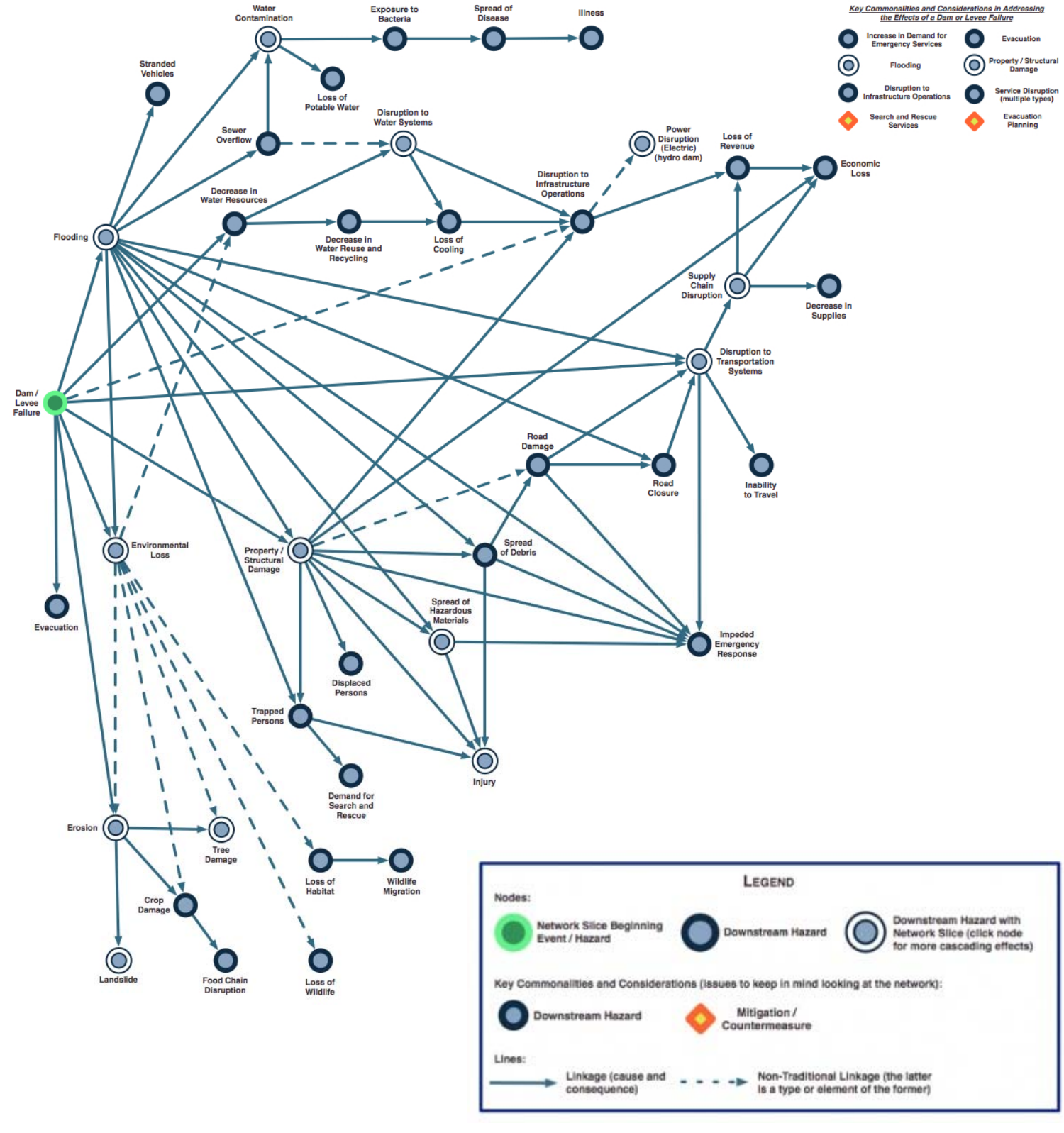
DAM/LEVEE FAILURE HAZARD NETWORK

The below hazard network represents potential cascading effects of a dam failure or levee failure.



NOTE: As with all hazard network slices included in The Knowledgebase, the above slice is a working draft and may be updated.

Included in the upper right corner of the hazard network are key commonalities and considerations that users should keep in mind when looking at the network. This list is not exhaustive, but highlights issues of importance as related to the effects of a dam failure or levee failure.

Examples of historical events related to a dam/levee failure and the downstream hazards above may be found in the Historical Events section of The Knowledgebase and in individual event/hazard descriptions.

Narrative Description of the Hazard Network

Below is a list of the hazards and outcomes caused by a dam failure or levee failure as depicted in the above network slice. Complementing this narrative description is a list of all Linkages pages found on the Dam/Levee Failure Hazard Network.

- Flooding (which may cause) *(see also the Flooding Hazard Network)*
  - Stranded Vehicles
  - Water Contamination (which may lead to) *(see also the Water Contamination Hazard Network)*
    - Exposure to Bacteria (which may result in)
      - Spread of Disease (which may cause)
        - Illness
    - Loss of Potable Water
  - Sewer Overflow (which may lead to)
    - Water Contamination (which may lead to hazards as previously listed, including Exposure to Bacteria and Loss of Potable Water, among others) *(see also the Water Contamination Hazard Network)*
    - Disruption to Water Systems, of which Sewer Overflow is a type (which may result in) *(see also the Disruption to Water Systems Hazard Network)*
      - Disruption to Infrastructure Operations (which may cause)
        - Power Disruption (Electric) (hydro dam), representing a type of disrupted infrastructure
        - Loss of Revenue (which may lead to)
          - Economic Loss
      - Loss of Cooling (which may cause)
      - Disruption to Infrastructure Operations (which may cause hazards previously listed, including Power Disruption (Electric) and Loss of Revenue, among others)
  - Disruption to Transportation Systems (which may lead to) *(see also the Disruption to Transportation Systems Hazard Network)*
    - Supply Chain Disruption (which may result in) *(see also the Supply Chain Disruption Hazard Network)*
      - Loss of Revenue (which may cause)
        - Economic Loss
      - Economic Loss
      - Decrease in Supplies
    - Inability to Travel
    - Impeded Emergency Response
  - Road Closure (which may lead to)
    - Disruption to Transportation Systems (which may result in hazards previously listed, including Supply Chain Disruption, Inability to Travel, and Impeded Emergency Response, among others) *(see also the Disruption to Transportation Systems Hazard Network)*

Impeded Emergency Response

Spread of Debris (which may lead to)

- Road Damage (which may result in)
  - Disruption to Transportation Systems (which may cause hazards previously listed, including Supply Chain Disruption, Inability to Travel, and Impeded Emergency Response, among others) *(see also the Disruption to Transportation Systems Hazard Network)*
  - Road Closure (which may cause hazards previously listed, including Disruption to Transportation Systems, among others)
  - Impeded Emergency Response
- Impeded Emergency Response
- Injury *(see also the Injury Hazard Network)*

Spread of Hazardous Materials (which may lead to) *(see also the Spread of Hazardous Materials Hazard Network)*

- Impeded Emergency Response
- Injury *(see also the Injury Hazard Network)*

Property/Structural Damage (which may lead to) *(see also the Property/Structural Damage Hazard Network)*

- Disruption to Infrastructure Operations (which may result in hazards as previously listed, including Power Disruption (Electric) and Loss of Revenue, among others)
- Economic Loss
- Road Damage, a type of Property/Structural Damage (which may result in hazards as previously listed, including Disruption to Transportation Systems, Road Closure, and Impeded Emergency Response, among others)
- Spread of Debris (which may result in hazards as previously listed, including Road Damage, Impeded Emergency Response, and Injury, among others)
- Impeded Emergency Response
- Spread of Hazardous Materials (which may result in hazards as previously listed, including Impeded Emergency Response and Injury, among others) *(see also the Spread of Hazardous Materials Hazard Network)*
- Injury *(see also the Injury Hazard Network)*
- Displaced Persons
- Trapped Persons (which may result in)
  - Injury *(see also the Injury Hazard Network)*
  - Demand for Search and Rescue

Trapped Persons (which may lead to hazards as previously listed, including Injury and Demand for Search and Rescue)

Environmental Loss (which may lead to) *(see also the Environmental Loss Hazard Network)*

- Decrease in Water Resources, a type of Environmental Loss (which may result in)
  - Disruption to Water Systems (which may cause hazards as previously listed, including Disruption to Infrastructure Operations and Loss of Cooling, among others) *(see also the Disruption to Water Systems Hazard Network)*
  - Decrease in Water Recycling and Reuse (which may cause)
    - Loss of Cooling (which may lead to hazards as previously listed, including Disruption to Infrastructure Operations, among others)
- Loss of Habitat, a type of Environmental Loss (which may result in)
  - Wildlife Migration
- Loss of Wildlife, a type of Environmental Loss
- Tree Damage, a type of Environmental Loss *(see also the Tree Damage Hazard Network)*
- Crop Damage, a type of Environmental Loss (which may result in)

        - Food Chain Disruption
    - Erosion, a type of Environmental Loss (which may result in) *(see also the Erosion Hazard Network)*
        - Tree Damage *(see also the Tree Damage Hazard Network)*
        - Crop Damage, (which may result in)
            - Food Chain Disruption
        - Landslide *(see also the Landslide Hazard Network)*
- Decrease in Water Resources (which may cause)

    Disruption to Water Systems (which may lead to)
    - Disruption to Infrastructure Operations (which may result in)
        - Power Disruption (Electric) (hydro dam), representing a type of disrupted infrastructure
        - Loss of Revenue (which may cause)
            - Economic Loss
    - Loss of Cooling (which may result in)
        - Disruption to Infrastructure Operations (which may cause hazards previously listed, including Power Disruption (Electric) and Loss of Revenue, among others)

    Decrease in Water Recycling and Reuse
    - Loss of Cooling (which may result in hazards as previously listed, including Disruption to Infrastructure Operations, among others)
- Disruption to Infrastructure Operations, of which Dam/Levee Failure is a type (which may cause)

    Power Disruption (Electric) (hydro dam), representing a type of disrupted infrastructure

    Loss of Revenue (which may lead to)
    - Economic Loss
- Disruption to Transportation Systems (which may cause) *(see also the Disruption to Transportation Systems Hazard Network)*

    Supply Chain Disruption (which may lead to) *(see also the Supply Chain Disruption Hazard Network)*
    - Loss of Revenue (which may result in)
        - Economic Loss
    - Economic Loss
    - Decrease in Supplies

    Inability to Travel

    Impeded Emergency Response
- Property/Structural Damage (which may cause) *(see also the Property/Structural Damage Hazard Network)*

    Disruption to Infrastructure Operations (which may lead to hazards as previously listed, including Power Disruption (Electric) and Loss of Revenue, among others]]

    Economic Loss

    Road Damage, a type of property/structural damage (which may lead to)
    - Disruption to Transportation Systems (which may result in hazards as previously listed, including Supply Chain Disruption and Inability to Travel, among others) *(see also the Disruption to Transportation Systems Hazard Network)*
    - Road Closure (which may result in)
        - Disruption to Transportation Systems (which may cause hazards as previously listed, including Supply Chain Disruption and Inability to Travel, among others) *(see also the Disruption to Transportation Systems Hazard Network)*

    Spread of Debris (which may lead to)
    - Road Damage, a type of property/structural damage (which may result in)

        - Disruption to Transportation Systems (which may cause hazards as previously listed, including Supply Chain Disruption and Inability to Travel, among others) *(see also the Disruption to Transportation Systems Hazard Network)*
        - Road Closure (which may cause hazards as previously listed, including Disruption to Transportation Systems, among others) *(see also the Disruption to Transportation Systems Hazard Network)*
    - Impeded Emergency Response
    - Injury *(see also the Injury Hazard Network)*

  Impeded Emergency Response

  Spread of Hazardous Materials (which may lead to)
    - Impeded Emergency Response
    - Injury *(see also the Injury Hazard Network)*

  Injury *(see also the Injury Hazard Network)*

  Displaced Persons

  Trapped Persons (which may lead to)
    - Injury *(see also the Injury Hazard Network)*
    - Demand for Search and Rescue

- Environmental Loss (which may cause) *(see also the Environmental Loss Hazard Network)*

  Decrease in Water Resources, a type of environmental loss (which may lead to hazards as previously listed, including Disruption to Water Systems and Decrease in Water Recycling and Reuse, among others)

  Loss of Habitat, a type of environmental loss (which may lead to)
    - Wildlife Migration

  Loss of Wildlife, a type of environmental loss

  Tree Damage, a type of environmental loss *(see also the Tree Damage Hazard Network)*

  Crop Damage, a type of environmental loss (which may lead to)
    - Food Chain Disruption

  Erosion, a type of environmental loss (which may lead to)
    - Tree Damage *(see also the Tree Damage Hazard Network)*
    - Crop Damage (which may result in hazards as previously listed, including Food Chain Disruption)
    - Landslide *(see also the Landslide Hazard Network)*
- Erosion (which may cause hazards as previously listed, including Tree Damage, Crop Damage, and Landslide, among others) *(see also the Erosion Hazard Network)*
- Evacuation

Key Commonalities and Considerations

As noted above, included in the upper right corner of the hazard network are key commonalities and considerations that users should keep in mind when looking at the network. This list is not exhaustive, but highlights issues of importance as related to the effects of a dam failure or levee failure. These issues include:

Downstream Hazards

- Increase in Demand for Emergency Services
- Evacuation
- Flooding
- Property/Structural Damage
- Disruption to Infrastructure Operations
- Service Disruption (multiple types)

Mitigation/Countermeasures

- Search and Rescue Services
- Evacuation Planning

Category: Networks