# Santa Clara Valley Water District

**File No.:** 17-0498

**Agenda Date:** 8/22/2017
**Item No.:** 6.2.

## BOARD AGENDA MEMORANDUM

**SUBJECT**:
Coyote Creek Flood Protection Project - Short-Term Flood Risk Reduction Options Update and Flood Barrier Recommendation for Rock Springs.

**RECOMMENDATION**:

A. Receive information on short-term project for flood risk reduction to the Coyote Creek community; and

B. Provide comments and direction to Staff to advance the recommended short-term project, complete public outreach, and finalize design for the Rock Springs area of Coyote Creek. The recommended short-term projects are:

   a. An up to 5-foot tall earthen berm extending 400 feet across the San Jose Water Company property to the end of Bevin Brook Drive; and

   b. An up to 3-foot tall vinyl sheet pile wall extending 500 feet across an access driveway and City of San Jose Park areas.

**SUMMARY**:
The Coyote Creek flood of February 21, 2017 was a devastating event for our community resulting in tens of millions of dollars in damages to residents and businesses and significant evacuation of community members from their homes. On June 13, 2017, the District Board of Directors (Board) conducted a public hearing on proposed modifications to the Coyote Creek Flood Protection Project (Project) of the Safe, Clean Water and Natural Flood Protection Program (SCW).

In the June 13, 2017 Board hearing, Staff was directed to reactivate the Coyote Creek Project planning study (Montague Expressway to Interstate 280) and extend the upstream project limit 2.9 miles from Interstate 280 to Tully Road. The new Project limits, from Montague Expressway to Tully Road (Project Reach) include the Rock Springs neighborhood area which was significantly impacted by the February 21, 2017 flood event.

In addition to extending the Project limits upstream to Tully Road, the Board also:

- changed the flood protection level from the 1% chance, or 100-year event, to protection from a

flood event equivalent to the February 21, 2017 flood event (approximately 20 to 25-year) which allows for implementation of a more moderate project with less environmental impacts and

- directed Staff to immediately develop short-term project flood risk reduction solutions to be implemented prior to the 2017-2018 winter season; and
- made Project funding available for the Rock Spring Neighborhood area.

*A. Objective:*

Focusing on the provision of short-term flood risk reduction to the areas at highest risk along Coyote Creek, available actions include the following:

a. Emergency Action Planning (EAP): One of the main lessons learned from this past winter was that a detailed and fully operational joint District/City of San Jose EAP was essential for future emergency events on Coyote Creek. A detailed update on this item is being separately presented to the Board at this meeting.

b. Reservoir operation options: whether by use of pumps or through other reservoir management techniques, reservoir operation options can reduce the risk of floods downstream. These options are to be investigated in detail for the Board's Ad Hoc Committee for Coyote Creek. Any decisions made by the Board pursuant to these investigations and Ad Hoc Committee discussions would then be implemented.

c. Creek management: Invasive vegetation, litter, and debris barrier removal can also reduce the risk of flooding along waterways. The District is currently conducting this type of work throughout the Coyote Creek watershed via the District's Stream Maintenance Program, SCW projects, and by other District habitat enhancement efforts. A summary of this work was presented to the Board at the August 8, 2017 meeting. As this work has already begun and will continue as appropriate over the coming years, instream management is not described further in this memo.

d. Structural repair: High flow events such as the Coyote Creek flood event of February 2017 can damage instream facilities to the point where they need repairs to be safe to operate and to avoid ongoing damage which can lead to larger failures and potential threats to life and property. District facilities on Coyote Creek were analyzed post-winter and those requiring urgent repairs identified. One such structure is the Coyote Percolation Dam, which is an in-stream flashboard dam that creates a percolation pond on Coyote Creek near Metcalf Road. This structure, including its fish passage facility, was significantly damaged by the winter high flows. While emergency actions have been taken to attempt to stabilize the facility, the structure requires permanent repair work before it can be operated safely and withstand future high flow events. If left in its current state for another winter, the facility may incur additional damage or potentially create flood risks downstream (for example, further undercutting of the dam's apron and foundation could result in large concrete portions of the dam foundation and apron to become dislodged and mobilize downstream). Preliminary plans for the dam repair have been prepared and submitted to

State Division of Safety of Dams (DSOD) for review. District staff has submitted permit applications to the regulatory agencies and is working to secure regulatory approvals as soon as possible. Staff is in the process of identifying the resources necessary to complete the dam repair prior to the upcoming rainy season. If it is determined that in-house resources must be supplemented with outside public works or other services, staff will likely seek a declaration of an emergency pursuant to California Public Contract Code Section 22050 and District Board Resolution 05-67. In the absence of such a declaration, it could take months to procure the necessary public works, supplies and other services essential to complete the repair prior to the rainy season, which is just a few months away.

e. Flood barriers: Flood barriers are ways to increase channel capacity through elevating its banks or providing a means to wall-off vulnerable areas from flood flows. This memorandum presents flood risk reduction planning principles and flood barrier options for this type of short-term project and seeks Board direction to proceed with a recommended flood barrier short-term project that can be designed, permitted, secured for right of way, and implemented by winter 2017.

*B. Short-term Flood Barrier Project Principles*

The Coyote Creek Watershed's FEMA special flood hazard area is shown on Attachment 1 and the areas flooded on February 21, 2017 are shown on Attachment 2. Staff has investigated flood barriers to reduce flood risks in the Project Reach. To be feasible, flood barriers must satisfy the following two principles:

Principle 1: Short-term project measures must not increase flooding elsewhere.

Flood risk reduction projects are typically constructed from downstream to upstream to avoid transferring additional flood water and consequently flood risk from upstream to downstream locations. Exceptions to this general rule include flood retention or detention projects which reduce the peak flood flows in the upper watershed.

Principle 2: Short-term project measures must be quickly permittable and constructible.

Flood risk reduction projects typically require numerous years to complete planning, permitting, and construction. To be feasible, flood barriers should be designed to require minimal environmental clearances and permitting negotiations, be constructed quickly, and can achieve expedited right-of-way acquisition.

*C. Short-term Flood Barrier Project Feasibility Analysis by Reach*

Flood barriers physically increase the top of bank height and limit floodwater overtopping and flooding in areas of concern. Major flood areas in the February 21, 2017 event (see Attachment 3, Page 5 for location map of reaches) were evaluated for flood barriers as follows:

<u>Mobile Home Parks Reach</u>

The Mobile Home Parks Reach currently includes an earthen levee along Coyote Creek's west bank

that protects the Golden Wheel Park, Riverbend Family Park, and South Bay Mobile Home Park. On February 21, 2017, flooding occurred when water overtopped the levee near the railroad spur at the south end of the reach and entered the residential areas.

Increasing the height of the levee in the Mobile Home Parks Reach was considered. However, hydraulic analysis indicates that a new flood barrier would significantly increase downstream flooding in the Charcot Road area. As such, flood barriers fail to satisfy the flooding principle and are not recommended for the Mobile Home Parks Reach as a short-term measure.

However, damage to the levee caused by floodwaters has since been repaired by District maintenance staff. In addition to the levee work, the District has conducted significant invasive vegetation management in this reach of the channel. Finally, the City of San Jose has already or is planning to improve the pump station located at the Golden Wheel Park to facilitate local water drainage as well as dewatering in the event of future flooding.

Selma Olinder Park Reach

Selma Olinder Park Reach does not currently include levees or floodwalls. When floodwaters break out, they continue until reaching low ground to the north-east and do not immediately return to Coyote Creek. As such, the floodplain does not convey flood flows downstream and hydraulic analysis indicates that a new flood barrier would significantly increase downstream flooding. As such, flood barriers fail to satisfy the flooding principle and are not recommended as a short-term option for the Selma Olinder Park Reach. Invasive vegetation and debris management will continue to be implemented in this reach.

Rock Springs Reach

The Rock Springs Reach also does not currently include levees or floodwalls. Unlike the Selma Olinder Park Reach, flood flows of the February 21, 2017 event magnitude are expected to be contained and conveyed by the floodplain and eventually return to Coyote Creek.

Hydraulic analysis indicates that the volume of floodwater which spilled into the Rock Springs Areas during the February 21, 2017 event was small (in hydraulic terms) and that a flood barrier, constructed to protect up to this event, would not significantly increase flooding elsewhere. Flood barriers targeting the February 21, 2017 flood elevation satisfy the flooding principle and are recommended for the Rock Springs Reach.

*D. Conclusion and Recommendation*

Based on the feasibility analysis presented above, flood barriers are recommended for the Rock Springs Reach.

Rock Springs Reach Details

To protect against a February 21, 2017 magnitude flood event, the Rock Springs Reach flood barrier would extend about 900 feet from the City of San Jose Park located at the Needles Drive and Rock Springs Road intersection to the end of Bevin Brook Drive.

About half of the flood barrier would be located on San Jose Water Company (SJWC) property. The proposed flood barrier would traverse across the open field area that is enclosed by a fence at the perimeter of the property. This 500-foot length of flood barrier is best suited for an up to 5-foot tall earthen berm with a 10-foot top width and 2.5:1 side slopes. The berm would terminate on District right of way located at the end of Bevin Brook Drive. The District will seek a 2-year license agreement for the length of the berm from the San Jose Water Company. The District will later seek an easement for the same area once the long-term project is defined.

Upstream from the berm, an up to 3-foot tall flood barrier would extend for about 200 feet alongside a paved driveway that is enclosed by a residential building, fence, and swing gates. This driveway is not wide enough to both accommodate an earthen berm and maintain ingress and egress rights for the SJWC. As such, the flood barrier is required to be either narrow or movable. The District and SJWC both hold easement rights along the driveway area.

The remaining flood barrier would be up to about 3 feet tall and extend for about 200 feet upstream from the driveway, across the City of San Jose park playground and terminate at the basketball court. To minimize impacts to the park, the flood barrier at this location is required to be narrow and located as close to the existing fence as practicable.

Staff considered multiple temporary and permanent flood barrier options for the Rock Springs Reach including: constructing an earthen berm, grading the park area to a higher elevation, constructing a sheet pile floodwall, constructing a concrete wall, installing super-sack sandbags, installing inflatable or water-filled rubber dams, installing water filled hard plastic barriers, constructing concrete covered sand bags, and installing commonly used sand bags.

Staff findings are:

- The earthen berm is the most practicable and cost-effective flood barrier in the open area where space is available.
- There is not sufficient time remaining to retain a contractor to construct a concrete wall or to grade the park and impacts for each of these options may prohibit permitting.
- Based on prior District experience, super sack sand bags and rubber dams are targets for vandalism.
- Based on District experience, water filled plastic barriers are not reliable and are targets for vandalism and theft.
- Concrete covered sand bags are only applicable in the park area where space is available.
- A vinyl sheet pile wall will impact the Park; however, the wall will be less susceptible to vandalism and will require minimal maintenance.

<u>Rock Springs: Recommended Short-term Flood Barrier</u>

Staff recommend:

1. An up to 5-foot tall earthen berm with drainage pipe(s) be installed along 400 feet extending across SJWC property to the end of Bevin Brook Drive.
2. An up to 3-foot tall vinyl sheet pile wall be installed along 500 feet extending across the SJWC access driveway and City of San Jose Park areas.

*E. Next Steps*

Upon Board direction to advance the Recommended Short-term Flood Barrier, staff will conduct public outreach in the Rock Springs Reach area and then proceed with a final design. Final plans and cost estimates will be submitted to the Board for approval prior to October 15, 2017. Pending Board approval, the project will proceed to construction using District forces prior to the winter of 2017.

**FINANCIAL IMPACT**:
The recommended action does not have a significant financial impact. Any construction project developed as a result of this Board direction will be brought back to the Board for authorization.

**CEQA**:
The recommended action does not constitute a project under CEQA because it does not have a potential for resulting in direct or reasonably foreseeable indirect physical change in the environment. Once Project development is complete, a CEQA environmental analysis will be provided for the Board to consider as part of its Project approval process.

**ATTACHMENTS**:
Attachment 1: FEMA Map
Attachment 2: Areas Affected Map
Attachment 3: PowerPoint

**UNCLASSIFIED MANAGER:**
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