

2014

**IMPROVING COMMUNITY  
RESPONSE TO WILDFIRE:  
2013 FIRE SEASON FINDINGS  
REPORT**

**WEST MULLAN FIRE**

In 2013, the Fire Chasers Research Team at North Carolina State University developed a series of incident performance measures in collaboration with incident response and land management professionals. The goal of this effort was to provide metrics that can help improve interagency coordination and communication during complex, large scale wildfires. In the summer of 2013, data on these incident response outcomes were collected from 22 Type I and Type II wildland-urban interface fires in Idaho, Montana, Oregon, and Washington. This report summarizes the findings from the West Mullan Fire in the areas of interagency network performance, incident management team performance, use of social media and incident learning and capacity building.

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## West Mullan Fire: Incident Report

### Study Background

This report summarizes findings on incident response outcomes for the West Mullan Fire that occurred in 2013. The report presents outcomes of the West Mullan Fire compared to twenty-one other Type I and Type II incidents that occurred in Idaho, Montana, Oregon, Washington, and one pilot incident in Colorado, during the 2013 wildfire season. The goal of this report is to provide disaster, fire response, and land management agencies with feedback on the incident. This feedback is designed to help identify areas of strength, as well as prioritize areas for capacity building to improve incident response in the upcoming fire season. This report summarizes findings on the following areas: 1) interagency network performance; 2) incident management team performance; 3) use of social media; and 4) incident learning and capacity building. All findings are based on surveys completed by key personnel associated with the incident management team, host agency, and cooperating disaster response agencies on each incident. County and municipal elected officials in the affected area were also surveyed. Surveys were generally collected from Type 1/Type 2 incident management team members immediately before they transitioned off the incident. Surveys with host agencies and county disaster response agencies were collected in October/ November of 2013. A total of 23 surveys were completed for the West Mullan Fire (42 percent response rate).

### How Should I Interpret the Data in This Report?

Incidents differ in their complexity and more complex incidents can create more challenges. The information contained in this report is based solely on the survey data and indicators *do not* account for differences between incidents. This should be kept in mind when interpreting findings from a single incident in relation to the regional incident averages. Findings with lower response rates should also be interpreted with greater caution as there may be key perspectives that are missing. Recommended questions for reflection in interpreting the findings from this report include:

**In what areas did we excel during this incident? What strategies and actions did we take that may have contributed to this success? What actions can we take to make sure these practices and lessons are retained for future incidents?**

**In what areas were our ratings comparatively less positive? How do we make sense of those? Were there missed opportunities either *before* or *during* the incident that might have improved our outcomes in this area? Are there actions we can take *now* to help ensure future success in this area?**

### **Overview: A brief summary of the West Mullan Fire**

The West Mullan Fire started in the evening of July 14<sup>th</sup>, 2013, on the Superior Ranger District of the Lolo National Forest near Mineral County, approximately four miles west of Superior, Montana. According to Inciweb, the fire was human caused. The fire was initially managed by Borgen's Type III Incident Management Team (IMT), but they quickly called up Heintz's Type II IMT. The fire eventually transitioned to Barger's Type III team. Over a dozen representatives from the Lolo National Forest Supervisor's Office and the Superior Ranger District were present on this incident. Cooperating agencies included Mineral County Disaster and Emergency Services, Mineral County Board of Commissioners, Mineral County Sheriff's Department, Superior Volunteer Fire Department, Superior Mayor's Office, Mineral County Fire Warden, Superior Area Ambulance, Town of Superior Public Works, Mineral County Health Department, Mineral County Sanitary Planning and GIS, St. Regis Volunteer Fire District, St. Regis High School Community Emergency Radio, Mineral County Road Department, Montana Department of Environmental Quality, and Montana Fish, Wildlife and Parks, among others. The county fair grounds were set up to shelter large animals and meetings with the local community took place on the front lawn of the Superior Courthouse.

According to 209 Incident Reports, at its height the West Mullan Fire threatened 138 residences, approximately 20 commercial properties, and 150 outbuildings. Evacuation notices for a number of the threatened residences were put in place on July 14<sup>th</sup> and continued for approximately a week, with some mandatory evacuations occurring on the 15<sup>th</sup>. Residents of Pardee Creek, including some in Superior and Flat Creek, were given evacuation notices on the 18<sup>th</sup>, with mandatory evacuations and county road closures around Flat Creek Road on the 19<sup>th</sup>, and Pardee Creek, Keystone Creek, and LaVista Roads remaining closed and under mandatory evacuation. On July 21<sup>st</sup>, *The Missoulian's* Betsy Cohen reported that most of the families from the homes evacuated the previous week were back in their homes and that fire crews were making steady progress. As of the 24<sup>th</sup>, area closures remained in effect, but the evacuation orders for people living up Keystone, Pardee, and Flat Creeks were lifted in the evening. Values at risk on the West Mullan fire included Superior's Bonneville Power Administration lines, as well as structures.

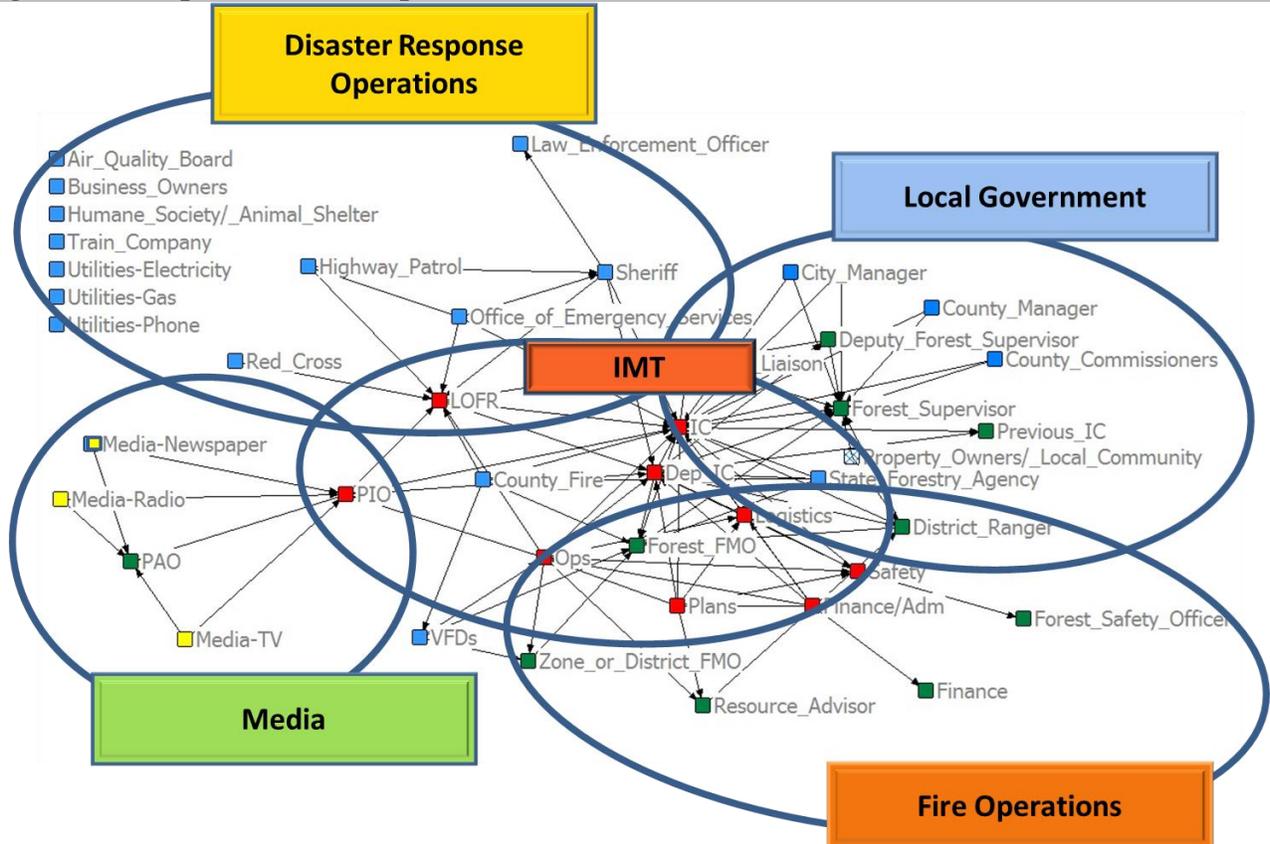
According to Inciweb, the West Mullan Fire was 100 percent contained by August 5<sup>th</sup>, although firefighters continued to search for hotspots at that time and smoke remained visible as unburned pockets of fuels ignited. Keystone, Pardee, and Flat Creek Roads remained closed to the general public but open to residents while crews continued mop-up. In total the fire burned 6,282 acres of Montana, Plum Creek, private, and Forest Service lands.

## Incident Response Network Performance: West Mullan Fire

### What Is an Incident Response Network?

Effective incident response to a complex wildfire event involves the coordination of multiple organizations and agencies with formal response responsibilities during the incident. This group of organizations and agencies can be referred to as the *incident response network*. This network typically includes the incident management team, fire management operations, disaster management operations, county and municipal government, and the media. Diagram 1 shows what this network might look like.

**Diagram 1. Sample Incident Response Network**



### What is network performance?

When working as part of an inter-connected network like the one shown in Diagram 1, the actions of any one agency within the network can affect others in the network. Consequently, incident outcomes are often the result of the *combined* management actions of the entire network, and the level of communication and coordination within it. Not all agencies are involved in all areas of incident response. However, problems in one area of the network can lead to problems in other areas. As a result, effective incident response is not about the performance of any single organization or agency, but is related to the performance of the *network as a whole* in the following areas:

- ❖ Interagency coordination & fire response
- ❖ Public information
- ❖ Road closures
- ❖ Evacuation and re-entry
- ❖ Sheltering & mass care
- ❖ Cost share

To learn more about network performance, we asked all agency and organizational leaders in the incident response network to rate how things went in each of these six areas. Respondents were asked their level of agreement with a set of statements. Options ranged from (1) “strongly disagree” to (5) “strongly agree.” Overall, network performance scores were high. Some areas are also worthy of additional attention prior to fire season 2014. For the twenty-two fires in our sample, overall network performance was the highest for interagency coordination and fire response (average = 4.44) and public information (4.34). On average, lower performance ratings were provided for cost share (3.87), evacuation (3.99), and sheltering/mass care (4.0). See Appendix A for specific questions asked in each category and average level of agreement for each.

**Network Performance: How did things go on the West Mullan Fire?**

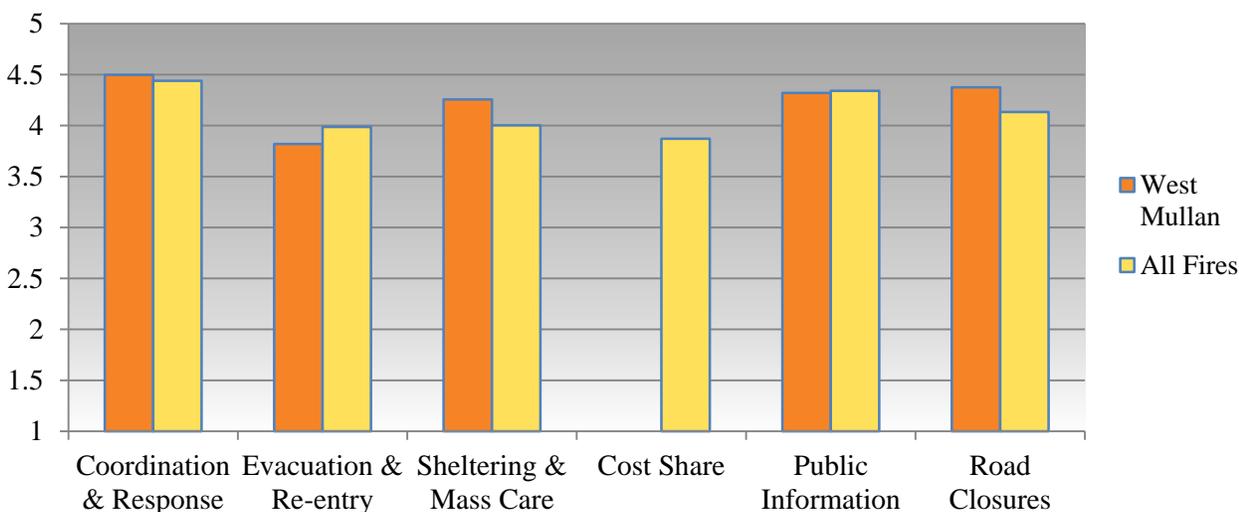
Figure 1 shows network performance ratings for the West Mullan Fire in comparison with the average across all twenty-two fires in our sample. Overall, network performance on this fire was relatively consistent with the averages across all fires. West Mullan Fire network performance was slightly higher than average for coordination and fire response, sheltering and mass care, and road closures. Evacuation and re-entry was identified as the area with the most room for improvement on the West Mullan Fire. In particular, respondents saw room for improvement in the use of existing evacuation plans to quickly establish a coordinated evacuation strategy among local agencies (see appendix A).

According to respondents, there were no cost share agreements on the West Mullan Fire, so we do not have data on this network performance factor for this incident.

**KEY FINDINGS**

- Network performance was greater than average in the areas of sheltering & mass care and road closures
- Room for improvement was identified in evacuation and re-entry, especially in the use of existing evacuation plans to quickly establish a coordinated evacuation strategy among local agencies

**Figure 1. Average Network Performance by Activity: West Mullan Fire**



## Incident Management Team Performance: Perspectives from host agencies and local cooperators

On each incident, we asked representatives of local cooperating agencies, the Forest Service, and other host agencies to reflect on how well the incident management team communicated and coordinated with local host agencies and cooperators. Incident management teams (IMTs) were assessed across 19 areas outlined in Table 1 on the following page. The response options ranged from “No room for improvement” to “A lot of room for improvement”, and included “Don’t know” and “Not applicable” choices.

Across all twenty-two incidents, incident management teams were reported to perform the best in: 1) being accessible; 2) acknowledging cooperation; 3) sharing credit; and 4) serving as positive ambassadors in interactions with the local community. On average, scores were quite positive across all areas. However, host communities reported the greatest room for improvement for IMTs in the areas of: 1) obtaining local context information to inform fire operations; 2) incorporating information about local values at risk into fire management plans; and 3) engaging affected jurisdictions in planning and decision making from the beginning. The first column of Table 1 lists the average room for improvement for incident management teams across all fires. The second column displays average room for improvement for the West Mullan Fire incident management team. For each item in Table 1, **lower numbers indicate less room for improvement**. The scale includes (0), indicating “no” room for improvement, (1) “a little,” (2) “some,” (3) “quite a bit,” and (4) “a lot.”

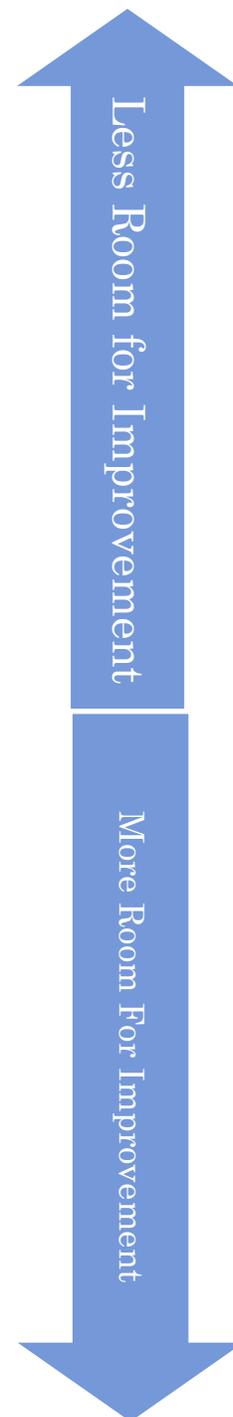
### KEY FINDINGS

- On average, Heintz’s Type II IMT was rated more positively than the regional average in 18 out of 19 areas during the West Mullan Fire
- Particular IMT strengths on this incident included:
  - being accessible
  - serving as a positive ambassador in interactions with the local community
  - being sensitive to local community culture and politics
  - seeking to understand organizational culture, values, and capacities of local agencies
- Areas the IMT may want to continue to focus on for improvement include:
  - valuing local knowledge and local input
  - being flexible in adapting fire management strategy to account for local preferences
  - engaging affected jurisdictions in planning and decision making from the beginning

Average responses for Heintz’s Type II IMT on the West Mullan Fire ranged from 0.4 to 1.2, indicating between “none” to “a little” room for improvement. The team was rated more positively than the regional average in 18 of 19 areas during the West Mullan Fire. On average, Heintz’s Type II IMT was rated most positively in being accessible and serving as a positive ambassador with the local community. While on par with the regional average, areas the Heintz’s Type II IMT may want to focus on for continued improvement include valuing the input of local agencies, valuing local knowledge, being flexible in their fire management strategy and engaging affected jurisdictions in planning and decision making from the beginning.

**TABLE 1. West Mullan Incident Management Team Room for Improvement**

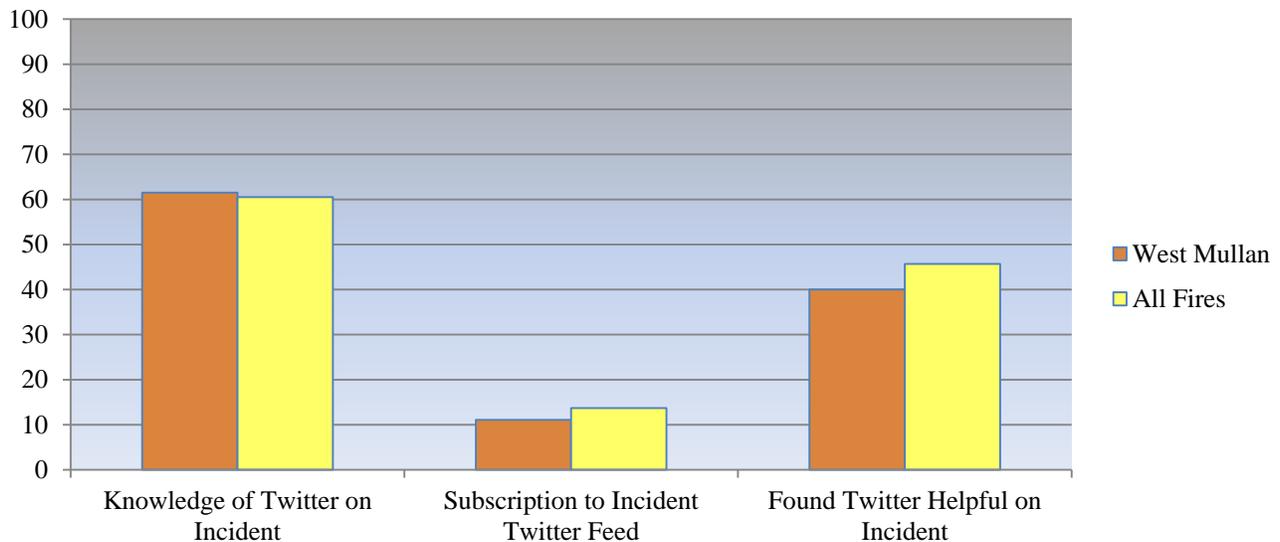
Area for improvement in working with Host Unit(s) and local cooperators	22 Incident Average Room for Improvement (0-4)	West Mullan Average Room for Improvement (0-4)
Being accessible to you	1	0.4
Serving as a positive ambassador in interactions with the local community	1	0.4
Being sensitive to local community culture and political climate	1.25	0.5
Seeking to understand organizational culture, values, and capacities of your agency	1.2	0.5
Rapidly identifying key local players they needed to be communicating with during the incident	1.2	0.6
Acknowledging cooperation	1	0.6
Using the incident as a training opportunity to build local capacity	1.2	0.6
Being helpful to cooperating agencies	1.1	0.7
Clarifying roles and responsibilities	1.2	0.8
Getting your agency information you needed to be effective	1.2	0.8
Staying in their lane and not over-stepping their delegation of authority	1	0.8
Including your agency in the dissemination of vital information during the incident	1.2	0.9
Sharing credit with your agency	1	0.9
Obtaining local context (e.g., burn scars, trail systems, local weather patterns) to inform their operations	1.3	1
Incorporating information about local values at risk (e.g., biological, archeological, cultural, recreational) into the management of the fire	1.3	1
Engaging affected jurisdictions in planning and decision making from the beginning	1.3	1.1
Being flexible in adapting their fire management strategy to account for local preferences	1.2	1.1
Valuing local knowledge and local input	1.2	1.1
Valuing your agency's input	1.2	1.2



## Twitter Use

Social networking sites, such as Twitter, have become important tools for sharing information during various emergencies. Researchers are only beginning to study the implications of social media for risk communication, and practitioners are often interested in best practices for using social media. As part of our survey, we asked local cooperators and Forest Service personnel whether they knew of an “official” Twitter feed associated with the wildfire incident, whether they subscribed to this feed, and whether or not they found the information on Twitter helpful. Figure 2 shows percentage of Twitter use for the West Mullan Fire compared to the average rate across twenty-one fires in our sample that reported on social media.

**Figure 2. Percent Social Media Use and Utility on the West Mullan Fire**



Inciweb, personnel on the Lolo National Forest, Montana Department of Emergency Services, and engaged but non-official fire watchers all tweeted information about the West Mullan Fire. A substantial portion of Twitter activity surrounding the West Mullan Fire came from Inciweb retweets. When compared to the 21 incident average, respondents from the West Mullan Fire had slightly more knowledge of Twitter, a lower percentage of subscribers to incident-based Twitter feeds, and were less likely to find Twitter helpful.

### KEY FINDINGS

- West Mullan Fire respondents were equally aware of Twitter information resources as respondents across other incidents
- West Mullan Fire respondents subscribed to incident-based Twitter feeds with less frequency than respondents across other incidents
- West Mullan Fire respondents did not find Twitter information sources as helpful as did respondents across other incidents

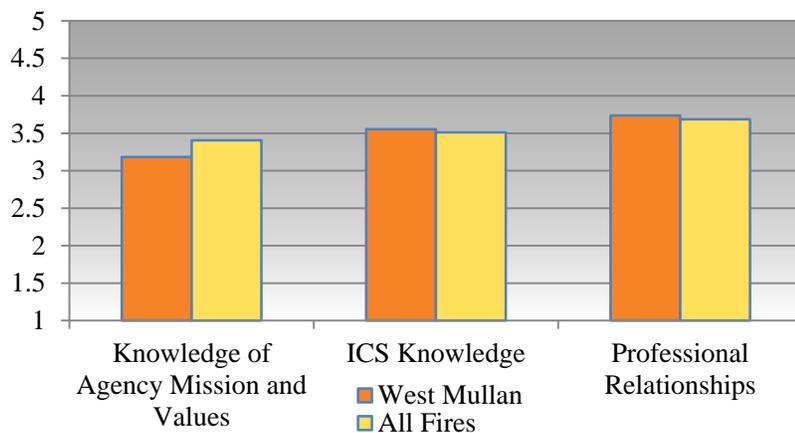
## **Moving Forward: Incident learning and capacity building**

The field of incident response prioritizes using every incident as an opportunity for learning and relationship building to improve capacity for responding to future events. To assess incident learning and capacity building, respondents were asked to report how personal outcomes were influenced by the incident in the areas of: 1) increased knowledge of other agencies' missions and values; 2) enhanced knowledge of the Incident Command System (ICS); and 3) increased familiarity and strengthened professional relationships within the local network. Respondents were asked to rate how each factor was affected by the incident, on a scale ranging from (1) "much worse" to (5) "much better", with (3) indicating "no change." See Appendix B for specific questions asked in each category and average level of agreement for each.

### **KEY FINDINGS**

- Over all wildfire incidents we studied, evidence suggests that knowledge of agency missions and values, ICS knowledge, and professional relationships were perceived to have improved
- West Mullan Fire respondents reported slightly higher scores than regional averages in ICS knowledge and professional relationships
- For the West Mullan Fire, the greatest impact was on professional relationships

**Figure 3. Incident Learning and Capacity Building from the West Mullan Fire**



Across all wildfire incidents we studied, evidence suggests that knowledge of other agency missions and values, ICS knowledge, and professional relationships were perceived to have improved. Across all incidents, local cooperators and host agencies reported the greatest improvements in the area of professional relationships, which included respondents reporting strengthened professional relationships with leaders of

cooperating agencies, stronger relationships within counties, and better knowledge of the capacities and constraints of cooperating agencies. The least improvement was shown in local cooperator and host agency knowledge of agency missions and values, which included knowledge of the mission and values of state land management agencies and the National Forest. In the middle range is knowledge of the Incident Command System, which includes familiarity with ICS, opportunities to gain additional training in an area of incident response, and understanding how to work with an IMT, including what the IMT can and cannot do to assist your county during an incident.

On the West Mullan Fire, all responses varied between "no change" and "somewhat better" for knowledge of agency missions and values, ICS knowledge, and professional relationships. Improvements in ICS knowledge and professional relationships were slightly higher for the West Mullan Fire than across all fires. Within professional relationships, reported knowledge of capabilities and constraints of cooperating agencies in the area improved the most, while the strength of working relationships with National Forest Headquarters improved the least. While improvement in knowledge of agency mission and values was slightly lower for the West Mullan Fire than the average across all fires, respondents did not report negative impacts in this area. Understanding of missions and values of state land management agencies improved slightly more than did understanding of missions and values of federal land management agencies in the area.

## APPENDIX A. Network Performance: West Mullan Fire

Areas of Network Performance	22 Incident Average Level of Agreement (1-5)	West Mullan Fire Average Level of Agreement (1-5)
<b>Coordination &amp; Fire Response</b>		
A coordinated set of fire management objectives were agreed upon among all affected jurisdictions	4.29	4.13
All concerned jurisdictions prioritized maintaining good communication across agencies	4.21	4.24
Credit for success and effort was shared among agencies during public meetings and media events	4.37	4.50
There was a general willingness across agencies to offer assistance to other agencies or jurisdictions	4.48	4.44
“Borrowed resources” were released in a timely fashion to minimize burden on the lending agency	4.38	4.47
Community values at risk from wildfire were readily identified	4.64	4.56
Efforts to protect community values were appropriate given available resources and risks to firefighter safety	4.59	4.61
The overall strategy taken in managing this fire was appropriate	4.40	4.50
Local resources were incorporated into the incident management operations	4.50	4.67
<b>Evacuation Performance</b>		
Cooperating agencies were able to use existing evacuation plans to quickly establish a coordinated evacuation strategy	3.82	3.53
Residents received timely notification of evacuation status using clear, pre-established language to distinguish between an evacuation warning and an evacuation notice	4.03	4.00
Evacuations were executed in a timely and orderly fashion	4.15	4.33
Cooperating agencies had a prepared plan for how re-entry into evacuated areas would be coordinated	4.05	3.80
Trigger points for when evacuated areas would be opened for re-entry were clearly communicated to the public	3.88	3.67
Re-entry was carried out in an organized and orderly fashion	4.15	3.94
<b>Sheltering &amp; Mass Care</b>		
Adequate sheltering options were prepared to house evacuees	4.16	4.69
Sheltering options were clearly communicated to evacuees	4.01	4.33
Donations for evacuees were well-coordinated	3.74	3.38
Auxiliary care needs of evacuees (e.g., food, water, clothing, transportation, spiritual or mental health assistance) were adequately provided for	4.05	4.30
Adequate sheltering options were made available to evacuate pets and livestock	3.88	4.08
<b>Cost Share Performance</b>		
We used pre-agreed frameworks/principles to expedite cost share agreements	3.80	NA
The process through which cost share was decided upon was fair	3.86	NA
The resulting cost share agreement was fair	3.96	NA

**APPENDIX A. Network Performance: West Mullan Fire (continued)**

<b>Areas of Network Performance</b>	<b>22 Incident Average Level of Agreement (1-5)</b>	<b>West Mullan Fire Average Level of Agreement (1-5)</b>
<b>Public Information Performance</b>		
Public information was coordinated among cooperating agencies to ensure continuity of the message	4.35	4.53
Local resources were leveraged to ensure timely dissemination of public information	4.32	4.38
Social media was used effectively to provide timely public updates concerning the status of the fire	4.16	3.78
A system for communication with the media was put in place to ensure timely dissemination of public information	4.42	4.27
<b>Road Closure Performance</b>		
All cooperating and fire management agencies maintained a timely awareness of the status of road closures	4.25	4.59
Trigger points for making decisions about road closures were proactively communicated to the local community	4.05	4.50
A consistent message was provided to the public about the status of road closures	4.11	4.06

## APPENDIX B. Incident Learning and Capacity Building: West Mullan Fire

Areas of Incident Learning and Capacity Building	22 Incident Average Reported Impact (1-5)	West Mullan Fire Reported Impact (1-5)
<b>Knowledge of Agency Mission &amp; Values</b>		
Your understanding of the mission and values of state land management agencies (e.g., Oregon State Forestry, DNR/DNRC, Idaho Department of Lands, Fire/Timber Protective Associations, etc.) in your area	3.43	3.27
Your understanding of the mission and values of federal land management agencies (e.g., BLM, National Park Service, USFS, etc.) in your area	3.38	3.23
<b>Knowledge of ICS</b>		
Your understanding of what an incident management team can and cannot do to assist your county during an incident	3.44	3.62
Your familiarity with Incident Command Systems	3.48	3.64
Your knowledge of how to work effectively with an incident management team	3.67	3.71
Opportunities for you to gain additional training in an area of incident response	3.45	3.31
<b>Professional Relationships and Networks</b>		
The strength of working relationships within your county	3.76	3.71
The strength of working relationships between your county the local National Forest District	3.60	3.71
The strength of working relationships with National Forest Headquarters	3.42	3.22
Your knowledge of the capabilities and constraints of cooperating agencies in your area	3.73	4.00
Your knowledge of the capabilities and constraints of the local National Forest	3.58	3.75
Your professional networks with leaders of cooperating agencies in your area	3.89	3.86
Your knowledge of your local community	3.72	3.54

**Correct citation for this report: Nowell, Branda, Toddi Steelman, A. J. Faas, Anne-Lise Knox Velez, Joy Davis, Clare FitzGerald, and Mary Clare Hano. 2014. Improving Community Response to Wildfire: 2013 Fire Season Findings Report for West Mullan Fire. <http://goo.gl/GBFQ1u>. 12 pp.**

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This research is part of a larger initiative funded by the National Science Foundation, Joint Fire Science Program and the USFS Northern Research Station. All views and conclusions in this document are those of the authors and should not be interpreted as representing the opinions or politics of the US Government. Mention of trade names or commercial products does not constitute their endorsement by the US Government.

**Acknowledgements:** The Fire Chasers would like to acknowledge and thank all the emergency and fire management personnel who contributed to this report. This research would not have been possible without the combined efforts of other members of our research team: Deena Bayoumi, Candice Bodkin, Jason Briefel, Jillian Cain, John Diaz, Casey Fleming, Annie Izod, Emily McCartha, Veronica Quintanilla, Holli Starr, Corinne Wilder, and Zheng Yang. Thanks to James Moody for consulting on methodology and to Brian Miedlar for web design, survey administration, and database design. We would also like to thank our research partner Sarah McCaffrey and the USFS Northern Research Station for their support of this project.

**Research Funding Provided By:**



**THE NATIONAL SCIENCE  
FOUNDATION**



**THE JOINT FIRE SCIENCE  
PROGRAM**



**USDA FOREST SERVICE:  
NORTHERN RESEARCH STATION**