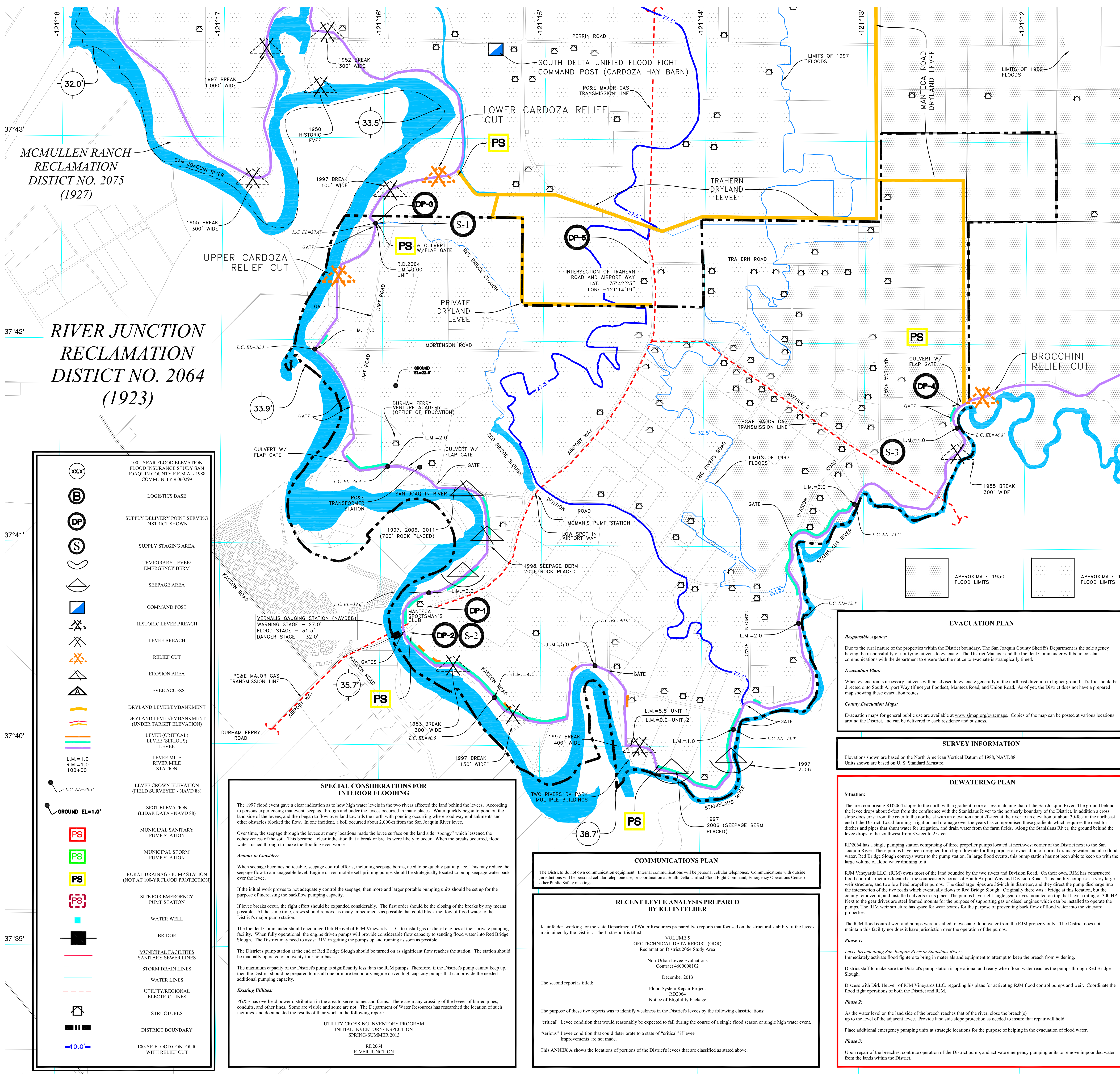




NO.	DESCRIPTIONS	DATE	APPROVED	DATE	SCALE
1	NOVEMBER 2015	1			1"=100'
2					



### FLOOD FIGHT HISTORY

**Stanislaus River (North Bank):**

- 1906: Flood broke out of the river east of Ripon and flowed down Jack Tone Road towards Stockton and west around Ripon.
- 1928: River overtopped the levee on the Hard Ranch near South Austin Road on March 29th. Approximately 6,000 acres flooded generally along the Stanislaus River and within RD2064. Water reached depths of eight to ten feet in areas.
- 1950: The Stanislaus River flow reached 68,000 cfs. Extensive rains on Thanksgiving Day caused the last general flood of the area. Flood water broke out south of the intersection of Mohler and Moore Roads, and extended north of this intersection. Water flowed north of the intersection through existing irrigation ditches. Flood water extended west to a cross levee along Manteca Road, and then north along the cross levee to West Ripon Road and then to Walhall Slough. The levee broke on the south side of the river near Mapes Ranch which lowered the water level in the river considerably. (Interview with Merlin Mohler and Ken Mohler)
- 1955: The river flow reached 55,000 cfs, the north levee failed upstream of Manteca Road. The water level came within inches of the top of a private levee that was constructed between Russ Road and the east end of Caswell Park. After the flood event, local landowners raised this levee by 30-inches in 1956. (Interview with Merlin Mohler)
- 1964: The river flow reached 36,000 cfs in June. Levees held although considerable patrolling and remedial work was necessary.
- 1983: The Vernalis gauge on the San Joaquin River reached elevation 31.5-feet caused by considerable spring runoff. The flowrate on the Stanislaus was not significant due to upstream runoff being stored in the New Melones reservoir.
- 1997: At approximately 4:00 pm on January 5th, the levee failed near Sturgeon Bend, one-quarter mile upstream from the San Joaquin River junction. Flows in the river reached 8,000 cfs.

**San Joaquin River (East Bank):**

- 1935: Flood water caused a break on the east bank a short distance above Durham Ferry Road (now South Airport Way) bridge on May 11th flooding about 3,000 acres. The break widened to about 400-feet, but a relief cut was made about one mile below the bridge which lowered the level of the flood water. But, on June 4th, the river flowrate increased which hindered attempts to close the break. (from Ken Mohler)
- 1950: The levee failed on Thanksgiving Day near the present location of the District pumps. A levee breach allowing flood water to flow back to the river occurred near Hillbrand Farm.
- 1955: A levee failure occurred on Christmas day north of the District in the jurisdiction of RD2075.
- 1983: The District levee failed during a flood event. This caused flood water to flow to the Trahern Levee along the north boundary of the District. RD2075 to the north was successful in a flood fight by reinforcing the Trahern Levee.
- 1997: In early January heavy rains in the mountain watersheds required high level of releases by major dams. Such releases cause large surges in downstream rivers. The District levee failed on January 5th. A flood fight took place on the Trahern Levee (dryland) which was successful in keeping water from flowing north. On January 7th, a levee break occurred near Hays Road. Over several days, this break widened to about 1,200-feet. The District remained flooded until March.

### LEVEE PATROL PLAN

**Supervisor:**  
 The District Manager or the District Engineer will take the lead in organizing patrols.

**Staging Locations:**  
 The patrol group will meet at the Manteca Sportsman property located where South Airport Way crosses the San Joaquin River.

**Organization:**  
 The patrol group will be organized at the time of the activation of flood watch operations, and it will attend a 2-hour Emergency Levee Worker Safety and Procedures Class. Topics covered in the class will include DWR Levee Threat Monitoring Guidelines and Basic NIMS Training. The number of those engaged in the patrol effort will be determined by the District Manager or the District Engineer.

**Patrol Plan:**  
 The initial periodic patrols will begin when the Vernalis Gauge reaches one foot below flood stage.  
 Continuous 24-hour patrols will begin when the Vernalis Gauge reaches flood stage.  
 Daily coordination meetings will be held by the District upon the initiating of levee patrols.

**Protocol for Placing Lath with Flagging:**  
 The color of flagging shall be:  
 Red - for spotting boils and seepage areas  
 Blue - for spotting rock seepage areas  
 White - for spotting levee or levee slope distress

### FLOOD CONTINGENCY OPTIONS

**High Water Event:**  
 The general flood fight strategy will be to maintain the District levees including preplanning for additional potential emergency actions.

**Actions:**  
 District will establish levee patrols with patrol plan shown.  
 San Joaquin County Public Works Aid Coordinator at San Joaquin Operational Area Emergency Operations Center maintains patrol status reports for all districts within the South Delta Flood Fight Command. Districts will establish contact and provide patrol status and mutual aid needs in accordance with protocols.  
 District will provide a representative to participate in the South Delta Unified Flood Fight Command with the command post at Cardoza Hay Barn on Perrin Road.  
 Upon initiation of levee patrols, or at the direction of the Manager of RD2064, there shall be a review of Preliminary Engineering Design plans, and identify sources of equipment to implement PEDs, if needed.

**Failure of a RD2064 Levee:**  
 The general flood fight will be to activate dewatering pumps that are under the control of the District. The District will act to protect interior levee slopes from wave wash as appropriate. Pipes, channels, and other conveyance features that could inhibit water flow to dewatering points shall be cleared as needed.  
 In the 1997 flood event, the District pumps could not keep up with the flood flow, and "relief cuts" were necessary. In future events, "relief cuts" will need to be an option.

**Actions:**  
 Activate dewatering pumps as soon as possible. Make sure pumps are properly lubricated, and the pipe discharge area is free of debris.  
 Acquire and strategically locate materials and equipment that will be needed as part of the flood fight activities.  
 Modify the patrol plan to include those areas within the District boundary that have been or soon will be inundated.  
 Proceed with work to protect interior levee slopes where appropriate.

**Continuing Effort to Protect Properties within the District:**  
 It is anticipated that a significant portion of the flood flow entering the District will come from general seepages through and under District levees. Flood fighting the dry land side of the levees will continue with the purpose of reducing or eliminating the seepage.

**Actions:**  
 Using emergency supplies and materials, flood fighting personnel will attempt to seal off individual seepage areas.  
 Import materials and earth moving equipment for the purpose of stabilizing the land side portion of the levee and significant seepage locations.  
 When the impounded water elevation comes close to that of the river, seal the breach in the levee with imported earth materials.

### EVACUATION PLAN

**Responsible Agency:**  
 Due to the rural nature of the properties within the District boundary, the San Joaquin County Sheriff's Department is the sole agency having the responsibility of notifying citizens to evacuate. The District Manager and the Incident Commander will be in constant communications with the department to ensure that the notice to evacuate is strategically timed.

**Evacuation Plan:**  
 When evacuation is necessary, citizens will be advised to evacuate generally in the northeast direction to higher ground. Traffic should be directed onto South Airport Way (if not yet flooded), Manteca Road, and Union Road. As of yet, the District does not have a prepared map showing these evacuation routes.

**County Evacuation Maps:**  
 Evacuation maps for general public use are available at [www.sjmap.org/evacmaps](http://www.sjmap.org/evacmaps). Copies of the map can be posted at various locations around the District, and can be delivered to each residence and business.

### SURVEY INFORMATION

Elevations shown are based on the North American Vertical Datum of 1988, NAVD88.  
 Units shown are based on U.S. Standard Measure.

### DEWATERING PLAN

**Situation:**  
 The area comprising RD2064 slopes to the north with a gradient more or less matching that of the San Joaquin River. The ground behind the levee drops about 5-feet from the confluence with the Stanislaus River to the northerly boundary of the District. In addition a cross slope does exist from the river to the northeast with an elevation about 20-feet at the river to an elevation of about 10-feet at the northeast end of the District. Local farming irrigation and drainage over the years has compromised these gradients which requires the need for ditches and pipes that shunt water for irrigation, and drain water from the farm fields. Along the Stanislaus River, the ground behind the levee drops to the southwest from 35-feet to 25-feet.

RD2064 has a single pumping station comprising of three propeller pumps located at northwest corner of the District next to the San Joaquin River. These pumps have been designed for a high flowrate for the purpose of evacuation of normal drainage water and also flood water. Red Bridge Slough conveys water to the pump station. In large flood events, this pump station has not been able to keep up with the large volume of flood water draining to it.

RM Vineyards LLC (RM) owns most of the land bounded by the two rivers and Division Road. On their own, RM has constructed flood control structures located at the southeasterly corner of South Airport Way and Division Road. This facility comprises a very large weir structure, and two low head propeller pumps. The discharge pipes are 36-inch in diameter, and they direct the pump discharge into the intersection of the two roads which eventually flows to Red Bridge Slough. Originally there was a bridge at this location, but the county removed it, and installed culverts in its place. The pumps have right-angle gear drives mounted on top that have a rating of 300 HP. Next to the gear drives are steel framed mounts for the purpose of supporting gas or diesel engines which can be installed to operate the pumps. The RM weir structure has space for wear boards for the purpose of preventing back flow of flood water into the vineyard properties.

The RM flood control weir and pumps were installed to evacuate flood water from the RM property only. The District does not maintain this facility nor does it have jurisdiction over the operation of the pumps.

**Phase 1:**  
 Levee breach along San Joaquin River or Stanislaus River:  
 Immediately activate flood fighters to bring in materials and equipment to attempt to keep the breach from widening.  
 District staff to make sure the District's pump station is operational and ready when flood water reaches the pumps through Red Bridge Slough.  
 Discuss with Dirk Hevel of RM Vineyards LLC regarding his plans for activating RM flood control pumps and weir. Coordinate the flood fight operations of both the District and RM.

**Phase 2:**  
 As the water level on the land side of the breach reaches that of the river, close the breach(s) up to the level of the adjacent levee. Provide land side slope protection as needed to insure that repair will hold.  
 Place additional emergency pumping units at strategic locations for the purpose of helping in the evacuation of flood water.

**Phase 3:**  
 Upon repair of the breaches, continue operation of the District pump, and activate emergency pumping units to remove impounded water from the lands within the District.

### SUPPLY DELIVERY POINTS AND RESOURCES STAGING AREA

**Supply Delivery Points:**

- Point No. 1: Manteca Sportsman property located at the intersection of the San Joaquin River and South Airport Way.
- Point No. 2: High ground behind levee on RM Vineyards LLC property where South Airport Way crosses the District's San Joaquin River levee.
- Point No. 3: District property located next to District pump station at the northwest corner of the District boundary at the San Joaquin River.
- Point No. 4: Behind Stanislaus River levee where east boundary of District meets Levee Mile 4.1.
- Point No. 5: Property at intersection of Trahern Road and Airport Way.

**Staging Areas:**

- Area No. 1: District supply bid located on District property located next to District pump station at the northwest corner of District boundary at the San Joaquin River.
- Area No. 2: High ground behind levee on RM Vineyards LLC property where South Airport Way crosses the District's San Joaquin River levee.

### TACTICAL PLANS AND EXISTING UTILITIES

**Tactical Plans:**  
 Implementation of District and private dewatering pumps and Upper Cardoza Relief Cut to 100 Year Base Flood Elevation if necessary.

SYMBOL	DESCRIPTION
(XX)	LOGISTICS BASE
(B)	SUPPLY DELIVERY POINT SERVING DISTRICT SHOWN
(DP)	SUPPLY STAGING AREA
(S)	TEMPORARY LEVEE/ EMERGENCY BERM
(D)	SEEPAGE AREA
(C)	COMMAND POST
(X)	HISTORIC LEVEE BREACH
(L)	LEVEE BREACH
(R)	RELIEF CUT
(E)	EROSION AREA
(A)	LEVEE ACCESS
(D)	DRYLAND LEVEE/EMBANKMENT
(D)	DRYLAND LEVEE/EMBANKMENT (UNDER TARGET ELEVATION)
(L)	LEVEE (CRITICAL) LEVEE (SERIOUS) LEVEE
(L)	LEVEE MILE RIVER MILE STATION
(L)	LEVEE CROWN ELEVATION (FIELD SURVEYED - NAVD88)
(L)	SPOT ELEVATION (LIDAR DATA - NAVD88)
(PS)	MUNICIPAL SANITARY PUMP STATION
(PS)	MUNICIPAL STORM PUMP STATION
(PS)	RURAL DRAINAGE PUMP STATION (NOT AT 100-YR FLOOD PROTECTION)
(PS)	SITE FOR EMERGENCY PUMP STATION
(W)	WATER WELL
(B)	BRIDGE
(S)	MUNICIPAL FACILITIES SANITARY SEWER LINES
(S)	STORM DRAIN LINES
(S)	WATER LINES
(S)	UTILITY/REGIONAL ELECTRIC LINES
(S)	STRUCTURES
(S)	DISTRICT BOUNDARY
(S)	100-YR FLOOD CONTOUR WITH RELIEF CUT

### SPECIAL CONSIDERATIONS FOR INTERIOR FLOODING

The 1997 flood event gave a clear indication as to how high water levels in the two rivers affected the land behind the levees. According to persons experiencing that event, seepage through and under the levees occurred in many places. Water quickly began to pond on the land side of the levees, and then began to flow over land towards the north with ponding occurring where road way embankments and other obstacles blocked the flow. In one incident, a boil occurred about 2,000-ft from the San Joaquin River levee.

Over time, the seepage through the levees at many locations made the levee surface on the land side "spongy" which lessened the cohesiveness of the soil. This became a clear indication that a break or breaks were likely to occur. When the breaks occurred, flood water rushed through to make the flooding even worse.

**Actions to Consider:**  
 When seepage becomes noticeable, seepage control efforts, including seepage berms, need to be quickly put in place. This may reduce the seepage flow to a manageable level. Engine driven mobile self-pumping pumps should be strategically located to pump seepage water back over the levee.  
 If the initial work proves to be not adequately control the seepage, then more and larger portable pumping units should be set up for the purpose of increasing the backflow pumping capacity.  
 If levee breaks occur, the first effort should be expanded considerably. The first order should be the closing of the breaks by any means possible. At the same time, crews should remove as many impediments as possible that could block the flow of flood water to the District's major pump station.

The Incident Commander should encourage Dirk Hevel of RM Vineyards LLC to install gas or diesel engines at their private pumping facility. When fully operational, the engine driven pumps will provide considerable flow capacity to flooding flood water into Red Bridge Slough. The District may need to assist RM in getting the pumps up and running as soon as possible.

The maximum capacity of the District's pump is significantly less than the RM pumps. Therefore, if the District's pump cannot keep up, then the District should be prepared to install one or more temporary engine driven high capacity pumps that can provide the needed additional pumping capacity.

**Existing Utilities:**  
 PG&E has overhead power distribution in the area to serve homes and farms. There are many crossings of the levees of buried pipes, conduits, and other lines. Some are visible and some are not. The Department of Water Resources has researched the location of such facilities, and documented the results of their work in the following report:  
 UTILITY CROSSING INVENTORY PROGRAM INITIAL INVENTORY INSPECTION SPRING-SUMMER 2013  
 RD2064 RIVER JUNCTION

### COMMUNICATIONS PLAN

The District does not own communication equipment. Internal communications will be personal cellular telephones. Communications with outside jurisdictions will be personal cellular telephone use, or coordination at South Delta Unified Flood Fight Command, Emergency Operations Center or other Public Safety meetings.

### RECENT LEVEE ANALYSIS PREPARED BY KLEINFELDER

Kleinfelder, working for the state Department of Water Resources prepared two reports that focused on the structural stability of the levees maintained by the District. The first report is titled:  
 VOLUME 5  
 GEOTECHNICAL DATA REPORT (GDR)  
 Reclamation District 2064 Study Area  
 Non-Urbain Levee Evaluations  
 Contract 4600008102  
 December 2013

The second report is titled:  
 Flood System Repair Project  
 RD2064  
 Notice of Eligibility Package

The purpose of these two reports was to identify weaknesses in the District's levees by the following classifications:  
 "critical" Levee condition that would reasonably be expected to fail during the course of a single flood season or single high water event.  
 "serious" Levee condition that could deteriorate to a state of "critical" if levee improvements are not made.  
 This ANNEX A shows the locations of portions of the District's levees that are classified as stated above.