

Special Considerations

Dryland Levees
Stark Dryland Cross Levee
 Cross levee follows old slough from eastern end of Grant Line Canal to Old River. Originally made by dredge which moved to slough through Grant Line Canal and crossed along slough building levee. Extended ponds still parallel levee. Most substantial dryland structure for holding flood waters following failure of primary levees on Stark Tract on island.

Wing Levee Dryland Cross Levee
 Narrow, sandy, considerable squirrel holes and other rodent activity. Levee, however, has been surveyed and has elevation to potentially, and at least temporarily, hold flood waters from areas to the east of Union Road. District considering low cost maintenance actions to improve potential performance of this levee.

Kidd Dryland Cross Levee
 Small cross levee probably placed to prevent movement of floodwaters into eastern portion of Union Island from a break in RD2 and to protect old town of Undine (no longer exists). Not high or substantial enough to hold floodwaters coming from Stark Tract or from primary levee failure on eastern portion of Reclamation District #1. Defense of this levee is not an option for current flood scenarios.

Tracy Boulevard Dryland Cross Levee
 Stretch south of Howard Road is substantial and well packed due to road running on top. Stretch north of Howard Road is higher but has more squirrel holes and less compaction. Gap in levee at Howard Road and Tracy Boulevard junction. Gap could be rapidly filled. Approximately 5000 cubic yards of material will be needed to fill the "Howard Road Gap" in the Tracy Boulevard dryland cross levee (based upon a field survey in December 2007). Please note: Portions of the Tracy Boulevard dryland levee shown in red are lower than the approximate 100-year water surface elevation at the Burns Relief Cut. The Tracy Boulevard dryland levee will have to be raised up to 2.5 feet in some areas to at least the approximate 100-year water surface elevation of 11.65 feet.

Union Island Pumping Stations
 All existing pumping stations shown are privately owned and not flood proofed. Districts do not own any pumping stations. Location for placement of emergency pumping capacity may require these pumps due to lack of power lines into area.

Access to Coney Island
 Only ground access to Coney Island is through Reclamation District #2. In the event of flooding of RD#2, an emergency access plan would be needed to provide Coney Island with flood light supplies and other emergency needs.

Regional High Voltage Power Lines
 Western Area Power Administration High Voltage Power Lines feed Federal pumping station for Delta Mendota Canal. Loss of these lines in a flood of Union Island would stop federal pumps. Regional P.G.E. High Voltage Power Lines run through district. Loss of this transmission route in a flood of Union Island would have regional impact on electrical power supply.

Tracy Boulevard Grant Canal Bridge Debris Dam
 During high flows Tracy Boulevard bridge at southern end of Union Island acts as debris dam due to the fact that a berm separating Grant Line Canal and Fabian and Bell Canal begins at this point. Bridge and berm divert the water flow allowing the buildup of debris which can cause flood waters to back up east of bridge.

RD 1
 Sandy levees along Middle River. High water creates seepage concern and potential beaver/rodent hole levee failure.

Flood Fight History

1872-78 First levees built around Union Island which included Victoria, Fabian, and upper half of Woodward Island at that time. Innovative large levees built which were set back 200' or more from river by straight levee lines.

1878 Flood in 1878 flooded portions of Union Island. Owner General Williams built eastern Tracy Dryland Cross Levee on map and southern (Grant Line Canal) cross levees (Grant Line Canal did not exist) to protect northwest two-thirds of Union from breaks on Old River. These were finished in 1880. Some were finished in 1880.

1882 Reclaimed eastern third of Union Island. Sometime after this reclamation, date uncertain, property owners built Wing Levee Dryland Cross Levee (shown on map) and Kidd Dryland Cross Levee (shown on map) to protect eastern portion of Union Island which contained the old town of Undine. This town no longer exists. The Kidd Dryland Cross Levee in particular seems to be connected with protecting the town of Undine.

1885 Grant Line Canal and North Canal completed by dredge "Atlas" separating Fabian Tract and Victoria Islands from Union Island. Fabian and Bell Canal which parallels Grant Line Canal separated by a berm was completed separately.

1890 Large snow melt flood on San Joaquin River broke the north levee of Grant Line Canal in Reclamation District #1 and flooded 8,000 acres of eastern Union Island. Later in the month the Middle River levee failed flooding another 8,000 acres.

1894-97 Union Island leveed on a larger scale by General Thomas creating basis for current levees with good to very good freeboard for 100-year flood elevations.

1907 Destructive flood triggered by storm system affected Pacific Coast with persistent, intermittently heavy, warm precipitation for several days beginning about March 15. San Joaquin River fully occupied its floodplain. Western half of Union Island (Reclamation District #2) flooded with adjacent Fabian, Victoria, and Clifton Court tracts. Presumably Tracy Dryland Levee was used to protect eastern side of Union Island (Reclamation District #1) which is not reported to have flooded. Dredge reportedly took the storm through break in Fabian Tract north of Tracy.

1997 Heavy rains during period of December 30th to January 2nd caused river stage more than 34' at Vernalis gauge on San Joaquin River. San Joaquin River flows estimated at over 70,000 cfs. Stanislaus River flows held at 8,000 cfs. Emergency releases at Don Pedro Dam reached 60,000 cfs which caused a dramatic surge in San Joaquin River stages by early morning of January 4, 1997. High flows where Paradise Cut and Old River overtopped small islands at Salmon Slough and heavily impinged and eroded south levee on Union Island as shown on map. Rock placed to prevent failure. Areas of heavy seepage on southeast side of island. Union Island and Stark Tract did not flood.

2006 Spring flood occurred on San Joaquin River due to heavy rains in March culminating in very heavy rainfall on April 2nd-4th. Initial predictions of 32' stage at Vernalis, combined with forecast for an additional large precipitation event, initiated a large flood fight operation. Failure of precipitation event to appear and recalculation of hydrological data lowered stage predictions with a subsequent peak stage of 29.4' at Vernalis. No levee failures were experienced on Union Island or Stark Tract.

Communications Plan

Field Command Posts
 RD 1 Delta Island Elementary School, 121°26'47.74"W 37°50'59.46"N Howard Rd
 RD 2 Kings Crown Packing Inc., 11605 Clifton Court Rd, 121°27'14.69"W 37°50'37.64"N
 RD 2089 S. Wing Levee Road, 121°24'15.59"W 37°49'06.30"N

Communications Equipment
 The District does not own communications equipment.

Internal Communications
 Means of internal communications among district staff and levee patrols will be personal cellular telephones. Telephone numbers will be assigned for response functions at the time of activation.

Communications with outside Jurisdictions
 Primary means of communications with outside jurisdictions will be personal cellular telephones. Secondary means of communications will be attendance at Central Delta Unified Flood Fight Command meetings.

Levee Patrol Plans

Reclamation District 1
 Superintendent Chip Salmon coordinates patrol schedules and sectors upon high water alerts. Patrol meets at command post shown. District anticipates having enough personnel to maintain extended patrol. Reclamation District #2 supports RD#1 patrol because of mutual exposure from failure in RD#1. Communications will be with personal cellular telephones.

Reclamation District 2
 Superintendent Michael Yoder coordinates patrol schedules and sectors upon high water alerts. Patrol meets at command post shown. District anticipates having enough personnel to maintain extended patrol. Communications will be with personal cellular telephones.

Reclamation District 2089
 Kent Okas, or appointed District Incident Commander, coordinates patrol schedule and sectors. RD#1 supports patrol of Stark Tract due to mutual exposure in the event of failure of Stark Tract levees. Communications will be with personal cellular telephones.

RD 1, RD 2, RD 2089

Tidal Triggers
 Venice Island Gauge will be used to monitor tidal conditions. Initiate periodic levee inspections at EL=8.0'. Initiate 24 hour continuous levee patrols at EL=9.0'.

Riverine Triggers
 Nossidae Gauge will be used to monitor river conditions. Initiate daily patrol at EL=19.5'. Initiate 24 hour continuous patrol at EL=21.5'.

Lath Protocol
 Red - Soil/Seepage
 Blue - Rock Slippage
 White - Slope/Levee Distress

Survey Information

Basis of Coordinates and Elevations - Union Island RD 1 and 2
 Bearings and Distances shown are based on the North American Datum of 1983 (NAD 83) converted to the California Coordinate System of 1983, Zone 3 (CCS83-III) as referenced by available NGS published control monuments. Grid distances must be multiplied by the inverse of a combined scale factor to obtain ground distances. Elevations shown are based on the National Geodetic Vertical Datum of 1929 (NGVD 29) as referenced by published benchmarks and have been converted to NAVD88 by adding +2.6. Units shown are based on the U.S. Survey Foot. Epoch date 2002.86.

Basis of Coordinates and Elevations - Stark Tract RD 2089
 Bearings and Distances shown are based on the North American Datum of 1983 (NAD83) converted to the California Coordinate System of 1983, Zone 3 (CCS83-III) as referenced by available NGS published control monuments. Grid distances shown must be multiplied by 1.0000654 (csf) to obtain ground distances. Elevations shown are based on the National Geodetic Vertical Datum of 1929 (NGVD 29) as referenced by available NGS and local published benchmarks and have been converted to NAVD88 by adding +2.6. Units shown are based on the U.S. Survey Foot. Epoch date 2002.86.

Basis of Elevations
 100 Year Flood: 1992 USACE Sacramento - San Joaquin Hydrology Special Study (Converted to NAVD88).
 Contours: 2007 DWR LIDAR Data.

Survey Data
 The survey points provided for RD 1 (Union Island East) were surveyed on July 25, 2001. RD 2 (Union Island West) were surveyed on July 13, 2001, and RD 2089 (Stark Tract) were surveyed on June 14, 2008 by KSN, Inc. Horizontal and vertical positions were recorded by GPS RTK, from established site control points. All three of the districts are based on the NGVD 29 elevation and have been converted to NAVD88.

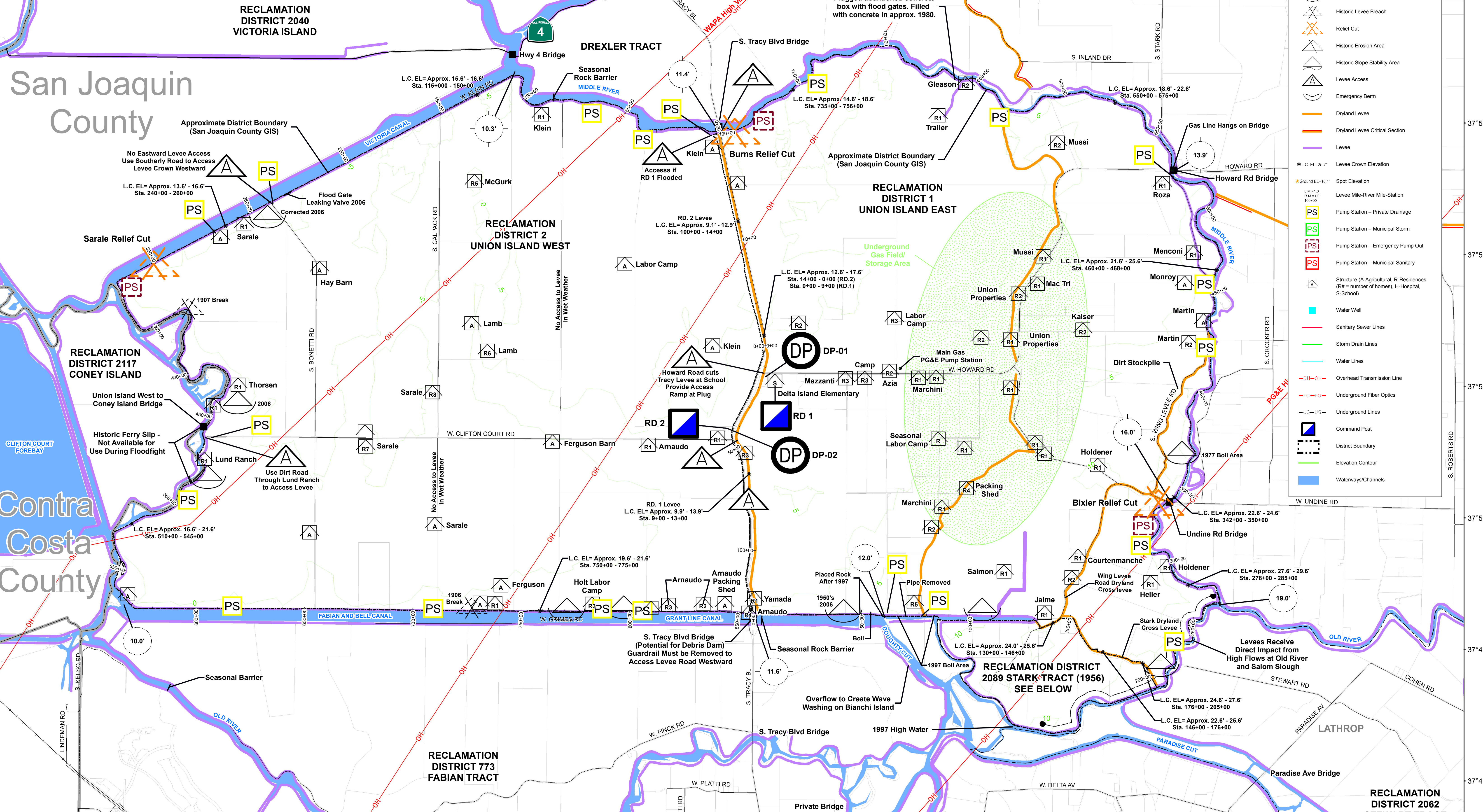
Scale
 0 2,500 5,000 Feet
 1 inch = 2,000 feet

Time/Date of Start of Incident

Map Version

Legend

- 100 Year Flood Elevation
- Logistics Base
- Delivery Point
- Supply Staging Area
- Water Landring
- Helibase
- Helipad
- Historic Seepage Area
- Historic Levee Breach
- Historic Erosion Area
- Historic Slope Stability Area
- Levee Access
- Emergency Berm
- Dryland Levee
- Dryland Levee Critical Section
- Levee
- Levee Crown Elevation
- Spot Elevation
- Levee Mile-River Mile Station
- Pump Station - Private Drainage
- Pump Station - Municipal Storm
- Pump Station - Emergency Pump Out
- Pump Station - Municipal Sanitary
- Structure (A= Agricultural, R= Residential, H= Hospital, S= School)
- Water Well
- Sanitary Sewer Lines
- Storm Drain Lines
- Water Lines
- Overhead Transmission Line
- Underground Fiber Optics
- Underground Lines
- Command Post
- District Boundary
- Elevation Contour
- Waterways/Channels



Flood Contingency Options Reclamation Districts 1 and 2

The general flood fight strategy will be to flood fight primary levees and ensure that options to limit flooding from levee failure can be initiated promptly if appropriate. District will coordinate levee patrol and County will coordinate action planning between district and State/Federal agencies and provide logistical support.

Actions:

- Coordinate and monitor patrol of primary levees.
- Attend meetings of Central Delta Flood Fight Unified Command at Holt Command Post.
- Reinforce and add wave wash protection to Stark Dryland Cross Levee.

Failure of Primary Levee on Reclamation District 2089 (Stark Tract)
 This scenario will lead to flooding of Stark Tract up to Stark Dryland Cross Levee with the need to flood fight Stark Dryland Cross Levee to prevent flood waters moving north into Reclamation Districts #1 and #2 (Union Island).

Actions:

- Patrol and flood fight Stark Dryland Cross Levee.
- Prepare to flood fight southern portion of Wing Levee Dryland Cross Levee in the event of failure of Stark Dryland Cross Levee.
- Identify equipment to make Burns Relief Cut if that contingency becomes necessary.

Flood Contingency Options Reclamation District 2089

Highwater Event
 The general flood fight strategy will be to flood fight primary levees and ensure that options to limit flooding from levee failure can be initiated promptly if appropriate. District will coordinate levee patrol and County will coordinate action planning between district and State/Federal agencies and provide logistical support.

Actions:

- Coordinate and monitor patrol of primary levees.
- Attend meetings of Central Delta Flood Fight Unified Command at Holt Command Post.
- Reinforce and add wave wash protection to Stark Dryland Cross Levee.

Failure of RD2089 Primary Levee
 This scenario will lead to flooding of Stark Tract up to Stark Dryland Cross Levee. The general flood fight strategy will be to make the Gikas Relief Cut if necessary. Coordinate with Drexler Tract to place rock on levee opposite cut location if not already done.

Actions:

- Patrol and flood fight Wing Levee Road Dryland Cross Levee.
- Protect interior of primary levees where water is impounded.
- Prepare to flood fight Tracy Dryland Cross Levee by filling Howard Road gap and make decision whether to begin raising levee to 11.6'.
- Include ramp when filling Howard Road gap to allow continued access to RD1.
- Position equipment to make Burns Relief Cut if necessary. Coordinate with Drexler Tract to place rock on levee opposite cut location if not already done.

Tactical Plans - (Preliminary Engineering Designs)

P.E.D.s have not been prepared for RD 1, 2, or 2089.
 For tactical information/alternatives refer to the Flood Contingency Options text box.

Dewatering Plan

The following dewatering plan options will be dependent upon the flood contingency options chosen.

RD 1
 If Burns Relief Cut has been made - Relief cut will remain open to allow impounded waters to exit district as river returns to normal elevations. Once flood waters will no longer drain through relief cut, the cut will be repaired along with breaches. Upon closure of breaches and relief cut, place emergency pumping station on levee at site shown for flood dewatering.

RD 2
 If Bixler Relief Cut has been made - Relief cut will remain open to allow impounded waters to exit district as river returns to normal elevations. Once flood waters will no longer drain through relief cut, the cut will be repaired along with breaches. Upon closure of breaches and relief cut, place emergency pumping station on levee at site shown for flood dewatering.

RD 2089
 If Gikas Relief Cut has been made - Relief cut will remain open to allow impounded waters to exit district as river returns to normal elevations. Once flood waters will no longer drain through relief cut, the cut will be repaired along with breaches. Upon closure of breaches and relief cut, place emergency pumping station on levee at site shown for flood dewatering.

