



# Flood Contingency Plan

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IN ASSOCIATION WITH:

GREATER TORONTO AREA CONSERVATION AUTHORITIES

Central Lake Ontario Conservation Authority  
Ganaraska Region Conservation Authority  
Lake Simcoe Region Conservation Authority  
Toronto and Region Conservation Authority

Halton Region Conservation Authority  
Credit Valley Conservation Authority  
Nottawasaga Valley Conservation Authority  
Kawartha Region Conservation Authority



GTA Conservation Authorities

# FLOOD CONTINGENCY PLAN

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CD (Not Included - Please forward all requests to Don Haley at 416.661.6600  
 ext. 5226)

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Flood Damage Centres

## 1.0 Introduction

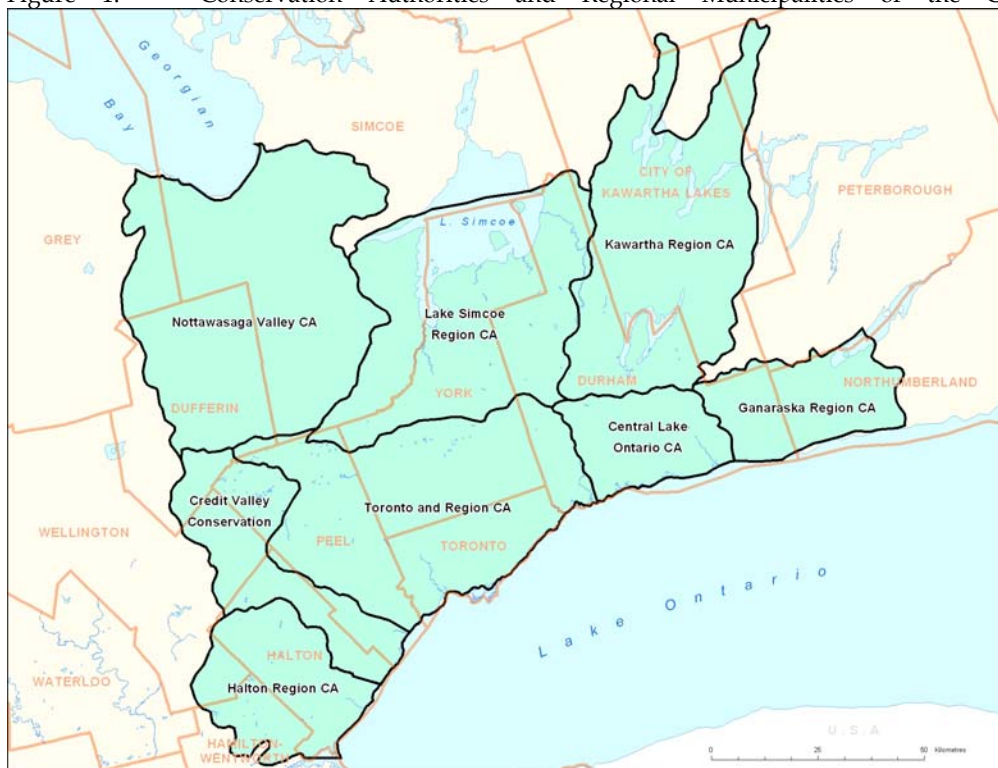
The responsibility for dealing with flood contingency planning in Ontario is shared by Municipalities, Conservation Authorities and the Ministry of Natural Resources, on behalf of the province. As with all emergencies, municipalities have the primary responsibility for the welfare of residents, and should incorporate flood emergency response into municipal emergency planning. The Ministry of Natural Resources and the Conservation Authorities are primarily responsible for operating a forecasting and warning system, and the province may coordinate a response in support of municipal action.

The Conservation Authorities of the Greater Toronto Area (GTA) have developed a coordinated Flood Forecasting and Warning Service for the municipalities and residents within their collective Watersheds and the shoreline of Lake Ontario and Georgian Bay. The purpose of this service is to reduce risk to life and damage to property by providing local agencies and the public with notice, information and advice so that they can respond to potential flooding and flood emergencies.

This Flood Contingency Plan is intended for all public officials and agency staff likely to play a role in flood warning, mitigation, or emergency relief. This version of the Flood Contingency Plan provides general information on the TRCA Flood Warning System, as well as specific information and contacts for all watershed municipalities.

The Conservation Authorities of the Greater Toronto Area include the Halton Region Conservation Authority (HRCA), the Credit Valley Conservation Authority (CVCA), the Toronto and Region Conservation Authority (TRCA), the Lake Simcoe Region Conservation Authority (LSRCA), the Central Lake Ontario Conservation Authority (CLOCA), the Ganaraska Region Conservation Authority (GRCA), the Nottawasaga Valley Conservation Authority (NVCA) and the recently joined, Kawartha Lakes Conservation Authority (KLCA).

Figure 1: Conservation Authorities and Regional Municipalities of the Greater Toronto Area



## 2.0 Roles and Responsibilities of Agencies

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### 2.1 MUNICIPAL ROLE

Municipalities have the primary responsibility and authority for response to flooding and flood emergencies, and also for the welfare of residents and protection of property. In order to fulfill this responsibility, municipalities should ensure that emergency plans are kept current and tested on a regular basis.

Upon receiving a Flood Advisory or Flood Warning municipalities shall:

1. Notify appropriate municipal officials, departments and agencies in accordance with their municipal emergency plan.
2. Determine the appropriate response to a flood threat and, if warranted, deploy municipal resources to protect life and property.
3. If required, declare a flood emergency and implement their Emergency Procedures Plan.
4. Request Provincial assistance under the Emergency Plan Act, if municipal resources are inadequate to respond to the emergency.
5. Maintain liaison with Conservation Authority Flood coordinators.

### 2.2 CONSERVATION AUTHORITY ROLE

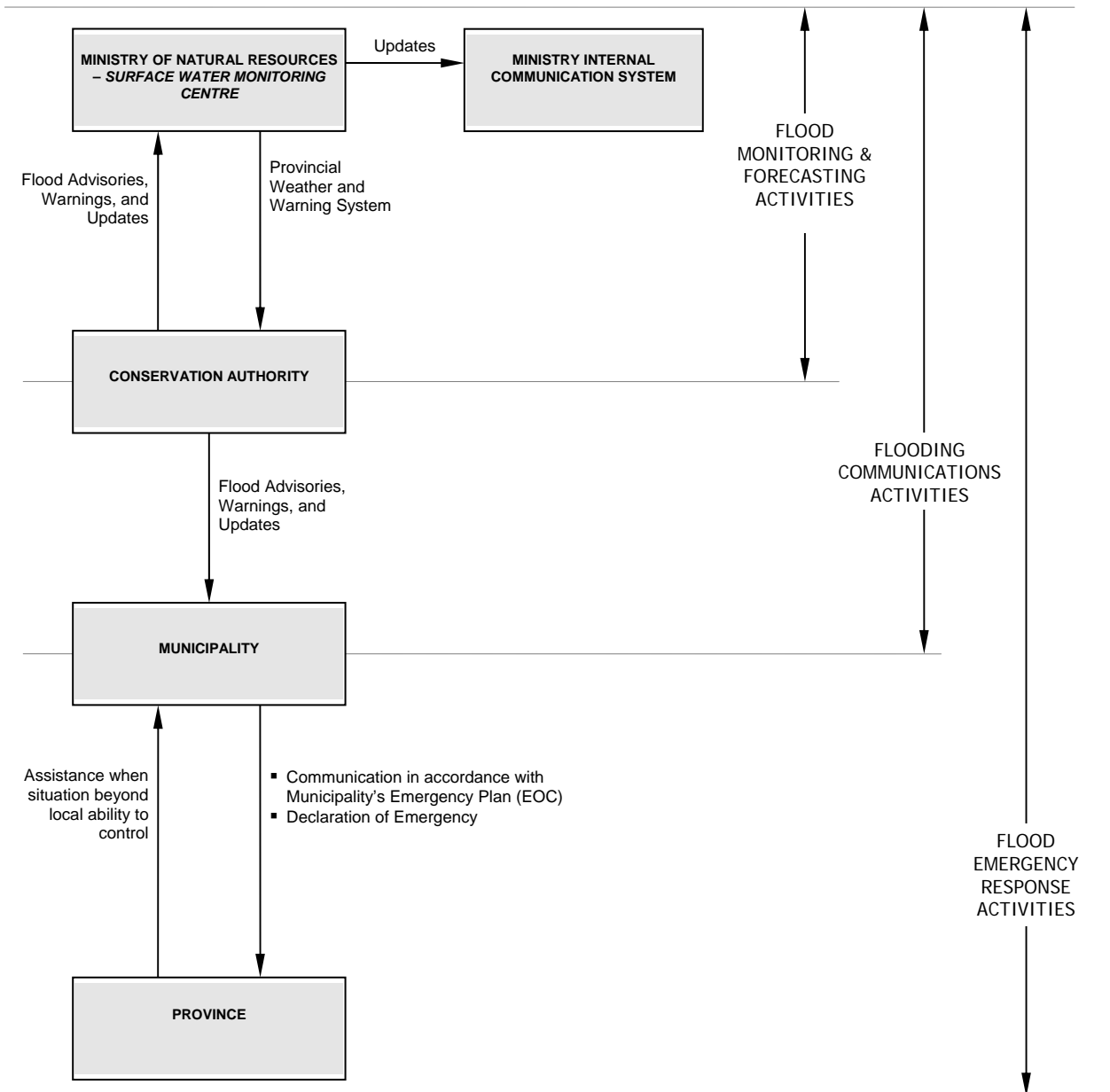
Conservation Authorities have several areas of responsibility for flooding and flood emergencies:

1. Monitor watershed and weather conditions and operate a flood forecasting system in order to provide warning of anticipated or actual flood conditions.
2. Issue High Water Safety, Flood Advisory and Flood Warning bulletins to municipalities and other appropriate agencies to advise of potential flooding.
3. Operate Conservation Authority dams and flood control structures to reduce the effects of flooding.
4. Provide advice to municipalities in preventing or reducing the effects of flooding.
5. Maintain communications with municipalities and the Surface Water Monitoring Centre of the Ministry of Natural Resources during a flood.

### 2.3 PROVINCIAL ROLE (SURFACE WATER MONITORING CENTRE)

1. Operate and maintain a Provincial Warning System to alert Conservation Authorities of potential meteorological events that could create a flood hazard.
2. Maintain communications with Ministry of Natural Resources' district offices regarding the status of flood situations.

2.4 INTERACTION OF AGENCIES - OVERVIEW



## 3.0 Flood Messages

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A flood is defined as a situation where water levels in a watercourse exceed the channel banks. This Flood Contingency Plan is intended to outline the roles of the parties affected by and responsible for the anticipation of potential flood situations.

The Surface Water Monitoring Centre (SWMC) of the Ministry of Natural Resources provides continual weather monitoring and forecasting, which is made available to Conservation Authorities as part of their flood monitoring system. The Centre also maintains the Provincial Warning System to alert Conservation Authorities of potential meteorological events that could create a flood hazard.

Each Conservation Authority monitors, on an ongoing basis, weather forecasts and watershed conditions, and uses this information to assess the potential for flooding. When spring melt or severe storms are anticipated, the Conservation Authority estimates the severity, location, and timing of possible flooding, and provides these forecasts to local agencies.

When conditions warrant Conservation Authorities will communicate with local agencies using one of the following types of messages (Appendices A and B provide additional details).

### 3.1 HIGH WATER SAFETY BULLETIN

A High Water Safety Bulletin is defined as a general notice that potential conditions exist that pose a risk to personal safety and will be issued to TRCA contacts, including schools, media sources and Regional and municipal staff. High Water Safety Bulletins may be posted when streams are flowing at near bankfull levels, when ice conditions are unsafe, or when stream banks are icy, soft, and/or slippery.

The standard content of a High Water Safety Bulletin may include:

- The date and time of issuance;
- Identification of sender (Conservation Authority and person);
- Recipient list;
- Brief summary of weather forecast;
- General assessment of implications;
- Date until the message is in effect;
- Conservation Authority contact for additional information (including adjacent Conservation Authorities when applicable).

### 3.2 FLOOD ADVISORY

A Flood Advisory is defined as a notice of the potential for flooding to occur in the near future. The Flood Advisory is based upon information received by the Conservation Authority's weather monitoring systems, and is intended to provide notice to municipalities and emergency services that measures should be taken to prepare for a possible emergency. Flood Advisories may be updated depending upon weather and runoff conditions, and will be followed by a notice of cancellation once the potential for flooding has passed.

The standard content of a Flood Advisory may include:

- the date and time of issuance;
- identification of sender (Conservation Authority and person);
- recipient list;
- summary of weather forecast (precipitation amounts and timing) ;
- description of potential flood magnitude (see Appendix A) and a general assessment of flooding implications, including specific sites and issues (e.g. ice jamming), if relevant;
- date and time of next update;
- Conservation Authority contact for additional information (including adjacent Conservation Authorities when applicable).

### 3.3 FLOOD WARNING

A Flood Warning is defined as a notice that flooding is imminent or occurring. The Flood Warning is based upon information received by the Conservation Authority's weather monitoring systems, and is intended to provide notice to municipalities and emergency services that action is required on their part. Flood Warnings may be updated depending upon weather and runoff conditions, and will be followed by a notice of cancellation once the potential for flooding has passed.

The standard content of a Flood Warning may include:

- the date and time of issuance;
- identification of sender (Conservation Authority and person);
- recipient list;
- summary of weather forecast (precipitation amounts and timing);
- description of potential flood magnitude (see Appendix A) and a general assessment of flooding implications;
- specific information regarding the magnitude and timing of the forecasted flooding, and the locations of anticipated problem areas;
- date and time of next update;
- Conservation Authority contact for additional information (including adjacent Conservation Authorities when applicable).

### 3.4 LAKE ONTARIO & GEORGIAN BAY SHORELINE HAZARD WARNING

A Shoreline Hazard Warning is defined as a notice that critical high water levels and waves are imminent and/or occurring, which could result in shoreline flooding and/or erosion. This warning shall be issued to the municipalities and emergency services. The following table outlines the criteria used to determine critical high water levels and wave heights.

**Table 1: Critical Water Levels and Wave Heights for Lake Ontario & Georgian Bay**

Section	Critical Water Levels (cm above chart datum, IGLD, 1985)	Wave height (metres)
Niagara Region - Stoney Ck	160 cm	>1.5 m
Stoney Creek – Burlington	130 cm	>2.0 m
Oakville - Port Credit	170 cm	>2.0 m
Whitby – Bowmanville	170 cm	>2.0 m
Port Hope	160 cm	>2.0 m
Port Hope - Presqu'ile	170 cm	>2.0 m
Prince Edward County	170 cm	>2.0 m
Georgian Bay –Collingwood / Wasaga Beach	130 cm	>1.0m

*Notes:*

- Shoreline Hazard Warnings for the Hamilton/Burlington Beachstrip of Lake Ontario are issued if either critical water levels or wave criteria are met.
- Wave criteria apply only when Lake Ontario's calm water level is 90 cm above chart datum, IGLD 1985.
- IGLD (International Great Lakes Datum) is the elevation reference system used to define water levels within the Great Lakes - St. Lawrence River system because of movement of the earth's crust. The reference system is adjusted every 25-35 years.

Forecasted wind velocities are also used to predict potential shoreline flooding/erosion problems. The following chart displays the various terminologies and units usually used to describe wind velocity.

**Table 2: Wind Velocity Descriptions**

Wind Speed	knots (kts)	miles/hour (mph)	kilometres/hour (km/h)
Light	1-14	1-16	1-26
moderate	15-19	17-22	28-35
Strong	20-33	34-47	39-54
Gale	34-47	39-54	63-87
Storm	48-63	55-73	89-117

The following terms are also used when describing wind velocities and their influence on critical wave heights.

*Wind Direction:* the direction from which the wind is blowing.

*Wind Setup:* the vertical rise above normal water level on the leeward site of a body of water caused by wind stresses on the surface of the water.

*Leeward:* the direction toward which the wind is blowing, the direction toward which waves are traveling.

*Wave Height:* the amplitude measured from wave trough to wave crest, for offshore areas, outside the breaker line.

### 3.5 COORDINATING ISSUANCE OF FLOOD MESSAGES

Flood messages are issued by phone, fax, or electronic transmission to designated individuals within municipalities and other local agencies. These individuals, in turn, are responsible for relaying the message to other relevant individuals and departments within their organizations, and activating their role as defined by this Flood Contingency Plan and their organization's Emergency Response Plan.

To streamline and coordinate communication with local agencies, a principal Conservation Authority has been assigned for each region or municipality. Both the principal and secondary Conservation Authority is responsible for issuing High Water Safety Bulletins and Flood Advisories. Flood Warnings and watershed specific information will be issued by the principal Conservation Authority.

Municipalities, local agencies, and residents requiring information or assistance should contact the local Conservation Authority having jurisdiction for the area of interest. Appendix C displays the principal Conservation Authority for each municipality in the GTA.

## 4.0 Flood Response Procedures

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During an actual flood, the primary responsibility for the welfare of residents and protection of property rests with the municipality. Upon receiving a flood message, municipalities should monitor their local conditions and determine the appropriate action.

During a flood, Conservation Authorities will continue to provide updated information as well as technical advice on flood mitigation.

During significant floods, municipalities should implement their Emergency Plan.

Where a flood emergency is beyond the capacity of a municipality, provincial assistance can be requested in accordance with the municipality's Emergency Plan.

During the emergency, the Conservation Authority representative will continue to advise the Surface Water Monitoring Centre of the Ministry of Natural Resources of the status of the situation. The Centre will be responsible for updating and relaying information related to the emergency to the Ministry's district offices.

### 4.1 COMMUNICATIONS AND OPERATIONS RELATED TO MUNICIPAL EMERGENCY OPERATION CENTRES

The Province of Ontario through its Emergency Plans Act legislation requires all Municipalities as the lead agency defined in terms of responding to an emergency to have valid emergency plans and procedures in place. To accomplish this, each municipality will have plans, procedures and staffing dedicated to this activity. One component of this requirement is the need to have a defined Emergency Operations Centre where municipal activities can be undertaken in the event of an emergency. Within most municipalities, the risk of flooding has or will be defined as one of the types of risks that would likely occur. As such, there is a need to define how the GTA Conservation Authorities will continue to provide advice and information to our municipalities to allow for effective emergency management of flooding events.

Under normal flooding operations where there is not a defined need to enact the Municipal Emergency response process, each GTA Conservation Authorities will provide information as requested by their local municipalities. However, in the event of a major flooding event, which would create the situation where the municipal emergency plans would require activation, the GTA Conservation Authorities have recognized an issue related to providing adequate staff support to this process. To address this issue, the following procedure has been defined. ( To ensure the effectiveness of this procedure, each GTA CA will develop a working relationship within the Municipal Emergency Planning Process that they are defined as having the lead Authority status for)

Under the protocols related to Principal Conservation Authorities as defined within this document (Appendix C), a key role of the lead Conservation Authority relates to providing staff to co-ordinate flood related information and advice to the Local and/or Regional Emergency Operations Centres (EOC's / ROC's) to facilitate their flood response activities.

As several Conservation Authorities may manage watercourses within the jurisdiction of an individual Regional Government, the lead Conservation Authority staff assigned to attend the Regional EOC will be required to provide advice on watersheds which would not be within their normal area of expertise. To ensure that this system of information co-ordination and sharing proceeds in a seamless manor, the following procedures are to be in effect during those occurrences.

- 1) The lead Conservation Authority will be responsible to co-ordinate communications with their assigned local or Regional emergency preparedness staff. They will discuss the need to begin the emergency response process and whether a need exists for the Regional/Municipal EOC group to assemble. The decision to assemble the Emergency Control Group is determined by the local or Regional Emergency preparedness staff, and will be based on upon the level and degree of flood threat which may be affecting the municipality and/or Region.
- 2) The lead Conservation Authority will co-ordinate the assemblage and forwarding of all appropriate Conservation Authority (both Principal and Secondary) communications (flood messages) to the Regional Emergency staff and when opened, to the Regional EOC.
- 3) The lead Conservation Authority will co-ordinate with surrounding secondary Conservation Authorities to develop and schedule telephone conferences or discussions to ascertain specific flood related information as well as updated weather forecast information.
- 4) The lead Conservation Authorities consolidate flooding and weather information into a briefing note which will be forwarded to their representative at the Regional EOC.
- 5) All GTA Conservation Authorities will ensure that all communications are forwarded to all other GTA Conservation Authorities upon issuance.
- 6) All GTA Conservation Authorities will ensure that their internal operations manuals/procedures reflect the requirements outlined above.

#### 4.2 SANDBAGS

Sandbags must be made available by the municipality in the event of a flood emergency. The following information provides existing sandbag sources.

The TRCA does not warrant or guarantee the services of these suppliers.

Clark Packaging Supply Inc.

8 Tracey Blvd.

Brampton, Ont., L6T 5R9

Telephone: 905-792-9898

Toronto Burlap & Bag

Fax: 1-416-291-7403

Burtex Industries

66 Bartor Road

Weston, ON M9M 2G5

Telephone: 416-745-2711

and 1-800-268-0908

[www.butexburlap.com](http://www.butexburlap.com)

Polytarp Product

11 Lepage Court

Toronto, Ontario, M3J 2A3

Telephone: 1-800-606-2231

[www.polytarp.com](http://www.polytarp.com)

Lloyd Bag Co. Ltd.

114 St. Clair St., P.O. Box 208

Chatham, Ontario, N7M 5K3

Telephone: 1-800-549-2247,

[www.lloydbag.com/e\\_menu.htm](http://www.lloydbag.com/e_menu.htm)

Dominion Bag & Burlap

190 Brockley Drive

Stoney Creek, Ontario, L8E 3C5

Telephone: 1-905-560-4000

## Appendix A: Flood and Weather Terminology

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### A.1 STANDARDIZED DESCRIPTION OF FLOOD MAGNITUDE

In order to improve the understanding of flood messages sent by the various Conservation Authorities, all Flood Advisories and Flood Warnings should include the following terminology to describe the magnitude of anticipated flooding.

<i>No Flooding:</i>	Water levels remain within channel banks.
<i>Nuisance Flooding:</i>	Flooding of low lying lands. However, road access remains available and no structures will be flooded.
<i>Minor Flooding:</i>	Potential for some structural flooding and sections of road access may be impassable. No evacuation is required.
<i>Major Flooding:</i>	Potential for significant basement flooding, some 1st floor flooding, and significant road access cuts. Evacuation possibly required.
<i>Severe Flooding:</i>	Potential for many structures to be flooded, major disruption of roads and services. Evacuation is required due to risk to life and major damages to residential, industrial, commercial and/or agricultural sites. The event may produce negative environmental impacts caused by spills of hazardous substances such as sewage, oils, chemicals, etc., that pose a threat to public safety and/or to the eco-system.

### A.2 WEATHER FORECAST TERMINOLOGY AND DEFINITIONS

A key component of Conservation Authorities' flood forecasting systems is the ability to interpret weather forecasts. To facilitate this, a report has been compiled containing explanations of the most commonly used weather forecasting terms.

Since the flood warning systems operator is primarily concerned with flooding, this section will only cover those terms relating to precipitation.

Terms such as *drizzle*, *rain*, or *snow* are used to indicate the occurrence of precipitation. The various forms of precipitation are defined as follows:

<i>Drizzle:</i>	Fairly uniform precipitation composed exclusively of fine drops with diameters of less than 0.5 mm, falling very close together. Drizzle appears to flow while following air currents.
<i>Rain:</i>	Precipitation, in the form of drops larger than 0.5 mm.
<i>Snow:</i>	Precipitation of snow crystals, predominantly in the form of six-pointed stars.

These terms may be accompanied by qualifying words and numbers to provide further detail regarding the intensity, amount and proximity of the precipitation. Qualifiers may be used in various combinations to describe weather phenomena.

The intensity qualifiers that are used are: *light*, *moderate*, or *heavy*, in accordance with the following charts.

**Table A.1: Intensity of rain based on rate of fall**

Intensity	Criteria
Light	Up to 2.5 mm per hour; maximum 0.25 mm in 6 minutes.
Moderate	2.6 mm to 7.5 mm per hour; more than 0.75 mm in 6 minutes.
Heavy	More than 7.6 mm per hour; more than 0.75 mm in 6 minutes.

**Table A.2: Estimating Intensity of Rain**

Intensity	Criteria
Light	From scattered drops that, regardless of duration, do not completely wet an exposed surface, up to a condition where individual drops are easily seen.
Moderate	Individual drops are not clearly identifiable; spray is observable just above pavements and other hard surfaces.
Heavy	Rain seemingly falls in sheets; individual drops are not identifiable; heavy spray to heights of several inches is observed over hard surfaces.

It is often difficult to accurately forecast the amount of rain expected, due to the subjective nature of computer model interpretation, and the large areas for which computer models are applied.

The actual amounts of precipitation received are dependent on how the system reacts to the conditions and topography as it crosses your specific location. The presence of water bodies in particular will cause the weather to differ over relatively short distances.

For example, when a forecaster predicts that South Central Ontario will receive 25 mm today, this *does not* mean that your specific area will receive exactly 25 mm, or even a maximum quantity of 25 mm. What this *does* mean is that, generally, over the area of south central Ontario, and given that current conditions remain the same, 25 mm are *likely* to fall over your location.

When a range is given, such as 10-20 mm, this implies a degree of uncertainty on the part of the forecasters with respect to the exact tracking of a system. The various computer models used may not be in agreement with regards to the estimated rainfall. Therefore, the forecaster is covering each possibility by using a range.

The terms *showers* and *thunderstorms* are used to further qualify the type of precipitation and weather phenomena that are expected.

*Showers:* Precipitation that stops and starts again abruptly, changes intensity rapidly, and is usually accompanied by rapid changes in the appearance of the sky.

*Thunderstorm:* A local storm produced by cumulonimbus clouds, and is accompanied by lightning and/or thunder. Thunder storms are essentially overgrown showers that produce thunder and lightning.

The probability of precipitation is another qualifier frequently used in forecasts. The probability of precipitation represents the likelihood of the occurrence of measurable precipitation at any point in the region. Thus a probability of 30 per cent means that out of 100 similar situations, precipitation should occur 30 times.

Rain, snow, periods of rain, or intermittent rain or snow will normally appear with probabilities of 90 or 100 per cent, and indicate that a major weather system will affect the region. The amount of precipitation may vary.

The terms showers, flurries or occasional rain (or snow) imply that the precipitation will not be continuous, and any point in the region is likely to get a measurable amount. These terms are normally combined with probabilities in the 60 to 80 per cent range.

The term *scattered* is used to qualify the terms showers and flurries when only a portion of the region is expected to get measurable precipitation. The probabilities associated with *scattered showers* are in the 30 to 50 per cent range.

When *isolated thunderstorms* are forecast, a probability of precipitation of 10 or 20 per cent is normally applied. Only a small part of the region is likely to get rain, but those areas that do are likely to get intense heavy rain for short periods. Thunderstorms may occur during a continuous rain (i.e., embedded thunder storms). Hail, strong winds, and even tornadoes can result from severe thunderstorms.

### A.3 WEATHER TERMINOLOGY IN FLOOD MESSAGES

When issuing a flood message to our clients (i.e., the municipalities), the operator of the flood warning system can not reasonably expect the client to remember all these definitions or expect the client to locate these definitions quickly in an emergency situation.

Therefore, it becomes important to use enough detail in the flood messages to make any technical terms self-explanatory. For example, the term "heavy rainfall" should be accompanied by the estimated quantity as well as the estimated duration (i.e., over the next 12 hours). A sufficient number of qualifiers should be used to make the message clear to the intended reader.

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## Appendix B: Sample Flood Bulletins

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### B.1 SAMPLE SAFETY BULLETIN



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## HIGH WATER SAFETY BULLETIN

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**Date:** February 1, 2004

**Time:** 1:30 PM

**Issued To:** School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services and Media

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Toronto and Region Conservation advises that rain is expected to arrive in our region tonight and continue for the next few days. The mix of current mild temperatures, rain and snowmelt will result in increased flows in all our rivers and streams.

All rivers, streams and ponds are currently considered dangerous, as water levels are high and remaining ice cover and stream banks are extremely unsafe.

Please alert any children under your care to these dangers and supervise their activities.

This Safety Bulletin will be in effect through Monday, February 8, 2004.

### Flood Duty Officer

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NOTE: A High Water Safety Bulletin is a general notice that potential conditions exist that poses a risk to personal safety. High Water Safety Bulletins may be issued when streams are flowing at or near bank full levels, when ice conditions are unsafe, or when stream banks are icy, soft, and/or slippery.

## B.2 SAMPLE FLOOD ADVISORY



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## FLOOD ADVISORY

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**DATE:** March 1, 2004

**TIME:** 1:30 PM

**ISSUED To:** School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services and Media

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Toronto and Region Conservation advises that rain is forecast to enter our area later today and continue overnight. Rainfall amounts are anticipated to be in the 5 -10 mm range. There is a slight risk of thunderstorms late this evening and overnight, which could result in higher rainfall amounts.

Currently it is anticipated that the combination of rain and snowmelt will result in increased flows in all our rivers and streams. The amount of rainfall and snowmelt forecast should not create a significant flood risk. The principle threat of flooding is related to ice break up and jamming.

Due to recent mild temperatures ice break up may occur on our rivers and streams causing localized ice jamming.

We will continue to closely monitor this system and will issue an update or cancellation to this Advisory by 11:00 AM on Tuesday March 2, 2004.

For further information please contact the following TRCA Flood Duty Officer at 416-661-6514.

### Flood Duty Officer

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NOTE: A Flood Advisory is a notice the potential for flooding in the near future exists in specific watercourses and municipalities. Flood Advisories may be issued when stream conditions and weather are expected to produce flooding.

## B.3 SAMPLE FLOOD WARNING



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## FLOOD WARNING

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**Date:** March 1, 2004

**Time:** 1:30 PM

**Issued To:** School Boards, Municipalities, Local Conservation Authorities, Local Police, Emergency Services and Media

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Toronto and Region Conservation advises that the weather system has continued to bring the forecast amounts of rain as anticipated. We expect to continue to receive rain overnight and into tomorrow. The expected amounts are anticipated to be in the 10-15 mm range.

Currently we are experiencing flooding from the lower Don River at Bayview Ave, south of Pottery Road. City Works have closed this area due to the flooding conditions. The CNR tracks at Richmond St are also experiencing flooding. With the added amounts of rainfall expected, we may continue to find additional flooded areas with our region.

We will continue to closely monitor this system as well as flooded areas and will issue an update or cancellation to this Warning by 11:00 AM on Tuesday March 2, 2004.

For further information please contact the following TRCA Flood Duty Officer at 416-661-6514.

Flood Duty Officer

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NOTE: A Flood Warning is a notice that flooding which could be damaging to human lives or property is imminent or occurring in specific watercourses or municipalities.

## Appendix C: Principal Conservation Authorities

**Key:**

P	<i>Principal Conservation Authority Contact for Bulletin/Advisory Messages and Contact List Updates</i>
S	<i>Secondary Conservation Authority shares a portion of a Municipality (Warning message is sent)</i>
KRCA	<i>Kawartha Region Conservation Authority</i>
HRCA	<i>Halton Region Conservation Authority</i>
CVCA	<i>Credit Valley Conservation Authority</i>
TRCA	<i>Toronto and Region Conservation Authority</i>
LSRCA	<i>Lake Simcoe Region Conservation Authority</i>
CLOCA	<i>Central Lake Ontario Conservation Authority</i>
GRCA	<i>Ganaraska Region Conservation Authority</i>
NVCA	<i>Nottawasaga Valley Conservation Authority</i>

### CONSERVATION AUTHORITIES - MUNICIPAL CONTACT LIST

Municipality	HRCA	TRCA	CVCA	NVCA	LSRCA	CLOCA	GRCA	KRCA
DUFFERIN COUNTY			P					
Town of Orangeville			P					
Township of East Garafraxa			P					
Township of Mono		P	S					
Township of Mulmur				P				
Township of Melancthon				P				
Township of Amaranth				P				
GREY COUNTY								
Municipality of Grey-Highlands				P				
Town of the Blue Mountains				P				
DURHAM REGION		S			S	P	S	
Town of Pickering		P				S		
Town of Ajax		P				S		
Township of Brock					P			
Township of Uxbridge		S			P	S		
Township of Scugog					S	S		P
Town of Whitby						P		

Municipality	HRCA	TRCA	CVCA	NVCA	LSRCA	CLOCA	GRCA	KRCA
City of Oshawa						P		
Municipality of Clarington						P	S	
HALTON REGION	P		S					
City of Burlington	P							
Town of Halton Hills	S		P					
Town of Milton	P		S					
Town of Oakville	P							
CITY OF HAMILTON	P							
NORTHUMBERLAND COUNTY							P	
Township of Hope							P	
Town of Port Hope							P	
Town of Cobourg							P	
Township of Hamilton							P	
Township of Haldimand							P	
PEEL REGION		S	P					
City of Mississauga	S	S	P					
City of Brampton		S	P					
Town of Caledon		S	P		S			
<b>Township of Millbrook North Monaghan</b>							P	
SIMCOE COUNTY				S	P			
Township of Adjala-Tosorontio		S		P				
Town of Innisfil				S	P			
Town of New Tecumseth				P	S			
Town of Bradford West Gwillimbury				S	P			
City of Barrie				S	P			
Township of Oro-Medonte				P	S			
Township of Ramara					P			
Township of Springwater				P				
Township of Clearview				P				
Town of Wasaga Beach				P				
Town of Collingwood				P				
Township of Essa				P				
CITY OF TORONTO*		P						
<b>CITY OF KAWARTHA LAKES</b>								P
WELLINGTON COUNTY	S		P					
Township of Puslinch	P							

CONSERVATION AUTHORITIES - MUNICIPAL CONTACT LIST (CONTINUED)

Municipality	HRCA	TRCA	CVCA	NVCA	LSRCA	CLOCA	GRCA	KLCA
Town of Erin			P					
YORK REGION		P			S			
Town of Markham		P						
City of Vaughan		P						
Town of Richmond Hill		P			S			
Town of Whitchurch/Stouffville		P			S			
Town of Georgina					P			
Township of King		S			P			
Town of Aurora					P			
Town of Newmarket					P			
Town of East Gwillimbury					P			

- TRCA is the Lead Conservation Authority

## Appendix E: Flood Vulnerable Areas

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Flood Vulnerable Areas are those areas within the watershed that are known to be susceptible to damages during flood situations. As a result, these areas are observed on a continuous basis to evaluate the extent of damage that occurs under various degrees of flooding.

## Appendix F: Distribution List

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### Contingency Plan Distribution List

Plan Distribution to be done by Principal Conservation Authority – Refer to Appendix C.

<b>Municipalities/Agencies</b>	<b>No. of Copies</b>
Township of Mono	1
City of Pickering	1
Town of Ajax	1
City of Vaughan	1
City of Brampton	1
City of Toronto	1
Region of York	1
Town of Markham	1
Town of Richmond Hill	1
Town of Whitchurch-Stouffville	1
Toronto Office of Emergency Management	1
Toronto Fire Services	1
Toronto Police Headquarters	1
Toronto Police – Marine Unit	1
Toronto Fire and Communication	1
MNR - Surface Water Monitoring Centre	1