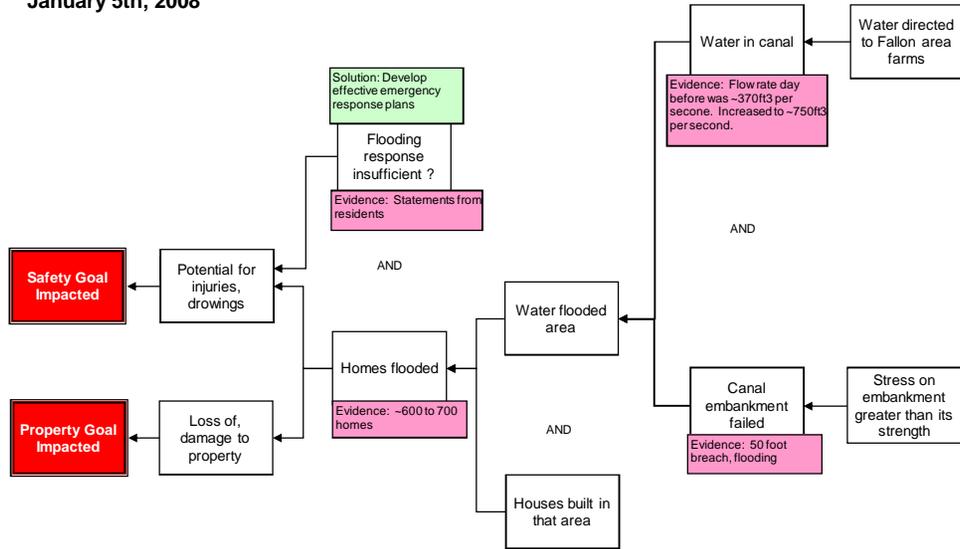


Canal Failure - Homes Flooded

Fernley, Nevada

January 5th, 2008



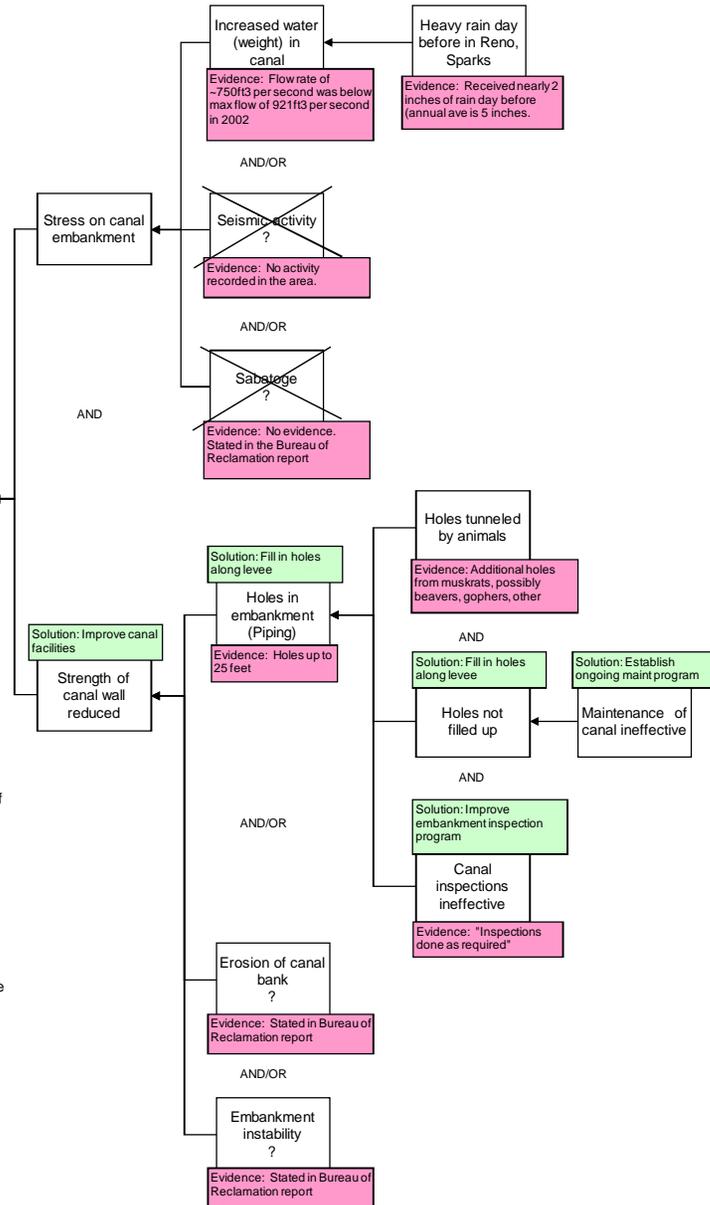
Just after 4 a.m. on January 5th, 2008 about 600 homes began flooding in Fernley, Nevada, about 25 miles East of Reno. A 50 foot section of a canal embankment failed flooding the adjacent area. The 32-mile canal carried water from the Truckee River south to Fallon area farms. There were no injuries in the flooding but it easily could have been very serious. The complete estimates for repairing the canal and the homes are not available at this time.

A report issued by the U.S. Bureau of Reclamation released March 20th concluded that the century-old irrigation canal failed due to burrowing rodents. A simple root cause analysis for this incident using the Cause Mapping method captures the tunneled holes in the embankment as one of the causes. Another one of the causes is the increased water flow in the canal caused by the nearly 2 inches of rain that fell the day before. The annual rainfall for the area is about 5 inches.

The Cause Map shows that the canal obviously failed because the stress on the embankment was greater than the strength of the embankment. The increased water flow added to the stress on the embankment while the holes tunneled by the rodents reduced the strength. A thorough root cause analysis built as a Cause Map can capture all of the causes in a simple, intuitive format that fits on one page.

Since the canal is almost 100 years old tunneling muskrats are not a surprise. If the holes would have been identified earlier and filled, the risk of the breach would have been reduced significantly. The evidence that the inspection and maintenance of the canals was ineffective is the fact that the canal failed due to holes. An effective inspection program would have found the holes and addressed them - that's the purpose of inspection and maintenance. Past inspections may have been conducted exactly as required, which simply means the previous inspection requirements were inadequate. Ineffective inspections is one of the causes of the canal failure that would need to be investigated further.

This is an intermediate level root cause analysis of the canal failure. It includes causes that were considered in the Bureau of Reclamation report as well as some of the evidence and solutions. A more detailed Cause Map can be created from the specific information in the bureau's report.



Cause Map

Detail Level



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