

10.0 Future Work and Annual Updates

This report provides a synthesis of data relevant to riverine flooding within the State of Maine. This data supports the State Hazard Mitigation Plan to provide detailed flood data in an accessible format to the public, local governments, and state and federal agencies. This report includes all data that was identified, collected, and synthesized prior to publication; however, new data sources continue to be identified. Future work may include expanding this report to contain:

- Flood information on the small coastal rivers in the Eastern and Western Coastal Drainage Basins
- An expanded list of flood events including flood events that date after the publication of this report
- An expanded list of flood events including flood events that date prior to 1970
- Discussion of the response and/or action taken as a result of a particular flood event, which may include mitigation such as acquisition of land or levee construction
- A description of the weather event that caused the flooding as described in the Storm Event database
- Incorporation of data on high-water marks and monuments available at the community level
- An expanded newspaper record including text and photos of flooding
- Expanded table in each section of the report indicating peak USGS flow recorded at streamgaging stations. Include all historical and short-record streamgages in this table (not just long-record and active gages) identify the contributing area and the flood stage at each gage.

The Maine State Planning Office and the Maine Emergency Management Agency will review this report on an annual basis to determine whether the report is meeting the intended goals. A minor effort to continue to identify sources of relevant data shall be ongoing throughout the year. When reason and funding allow, the additional data shall be incorporated into the report.

11.0 References

44 CFR 59.1 Code of Federal Regulations, Emergency Management and Assistance, Federal Emergency Management Agency, General Provisions, Definitions.

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Interagency Hazard Mitigation Team Report, FEMA-788-DR-ME, in response to the April 1987 disaster declaration for the State of Maine, multiple counties, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-901-DR-ME, in response to the April 19, 1991 disaster declaration for the State of Maine, Counties of Aroostook, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-988-DR-ME, in response to the May 11, 1993 disaster declaration for the State of Maine, Counties of Androscoggin, Aroostook, Franklin, Kennebec, Oxford, Penobscot, Piscataquis, Somerset, Waldo, Incident Period April 9, 1993 - unknown.

Interagency Hazard Mitigation Team Report, FEMA-1029-DR-ME, in response to the May 1994 disaster declaration for the State of Maine, Aroostook County, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-1106-DR-ME, in response to the April 1996 disaster declaration for the State of Maine, Oxford, Franklin, Somerset, Piscataquis, Penobscot, and Waldo Counties, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-1114-DR-ME, addendum to FEMA-1106-DR-ME, in response to the April 1996 disaster declaration for the State of Maine, Androscoggin, Cumberland, Knox, Oxford, and York Counties, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-1143-DR-ME, in response to the October 24, 1996 disaster declaration for the State of Maine, Cumberland, Oxford, and York Counties, Incident period unknown.

Interagency Hazard Mitigation Team Report, FEMA-1232-DR-ME, in response to the July 2, 1998 disaster declaration for the State of Maine, Counties of Androscoggin, Cumberland, Franklin, Kennebec, Oxford, Somerset, and York, Incident Period June 12 – June 21, 1998.

Interagency Hazard Mitigation Team Report, FEMA-1263-DR-ME, in response to the January 21, 1999 disaster declaration for the State of Maine, Counties of Cumberland and York, Incident Period October 8-11, 1999.

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New England River Basins Commission, "Presumpscot River Basin/Casco Bay Overview", September 1981.

New England River Basins Commission, "St. Croix/Maine Eastern Coastal River Basins Overview", September 1981.

FEMA, National Flood Insurance Program Summary of Coverage.

Southern Kennebec Planning and Development Council, "Floodplain Management along the Kennebec River", October 1986.

U.S. Army Corps of Engineers, "Kennebec River Basin Study", Waltham, Massachusetts, February 1990.

U.S. Army Corps of Engineers, "Penobscot River Basin Study", Waltham, Massachusetts, April 1990.

U.S. Army Corps of Engineers, "Saco River Basin Study", Waltham, Massachusetts, April 1990.

U.S. Army Corps of Engineers, "Feasibility Study, St. John River, Water Resources Investigation", Waltham, Massachusetts, September 1987.

U.S. Army Corps of Engineers, "Hydrology of Floods, Kennebec River Basin Part I", Waltham, Massachusetts, October 1985.

U.S. Army Corps of Engineers, "Hydrology of Floods, Kennebec River Basin Part II", Waltham, Massachusetts, May 1988.

U.S. Army Corps of Engineers, "Reconnaissance Report, Androscoggin River Basin, Maine", Waltham, Massachusetts, March 1990.

U.S. Geological Survey, C.A. Perry, B.N. Aldridge, H.C. Ross. "Significant Floods in the United States, Puerto Rico, and the Virgin Islands, 1970 Through 1989", Water Supply Paper 2502.

U.S. Geological Survey, P.R. Jordan, L.J. Combs. "Summary of Floods in the United States during 1990 and 1991", Water Supply Paper 2474.

U.S. Geological Survey, J.P. Nielsen. "Flood of April 1991 in Northern Maine in Summary of floods in the United States during 1990 and 1991", Water Supply Paper 2472.

U.S. Geological Survey, C.A. Perry, "Significant Floods in the United States and Puerto Rico, 1994 Through 1998 Water Years", Scientific Investigations Report 2005-5194.

U.S. Geological Survey, G. Hodgkins. "Estimating the Magnitude of Peak Flows for Streams in Maine for Selected Recurrence Intervals", WRIR 99-4008. 1999.

U.S. Geological Survey, R.A. Fontaine, "Flood of April 1987 in Maine, Massachusetts, and New Hampshire", OFR 87-460.

U.S. Geological Survey, "Maine Water Resources Study: Effect of Historic Flooding on Inland Waterways". May 1978.

U.S. Geological Survey, G. Hodgkins, G. Stewart. "Flood of October 1996 in Southern Maine", Water Resources Investigations Report 97-4189, 1997.

Sun Journal, "The Flood of 1987, Rivers on the Rampage", April 1-3, 1987.

12.0 Draft Framework for a Web-Based Geographic Database

[Consider this section a draft/outline only]

The grant application requesting funding for this study indicates that the purpose of this report is *"to provide detailed information in a useable format... to be migrated to a webbased system for wider use by local governments and state agencies for preparing grant applications, implementing projects, and managing the State's floodplains."*

This section of the report outlines a framework that may be used to develop a geo-spatial database that would logically correlate the data described in Section 1.4 for use in querying historical flood data. Production of this geospatial database will not be completed within the scope of this study. However, the plan presented below may be useful going forward for developing a relational database in the future.

12.1 GIS Data Inventory

Towns (metwp24, MEGIS)

Counties (metwp24, MEGIS)

Watersheds (wbdme6_a, MEGIS)

USGS gages (USGS, NWIS)

Dams (impound, MEGIS),

Bridges (bridges, MEDOT),

Rivers and Tributaries (USGS, NHD),

NOAA stations (NOAA, NWS, Tom Hawley).

Snowpack Stations (MGS, Marc Loiselle)

Q3 Digital Floodplain Boundaries (MEGIS, FIRM)

Storm Event Locations (NWS, NCDC)

12.2 Plan for linking data

Each flood event will be given a single day date.

Each flood event will be located at a specific point.

If the flood event spans several days, there will be as many records (points) as days in the flood.

A flood can be located at a USGS gaging station on a day where the instantaneous stage is greater than the flood stage or at an Ice Jam location where the description of the flood jam includes notes on flooding or damages. At gaging stations and ice jam locations, coordinates are given in latitude and longitude. A flood event may also occur at address as reported by word-of-mouth or in a newspaper article.

Each flood event date is located in a town, a county, and a/many drainage basin(s) (Huc 6, 8, 10, 12).

Each flood event date should be linked by date to the daily stage and daily discharge if it is located at a USGS gaging station.

Each flood event date should have a unique ID that correlates multi-date floods to one distinct event

A flood event can be linked by unique ID to the precipitation records and the snowpack records

A flood event can link to a photograph or a newspaper article, if available.

If a county is declared a disaster area, the disaster declaration should be combed for reference to flood source.

A flood event can contain a field for: structures damaged (qty), lives lost (qty), injuries (qty), total losses (\$), disaster funds (\$), Notes (text field).

Flood event points database (not yet created, will contain a subset of USGS gages, Ice Jam locations, and notable flooding in newspapers, etc...)