



AGENCY: City Council  
MEETING DATE: June 12, 2017  
DEPARTMENT: Public Works  
PRESENTED BY: T. Varga  
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## AGENDA ITEM SUMMARY

### **TITLE:**

**RECEIVE REPORT AND PROVIDE DIRECTION TO STAFF REGARDING RELOCATION OF THE PUDDING CREEK WATER LINE TO THE PUDDING CREEK BRIDGE**

### **ISSUE:**

During the winter storms of December 2016, the Georgia Pacific (GP) dam across Pudding Creek was overtopped by high stream flows and sustained significant damage. This, in turn, put the City's 10-inch water main (which is supported by the dam) at risk. GP performed interim repairs to stabilize the dam; however these repairs did not fully restore the support for the water main. Additional protective measures are necessary for the water main. Staff is seeking Council direction regarding relocation of the water main.

### **RECOMMENDED ACTION:**

Provide direction regarding relocation of the water main crossing Pudding Creek from its current location atop the GP dam to the Pudding Creek Bridge on Main Street (State Route 1).

### **ALTERNATIVE ACTION(S):**

After reviewing the issues and recommended actions, Council may choose to modify the recommendations or direct that alternate actions be taken.

### **ANALYSIS:**

Protective Measures undertaken as an initial response to the disaster:

Approximately 200 feet of 10-inch water main crossing Pudding Creek (on top of a dam owned by GP) lost its support when the dam was overtopped on December 16, 2016. The dam and the water main are in the waterway and floodplain of Pudding Creek. Approximately \$11,000 of damage was sustained by the water main. This main serves the health, safety, and fire protection needs of property within the City north of Pudding Creek.

The GP dam is a 300-foot long earthen dam that includes an approximately 76-foot long concrete spillway divided into eight gated bays. The dam was originally approximately 50 feet wide. It was built in 1953 to store water used by the nearby GP timber mill. A 10-inch water main was placed on the dam in 1984. It was located approximately 10 feet away from the dam's downstream face and crossed the spillway on a wooden walkway.

Over time, several of the dam's bays became blocked by vegetation. Other bays were blocked or modified to support fish passage. One of the bays contains a fish ladder to help spawning salmon get past the dam. During the December storm, more of the spillway bays were blocked by debris and vegetation washed down during the storm. Some of the vegetation was torn loose in mats that grow in the reservoir just upstream of the dam. All but two of the bays were blocked during the storm event resulting in the overtopping of the dam.

Severe erosion of the dam washed away up to 10 feet of the dam's width. Two large washouts occurred near the concrete spillway that penetrated farther into the dam. North of the spillway, one of the washouts occurred under the water main and left a 1,000 pound concrete pier hanging in the

air, supported by only the water main. South of the spillway most of the dam eroded to almost under the water main. This resulted in two more piers south of the spillway being exposed to imminent failure. GP has stabilized the dam structure but only marginally restored support under the water main. The water main is still at the very edge of the dam south of the spillway. North of the spillway, the washout has not been filled and a temporary support structure built by the City holds up the water pipe. Since the City does not own the dam, further repairs to the dam are beyond its purview.

Attached is the cost summary sheet submitted to California Office of Emergency Services (Cal OES) summarizing the City's disaster response costs of \$11,000. While not all parts of the City's disaster response may be reimbursable, the reported amount represents the immediate damage suffered by the citizens in the City of Fort Bragg.

Permanent fix:

The water main which is at risk serves the health, safety, and fire protection needs of property located within the City north of Pudding Creek. These water customers include: an approximately 70-unit mobile home park, six motels, the local Caltrans maintenance yard, the Waste-Management solid waste handling site, and about 20 other commercial or industrial businesses.

Caltrans is preparing to widen the State Route 1 (North Main Street) bridge over Pudding Creek. Construction is scheduled for 2020. Caltrans recently notified staff that construction has been pushed back from the previous estimate of 2018. City staff will continue to coordinate with Caltrans regarding the relocation of the 10-inch water main onto this bridge. The bridge is about 600 feet downstream of the GP dam and the existing water main crossing. This is the closest available, existing creek crossing. Adding a sleeve to the bridge widening for a relocated water main is a simple design and construction matter. The City previously placed a sewer main on the west side of the bridge in cooperation with Caltrans. Because part of the relocation route already has water pipes in the ground, only 1,000 feet of new 10-inch water pipe is needed to accomplish the relocation (see attached sketch).

Alternate ways to cross the creek have been examined. The most obvious option is to move the water main away from the downstream edge of the dam where it is at risk (i.e., to the east) and restore the pre-disaster condition. Doing so would put the water main in the middle of the access road that serves the dam and spillway. There is insufficient room on the dam to move the water pipe and move the access road while maintaining adequate dam access for any heavy equipment needed to reach the spillway, maintain the reservoir, or provide emergency vehicle access. Furthermore, GP has advised the City that they are evaluating options that might include removal of the dam.

Other options include construction of a special bridge for the water main or micro-tunneling under the creek. Either of these options require crossing several hundred feet of the creek. The bridge would have to be a substantial, multi-million dollar structure. Creating an underground crossing would have to be many feet deep to avoid streambed erosion caused by stream-flows and tidal action, (this was the cause of the previous sewer main relocation). After the incorporation of environmental mitigations and endangered species protections, either of these options would be multi-million dollar construction projects with very lengthy and costly environmental and permitting processes.

For these reasons, staff recommends that the water main be relocated to the Pudding Creek bridge in conjunction with the Caltrans' bridge relocation project. Estimated costs are as follows:

Water Main Relocation - Preliminary Project Estimate:

PRECONSTRUCTION

Design and engineering	\$ 160,000	
Permits	20,000	
Environmental review	25,000	
Total Preconstruction		\$ 205,000

CONSTRUCTION

SWPPP	\$ 25,000	
Mobilization	50,000	
Surveying/Construction staking	40,000	
Traffic control	35,000	
Demolition/Site preparation	50,000	
Install buried 10-inch water pipe	150,000	
Install 10-inch water pipe on bridge	600,000	
Total Construction		\$ 950,000

CONTINGENCY (25% of Preconstruction & Construction) \$ 290,000

CONSTRUCTION MANAGEMENT (3% of Construction) \$ 29,000

TOTAL ESTIMATED PROJECT COST \$1,474,000

Note: SWPPP = Storm Water Pollution Prevention Plan

Construction management includes materials testing and inspection. None of this would be done in-house.

**FISCAL IMPACT:**

Cal OES has indicated that they can provide a grant for 75% of the relocation expense. An application for disaster assistance has already been submitted. The City will also coordinate with Caltrans to incorporate the water main relocation into the upcoming widening of the SR 1 (North Main Street) bridge over Pudding Creek to minimize costs. The City will need to define a funding source for the required 25% match to the disaster assistance grant. City staff will work to define alternative funding options for the required match.

**CONSISTENCY:**

The proposed water main relocation will not change the functionality of the water distribution system north of Pudding Creek.

**ATTACHMENTS:**

1. Sketch of Pudding Creek dam and nearby water system
2. Cal OES Cost Summary worksheet

**NOTIFICATION:**

1. None.

**City Clerk's Office Use Only**

Agency Action      ☐ Approved      ☐ Denied      ☐ Approved as Amended

Resolution No.: \_\_\_\_\_ Ordinance No.: \_\_\_\_\_

Moved by: \_\_\_\_\_ Seconded by: \_\_\_\_\_

Vote: \_\_\_\_\_

☐ Deferred/Continued to meeting of: \_\_\_\_\_

☐ Referred to: \_\_\_\_\_