

**The 1980 Eruptions of Mount St. Helens: Disregard for Volcanic Hazards and its Effects
on State Preparedness**

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Abstract

The 1980 eruptions of Mount St. Helens are an important part of Washington history. I narrowed down to this topic because it was a piece of the National Guard's history that received extensive coverage from the media. When searching for information about the emergency response, I had found a large number of sources that looked at the scientific studies, the heroic rescue stories, and the lives of those effected from mudflows, ashfall, and flooding. What was not covered as in-depth was how the state had managed emergency services prior to and during the eruptions. I searched through online libraries and the state archive, and I found only two sources that took a thorough look at the how the state handed emergency management. These two sources were also written immediately following the eruption, one in 1981 and the other in 1985. I wanted to analyze the emergency response to the eruption, determine what the failures were in response to the eruptions, and why those failures occurred. Looking at primary sources based on after action reviews from those involved, I would argue that the state was not worried about future eruptions and was thus, not prepared.

Abbreviations

ECC	Emergency Coordination Center
FEMA	Federal Emergency Management Agency
PIO	Public Information Officer
SAR	Search and Rescue
WADES	Washington Department of Emergency Services
WFF	Wildland Fire Fighting
WSP	Washington State Patrol
USFS	United States Forest Service
USGS	United States Geographic Survey

Introduction

In 1980, the state of Washington did not expect to find itself in the middle of the limelight. They especially didn't think it would be because of an awakening volcano. When Mount St. Helens erupted on March 27th, 1980, the state found itself unprepared. Following the eruption, federal and state agencies worked to make contingency plans, assess the hazards, and warn the public, all with less than two months before the largest eruption. Even with prior knowledge from the United States Geological Survey (USGS), the state of Washington was not prepared to respond to an event so unpredictable. The state of Washington had no contingency plan in place and the Washington State Department of Emergency Services (WADES) was inadequate due to a lack of funding and manpower. The state failed to keep all citizens informed of the hazards and had no emergency funding plan in the event of an emergency of this scale. The state of Washington and its citizens did not believe that they could face a volcanic threat in their lifetime, leading the state to be unprepared in its moment of response.

Methodology

While collecting and analyzing sources, I focused on articles and documents that were produced by the state and local governments and agencies; I specifically searched for their actions taken prior to, during, and after the eruption of May 18th, 1980, and for their assessments on their actions taken. The lens I used was from the perspective of an after-action analyst, focusing on the emergency response. I picked apart the successes and failures of the main state and local government actors in the overall response.

I specifically relied on the University of Washington Mount St. Helens Archival Collection. The documents acquired from it contained information about public information provided by the WADES in conjunction with the Federal Emergency Management Agency

(FEMA). They also provided a better perspective of the event and conflicts from the United States Forest Service (USFS) and a more detailed timeline of events from the USGS. Another archive that supplied useful resources was the State of Washington Online Archive, which supplied former Governor Dixie Lee's executive orders as Governor of the State of Washington preceding the eruption and local government resolutions portraying firsthand accounts of ashfall in eastern Washington.

Literature Review

The scholarship about the emergency response to the Mt. St. Helens eruptions focuses on two topics. One focus is the emergency response in the eyes of the government, often written by Thomas Saarinen, James Sell, and John Sorensen. The other is the civilian perspectives and consideration of hazards, often written by Ronald Perry, Michael Lindell, and Marjorie R. Greene. Beyond the few sources written between 1980 and 1985, the analysis of emergency response is not a popular topic. These identify three very important points. One, the state had no prior planning for an adequate response to an eruption event. Two, the state agencies did not communicate efficiently until after the main eruption of May 18th. And three, the public information shared following the March 27th eruption adequately informed citizens in the direct vicinity of the potential hazards from the volcano however, the citizens did not believe the mountain would erupt.

The sources I found most useful for an analysis of the response were case studies conducted years after the event, allowing the authors to have hindsight and a better understanding of the overall situation that had occurred. Works that fall into this category include Drabek's *Managing the Emergency response* and Abkowitz's *Operation Risk Management*. I also found two specific sources, *Warning and Response to the Mount St. Helens*

Eruptions by Saarinen and Sell and *Emergency Response to the Mount St. Helens Eruption: March 20 to April 10, 1980* by John H. Sorenson, which is a compilation of surveys taken either prior to or after the main eruption and after-action reports. These sources specifically provide a comprehensive survey of what those involved in the response felt about each actor's response to the eruption event.

Mark Abkowitz's *Operational Risk Management: A Case Study Approach to Effective Planning and Response* examines the Mount St. Helens eruption from a current-day perspective, knowing the information from all sides. This allowed Abkowitz to have a better understanding of the overall events of the eruption, furthering his ability to analyze the situation. Abkowitz recognized both success and failure points in the response taken by state organizations. Overall, Abkowitz found that the short-term response by federal, state, and local governments has been credited with saving lives, but they were still surprisingly unprepared and underfunded when considering the prior warnings from the USGS about the threat posed by Mt. St. Helens.¹ Some positive actions were the establishment of the red zone by the USFS, as outlined in its Mount St. Helens Contingency plan. Some failures highlighted were that the USGS had been tracking and informing the State of Washington since 1975 about the threat and hazards of a possible Mount St. Helens eruption in the next decades; when the volcano became active, the state found itself scrambling to prepare.²

In *Operational Risk Management: a case study approach to effective planning and response*, Abkowitz closes with a conclusion on what the common risk factors are for the

¹ Mark D. Abkowitz, "Eruption of Mount St. Helens" in *Operational Risk Management: a case study approach to effective planning and response* (Hoboken, NJ: John Wiley & Sons, 2008), 185, <https://ebookcentral-proquest-com.offcampus.lib.washington.edu/lib/washington/reader.action?docID=335777&ppg=5>.

² Ibid., 185.

emergency response. The factors that he notes were present were economic pressure, lack of planning and preparedness, and lack of communication.

Jack Kartez's journal article *Crisis Response Planning Toward a Contingent Analysis* used the Mount St. Helens disaster as an example of crisis response that had been analyzed prior and could be used to adapt new strategies in emergency planning and response. Kartez focuses on the actions of local jurisdictions and citizens. The data he based his article on was collected during the weeks following the May 18th eruption. The data covers what methods of communication local jurisdictions used, whether they followed state plans, and what decisions they made in an adaptive strategy.

Kartez identifies failures of communication networks on all levels from federal, state, and local jurisdictions. Radio broadcasts across multiple cities played over each other, causing confusion, and making it so cities couldn't inform their own citizens. There was not an outlined plan for this issue, forcing local jurisdictions to make their own plans. He also identifies the need, specifically in eastern Washington, for civilian participation in emergency actions such as local clean-ups. He also identifies that the majority of these local jurisdictions did not follow the countrywide emergency plans, nor did they use countrywide and civil defense programs.³ Overall, he concluded that local jurisdictions had to rely on themselves because they felt they could not rely on state and federal assistance during their time of crisis.

John Sorenson's report *Emergency Response to Mount St. Helens' Eruption: March 20 to April 10, 1980*, uses surveys and research from prior to the eruption to investigate the overall reaction from citizens, local jurisdictions, and state government organizations. He identified who

³ Jack D. Kartez, "Crisis Response Planning Toward a Contingent Analysis," *Journal of the American Planning Association* 50, no. 1 (Winter 1984): 10, <https://www.tandfonline.com/doi/abs/10.1080/01944368408976578>.

the main actors were in the overall response, and what the responsibilities and actions of these organizations were. He also identified what communication between these organizations looked like and whether this influenced the preparedness of each organization. Communication between organizations lacked greatly; state and federal agencies were segregated from each other, seen in the extensive response from the USFS and USGS, but not from the DES. Some organizations were so disconnected from the communication links, they received more information from public news media reports.⁴ Lastly, he sought to identify what the perceived risk was, from both the perspective of organization officials and citizens in known danger or hazard areas.⁵

This working paper provided a better general understanding of who was involved in responding to the eruption, prior to and during. It also informed me of which organizations took responsibility for which parts of the plan such as informing the public, early warning, and red zone enforcement. Sorenson's found that most local and state agencies were unprepared due to a general lack of a perceived threat, despite USGS warning, and Local efforts were hindered by a lack of hazard information.⁶ He also found that the emergency management measures used were mostly effective in minimizing risk to the public.⁷

In Drabek's *Managing the Emergency Response*, he discusses management and response to natural disasters/emergencies that occurred within the span of 1978 to 1980. The six disasters discussed are the Kansas 1978 Tornado, the Hill Country Texas flash flood of 1978, the Wichita Falls Texas 1979 tornado, the Cheyenne Wyoming 1979 tornado, the 1976 Jackson County

⁴ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption: March 20 to April 10, 1980*, by John H. Sorenson, 1981, 31.

⁵ *Ibid.*, 1-3.

⁶ *Ibid.*, 24-27

⁷ *Ibid.*, 60-61.

Mississippi hurricane, and the Mount St. Helens eruption. In a review of the response to these events, Drabek makes an analysis of the four qualities that were seen in all six disasters: localism, lack of standardization, unit diversity, and fragmentation. He also identified the problems found in these qualities and provides six suggestions to improve future response to events similar in issue. For the Mt. St. Helens eruption, he found that loosely connected and decentralized quality of emergency services could have responded quicker however, these organizations needed to work and communicate together when using resources to not over or under-respond.⁸ This article is useful to my analysis because it discusses the specific reasons that organizations had difficulty operating in both expected and unexpected outcomes of the eruption.

Warning and Response to the Mount St. Helen's Eruption by Thomas F. Saarinen and James L. Sell is the most in-depth of all these sources about the main actors in the overall response. The research is compiled of public information about the actions taken by state and federal organizations and 130 interviews of personnel and responders involved in the warning and response mission for Mount St. Helen's eruption in 1980. The authors analyzed what was done by each organization to respond, what the "good and bad" of the response was, and what the overall outcome of the mission was. Gaining the civilian perspective was important as well since the lack of belief of a future eruption had an effect.⁹ Saarinen and Sell's analysis gave me the best understanding of what I needed to look for in my analysis to determine how well Washington prepared for a possible eruption event. Overall, they found that there was a need for a clear chain of command, a set multi-organizational plan, and there needs to be further reaching

⁸ Thomas E. Drabek, "Managing Emergency Response," In "Emergency Management: A Challenge for Public Administration," special issue, *Public Administration Review* 45 (January 1985): 85-92, <https://www.jstor.org/stable/3135002>.

⁹ Thomas F. Saarinen and James L. Sell, *Warning and Response to the Mount. St. Helens Eruption* (Albany, NY: State University of New York Press, 1985), 4.

methods of informing the public of hazards. Also, the WADES needs to be well funded and resourced to properly act as the lead in emergency situations.¹⁰

Overall, these sources show that there was clearly a failure in the Mount St. Helens preparedness plan. These sources identify the main areas where the state had not prepared for this type of natural disaster and why. They also identify what the state organizations did right in their response to such an abrupt and unpredictable emergency. It is important to note that the eruption was unpredictable, since the technology of the period could not estimate when it would occur, nor could they estimate that the blast would be projected northward instead of upward into the sky. Together these sources assist in identifying where issues were, what the possible problems were for these shortcomings, and what the proper response should have been, had they prepared properly.

Background

The Mount St. Helens eruption of 1980 is currently the most devastating natural disaster that has occurred in the history of Washington State. The first eruption occurred on March 27th, following seven days of unusual seismic activity. This seismic activity continued until April 25th when it appeared to have lulled. Since activity had calmed down, and there was no definite way of predicting the eruptions, citizens and officials didn't believe the mountain was going to erupt anytime soon.¹¹ At 8:32 AM on May 18th, a 4.9 magnitude earthquake set off a landslide on the north face of the mountain, which was followed by an explosive eruption. Hurricane-force winds were felt as far as twenty miles from the mountain, ash and debris known as tephra as well as steam clouds were sent as high as 63,000 feet into the sky and began drifting east, and mudflows

¹⁰ Saarinen and Sell, *Warning and Response*, 188-199.

¹¹ *Ibid.*, 4.

filled the Toutle, Lewis, and Cowlitz rivers. These mudflows reached as far as the Columbia River and ended up filling its shipping channel.¹² The total amount of energy released was equivalent to a 400-megaton nuclear explosion; when evenly distributed through the period of eruption, this is the equivalent to detonating one Hiroshima-sized bomb, every second, for nine hours (27,000 bombs total).¹³ In total, 68 people were reported missing or killed (later confirmed 57 dead), 3,000 miles of river were damaged or destroyed, 150 square miles of forest was destroyed, and a reported \$1.8 billion in property and crops were destroyed.¹⁴ The eruption that occurred exceeded what the state and federal agencies had planned for. When the mountain blew, it exploded violently, laterally northwest, and destroyed all of what the agencies had identified as the “Red Zone” (which meant what) as well as large portions of the blue zone or “Hazard” zone.¹⁵

Main Actors

The United States Forest Service (USFS) took the lead in the overall response to the eruption; the USFS coordinated emergency response activities, collected and disseminated data about the mountain’s activity, provided facilities, and informed the public.¹⁶ The USFS had prior knowledge about the area and was well informed about the awakening of the volcano. They also had legal authority over the lands around the mountain, an authority that gave them the ability to

¹² Ronald Perry and Marjorie R. Greene, *Citizen Response to Volcanic Eruptions: The Case of Mt. St. Helens* (New York, NY: Irvington Publishers, 1983), 2-3.

¹³ Saarinen and Sell, *Warning and Response*, 11.

¹⁴ Perry and Greene, *Citizen Response to Volcanic Eruptions*, 3.

¹⁵ John Eisele, R. O’Halloran, D. Reay, G. Lindholm, L. Lewman, and W. Brady, “Deaths During the May 18, 1980, Eruption of Mount St. Helens,” *The New England Journal of Medicine* article by, Box 4, Folder 3, University of Washington Mount St. Helens Collection, University of Washington Library.

¹⁶ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens’ Eruption*, 1981, 20.

act quickly. The USFS used their Wildland Fire Fighting (WFF) plan to model a contingency plan in addition to reviewing the Mount Baker contingency plans and reports.¹⁷ The WFF plan provided the USFS with a flexible model that allowed them to use extra funds for additional personnel, specifically public information officers (PIO). These PIOs provided the media updates on the physical situation at the mountain and possible hazards; with an exponential increase in public and government interest, these PIOs were a necessity.¹⁸ The USFS' WFF plan also had a military style, emergency command structure, which allowed the agency to make quick decisions that avoided bureaucratic processes which other agencies had to deal with when making decisions. This streamlined structure reduced reaction time.¹⁹ In addition to having prior knowledge and plans, the USFS had the ability to easily draw extra PIOs to deal with the influx of citizens and government need for information.²⁰ Lastly, the USFS had the facilities to host government officials and other responding agencies near the location.²¹ Overall, the USFS had the planning, resources, and experience to take the lead on the response of the eruption in the vicinity of the mountain.

The United State Geological Survey (USGS) took the role of assessing the hazard potential of the volcano in order to attempt to predict future activity and eruptions. In addition, they were responsible for informing the public about these hazards and physical changes.²² The

¹⁷ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 15; Saarinen and Sell, *Warning and Response*, 62.

¹⁸ *Ibid.*, 63.

¹⁹ Saarinen and Sell, *Warning and Response*, 64.

²⁰ *Ibid.*, 64.

²¹ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 19.

²² *Ibid.*, 20.

USGS responded to seismic activity that occurred on March 20th by sending a few geologists. They sent 15 to 20 additional geologists after the March 27th eruption.²³ Their job was to monitor the activity of the mountain, but they quickly took the role of informing both the agencies involved and the public of the hazards of the mountain and its activity. These agencies at the time were the USFS, the Washington Department of Environmental Safety (WADES), the Washington State Patrol (WASP), the Washington Department of Transportation (WADT), and surrounding Sheriff's offices. It was not in the original plan for the USGS to take point in providing information, but the severe lack of people with knowledge of the hazards forced the agency to take on this responsibility as well.²⁴ The problems faced by the USGS pertained to an overall lack of knowledge about volcanos. Today, we can recognize the physical changes of the mountain, such as the growth of the northern bulge and other physical landscape changes, as precursors to the eruption. The observers in 1980 had obsolete equipment and limited knowledge which decreased their ability to predict when it would erupt.²⁵ This is important to note because, without the ability to accurately predict the eruption, the state agencies were at the whims of the mountain. This wasn't a variable that could be controlled by the state, making it a variable that could be included in an analysis of the state's actions to prepare for an eruption.

Fortunately, in 1978, the USGS had published an article most commonly referred to as "The Blue Book." The Blue Book was a bulletin that assessed the potential hazards from an eruption of Mt. St. Helens, written by Crandell and Mullineaux. This bulletin identifies the effects that volcanoes can have on the property and people in the vicinity of a possible eruption.

²³ Saarinen and Sell, *Warning and Response*, 44.

²⁴ *Ibid.*, 45.

²⁵ Abkowitz, "Eruption of Mount St. Helens," 186.

The Cascade Volcano Hazard Appraisal program had identified Mt. St. Helens as a near potential threat, pushing the USGS to make a hazard assessment. Due to the Disaster Relief Act of 1974, the USGS was responsible for informing the public about geological hazards. These assessments fell under this responsibility.²⁶ Without this assessment, the planning for eruption could have been significantly hindered.²⁷ The USGS utilized all the resources at its disposal to monitor the situation and inform the public and joint operational agencies. The agency's largest failure was not informing public officials in Eastern Washington of possible ashfall, which was shown in a lack of preparation in the East for those hazards.²⁸

The WADES sat in an interesting position. As the Department of Emergency Services, they should have been placed in the role of the head of response. However, with a lack of personnel, confidence from other organizations, and funding, they fell into the role of assisting with planning and disseminating public information.²⁹ Even in the original *Special Volcanic Eruption Disaster Plan* compiled on March 26th, prior to the first eruption, the WADES only designated role was to share information from the USFS and USGS with 'affected agencies'.³⁰ The lack of funding and manpower greatly hindered the WADES in its ability to act as the Emergency Service agency of the state. The organization had twenty-one employees, was housed in WWII barracks, had "antiquated equipment" and "definitely not state-of-the-art

²⁶ Saarinen and Sell, *Warning and Response*, 52.

²⁷ Ibid., 44; US Department of the Interior, United States Geological Survey, *Potential Hazards from Future Eruptions of Mount St. Helens Volcano*, Washington, no. 1383-C, by Dwight R. Crandell and Donald R. Mullineaux (1978), <https://pubs.er.usgs.gov/publication/b1383C>.

²⁸ Saarinen and Sell, *Warning and Response*, 55, 120.

²⁹ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 21; Saarinen and Sell, *Warning and Response*, 81.

³⁰ US Congress, Senate, Hearing before the Committee on Appropriations, Special Fiscal Year 1980 Supplemental Hearing, 96th Cong., 1st sess., 1980, <https://pubs.usgs.gov/pp/1250/report.pdf>

communication equipment.³¹ The agency which should have taken the lead was barely capable of keeping all agencies informed, which identifies the state's largest issue with emergency preparedness: the state government had not placed a priority in preparation.

During an eruption event, the sheriff departments of Cowlitz, Skamania, and Clark counties were responsible for emergency warnings in their counties, setting up and manning roadblocks for any established hazard zones, and assisting in evacuation.³² The sheriff's department acted firmly in their counties; however, they could only provide such a prolonged response until they ran out of funding to pay for the man hours. Each Sheriff's department had allotted \$10,000 to \$12,000 total for responding to such emergencies, and manning roadblocks took roughly \$3,500 a day.³³ Another issue was that by law, the county sheriffs had the responsibility and jurisdiction over search and rescue (SAR). However, there were multiple resources to help the departments with SARs, such as the Washington National Guard, Scott Air Force base, and the USFS.³⁴ Although the sheriffs and their deputies were legally in charge, there was still mass confusion about where SAR could come from. This jurisdiction confusion was only solved later, following the main eruption of May 18th, out of the necessity at the time of emergency.³⁵

State Preparedness

³¹ Saarinen and Sell, *Warning and Response*, 80-81.

³² Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 22.

³³ *Ibid.*, 47.

³⁴ *Clouds of Ash, Rivers of Volcanic Mud, Piles of Contingency plans*, for presentation at ASPA National Conference by Gayle Rothrock, April 14, 1981, Box 6, Folder 5, University of Washington Mount St. Helens Collection, University of Washington Library, 37.

³⁵ Saarinen and Sell, *Warning and Response*, 102.

Prior to the small eruption on March 27th, 1980, the state's preparedness for volcanic activity appears to be little to none. Following the activity of Mt. Baker in March of 1975, Governor Evans issued Executive order 75-03, recognizing the potential for natural and manmade disasters and calling on the WADES to issue new plans.³⁶ The order read:

“...recognizing the continuing possibility of future disasters resulting from flood, storm, earthquake, fire, or other natural or manmade catastrophic events...I designate the Washington State Department of Emergency Services with the primary responsibility to develop, maintain, improve, and update all state government comprehensive disaster preparedness plans in conjunction with other appropriate state agencies. The plans shall include all necessary actions to insure compatibility with applicable disaster relief and mitigation laws and regulations.”

From March 1975 to February 1977, the USFS, USGS, and local sheriffs responded to the activity of Mt. Baker. The closed areas around the mountain, slowly backed closures off until fully lifting restrictions in February of 1977.³⁷ Citizens who suffered from closures received no financial assistance, leaving a heavy burden on residents.³⁸ This soured the USFS reputation and appeared as “another example of the meddling federal government.”³⁹ Responding to this situation provided the USGS and the USFS with hands on experience responding to volcanic activity, and should have given the state government an idea about the volcanic hazard present in the state.

The Blue Book, the USGC Hazard assessment of Mt. St. Helens, was distributed and discussed in a meeting with federal and state officials in December of 1978, in accordance with

³⁶ Daniel J. Evans, Executive Order 75-03, “Designation of Washington State Department of Emergency Services Authority to Develop State and Local Government Disaster Preparedness Plans and Programs”, (March 24, 1975), https://www.governor.wa.gov/sites/default/files/exe_order/eo_75-03.pdf

³⁷ David Hodge, Virginia Sharp, and Marion Marts, “Contemporary Responses to Volcanism: Case Studies from the Cascades and Hawaii,” in *Volcanic Activity and Human Ecology*, ed. Donald K. Grayson and Payson D. Sheets (Cambridge: Academic Press, 1979), 225-227.

³⁸ *Ibid.*, 224.

³⁹ Richard A. Warrick, “Volcanoes as Hazard: An Overview,” in Grayson and Sheets, 184.

the USGS Cascade Volcano Hazard Appraisal program. Originally when they received the book and notification of the USGS assessment, officials in Washington took it as a warning of an immediate eruption, and held a meeting in January of 1979 to discuss.⁴⁰ When the officials learned that such an event would occur in a sparsely populated area, was unpredictable in nature, and could take as long as 100 years to happen, the importance of being prepared was reduced in their eyes when compared to the seasonal floods and fires in the state of Washington.⁴¹ In an article published a year after the Blue Book, The same authors, Dwight Crandell and Donal R. Mullineaux, made the statement that due to the lack of historical record of cascade eruptions, the general public disregarded the possibility of future eruptions.⁴² It's clear that the state didn't expect volcanic activity to be a threat, and this greatly affected their level of preparedness.

Prior to the activity of Mt. St. Helens in March of 1980, there is no evidence of a volcanic contingency plan for Mt. St. Helens in place by the state agencies, nor actions toward making one. According to the US Senate's Special Fiscal Year Hearing of 1980, there were two clearly identified contingency plans to respond to volcanic activity, established after the initial eruption of March 27th. First, the USFS had created their contingency plan that included the roles and responsibilities of the USFS and Skamania and Cowlitz county sheriffs for the immediate area of the Mt. St. Helens land and surrounding towns. This plan had been adapted from their Wildlands Fire Fighting Plan, so it was not perfect, but would work on a temporary basis.⁴³ The other plan,

⁴⁰ Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 2.

⁴¹ *Perspectives: The Eruption of Mount St. Helens, Entering the Era of Real-time Geology*, for presentation at ASPA National Conference by Robert L. Wesson, April 14, 1981, Box 6, Folder 5, University of Washington Mount St. Helens Collection, University of Washington Library, 7.

⁴² Dwight Crandell, Donal R. Mullineaux and C. Dan Miller, "Volcanic-Hazards Studies in the Cascade Range of the Western United States," in Grayson and Sheets, 197.

⁴³ Saarinen and Sell, *Warning and Response*, 64-65.

named the *Mt. St. Helens Contingency Plan* was established on April 6th, 1980; it identified the roles of agencies participating in the Emergency Coordination Center (ECC), an intergovernmental organization. The ECC headquarters was located in Vancouver, Washington, and was meant to be a joint operation center for the emergency response; information flowed through the ECC, whether for joint operations or for informing the public, the ECC would act as the hub.⁴⁴

After the activity on March 27th, cities also started making their own emergency plans as well, but the amount varied significantly across the board. Some cities, such as Mercer Island and Seattle, made in-depth plans for ashfall and other effects that would most likely not affect them, whereas cities like Chehalis and Longview, made extensive plans for flooding and mudflows while overlooking the damaging effects of ashfall. Overall, there was a level of preparedness in these towns and cities however, there was no centralized plan out outline to cover all hazards.⁴⁵ In Eastern Washington immediately following the eruption, cities and counties didn't even follow the emergency plans that had been laid out by the state; less than one-third of twenty-six Eastern Washington jurisdictions had reported using a countrywide emergency plan; Most thought local use of judgment was more reliable.⁴⁶ Due to this disregard of the possibility of an eruption, the state of Washington was not prepared to respond. The state lacked a thorough and centralized plan, leaving the state to be broken into different levels of

⁴⁴ US Congress, Senate, Hearing before the Committee on Appropriations, Special Fiscal Year 1980 Supplemental Hearing, 96th Cong., 1st sess., 1980, 102-21.

⁴⁵ *Human Needs and Mt. St. Helens*, memorandum to inform representatives Wayne Ehlers and Joe Taller by Jane A. Boyajian Raible, July 14, 1980, Box 4, Folder 7, University of Washington Mount St. Helens Collection, University of Washington Library.

⁴⁶ Kartez, "Crisis Response Planning Toward a Contingent Analysis," 10.

preparedness, causing some portions of the state to suffer more than others, specifically Eastern Washington.

The Red Zone

One of the most publicized actions taken by the State government as directed by the USFS and the USGS was the establishment of a hazard zone, first known as the Red Zone, and later with an added Blue Zone. Collectively, they were known as The Hazard Zone. These zones stood as protective boundaries for citizens; Originally, the Red Zone was off limits to anyone who was not a part of the research scientists or law enforcement officers. You could also apply for a pass from the Washington State Director of Emergency Services.⁴⁷ The Blue Zone was later added; it covered an additional 5 miles from the Red Zone and allowed loggers and property owners access during the daytime only.⁴⁸ The Red Zone was first established by the USFS, with the assistance of the USGS, accurately reflecting the hazard areas in the vicinity.⁴⁹ Citizens however, fought against the establishment of a Red Zone as many property owners believed that there was no real danger. In their eyes, the government had no right to keep them out of their own property. The Weyerhaeuser Lumber Company fought for rights to the lands near the mountain to continue its lumber operation and won.⁵⁰

⁴⁷ *The Federal Disaster Relief Organization for the Mt St Helens Eruption*, for presentation at ASPA National Conference by Richard A. Buck, April 14, 1981, Box 6, Folder 5, University of Washington Mount St. Helens Collection, University of Washington Library, 61.

⁴⁸ *Perspectives: The Eruption of Mount St. Helens*, by Robert L. Wesson, 8.

⁴⁹ Thomas F. Saarinen and James L. Sell, *Warning and Response to the Mount. St. Helens Eruption*, 28.

⁵⁰ *Aftershocks at Mount St. Helens*, Columbia Journal Review article by Claudia Morain, September-October 1983, Box 4, Folder 3, University of Washington Mount St. Helens Collection, University of Washington Library, 6.

Eventually, the official Hazard Zone was established on April 30th in accordance with the Governor's executive order 80-05.⁵¹ The limits were changed multiple times prior to and after the executive order, finally settling two weeks prior to the eruption on May 18th with the establishment of a Blue Zone.⁵² Although it was established, the verbiage for the limits of the zone were so confusing that members of the public media even asked for the "English version."⁵³ The governor simply told the media it was roughly a five-mile circle around the mountain; however, it was not so simple. On the Southern and Eastern sides of the mountain, the zone reached six to eight miles. On the Northern and Western sides, there were chunks wrapped around making the zone reach about two and a half to 3 and a half miles; these chunks happened to be portions of the Weyerhaeuser Lumber company lands.⁵⁴

Even with the hazard zones established, they did not stop people interested in a closer view of the mountain. This led to a new problem for the sheriff's departments and the National Guardsmen manning the roadblocks; whose jurisdiction were the trespassers under? Who was responsible for apprehension and processing? The lands were federal lands of the USFS, but the highways were under state jurisdiction by the Washington State Patrol (WSP), and the people were being arrested under county jurisdiction. This problem did not have a well-established

⁵¹ Dixy L. Ray, Executive Order 80-05, "Mt. St. Helens", (April 30, 1980), https://www.governor.wa.gov/sites/default/files/exe_order/eo_80-05.pdf

⁵² *Aftershocks at Mount St. Helens*, Columbia Journal Review article by Claudia Morain, September-October 1983, Box 4, Folder 3, University of Washington Mount St. Helens Collection, University of Washington Library, 8.

⁵³ *Ibid.*, 9.

⁵⁴ *Ibid.*, 9.

solution which led to most cases being dropped and the trespassers being released with no charges filed.⁵⁵

In the end, the biggest problem was the overall lack of coverage of the hazard zone; the zone ended up being smaller than the projected destruction. When the dust settled and search and rescue was conducted, only three of the total dead were found in the red zone and all three had had permission to be there. Red zone areas on the north side, where the path of destruction lay, were as thin as three miles, despite predictions showing areas with up to twenty miles of destruction.⁵⁶ Casualties were found as far as sixteen miles north of the mountain.⁵⁷

Prior to the eruption, some citizens recognized that the Warehouse Company had pulled strings to be able to retain the ability to operate in the dangerous area.⁵⁸ This can be seen as a representation of the state's lack of priority in ensuring a thorough response. The state was lucky that the eruption occurred on a Sunday when most loggers were home instead of in the destruction zone. As well as group of people planning on visiting their property, being escorted by the Sheriff's department, had not entered the hazard zone yet since the planned entry was at 10:00am.⁵⁹ The Red Zone was first a USFS and USGS concept, without any power from the state supporting it until Executive Order 80-05. The people of Washington found the Hazard Zone as

⁵⁵ *Aftershocks at Mount St. Helens*, Columbia Journal Review article by Claudia Morain, 62.

⁵⁶ *Ibid.*, 9.

⁵⁷ *Mount St. Helens Eruptions, May 18 to June 12, 1980: an Overview of the Acute health impact*, Article from Journal of the American Medical Association by P Baxter, R. Ing, H. Falk, J. French, G. Stein, R. Bernstein, J. Merchant, and J. Allard, December 4, 1981, Box 4, Folder 3, University of Washington Mount St. Helens Collection, University of Washington Library, 2586.

⁵⁸ *Aftershocks at Mount St. Helens*, Columbia Journal Review article by Claudia Morain, 10.

⁵⁹ Saarinen and Sell, *Warning and Response*, 187-188.

more of a hindrance to their lives than as a protective barrier. In the end, the Hazard Zone didn't cover enough to protect all human life.

Public Information and Funding

When it came to public information, there were great actions and huge issues. In most cases, the citizens in the affected areas were well informed of the risks. Whether in press conferences from the ECC or media on the radio, almost every citizen in immediate danger knew the hazards. Around 90% of those questioned in a survey heard hazard information at least 3 times a day (the survey was conducted in the vicinity of the mountain).⁶⁰ Even with the abundance of information there were still those who doubted the hazard. One Logger was interviewed; he compared Mt St Helens to Hawaiian volcanos, noting that you can bus to the edge of those volcanos, that St. Helens will be no different, and that he sees no hazard.⁶¹ The problem here is that people continued to compare the volcanoes to the slow and controlled eruptions of Hawaiian volcanoes, where the structure of Cascade volcanoes produced violent and explosive eruptions.⁶² Another issue occurring, that supports the idea of citizens not truly being worried about an eruption, was that when the media slowed reports about the volcano, due to lulls in its activity, the public started speaking out to question the government's caution.⁶³

⁶⁰ "Washingtonians Look at Their Volcano", article from *Hazard Monthly* by Ronald Perry, Michael Lindell, and Marjorie Green, July 1980, Box 2, Folder 6, University of Washington Mount St. Helens Collection, University of Washington Library, 13.

⁶¹ US Department of the Interior, United States Geological Survey, *Volcanic Eruptions of 1980 at Mount St. Helens: The First 100 Days*, no. 1249, by Bruce L. Foxworthy and Mary Hill, 1982, 37, <http://pubs.er.usgs.gov/publication/pp1249>.

⁶² *Ibid.*, 37.

⁶³ *Ibid.*, 37.

Despite this abundance of warnings, there was a lack of information specific to the problem of ashfall, especially in Eastern Washington. The USGS, being the most knowledgeable, were held responsible for informing local governments and agencies about the hazards, while informing the public of hazards had been pushed to USFS PIOs.⁶⁴ Plenty of information about the hazards of the ashfall, respiratory issues and damages to property, was provided through the use of bulletins.⁶⁵ However, with information being relayed to the ECC in Vancouver, representatives on the east side of the cascades did not receive hazard information, leaving them in the dark about the hazard they should be most worried about.⁶⁶ In addition to the oversight from the ECC, the media also failed to inform the public due to its narrow focus on the immediate hazards of mudflows and flood threats.⁶⁷ Following the eruption of May 18th, ashfall between one and four inches covered twenty percent of the state Washington. Eastern Washington was “at a standstill” for at least one week. Everywhere near open air was covered and Eastern Washington was thought to “remain a dust bowl for years to come.”⁶⁸ Eastern Washington was unprepared. Without plans that provided water trucks for cleanup and public information to the public about the damage that could occur to machinery and vehicles, damages were greater than they should have been. Cities and towns were covered in ash significantly longer than if they had plans in place to provide aid. The media had also put more focus on the

⁶⁴ Saarinen and Sell, *Warning and Response*, 34.

⁶⁵ US Department of the Interior, United States Geological Survey, *What to do when a Volcano Erupts*, bulletin prepared at the request of state and local officials, April 3, 1980, Box 6, Folder 8, University of Washington Mount St. Helens Collection, University of Washington Library.

⁶⁶ Saarinen and Sell, *Warning and Response*, 55.

⁶⁷ *Mount St. Helens Eruptions, May 18 to June 12, 1980: an Overview of the Acute health impact*, by P Baxter, R. Ing, H. Falk, J. French, G. Stein, R. Bernstein, J. Merchant, and J. Allard, 2587.

⁶⁸ *The Federal Disaster Relief Organization for the Mt St Helens Eruption*, for presentation at ASPA National Conference by Richard A. Buck, 23.

everyday physical elements of the mountain than on the political discourse of emergency planning. Instead of looking at what they weren't being told about, they worried more about the immediate area. This could reflect the public perception that they doubted the possibility of an eruption, as reporters are quoted in *Aftershock at Mount St. Helens*, or a sense of trust in planning officials.

One problem that was consistent across all agencies and governments was a lack of funding and manpower. In Eastern Washington, officials who were uninformed of the possible problems with ashfall had no prior planning to respond. After the eruption, cities and towns found themselves without a plan, scrambling to find any equipment to assist in clearing up ash. In the city of Ellensburg, the local government had to immediately apply for financial aid to be able to afford the clean-ups, additional workers, and equipment.⁶⁹ In Cheney, the officials there had to rely on personal connections with other cities to be able to receive equipment.⁷⁰ They were able to borrow a water truck from the city of Fernie in Canada.⁷¹ Lack of funding affected into government agencies as well. For example, the WADES found itself with only twenty-one employees. For such a large response to a possible emergency, the WADES was undermanned and underfunded, eventually taking the role of public information dissemination as the only option.⁷² Before Cheney had received aid from Fernie, they had sent a message for water trucks from the WADES but received no response. WADES was too tied up with distributing aid across

⁶⁹ Declaration of a state of emergency, Ellensburg City Council Res. 1980-9, (June 2, 1980), <https://www.digitalarchives.wa.gov/Record/View/F19432AB0544112B55714A6156C235BE>.

⁷⁰ Kartez, "Crisis Response Planning Toward a Contingent Analysis," 13.

⁷¹ Expression of Gratitude, Cheney City Council Res. C-401, (June 24th, 1980), <https://www.digitalarchives.wa.gov/Record/View/0F3CD1E8C1DC820CA20C152B8553404E>

⁷² Saarinen and Sell, *Warning and Response*, 81-83.

the state.⁷³ The state not only lacked a disaster emergency fund, but the financial plans they had in place were not adequate enough to maintain a constant response to an uncertain disaster, leading to unmanned roadblocks and skeleton crews manning emergency centers.⁷⁴ The states local agencies couldn't pay for the manpower to respond, nor could it aid local jurisdictions with their financial burdens either.

Conclusion

The overall response was mostly successful when you consider the amount of time spent planning, the amount of pressure from the citizens about being overly cautious, and the lack of prior knowledge about responding to a volcanic eruption. With this said, the response could have been seen as a larger success if the state had recognized the hazards of the volcano prior to its March 27th eruption, especially following all prior warnings from the USGS and the activity of Mount Baker. Due to this disregard for the Cascade Range's volcanic hazards, the state had to scramble to make up for lost time, and it was visible in the outcome of its response. They developed contingency plans, hazard zones, and a public information network that were mostly effective. In the end, 57 people were confirmed dead, and if the responders hadn't set a hazard zone and responded effectively to public information needs, the loss of life could've been more catastrophic. Due to the proximity of cascade volcanos, such as Mount Rainier, to the Puget sound, is important to reflect on the past to ensure that we are planning for possible future outcomes, and not relying on luck.

⁷³ Kartez, "Crisis Response Planning Toward a Contingent Analysis," 13-14.

⁷⁴ Saarinen and Sell, *Warning and Response*, 80; Oak Ridge National Laboratory, *Emergency Response to Mount St. Helens' Eruption*, 47.

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