State of Maine
River Flow Advisory Commission
Report on Current Hydrologic Conditions
March 4, 2004

Overview:

The spring meeting of the River Flow Advisory Commission took place Thursday, March 4, 2004. The Commission meets annually in late winter to share information, examine potential for spring flooding and to renew operational protocols. Such factors as stream flow, long-term weather forecasts, snowpack, river ice conditions and reservoir levels are reviewed. This report summarizes the information presented on current hydrologic conditions.

Throughout this report, Internet addresses are listed for each category of information. The River Flow Advisory Commission web site provides a portal to all these different sites. That web site address is **www.maine.gov/rfac**. This Internet site will provide a connection to the ever-changing information critical to monitoring flood potential in the state.

At the end of the report, additional sources are provided for further information.

Current Conditions and Flood Potential:

Stream Flow and Headwater Storage Levels:

As of the end of February, stream flows were in the normal to below-normal range for most of Maine.

River basin managers report headwater storages in the normal to slightly above normal pre-spring drawdown levels. Regulated flows are much higher than at this time last year, when flows were reduced because of the persistent drought. In the Penobscot basin, storages are slightly above the long-term average. In the Androscoggin basin, storages are 17% above average. In the Kennebec basin, storage levels are right about at average values.

River basin managers note that the elevated stream flows in regulated rives and streams could cause a rapid erosion of ice cover. Recreational interests should take note that ice cover that is currently safe for snowmobiling or ice-fishing could become unsafe in just a few days.

For further information on stream flow:

USGS Water Resources of Maine	**me.water.usgs.gov** (Hydrologic Conditions Section)

Ice Conditions:

The potential for ice jams is elevated for the time of year. Thick, solid sheet ice or “black ice” is in place in most rivers. Measurements taken in late February and early March indicate ice thicknesses of 1.5 to 2.5 feet in many locations. Measurements on the Kennebec at Augusta indicated 2 to 3 feet of ice.

Ice jams are known to be in place in the St. John River, including a large jam at Allagash. These jams are not currently causing problems, but will be monitored closely through the spring.

Although the current presence of significant river ice does not mean that spring flooding will occur, the potential for ice jam flooding remains a concern as the ice begins to break up and move. Ice jams, particularly during spring runoff, can produce locally severe flooding.

On the Kennebec River, the Cold Regions Research and Engineering Laboratory of the Army Corps of Engineers (CRREL) has placed ice motion detectors in the river ice. These devices trigger when ice movement occurs and place telephone calls to National Weather Service and public safety agencies. This alerts local officials to begin on-site observation of the movement of the ice and to be alert for any sudden changes in water level caused by ice jams.

In addition, the USGS has placed a live web camera on the Kennebec River in Augusta to provide remote "eyewitness" observation of ice and water movement. The web cam images are accessible on the Internet at **http://me.water.usgs.gov**

For more information on ice conditions:

CRREL	**www.crrel.usace.army.mil**
Northeast River Forecast Center	**www.nws.noaa.gov/er/nerfc**
USGS	**me.water.usgs.gov**

Snowpack:

The Maine Cooperative Snow Survey conducts surveys at sites across Maine from January until the snowpack is gone from the headwaters of our major rivers. Cooperators measure snow depth and water content at specific sites. A critical measurement is the "snow water equivalent" which quantifies the amount of water that could potentially run off into the river basins. Snowmelt alone does not generally cause flooding in Maine, but can add to the runoff caused by rainfall.

A full statewide snow survey was conducted March 1st through 3rd. Water content throughout the state was found to be slightly below normal in far northern and far southern Maine, as well as in a small pocket around Dover-Foxcroft. The rest of the state was in the normal range except for a small patch in western Maine which was slightly above normal.

Contributors to the Maine Cooperative Snow Survey include Federal and State agencies, hydroelectric power and paper companies and Canadian and New Hampshire environmental agencies.

For more information on snow survey data, updated weekly with every survey through the spring:

Maine Cooperative Snow Survey	**www.maine.gov/mema/weather/snow.htm**

Weather Outlook:

The short term (8 to 14 days) forecast shows a tendency to slightly above normal temperatures and normal precipitation. Longer term forecasts (90 days) show no trend toward either above or below temperatures or precipitation. There are no major storms in the short-term forecast.

Flood Potential:

Flood potential considering snowpack, precipitation forecasts and current storages and streamflow is normal for the time of year. However, potential for ice jams is elevated at the present time.

The most important single factor in determining the severity of flooding is rainfall, how much and in how short a period of time. Major flooding on Maine rivers does not generally occur from snowmelt alone. However, ice jam flooding is a concern as long as large amounts of ice remain in Maine's rivers. Ice jam flooding cannot be forecast. Local observation is critical as ice begins to break up and move. Ice jams can cause sudden flooding above the jam, as the water backs up, and below the jam if it breaks and releases a large amount of water.

The National Weather Service Forecast Offices in Caribou and Gray will issue Flood Potential Statements every two weeks throughout the spring. These reports will examine all current hydrologic factors and give an overall assessment of flood potential.

For more information on flood potential and for flood watches and warning should they arise:

NWS Gray	**www.nws.noaa.gov/er/gyx/hydrology.htm**
NWS Caribou	**www.nws.noaa.gov/er/car/hydro.htm**
NWS Flood Forecasts/MEMA site	**www.maine.gov/mema/weather/flood.htm**

Drought Conditions:

As of the end of February, ground-water levels were in the above-normal range in most of Maine but slightly below-normal in far southern Maine.

According to the National Weather Service, a persistent area of below-normal precipitation exists in far southern Maine. January of 2004 in Portland was the driest January on record. Portland also shows a 12-month precipitation deficit of 10 inches.

However, there is no evidence of emergency conditions in southern Maine resulting from the persistent dry weather.

The heavy fall rains appear to have helped ground water levels in the rest of the state to rebound. Emergency conditions as a result of the recent drought have abated across the state.

The USGS has two new publications putting Maine's recent drought in perspective: A fact sheet, "The 1999-2002 Drought in Maine—How Bad Was It?" and the report "Drought Conditions in Maine, 1999-2002: A Historical Perspective". Both publications are available on the USGS web site at:

http://me.water.usgs.gov/newreports.html

Weather/climate sites:

http://www.nws.noaa.gov/er/gyx
http://www.nws.noaa.gov/er/car
http://maine.gov/mema/weather/genweath.htm
http://www.drought.unl.edu/dm/monitor.html

*Background information***:**

http://www.umaine.edu/maineclimate
http://www.ncdc.noaa.gov/ol/climate/research/prelim/US/US_prelim.html
http://lwf.ncdc.noaa.gov/oa/climate/research/prelim/drought/spi.html
http://lwf.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/palmer_drought/
http://enso.unl.edu/ndmc/enigma/indices.htm#palmer

Preparedness and Mitigation:

Flood Insurance and Floodplain Management:

The State Floodplain Management Program continues to stress that with winter's ice and with spring rains, flooding is always a threat to those properties that are in the floodplain. In fact flooding can happen any time of the year. One very important item that property owners and renters should consider is the purchase of flood insurance. Unfortunately, **many individuals think that their homeowner's or**

business owner's insurance policy will cover any losses. These insurance policies do NOT cover damages from flooding. Flood Insurance must be purchased separately. **There is a 30-day waiting period** before the policy goes into effect. It is estimated that only 25% of those structures in the floodplain in Maine are covered by flood insurance.

The State's Floodplain Management Program strongly recommends that all individuals and business owners check with their insurance agents and determine if their flood insurance coverage is adequate. As long as a community participates in the National Flood Insurance Program, residents, renters and business owners can buy flood insurance no matter where they are located in the town.

According to the most recent National Flood Insurance Program Insurance Report for January 2004, there are 7,030 flood insurance policies in effect in Maine with a total coverage of $988,744,100. This includes all flood policies for residential and non-residential structures and/or contents. The average coverage per policy in Maine is $140,600 and the average annual premium is $592. Since 1978, $26,284,000 has been paid out in flood insurance claims in the State of Maine.

The State Planning Office and the Maine Emergency Management Agency, in partnership with the Federal Emergency Management Agency (FEMA) have ongoing programs stressing "mitigation", or the reduction of risk from disasters. Flood mitigation can be as simple as moving perishable items out of a basement, elevating a furnace or improving drainage for a road that always floods. It can be as far-reaching as moving entire neighborhoods out of the floodplain. For example, the town of Canton, which suffered severe flooding in December of 2003, has a long-term plan to move its entire central village out of the floodplain.

In the Town of Allagash, several houses were moved out of the flood plain in 1991, following a devastating ice jam flood that also destroyed two bridges. The bridges were replaced with higher structures designed to withstand a similar or worse future event.

Flooding is Maine's most costly hazard, affecting some community in the state every year, sometimes with disastrous results. Mitigation measures can not only save repair dollars in the long term, but may even make a community more attractive to development and business investment.

For more information on floodplain management and mitigation:

State Planning Office, Floodplain Management Program	**http://www.state.me.us/spo/flood**

Preparedness and Safety:

Preparedness is key to minimizing the impact of flooding or any emergency. Individuals and families, businesses, schools and communities benefit from reviewing their vulnerability to flooding and ensuring that they have workable plans for dealing with the event. Everyone should stay aware of National Weather Service forecasts as the spring progresses, and talk to local officials and County Emergency Management Agencies if they have questions about flood preparedness in their communities, or how to build an emergency plan for family, business or school.

It is also critical during a flood event that all citizens heed all official warnings. In particular, the Maine Department of Transportation stresses that during a flood no one should drive on submerged roads, as the stability of the road may have been severely damaged by flood waters. Highway crews will place signs and barricades to warn of flooded sections of road. Motorists who ignore these warnings and drive through flooded areas are gambling with their own safety and that of their passengers. **Nationwide, most flooding deaths occur when vehicles are caught in flood water.**

Motorists should always seek an alternate route around flooded areas and avoid taking unnecessary chances by driving through flooded areas. According to the National Weather Service, even 6 inches of

fast-moving flood water can knock a person off his feet, and a depth of two feet will float a car. In the southern Maine flood of October, 1996, a life was lost as a result of a vehicle being trapped in flood water.

The National Weather Service Forecast Offices in Caribou and Gray will conduct a Flood Awareness Day on Friday, March 5. Both offices put out special flood preparedness and safety information. For more information on flood preparedness and safety:

MEMA Flood Preparedness Page	**www.maine.gov/mema** (follow link to River Watch)
NWS Caribou	**www.nws.noaa.gov/er/car/hydro.htm**
NWS Gray	**www.nws.noaa.gov/er/gyx**
County Emergency Management Agencies	**www.maine.gov/mema/county.htm**

Important Factors for Springtime Floods (in order of relative importance):

1) RAINFALL: This is the most important factor in determining the magnitude of significant floods in Maine. If precipitation during April and May are normal and evenly distributed, then streamflow will be in the normal range. However, if significant rainfall occurs over a short period of time, flooding could result.
2) SNOW COVER: This is a secondary factor and can add to rainfall events. As the snow pack becomes more "ripe" (nearly saturated), it can melt quickly and significantly add to a flood peak. The most accurate measurement of snow cover is "snow water equivalent". Snow water equivalent is the amount of liquid water contained in the snow. Snowmelt alone should not produce major floods.
3) RIVER ICE: Ice jams can cause increased damage by temporarily blocking rivers and streams and causing higher water levels behind the jam. Peak flows downstream increase when jams break up and quickly release stored water.
4) TEMPERATURE: Warm days with freezing night temperatures allow a gradual melting and runoff of the snowpack. A sudden warm up, especially when coupled with significant rainfall, can send large amounts of runoff into rivers and streams.
5) RESERVOIR STORAGE: Maine's headwater storage reservoirs typically reach their annual low water levels in March. These reservoirs can moderate downstream flood peaks if rainfall occurs above the storage dams while the reservoir's water levels are down. The reservoir systems have limited ability to moderate flood peaks in the lower parts of the river basins if large amounts of rain fall or if heavy rains fall downstream of the storage dams.

Conclusion:

The River Flow Advisory Commission found that as of March 4, flood potential in the state was normal, with the exception of the possible risk posed by the large amount of thick and solid ice in Maine's rivers. The current conditions information in this report represents a "snapshot" of conditions throughout the state as of March 4, 2004. However, many new factors will influence the flood potential in Maine as the spring progresses.

National Weather Service and emergency management reports should be watched throughout the spring, and local officials should monitor the flood-prone areas for each community. In particular, rivers should be monitored closely as ice begins to break up and move, as ice-jam related flooding can arise quickly and have locally devastating impact. Property owners, business owners and renters in flood-prone areas should check their insurance coverage to be sure that they are protected against flooding damages.

The Maine River Flow Advisory Commission is composed of representatives from major river basin management operations, state agencies, federal agencies and the University of Maine. The

Commission was originally formed after the spring floods of 1983 to improve the exchange of hydrologic information collected by the members, to review the data, and to provide information to emergency action agencies and the public. It was created in statute by the Legislature in 1997.

Information Resources:

For additional information on particular aspects of this report, please contact:

Art Cleaves, Maine Emergency Management Agency	Flood preparedness and mitigation	207-626-4503
Bob Lent, U.S. Geological Survey	Stream flow, ice conditions, snow survey	207-622-8202
Tom Hawley, National Weather Service, Gray, Maine	Flood potential for central and southern Maine; flood forecasting	207-688-3216
Mark Turner, National Weather Service, Caribou, Maine	Flood potential for northern and eastern Maine; flood forecasting	207-492-0180
Marc Loiselle, Maine Department of Conservation	Snow survey	207-287-2801
Lou Sidell, State Planning Office, Floodplain Management Program	Floodplain management, flood insurance and mitigation	207-287-8063

Links to further information on all sections of the report, updated as conditions change:

http://www.maine.gov/rfac

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