



MEMORANDUM

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TO:	Amanda Walker	DATE:	February 25, 2008
FROM:	Jon Edgerton	PROJECT NO.:	11123A
SUBJECT:	City of Gardiner Waterfront Planning Project		

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Among the issues to be considered as a part of the planning effort associated with the City of Gardiner's Waterfront is the impact of Flood Hazard regulations on planned elements of construction. As evidenced by the periodic inundation associated with floods of significance, much of the project area falls within both the designated limits of the 100 year floodplain as shown on the Flood Insurance Rate Maps (FIRM) as developed by the Federal Emergency Management Agency (FEMA) as well as the FEMA-designated Floodway. The floodway is generally taken to represent the portion of the channel carrying the majority of the flood flows, and is often subject to greater flood velocities. Development within the floodway is more restricted than that within the floodplain in general.

**Regulatory Framework**

In the case of Gardiner, construction within the 100 year floodplain, or Special Flood Hazard Area (SFHA), is regulated by the City's Floodplain Ordinance, consistent with the requirements of the Maine Floodplain Management Program. The Maine State Planning Office administers the Maine Floodplain Management Program and provides assistance to communities taking part in the National Flood Insurance Program (NFIP). FEMA Region 1 provides additional technical support to the Maine Floodplain Management Program on an as-requested basis.

Physical improvements proposed within the area designated as floodway must be reviewed to establish that the work will not have any adverse effect on flood levels (i.e., increase the risk of damage to other facilities in the area).

A separate, but related restriction can be tied to the source of monies paying for the improvements. Use of funding which originates with the federal government, such as Infrastructure Grants from the Maine Department of Economic and Community Development, must comply with the president's Executive Order 11988. The EO 11988 review does not allow use of federal funding to pay for elements that are likely to: 1.) be damaged by flood flows, 2.) be displaced by flood flows or 3.) result in increased flooding. In addition, this may require an assessment of alternatives and mitigative actions for work that falls within a SFHA or other floodplain.

## **General Improvements**

Infrastructure improvements proposed as a part of the Waterfront Master Plan are expected to require approval through the City's Floodplain Ordinance. Also, as noted above, use of federally originating funding (such as that obtained through the Maine Department of Economic and Community Development's Community Development Block Grant program) will require clearance under the federal Executive Order No. 11988.

Given the designation of much of the project site as within the floodway of the Kennebec River, the City's approval of the improvements can be expected to require review by staff at FEMA Region 1.

Elements that are likely to receive scrutiny as a part of these reviews include: light poles, other electrical equipment, trees, berms, other features subject to displacement or damage during a flood.

## **Buildings and/or Structures**

Any new "structures" constructed within the FEMA-designated floodplain are subject to a requirement for floodproofing under the City's Floodplain Ordinance. Forms of floodproofing for structures include the following: Dry floodproofing is defined to mean making the building watertight and sufficiently structurally sound to resist hydrostatic pressure, hydrodynamic forces and wetting associated with a 100 year flood. Wet floodproofing allows the floodwaters to inundate the lower portion of the building.

While the designation of much of the site as floodway effectively limits the City's ability to construct buildings (in the usual sense) on the site, there may be a better prognosis with respect to pergolas, gazebos or similar structures which tend to allow the flood waters to pass through them. It will be important, however, that any such structures be designed with the possibility of damage from waterborne debris in mind.

Requirements for wet floodproofing include provisions for: the flow of water into and out of the structure; use of flood damage resistant materials; and placement of machinery, utility meters, electrical equipment, etc. above the flood protection elevation. In addition, it is common to prohibit the storage of hazardous materials below the established base flood elevation.

Final estimates of construction costs should reflect corresponding standards of construction.

## **Emergency Action Plan**

Given the likely desirability of installing certain features (such as lighting) within the area subject to inundation, it may be appropriate to develop an action plan of sorts to promote proactive actions within the community in advance of anticipated flood events. In particular, there may be significant benefits associated with a formal program to remove certain infrastructure components that may be particularly susceptible to damage in the event of flooding.