

1 Problem

What	Problem(s)	Dam failure
When	Date	June 5, 1976
	Time	11:57 a.m.
	Differences	Leak; dam drained in less than 6 hours
Where	Physical Location	Teton River, Idaho
	Unit/Process/Equipment	Dam
	Work/Task Being Done	Filling dam to capacity

Impact to the Goals		
Safety	14 people killed	
Environmental	Severe impact on ecosystem	
Cust. Service	3 towns evacuated	
Production-Schedule	Dam abandoned	\$48.5 M
Property	Property damage	\$400 M
		This incident >\$400 M

TETON DAM FAILURE

Teton River, Idaho - June 5, 1976

On June 5, 1976, workers were called to the Teton Dam to attempt to repair a leak. Workers in bulldozers narrowly avoided being sucked into the dam with their equipment, and watched helplessly as the dam was breached. It would kill 14 people and cause nearly \$1.5 billion in property and environmental damage and claims.

"The Bureau ignored its own data that rocks in the area were full of fissures, and in addition they filled the dam too fast . . . All it takes to bring a dam down is one crack, if that crack wets the soil within the interior portions of the dam, turning it into a quagmire."
 - Charles Perrow in "Normal Accidents"

Cause Mapping is a Root Cause Analysis method that captures basic cause-and-effect relationships supported with evidence.

CAUSE MAPPING

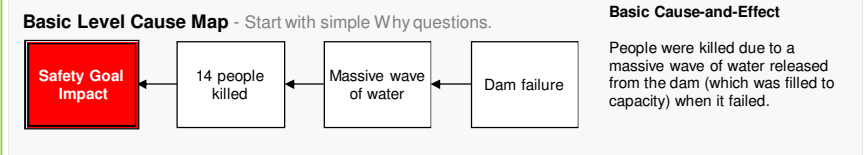
Problem Solving • Incident Investigation • Root Cause Analysis

Step 1 Problem What's the Problem?

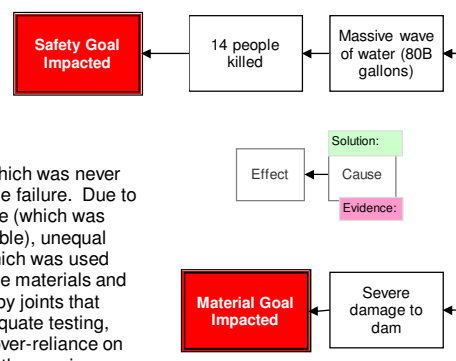
Step 2 Analysis Why did it happen?

Step 3 Solutions What will be done?

2 Analysis



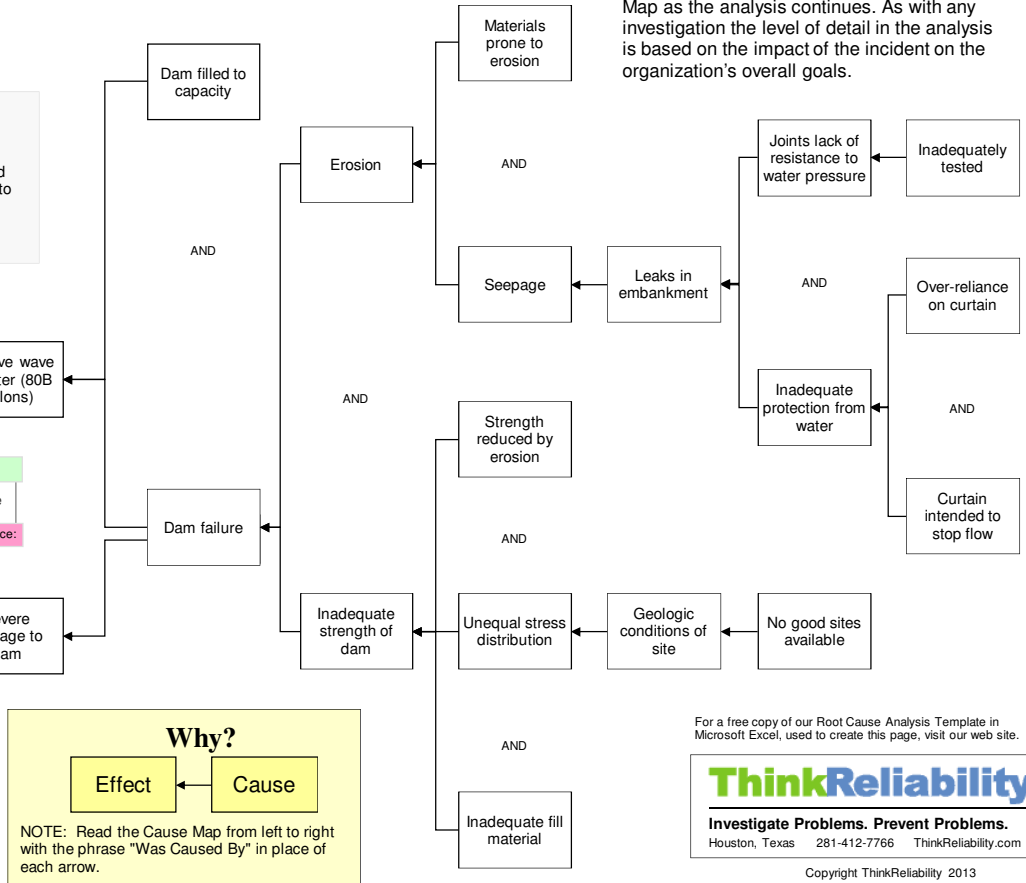
More Detailed Cause Map - Add detail as information becomes available.



More Detailed Cause-and-Effect

The failure caused severe damage to the dam, which was never rebuilt. Erosion and inadequate strength led to the failure. Due to the less than ideal geological conditions of the site (which was picked because there were no "good" sites available), unequal stress distribution and inadequate fill material (which was used from the site) led to reduced strength. Susceptible materials and seepage from leaks in the embankment, caused by joints that were not resistant to water pressure due to inadequate testing, and inadequate protection from water due to an over-reliance on an ineffective curtain intended to stop flow, led to the erosion.

Many geologists had predicted problems with the dam before it was built. Although tragic, and expensive, the failure of the Teton Dam did lead to many reforms in the Bureau of Reclamation, who is responsible for dam safety.



Even more detail can be added to this Cause Map as the analysis continues. As with any investigation the level of detail in the analysis is based on the impact of the incident on the organization's overall goals.

Why?

Effect ← Cause

NOTE: Read the Cause Map from left to right with the phrase "Was Caused By" in place of each arrow.

For a free copy of our Root Cause Analysis Template in Microsoft Excel, used to create this page, visit our web site.

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