

RECOMMENDED FLOOD PROCEDURES

AS OF AUGUST 2010

Inspections: October/November of each year a joint inspection by the Engineering Division and personnel from the Rock Island District, U.S. Army Corps of Engineers is conducted. Summer mowing operations and monitoring rodent dens (groundhogs) for gassing and filling in advance of the annual inspection are primary maintenance items for diligence. In Mid-March, a spring visit to the Mad Creek Levee in particular is necessary to assess any winter damages for correction ahead of spring rains. Check pump stations, valves, gatewells for ice damage, driftwood, etc.

Proficiency Drills: Annual drills are to be conducted to retain familiarity with the mechanics and manpower requirements of installing closure structures in years when actual need to close did not occur. Sporadic intervals of personnel turnover make drills extremely necessary. Conduct gate closure drills on Mississippi Drive Structure #1 and on E. 2nd Street Structure#2. Notify Iowa Department of Transportation and the Railroad prior to the closures.

The flood gates were removed from 5th Street in 2006 and the bridge was elevated, therefore, no action is required at 5th Street.

Sandbag Information

The Public Works Street Department will have 500 to 1000 filled sandbags in storage. The rate that sandbags can be made with the hopper and sewing machine is 100 sandbags in 15 minutes or 2000 in a regular 8 hour shift if there are no mechanical problems.

Sandbags needed:

2000 sandbags @ 18' gage (1000 for WWTP, 1000 for Public Works)
4000 empty sandbags @ prediction of 22' (2000 for MP&W, 2000 for GPC)
200 sandbags @ Riverfront Park fountain area (Parks Department)

Preparatory to Flood Levels

- 9' Gage Mad Creek Storm Water Pumping Station on Mississippi Drive – close gravity outfall and proceed with automatic pumping at Mad Creek Storm Water Station.
- 10' Gage Monitor the above condition.
- 11" Gage Verify Hershey Avenue Pump Station sluice gate is closed. The gate shall be disconnected so that an electronic malfunction cannot result in accidental flooding.
- At 11.7' back water at Hershey Avenue Pumping Station backs into manhole invert at Hershey & Mississippi Drive if gate is not closed.
- 13-14' Gage Toe drains at GPC are set to discharge at 13.13', 14.13', 14.16', and 14.26' in downstream order. Monitor stage forecasts (see 17').
- 16' Gage Official Flood Level – This corresponds to older records of 17'+ on the gage used prior to the 1985 relocation. At this level, water is at the edge of the drive along the boat launch area on the riverfront, rising above that will start to reduce parking between Cedar and Chestnut Streets until the riverfront parking area is completely covered at 19.5'. Monitor projections for river stages and monitor local weather respecting Mad Creek potential flows.
- 17' Gage Wait and watch. Water will encroach onto the walk area at Pearl City Station at 17.5'. Toe drain pumps at GPC ready to run. 3'-4' of stage above flow lines will create seepage through sand levee—new installation in year 2000. Record events as they occur for future updates to this item. (In 2001 pumps were engaged near 19' with very little local rain.)
- 18' Gage Boat harbor breakwater overtops in scattered locations. At 18.2' water starts to back out of storm inlet at Mississippi Drive and Walnut Street. Two lanes covered by 19.2. Check seals at the closed Railroad (Closure structure #3) for forecasts of 19+ feet. Sill elevation 19.35. Prepare to phase all parking out of Riverfront parking lot.
- With prediction of 18' make 2000 sandbags - 1000 for WWTP for use in the pump houses and 1000 for Public Works Street Department for detour signage.
- 19' Gage At 19.5' water across all four lanes of Mississippi Drive at Walnut. At 19.83' water on top of deck at Pearl City Station. At 19.64' water to centerline of

Mississippi Drive at Mulberry. At 19.5' all of Riverfront parking lot is under water.

Watch for local weather forecasts very closely in regard to Mad Creek flows. (Only a little over 1' available for storm flows.) Alert Railroad and Heinz U.S.A. of potential closing of Pickle Spur at Mississippi Drive (Closure Structure#1).

20' Gage Closures include Structure #1 (Mississippi Drive), top of sill 20.12'. At 20.2' all four lanes are full at Walnut and Mississippi Drive. Alert D.O.T. of potential detouring of Ia. Rte. 92.

Seepage appears along Island Levee toe from Canal Street to Kent Feeds plant. At 20.5 the back water in street inlet at N.W. corner of Sycamore and Mississippi Drive is 1' below grate. Close the gatewell at Sycamore and Mississippi Drive at 20.7'.

Watch the weather forecast. If 22' or more is predicted we need to make 4,000 sandbags to have in reserve. Muscatine Power & Water and Grain Processing will need 2,000 each for the levee on their property.

21' Gage Close Structure #2, E. 2nd St., and detour Ia. Rte 92 under "Just in Time" where river is rising with no local precipitation. Subgrade of roadway will become saturated and want to protect bridge approach. Sill elevation is 21.22' to 21.64' depending on rate of rise on river profile. (These two readings experienced in 1986 and 1993 respectively.)

Contact Muscatine Disaster Services (288-2526) for State of Iowa and Corps of Engineer, Emergency Management Office for loan of Krissifille pumps for Island Levee seepage if forecasts exceed 21.5'. 8" diameter is good, 12" diameter is excellent. One of each is perfect. Use P.T.O.'s from existing tractor inventory such as Parks Department mowers. Include 300 feet of hose for each pump.

22' Gage System is buttoned-up and need to patrol levees on 24-hr. basis. Watch for boils and sandbag as necessary.

23,24,25' Maintain vigilance and contact Railroad about Gate closure. Boils increase, especially at Power Plant.

During this period, water will enter onto Washington Street near Fillmore, previous observations were 23.65' in 1993 and 23.20' in 2001. Walnut Street at #1 alley will require sandbag closure. Gutter line elev. 24.68' and top of drive ramp is 25.28'.

26' Gage Close main line railroad flood gate, sill elev. 26.16' at the absolute latest. By then RR will already be out of operation upstream.

ELEVATION/GAGE CORRELATIONS

LOCATION CLOSURE STRUCTURE	ELEVATION 1912 DATUM	NEW GAGE (IF FLAT)	PROFILE ADJUSTMENT (THEORETICAL)	PROFILE ADJUSTMENT (OBSERVED)
#1 Mississippi Drive	552.0	21.26	19.94	20.12
#2 E. 2 nd St.	553.50	22.76	21.44	21.28 - 21.64*
#3 Old RR, 2 nd St.	551.41	20.76	19.35	19.24
#4 E. 5 th St.	552.50	21.76	20.44	20.33
Main Line RR	558.40	27.66	26.76	Possible 26.16 Not observed
*Depending on rate of rise				

Seepage

Seep waters through the Muscatine Island Levee start occurring at 19.5 at Musser Park and in the garden area north of the Kent Feeds Plant followed by the area north of Canal Street and north of the grain elevators at Franklin Street. Pumping at Franklin Street occurs as waters encroach on the Railroad yard between Franklin and Canal Streets – prepare for pumping at forecast above 21.5', definitely 23'.

Heavy seepage occurs along the MP&W Power Plant area in significant quantities above 22' gage due to the larger sand particle size in that particular reach.

Stability of the sand levees was improved in the 1997-1999 period so don't panic.

Mad Creek Levee seepage is slight to moderate below 22' gage. After that, patrolling is necessary and small sandbag rings to control boils are necessary safeguards.

For river events forecast above 20', 5,000 sandbags filled and stockpiled is a good precaution. Most sandbag activity will be in the 23' – 25' gage range.

A graphical depiction of River Stage vs. Ground Water levels is presented here. Information was obtained during the Aquifer study that happened to be underway at the time of the 1993 Mississippi River Flood.

Toe drains, GPC Plant Area:

Four (4) – Diesel-powered portable pumps (4,000± gm) are in storage in the plant and GPC shall service and operate the pumps. GPC will also notify the City if pumps are sent out for service. Pumps shall be operated for the toe drain pumping only.

#1 upstream Seep water enters at el. 543.87 (13.13' gage) from u.s. end and 544.87 ds. End (14.13 ga.)

#2 downstream – Seep water enters at el. 544.90 from (14.16' gage) therefore, pumping will begin anytime after ≈3' – 4' of gage above 14.2 i.e. between 17' and 18' depending on rate of rise. This is a new installation and experience with time required to refine response levels.

Mississippi Drive (near Spring Street) – Flood Pump Station

5' Flap Gate – el. 537.00 (6.26 gage) to 542.00 (11.26 gage)
suction tip of pumping el. 537.50 (6.76' gage) flat pool 536.00 (5.26' gage – new)

Landside top of wet well 551.25
Top of stand pipe discharge 559.0

2 sluice gates to operate:

1. Gravity flow to River (non-flood status)
 - a. exterior sluice gate to standpipe is open
 - b. interior sluice gate to pumping chamber is closed
2. Pump discharge to River
 - a. exterior sluice gate closed to standpipe
 - b. interior sluice gate opened to pumping chamber

Hershey Ave. – Storm Water Outfall:

- Flat pool el. 536.0
- Fl. end of pipe 536.5 Fl. @ gatewell 36" cmp, 537.0 Fl. in M.H. in Hershey/Miss. Dr. 542.9 (11.7' gage)
- Orig top of gatewell 561.0 (raised in late 90s)
- Sluice gate to be permanently closed and only opened during prolonged power failure when river gage is below 19'.

Canon Ave. Pump Station:

Sump el. 281.0 City datum = 530.59

Floor of pump room 311.0, City datum = 560.59

(Add 249.59 for 1912 datum)

This pump station floor is very close to the 500-year flood profile.