Decision Example- Gold Pan Fire

The Wildland Fire Management Research, Development and Application (WFM RD&A) program has identified the Gold Pan Fire as a good example of a risk-informed decision made on a high complexity and long duration wildland fire. Users can reference this example for guidance and learning while they work within the Wildland Fire Decision Support System (WFDSS). The Gold Pan Fire started on July 16th, 2013 on the Bitterroot National Forest and was declared out on October 9th at 41,888 acres. This document provides key points with additional in-depth information.

This is a real-world example to illustrate possible ways to use WFDSS for a risk informed decision process. It is not intended to critique the authors or managers of this incident. In 2014, the WFM RD&A reviewed WFDSS Incident Objectives on twenty-three fires and concluded that approximately 90% of the WFDSS Incident Objectives were written generically and could be applied anywhere in the country. Agency Administrator direction often differed and sometimes conflicted between WFDSS, the Delegation of Authority, Leader's Intent letters, and Incident Action Plan (IAP) Objectives. From this learning experience the WFM RD&A program has looked retrospectively at the Gold Pan Fire and provided new thoughts.

Key Points: Use the hyperlinks in the table to quickly view details about the specific WFDSS elements on the Gold Pan Fire. Hyperlinks in the body of the document link to WFDSS Help information specific to that element and other sources.

Table 1 WFDSS Elements and Key Points from the Gold Pan Fire

WFDSS element	Key points
Publishing a Decision	Updated as needed, six total for the incident
Relative Risk and Organization Assessment	Reviewed and updated routinely
Planning Area	Redrawn as planning efforts grew and growth projections indicated
Objective Shapes	Used as a communication and planning tool
Points of Interest	Used as a communication tool
Unit Shapes	Preloaded shapes aided quicker values assessment
Management Action Points	Documented and communicated potential actions
IMT Management of the Fire	Shifted as the needs of the incident changed
Incident Objectives and Requirements	Communicated LRMP direction at the incident level; some Objectives would be better provided in the Delegation of Authority and/or Leader's Intent Letter
Course of Action	Conveyed leader's intent for strategy on fire
Rationale	Conveyed leader's intent and documented risk decision dialogue
Reports	Utilized for different purposes to convey information
Complexing Fire Decisions- A Recommendation	Complexing Decisions in WFDSS is not recommended
Other References	Other Decision trainings documents

Publishing a Decision:

- During the life of this incident there were six decisions published.
- The first Decision had a moderate Relative Risk and was a simple decision documenting that the fire was meeting the Strategic Objectives of the Land/Resource Management Plan (LRMP) and identified a Course of Action to ensure success while managing the fire.
- Each subsequent decision provided additional information to support the decision and assessments being completed. WFDSS spatial maps and tools were used to inform the decisions.
- To view the decisions, locate the Gold Pan 2013 incident on the Bitterroot National Forest within WFDSS: From the Incidents tab, type 'Gold Pan' under Incident Name and set the Incident Year to 2013 - select *Find Incidents*. From the Decisions tab, select which decision you want to view by selecting the radio button to the left of the date of which it was published. Select either *View Decision* to view the decision within WFDSS or *PDF* to view the decision as a stand-alone PDF document (Figure 1).
- Line Officers utilized the Periodic Assessment to document key information and decisions made on the fire. These can be viewed in WFDSS utilizing the Incident History List in the left hand menu and clicking the *Show Details* button at the top.

Figure 1 The Decisions tab in WFDSS for the 2013 Gold Pan Fire and how to view one of the six decisions.

Relative Risk and Organization Assessments:

- The Relative Risk (Figure 2) and Organization Assessment (Figure 3) were reviewed routinely and updated over the life of the incident.
- Analysts were utilized early in the incident to provide quantitative risk assessment information.
- An extended risk assessment was completed as fire activity increased. This information can be found in the decision on 8/4 and each subsequent decision.
- To learn more about quantitative risk assessments read "Wildland Fire Decision Support System (WFDSS): Quantifying a Qualitative Relative Risk Assessment" and watch the 6 part YouTube videos series on "Strategic Level Risk Assessment". Note that although the videos indicate they are for Fire Behavior Specialists, the information contained in the videos is applicable to incident owners, editors, and fire managers wanting to know more about or include strategic level risk assessment on their fires.

- As the Organization Assessment changed, so did the management level of the incident (see IMT Management of the Fire below).
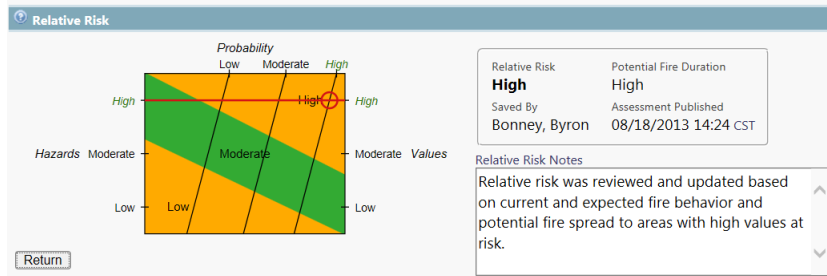

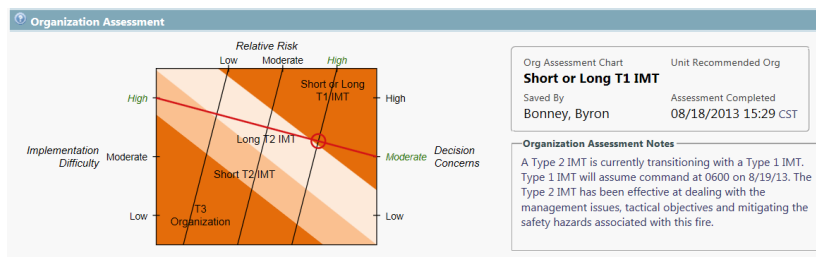**Figure 2 Relative Risk Assessment updated on 8/18/2013 shows High Relative Risk.**

Figure 3 Organization Assessment updated on 8/18/2013 recommended either a Short or Long T1 IMT.

Planning Area:

The Planning Area was modified throughout the life of the incident using fire behavior/analysis information of where the fire had a high probability of burning. The Planning Area is the geographical area, defined on the landscape, where strategic planning takes place for managing a wildland fire[1]. Adjusting the Planning Area ensured managers were considering values, benefits, and risks in areas likely to be impacted by the fire (Figure 4)
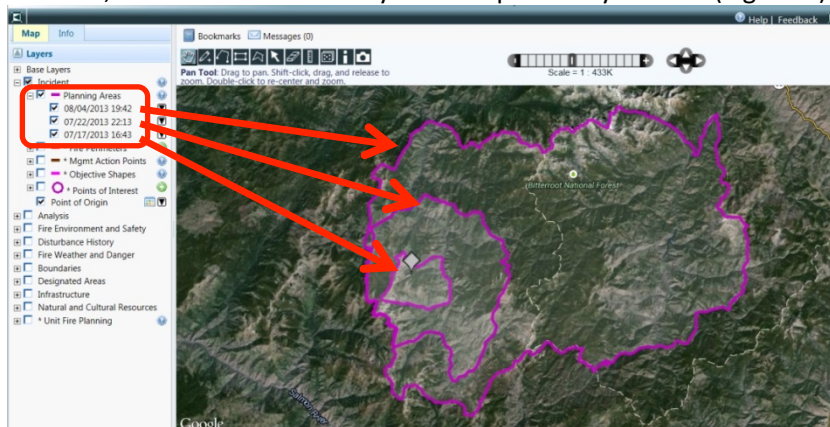

Figure 4 Situation Map display shows three Planning Areas were defined as the fire grew and planning efforts expanded.

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[1] It is not always necessary to draw a detailed Planning Area as shown here, often times a simple box will work fine.
[2] Units often provide a Leader's Intent Letter to IMTs, sometimes attached to the Delegation of Authority, but can also be a stand-alone document. See Appendix A and B for examples of how the Bitterroot National Forest

Objective Shapes:

- Objective Shapes were utilized to represent an area closure (Figure 5 Pink Polygon) and established carnivore monitoring sites (Figure 5 Pink Dots). Utilizing Objective Shapes provides a spatial link between an Incident Objective and the location(s) on the ground to give context to Incident Objectives. Gold Pan Fire managers never actually associated the Objectives Shapes with an Incident Objective therefore they were never explicitly tied to a Decision on the fire, and consequently cannot be viewed in WFDSS by users other than the incident owners. The WFM RD&A recommends either ensuring Objectives Shapes are associated with Incident Objectives or create them as Points of Interest so they are visible on the Situation Map as a communication tool. Objective Shapes are specific to the Incident you are working on.
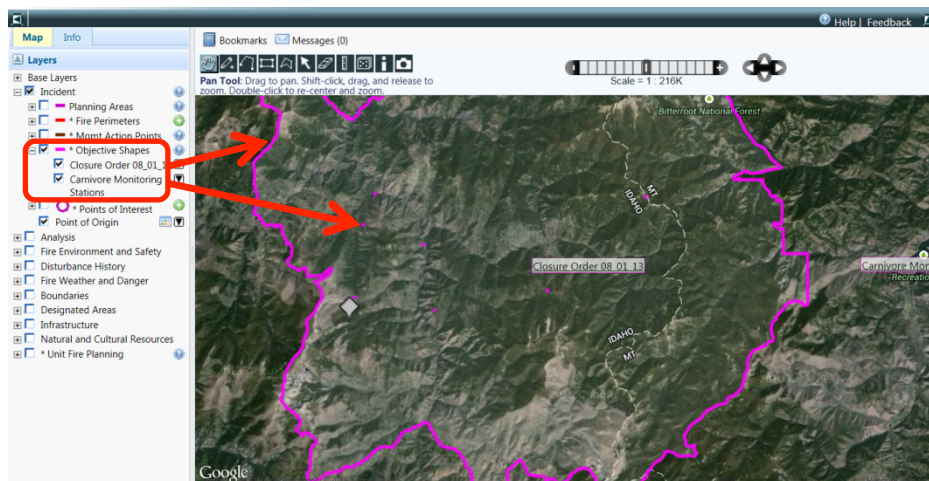

Figure 5 Objective Shapes for an Area Closure and Carnivore Monitoring sites.

Points of Interest:

- Points of Interest were utilized to highlight areas of interest and landmarks on the Situation Map for use as a communication tool (Figure 6). These included: bridges, lookouts, new starts in the area, and other notable areas. Although Points of Interest aren't tied to a specific decision they are useful for communication/orientation and can be included in a decision with a screen capture if desired. To view the Points of Interest used in the Gold Pan Fire, expand the Points of Interest menu tree underneath Incidents on the Situation Map. Points of Interest are specific to the Incident you are working on. If you want these shapes available for all incidents your unit creates, consider loading them as Unit Shapes.
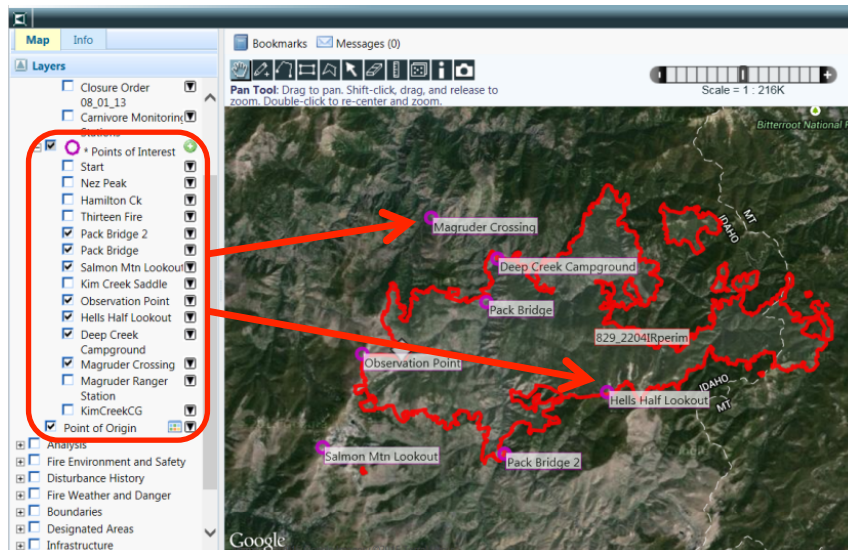
Figure 6 Many Points of Interest were used to aid in communication and orientation.

Unit Shapes:

- The forest loaded several Unit Shapes pre-season that were used to support decision making (Figure 7). To view the shapes uploaded, view the Situation Map and expand the left hand menu tree labeled Unit Fire Planning, MTBRF (Montana- Bitterroot National Forest). By clicking on each shape you can see what preloaded information existed and how that information could have been valuable during time critical analysis on the incident.
- Unit Shape information is also represented in the Values Inventory (if the unit elects to have it included when uploading the shapes, See Figure 8) which can be utilized in decision making. To review this inventory, expand the Planning Area from the left hand menu on that Situation Map. Use the down arrow to the right of the Planning Area and click on *Spatial Inventory*. This inventory is automatically included in the incident Decision displaying Highly Valued Resources and Assets (HVRAs) and their associated value (number of structures; acres of habitat, etc.). On this particular incident none of the Unit Shapes loaded that were elected to be included in Values Inventory were within the Planning Area (Figure 8); but you can see how if they had been this would further communicate values of concern in a timely manner.
- It is recommended all units upload information that is pertinent to risk informed decision making during the shoulder seasons either through the Spatial Fire Planning process or the use of Unit Shapes. For information and resources on Spatial Fire Planning in WFDSS see the heading "Spatial Fire Planning" on the WFDSS training page.
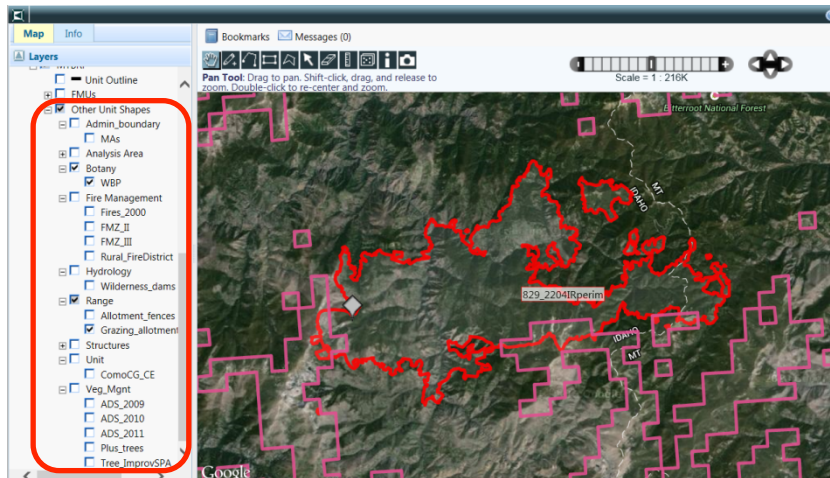
Figure 7 Unit Shapes loaded pre-season show Highly Valued Resources and Assets (HVRAs) and aid assessment when time is critical.
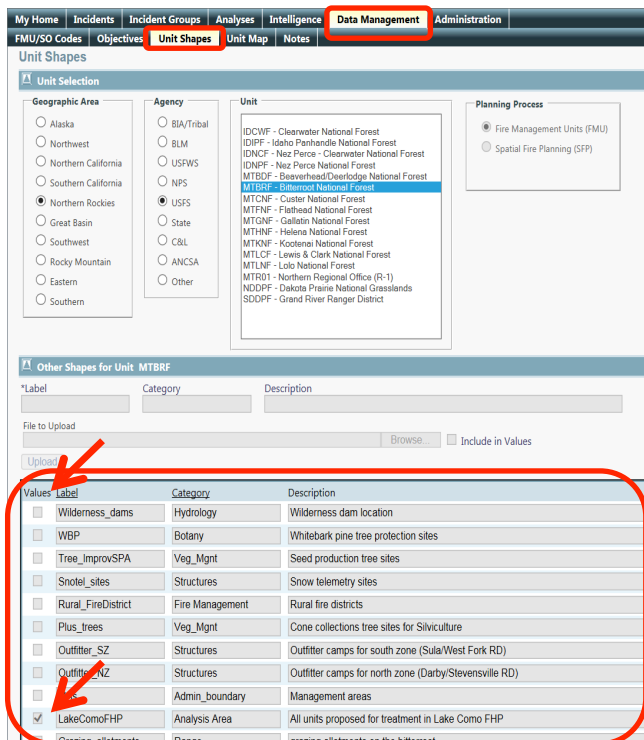

Figure 8 Units upload Unit Shapes from the Data Management Tab, sub tab Unit Shapes. By selecting the box in the Values column, shown with the arrows, the items will display in the Values Inventory if they intersect the Planning Area.

Management Action Points:
- Management Action Points (M.A.P.s) were established as early as 7/17 to protect values (Figure 9).

- Review the M.A.P.s utilized on this fire to see good examples of how they are written, activated, deactivated, and versioned. M.A.P.s define actions to be taken under specified conditions and are useful to assist in communication between the IMT and the local unit regarding under what conditions certain action should be taken. Using WFDSS to document and communicate these discussions allowed for shared understanding of proposed actions, timeframes, resources, and costs.
- Some "Watch Outs" to avoid when creating M.A.P.s include:
  - Avoid M.A.P.s that are very short term or tactical in nature. These may require excessive user time in WFDSS to keep them up-to-date and/or may require frequent publishing of Decisions to constantly include new M.A.P.s or exclude old ones even when the Course of Action for the fire has not changed.
    - Consider limiting M.A.P.s in WFDSS to those that reflect strategic actions.
    - Short term or tactical M.A.P.s could be provided in an IAP, briefing, or other format/venue that will reach the needed audience.
  - Don't enter M.A.P.s that already occurred (for documentation sake). This is unnecessary work.
    - If you would like to document implemented M.A.P.s you can describe them in a narrative form in the Decision.
  - Don't unnecessarily 'tie the hands' of managers by entering very specific resource needs for an M.A.P. when not needed.
    - Will there be a need to evaluate resource needs based on fire behavior or time of season? If so, go ahead and state that. But do provide needed guidance and resources for M.A.P.s in situations where it is warranted.
- Good practices for creating M.A.P.s:
  - Ensure fire managers receive a copy and/or are part of the M.A.P. creation process. Authors and Editors can create and print Management Action Point Reports for easy distribution of M.A.P.s (See Reports for more information).
  - Ensure unit and team (if assigned) have mutual understanding and support for M.A.P.s.
  - Include READs (Resource Advisors) and other specialists in development as appropriate.
  - Monitor the status of M.A.P.s and document (in WFDSS) when M.A.P.s have been implemented (See Annotating a Management Action Point).
  - Evaluate M.A.P.s as the fire grows and if action on the fire changes (i.e. the Course of Action changes or a new Decision is needed). Edit, exclude, and include M.A.P.s as needed.
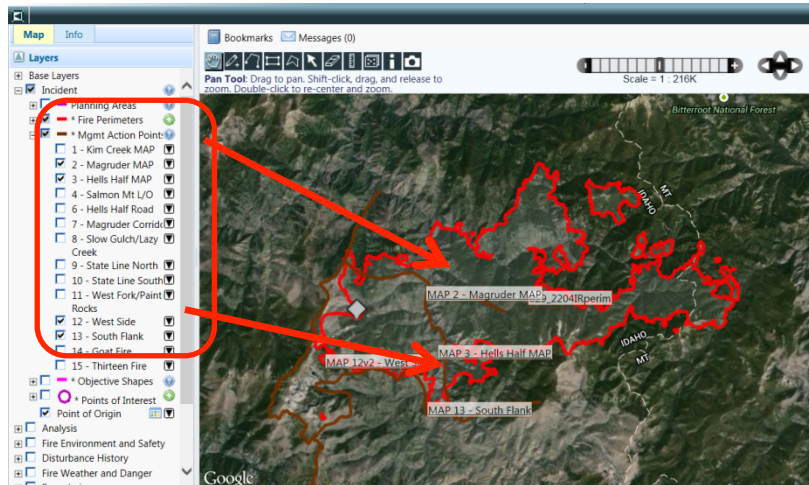
Figure 9 Management Action Points were utilized and assisted with communication between the home unit and the IMT regarding pre-planned actions.

IMT Management of the Fire:

- Fire managers were adaptive and flexible in the management of the fire and adjusted their use of IMTs to fit the current needs of the incident.
  - As the fire activity increased, a Periodic Assessment indicated the need for an Incident Management Team. A Type II team was ordered to provide long term planning and manage the incident. After evaluating the complexity of the incident and the long term planning needed, an additional team, a Type I team, was ordered to work with the Type II team (See Appendix A and B). The Type II team addressed long term planning while the Type I team managed the short term needs and protection of values.
  - The Type I and II team worked to together not just on long-term planning, but also for short-term strategic decisions. The Type II team's Strategic Operational Planner (SOPL), Long Term Analyst (LTAN), and Fire Behavior Analyst (FBAN) were consulted by the Type I team when discussing undertaking construction of a contingency line for WUI protection.
- This approach worked well for the management of the incident. Below are two excerpts taken from the Fire & Aviation Management Fire Review Reports for the Gold Pan Fire that emphasize how IMT management of the fire was successful.
  - "Integration of long-term planning and modeling skills into existing IMTs proved to be highly beneficial. In this situation the Type 2 Incident Commander (ICT2) became the Deputy IC for the combined team. With the long-term plan development, both teams entered into a Strategic Risk Assessment process [or Extended Risk Assessment]. The Type 1 personnel became directly involved with this process with experienced planners Strategic Operational Planner (SOPL/LTAN). This was a great learning opportunity for the Type 1 personnel and a benefit for both organizations."
  - "Continued monitoring and adjustments, as situations/behaviors changed, aided incident personnel and Agency Administrators (AA) with communicating risk informed strategies to engage stakeholders. Furthermore, LTAN/FBAN products were used, as a valuable tool, to help educate the public on long-term effects/predictions."

Incident Objectives & Requirements:

- Incident Objectives and Requirements were specific to the Gold Pan Fire and were tiered down from the WFDSS Strategic Objectives and Management Requirements summarized from planning documents (LRMPs). Incident specific Objectives and Requirements should align with LRMP direction.

- The Incident Objectives were expanded and updated in subsequent decisions, reflecting new information as the fire grew. Ideally, the leader's intent for the incident is reflected in the Incident Objectives (Figure 10). Examples from the 8/4 and subsequent Decisions:
    - "Infrastructure: Minimize the fire's impact to FS infrastructure as identified in the Values Inventory."
    - "Cultural Resources: Protect identified cultural resource values at risk from unacceptable damage from fire or fire suppression activities."
    - "Private Property: Protect private property and infrastructure by preventing the spread of fire out of the Wilderness and onto private lands."
    - "Wilderness: Use fire in the Wilderness area to meet land management objectives where fire spread will not compromise protection objectives."

- Gold Pan Fire managers did a good job in describing Incident Objectives and Requirements and revising/improving them over time; the following is only offered as a learning example to highlight how they were improved. Based on the observations completed during the 2014 fire review of Incident Objectives, the WFM RD&A recommends that some of the Incident Objectives identified in some of the Decisions would have better been provided as leader's intent statements within the Delegation of Authority and/or Leader's Intent Letter[2] or Briefing Package documents as they had little to do with managing the incident but more to do with the Line Officer's direction to the team or their staff in managing the incident. Examples:
    - "Base all actions on sound risk management principles making public, firefighter and aviation safety number one priority. Manage incident operations in a cost effective and efficient manner. Carefully weigh risk versus gain, probability of success, exposure, cost, and impacts to wilderness values. Utilize management actions commensurate with values at risk." 8/4 Decision.
    - "Base all actions on sound risk management principles making public, firefighter and aviation safety number one priority." 8/1, 8/4, and 8/17 Decisions.
    - "Emphasize the use of contingency plans and management action points for managing risk associated with all actions identified in the IAP and Long Term Plan." 8/1 Decision.
    - "Coordinate and maintain communications about fire status and area/road/trail closures with Painted Rocks and West Fork RFD's, State DEQ, Ravalli County (Ravalli County Fire Warden, County Commissioners, County DES, County Road Dept.), Sheriff's Department, Nez Perce Forest, Ravalli County Electric, residents and general public" 8/1 Decision. *Note: depending on the level of importance this coordination had as it related to incident activities, it could have been included as an Incident Requirement rather than as an Incident Objective. For some incidents coordination such as this may warrant an Incident Requirement to stress the level of importance and attention it needs.*

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[2] Units often provide a Leader's Intent Letter to IMTs, sometimes attached to the Delegation of Authority, but can also be a stand-alone document. See Appendix A and B for examples of how the Bitterroot National Forest included their Leader's Intent Letter as a separate piece of the Delegation of Authority.

- "Use the Tactical Hazard Analysis (215A) and the Safety Risk Analysis (215R) as part of the operational planning process, ensuring all IAP's and the Long Term Plan reflects this commitment to safety through the 10 Standard Firefighting Orders, 18 Watch Out Situations, and LCES and if the hazard cannot be mitigated, don't implement the corresponding action. Ensure that Leader's Intent is clearly communicated and understood, and is based on current factual information." 8/1 Decision.

- Too many Incident Objectives can be difficult for a team to prioritize or achieve. Be conscious of how many Incident Objectives are created and make priorities known if they exist or if multiple Objectives conflict.

- During the 2014 review of fire incidents it was found that often there were conflicting Incident Objectives in the WFDSS decision from the information found in the Delegation of Authority/Leader's Intent/Briefing Package/Incident Action Plan (IAP). The Gold Pan Fire managers did a good job of ensuring there was little disparity between the direction in the WFDSS Decision & Incident Objectives and the IAP Objectives (See Appendix C). This ensures the leader's intent reaches every firefighter on the fire.

  o The WFM RD&A is in the process of coordinating and developing a new organization and format for the Delegation of Authority. This new format will be available for testing and use in WFDSS as a Report for fire season 2015. Feedback on the new format can be sent to the WFM RD&A using the Feedback button in WFDSS. Units can include Leader's Intent direction as either a separate document or as part of the Delegation of Authority (See Appendix A and B for examples from the Bitterroot National Forest). The Leader's Intent should provide direction regarding conduct and other local unit expectations. Information provided in the Briefing Package needs to be consistent and complementary to the Delegation of Authority/Leader's Intent (See Appendix D for example of Briefing Package to IMT).

Figure 10 Objectives and Requirements in WFDSS should indicate leader's intent and align with LRMP Strategic Direction for the area.

Course of Action:

- The Course(s) of Action (COA) were adjusted over time; new ones were added and old ones deactivated as needed. The below COA from the 8/4 and subsequent Decisions conveys the strategic management actions to manage the fire while protecting Highly Values Resources and Assets (HRVAs), which include fire fighter and public safety.

- "Implement, as appropriate under current conditions, the long term plan to manage this as a long duration incident addressing area/road/trail closures for public safety; outfitter/guide operations; Forest Service infrastructure and values,; and to prevent fire from reaching private property and private residences in the Nez Perce Creek drainage and West Fork of the Bitterroot. Long term plan focuses on utilizing a point projection and modified suppression strategies to protect values at risk until the season-ending event. MAP's will be monitored continually and actions/decisions will be implemented to meet incident objectives and requirements. Develop additional management action points needed to protect values within the planning area. Ensure that the long-term plan and risk assessment products (FSPro, weather outlooks, etc.) are re-evaluated regularly and updated as necessary by qualified personnel (LTAN and/or SOPL)."

- FMU (Fire Management Unit) specific COAs aided communication regarding how the fire would be managed differently in different areas per the LRMP direction (8/4 and subsequent Decisions).
    - "In FMU4 (Wilderness), monitor fire behavior to ensure that fire effects will be consistent with vegetation and habitat objectives, and predicted fire spread will not conflict with protection objectives. Use appropriate strategies to prevent the fire from leaving the Wilderness."
    - "In FMU1 (WUI), FMU2 (Active Roaded) and FMU3 (Roadless and Unroaded), use point protection and modified suppression strategies to protect values at risk."

- In 2015, a Strategy Slider bar and comment box were added to the COA screen to aid home units in communicating their overall strategy for the fire and leader's intent regarding strategy (Figure 11). This could have been a useful addition to the COA had it been available in 2013 during this incident.

- The following was not done on Gold Pan, but is a good learning point for COA. The review of decisions in 2014 highlighted that many incident COA include a cardinally described box in which to keep a fire along with statements such as "keep fire as small as possible." It is not necessary to describe a box location within which to keep the fire; that is a dated MMA (Maximum Management Area) concept. Additionally, it conflicts with statements such as "keep the fire as small as possible." If there are areas where the fire should be avoided, describe the reasons why. For example, instead of writing "keep the fire south of Rock Creek"; instead write, "North of Rock Creek is where the Wildland Urban Interface zone begins with numerous private structures; strategy and tactics will manage the fire to keep it south of Rock Creek." In this example, *why* the fire is being kept south of Rock Creek communicates the Course of Action.
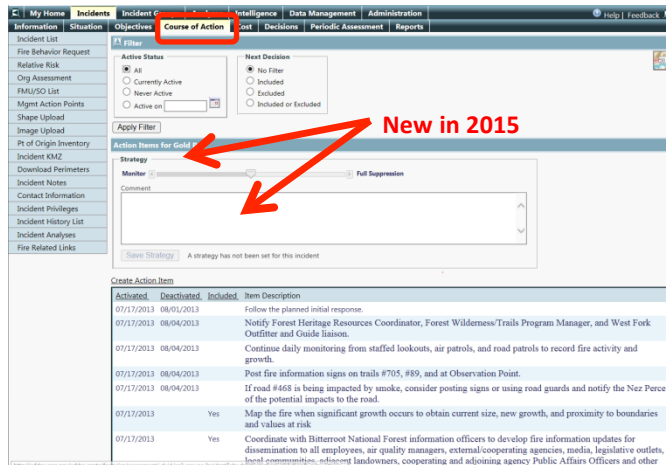
Figure 11 Courses of Action should express leader's intent for the strategic direction on the fire.

Rationale:

- The Rationale section in the decision is the location in which the Agency Administrator(s) communicates why the decision was made to implement the Course of Action; and it documents the risk decision dialog amongst the Agency Administrator(s) and Incident Managers (Figure 12). Although not required in WFDSS, some FS units utilize the 10 question Risk Management Framework provided in the FS chapter of the 2015 Redbook (Chapter 5) as an outline for their Rationale. The initial Gold Pan Decision Rationale section was short and to the point; as the incident grew in size and complexity the home unit chose to include a more thorough Rationale in the form of the FS 10 question format; units are not required to use them however, unless regional guidance dictates otherwise.
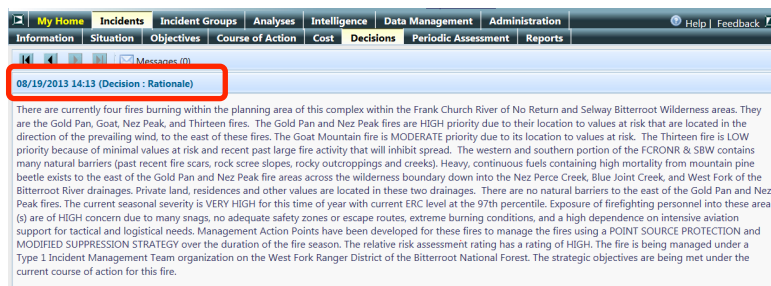

Figure 12 The Rationale portion of the Decision is used to communicate why the decision was made to implement the Course of Action.

Reports:

- Reports offer a handy way to document and report out information related to an incident. Gold Pan Fire managers used the Report feature for a variety of different reports and uses. Navigate to the Reports tab in WFDSS to see how it was utilized on this particular fire, for example reports on Management Action Points, Values Inventory, Wilderness Mechanized/Motorized Use Authorizations, and Area Closures were used (Figure 13).

- Users can create custom reports, Management Action Point(s) reports, or Delegation of Authority reports. Customize reports allow users to create content on whatever they desire. Management Action Point reports automatically populate with the Management Action Point details and maps created for the Incident. The Delegation of Authority report can be used by units that wish to provide the delegation in the same location as the WFDSS Decision. Publishing the Delegation within WFDSS can aid units in ensuring that there is a strong connection between the two documents and minimize conflicting statements or direction. Units can create a Delegation from a blank page, create their own template, or utilize a national template.

Figure 13 Reports were used for a variety of purposes on the Gold Pan Fire.

Complexing Fire Decisions- A Recommendation:

- The WFM RD&A does not recommend or support "complexing" fires for decision making and documentation purposes in WFDSS. Complexing for incident management is a separate need and should not be mixed with complexing in WFDSS. The Gold Pan Fire included three additional fires: Nez Peak, Thirteen, and Goat. These fires were not explicitly mentioned in the Gold Pan Decisions, nor do they have any information other than the start time in WFDSS. It's unclear if the management of these fires was included in the Gold Pan Decisions. The WFM RD&A recommends keeping separate decisions for each fire in WFDSS for a variety of reasons; see "Complexing Fire Decision Documentation is Not Recommended." Should a unit decide to "complex" within WFDSS it is recommended to mention it directly in the Decision and clearly articulate that the Objectives/Requirements/Course of Action, etc. applies to multiple incidents.
- The Incident Groups tab in WFDSS offers the functionality to group multiple incidents for ease of navigation and may alleviate the desire to "complex" fires in WFDSS. For Incident Groups, users can view all the grouped fires on a single map, view all the fire's Decisions from one screen, download perimeters for all incidents in a group, generate a KMZ for all incidents in a group, and view all the fire's analysis from one screen. See Incident Groups for more information.

Other References:

- For another example of a good WDSS decision see the Salt Springs training documents.
- For more information about the 2014 Review of WFDSS Decisions and recommended actions see Example Decision section of the Reference and Guidance page.

Appendices

Appendix A: Delegation of Authority and Leader's Intent for the Gold Pan Fire Complex to Diane Hutton, Incident Commander, July 27th, 2013

Appendix B: Delegation of Authority and Leader's Intent for the Gold Pan Fire Complex to Greg Poncin, Incident Commander, July 31st, 2013

Appendix C: Gold Pan Incident Action Plan July 29th, 2013

Appendix D: IMT Briefing Packet, July 29, 2013