Onion Creek House Unit

July 19th, 2017 Escaped Prescribed Fire Lessons Learned
Austin Water Wildland Conservation Division

Table of Contents:

Executive Summary

On Wednesday, July 19th, 2017 the Wildland Conservation Division of Austin Water conducted a prescribed burn on the Onion Creek management unit, located near Buda, Hays County, Texas, owned and maintained by Austin Water. This moderate complexity prescribed burn was conducted on Blocks B and C of the House Burn Unit for a total of 533 acres. During the initial stages of the operation, a spot fire ignited outside the burn unit and expanded rapidly onto an adjacent privately owned ranch. Resources on scene were not able to control the fire. A wildfire conversion was declared and additional resources from within the region were requested as emergency responders.

The escaped fire eventually burned an additional 250 acres on private property before being fully contained within 48 hours. The House Unit prescribed burn was also completed at the time. The fire and suppression response damaged vegetation and fencing on two privately owned properties.

This burn was planned and conducted in accordance with State law by the Environmental Program Coordinator of the Wildland Conservation Division, a Texas Department of Agriculture (TDA) licensed and insured Prescribed Burn Manager and National Wildfire Coordinating Group (NWCG) qualified Burn Boss Type 2. Additional agencies participating on the prescribed burn were the Austin Fire Department and the Buda Fire Department.

The review found that the following recommendations will improve the success of prescribed burn operations and reduce the chance of fire escape and wildfire declaration:

- Provide timely, accurate, and complete information to the public, officials, fire departments, and other stakeholders.
- Clarify the criteria for converting a prescribed fire to a wildfire and the initial suppression actions.
- Improve the availability and capability of participating personnel.
- Prepare all planning documents to the best and most current standards.
- Improve the planning and preparation for contingency situations.
- Prepare all fire containment lines to the highest and most appropriate standards.
- Ensure equipment performance, readiness, and quantity are sufficient for the operation.
- Improve radio communication planning, compatibility, and equipment.
- Ensure safety concerns are addressed and safe practices are observed.

It has also been suggested that a Fire Program Functional Review could be conducted by a third party subject matter expert on a periodic basis to improve program effectiveness. A functional Review should be designed to obtain, analyze, and evaluate information concerning the management, planning, and operational procedures of the program.

Purpose of Review

The purpose of this report is to analyze this incident, identify strengths to be maintained and built upon, identify potential areas for further improvement, and support development of a corrective actions plan. The outcome of the review should be to promote organizational and individual learning, increase beneficial dialogue, avoid serious accidents, and result in more effective prescribed burning.

Review Process

The Austin Fire Department and Austin Water appointed staff members to an interagency team to conduct a review of the escaped fire and wildfire declaration. Review Team members visited the site, interviewed key personnel involved with implementation of the burn, and analyzed events, actions, and decision-making leading up to and immediately following the event.

The review team consisted of:

Utility Emergency Management Coordinator, Austin Water
Division Chief, Austin Fire Department
Assistant Chief, Austin Fire Department
Fuels Management Coordinator, Wildfire Division, Austin Fire Department
Division Manager, Wildfire Division, Austin Fire Department

The staff of the Wildland Conservation Division also conducted a formal After Action Review with prescribed burn implementation staff and management to review policy, prescription, and procedures. The review was facilitated by the Environmental Program Coordinator and included 14 members of the WCD staff involved in prescribed fire planning, approval, and operations.

This report includes the findings and recommendations from both of these efforts.

WCD Description and Prescribed Fire Operations

The Austin Water Wildland Conservation Division (WCD) is an organization established in 2001 by the City of Austin to provide management services for two land conservation programs, the Balcones Canyonlands Preserves (BCP) and Water Quality Protection Land (WQPL). Prescribed fire is identified as an important component in the long-term land management plans for both programs. The WCD began conducting prescribed burns in 2002 to use fire as a management tool on conservation properties. Initially, burns were planned and conducted by partner agencies until an Environmental Program Coordinator position for fire management was staffed in 2006. The WCD has conducted over 10,000 acres of prescribed burns in 15 years, primarily for savannah restoration on WQPL property. These burns are generally in wildland-urban interface areas and often within city limits.

The WCD has an established prescribed fire program policy for mission, standards, and practices. Program staff consists of the Environmental Program Coordinator with other WCD staff members supporting the program as a collateral duty. All prescribed burn planning, personnel, and equipment

meet the standards set by the National Wildfire Coordinating group where they do not conflict with other City policy. Local suppression departments participate in prescribed burns to gain wildland firefighting experience and to improve response to wildfire incidents throughout the region. Partnerships with other land management agencies that conduct prescribed burns provide training and experienced personnel to assist with burn implementation, but recently maintaining interagency agreements has been challenging. These partnerships have immense value to all parties and should be continued.

Prescribed Fire Program Staffing Targets

Position	Tag	Target Number	Training Required	Prerequisite Qualification	Fitness Level Required
Firefighter Type 2	FFT2	6	S-130, S-190, I-100, L-180, IS-700	None	Arduous
Firefighter Type 1	FFT1	2	S-131, S-133	FFT2	Arduous
Single Resource Boss-Engine	ENGB	2	ICS-200, S-230, S-290	FFT1	Arduous
Single Resource Boss-Firing	FIRB	2	ICS-200, S-230, S-290	FFT1	Arduous
Incident Commander Type 4**	ICT4	1	S-200	Any Single Resource	Arduous
Prescribed Fire Burn Boss Type 2**	RXB2	1	S-390	FIRB, ICT4	Moderate
Public Information Officer	PIOF	2	ICS-200, IS-700, S-203	FFT2	None
Fire Effects Monitor	FEMO	2	S-290	FFT2	Moderate
Weather/ Smoke Observer		6	Develop in House	None	None
Safety Support		2	Develop in House	None	None
Incident Agency Representative	AREP	12	ICS-100, ICS-200, IS-700, IS-800b	None	None
*Prescribed Fire Burn Boss Type 1***	RXB1	1	S-490	RXB2	Moderate
Single Resource Boss-Crew	CRWB	1	ICS-200, S-230, S-290	FFT1	Arduous
Single Resource Boss-Heavy Equipment	HEQB	1	ICS-200, S-230, S-290	FFT1	Arduous

** Qualifications expected to be held by the Fire Management Specialist

Positions listed in italics are lower priority

One individual may fulfill more than one position (i.e. a Firefighter Type 1 may also be qualified as a Fire Effects Monitor).

House Unit Description and Prescribed Fire Objectives

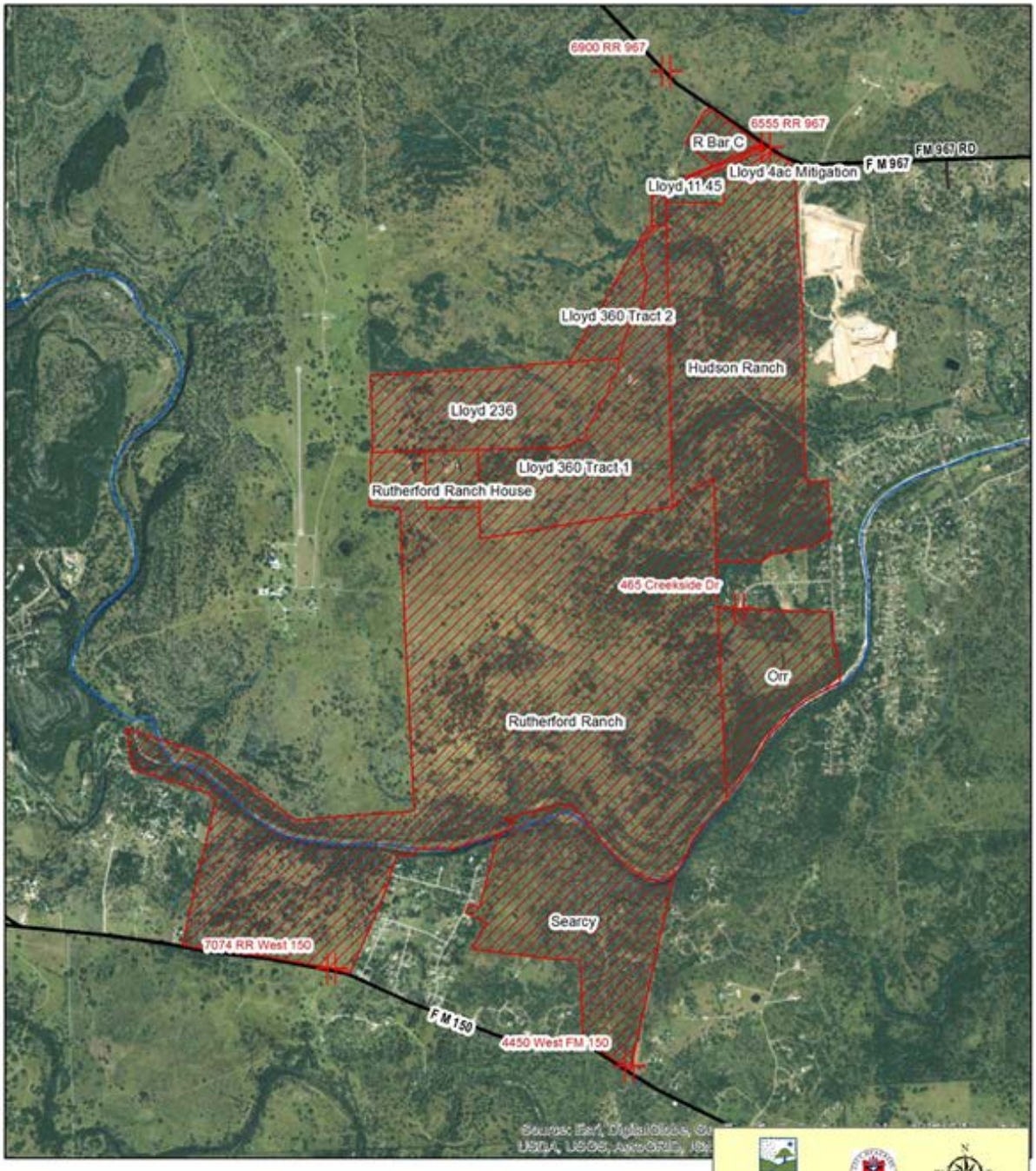
The House Unit is an established burn area on the 2,567 acre Onion Creek Management Tract in northeastern Hays County, Texas. The Burn unit is divided into three subunits, or Blocks, totaling 561 acres. The unit is roughly square in shape with the majority of the area contained in the 466 acre Block C while Block A is a narrow 28 acre strip along the northern boundary and Block B is a narrow 62 acre strip along the western boundary. The northern and western unit boundaries are adjacent to fenced private property while the southern and eastern boundaries are defined by an internal paved access road. There is an unoccupied ranch house complex located on the west central side of Block C.

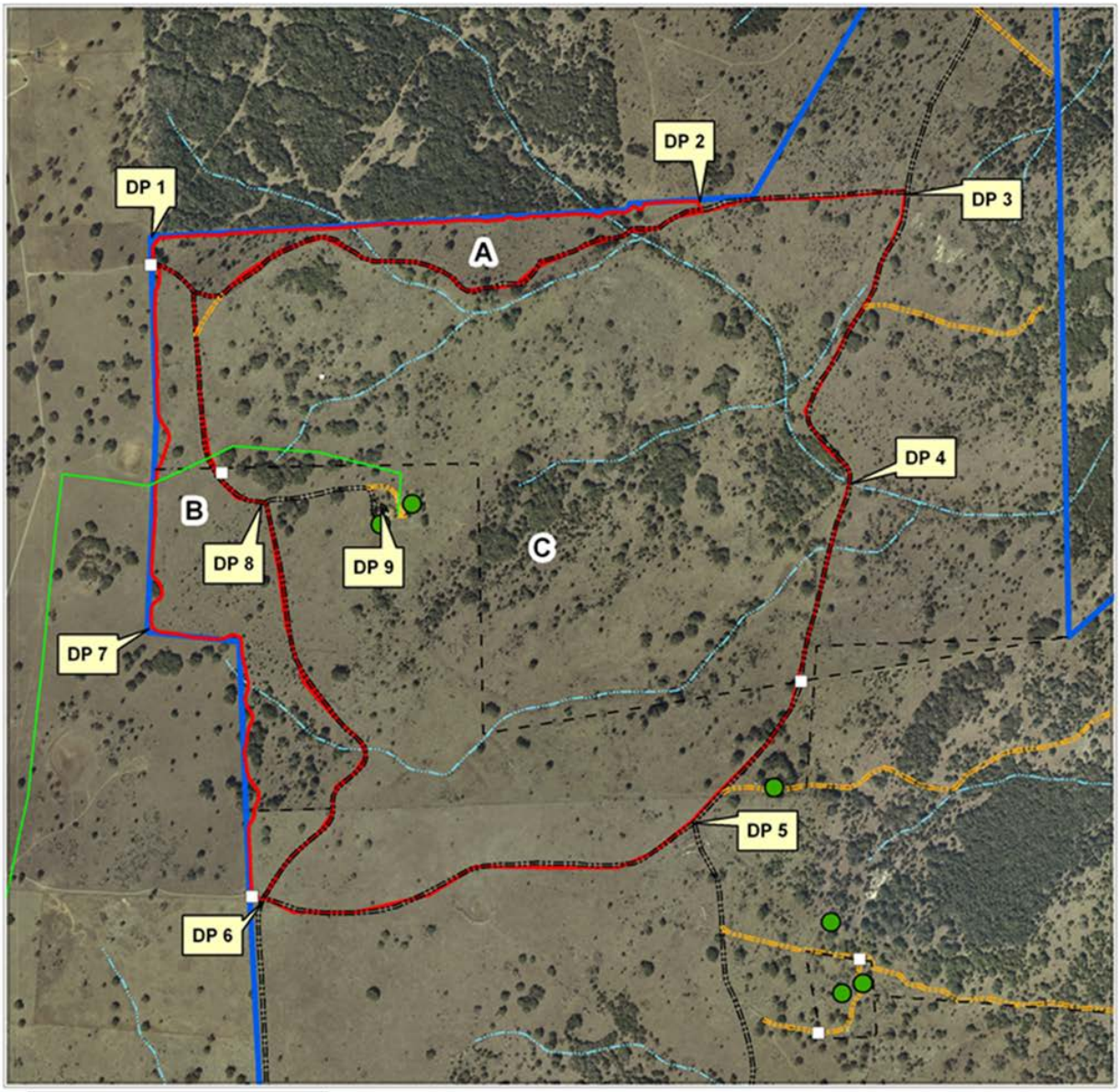
The vegetation in the unit is generally dense grasslands with a distributed and diverse brush component. Dense woodlands are a minor portion of the vegetation and primarily located in drainages. Mechanical fuel treatment was carried out on the northern and eastern portions of the unit in 2009 and previous prescribed burns were implemented on the entire unit in 2007 and 2012.

This burn was primarily intended as a maintenance burn. The major resource goals were to control problematic species, reduce fuel loads, and reintroduce fire into the ecosystem. The prescription was written to meet the objectives of consuming at least 90% of available fine fuels, scorching or top-killing at least 50% of woody brush, and consuming at least 50% of 10 and 100 hour dead fuels, while limiting top-kill to less than 10% of riparian hardwoods. The burn plan was prepared by the Environmental Program Coordinator, reviewed by the WQPL Program Manager, and approved by the WCD Division Manager in early July, 2017.

An adjacent burn unit, the 229 acre Hoskins Hole unit, was completed the previous week on July 13th. The results of that prescribed burn were judged to meet objectives.

[See the Onion Creek Management Unit map on the next page and the House Unit Prescribed Burn project map on page 7.]


6900 RR 967
6555 RR 967
R Bar C
FM 967 RD
F M 967
Lloyd 4ac Mitigation
Lloyd 11 45
Lloyd 360 Tract 2
Hudson Ranch
Lloyd 236
Lloyd 360 Tract 1
Rutherford Ranch House
465 Creekside Dr
Orr
Rutherford Ranch
Searcy
7074 RR West 150
F M 150
4450 West FM 150
Legend
Onion Creek Management Unit
Onion Creek Management Unit Area Map
0
1,500
3,000
6,000
Feet
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.
This product has been produced by the Wildland Conservation Division for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.


DP 1
DP 2
DP 3
DP 4
DP 5
DP 6
DP 7
DP 8
DP 9
A
B
C
mow line
two-track
asphalt
gates
structures
powerlines
fences
Creeks
COA property boundary
N
W
E
S
0
1,000
2,000
Feet
Onion Creek Management Unit
New House Prescribed Burn Unit
Project Map
410 acres / 3.9 miles perimeter
Block A - 27.9 acres
Block B - 62 acres
Block C - 471 acres
This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. This product has been produced by the Wildland Conservation Division for the sole purpose of geographic reference. No warranty is made by the City of Austin regarding specific accuracy or completeness.

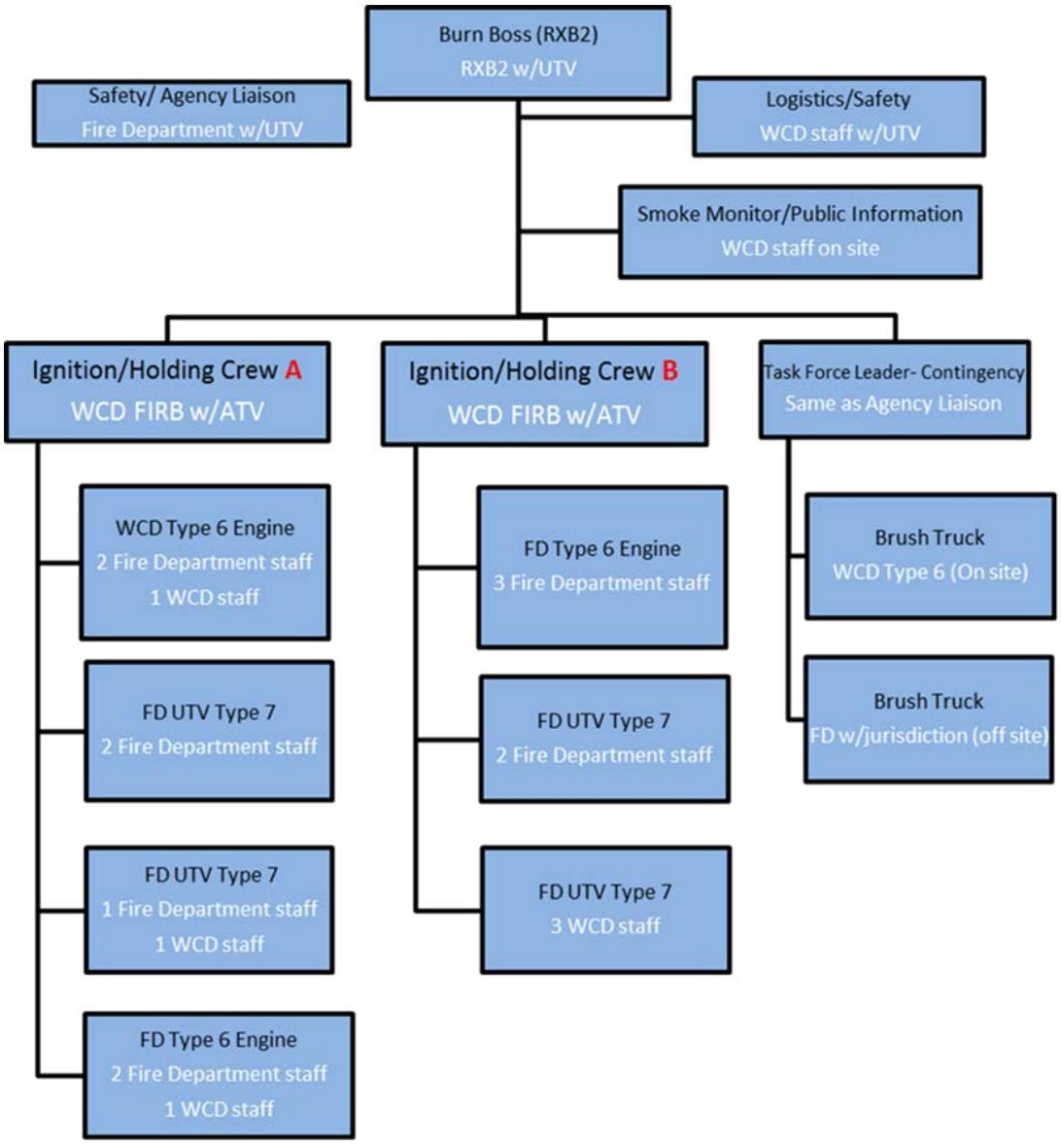
Organization and Equipment

Personnel and equipment were assigned to the prescribed burn from the WCD, Austin Fire Department (AFD), and Buda Fire Department. An organizational chart was produced the day before the burn based on the expected equipment and personnel. Alterations to the organization were made on burn day, and communicated during the briefing, to account for changes in personnel and the availability of equipment.

As per the MOU established between the WCD and AFD, a Battalion Chief is assigned to a prescribed burn when AFD resources are utilized, to act as an initial attack Incident Commander in case of wildfire conversion. The officer was identified in the org chart as the "Contingency IC" and the expected role was described during the briefing.

See the org chart below that reflects the organizational structure at the initiation of the burn.

Organization Chart



Social and Political Concerns

Four prescribed burn areas, totaling 1,600 acres, were planned to be conducted on the Onion Creek management tract during the summer burn season of 2017. The burn plan was shared with the Austin Fire Department Wildfire Division and the Hays County Fire Marshal on July 7th. A media advisory describing the seasonal burn project was sent to local media in early July. Approximately 2 weeks before burning commenced, notifications were made by postcard to the 315 residential addresses within ½ mile of the perimeter of the Onion Creek management tract. A press release with further specific details was provided to media outlets the day before each burn operation. This information about the burns was repeated through the Austin Water social media platforms and updates were provided by the WCD Outreach Coordinator to communicate significant events during the burn operation (safety briefing, test fire, ignition of backing fire).

No stakeholder agencies or representatives voiced any reluctance to conduct this burn or made any request to cease or postpone this burn prior to commencement of operations. Hays County was under a countywide burn ban at the time of ignition. Burns conducted by a TDA Prescribed Burn Manager are exempted from burn bans by state law and the Hays County Fire Marshal was informed that the burn on July 19th would be conducted by a license holder. Following the escape, Hays County officials and residents voiced questions and concerns regarding this fire, as it was conducted during a burn ban.

Weather, Fuels, and Fire Behavior

The WCD Environmental Program Coordinator monitors weather and fuel conditions for fire danger and prescribed fire planning. In addition to the National Weather Service (NWS) products, the WCD maintains a portable Remote Automated Weather Station (RAWS) that is prepositioned near each burn project. Forecast and observed conditions are used to determine if the burn can be conducted safely while meeting the desired objectives. This information is obtained through a combination of weather forecasts provided by the NWS office in New Braunfels TX, National Fire Danger Rating System (NFDRS) products calculated from the permanent RAWS station in south Austin, measurements made by the portable RAWS on site, and field observations by WCD staff.

The burn prescription parameters for this project required certain weather, environmental, and fuels conditions. While some of the conditions were outside of the desired range, the only condition outside of the acceptable prescription range was the woody live fuel moisture content. This parameter is not available as a daily fire behavior forecast product. The WCD has a volunteer group that samples live leaf moisture in juniper trees twice monthly. One of the juniper sampling sites is within ½ mile of the burn unit. The results of the juniper moisture sampling are used to anticipate fire behavior in woody fuels. The most recent sample was taken 14 days before the burn was conducted. While it was expected that the moisture content of woody fuels was declining due to hot, dry conditions, the sample taken the day after the burn showed that the moisture content was lower than anticipated and outside the acceptable range in the prescription. This may have been a factor that contributed to more vigorous fire behavior in the woody fuels than the burn participants expected.

With the exception of the woody live fuel moisture, the conditions present on the day of the burn were as expected, within the range of the prescription, and did not present a hazard to operations. The forecast and observed fire danger class rating produced by the Wildland Fire Assessment System was

categorized as “Moderate”. Similar conditions during a burn on an adjacent unit the previous week had produced fire effects that met all burn objectives.

Weather Conditions	***Acceptable Range***		***Desired Range***		***Forecast***	***Observed***
Temperature (F)	35	100	70	90	Max 98	Max 99
Relative Humidity (%)	25	50	30	40	Min 38	Min 33
Wind Speed (mid-flame/eye level)	1 mph	17 mph	5 mph	10 mph	5-8 mph	Max 8
Cloud Cover (%)	0	100	0	0	20-30	Ptly Cldy
Mixing Height	Min 2000 ft.		>2000 ft.		Min 3000ft.	

Environmental Conditons	***Acceptable Range***		***Desired Range***		***Forecast***	***Observed***
1 hr. fuel moisture (%)	4	11	6	9		Min 5
10 hr. fuel moisture (%)	4	15	7	10	10	8
Soil Moisture (KBDI)	0	700	200	600	620	615
100 hr. fuel moisture (%)	8	18	10	12	14	14
Woody-Live Fuel Moisture (%)	85	180	90	100	96 on 7/5	81 on 7/20
NFDRS Burning Index (BI)	20	77	35	50	33	51
NFDRS Ignition Component (IC)	0	50	25	45	18	31

Chronology of Events

In addition to the staffing adjustments mentioned above, several changes to the planned burn operation were made on burn day prior to ignition.

Block A was removed from the planned ignition for the day. During a previous burn on this unit in 2012, the ignition of the north fireline of Block A (DP1-DP2) required very slow paced operations to allow for sufficient patrol and containment. Part of the delay was the constraint of operating directly adjacent to a fence and private property. Resources were required to operate in close proximity to fire in the narrow space between the burn unit and the fence and would have difficulty accessing any fire across the fence on private property. In order to increase the pace of line ignition, the Burn Boss decided to move the burn unit boundary from the fenceline (north side of Block A) to the interior road from DP1 to DP2 (north side of block C). This was intended to allow the ignition team to have more room to operate, a better containment line (the road is composed of deteriorated pavement instead of just mowed grass), and more time to react to a spot fire before the fire could enter private property. The location of the escape (near DP2) was noted in the briefing as a potential containment concern due to a spot fire occurring in the same general area during the prescribed burn in 2012.

One piece of WCD equipment was removed from service before the burn due to unnoticed suspension damage. This required the WCD staff to be reassigned to an unfamiliar piece of equipment from a partner agency. The requirement to exclude fire from the ranch house complex in the interior of the burn added to the ignition complexity. In order to facilitate the interior exclusion ignition, the burn boss made the decision to position one unstaffed Type 6 fire engine in the exclusion area. The engine would be staffed by the Burn Boss during interior ignition to provide a sufficient water supply for the exclusion firing. This left one Type 6 engine to be assigned to Team B for the DP1-DP2 ignition operations. On

typical operations of this type, two Type 6 engines would be assigned to each ignition team. The burn boss judged the reduced holding requirements provided by moving the fireline would mitigate the reduced equipment assigned.

July 19, 2017

0900 Resources requested to assemble at the “Rutherford House” –DP9

1000 Resources assembled, begin briefing

1045 Main briefing complete, conducted “Go/No-go” checklist by phone with the WCD Division Mananger, fire team breakout briefings

1125 Resources on-site at DP1, begin test fire at DP1

1130 Team B ignition proceeding from DP1 to DP2

1140 Test burn successful, Team A proceeding from DP1 to DP7

1200 Team B ignition from DP1 to DP2 proceeding slowly to allow for wetline on grass in paved road

Spot fires as ignition progressed on the north line and surface fire creeping through the mowed grass growing in the paved road was more frequent than expected.

1215 RXB2 at DP9 with an AFD staffed UTV from Team A to initiate interior avoidance firing on house and utility poles

1220 An active spot fire was discovered between DP1 and DP2 and controlled at around ¼ acre.

1230 Team B Firing Boss ATV down, AFD Contingency IC to DP9 to reposition RXB Polaris to Team B firing boss, RXB moves to AW62

The ATV (with small electric water pump) that was assigned to the ignition Team B leader had failed and was inoperable. The UTV operated by the Burn Boss was repositioned to the Team B leader and the Burn Boss began operating the Type 6 engine positioned for interior ignition.

1310 Team A tied in to utility line west of DP9, interior avoidance firing begins at DP9

1350 Avoidance firing complete at DP9, AFD staffed UTV to patrol at DP9, RXB out to patrol lines

Due to the amount of water required to maintain the fireline, the Type 6 engine assigned to Team B was low on water upon ignition arriving at DP2. The leader of Team B decided to send the Type 6 engine and one of the UTVs out to refill with water immediately upon ignition arriving at DP2. The intention was to acquire ample water for subsequent patrols and spotfire suppression. During normal operations this would have left one Type 6 engine as well as assigned UTVs to patrol the fireline and detect and suppress spotfires.

1355 Spot fire reported on Team B line near DP2, initial attack begins with resources on site

The spot that produced the escaped fire occurred while the Type 6 engine was refilling with water. The likely cause of the escape spotfire was later determined to be a roughly 12 foot tall hackberry tree, encased in vines, 20 plus feet inside the burn unit that began to torch when reached by the backing fire. The ignition team leader identified the spot fire immediately and began suppression with his UTV. The other UTV assigned to the team also began suppression, but was unable to produce the water flow expected from equipment of its type. This was a piece of equipment from a partner agency and was being operated by AWU personnel. Either the equipment was not able to produce the required performance or the personnel were not able to operate the equipment to full potential due to unfamiliarity.

1400 RXB on site at spot fire, fire is crossing the fence onto private property

1405 Fence cut and IA begins on private property, resources reassigned from Team A, ignition held up on DP1 to DP7 line

The burn boss arrived in the Type 6 used for interior ignition within 5 minutes of the spot occurring and the Type 6 assigned to Team B arrived a few minutes later. By then the fire had crossed onto private property and was established in the tree line.

1410 Additional contingency resources requested by RXB from Buda FD by phone

1420 One brush truck and UTV on left flank, hose pack deployed on right flank with additional brush truck making access, fire is outpacing containment efforts

1420 RXB and contingency IC agree to convert to incident

The prescribed burn was converted to a wildfire by consent of the Burn Boss and the AFD Contingency IC. The conversion status was communicated to all prescribed burn resources and the Contingency IC assumed command of the entire operation. Suppression resources were mobilized through the regional dispatch system. Ignition ceased on the prescribed burn and the Team leaders retained the minimum complement of resources to maintain containment on the remaining fireline. The Burn Boss remained on the escape to provide local information.

1430 Additional resources arrive from Buda FD, RXB transfers AW62 to Team B

1430 RXB scouting downwind for contingency lines with Div. Z

1530 WCD resources assigned to continue to monitor RX burn and keep up with backing fire on west line, RXB with Div. Z

1630 Team A ignitions at DP6 and holding, RXB scouting on Div. A

1930 AW management on scene, IC approves completing Rx burn

1945 Rx burn resources regroup at windmill for briefing to complete perimeter ignition

The remaining prescribed burn teams were still managing containment, but only roughly half of the prescribed burn area had been ignited, leaving several hundred acres and an approximately 1 mile long unsuppressed backing fire. The IC approved completing the prescribed burn to provide containment of the backing fire. The Burn Boss was released and a short complement of the original prescribed burn personnel were re-organized to complete the prescribed burn headfire ignition.

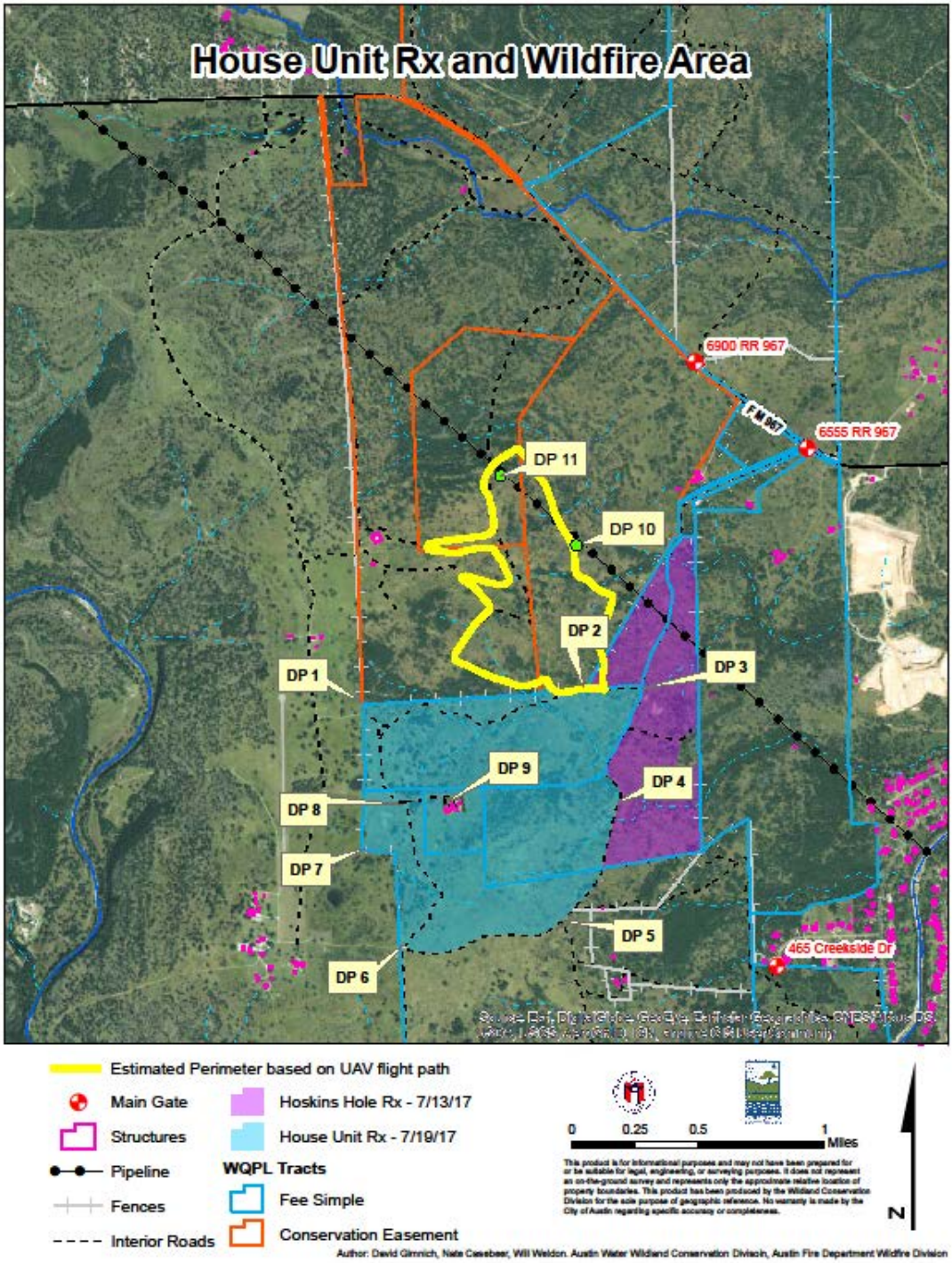
2000 Aircraft refueling adjacent to burn line, ignition held

2030 Ignition completed on House Unit, from DP6 to DP5

2200 House unit burned out, suppression resources released, fire transferred to WCD personnel until 0200

Ignition of the prescribed burn was completed and the burn and escape perimeter were patrolled overnight. Suppression resources were again active on the escape through July 20th. Full containment was declared at 1000 on July 20th and all suppression resources were released by 1930. The WCD remained on mop-up and patrol activities through July 23rd. The wildfire was contained to WCD property and two private properties that are in conservation easement status with the WQPL program. Perimeter and internal fences were damaged and some undesirable soil disturbance occurred on private property due to heavy equipment operations, but no structures were damaged or directly threatened by the wildfire. Post-burn evaluations with the landowners were conducted by WCD staff and the Texas Forest Service to determine the impacts to soils and valued overstory trees. Long-term impacts were expected to be minimal.

[See the House Unit and Wildfire Area map on the next page.]


House Unit Rx and Wildfire Area
6900 RR 967
6555 RR 967
FM 967
DP 11
DP 10
DP 2
DP 3
DP 1
DP 9
DP 4
DP 8
DP 7
DP 5
DP 6
465 Creekside Dr
Estimated Perimeter based on UAV flight path
Main Gate
Structures
Pipeline
Fences
Interior Roads
Hoskins Hole Rx - 7/13/17
House Unit Rx - 7/19/17
WQPL Tracts
Fee Simple
Conservation Easement
0 0.25 0.5 1
Miles
N
Author: David Gimnich, Nate Casebeer, Will Weldon. Austin Water Wildland Conservation Division, Austin Fire Department Wildfire Division

Findings and Recommendations

The findings below were identified by the AW/AFD and WCD reviews as contributing factors leading to the escaped prescribed burn or conditions that could be improved to facilitate successful burn operations and escaped fire suppression.

Agency policy and accountability:

Finding #1- There were good pre-burn contacts with immediate neighbors and public officials. Affected landowners and nearby residents who were contacted directly remain supportive of the program and operations. Some local residents who had less information about the project and response to the escaped fire have expressed concerns about prescribed burns during a burn ban. The weather and fuels conditions detailed in the burn prescription that are required to meet burn objectives often occur during periods when a burn ban is in place. Burn managers licensed by the Texas Department of Agriculture are permitted to conduct prescribed burns during burn bans declared by a county. Although the operation conformed to state laws, the media exposure of the escaped fire event raised questions about prescribed burning during countywide burn bans.

Impact to operations:

Resident concerns led to public officials expressing acute apprehension about prescribed burns during countywide burn bans, even when permitted by state law.

Recommendations:

Maintain a current neighbor contact list, contact neighbors earlier, and improve outreach to the public and local officials.

Consider reducing the number of burns conducted during burn bans.

Coordinate with public officials when burn ban declarations are imminent to provide information to the public about prescribed burns.

Finding #2- In order to provide complete incident containment, ignition of the prescribed burn portion was completed after containment of the wildfire portion was announced to the media. The prescribed fire ignition was completed at dusk and was highly visible to the most concerned members of the public, leading to confusion about the containment of the incident.

Impact to operations:

Uncertainty about the status of the incident led to public concern expressed on social media and questions about the management of the incident from public officials.

Recommendations:

A Public Information Officer should be assigned to each prescribed burn with no other collateral duties.

Coordination between PIOs and incident commanders should be reviewed to ensure a system for accurate, consistent, and timely information communication is in place.

Improve communication with neighbors during the burn and in case of escape.

Finding #3- Wildfire conversion standards described in the burn plan allow for discretion on the part of the Burn Boss and contingency Incident Commander and procedures were discussed in the pre-burn briefing. There was some confusion and concern about the standards and procedures for declaring a wildfire conversion.

Impact to operations:

Uncertainty during the time between the report of the spot fire and the wildfire conversion about the assignment of resources led to some friction between personnel.

Recommendations:

Develop clearly defined criteria for wildfire conversion trigger points using the Management Action Points principles found in the Interagency Prescribed Fire Planning and Implementation Guide (PMS484).

Clarify the expectations and procedures for personnel assignments when a wildfire conversion occurs in Incident Action Plans and briefings.

Finding #4- Resources from some experienced local prescribed fire organizations were not available for this burn due to a lack of current interoperability agreements. The effectiveness of the fire department resources deployed on prescribed burns can be increased by including personnel from agencies with more specific wildland and prescribed fire experience.

Impact to operations:

The tactics specific to wildland fire operations are not as frequently exercised by fire departments with more structure fire focused responsibilities. A limited number of experienced personnel were available to provide guidance.

Recommendations:

Maintain or establish Interlocal Agreements or Memoranda of Understanding with wildland fire and prescribed fire specific organizations in the area.

Increase involvement of local land management agencies with extensive wildland firefighting and prescribed fire experience. (US Fish and Wildlife Service, Texas Forest Service, Texas Nature Conservancy, Texas Parks and Wildlife Department, Travis County Parks and Recreation Department)

Increase the diversity of personnel and agencies participating on WCD burns to provide experience to a broad group of partners.

Plan preparation and execution:

Finding #1- Burn plans should be maintained up to current policy standards. The WCD follows the guidelines in the Interagency Prescribed Fire Planning and Implementation Guide (PMS484). Some discrepancies in form and structure from current Guide standards were identified in the burn plan used.

Impact to operations:

The burn plan was not prepared using the most current standards and was not reviewed by a qualified plan preparer to ensure best practices were followed.

Recommendations:

Revise plans to current Guide standards and plan templates.

Obtain a technical review from an outside agency on all plans.

Finding #2- Resources had difficulty accessing private property and locating effective containment perimeters.

Impact to operations:

More familiarity with the burn unit and better contingency planning for fire suppression on private property could have resulted in more efficient spot fire suppression and less impact from the wildfire conversion.

Recommendations:

Familiarize personnel with the burn unit by involving more WCD staff in unit preparation and conducting pre-burn scouting with all burn personnel.

Work with GIS staff to improve contingency mapping.

Use contacts with private property owners to gain information about downwind contingency containment opportunities, including site visits with landowners when possible.

Finding #3- The availability of live brushy fuels to ignite informs the operations on these prescribed burns. In order to assess live fuel availability, fuel moisture levels are monitored by the WCD through a volunteer led program that samples and measures the moisture content of juniper leaves. Juniper moisture sampling is conducted on the Onion Creek property twice a month. The most recent samples had been taken two weeks before the House Unit burn. Fire behavior in the brushy fuels on burn day was higher than expected based on the most recent samples. Fuel moisture measurements conducted immediately after the escaped fire showed that actual fuel moistures, while within prescription, were lower than expected.

Impacts to operations:

The potential for spotfires and the fire intensity in brushy fuels during the initial stages of spotfire suppression were higher than anticipated.

Recommendations:

Live fuel moistures should be measured on the burn unit as soon as practical before the burn is conducted.

Sample live fuel moisture if significant time (1 week +) has passed from last sample or if weather conditions could result in rapid moisture changes.

Finding #4- Spot fires and creeping across the fireline were observed on both ignition lines during the ignition of the backing fire. This is a normal occurrence on prescribed burns and drives the requirement for personnel and equipment to manage a burn. The availability of resources to patrol for and address spot fires could be increased with changes to fireline construction standards. While the probable cause of the escaped prescribed fire was spotting from a tree well outside the typical line preparation area, improved preparation in other areas could have freed up resources.

Impacts to operations:

Water use and personnel commitment to suppression of previous spot fires and patrol reduced the availability of resources to address the critical spot fire.

Recommendations:

Ensure line preparation is up to established standards and expand line preparation standards where warranted.

Investigate using partners or contractors to improve line preparation.

Finding #5- Extended events can tax personnel. In this escaped fire event, WCD personnel were engaged for a longer duration than expected. During normal burn operations personnel are still required to monitor the burn for multiple operational periods. Staffing assignments beyond the initial burn operation are not always established.

Impact to operations:

Overwork of key staff can cause fatigue and lead to safety concerns.

Recommendations:

For normal operations, pre-plan for mop-up and patrol staff ahead of time.

Identify additional personnel to act as resource advisors if a wildfire conversion results in an extended suppression response.

Staffing and Equipment:

Finding #1- The normal complement of equipment assigned to an ignition team on a WCD burn includes a minimum of two Type 6 engines. One the House Unit burn, Team B was only assigned one engine while the other was positioned for interior ignition. This led to reduced capacity and flexibility for the team leader.

Impact to operations:

The shortage of high water capacity equipment delayed the progress of line construction and required the team leader to make a decision on water refill timing that resulted in a lack of available equipment during the critical spotfire event.

Recommendations:

A minimum of two Type 6 or higher capacity engines will be assigned to each ignition team.

Finding #2- Some WCD equipment suffered failures due to maintenance and operation issues.

Impact to operations:

One UTV was found on burn day to be inoperable due to undiscovered damage sustained during the previous burn.

Recommendations:

WCD equipment management and preparation will be improved by clarifying responsibilities and improving equipment readiness inspections.

Each piece of equipment will be inspected to ensure it is up to standards before each burn.

Finding #3- Some personnel were unfamiliar with partners' equipment leading to reduced performance and operational delays.

Impact to operations:

One piece of equipment crucial to spot fire suppression was staffed with personnel from a different agency who were unable to achieve the water delivery performance expected from the equipment type.

Recommendations:

Cross train on partner equipment and conduct exercises with partners before each burn season.

Ensure all personnel assigned to a piece of equipment on burn day are familiar with the operation of the equipment before ignition commences.

Keep one staff member from the home agency on each piece of equipment.

Finding #4- Equipment standards and tool inventories are not consistent or standardized across agencies. Minimum performance standards and the presence of certain tools will allow the all partners' equipment to perform as expected.

Impact to operations:

The lack of readily available fence cutters on some equipment delayed access to private property during the initial stages of the spot fire response.

Recommendations:

Coordinate with partner agencies to establish minimum performance standards and inventories.

Ensure all partners' equipment meets standards before utilizing that equipment on operations.

Include some critical loaner tools and safety equipment in a kit to supply to partner agencies on burn day if needed.

Communications:

Finding #1- The need to integrate multiple agencies, provide the needed radio coverage, and accommodate the amount of radio traffic needed for proper communication on prescribed burns is always a challenge. The VHF frequency band has been long established as the standard for wildland firefighting by federal, state, and many county agencies. This band is typically used on WCD prescribed burns to accommodate the most partner organizations, many of which are only equipped with VHF radios. Emergency response agencies in the area are primarily operating on the 800MHz frequency band and are integrated into a regional radio network. Resources that arrived to assist from the Texas Forest Service were only equipped with VHF radios. City of Austin resources generally have access to radios for both bands.

Impact to operations:

In this event, all personnel were operating on VHF radios and WCD personnel were only carrying radios of that band until the burn was declared a wildfire. After the conversion to a wildfire and the response of emergency resources from the Austin area, key WCD personnel retrieved 800MHz radios from the supply located in the staging area. The WCD does not have enough 800MHz radios to assign one to each staff member.

Recommendations:

The burn boss and firing bosses will carry radios for both bands.

An emergency 800MHz channel will be established and any patching between WCD and AFD radios arranged before ignition.

Additional 800MHz radios may need to be acquired to supply to all WCD personnel.

Discussions will need to be conducted between the WCD and regional first responders to ensure radio interoperability is available.

Finding #2- Communication was temporarily lost by the Team B leader due to a radio equipment failure. A logistics position is assigned to WCD burns to address this type of situation and the problem was corrected by obtaining another radio for the team leader.

Impact to operations:

A loss of communication with the team leader prior to the escaped fire caused some concerns about communication ability during the operation.

Recommendations:

Maintain a supply of additional radios on the burns and utilize the logistics position to manage equipment.

Persistent equipment failures may indicate a need for better radio management or new equipment.

Safety:

Finding #1- While two individuals were identified in the organization chart to provide safety supervision during the burn, the standards and expectations for those roles are not well defined. It may have also been unclear to the assigned safety personnel and others that any participant has the right and responsibility to call for an interruption of activities to address a safety concern. It will be difficult to secure an NWCG qualified safety officer for prescribed burn operations in this area, but a safety officer meeting the requirements set by FEMA may be available or developed in staff.

Impact to operations:

Without a clear delegation of safety authority, participants may have felt uncomfortable expressing concerns about unsafe actions or practices.

Recommendations:

Clarify in pre-burn briefings the ability of any participant to have any safety concern addressed.

Assign at least one person to act as a safety lookout on each burn, with no additional duties.

Determine the best standards of training and qualifications for a safety position and develop personnel to fill the position.