

External Flooding Integrated Assessment

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Flooding Reevaluated Hazards Revised Phase 1 Guidance Development

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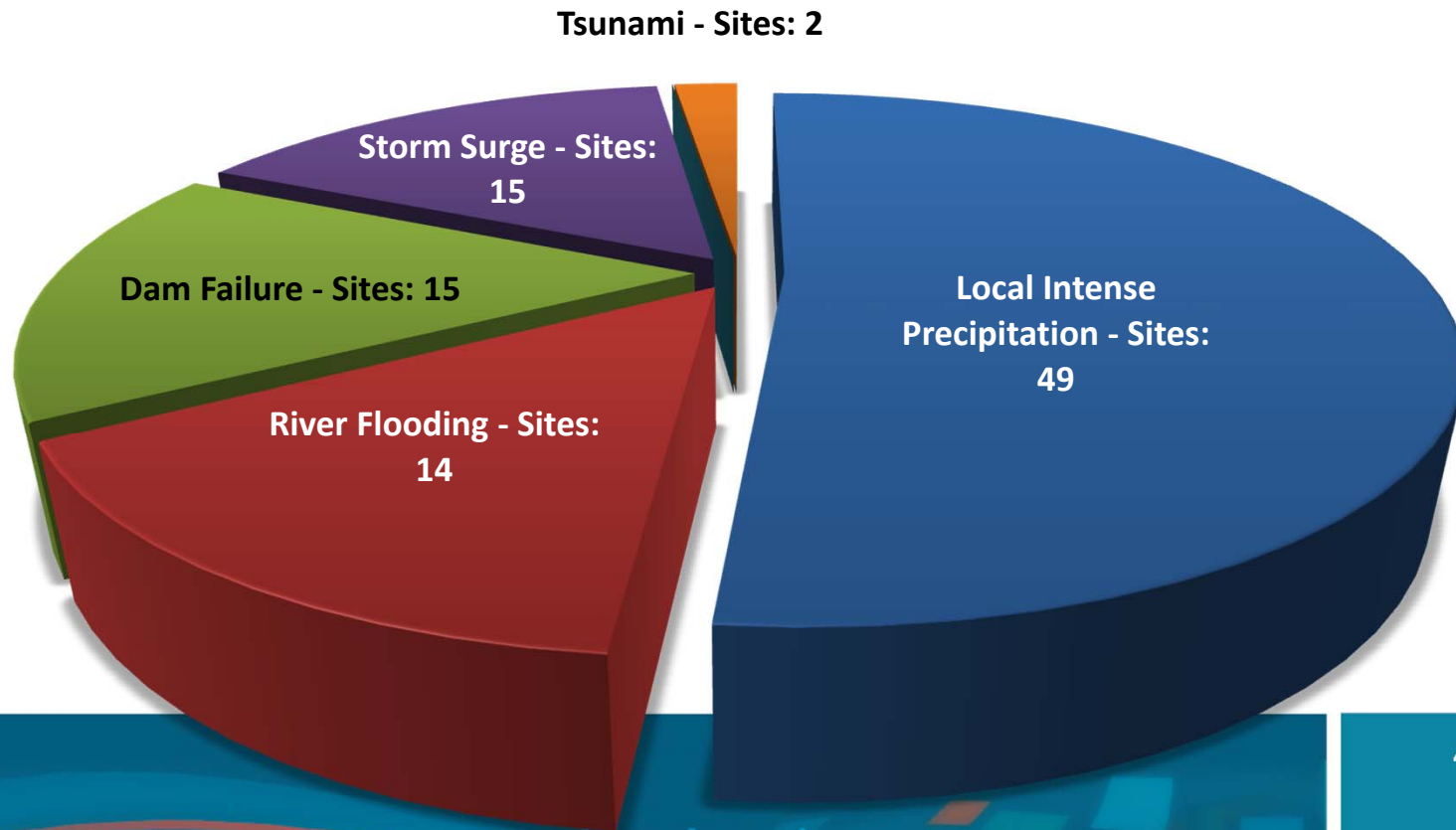
Purpose

- Write guidance document that appropriately addresses COMSECY 14-0037 & 15-0019
 - Focus on most important plants
 - Focus on areas with greater opportunity for safety enhancements
 - Flexibility in response

Key Aspects

- Focus on key safety functions
 - Core Cooling
 - Spent Fuel Pool Cooling
 - Containment Integrity
- Completed Staff Assessments will be used as input
- Evaluation of penetrations seals will be performed as a separate effort

Flood Mechanisms by Number of Sites



Tsunami - Sites: 2

Storm Surge - Sites: 15

Dam Failure - Sites: 15

River Flooding - Sites: 14

Local Intense Precipitation - Sites: 49

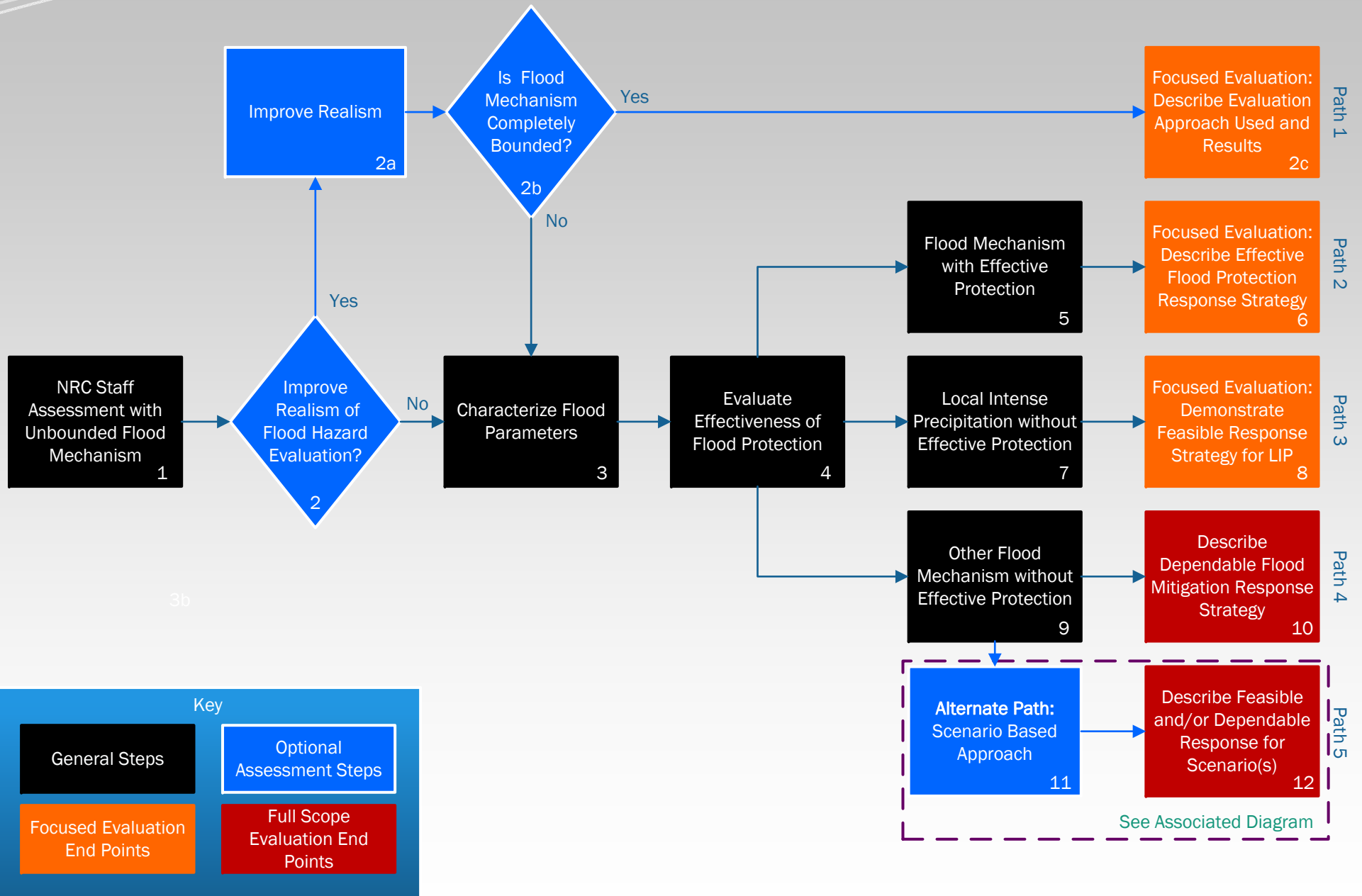
Effective Protection

- Credited features and actions that prevent flood conditions from impacting key safety functions
- Effectiveness determination includes
 - Passive and/or active components are reliable
 - Available physical margin is adequate
 - Flood protection response strategy is dependable

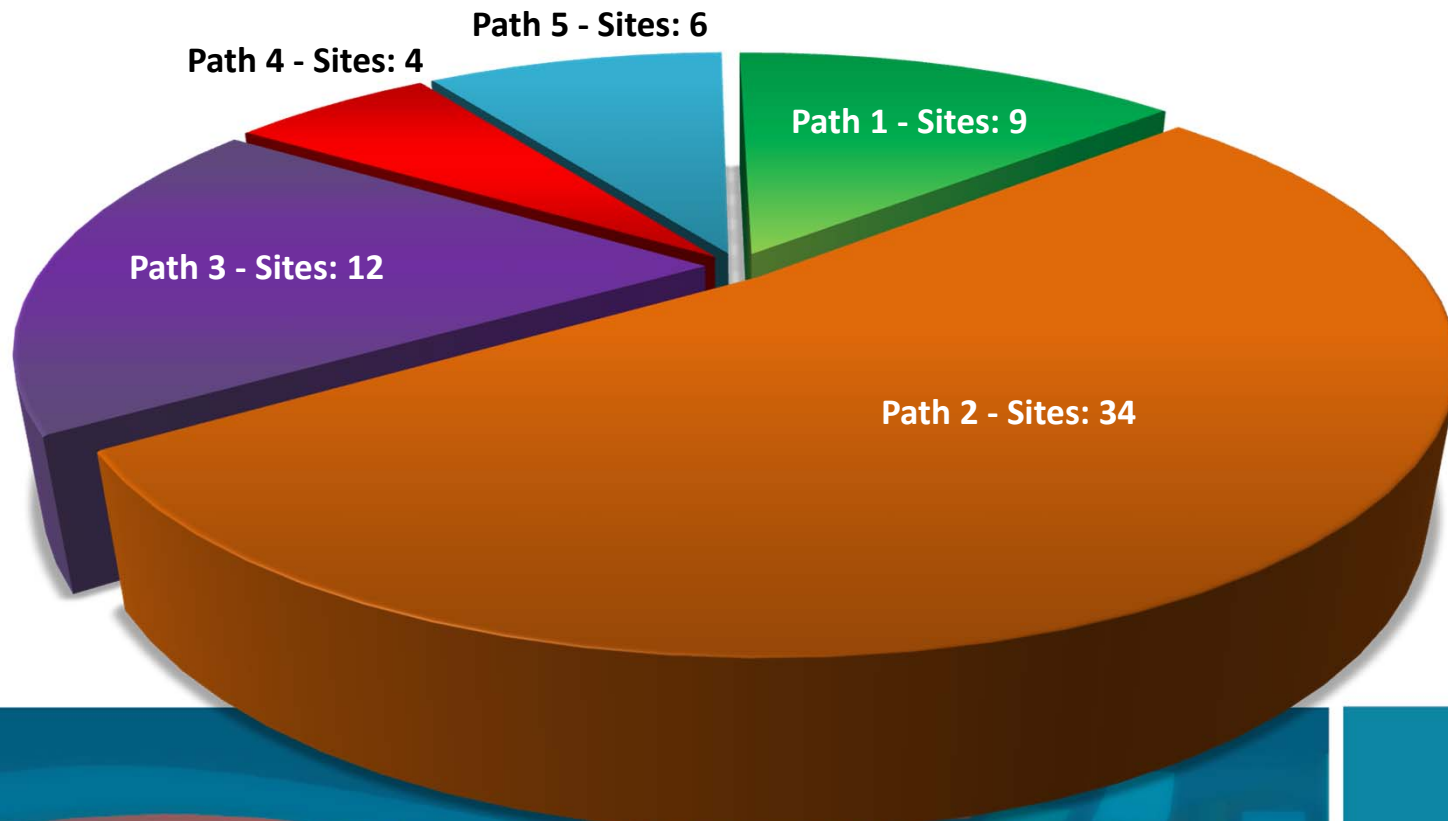
Dependable Mitigation

- Credited components and equipment are reliable
- Dependable Flood Response Strategy
 - Feasible Actions per NEI 12-06 Appendix E
 - Establishing unambiguous procedural triggers
 - Proceduralized and clear organizational response to a flood
 - Defining critical path actions
 - Developing a detailed flood response timeline
 - Determining time and time margin availability

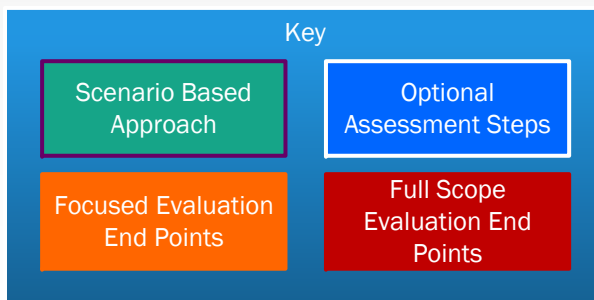
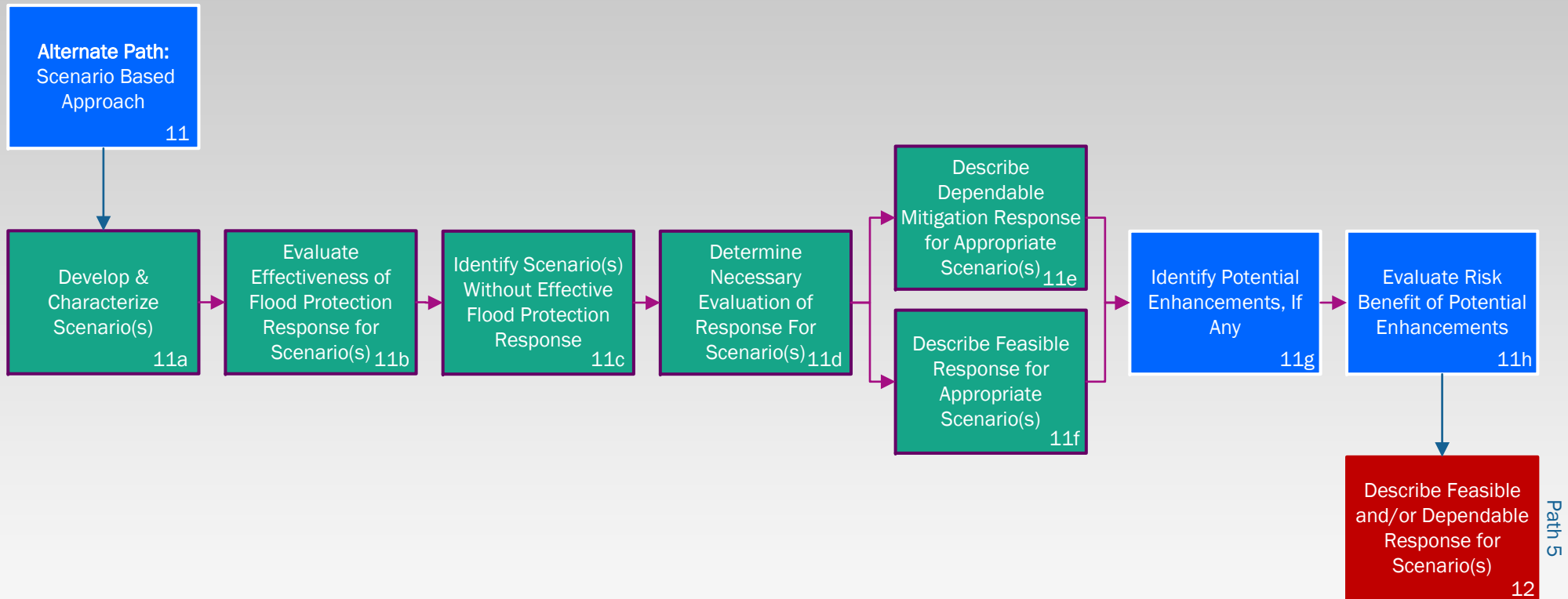
Overview of the External Flooding Integrated Assessment Process



Number of Sites for Each Response Path



External Flooding IA Scenario Based Approach



Section	% Complete	Lead
Framework of Process and Determination of Path	50	
Characterization of Flood Mechanism Parameters	75	Zachariah
Reduction of Conservatism	75	Zachariah
Description of Path 1	50	Zachariah
Identification of key safety functions	50	Zachariah
Impacted SSCs Supporting Key Safety Functions	75	Zachariah
Assessment of Credited Flood Protection of Identified SSCs	75	Zachariah
Description of Path 2	90	Zachariah
Description of Path 3	10	Zachariah
Description of Path 4	10	Zachariah
Description of Path 5	10	Zachariah
Path 1: Demonstrate Flood Mechanism Parameters are Bounded		
Objective	90	Bellini
Evaluation of Results	90	Bellini
Path 2: Focused Evaluation: Demonstration of Effective Protection		
Objective	90	Hubbard
Determination of Effective Protection	90	Hubbard
Path 3: Feasible Mitigation of Local Intense Precipitation (LIP)		
Objective	10	Zachariah
Evaluation Feasibility to Mitigate Loss of Functions	10	Zachariah
Demonstration of Overall Feasibility of Response	10	Zachariah
Path 4: Dependable Mitigation of Other Flood Mechanisms		
Objective	10	Schneider/Rohrer
Identification of Impacted Systems Unprotected from Flood	10	Schneider/Rohrer
Evaluation of Dependability to Mitigate Loss of Functions	10	Schneider/Rohrer
Demonstration of Overall Dependability of Response	10	Schneider/Rohrer
Path 5: Scenario Based Approach of Other Flood Mechanisms		
Objective	5	Miller
Development and Characterization of Scenarios	5	Miller
Identification of Scenarios with Adequate Available Physical Margin	5	Miller
Determine Necessary Level of Response for Appropriate Flood Scenarios	5	Miller
Dependable Mitigation of Appropriate Scenarios	5	Miller
Feasible Mitigation of Appropriate Scenarios	5	Miller
Identification and Evaluation of Any Potential Improvements	5	Miller
APPENDIX A: Reduction of Conservatism	75	Bellini
Identify flood mechanisms with conservatism	40	Bellini
Types of conservatism	80	Bellini
Characterization of Conservatism	80	Bellini
APPENDIX B: Evaluation of Passive and Active Components	90	Attarian
available Physical Margin	90	Attarian
Passive Components	90	Attarian
Active Components	90	Attarian
APPENDIX C: Evaluation of Manual Actions in Response to an External Flood	80	Miller
Overview	80	Miller
Overall Process of Evaluating A Flood Response Strategy	80	Miller
Evaluating Feasible Actions	80	Miller
Evaluating a Dependable Strategy	80	Miller
Procedural Cue to Initiate Response	80	Miller
Organizational Response to Procedure Initiation	80	Miller
Defining critical path actions responsible for maintaining KSFs	80	Miller
Flood Response Strategy Timeline Analysis	80	Miller
Confirmation and Compensatory Actions	80	Miller