
City of Lake St. Croix Beach



Flood Management Manual

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Introduction

It is no secret – Rivers flood. Because of the city's proximity to the St. Croix River (a River with a propensity to flood) and the populated areas within the City that are designated 'Flood Plain', the City must have a defense for flooding. The scope of this defense is the task of the City Council who will assess the financial, material and human resources necessary to fight a flood. This manual seeks to provide the guidance needed to accomplish that task once the City Council begins to discharge its responsibility to establish the scope of the flood fighting effort.

Scope of this Manual

This manual is expected to be a continuous work in progress, which will undergo periodic examination and changes, as floods are fought and debriefed, as flood fighting resources change and modify, and as federal and state emergency management policies change. Implementation of the suggestions and framework set forth within this Manual shall be subject to and dependent upon the action of the City Council during each flood event. The use, implementation, modification or change of the practices suggested within this Manual shall always be at the discretion of the City Council.

How to use this Manual

Since each flood has its own 'personality', each flood fought will be different. This manual is organized along the decision points that flood fighting requires. Depending on the rapidity with which the water rises, some or several of these steps may be compressed into a single step. However, if one views the flood as a set of decision points, this manual can help identify the task that must happen at each stage.

Phases and Events

This manual has been structured to provide an organized response to the flood threat beginning at the lowest flood level and proceeding to final overtopping of the levee system when flood-fighting activities would have to be abandoned. A team approach is used to execute the required activities. The events in each level of response are described in Section III Flood In Process. The estimated cost for materials/equipment that may be used at each level is found in Appendix F.

Key team members are as follows (Position Descriptions are found in Appendix G)

- A Director of Flood Operations (Director) may be appointed by the City Council and will have on-site decision-making authority based on City guidelines and policies for flood management activities. The Director is responsible for the overall management of all flood-fighting activities.
- City Administrator will assist in the coordination of flood management operations and administration activities with City, county, state and federal officials.

The following Coordinators work at the direction of the Director.

- Volunteer Coordinator will solicit, coordinate and oversee all volunteer activities
- Set-up Coordinator will coordinate and oversee all required materials, equipment, small construction projects and inventory.
- Communications Coordinator will coordinate and implement communications with City residents and media.
- Sandbag Coordinator will coordinate and oversee the filling of sandbags, construction of sandbag levees, ring dams, etc.
- Pumping Coordinator will coordinate and oversee all phases of pumping activities.
- Clean-up Coordinator will coordinate and oversee all cleanup activities.

I. Annual Pre Season Review and Preparation

The Floodplain Advisory Commission will meet in January for the following purposes:

- Review changes in flood emergency response procedures
- Review information concerning changes in county, state or federal flood related assistance
- Update pro forma budget
- Introduce city officials to the Flood Management Team
- Provide updates on any flood management projects
- Identify specific needs or actions, such as recruiting more volunteers for positions within the team
- Update phone numbers, email addresses, etc. of all team members
- Establish initial flood communication information if appropriate

II. Mobilization

If flooding is anticipated, the following activities begin:

- Administrative staff will contact National Weather Service (NSW) for flooding forecast. (www.crh.noaa.gov.) Note that the NWS predictions do account for predicted rainfall within the watersheds of the St. Croix River.
- City Council will meet to discuss the type, urgency and severity of flood that is being predicted. At this time, the Council should decide how the flood emergency will be managed; by the City Council as a body, by appointing one or more individuals to act as Director of Flood Operations, or other method determined by the Council.
- Some issues to be decided by the City Council are:
 - Develop a charter with Director if one is appointed.
 - Agree on compensation for Director (Volunteer- no pay, hourly, weekly, etc.)
 - Agree on how the Director will communicate with the City Council (in person, by phone, by e-mail, by City website, etc.)
 - Agree on what type of information the City Council wants to receive and prepare some type of template or format for this purpose.
 - Agree on when the Director will communicate with the City Council (daily in continuous special meetings, by Level, by some anticipated expenditure amount, etc.)
 - Establish a preliminary meeting schedule.
- Administrative staff sets up records and files as needed
- Director reviews resource needs (*See Resource Checklist*)
- Setup Coordinator and Sandbag Coordinator will review and inventory flood fighting materials. (*See Inventory Checklist.*)
- Volunteer Coordinator will review, prepare and confirm volunteer corps. (*See Volunteer Checklist.*)

III. Flood In Process

Level 1 Prediction of River Rise to Elevation 685+

As a frame of reference, river water at El 685 would be one foot above the bottom of the culvert at 17th Street. If the river level is expected to remain over El 685 for more than one week, it is likely that seepage will occur in the floodplain. The higher the river level, the greater the hydrostatic pressure, the more quickly the seepage occurs. However, a quick rise and rapid fall in the river level does not generally cause an inland flooding threat.

- Council and staff monitor situation.
- The Director will stabilize the base of all staircases in the bluffland and dike area by placing sandbags on and around the base of the stairs.
- A notice explaining the flood emergency is prepared and mailed to all residents.

Of special note, when seepage of the dike occurs, the potential for catastrophic failure of the dike increases significantly. Therefore, property owners need to be aware of the increased risk and make decision accordingly. If this happens, damage could occur on a large scale and there is the potential for fatalities. The potential for this should be communicated to residents in City communications at this stage and at every subsequent stage.

Level 2 River Elevation at 683 & Rise Predicted

At this elevation, the water is one foot below the 17th Street culvert and has reached the staircases in the bluffland and dike area. A "No Wake Zone" will be in effect on the river.

- Communications Coordinator will post river elevations daily at City Hall and on the City's Website at LSCB.GOVOFFICE.COM to keep residents informed about the potential threat of flooding.
- Director monitors the culvert cap at 17th Street to ensure that it will close properly.

Level 3 River Elevation at 684

Now that the water has reached the base of the 17th Street culvert, it is critical that the culvert cap be sealed properly. (See Appendix ___ for details)

- Director verifies that the culvert cap at 17th Street has sealed securely.
- Get commitment on all equipment, supplies, personnel and materials to prepare for flood management activities.
- City Council meets in Special Session with the Director to discuss the status of emergency management procedures.

Level 4 River Elevation at 684 for Sustained Period and Rise Predicted

It is likely that seeping water is now visible in the 10-year floodplain. As the river level rises, the inland seeping water will rise more quickly. Pumping may hold the inland water elevations as much as four feet lower than the river elevation.

- The Director will:

- Move contents from City Garage to safe location.
 - Initiate mobilization of required equipment.
 - Prepare pump sites at 20th & Redwing and at 19th & Riviera, and secure any Waivers of Trespass as needed.
 - Attend any county/state emergency management meetings.
 - Arrange congregate care (food, clothing, housing, etc.) from Red Cross and Salvation Army.
 - Notify residents of availability of home contents storage trailers.
 - Contemplate request to City Council for Declaration of State of Emergency and the need for National Guard and Sheriff Command Post if situation warrants.
- The Setup Coordinator will:
 - Take possession of bobcat/forks, pallets, sand, sandbags, cell phones, portable toilets, truck, shelter for pump workers.
 - Build ramp over pump discharge pipes at 20th Street.
 - Install water elevation rulers in river bank.
 - Secure rowboat with motor. Place at 20th St.
 - Continue to monitor 17th Street culvert cap.
 - Monitor resident pumping so ensure that force of water being discharged does not erode the levee face.
 - Inspect for boils (river water intruding) at water-main valves in streets and at fire hydrants. Past problem areas have been at 20th & Redwing, septic system by Laurel March's home, Kurt Schmidt's well, Christgau's well and 17th Street culvert.
 - Purchase motor oil, filters, etc. for pumps.
 - Set-up flood safety measures as needed:
 - Barrier in bluffland if slumping occurs.
 - Notices to KEEP OFF Levees 1 & 2.
 - Street barriers where needed.
 - Life ring with 50 feet of rope at levee 1.
 - Life jackets for dike walkers and county workers.
 - The Sandbag Coordinator will:
 - Make the required number of sandbags.
 - If leaking occurs, place sandbags on base of levee #1 by 17th Street as needed.
 - The Volunteer Coordinator will:
 - Prepare volunteer schedules for pump watchers, dike walkers and sandbaggers as needed.
 - Arrange volunteer hotline with Washington County Community Volunteer Service.
 - The Pump Coordinator will:
 - Train all pump volunteers.
 - The Communications Coordinator will:
 - Produce and distribute resident flood information kit and access passes if needed.

Once, and if, pumping is initiated and while the water is contained below ground level (groundwater), the greatest benefit is realized by properties closer in proximity to the pumps. Owners of properties further from the pumps may need to make other provisions to deal with increased hydrostatic pressure and potentially higher ground water levels than observed at the site of the pumps. Other provisions may be required to provide additional protection to these properties. Decisions will need to be made if this is to be done by property owners or by the City. Property owners in the floodplain area should be appraised of this situation at this time and that the responsibility for their property is the owner's responsibility.

Pumping begins and frequent monitoring of the levee system starts when inland water reaches 684. The goal is to keep the water from overtopping 20 Street at El 686.6.

- The Director will:
 - Closely monitor all water levels, pumping preparations, and levee integrity.
 - Monitor St. Mary's Point run-over at their culvert.
 - Monitor height of river/crest on levee freeboard.
 - Prepare street closing plan to secure.
 - Deploy equipment as required.
- The Pump Coordinator will:
 - Prime and test all pumps prior to operating.
 - Monitor pumping procedures at all pump sites.
 - Maintain the required inventories of motor oil, filters, etc. on hand for each type of pump.
 - Provide other supplies as needed (flashlights, ponchos, safety vests, etc.
 - Post repair phone numbers for each pump in warming house.
- The Setup Coordinator will:
 - Continue to monitor all pumping, equipment needs and new developments.
- The Sandbag Coordinator will:
 - Continue to monitor all sandbagging areas, needs and new developments.
- The Volunteer Coordinator will:
 - Post pump volunteer schedules in warming house.
 - Levee patrols must be diligent in monitoring the condition of levees for leaks.
 - Continue to monitor all volunteer activities, seeking more volunteers if needed.
 - Start continuous levee patrols.
- The Communications Coordinator will:
 - Post daily updates on flood levels and anticipated crest date.

Level 6 River Elevation at 686 & Rise Predicted

At this elevation, individual septic systems may become inundated with seeping water and should not be used. Some property owners will evacuate at this time because of their compromised septic system and the potential that seepage may have contaminated their wells. Residents that remain in their homes are encouraged to use the rental toilets at the pumping sites. The inland water will be showing up in most of the 10-year floodplain including some low-lying city streets (18th St., Upper 18th, Upper 19 and sections of Redwing Ave.). It is likely that flooding is now widespread in the St. Croix and Mississippi watersheds. In the past, this extensive flooding has triggered a Presidential Disaster Declaration, but there is no guarantee that this will occur. When the City is included in this type of Disaster Declaration, some help with paying the costs associated with the flood may be forthcoming. If the City is not included in such a declaration, then it is probable that the City will become responsible for the bulk of the flood fighting expense. The City Council must monitor this situation since it could have significant financial impacts on the City's finances and cash reserves and its ability to meet its other obligations.

Many factors may go into the issuance (or failure to issue) of a Presidential Declaration. These could include localized flooding around only a small portion of a single watershed, political issues at the state and federal levels, state of federal and/or state budgets, or changes in federal disaster emergency response policies. Depending on the state of the City's finances and cash availability, the City Council will need to carefully consider actions planned and taken. The City Council, as the elected leadership of the City must also monitor this situation and assess the probability of receiving a Presidential Declaration and plan accordingly.

- The Director sets up pumping operations at 19th and Riviera with the goal being to keep inland water from overtopping 19th Street.
- The Director continues to monitor all pumping operations.
- The Director monitors the Bluffland Park for evidence of fissures, erosion or slumping.
- The Director contacts the six residents adjacent to the Bluffland Park and asks them to report any observed instability in the Bluffland Park next to their property.
- City Staff calculates what has been spent on flood fighting so far in anticipation that Washington County and Governor are requesting a Presidential Disaster Declaration.
- The Communications Coordinator warns residents that their septic systems may be flooded and their wells contaminated.
- Appropriate warnings should be communicated to residents.

Level 7 River Elevation at 688

Pumping may hold inland water at El. 684.

- The Director monitors all activities.
- All pumping stations continue to operate as needed.
- The Volunteer Coordinator initiates patrols of the levee system.

Level 8 River Elevation at 689 & Prediction of 692+

Pumping may hold inland water at El. 685/686 near the pumps. Saturation of the levees and rapid seepage in the floodplain occurs at this stage. The Corps of Engineers may be called in to advise on protective measures and calculate the correct number of pumps needed to handle the seepage. At this stage, the risk of dike failure increases due to the seepage and internal damage to the dike may result. This situation needs to be monitored because of the potential for catastrophic dike failure.

- The Director coordinates construction of temporary dike where needed to protect the floodplain to El 695.

All pumping stations continue to operate. Reliable pumping is critical at this time. Failure of one pump may cause inland water levels to rise quickly.

Level 9 River Elevation at 695+ (500 yr Elevation)

At this level, water may be expected to overtop the levee system. It is unknown how the saturated sand levees will stand up to the increased water pressure and/or wave and wake action that might occur. It is unknown if inland pumping would be effective at this flood stage. The probability of a catastrophic failure of the dike increases.

- Director coordinates meeting of the City Council and all relevant support personnel to determine what steps are to be taken.
- Communications Coordinator advises all residents of the City Council decisions.
- The City Council will likely need to consider evacuation of portions of the floodplain.

Level 10 Emergency Evacuation

An emergency evacuation situation could occur because of a variety of reasons including, overtopping of the levee system, impending failure of the levee, or failure itself. The Lower St. Croix Valley Fire Department and Washington County Sheriff would coordinate this type of critical event. The State Emergency protocol specifies the reporting structure and the hierarchy of agencies responsible to meet such an emergency. At this time, control of some aspects of this flood fight may transfer to other agencies.

- The Director will continue to coordinate flood related activities as the situation warrants.

IV. Demobilization

Once the Corps of Engineer's has issued an "all clear" that the flood threat has subsided, the City may begin to dismantle the flood fighting operations. When the water level drops at 20th and Redwing, pumping activity may be reduced or suspended based on current and pending weather conditions. Pumping activities at other locations may be suspended as the water subsides. Demobilization includes:

Damage Assessment
Dismantling
Cleanup
Repair

Damage Assessment

- The Director, Administrator, and Coordinators as needed will meet with appropriate officials from FEMA, DEM, DNR, COE, and City Engineer (including all utility companies) to inspect all affected sites for flood related damage.
 - 20th Street & Redwing (Primary Pump Area #1).
 - 19th Street & Riviera (Secondary Pump Area #2).
 - 17th Street & Riviera (Pump Area #3).
 - Riviera Levee #1.
 - 21st Street Levee #2.
 - 17th Street culvert cap on riverside of levee.
 - Bluffland and levee staircases.
 - Inspect 20th Street culvert at city parking lot.
 - All areas where boils occurred.
 - All areas where ring dams were constructed.
 - Staging areas.
 - All river frontage in the Bluffland and Shoreland Park.
 - All city streets in the floodplain.
 - All city park facilities in the floodplain.
 - City Hall and other sites that were used as staging areas.

Dismantling

- Cleanup Coordinator (with assistance from Director of Flood Operations).
 - Identify main trash collection area.
 - Remove extra portable toilets.
 - Return loaned pumps, equipment and fork rental.
 - Dispose of contaminated sandbags.
 - Sandbags that are not contaminated may be emptied onto the swimming beach .
 - Inventory and return:
 - ice house/pump shelter.
 - orange barrier fence & stakes.
 - all signs.
 - empty large gas tanks of fuel.
 - discharge hose if not include with pumps.
 - storage trailers for home content evacuation (Brockman).
 - 20th Street pump discharge drive-over ramp and gravel at Riviera and 20th St.
 - orange barrier fence & stakes along bluffland and river.
 - road block barriers.
 - PFD with 50 feet of rope.
 - (5) Floatation devices with 50' rope placed along river bank.
 - water pumping relay system on short 19th street section.
 - rowboat with motor.
- Sandbag Coordinator (with assistance from Cleanup Coordinator)
 - Collect pallets and return to vendor.
 - Collect and store sand chutes.
 - Collect and inventory unused sandbags.

Cleanup

- City Administrator
 - _____ Verify threat is gone - COE confirms. (*Consider pending rain forecasts or other conditions that may prolong flood levels.*)
 - _____ Contact all agencies to begin cleanup assistance.
 - a. organize FEMA disaster assistance location.
 - b. contact Red Cross for resident flood clean-up kits assistance.
 - c. attend any county/state emergency management meetings.
- Volunteer Coordinator
 - _____ Determine level of local volunteer requirements.
 - a. conduct all operations internally (Federal Disaster Declaration may cover?).
 - b. contract with outside companies for specific removal & cleanup activities.
- Director of Flood Operations/Cleanup Coordinator
 - _____ Prepare for equipment return and dismantling of protection measures.
 - a. bring in new set of volunteers (*They should all be pre-scheduled.*).
 - b. call around for better transportation costs and other anticipated expenses.
 - _____ Secure pickup truck or similar vehicle.

- Communications Coordinator

_____ Prepare resident communications materials.

- Volunteer Coordinator/Cleanup Coordinator/Sandbag Coordinator

_____ Coordinate with cleanup volunteer activities. (*Review Volunteer list*).

_____ Activities:

- a. pump hose and protection dismantling.
- b. levee inspection and sandbag removal.
- c. beach debris removal.
- d. sandbag protection dismantling.
 1. sandbagging areas
 2. staircases
 3. fuel tank containment
 4. water backflow beehives (ring dams)
 5. levee seepage buttressing
 6. top of levee
 7. discharge area
 8. resident sand
 9. extra sand in streets
- e. removal of debris piles on 20th St.
- f. collection of used sandbags.
- g. identify main trash collection area.

- Volunteer Coordinator

_____ Make arrangements for outside volunteers if necessary. (*See Volunteer list*).

- a. Sentence to Serve
- b. sports teams
- c. schools
- d. St. Paul Airport businesses
- e. other volunteers
- f. Fire Department's Explorer's Post
- g. Red Cross
- h. Salvation Army

_____ Direct people to call Community Volunteer Service at Washington County.

- Communications Coordinator

_____ Contact residents to determine if they need assistance in cleanup of their properties.

Repair

- Director or City Engineer will coordinate repairs that were identified during the damage assessment tour.

V. Administrative Closeout

- The City Administrator will compile all data and work with affected agencies to receive all eligible reimbursement for the flood fighting activities.

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Appendix A. Annual Preparation

Annual Pre Season Review and Preparation Checklist

The Floodplain Advisory Commission will meet in January to monitor and assess the flood risk.

- _____ Consider new information received during the year and propose changes in flood emergency response procedures
- _____ Research for any changes in county, state or federal flood related assistance and propose changes to procedures if needed
- _____ Update pro forma budget
- _____ Introduce new city officials to the Flood Management Team and Flood Management Manual concept
- _____ Research the status of any flood management project
- _____ Identify specific needs or actions, such as recruiting more volunteers for positions within the team
- _____ Update phone numbers, email addresses, etc. of all team members
- _____ Establish initial flood communications information if appropriate
- _____ Communicate annual issues to residents
- _____ Check with the National Weather Service and Washington County Emergency Services for flooding predictions and advise Council

Appendix B: Checklist: Mobilization Checklist

Director of Flood Operations

(See Resource checklist as needed.)

- ___ Secure individuals and obtain Council approve for all Flood Management Team positions
- ___ Review, prepare and confirm all required equipment from vendor list.
- ___ Contact Red Cross and Salvation Army to advise of pending need for assistance.
- ___ Call Gopher for underground line inspections before digging sump pit .
- ___ Review Washington County's book on equipment available for loan. *(Ask for updated list of supplies.)*
- ___ Monitor conditions. *(Need facts from these sources for proper disbursement of information to residents to avoid excessive rumors.)*
- ___ National Weather Service
- ___ Corps of Engineers
- ___ Attend any county/state/river community emergency management meetings.
- ___ Plan for possible need for:
 - ___ National Guard
 - ___ Sheriff evacuation station
- ___ Establish Flood Disaster contacts with all appropriate agencies.

City Administrator

- ___ Contact National Weather Service for flooding forecast. (www.crh.noaa.gov)
- ___ Create activity log/notebook.
- ___ Review/establish expenditure/receipt & financial record keeping system/procedures.
- ___ Secure Council appointment of team members and approval of pay rates for team members if needed. *(See "Personnel" for those who qualify.)*
- ___ Check inventory of all city, state, county & federal forms and manuals and update with new information and contacts, etc. *(See Resource Checklist.)*
- ___ Get trespass waiver from property owners as needed.

Setup Coordinator

- ___ Review and count inventory of on-hand flood fighting materials. *(See Inventory Checklist.)*

Sandbag Coordinator

- ___ Review and count inventory of on-hand flood fighting materials. *(See Inventory Checklist.)*

Volunteer Coordinator

- ___ Review, prepare and confirm Volunteer Corps from list. *(See Volunteer Checklist.)*

Pump Coordinator

- ___ Duties not required.

Communications Coordinator

- ___ Prepare and secure Council approval of materials in flood information kit to residents.

Cleanup Coordinator

- ___ Duties not required.

Appendix C: Checklist: Flood in Process

Level 1 Prediction of River Rise to Elevation 685+

(Protect staircases, monitor situation and communicate with residents.)

Director of Flood Operations

- ___ Ensure that the Setup Coordinator has stabilized the base of all staircases in the bluffland and dike area by placing sandbags on and around the base of the stairs.
- ___ Ensure flapgate is down at 17th Street culvert. Place rocks against flap to prevent gate from being opened by wind. Note: If rain is expected when river is below flapgate, do not place rocks in front of gate so rain water on street side of levee may flow out.
- ___ Work with Communications Coordinator on notice to residents regarding the flood emergency.

City Administrator

- ___ Get trespass waiver from property owners. (19th & Riveria)

Setup Coordinator

- ___ Stabilized the base of all staircases in the bluffland and dike area by placing sandbags on and around the base of the stairs.

Sandbag Coordinator

- ___ Assemble the appropriate supply of sandbags for stabilizing the bluffland and dike stairs.

Volunteer Coordinator

- ___ Provide workers to assemble sandbags for stairway stabilization.

Pump Coordinator

- ___ Duties not required.

Communications Coordinator

- ___ Work with Director to prepare notice to residents on the pending flood emergency.

Cleanup Coordinator

- ___ Duties not required.

Level 2 River Elevation at 683 & Rise Predicted

(Monitor situation.)

Director of Flood Operations

- ___ Monitor sandbags at all staircases in the bluffland and dike areas.
- ___ Monitor flapgate and at 17th Street culvert and pending rain/snow conditions.
- ___ Work with Communications Coordinator on notice to residents regarding the flood emergency.

City Administrator

- ___ Monitor situation. Send periodic emails to flood management team with any new river rise predictions.
- ___ Maintain time and activity records.

Setup Coordinator

___ Monitor situation.

Sandbag Coordinator

___ Monitor situation.

Volunteer Coordinator

___ Monitor situation.

Pump Coordinator

___ Duties not required.

Communications Coordinator

___ Post river elevations daily at City Hall and on the City's Website at LSCB.GOV.OFFICE.COM to keep residents informed about the potential threat of flooding.

Cleanup Coordinator

___ Duties not required.

Level 3 River Elevation at 684

(Monitor situation and discuss activation of emergency protective measures with City Council.)

Director of Flood Operations

- ___ Meet with City Council to discuss the status of emergency management procedures and the potential of activate flood-fighting measures.
- ___ Monitor sandbags at all staircases in the bluffland and dike areas.
- ___ Monitor flapgate and at 17th Street culvert and pending rain/snow conditions.
- ___ Work with Communications Coordinator on notice to residents regarding the flood emergency.
- ___ Confirm availability of all required flood fighting supplies and equipment. *(Including pumps, pipes, hoses, fuel tanks, etc. Use resource List and Washington County's Shared Equipment Directory.)*
- ___ Call Gopher for underground line inspections at 20th St. and Riveria.

City Administrator

- ___ Monitor situation. Send periodic emails to flood management team with any new river rise predictions.
- ___ Assist with City Council meeting regarding flood preparation activities.
- ___ Maintain time and activity records.

Setup Coordinator

___ Monitor situation.

Sandbag Coordinator

___ Monitor situation.

Volunteer Coordinator

___ Monitor situation.

Pump Coordinator

___ Duties not required.

Communications Coordinator

___ Post river elevations daily
___ Draft resident communications for review as needed.

Cleanup Coordinator

___ Duties not required.

Level 4 River Elevation at 684 for Sustained Period and Rise Predicted

(Get commitment on supplies and equipment and stage for expected pumping activities.)

Director of Flood Operations

- ___ Move contents from City Garage to safe location.
- ___ Attend any emergency management meetings.
- ___ Arrange congregate care from Red Cross and Salvation Army.
- ___ Notify residents of availability of home content storage trailers.
- ___ If needed, meet with City Council to secure Declaration of State of Emergency and the need for National Guard and Sheriff Command Post.
- ___ Obtain the following:
 - ___ pumps as needed
 - ___ large gas tanks and fuel. *(Diesel and unleaded)*
 - ___ discharge hose if not include with pumps.
 - ___ storage trailers for home content evacuation.
 - ___ back-hoe of sump area at 20th St. and 19th St.
- ___ Initiate mobilization of all other required equipment *(See Resource/Inventory Checklist.):*
 - ___ order portable toilets for flood workers and flood plain residents.
 - ___ bobcat equipment and fork rental. *(See Resource Checklist. Put down payment on fork rental.)*
 - ___ appropriate number of pallets.
 - ___ pickup truck or similar vehicle.
 - ___ mobile phones.
 - ___ shelter (ice house) for pump volunteers *(Need trespassing waiver?)*
 - ___ sand bags
 - ___ sand
 - ___ orange barrier fence & stakes
 - ___ KEEP OFF signs
 - ___ develop standard street blockade plan
- ___ Stage incoming equipment:
 - ___ pumps & hoses
 - ___ fuel tanks
 - ___ sand pile placement (gas tank reservoirs, discharge hose stabilization, beehive construction, rear levee 1 seepage, floodplain resident use)

City Administrator

- ___ Monitor situation. Send periodic emails to flood management team with any new river rise predictions.
- ___ Assist with City Council meetings regarding flood activities.
- ___ Issue warnings to residents on river levels, emergency activities and safely measures.

- ___ Monitor other area river level conditions. *(Need facts from these sources for proper disbursement of information to residents to avoid excessive rumors.)*
 - ___ National Weather Service
 - ___ St. Croix Falls dam
 - ___ Apple River dam
 - ___ Redwing Lock & Dam
 - ___ Corps of Engineers
- ___ Maintain time and activity records.

Setup Coordinator

- ___ Inspect 17th Street flapgate and remove any debris and to ensure tight seal. Sandbag or lock if necessary.
- ___ Inspect and prepare all flood activity areas:
 - ___ 20th street & Redwing (Primary Pump Area #1)
 - ___ 19th Street & Riveria (Secondary Pump Area #2)
 - ___ 17th Street & Riveria (Pump Area #3)
 - ___ Levee 1
 - ___ Levee 2
- ___ Secure bobcat/forks, pallets, sand, sandbags, mobile phones, portable toilets, truck, shelter for workers
- ___ Build ramp over pump discharge hose at Riveria and 20th St.
- ___ Install water elevation rulers in river bank.
- ___ Monitor resident pumping to ensure that force of water discharge does not erode levee surface.
- ___ Inspect for boils (ground water intruding) at water-main valves in streets and at fire hydrants. Past problems have been at 20th St. & Redwing, septic system by 2085 Racine, well at 16840 18th St. and 17th St. culvert.
- ___ Purchase motor oil for pumps & plastic for fuel tank station
- ___ Set-up flood safety measures:
 - ___ secure rowboat with motor. Place at 20th street.
 - ___ barrier fence along bluffland if slumping occurs
 - ___ notices to KEEP OFF at Levees 1 & 2
 - ___ street barriers where needed
 - ___ Life ring with 50 feet of rope at levee 1
 - ___ (5) life jackets with

Sandbag Coordinator

- ___ Centralize all sandbagging equipment and supplies and report needs to Director.
 - ___ Pallets
 - ___ Chutes
 - ___ Sandbags
 - ___ Ties
 - ___ Shovels
- ___ Place sandbags at street level on base of levee #1 by 17th Street - approximately 50' long and 3 to 4' feet high on bank.
- ___ Review sandbagging activity locations and requirements.

Volunteer Coordinator (Useful source: Community Volunteer Service and Corps Manual & List)

- ___ Fill in volunteer schedule with volunteer availability.
 - ___ pump operators
 - ___ levee walkers
 - ___ sandbaggers
 - ___ runner

- ___ flood preparation set-up
- ___ City Hall phones
- ___ set-up person/food & beverage
- ___ Initiate periodic levee patrols.
- ___ Activate volunteer hotline.
- ___ Make preparatory arrangements for outside volunteers. (*See Non-community Volunteer list*):
 - ___ Sentence to Serve: Washington County (*Need list of what they can and can't do when they work in private property.*)
 - ___ sports teams (*Need supervision.*)
 - ___ schools (*Need supervision.*)
 - ___ St. Paul Airport businesses
 - ___ other volunteers
 - ___ Fire Department's Explorer's Post
 - ___ churches
 - ___ Red Cross
 - ___ Salvation Army
- ___ Set-up volunteer hotline. (*Need standard phone number for any city emergency - just change message based on emergency.*)
 - ___ directs people to call Community Volunteer Service - Wash. Co.
 - ___ establish plan to help residents if they need flood fighting assistance/bluff protection activities

Pump Coordinator

- ___ Work with Volunteer Coordinator to secure proper number of pump operators.
- ___ Train all pump volunteers on how to operate pumps, type of fuel and oil to use, how often to conduct maintenance and safety measures to use while operating pumps.

Communications Coordinator

- ___ Post river elevations daily.
- ___ Monitor situation and assist as needed.
- ___ Begin resident communication efforts with established Communication Kit (*Review content.*)

Cleanup Coordinator

- ___ Duties not required.

Level 5 Inland Water Elevation at 684 for Sustained Period and Rise Predicted

(Pumping begins when inland water reaches El 684. Goal is to keep 20th St. open (El 686.6.)

Director of Flood Operations

- ___ Monitor all water levels, pumping preparations, and levee integrity.
- ___ Monitor St. Mary's Point run-over at their culvert.
- ___ Monitor height of river/crest on levee freeboard.
- ___ Prepare for additional measures:
 - ___ prepare for possible need for fire department
 - ___ order jersey barriers
 - ___ purchase plastic

City Administrator

- ___ Monitor situation. Send emails to flood management team with any new information.
- ___ Assist with City Council meetings regarding flood activities.

- ___ Re-issue warnings to residents if needed.
- ___ Monitor other area river level conditions.

Setup Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Sandbag Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Pump Coordinator

- ___ Have all pump maintain procedures typed and posted at all pumps.
- ___ Have all required inventories of motor oil on hand for each pump.
- ___ Prime and test all pumps prior to required pumping inland elevation
- ___ Post all equipment emergency repair phone numbers for each pump in shelter
- ___ Maintain pumping activities as needed to maintain inland water level at El 684.

Volunteer Coordinator

- ___ Post volunteer schedules in shelter.
- ___ Double check volunteer supplies (flashlights, rain ponchos, safety vests, etc.).
- ___ Maintain scheduled levee patrols.

Communications Coordinator

- ___ Post river elevations daily.
- ___ Monitor situation and assist as needed.
- ___ Continue resident communication efforts.

Cleanup Coordinator

- ___ Prepare for planned cleanup activities.

Level 6 River Elevation at 686 & Rise Predicted

(Maintain pumping activities. Prepare for additional volunteers and supplies if needed)

Director of Flood Operations

- ___ Monitor all water levels, pumping activities, and levee integrity.
- ___ Monitor for evidence of fissures, erosion or slumping in the Bluffland Park.
- ___ Meet with City Council to discuss prediction and report on status of flood fighting activities.
- ___ Prepare for additional measures:
 - ___ additional volunteers
 - ___ additional sand and sandbags
 - ___ additional pumps
- ___ Conduct door-to-door survey to learn which floodplain homes remain occupied and which homes have been vacated.
- ___ Work with Communications Coordinator to instruct floodplain residents on how the floodwaters are impacting their septic systems and wells.
- ___ Monitor for sand boils and/or the integrity of and beehives (ring dams) that were built to contain leaks in the levees, at fire hydrants, wells, etc.

City Administrator

- ___ Monitor situation. Send emails to flood management team with any new information.
- ___ Assist with City Council meetings regarding flood activities.
- ___ Re-issue warnings to residents if needed.

- ___ Compile financial data to prepare for potential Presidential Disaster Declaration.
- ___ Monitor other area river level conditions.

Setup Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Sandbag Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Pump Coordinator

- ___ Monitor all pumping activities.
- ___ Determine additional volunteers, supplies or other needs based on level predictions.

Volunteer Coordinator

- ___ Add additional volunteers to pumping and levee schedules if needed.
- ___ Maintain scheduled levee patrols.
- ___ Prepare for staffing of cleanup volunteers.

Communications Coordinator

- ___ Post river elevations daily.
- ___ Work with Director to conduct door-to-door survey to learn which floodplain homes remain occupied and which homes have been vacated.
- ___ Work with Director to instruct floodplain residents on how the floodwaters are impacting their septic systems and wells.
- ___ Assist the Director in communicating with property owners adjacent to Bluffland Park regarding potential slumping of the bluff.

Cleanup Coordinator

- ___ Prepare for planned cleanup activities.

Level 7 River Elevation at 688

(Maintain pumping activities and levee patrols)

Director of Flood Operations

- ___ Monitor all water levels, pumping activities, and levee integrity.
- ___ Monitor for evidence of fissures, erosion or slumping in the Bluffland Park.
- ___ Monitor for sand boils and/or the integrity of and beehives (ring dams) that were built to contain leaks in the levees, at fire hydrants, wells, etc.
- ___ Meet with City Council to discuss prediction and report on status of flood fighting activities.

City Administrator

- ___ Monitor situation. Send emails to flood management team with any new information.
- ___ Assist with City Council meetings regarding flood activities.
- ___ Re-issue warnings to residents if needed.
- ___ Compile financial data to prepare for potential Presidential Disaster Declaration.
- ___ Monitor other area river level conditions.

Setup Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Sandbag Coordinator

- ___ Monitor all flood activities for changing needs and supplies.

Pump Coordinator

- ___ Monitor all pumping activities.
- ___ Determine additional volunteers, supplies or other needs based on level predictions.

Volunteer Coordinator

- ___ Add additional volunteers to pumping and levee schedules if needed.
- ___ Maintain scheduled levee patrols.
- ___ Prepare for staffing of cleanup volunteers.

Communications Coordinator

- ___ Post river elevations daily.
- ___ Monitor and assist as needed.

Cleanup Coordinator

- ___ Prepare for planned cleanup activities.

Level 8 River Elevation at 689 & Prediction of 692+

(May construct temporary dike on Levees)

Director of Flood Operations

- ___ Meet with City Council for instructions on whether to construct temporary dike to protect floodplain to El 695.
- ___ Contact suppliers and contractors for:
 - ___ jersey barriers
 - ___ sand
 - ___ plastic
- ___ If building temporary dike, work with Setup, Sandbag, and Volunteer Coordinators to assist in construction of the dike.
- ___ Order security lighting if deemed necessary.
- ___ Monitor all water levels, pumping activities, and levee integrity.
- ___ Monitor for evidence of fissures, erosion or slumping in the Bluffland Park.
- ___ Monitor for sand boils and/or the integrity of and beehives (ring dams) that were built to contain leaks in the levees, at fire hydrants, wells, etc.

City Administrator

- ___ Monitor situation. Send emails to flood management team with any new information.
- ___ Assist with City Council meetings regarding flood activities.
- ___ Re-issue warnings to residents if needed.
- ___ Compile financial data to prepare for potential Presidential Disaster Declaration.
- ___ Monitor other area river level conditions.

Setup Coordinator

- ___ Work with the Director, outside contractors and volunteers to construct temporary dike.
- ___ Monitor all flood activities for changing needs and supplies.
- ___ Assist the Director and lighting vendor to place lights along levees if ordered.

Sandbag Coordinator

- ___ Work with the Director, outside contractors and volunteers to construct temporary dike.
- ___ Monitor all flood activities for changing needs and supplies.

Pump Coordinator

- ___ Monitor all pumping activities.
- ___ Determine additional volunteers, supplies or other needs based on level predictions.

Volunteer Coordinator

- ___ Add additional volunteers to temporary dike, pumping and levee schedules if needed.
- ___ Maintain scheduled levee patrols.
- ___ Prepare for staffing of cleanup volunteers.

Communications Coordinator

- ___ Post river elevations daily.
- ___ Monitor and assist as needed.

Cleanup Coordinator

- ___ Prepare for planned cleanup activities.

Level 9 River Elevation at 695 + (500 Year Floodplain)

(Water may overtop levee system.)

Director of Flood Operations

- ___ Meet with City Council and all relevant support personnel to determine response while considering safety of residents and flood fighting volunteers.

City Administrator and All Coordinators

- ___ Monitor and maintain all activities.
- ___ Await decision of the Council on how to proceed.

Level 10 Emergency Evacuation

(It is possible that other agencies with more resources will conduct any emergency evacuation.)

Director, City Administrator and All Coordinators

- ___ Monitor and maintain all activities.
- ___ Await decision of the Council on how to proceed.

Appendix D: Checklist: Demobilization

After the Corps of Engineers has determined that the flood threat is over, the following activities are needed to clear away flood fighting materials.

Damage Assessment

Director of Flood Operations

- ___ Determine if President declared Washington County a disaster area.
- ___ Attend all meetings with FEMA and other agencies regarding disaster declaration.
- ___ Work with City Administrator to prepare all records for FEMA disaster application.
- ___ Collect all volunteer hours and other supporting materials and give to City Administrator.
- ___ Work with flood photographer to compile videotapes/photos of flood
- ___ Arrange for tour of flood damage. Invite *FEMA, MnHSEM, MnDNR, COE, City engineer*
 - ___ 20th street & Redwing (*Primary Pump Area #1*)
 - ___ 19th Street & Riveria (*Secondary Pump Area #2*)
 - ___ 17th Street & Riveria (*Pump Area #3*)
 - ___ Riveria Levee #1
 - ___ 21st Street Levee #2
- ___ Inspect new 17th Street culvert cap on riverside of levee: remove all debris and ensure proper operation.
- ___ Inspect all stairways.
- ___ Inspect 20th Street culvert at city parking lot.

Dismantling

Director of Flood Operations/Cleanup Coordinator

- ___ Prepare for equipment return and dismantling of protection measures.
- ___ Contract all agencies to begin clean-up assistance.
- ___ Work with Volunteer Coordinator to bring in new set of volunteers (*They should all be pre-scheduled.*)
- ___ Call around for better transportation costs and other anticipated expenses.
- ___ Secure pickup truck or similar vehicle.
- ___ Organize FEMA disaster assistance location.
- ___ Contact Red Cross for resident flood clean-up kits assistance.
- ___ Return cell phones and other loaned materials, equipment.

City Administrator

- ___ Attend any county/state emergency management meetings.
- ___ Assemble all required documentation for Disaster Declaration eligibility.

Setup Coordinator

- ___ Assist Director with dismantling operations.

Sandbag Coordinator (with assistance from Cleanup Coordinator)

- ___ Collect pallets.
- ___ Collect sand chutes.
- ___ Collect and inventory unused sandbags.

Volunteer Coordinator

- ___ Determine level of local volunteer requirements.
- ___ Conduct all operations internally (Federal Disaster Declaration may cover?).
- ___ Contract with outside companies for specific removal & clean-up activities.
- ___ Activities:
 - ___ pump hose and protection dismantling
 - ___ levee inspection and sandbag removal
 - ___ beach debris removal
 - ___ sandbag protection dismantling
 - ___ sandbagging areas
 - ___ staircases
 - ___ fuel tank containment
 - ___ water backflow beehives (ring dams) (ring dams)
 - ___ levee seepage buttressing
 - ___ top of levee
 - ___ discharge area
 - ___ resident sand
 - ___ extra sand in streets
 - ___ removal of debris piles on 20th St.
 - ___ collection of used sandbags
 - ___ identify main trash collection area
- ___ Make arrangements for outside volunteers if necessary. (*See Volunteer list.*)
 - ___ Sentence to Serve
 - ___ sports teams
 - ___ schools
 - ___ St. Paul Airport businesses
 - ___ other volunteers
 - ___ Fire Department's Explorer's Post
 - ___ Red Cross
 - ___ Salvation Army
- ___ Direct people to call Community Volunteer Service at Washington County.

Communications Coordinator

- ___ Prepare resident communications materials.

Cleanup Coordinator

Work as instructed by the Director to dismantle flood fighting equipment.

- ___ Identify main trash collection area.
- ___ Remove extra portable toilets.
- ___ Return loaned pumps, equipment and fork rental.
- ___ Inventory and return:
 - ___ ice house/pump shelter
 - ___ orange barrier fence & stakes
 - ___ all signs
 - ___ empty large gas tanks of fuel
 - ___ discharge hose if not include with pumps
 - ___ storage trailers for home content evacuation (Brockman)
 - ___ 20th Street pump discharge drive-over ramp and gravel at Riveria and 20th St.
 - ___ orange barrier fence & stakes along bluffland and river
 - ___ road block barriers
 - ___ PFD with 50 feet of rope
 - ___ (5) Floatation devices with 50' rope placed along river bank
 - ___ water pumping relay system on short 19th street section
 - ___ rowboat with motor

Cleanup

Director of Flood Operations

- Monitor all cleanup activities – see following checklists.

Sandbag Coordinator

- Work with Cleanup Coordinator

- Activities:

- levee inspection and sandbag removal
- sandbag protection dismantling
- sandbagging areas
- staircases
- fuel tank containment
- water backflow beehives (ring dams) (ring dams)
- levee seepage buttressing
- top of levee
- discharge area
- resident sand
- extra sand in streets
- Collect pallets.
- Collect sand chutes
- Collect and inventory unused sandbags.

Volunteer Coordinator

- Determine level of local volunteer requirements.
 - conduct all operations internally (Federal Disaster Declaration may cover?)
 - contract with outside companies for specific removal & clean-up activities
- With assistance from Cleanup Coordinator and Sandbag Coordinate arrange cleanup volunteer activities. (*Review Volunteer list*)
- Activities:
 - pump hose and protection dismantling
 - levee inspection and sandbag removal
 - beach debris removal
 - sandbag protection dismantling
 - sandbagging areas
 - staircases
 - fuel tank containment
 - water backflow beehives (ring dams) (ring dams)
 - levee seepage buttressing
 - top of levee
 - discharge area
 - resident sand
 - extra sand in streets
 - removal of debris piles on 20th St.
 - collection of used sandbags
 - identify main trash collection area
- Make arrangements for outside volunteers if necessary. (*See Volunteer list.*)
 - Sentence to Serve
 - sports teams
 - schools
 - St. Paul Airport businesses
 - other volunteers

- Fire Department's Explorer's Post
- Red Cross
- Salvation Army

Direct people to call Community Volunteer Service at Washington County.

Communications Coordinator

- Contact residents to determine if they need assistance in cleanup of their properties.
- Begin resident communication efforts with established Communication Kit.
- Delay annual spring cleanup until all flood cleanup is completed. Then coordinate with residents to throw away flood related debris.
- Produce and distribute flood report for residents

Cleanup Coordinator

- Rake up ditch debris.
- Disinfect City garage.
- Return items to City garage.
- Sweep floodplain area streets. (*County - get estimate.*)

Repair

Director of Flood Operations

- Work with City Engineer regarding repairs.
- Paint street parking lines.
- Repair any boils in streets.
- Repair sump areas.
- Paint garage if necessary.

Communications Coordinator

- Begin resident communication efforts with established Communication Kit.
- Delay annual spring cleanup until all flood cleanup is completed. Then coordinate with residents to throw away flood related debris.

Appendix E: Checklist: Administrative Close Out

Director of Flood Operations

- Post Flood de-briefing/follow-up.
 - St. Mary's Point culvert
 - St. Croix Falls dam
 - Apple River dam
 - Redwing Lock & Dam
 - Corps of Engineers
 - National Guard
 - Sheriff

City Administrator

- Collect all bills, receipts, notes, logs and other documentation from the flood.
- If declared a Disaster, work from the current FEMA procedure book that you will receive at one of the briefing sessions.
- Attend any meetings as needed to secure reimbursement for flood fighting expenses.

Communications Coordinator

- Produce and distribute flood report for residents.

Appendix F: Pro Forma Budget

2001 EMERGENCY RESPONSE SUMMARY

I. Annual Pre Season Review and Preparation	\$	-
II. Securing Equipment and Volunteers	\$	2,613.00
III. Mobilization Activities	\$	25,726.00
IV. Flood Management Monitoring	\$	12,855.00
V. Evacuation Plans	\$	-
VI. Demobilization	\$	<u>7,420.00</u>
Flood Emergency Response	Total	\$ 48,614.00

2001 PUMPING AND LEVEE PROTECTION SUMMARY

I. Flood Emergency Response	\$	48,614.00
II. Recent Capital Improvements	\$	392.00
III. Recent Regular Maintenance	\$	<u>2,900.00</u>
	\$	51,906.00

F.E.M.A. CONTRIBUTION SUMMARY

I. Flood Emergency Response Expenses		
A. 2001 flood expense	\$	48,614.00
B. Eligible flood expenses	\$	45,200.00
C. City Share (Annual Budget \$4,000)	\$	3,414.00
II. F.E.M.A Payments & Credits		
A. Disaster payments	\$	57,633.00
B. Eligible flood expenses	\$	45,200.00
Pump credit	\$	6,554.00
Volunteer credit	\$	<u>5,879.00</u>
	\$	57,633.00

Appendix G: Authority, Flow Chart and Positions

CITY ORGANIZATION & FLOOD OFFICIALS

FLOOD MANAGEMENT TEAM

The Flood Management Team is made-up of City officials, volunteers, and paid personnel. More information outlining the specific duties and responsibilities of each Team member is located in the appendix.

Ultimate Decision-making Authority

City Council

Oversees and is responsible for all flood management operations. The Council will delegate on site daily operations authority to the Director of Flood Operations, who would then carry-out a level of authority the Council feel is appropriate. Reviews and votes on major flood related decisions.

Primary Flood Management Planning and Operations

Floodplain Advisory Commission

Prepares all planned flood management materials, Policies and procedures. Advises City and Team officials. Assists in on-site coordination efforts.

Director of Flood Operations

Makes decisions subject to the authority vested by the City Council.

Flood Management Support Personnel

Six Management Team coordinators are responsible for specific flood management areas. They are responsible for executing work direction given by the various directors.

City Administrator

Coordinates all internal flood management operations and administration activities with City, county, state and federal officials.

In the Field

Pumping Coordinator	Coordinates and oversees all pumping activities
Volunteer Coordinator	Coordinates and oversees all volunteer activities
Setup Coordinator	Coordinates and oversees all required materials, equipment and inventory
Sandbag Coordinator	Coordinates and oversees all sandbagging activities
Communications Coordinator	Coordinates communication to residents
Cleanup Coordinator	Coordinates and oversees all clean-up activities

Staff Support

Phone Callers	Communicates with all volunteers as needed
New Volunteer Recruiter	Seeks new sources of volunteers as needed

Other Support Personnel

Other personnel may be called upon from time to time to assist in specific activities. Example: Designated Flood Biographer - Video/photographer and recorder of events.

Position

DIRECTOR OF FLOOD OPERATIONS

Description

This position will be responsible for overseeing all day-to-day flood management operations.

Authority Level

He/she will have on-site decision-making authority limited to the scope of his/her level of responsibilities as provided.

Supervisor

He/she will perform his/her duties at the direction of the mayor, if the mayor does not assume this role.

Responsibilities

As Director of Flood Operations, he/she will be responsible for protecting the health and safety of area residents, and protection of city property, utilities and streets, from flood damage. He/she will be responsible for overseeing all flood management activities as provided within this official Flood Emergency Manual and as provided within the authorized limits. General responsibilities include:

- * Pre-flood assessment and corresponding preparation activities
- * Enacting all necessary flood emergency measures as provided in this manual
- * Coordination of all county, state and federal emergency assistance
- * Post flood cleanup, restoration, and repair

Duties

He/she will be responsible for fulfilling the following duties as provided within the positions scope of authority:

- Remain in constant contact with the mayor, not assumed by the mayor, for the purpose of assessing flood emergency actions as provided in this manual
- Conducting regularly scheduled meetings with Flood Management Team Coordinators to plan all volunteer and emergency response personnel activities as authorized
- Attend meetings with county, state and federal agencies and call for meetings with same agencies at the direction of the mayor
- Assess and enact flood preparation plans as provided in this manual as authorized

Spending Authority

Unauthorized spending limit: \$ _____. Must retain and submit all receipts. Additional expenses must receive prior approval from the City Council.

Availability

Be on site during the day and remain in contact in evening hours.

Time Commitment

Medium during assessment and cleanup. High during preparation and flooding.

Compensation

To be determined. Could be based on the level of authority required.

- a. Part-time assistant to the mayor (as needed- very limited authority)
- b. Part-time level helping fill gaps when the mayor is not available (limited)
- c. Co-director with "split" of some responsibilities with on-site mayor
- d. In-charge director with full scope of authority as provided

Position CITY ADMINISTRATOR (Flood Activities)

Description Coordinates all internal flood management operations and administration activities with city, county, state and federal officials.

Authority Level He/she will work closely with the mayor, City Council and Director of Flood Operations and with other team coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed, and in addition to his/her normal responsibilities.

Supervisor Duties will be performed at the direction of the mayor, City Council and Director of Flood Operations.

Responsibilities Responsibilities include:

- * Contacting all government agencies to prepare flood management resources including forms, assistance criteria and other information
- * Coordinate all assistance efforts with Director of Flood Operations and other team coordinators
- * Collect and maintain all flood records, expenses and volunteer hours

Duties He/she will be responsible for fulfilling the following duties as provided within the scope of authority:

- Contacting all government agencies to assess flooding potential
- Maintain/update all government forms and assistance criteria
- Maintain all flooding expense reports, minutes of City Council meetings
- Coordinate flooding expenses with proper federal disaster categories
- Prepare all forms related to Federal Disaster assistance
- Assist Communications Coordinator with all communication activities
- Collect and maintain all volunteer hour records
- Assist other coordinators as needed

Spending Authority Authorized spending as provided within scope of city authority.

Availability Day hours. On call as needed.

Time Commitment	Flood Phases	Time Level	Main Tasks
	Flood assessment	Low	Contact/agency updates
	Pre-flood Preparation	Medium	Coordinating assistance
	Flood management	High	Assistance coordination
	Disaster declaration	High	Carryout tasks

Compensation [Overtime pay.]

Position **SETUP COORDINATOR**

Description Prepares equipment, materials and locations for flood management activity.

Authority Level He/she will work closely with the Director of Flood Operations and with other coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed. He/she may direct other volunteer personnel to assist with timely required tasks as needed.

Supervisor Duties will be performed at the direction of the Director of Flood Operations. He/she will assist other coordinators as needed and directed.

- Responsibilities** Responsibilities include:
- * Maintaining accurate inventories of all flood management equipment and materials on a year-around basis.
 - * Complete preparation of all flood management locations with all necessary improvements, supplies, materials and equipment
 - * Conducting all tasks as provided in this manual or as directed

Duties He/she will be responsible for fulfilling the following duties as provided within the scope of authority:

- Maintain all equipment and material inventories
- Prep and constant monitoring of all flood management locations
- Construct any temporary structures such as hose drive-over ramps, etc.
- Setup all flood management equipment
- Prepare all safety equipment and materials
- Assist other coordinators as needed
- Assist Cleanup Coordinator as needed

Spending Authority Unauthorized spending limit: \$30 per day. Must retain and submit all receipts. May purchase additional materials with prior approval from the Director of Flood Operations.

Availability Day hours during all phases. On call as needed.

Time Commitment	Flood Phases	Time Level	Main Tasks
	Flood assessment	Low	Prep inventories
	Pre-flood Preparation	High	Location setup
	Flood management	Medium	Monitoring locations
	Post-flood cleanup	Low	Assist as needed

Compensation [To be determined]

Position **SANDBAG COORDINATOR**

Description Coordinates and oversees all sandbagging activities and requirements.

Authority Level He/she will work closely with the Director of Flood Operations and with all other coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed. He/she will direct all volunteer personnel to perform their duties as directed or as delegated by other supervising coordinators.

Supervisor Duties will be performed at the direction of the Director of Flood Operations. He/she will work closely with other coordinators.

Responsibilities Responsibilities include:

- * Directing placement of sand as identified.
- * Assembling all required equipment and supplies
- * Overseeing all volunteers with sandbagging activities

Duties He/she will be responsible for fulfilling the following duties as provided within the scope of authority:

- Maintain proper supply levels as required for on hand inventory
- Oversee construction of all sandbag installations such as bee hives, fuel tank containment area, and stairs and levee support measures
- Continually monitor all sandbag installations for changes in condition
- Assist other coordinators with clean up activities or as needed

Spending Authority No authorized spending. Supplies will be provided by the city or reimbursed if additional materials may be needed.

Availability Day and night hours during peak level. On call as needed.

Time Commitment	<u>Flood Phases</u>	<u>Time Level</u>	<u>Main Tasks</u>
	Flood assessment	Medium	Confirm supplies/equipment
	Pre-flood Preparation	High	Coordinate activities
	Flood management	Medium	Monitoring installations
	Post-flood cleanup	High	Cleanup activities

Compensation [To be determined]

Position **VOLUNTEER COORDINATOR**

Description Recruits, organizes and schedules all volunteer personnel.

Authority Level He/she will work closely with the Director of Flood Operations and with all other coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed. He/she will direct all volunteer personnel to perform their duties as directed or as delegated by other supervising coordinators.

Supervisor Duties will be performed at the direction of the Director of Flood Operations. He/she will work closely with other coordinators.

Responsibilities Responsibilities include:

- * Recruiting, organizing and scheduling of all local volunteers
- * Maintaining appropriate personnel levels for each of the following volunteer groups:
 - Setup personnel
 - Pumping staff
 - Levee walkers
 - Cleanup personnel
 - Runners
- * Securing additional volunteers from outside the city
- * Monitoring and directing all activities of all volunteer groups

Duties He/she will be responsible for fulfilling the following duties as provided within the scope of authority:

- Maintain all volunteer personnel levels throughout the year
- Recruiting new volunteers as needed
- Maintain and revise standing volunteer schedules for all groups
- Setup and maintain volunteer hotline during flood event
- Assist other coordinators as needed

Spending Authority No authorized spending. Supplies will be provided by the city or reimbursed if additional materials may be needed.

Availability Day and night hours during peak level. On call as needed.

Time Commitment	<u>Flood Phases</u>	<u>Time Level</u>	<u>Main Tasks</u>
	Flood assessment	Medium	Confirm volunteers
	Pre-flood Preparation	High	Revise schedules
	Flood management	Medium	Monitoring volunteers
	Post-flood cleanup	Low	Cleanup volunteers only

Compensation [To be determined]

Position **PUMP COORDINATOR**

Description	Oversees all pumping equipment and personnel.															
Authority Level	He/she will work closely with the Director of Flood Operations and with all other coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed. He/she will direct all pumping personnel to perform their duties as directed.															
Supervisor	Duties will be performed at the direction of the Director of Flood Operations. He/she will work closely with other coordinators.															
Responsibilities	<p>Responsibilities include:</p> <ul style="list-style-type: none"> * Training and supervising all pumping volunteers * Supervising Setup Coordinator as needed to properly prepare flood management locations, materials and equipment * Supervise mobilization and demobilization of all pumping equipment * Maintaining and monitoring of all pumping equipment and supplies 															
Duties	<p>He/she will be responsible for fulfilling the following duties as provided within the scope of authority:</p> <ul style="list-style-type: none"> • Work with Volunteer Coordinator to maintain proper schedule of volunteer personnel • Prepare and maintain proper pump instructions and maintenance schedule • Maintain all safety equipment and supplies • Purchase as needed all pump supplies, fuel and oil • Supervise and direct volunteers as needed 															
Spending Authority	Unauthorized spending limit: <u>\$75 per day</u> . Must retain and submit all receipts. Bulk fuel, oil and supplies will be provided by the city. All major repairs above spending limit must be approved by Director of Flood Operations.															
Availability	Day and night hours during peak level. On call as needed.															
Time Commitment	<table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Flood Phases</th> <th style="text-align: left; border-bottom: 1px solid black;">Time Level</th> <th style="text-align: left; border-bottom: 1px solid black;">Main Tasks</th> </tr> </thead> <tbody> <tr> <td>Flood assessment</td> <td>Low</td> <td>Review requirements</td> </tr> <tr> <td>Pre-flood Preparation</td> <td>High</td> <td>Prepare activities</td> </tr> <tr> <td>Flood management</td> <td>Medium</td> <td>Monitoring activities</td> </tr> <tr> <td>Post-flood cleanup</td> <td>Low</td> <td>Supervise demobilization</td> </tr> </tbody> </table>	Flood Phases	Time Level	Main Tasks	Flood assessment	Low	Review requirements	Pre-flood Preparation	High	Prepare activities	Flood management	Medium	Monitoring activities	Post-flood cleanup	Low	Supervise demobilization
Flood Phases	Time Level	Main Tasks														
Flood assessment	Low	Review requirements														
Pre-flood Preparation	High	Prepare activities														
Flood management	Medium	Monitoring activities														
Post-flood cleanup	Low	Supervise demobilization														
Compensation	[To be determined]															

Position

COMMUNICATIONS COORDINATOR

Description Creates and distributes all communications materials to residents, media and the public.

Authority Level He/she will work closely with the Director of Flood Operations, City Administrator and Volunteer Coordinator, and has full authority to carry out his/her tasks as provided specifically in this manual or as directed.

Supervisor Duties will be performed at the direction of the Director of Flood Operations.

Responsibilities Responsibilities include:

* Preparing and maintaining all communication materials for:

- Residents
- Media
- Public

* Post daily updates on flood levels and anticipated crest date

Duties He/she will be responsible for fulfilling the following duties as provided within the scope of authority:

- Work with Volunteer Coordinator to secure more volunteer support
- Develop and update standard communication materials
- Maintain and distribute daily flood updates
- Prepare media materials and resident notices
- Coordinate all communication efforts

Spending Authority No authorized spending. Supplies and printing will be provided by the city or reimbursed if additional materials may be needed.

Availability Day hours. On call as needed.

Time Commitment	<u>Flood Phases</u>	<u>Time Level</u>	<u>Main Tasks</u>
	Flood assessment	Low	Review materials
	Pre-flood Preparation	Medium	Revise & draft as needed
	Flood management	High	Distribute daily
	Post-flood cleanup	Low	Assess effectiveness

Compensation [To be determined]

Position

CLEANUP COORDINATOR

Description	Oversees all post-flood dismantling, cleanup and repairs.		
Authority level	He/she will work closely with the Director of Flood Operations and with other coordinators and has full authority to carry out his/her tasks as provided specifically in this manual or as directed. He/she may direct other volunteer personnel to assist with required tasks as needed.		
Supervisor	Duties will be performed at the direction of the Director of Flood Operations. He/she will assist other coordinators as needed and directed.		
Responsibilities	Responsibilities include:		
	*	Preparing all flood management equipment and materials for demobilization and inventory, or return to supplying vendor	
	*	Debris and flood protective measures dismantling, collection and removal	
	*	Assessing required repairs and extensive cleanup to city common areas	
Duties	He/she will be responsible for fulfilling the following duties as provided within the scope of authority:		
	<ul style="list-style-type: none"> • Coordinate all trash and debris removal • Prepare for the return of all rented equipment • Collect and inventory all equipment and material • Demobilize and cleanup all flood management locations, sandbags, etc. • Breakdown any temporary structures such as hose drive-over ramps, etc. • Prepare all flood management equipment for return to provider • Return and inventory all safety equipment and materials • Assist other coordinators as needed 		
Spending Authority	No authorized spending. Any spending will be approved by the Director of Flood Operations.		
Availability	Day hours. On call as needed.		
Time Commitment	<u>Flood Phases</u>	<u>Time Level</u>	<u>Main Tasks</u>
	Flood assessment	Low	Review tasks
	Pre-flood Preparation	Low	Assist as needed
	Flood management	Medium	Assess requirements
	Post-flood cleanup	High	Carryout tasks
Compensation	[To be determined]		

Appendix H: Contacts, Resources, Suppliers and Inventory Checklist

Contacts

CITY OF LAKE ST. CROIX BEACH
1919 Quebec Avenue South, PO Box 158
Lake St. Croix Beach, MN 55043

Phone: 651.436.7031
Fax: 651.436.8310
Email: lscb@comcast.net

City Council

Todd Streeter (Mayor) 651.436.4911
John Jansen 651.436.8966
Roger Johnson 651.436.2349
Don Roberts 651.436.8244
Sally Thompson 651.436.3372

City Staff

City Administrator Linda O'Donnell 651.436.7001
Deputy Administrator Cindie Reiter 651-436-8244
City Engineer Dave Simons 651.490.2066
SEH - Short, Elliot, Hendrickson, Inc.
City Attorney Mark Vierling 651.439.2878
Eckberg & Lammers, Stillwater
Flood Management Team
Director of Flood Operations [To be determined.]
Pumping Coordinator [To be determined.]
Volunteer Coordinator [To be determined.]
Setup Coordinator [To be determined.]
Sandbag Coordinator [To be determined.]
Communications Coordinator [To be determined.]
Cleanup Coordinator [To be determined.]

Floodplain Advisory Commission

Chuck Zlamal, Chair 651.283.1788
Gina Allen 651.436.5383
Laurel March 651.436.2085
Kevin Anderson 651.436.1224
John Sievert 651.436.5880
Pete Granat 651.436.8266
Tom Kingston 651.436.5717

Resource and Supplies

Name	Product	Phone Number
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Cities

Afton City 3033 St. Croix Tr. Afton 55001	Equipment and supply sharing	651-436-5090
Eagan City	Pumps & equipment sharing	651-681-4350
Hugo City	Pump	651-429-6676
LSCB City Hall		651-436-7001
LSCB City Hall FAX		651-436-8310
LSCB E-Mail	lscb@comcast.net	
LSCB Office of Emergency Management,	Betsy Beedle	651-436-1259
LSCB Office of Emergency Management	Pete Granat -	651-436-8266
Oakdale City	Pump	651-730-2730
South St. Paul City	Pump	651-554-3225
Woodbury City	Pump & equipment sharing	651-739-4141
Short Elliott Hendrickson o	Engineering support & surveying	651-490-2066
Dave Simons & Mark Angel		

County

Washington County Medical Examiners Office	Coroner – Contract w Ramsey County	651-224-7627
Washington County Office of Emergency Gvmt.	County services/communications	651-430-6725
Washington County Public Works	Trucking, labor & equipment	651-458-3913

State

State of Mn Division of Emergency Management	Duty Officer	800-422-0798
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Federal

U S Army Corps of Engineers	Actual River levels	651-290-5861
U. S. Army Corps of Engineers	Technical Support	651-290-5443
190 Fifth St. E. St. Paul		

Emergency number

LSCV Fire Department	Fire & rescue	(911) 651-436-7033
Washington County Sheriff's Department	Law Enforcement	(911) 651-439-9381

Weather service

National Weather Service (Gary McDevitt)	River level predictions	952-361-6670
National Weather Service	Weatherline	763-512-1111

Pumps

Belwin Outdoor Ed Ctr	Pump	651-436-5243
1553 Stagecoach Tr Afton 55001		
Kieger Enterprises	Pumps, light towers, will build dikes, etc.	651-426-0033
5885 – 165th St. Hugo 55038		

Pallets

Gruber Pallets 11490 Hudson Blvd Lk Elmo 55042	Pallets for moving sandbags	651-436-1912
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Sandbags

Berg Bag Company 410 Third Ave N Mpls 55401	Sandbags	612-332-8845
Brock White 2575 Kasota Ave. St. Paul 55108	Sandbags, ties, plastic, geo fabric	651-647-0123

MN State Surplus Supplies	Sandbags, boots, ponchos, misc.	763-639-4024
<u><i>Bobcat</i></u>		
Century Power and Equipment Tim Stanke	Bobcats & equipment rental Bobcat	651-439-2035 651-436-6694
<u><i>Sand</i></u>		
Miller Excavating Inc. 3636 Stagecoach Tr. Stillwater 55082	Sand & aggregate	651-439-1637
<u><i>Jersey barriers</i></u>		
MN DOT East Metro	Jersey barriers	651-779-5000
<u><i>Transportation</i></u>		
Semple Excavating	Transport jersey barriers	651-772-1449
<u><i>Trucks/aggregate</i></u>		
Tower Asphalt	Trucks, aggregate	651-436-8444
<u><i>Barriers/blockades</i></u>		
United Rentals 4700 Lyndale Ave. N. Mpls. 55430	Barriers, blockades, signs & light towers	612-521-4200
<u><i>Fuel</i></u>		
Yocum Oil, 2719 Stillwater Rd. St. Paul 55119	Fuel and fuel tanks	651-739-9141
<u><i>Volunteers</i></u>		
American Red Cross 2300 Orleans T. Stillwater 55082	Volunteer & victim support/food/shelter	651-439-0031
Community Volunteer Service Salvation Army Disaster Services 1720 E 7th St. St Paul	Schedules individuals & groups Food & shelter	651-439-7434 651-776-6492
Washington County Sentence to Service	Supervised labor	651-430-7638
<u><i>Utilities</i></u>		
Gopher One Call (LSCB ID No. 61328) Lakeland Water Utility Jim Gilles & Matt Kline Qwest Reliant Energy 501 W. 61st St. Mpls 55419 Xcel Energy	Locate buried utilities Municipal water/hydrants & 3 in pump Telephone Natural gas main shut down Electricity	651-454-0002 651-436-8044 800-573-1311 612-372-5050 800-895-1999
<u><i>Portable toilets</i></u>		
Biffs 8610 Hansen Ave Shakopee 55379	Portable toilets	952-403-1221
<u><i>Storage trucks</i></u>		
Brockman Trucking	Store/remove personal property	651-436-6519

Excavating

Chaves Excavating 120 N Quinlan Ave. Lakeland 55043	Pump site prep	651-436-1384
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Printing

Copy Cat 209 2nd St. Hudson 55016	Printing, folding fliers, etc.	715-386-8400
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Food

County Market 2310 Crest View Dr. Hudson 54016	Food – donated baked goods	715-386-8214
Econo Foods	Food	715-386-5858

Tradesman

Freeway Electric	Master electrician	651-436-5868
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Medical

Lakeview Hospital,, Stillwater	Medical	651-439-5330
Hudson Medical Center	Medical	651-436-7860
Human Services Inc.	Mental health support	651-777-5222

Trash

Maroney Sanitation 9209 Lansing Stillwater 55082	Dumpsters	651-439-7279
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Tree removal

Mekitt Olaf 176 St Croix Tr Lakeland 55043	Chain saws & tree trimming	651-436-5144
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Mosquito/pollution control

Metropolitan Mosquito Control	Spray stagnant ponded water	651-645-9149
MN Pollution Control		651-297-8219

Parts/repair

Polfus Implement 730 Deere Dr New Richmond 54017	Equipment parts & repairs	715-246-6565
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Vacuum pumping

Vacuum Excavating Service	Vacuum water from man holes/basements	651-261-1562
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Suppliers

Fleet Farm 1001 Industrial Hudson 54016	Plastic, ties, etc.	715-386-3281
Menards 1400 Gateway Blvd Hudson 54016	Plastic, ties, etc.	651-386-2918
MN State Surplus Supplies	Sandbags, boots, ponchos, and much misc.	763-639-4024
True Value Hardware Plaza 94 Hudson	Operating supplies	715-386-2354

Inventory Checklists

Equipment Inventory as of 6/03

City Hall	
Orange life vest	7
O-ring with rope	1
Safety vest	32
Ear plugs	2
Flashlight	1
Fire extinguisher	2
First aid kit	1

City Garage	
Sand chutes	5
Shovels	4
Rakes	2
Road closed sign	1
O-ring	1
Orange fencing (rolls)	2
Orange cones	4
Sandbags	5,500
(Approx. 55 bundles/100 per)	

Equipment Needs List

General Needs List

____ Voice mailbox number with several keyed departments (for each coordinator/activity)

- ___ Portable phone with charger for pumping shack
- ___ Pads of updated volunteer slips for each volunteer to record hours (pass out early to volunteers and home owners to list hours used to protect their home too)
- ___ Create master volunteer reporting log using a software (have Corps listed in advance)

Equipment and supplies to purchase or have donated

Sandbagging

Equipment

- ___ (15) shovels
- ___ Plastic tarp to cover sand
- ___ Back support vests
- ___ Gloves

Supplies

- ___ Sandbags
- ___ Sandbag ties
- ___ Plastic sheeting for fuel tank containment area
- ___ Wood pallets

Pumping

Equipment

- ___ (2) rakes - make long extension handles
- ___ (2) pool nets
- ___ (4) garage cans (at each pumping location)
- ___ (4) fire extinguishers (at each location)
- ___ (4) tubs for fuel spillover containment/refilling (at main fuel tank)
- ___ (2) strong lights to light up main pumping area at City beach parking lot
- ___ (1) hand washing station
- ___ (10) plastic 5 gal. gas cans: 8 red, 2 yellow/label "unleaded" & "Diesel"
- ___ (3) trash barrels
- ___ (2) metal rulers for area by road and City garage
- ___ Large tarps (tent large gas tanks to keep rainwater from collecting in fuel spill containment area)

Supplies

- ___ 12" x 10' Culvert tube (provided by Washington County)
- ___ (8) 6"x 6" treated timbers for pump elevation and pipe drive over bridge
- ___ (5) 5/8"x 4' x 8' plywood sheets
- ___ (3) 50' nylon ropes
- ___ Chest waiters
- ___ Highly equipped first aid kit
- ___ Funnels: (4)- large (gas for large pumps) * clearly label use of each funnel
(4)- medium (oil for large pumps)
(6)- small (one for gas, one for oil - for small pumps)
- ___ Oil for all pumps (Must meet manufacture's specs.)
- ___ Floor Dry to absorb oil/gas spills at all pumping locations (put in paint bucket with lid)
- ___ Duct tape

Levee Walkers

Equipment

- ___ Orange safety vest
- ___ Life vest
- ___ Walkie-talkie or cell phone
- ___ Flashlight
- ___ (6) orange rain ponchos

Other Safety Items

- ___ Orange fencing and stakes (Bluffland and along levee #1)
- ___ (6) metal stakes/poles for PFDs (make signs for poles too)

- ___ (6) PFD sprayed orange
- ___ (6) 50' sections of rope
- ___ (3) first aid kits

Materials to make and have ready

- ___ NO SMOKING sign at all pump locations
- ___ Pump directions/maintenance steps place in plastic sleeve at each location
- ___ Make all "KEEP OFF" & "STAY AWAY - RESIDENTS ONLY" signs with wood, paint and metal posts.
 - Cardboard sign bend in rain.
 - Find donated wood, paint & posts only cost
- ___ Make large road barriers with A-frame supports and large wood plank cross beam. Paint yellow/orange and attach blinking flasher (commercial grade).
 - 13-16 barriers needed.
 - Amount spent on signs & flashers in 2001: \$2,426
- ___ Create permanent sump wells with block retaining walls at City parking lot and on personal property on 19th (if allowed).
 - Cost to excavate (\$255) and post flood repair (\$1,000 -\$2,000). Probable cost: \$2,000
- ___ () water elevation poles

Volunteer support materials

- ___ Separate summary sheet specific to their duties/position to be taped on their door, cabinet, etc. (should include their contact person, and all other Flood Management Team personnel and numbers)
- ___ Small carrying card with essential information
- ___ Initial schedule (new weekly schedules should be copied and place in large pocket folders in shack)
- ___ Put up large photo display of flood elements to look for (does the COE have photos, video, training tapes, etc.?)

Need map of all flood activity areas, including:

- ___ City Hall and drive to directions
- ___ Where to park
- ___ Portable toilets
- ___ Each levee and pumping station area
- ___ Safety placement devices (o-rings)
- ___ walking areas, known trouble spots

Purchase Long-term (Rent if not donated)

- ___ Purchase used bobcat forks from auctions.
 - Spent on fork rental in 2001 flood: \$950
- ___ CB/marine radios (etc.)
- ___ 2" and 4" trash pumps (Honda 2" semi trash pump - \$185)

Rent As Standard Practice (If not donated)

- ___ pallets
- ___ sand
- ___ pumps, pipes, fuel tank,

Appendix I: Historical Flood Data

Past Flood Crest Levels

Year	1965	2001	1969	1997	1993	1986
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Height	694.7	692.5	692.2	690.0	688.0	686
Duration (weeks)	n/a	6	n/a	2	4	
Crest Dates	?	?	?	?	?	

Contributing Factors

- 1965 Worst flood on record. No levees present.
- 2001 70" of winter snow, ice pack, record April rains
- 1969 Excessive snow melt
- 1997 Record 90" winter snowfall
- 1993 Record steady spring/summer rainfall
- 1986 Spring rise.

Other Important Flood Data

Flat pool (Ordinary high water mark)	675.0
Bottom Step at 17th Street Staircase	679.4
Bottom Step at 18th Street Staircase	679.5
Lowest Inland City elevation	679.5 (garage)
Bottom Step at North Bluff Staircase	680.3
Normal High Water Mark	682.5
Bottom Step at South Bluff Staircase	682.6
Redwing Parking Lot	682.7
No Wake Zone	683
Bottom Step at 19th Street Staircase	683.5
17th Street Culvert East Side (Bottom Rim)	684
City Garage Floor	684
17th Street Culvert West Side (Bottom Rim)	685.4
20th Street @ Redwing	686.6
Flood Stage	687
Top Step at 19th Street Staircase	692.6
Riviera South of Levee (4/12/01 survey)	693.2
Top Setp at 17th Street Staircase	693.4
Top Step at 18th Street	693.5
Levee Reach 1 (4/12/01 survey)	694

Floodplain Elevations

10 year floodplain elevation	687 and below
100 year floodplain elevation	687 to 692
500 year floodplain elevation	692 to 695

Note: City engineer's marked reference point for all flood related elevation measurements are found throughout the City, but fire hydrants are primarily the main elevation indicator.

Narrative of Flood Management Activities and Improvements

Standard Flood Fighting Activities

Lake St. Croix Beach experiences flooding during times of abnormally high river levels. Over the years, many flood-fighting improvements, activities and procedures have been put in place that has successfully prevented serious damage to area homes, city streets and public facilities. When flooding occurs, two main activities have traditionally been set in motion; 1) pumping of seeping water in the floodplain and 2), constant monitoring of the levee system.

Area Pumping

The greatest threat of flooding occurs as ground water, rising with the river's elevation, begins to seep through and collect in low-lying areas of the City's floodplain. The first area that begins to collect with ground water is the City Garage property located at Redwing Ave. S. and 20th St. This area is the center of primary pumping activity. Large 6" and 8" high volume diesel and gas pumps are placed at the edge of the beach parking entrance with 8" discharge hoses running up to the river where the seepage water is returned to the river. These pumps may run 24 hours a day during high rates of seepage, with shutdown rotations for refueling and oil. Two volunteers are scheduled to remain on site to oversee pumps while they are operating.

Another low-lying area requiring pumping is the property located at the corner of 19th St. and Riviera. A smaller 4" trash pump is placed north of the driveway with its discharge hose running up and over the levee. A third possible location is at 17th St. and Riviera. Pumping usually occurs when the culvert to the river begins to fill with rising river water that is then forced back up behind the levee, surfacing at the culvert location on Riviera. New improvements to the riverside culvert opening, including an automatic closing culvert cap, should minimize future flooding in this area.

All discharge hoses must be placed far beyond the levee's edge to prevent any erosion from occurring. Wood and gravel are also placed on both sides of all discharge hoses to prevent damage from cars that need to access area roads. These conditions also apply to hoses discharging water from resident basements.

Pumping benefits properties closest in proximity to the pumps. owners of properties farther away may need to take other actions to protect their property.

Permanent Pumping Station

In the fall of 2002, the Floodplain Advisory Commission submitted a formal grant request proposal to the State Department of Emergency Management for a permanent pumping station. The application was not selected for funding because pumping was not deemed a permanent solution to the flood hazard.

Levee Improvements

The most significant flood prevention improvements to date have been the construction of two levees that hold back rising river water from flooding the area. These earthen levees were constructed in 1969 a levee was constructed after the highest flood recorded (elevation 694.7) occurred in 1965. This earthen levee has successfully prevented free-flowing river water from entering the floodplain area during later flood events. In 1994, additional fill was added to establish its current width.

In 1997, the City received \$450,000 in grant funds to prevent erosion from occurring along the 1000' Riviera levee. Riprap was placed on the riverside of the levee, from top to toe, to keep ice and windblown water from eroding the levee. This measure was also taken so the levee would comply with the "Non-Federal Flood Control Inspection Program." This program provides that the Corps of Engineer accept responsibility for 80% of all future repairs caused by flooding. The City must maintain the levee system to certain standards and is inspected annually to ensure compliance.

Levee Monitoring

During times of high water, the levees require constant monitoring for any changes in their condition or overall integrity. When the river begins to rise, the levees eventually become saturated with water and may seep from the backside, at its base near the street. If water were seen spurting or running from the levee, the levee is at high risk for catastrophic failure.

Boils may occur in the asphalt caused by high hydrostatic pressure. These boils resemble asphalt that might have been pushed up by a young tree or other growth. Boils, street cracks and any other changes in the asphalt should be evaluated by the City Engineer or designate since they may be indicative of rising levels of hydrostatic pressure and for any insight they may give on the structural integrity of the levee.

Easements and agreements

Some temporary easements (trespass waiver) must be granted by property owners so pumping and other flood fighting activities can take place. One such approval must be obtained by the owner of the property located at the corner of 19th St. and Riviera. This is the secondary area of pumping activity. At this time, the City seeks to create a standing agreement with this property owner and perhaps others so the City, flood volunteers, and other personnel may have on-going access to these areas during future flood events.

Factors Contributing to Flood Risk

The factors that contribute to floods are highly technical in nature and beyond the scope of this manual. There are a number of good sources of flood forecasting that should be consulted frequently by the City.

Summary

The potential of a flood, its severity, and duration, are very difficult to predict. Various government agencies provide forecasts that are ever more accurate and account for the many technical and complex factors that can cause flooding. The City should become proficient at monitoring these forecasts.

Appendix J Equipment and Infrastructure Maintenance

Preventative Maintenance

All critical flood management improvements such as levees, culvert caps, on-hand pumping equipment and supplies, should be tested and maintained in proper working condition. Levees #1 and #2 must be maintained in accordance with the Corps of Engineers repair and reconstruction program. To do so will allow the City to remain eligible for the cost reimbursement program. Direct any questions about levee maintenance to the City Engineer.

LEVEE #1 - RIVIERA AVE.

[Insert standards here. To be completed.]

LEVEE #2 - 21st St.

[Insert standards here. To be completed.]

[Need to complete]

I.Flood Planning Review**2001 Total**Annual January Meeting

Meeting Facility	\$	-
Food/beverage	\$	-
Materials	\$	-
	\$	-

II.Flood Risk Monitoring and PreparationAnnual February Assessment

Misc. materials	\$	-
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III.Securing Equipment and VolunteersPreparation

Trespass waiver from property owners	\$	-
Equipment holding deposits	\$	-
	\$	-

Community/Volunteer Activities

Volunteer scheduling - materials	\$	-
Phone line for Volunteer Hotline	\$	-
Community mailing #1 - initial notice of flood threat	\$	-
	\$	-

Administration

Emergency Management Team	\$	800.00
City Administration - overtime	\$	383.00
Engineering consultation	\$	930.00
City Council - per diem	\$	500.00
	\$	2,613.00

IV.Mobilization Activities**2001 Total**Pumping Equipment

Pumps (Received \$12,500 FEMA credit*)	\$	-
Delivery of pumpings	\$	128.00
Discharge hoses	\$	-
Gas storage tank	\$	-
Fuel	\$	4,588.00
Oil	\$	315.00
Excavate sump areas (19th & 20th)	\$	255.00
Drive-over ramp for discharge hose	\$	178.00
Installation of water level rulers	\$	-
Fuel tank containment plastic	\$	-
Fire extinguishers & first aid kits	\$	91.00
Fuel sales tax	\$	869.00
	\$	<u>6,424.00</u>

Sandbagging

Sand delivery	\$	332.00
Purchase of sandbags	\$	1,150.00
Rental of pallets	\$	35.00
Rental of bobcat forks	\$	950.00
Sandbagging chutes	\$	-
Plastic ties & tarps	\$	249.00
	\$	<u>2,716.00</u>

Safety

Secure rowboat with motor	\$	-
Setup orange fence along bank	\$	-
Setup roadblock barricades	\$	2,426.00
Setup PFD along river bank	\$	-
Setup DANGER / STAY AWAY Signs	\$	-
Sales tax -warning lights	\$	159.00
Flashlights and batteries	\$	34.00
	\$	<u>2,619.00</u>

IV. Mobilization Activities Continued

2001 Total

Equipment Repair

Starter	\$ 389.00
Pump shaft	\$ 1,188.00
2" pump	\$ 185.00
Truck tire repair	\$ 114.00
	<u>\$ 1,876.00</u>

Services

Trash hauling	\$ 172.00
Delivery of portable toilets	\$ 425.00
	<u>\$ 597.00</u>

Community/Volunteer Activities

Activate Volunteer Hotline	\$ -
Resident storage trailer	\$ -
Community mailing #2 - flood threat update	\$ 392.00
Phone fees	\$ 69.00
	<u>\$ 461.00</u>

Washington County Assistance

<i>Cost includes:</i>	\$ 5,644.00
Capping culvert on Riveria	
Delivery of initial sand	
Corrigated culvert pipe for discharge	
Class #5 gravel for drive over ramp	

Administration

Emergency Management Team	\$ 2,000.00
City Administration - overtime	\$ 800.00
Engineering consultation	\$ 1,852.00
City Council - per diem	\$ 500.00
Office supplies	\$ 237.00
	<u>\$ 5,389.00</u>

V.Flood Management Monitoring

2001 Total

Additional Pumping

Equipment

Pumps (quantity may vary)	\$	-
Discharge hoses	\$	-
Excavate sump areas (extra at 20th)	\$	-
	\$	-

Additional Sandbagging

Sand delivery	\$	-
Purchase of sandbags	\$	-
Rental of pallets	\$	-
	\$	-

Additional Levee Protection

Sand delivery	\$	5,413.00
Jersey barriers	\$	-
Transportation	\$	2,500.00
Plastic film	\$	708.00
Floodlights & delivery (\$1,341 not charged.)	\$	-
Sand & delivery sales tax	\$	499.00
	\$	9,120.00

Community/Volunteer
Activities

Community mailing #3 - flood threat update	\$	-
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Administration

Emergency Management Team	\$	2,000.00
City Administration - overtime	\$	600.00
Engineering consultation	\$	635.00
City Council - per diem	\$	500.00
	\$	3,735.00

VI.Evacuation Plans

(City has not incurred any evacuation costs. \$ -

Evacuation budget planning to be done.)

VII. Demobilization

Cleanup and Repairs

Pump site repairs	\$ 4,000.00
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Community/Volunteer Activities

Community mailing #4 - flood update	\$ -
Volunteer credit (FEMA paid \$5,870 credit)	

Administration

Emergency Management Team	\$ 2,000.00
City Administration - overtime	\$ 600.00
Engineering consultation	\$ -
City Council - per diem	\$ -
Photos	\$ 188.00
Mayor mileage	\$ 602.00
Other	\$ 30.00
	<u>\$ 3,420.00</u>

Manual Revisions

The City Staff is responsible for maintaining and updating this Manual for review and recommendation by the Floodplain Advisory Commission. These revisions will be submitted to the City Council for approval.

Annual updating regardless of flood event

- a. All City, County, State and Federal contact persons and phone numbers
- b. Changes in Management Team personnel
- c. Addition of new or revised policies, procedures, City actions or supply vendors
- d. New calendar dates or added activities
- e. Changes in Federally declared disaster procedures or reimbursements
- f. Material changes to checklists or other appendix information

ANNUAL CALENDER OF ACTIVITIES

Winter	___	January's meeting - review all procedures
	___	Governor's Conference - 1st weekend in February ? Flood Predictions
	___	Establish pay for disaster management team (City Council)
	___	Check all inventory of all flood/government forms (City Administrator)
	___	Review and prep all required equipment from vendors (Director of Flood Operations)
	___	Double-check with all agencies - any new changes(?), establish tentative plans
Spring	___	Physical review of all inventories (Setup Coordinator)
	___	Confirmation existing community & non-community volunteers, solicit for new volunteers as necessary (Volunteer Coordinator)
	___	Check all flood protection improvements/activity areas (Director of Flood Operations)
	___	Attend any County emergency management meetings (Director of Flood Operations)
	___	Confirm condition of area lock and dams (City Administrator)
Summer	___	Review of flood management efforts/manual revisions
	___	Review/revise all flood communication information
Fall	___	Contact county, state & federal agencies for changes in standing flood related policies/reimbursements
	___	Submit CRS Report City Administrator October 1st
	___	Revisions due date: From commission: October 15th
		From City Council: Nov. ___
		Revisions & Final City Dec. ___
		Incorporated into manual January's meeting
	___	Submit resident Floodplain Advisory March Newsletter
		annual report Commission