National Forests in Mississippi

De Soto Ranger District

Acadian Wildland Fire

Firefighter Burn Incident - May 2, 2011

Facilitated Learning Analysis

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I. Summary and Description of Incident and the Outcome

On May 2, 2011 the Acadian Wildland Fire was reported to the De Soto Ranger District of the National Forests in Mississippi. The De Soto Ranger District has a very active fire program. The district conducts prescribed burning on an average of 100,000 acres a year and suppresses on average 100 wildfires a year. The Acadian Wildfire was ignited in an area of the district that was last prescribed burned in the winter season of 2005, before Hurricane Katrina. The fuel model for the fire area is Southern Rough with heavy Yaupon and hurricane damage fuels.

During initial attack actions the Incident Commander (IC) identified Forest Development Road 406G1 as a control line and burn out operations were conducted. During the burn out fire personnel picked up several spots and were taking action with bladder bags and hose lines from the engines. The first dozer unit on site was assigned to construct contingency lines north of the road due to the number of spots. The vegetation north of the road was extremely thick and made it difficult to identify and suppress the spot fires. The dozer unit had constructed a total of four separate plowed lines. While the dozer unit was constructing the contingency lines the fire spotted in several locations between the road and the first dozer/plow line. The firing and holding operations then moved to the first plow line. At this point the District Law Enforcement Officer (LEO) changed out of uniform into fireline PPE and started to assist in fire suppression activities. The LEO was assigned to patrol the second plow line with a bladder bag and suppress spot fires. The LEO notices he did not have his gloves and returned to his vehicle to get them. After retrieving his gloves the LEO clipped them on his pack and headed down the plow line. The LEO had progressed down the plow line about 400 feet and found a spot fire. The LEO then engaged in suppressing the spot fire and found it was more then he could handle on his own. The LEO was able to see the top of the dozer through the brush. The LEO pulled his radio out to call the dozer when the main fire “flashed” over the plow line in front of him. The LEO turned around to head back up the line towards his vehicle and saw the main fire had “flashed” over the plow line behind him as well. The LEO could feel the heat of the two flanking fires coming together. The LEO looked into the green towards the dozer unit but he felt the fuels were too thick to run through to get to the third plow line. The LEO then looked into the black and made the decision to hop over knee high (2-3 foot high) flames and get into the black. The LEO hopped over the flames and found himself on the first plow line. The LEO then turned to go down the first plow line but found it too hot to proceed to the vehicles. At this point the LEO made the decision to run through the black to the 406G1 road, 200 feet away. The LEO ran to the south weaving his way in and out of hurricane debris to the road. As the LEO was running towards the road he called the IC on the radio and informed the IC the LEO had received burns to his hands and arms. The LEO also relayed his location and said he would need an ambulance. The LEO was treated on site by other firefighters until an ambulance arrived. Once the ambulance arrived the medical crew treated the LEO for first degree burns to the hands and a quarter size second degree burn to the right elbow. The LEO was released from treatment by the ambulance crew at the fire location. The LEO then returned to LE&I duties after being treated and did not require additional medical treatment.

The Acadian Wildland Fire grew to a total of 42 acres and was contained at 20:10.

Local district resources assigned to suppression actions were;

- 1 ITC4
- 1 LEO
- 2 IA Dozers
- 1 Type 6 Engine
- 2 Type 7 Engines
- 7 Firefighters

On May 5, 2011 a Facilitated Learning Analysis team was assembled. The team traveled to the De Soto District on May 9, 2011 and received a briefing on the incident on May 10, 2011 at 09:00.

II. Chronology

Acadian Wildland Fire Incident Chronology
May 2, 2011
All times are taken from the dispatch log

1300

- De Soto Dispatch receives a report of a fire from a private citizen.

1334

- Incident Commander and other units respond to the fire.

1359

- Fire suppression units arrive on scene – assess situation, and begin initial attack on the fire at 1412.

1417

- District Law Enforcement Officer arrives on scene.

1425

- North-half District Assistant Fire Management Officer arrives on scene, receives a briefing from Incident Commander and attacks the fire around 1437.

1444

- Dozer unit arrives on scene.

1529

- Incident Commander advised dispatch that District Law Enforcement Officer has received burns on the fire and is requesting an ambulance.

1532

- District Ranger called and advised of the situation from dispatch..

1544

- District Law Enforcement Officer advised that on-site burn treatment was adequate and that there was no need for transport by ambulance.

1621

- District Law Enforcement Officer advised dispatch that paramedics were satisfied that he was stable and no further treatment was needed. He was staying on the fire to resume his law enforcement duties.

1640

- Incident Commander advised dispatch that they are beginning to get a handle on the fire. More resources have arrived on the fire.

1908-1940

- District Law Enforcement Officer leaving fire enroute back to the Wiggins, MS office. District Ranger checked in with dispatch for an update and made contact by phone with District Law Enforcement Officer at the office.

2010

- Fire declared contained by Incident Commander.

III. Conditions

On the date of the Acadian wildfire, weather and fuels were typical for the season. The last significant rainfall (0.27 inches) had occurred 16 days earlier, but this was not unusual for spring on the De Soto Ranger District. Fuel moistures were 9% 10 hr FSM, 16% for 100 hr FSM, and 19% 1000 hr FSM, also relatively common for the season. This area of the wildfire had been burned (prescribed) in 2005, allowing a dense fuel/vegetative loading to develop in the following six years. The preferred prescribe fire frequency for the De Soto is three years. There were also heavy fuels from Hurricane Katrina and snags in part of the fire area. The following conditions were present at the Black Creek weather station when resources were dispatched:

Temperature 86 ` F
Winds South 9 mph with gusts 18 mph
Relative Humidity 53%
10 hr fuel moisture 8%

1400 Actual Indices	Rainfall Black Creek RAWS
KBDI – 522	March rainfall total 6.50 inches
BI – 91 Staffing Class D	April rainfall total 1.34 inches
ERC – 57	Last rainfall 0.27 inches April 15

What happened – the perspective of the IC, LEO and other fire personnel…

The fire was reported by a local resident and resources dispatched at 1334. Resources arrived at different times between 1359 and 1624. After briefing from the IC, each resource was given an assignment and engaged. The first priority was to hold a road that served as the east flank and head of the fire (north). The tactics were to extinguish spots, plow lines to contain all spots and burnout road or lines. The dry, heavy fuel/vegetation resulted in flame lengths from 3 to 50 feet and multiple spots over roads and lines.

The IC and other fire personnel felt “this was a typical fire day” in South Mississippi. Many of the regular fire personnel were on details to Texas, but those assigned to this fire were qualified for their positions and were experienced with De Soto fire operations. Tactics used by the IC were normal for the District. Spotting was short range (mostly less than one-half chain), but it was difficult to access and extinguish spots because of the thick brush. The IC planned to continue catching spots and plowing parallel lines until conditions allowed burning out the final perimeter line. As spots or fire activity flared up, personnel would pull back or wait before moving ahead.

Sometime shortly after 1430, the LEO had completed evacuation of private residences at the head of the fire. He put on fire ppe, contacted the IC and began to assist with suppression of spot fires. He moved past another firefighter; both were working on spots along a plow line. Two spots flared up on both sides of the LEO. The heat from these spots was too intense for him to continue working. He assessed the situation and decided to leave the area before they

burned together. As he looked into the dense, unburned fuel/vegetation, he decided it posed a high risk since the flames were moving in that direction. He decided to go back into the black and toward the original road perimeter. He ran through the "black" because it was very hot with heavy fuels still burning. Holding his breath and weaving around the burning fuels, he felt like a "linebacker on a football field". While running, in the back of his mind he thought "I must not fall" with all the heavy fuels still burning. His main goal was to reach the road just a short distance away. He radioed to the IC that he was running through the fire and needed an ambulance because he was burned. He felt burning on his elbows and knees where the nomex was tight against his skin. Although he had gloves with him, they were still hanging on his pack, and his hands felt burned, too.

After the radio call to the IC, the closest firefighter went out to the secure road and began to look for the injured firefighter. Based on the radio communication, he thought the injury was life-threatening. In just a few minutes, they met and first aid was administered by the firefighter – cool water and burn cream to the hot areas.

The IC responded to the radio call for help (around 1529) by requesting an ambulance through De Soto Dispatch. The ambulance arrived and checked the injured firefighter who declined further medical treatment. The firefighter remained at the fire, resuming his role as LEO.

IV. Lessons Learned from the FLA Participants

Don't work alone. When you are working on spot fires on a hot fire, work with someone so you can watch out for each other. Don't walk by someone without talking to them about where you are going and what your assignment is. This keeps adjacent resources informed about your location if an emergency requires quick response.

Wear all your ppe when you are working spot fires. Gloves can protect hands only when they are worn. They also allow other ppe to do its job correctly. Stretching nomex sleeves to cover hands caused burns on elbows because the nomex shirt was too tight against skin.

Communication in emergencies is critical and is sometimes difficult. Use clear terminology so that others will understand what has happened, where people are located and what injuries have occurred. Use sufficient details to provide good information and to prevent misunderstanding.

V. Lessons Learned from the FLA Team's Perspective

LEO Participation in Fire Management Varies by Unit (District/Forest/Region)

It was evident in discussions with the LEO and other experiences from the FLA team that some LEO's have the flexibility to be involved in fire management activities and others do not. In this case, the LEO had been involved previously as a primary firefighter. Currently, the direction from his supervisor is that he not participate in prescribed or wildand fire activities.

- More consistent policy in the law enforcement organization might help fire managers better understand the role LEO's can play in fire management.

Radiant Burns Through Nomex

Since the LEO did not have his gloves on, he elected to try and pull his nomex shirt sleeves over his hands for protection. This resulted in his fire shirt pulling tight at his elbows. Radiant heat then traveled through the nomex and caused burns on his elbows.

- Correct use of gloves could have alleviated this injury.

Experience in Fuel Type

The LEO had worked as a primary firefighter for four years before becoming an LEO. During this time he was located on a unit that had limited wildland fire activity. His fire experience in this fuel type and time of year was minimal and may have contributed to the incident.

- If LEO returns to active fire suppression activities, additional time spent with more experienced fire personnel would be recommended.

Good Actions to Continue

Three things were identified that were particularly good actions prior to and during this burn incident. The District is commended and encouraged to continue this work.

- First Aid and medical emergencies were addressed prior to this incident through District readiness actions and the annual fire refresher. The District has begun training six employees as first responders for medical emergencies. Just days earlier, first aid kits had been resupplied with burn cream and other medical supplies. There is a good lesson in preparing for emergencies – both employee skills and medical supplies.

- During the Acadian Wildfire, a good decision was made to secure an engine in a safe location rather than attempt to work it alone suppressing spot fires. This decision allowed the firefighter to focus on spots and removed the engine from potential fire. Both the firefighter and engine were available when needed to respond to the injured firefighter. The lesson to share is keeping situational awareness high includes anticipating possible equipment burn overs. Another lesson was the firefighter no

longer had to devote mental or physical energy to the engine's safety and was able to increase his situational awareness of the spot fires.

- The radio communication from the LEO to the IC requested an ambulance. The IC immediately requested De Soto Dispatch to order a local unit to respond. The IC did not hesitate with the order or wait until the injuries were evaluated. Although further medical treatment was declined by the firefighter, the order was appropriate. The lesson to share is to get proper medical response immediately for a critical injury. In an emergency, the IC must quickly make a decision based on the information at hand. It is better to order medical response that is not needed than to delay a response that could save a life.

VI. Recommendations to the Line Officer

Coordination between the Line Officer and LE&I Patrol Captain

- Coordination and communications between the Line Officers on the National Forests in Mississippi and the LE&I Patrol Captain on the National Forests in Mississippi needs to be improved in order to have better clarification on the roles and responsibilities for the LEOs on the districts in regards to wildland and prescribed fire activities and participation.
- This clarification will need to be relayed to all ICs and LEOs on the National Forests in Mississippi using the proper chain of command.

Revisit Delegation of Authority to ICs

- A revisit of the Delegation of Authority between the Line Officers and all ICs to confirm and reinforce the expectations from the Line Officer. Also this revisit should look to see if the conditions "on the ground" have not changed that has made the delegation of authority no longer valid.

Communications with Dispatch about position static and/or changes in ICS position

- With the use of several dispatching data bases and resource tracking systems it is critical that all personnel are made aware of the importance of keeping dispatch informed of position static and/or changes in ICS position with assigned to an incident.

The proper use of personal protective equipment (PPE)

- A confirmation to all personnel about the proper use of PPE should be conducted and a reminder of the importance of PPE.

VII. FLA Team Members

Team Leader

Dale Snyder

National Forests and Grasslands in Texas

Prescribed Fire Module Leader

Team Members

Michael Cook

National Forests in Alabama

Forest Safety Officer

Brad Bernardy

National Forests in Mississippi

Acting Forest Safety Officer/Aviation Officer

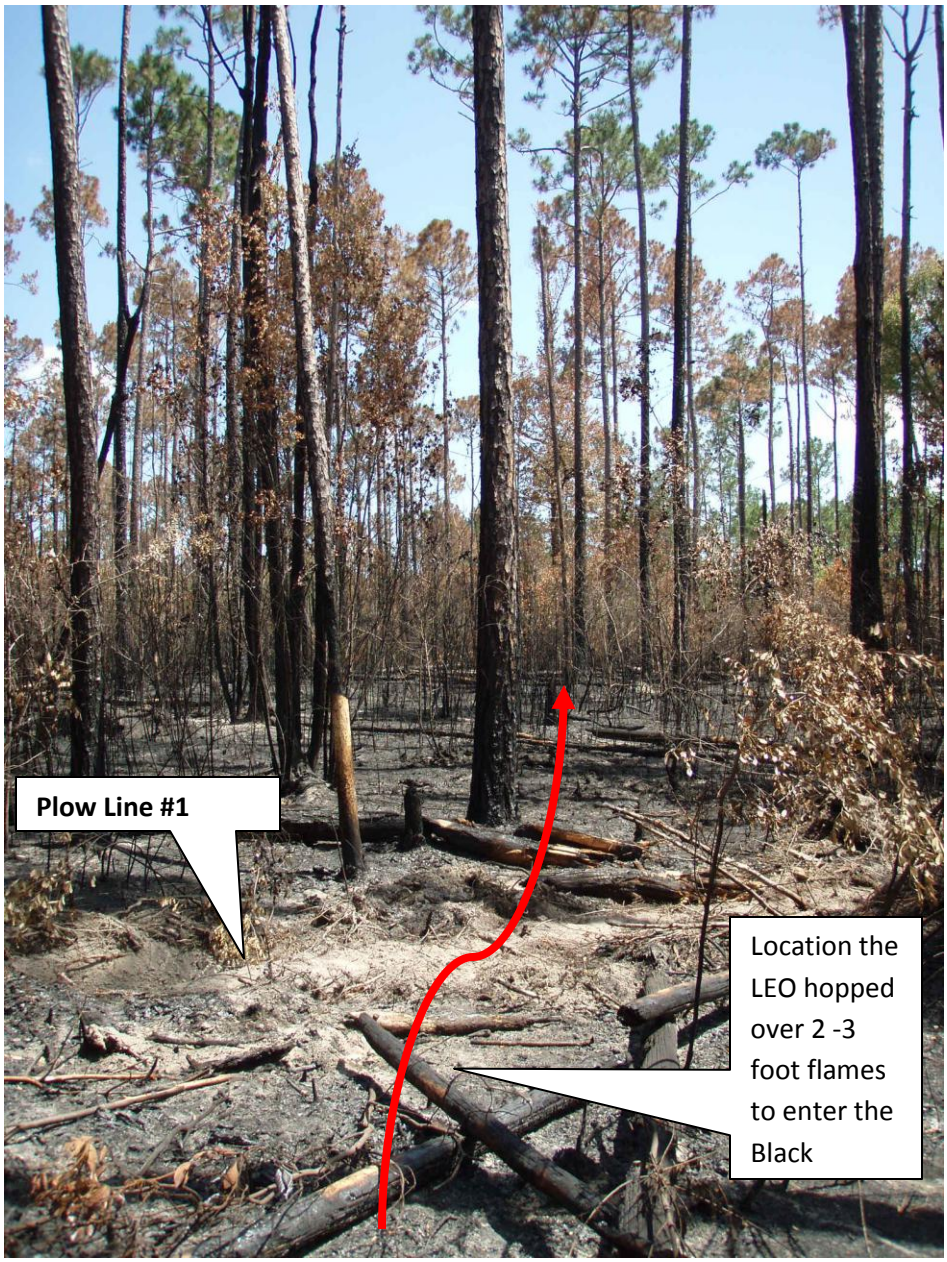
VIII. APPENDIX

Area along plow line number 2 were LEO was working spot fires. Looking southwest towards the vehicles

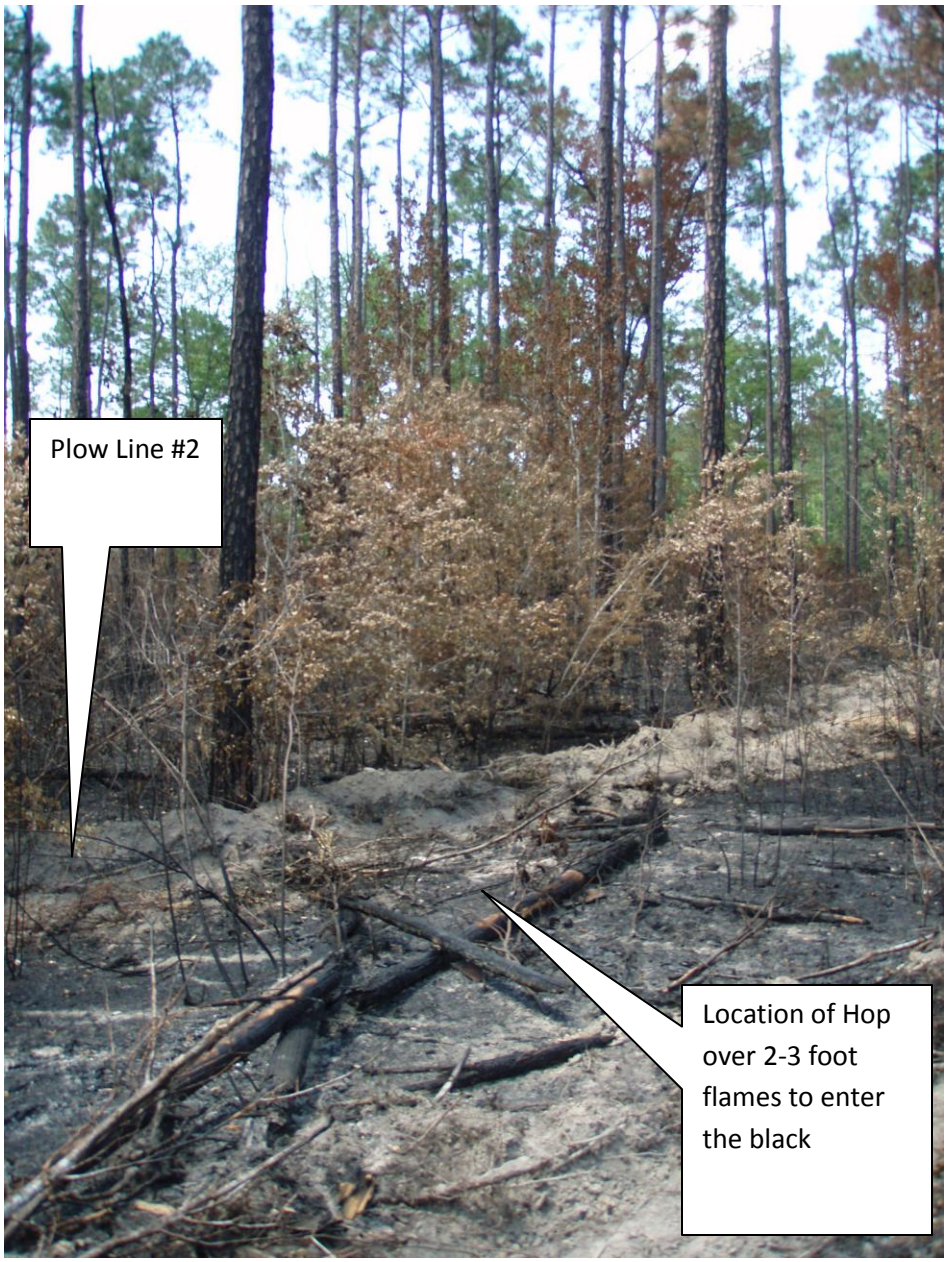
Fuels that "flashed" flames over the plow line. Looking southwest towards the vehicles

Location of spot fire LEO was trying to suppress… behind the taller Yaupon

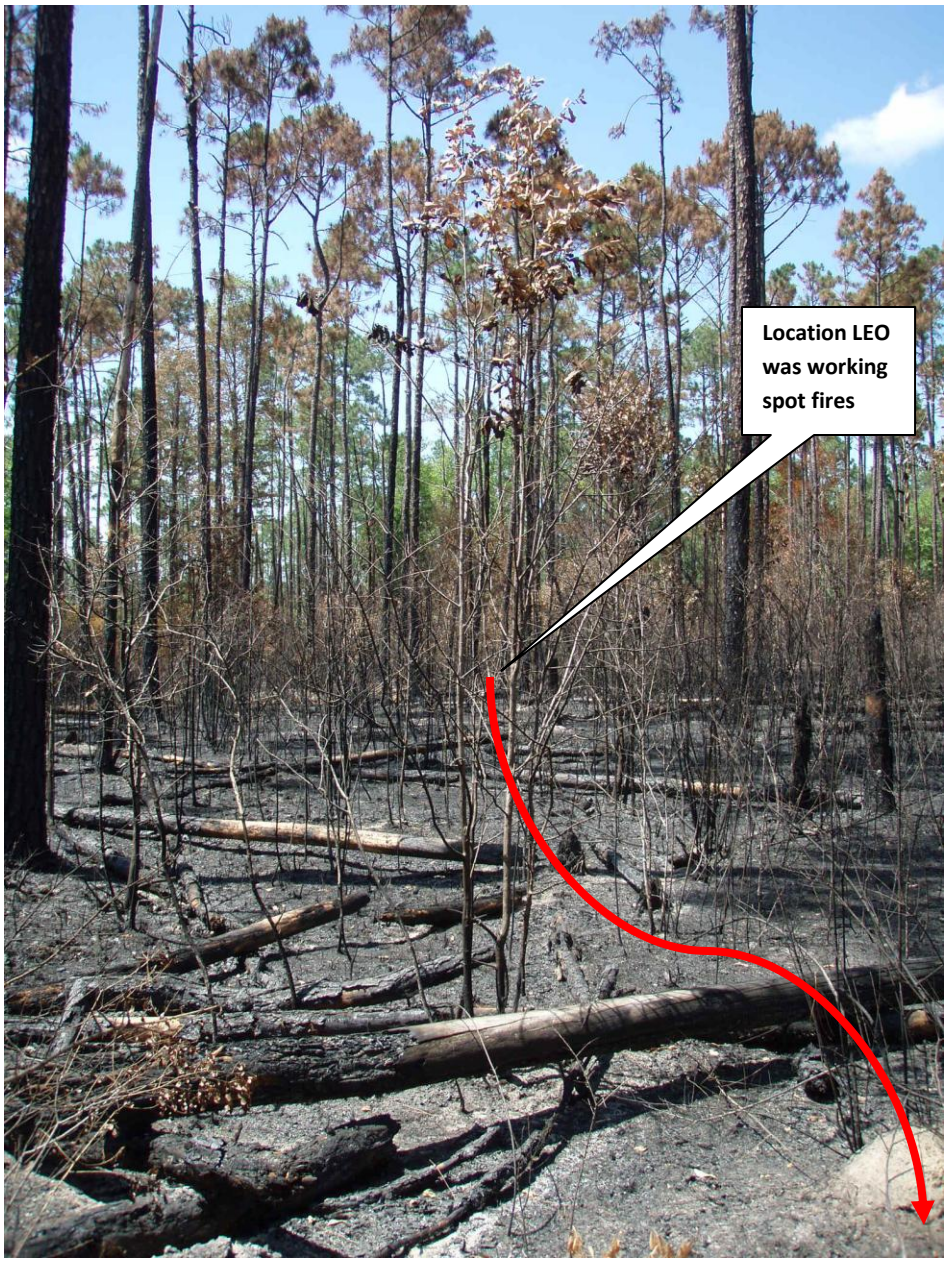
Area LEO was working spot fires… looking northeast away from the vehicles



Location the LEO hopped over 2-3 foot flames and the direction he ran to get to the road… Looking south from plow line #2 towards the 406G1 road



Area LEO was working spot fires and left dozer line #2 hopping over 2-3 foot flames to enter the black



Path LEO took through the black to the road…. Taken from the 406G1 road looking north towards dozer line #2.

Representation of the fuel loading prior to the wildfire… Taken from plow line #4…. Also representation of what the LEO would have had to go through to get from plow line #2 to plow line #3

Representation of fuels with LEO to show scale