

**Step 1. Outline**

|              |                            |                                                                                             |
|--------------|----------------------------|---------------------------------------------------------------------------------------------|
| <b>What</b>  | Problem(s)                 | Bluff collapse, release of coal ash                                                         |
| <b>When</b>  | Date                       | October 31, 2011                                                                            |
|              | Time                       | ~11:00 a.m.                                                                                 |
|              | Different, unusual, unique | Ravine filled in the 1950s with coal ash; no impact studies performed prior to construction |
| <b>Where</b> | State, city                | Oak Creek, WI                                                                               |
|              | Facility, site             | Power plant                                                                                 |
|              | Task being performed       | Construction of air quality control system                                                  |

**Bluff Collapse Releases Coal Ash  
Lake Michigan, October 31, 2011**

On October 31, 2011, a bluff collapsed at a power plant on the shores of Lake Michigan. The resulting mudslide took trailers, storage units, at least one truck and an unknown amount of coal ash into the lake, which provides drinking water for more than 40 million people. Cleanup is ongoing, but the overall impact to the environment has not yet been determined. Fortunately, no personnel were in the objects that ended up in the lake, so there were no injuries.

Although the safety goal was not impacted by this incident, there was the potential for personnel injury. Additionally, the environmental, customer service, property and labor goals were impacted by the pollution of the lake, loss of property and necessary cleanup. The causes for these impacts to the goals can be examined in a Cause Map, or visual root cause analysis.

**Impact to the Goals**

|                              |                                                   |
|------------------------------|---------------------------------------------------|
| <b>Safety</b>                | Potential for personnel injury                    |
| <b>Environmental</b>         | Pollution in Lake Michigan                        |
| <b>Customer Service</b>      | Potential to affect drinking water for 40 million |
| <b>Production-Schedule</b>   | None - power output unaffected                    |
| <b>Property, Equip, Mtls</b> | Loss of property                                  |
| <b>Labor, Time</b>           | Cleanup                                           |

**Step 2. Cause Map**

