry of Natural Resources in partnership with Conservation Ontario, Environment Canada and other applicable agencies updated and changed the flood messaging terminology in February of 2012.

Normal

Conditions are within NORMAL limits. No flooding is expected.

Watershed Conditions Statement - Water Safety

High flows, unsafe banks, melting ice or other factors that could be dangerous for recreational users such as anglers, canoeists, hikers, children, pets, etc. Flooding is not expected.

Watershed Conditions Statement - Flood Outlook

Early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high wind or other conditions that could lead to high runoff, cause ice jams, lakeshore flooding or erosion.

Flood Watch

Flooding is possible in specific watercourses or municipalities. Municipalities, emergency services and individual landowners in flood-prone areas should prepare.

Flood Warning

Flooding is imminent or already occurring in specific watercourses or municipalities.

Throughout a flood event, the Catfish Creek Conservation Authority (CCCA) will continue to monitor weather, ice, and watercourse conditions, update Watershed Condition Statements as required and provide technical advice to municipalities to help mitigate the effects of flooding.

Please use the appropriate Watershed Condition Statement from the following location (S:\Water Management\Flood Management\Watershed Condition Statements\Watershed Condition Statement Templates) for dissemination to our flood emergency partners. Following distribution save the file in the aforementioned file address in the appropriate year file.

CATFISH CREEK CONSERVATION AUTHORITY
WATER SAFETY
WATERSHED CONDITIONS STATEMENT

For Immediate Release
Water Safety, Watershed Condition Statement for Residents of Catfish Creek Watershed
Issued on February 1, 2019 at 11:45 a.m.
Issued by: Peter Dragunas, Water Management Technician
Catfish Creek Conservation Authority
(519) 773-9037

This is a Water Safety, Watershed Conditions Statement indicating that high flows, unsafe banks, melting ice or other factors can be dangerous for ALL USERS such as but not limited to anglers, boaters, swimmers, children or pets. Flooding is not expected.

Forecast is for mixed precipitation (mostly rain) in the range of 6 to 10mm of cumulative rainfall for Sunday and into Monday.

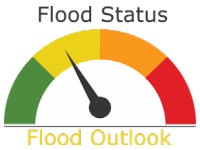
Effective immediately, the Catfish Creek Conservation Authority is issuing a **Water Safety, Watershed Conditions Statement** for flood prone low-lying areas adjacent to watercourses within the Catfish Creek watershed and its tributaries. At present stream flow and water levels are about average within the Catfish Creek watershed. The snowpack is not saturated and may absorb the precipitation. The ground is frozen and has a limited ability to absorb any rainfall that is forecast in the aforementioned time period. As a result, infiltration of the forecast rainfall may be limited and runoff has the potential to elevate water levels within the watershed. No major flooding is expected at this time but water levels may rise and may continue to remain higher during this forecast period. Due to these increased adverse weather conditions, there is a potential for higher water flows resulting in unsafe channel bank conditions and other unpredictable dangers around waterways within the Catfish Creek watershed. Anglers, boaters, children, pets and people intending to undertake any recreational activities around watercourses need to abstain from these areas during these conditions.

The public is encouraged to exercise **extreme caution** near open bodies of water, and to keep children away from waterways during times of increased water flow. Landowners are advised to check dams, culverts, and catch basins and make sure they are free from debris and functioning as intended during high water situations.

CCCA will continue to monitor watershed conditions and will issue updates and recommendations as necessary. CCCA always recommends taking any necessary precautions to minimize the results of flood impacts of the Catfish Creek and its tributaries.

This Watershed Conditions Statement will remain in effect until Tuesday February 5th and will be adjusted accordingly if warranted or otherwise expire. Residents are asked to closely watch local conditions and take appropriate responsible action. Updates will be made available if conditions warrant.

CATFISH CREEK CONSERVATION AUTHORITY
WATERSHED CONDITIONS STATEMENT
FLOOD OUTLOOK



For Immediate Release
Flood Outlook, Watershed Condition Statement for Residents of the Catfish Creek Watershed
Issued on April 1, 2016 at 7:30 a.m.
Issued by: Peter Dragunas, Water Management Technician
Catfish Creek Conservation Authority
(519) 773-9037

This Flood Outlook, Watershed Conditions Statement gives early notice of the potential for flooding based on weather forecasts calling for heavy rain, snow melt, high wind or other conditions that could lead to high runoff, cause ice jams, lakeshore flooding or erosion. This is an assessment that the potential exists for flooding of low-lying areas within the Catfish Creek Conservation Authority administrative area.

Effective immediately, the Catfish Creek Conservation Authority (CCCA) is issuing a **Flood Outlook, Watershed Conditions Statement** for the low lying, flood prone areas along open channels and water bodies within the Catfish Creek Conservation Authority watersheds.

The Catfish Creek Conservation Authority is advising that unfavourable weather conditions over the last few days has produced elevated amounts of rain, which has resulted in significant runoff and caused flooding in low-lying, flood prone areas adjacent to water courses within the Catfish Creek watershed.

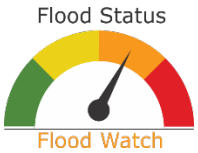
CCCA will continue to monitor these developing conditions and will issue updates and recommendations as necessary. CCCA recommends taking any necessary precautions to minimize the results of flooding impacts to the Catfish Creek and its tributaries.

The public is encouraged to exercise caution near open bodies of water, and to keep children and pets away from all waterways during adverse flow conditions.

Residents are advised to remove property from low-lying areas adjacent to streams, creeks ditches or other open bodies of water.

This Flood Outlook Statement will remain in effect until Monday April 4th at 8:00 a.m. and will then be adjusted accordingly. Residents are asked to closely watch local conditions and take appropriate responsible action. Updates will be made available if or when conditions warrant.

CATFISH CREEK CONSERVATION AUTHORITY
FLOOD WATCH



For Immediate Release
Flood Watch for Residents of Catfish Creek Watershed
Issued on February 4, 2019 at 8:30 a.m.
Issued by: Peter Dragunas, Water Management Technician
Catfish Creek Conservation Authority
(519) 773-9037

The Water Safety, Watershed Conditions Statement issued on February 1, 2019 at 11:45 a.m. has been upgraded to a **Flood Watch**.

This <u>Flood Watch</u> is to notify Catfish Creek Conservation Authority member Municipalities, Emergency Services staff and individual landowners that water level conditions have increased. This is an assessment that a high probability exists for flooding of low-lying flood prone areas within the watershed.

Effective immediately, the Catfish Creek Conservation Authority is issuing a **Flood Watch** for low-lying flood prone areas within the watershed. Due to unseasonal weather conditions rains, increased snowmelt and a warming trend there is a potential for flooding to occur in flood prone areas of the watershed.

The adverse weather conditions coupled with the deteriorating ice situation on the Catfish Creek and its tributaries indicate that potentially hazardous circumstances exist; primary concerns are increasing water levels, intensifying water flows and obstructions to riverine ice transport. **HIGH** water flows result in unsafe channel bank conditions and other unpredictable dangers around waterways, adjacent fields and parkland, urban storm drains, small streams, creeks, or other hazardous areas.

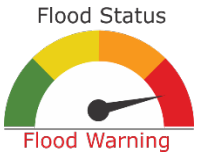
The public is encouraged to exercise caution near open bodies of water, and to keep children away from waterways during Flood Watches and other times of high water flow.

Residents are asked to watch local conditions closely and take appropriate responsible action. Updates will be made available if conditions warrant.

This Flood Watch Statement will remain in effect until Wednesday February 6th and will be adjusted accordingly if warranted or otherwise expire.

CATFISH CREEK CONSERVATION AUTHORITY

FLOOD WARNING



For Immediate Release
Flood Warning for Residents of Catfish Creek Watershed
Issued on February 5th at 5:00 a.m.
Issued by: Peter Dragunas, Water Management Technician
Catfish Creek Conservation Authority
(519) 773-9037

This is a FLOOD WARNING that flooding is imminent and dangerous water level conditions may be occurring in low-lying areas of the Catfish Creek Watershed.

This is a **WARNING** that flooding is imminent / extremely possible or occurring.

Effective immediately, the Catfish Conservation Authority is issuing a **Flood Warning** for low-lying areas within the watershed. Due to heavy rain, density of the snowpack and a general warming trend there is a high potential for flooding to occur in low-lying areas of the watershed. This Warning will remain in effect until 2300hrs Wednesday February 6th and will then expire or be adjusted accordingly. Residents are asked to watch local conditions closely and take appropriate action.

Environment Canada weather forecast conditions, snowpack water equivalency and the deteriorating ice conditions on the Catfish Creek indicate that potentially high hazard situations exist. Primary concerns are rapidly increasing creek levels and associated intensifying water flows. Rapid flooding of low-lying areas, fields, adjacent parkland, urban storm drains, small streams, creeks, or urban areas is imminent / extremely possible or occurring. Creek levels are high and are expected to continue rising.

Levels have reached bank full in most areas throughout the watershed and will escalate over top of bank in low-lying flood prone areas. The public is encouraged to stay away from open bodies of water, and to keep children away from waterways during times of high water levels and flows.

Residents are asked to watch local conditions closely and take appropriate action. Updates will be made available if conditions warrant.

Appendix A
CCCA Flood Watch and Warning Guideline Check List

1. Provincial Flood Watches or Warnings issued by the Ministry of Natural Resources and Forestry (MNRF), Surface Water Monitoring Centre.

   Yes ☐ No ☐

2. Government of Canada Weather Alerts.

   Yes ☐ No ☐

3. Precipitation exceedance rates, (circle exceedance volume).

Hurricane Hazel Precipitation Rates				
Hours	6	12	18	24
Precip. (mm)	12	24	36	48

Flood Forecast Precipitation Rates			
Hours	24 (summer)	24 (winter)	30
Precip. (mm)	50	25	60

Conservation Authorities Act Flood Event Standards			
Hours	36	42	48
Precip. (mm)	73	123	285

4. Potential of combined forecast precipitation and snow water equivalency surface runoff to exceed Hurricane Hazel 6, 12 and 18 hour precipitation rates (circle exceedance volume).

5. The combined present stage, rainfall and snow water equivalency potential to exceed a discharge rate at the Catfish Creek at Sparta (02GC018) gauge of 39.2 m^3/sec (1.47m stage).

   Yes ☐ No ☐

6. Measured ice on Catfish Creek at Port Bruce greater than 15.25cm (6.0 in), Catfish Creek discharge below average, may indicate that ice transported downstream has the possibility of jamming.

7. GIS modelling, the distance inland (elevation) that Lake Erie water levels have the risk to impede channel flows.

   Lake Elevation: _____ Upstream Effect: _____

8. Present Lake Erie ice thickness (cm. and ft.) and concentration in the area off shore of Port Bruce.

   Ice Thickness:_____

9. Government of Canada, Marine Weather forecast for Lake Erie, sustained wind speed (convert to kilometres/hour) and direction (azimuth) potential to push outlying lake ice into the harbour.

   Wind Speed (km/hr.) _____ Wind Direction (azimuth.) _____

10. London Airport Daily Weather Data, precipitation.

Based on the above flood forecasting data and extrapolated GIS information the CCCA is obligated to issue an appropriate watershed statement (e.g. **Flood Warning**) for the CCCA Low Lying Flood Prone Areas around waterways within the Authorities administrative boundary.

The above outlined checklist of deteriorating weather conditions affecting Catfish Creek stage discharge should be used as a guideline for issuing Watershed Condition Statements. Flood staff can use the checklists outlined above as a guide to determine when any alternate assistance is required to help with channel flow monitoring, to determine the probability of issuing a flood advisory.

Appendix B
Malahide Township Emergency Flood Contacts

Malahide Township Emergency Flood Contacts					
Call Order	Contact	Email	Cell Number	Office	Extension
1	Jeff Spoor	jspoor@malahide.ca	519-615-3384	519-773-5344	230
2	Ryan DeSutter	rdesutter@malahide.ca	226-545-0432	519-773-5344	320
3	Monica Badder	mbadder@malahide.ca	226-973-4132	519-773-5344	241
4	Nathan Dias	ndias@malahide.ca	519-808-1703	519-773-5344	223

Appendix C
CCCA Staff Flood Emergency Contacts

CCCA Staff	E-mail	Office	Cell Phone
Flood Watch Co-ordinator **Dusty Underhill** General Manager/Sectretay- Treasurer	generalmanager@catfishcreek.ca	519-773-9037 Ext.13	
First Alternate **Peter Dragunas** Water Management Technician	water@catfishcreek.ca	519-773-9037 Ext. 19	519-808-6370
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