An analysis of the seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.

- Weather Observations preceding the February 7, 2020 wildfire declaration of the pile burn conducted on Ferguson Ridge utilizing the data from the Bass Lake Ranger District (BLRD) pile burn plan. The data was retrieved from the Miami-California RAWS (elevation 4267 ft.). The piles were located at an elevation of 6000 feet. The RAWS recorded the following observations:

Month	Precipitation (inches)	Average Temp (F)
October	0.00	59.7°
November	0.00	55.4°
December	6.25	42.8°
January	0.38	43.4°
February	0.00	43.8°

- Live fuel moisture sampling is not conducted from the months of October through March on the BLRD.
- The piles were located along a dozer line that had been constructed along the Ferguson Ridge. Two fire scars exist on either side of the dozer line. To the north of the dozer line, the Ferguson fire burned in 2018. Solid black exists within the fire scar with very few available fuels to burn. To the south of the dozer line, the Oliver Fire burned in 2008. This fire scar has left down and dead 1000 hour fuels, standing dead, bear clover and brush. These fuels were readily receptive to fire brands.
- The BLRD and most of the Sierra National Forest (SNF) is experiencing a lack of snow in areas that usually have moderate to heavy snowpack. On February 6th and 7th of 2019, the piles were inaccessible due to 3 feet of snow along FS roads that provide access to the pile unit. No snow was visible along the road at the same time in 2020.
- Aspect and location of the piles contributed to the drier conditions. Piles are located on the top of a ridge on a southern aspect.
- With less than average precipitation recorded, the 100 and 1000 hour fuels were very receptive to fire brands and radiant heat.
- During the night of February 6, 2020 the RH recovery was poor, aiding to the adjacent fuels staying receptive longer.
- There was no spot weather submitted for the day of the burn, a general forecast was used.
- In the general weather forecast there was nothing significant that would indicate a prescription parameter being exceeded.
- There was a wind advisory issued on February 7th for the time period beginning on February 9th through February 10, 2020.

Findings: An abnormally dry winter with no snow pack and readily available 1000 hour fuels aided in the escape of the piles. This specific location doesn't represent the general weather forecast due to location and aspect. The site is much drier than the general weather forecast would indicate. The burn plan indicates that the agency administrator can exempt the need for a spot weather forecast. No such documentation exists, the burn plan does not state how that information would be recorded.

An analysis of the prescribed fire plan for consistency with agency policy and guidance related to prescribed fire planning and implementation.

There is one burn plan used for the implementation of pile burns on the Bass Lake Ranger District.
Bass Lake Ranger District 2019-2020 Pile Burn Plan:

- Element 1 Signature page: The burn plan was signed by the preparer on November 21, 2019, the technical review was conducted and signed on November 21, 2019, and the agency administrator signed the element on December 3, 2019.
- Element 2A: Agency Administrator Ignition Authorization: The authorization was signed on January 31, 2020, with an authorization period from January 31, 2020, through March 31, 2020.
- Element 2B: Prescribed Fire Go/No-Go Checklist. The checklist was completed by the Burn Boss on February 6, 2020. The agency administrator is comfortable with the burn bosses not contacting her of the daily pile burn ignitions.
- Element 3: Complexity Analysis and Final Complexity. The most current Complexity Analysis was signed by the preparer, technical reviewer and the agency administrator on December 3, 2019.

Findings: All elements are consistent with agency policy and guidelines outlined in the Interagency Prescribed Fire Planning and Implementation Guide and Prescribed Fire Complexity Rating System. There are no amendments documented for the pile burn plan. There is an updated list of pile locations that are within the burn plan folder. An error was identified in Element 3: Complexity Analysis Summary. Four elements within Complexity Analysis Summary Table are rated as moderate (Table 1), however, within NWCG Prescribed Fire Summary and Final Complexity Worksheet that is located within Appendix C: Complexity Analysis all elements are rated as low (Table 2).

Table 1: Complexity Analysis Summary

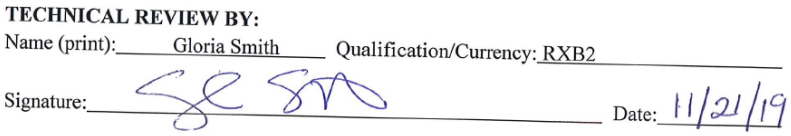
ELEMENT	PRELIMINARY RATING	POST PLAN RATING	FINAL RATING
1. Safety	Mod	Low	Low
2. Fire Behavior	Low	Low	Low
3. Resistance to Containment	Low	Low	Low
4. Ignition Procedures/Methods	Low	Low	Low
5. Prescribed Fire Duration	Low	Low	Low
6. Smoke Management	Mod	Mod	Mod
7. Number and Dependence of Activities	Low	Low	Low
8. Management and Organization	Low	Low	Low
9. Treatment/Resource Objectives	Low	Low	Low
10. Constraints	Low	Low	Low
11. Project Logistics	Low	Low	Low

Table 2: Complexity Analysis Summary within Complexity Analysis document.

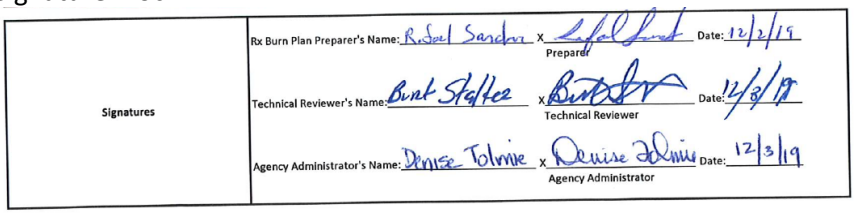
Element	Preliminary Risk	Post-Plan Risk	Technical Difficulty	Calculated Rating
Safety	Low	Low	Low	Low
Fire Behavior	Low	Low	Low	Low
Resistance to Containment	Low	Low	Low	Low
Ignition Procedures and Methods	Low	Low	Low	Low
Prescribed Fire Duration	Low	Low	Low	Low
Smoke Management	Low	Low	Low	Low
Number and Dependence of Activities	Low	Low	Low	Low
Management Organization	Low	Low	Low	Low
Treatment/Resource Objectives	Low	Low	Low	Low
Constraints	Low	Low	Low	Low
Project Logistics	Low	Low	Low	Low

A second error was identified for the technical reviewer signatures. The technical reviewer signature on Element 1: Signature Page (Signature Block 1) differs from the technical reviewer signature block on the NWCG Prescribed Fire Summary and Final Complexity Worksheet that is located within Appendix C: Complexity Analysis (Signature Block 2).

Signature Block 1:


TECHNICAL REVIEW BY:
Name (print): Gloria Smith Qualification/Currency: RXB2
Signature: Date: 11/21/19

Signature Block 2:


Signatures
Rx Burn Plan Preparer's Name: Rafael Sanchez X Prepared Date: 12/2/19
Technical Reviewer's Name: Bunk Stalter X Technical Reviewer Date: 12/3/19
Agency Administrator's Name: Denise Tolmie X Agency Administrator Date: 12/3/19

<u>An analysis of prescribed fire implementation for consistency with the prescription, actions, and procedures in the prescribed fire plan.</u>

<u>The following are findings that the review team identified to improve consistency within burn plans:</u>

- Element 3: Complexity Analysis Summary
  - To reduce errors between the summary from Appendix C: Complexity Analysis and the Element 3: Complexity Summary, cut and paste the final complexity summary from the complexity guide onto the Element 3: Complexity Analysis Summary Page.

- Element 4: Description of Area
  - Consider using SB3 as a fuel type instead of SB2 to better represent fuel conditions adjacent to the burn unit and subsequent modeled fire activity.

- Element 5: Objectives
  - Through interviews with District personnel, it was noted that maintaining existing fuelbreaks was important. Consider adding to the burn plan verbiage that emphasizes the importance of fuelbreaks.

- Element 7: Prescription
  - Conditions were within the prescription perimeters. Section 7B: Prescription Parameters Add to the high district/mid district fuel model slash fuel model (SB3) to better represent fuel conditions (See also Element 4 above).

- Element 9: Pre-Burn Conditions and Weather
  - Section 9A: Considerations ensure that piles or groups of piles have adequate natural or manmade line encircling them prior to ignitions as directed in the burn plan. If black-lining piles or groups of piles is an acceptable tactic to prevent fire spread, add this to the burn plan to ensure that burn personnel have this option available for use.
  - Section 9B: Method and Frequency for Obtaining Weather and Smoke Management Forecast(s) –
    - State a timeframe(s) in the burn plan when weather observations will be taken prior to ignitions. During implementation of the piles on February 6, 2020, the first weather observations were recorded at 1100, 15 minutes prior to ignition of the first pile. Miami RAWS was excluded from the list of RAWS in the burn plan that were to be used as for reference weather conditions, despite being the RAWS most representative of the weather conditions of the Round pile burn unit. Add Miami Raws to list. Add all available RAWS that are representative of conditions at burn units.
    - The burn plan states that an exemption from obtaining a Spot weather forecast may be given by the Line Officer if certain conditions that are listed in the burn plan are met. The burn plan does not mention how of if this exemption should be documented.
- Element 11: Organization and Equipment
  - Burn plan states “in addition RXB3 need a minimum qualification as a Type 5 IC [ICT5]”. Burn Boss is an ICT5 (t).

- Element 12: Communication
  - Communication protocol for updating Sierra ECC as described in the burn plan was not consistently followed. The test fire, number of acres, and movement of the Plumas National Forest (PNF) dozer to the burn unit were communicated the Sierra ECC, however, the ECC was not informed when on-site conditions changed or when other resources were assigned.

- Element 17: Contingency Plan
  - All burn personnel and contingency resources were on site during implementation and totaled three firefighters. The burn plan states that the minimum number of contingency

resources must outpace the expected Rate of Spread in a given fuel model. The minimum number of contingency resources needed for line production rates were not met. "The request for contingency resources will be made by the Burn Boss and will be made through SNF ECC." Contingency resources were not requested through the SNF ECC. Contingency resources were requested and identified at the District level, but the information was not relayed to SNF ECC.
    - Although a slash fuel model was utilized to model potential fire behavior, line production rates for resources in a slash fuel model was not considered (or listed on the fuel model table) in the "Resource Line Production Rates for Reference" table that is used to determine Contingency Resources.
    - The burn plan requires a Type III Engine with minimum 5-person staffing for the patrol phase of the prescribed burn. On February 7, 2020, the burn boss plus one firefighter patrolled the burn after reports of increased fire activity in the area of the burn unit which was below the patrol resources identified in the burn plan.

- Element 18: Wildfire Declaration
    - The burn plan states that "the burn boss will become the Incident Commander" upon declaration of a wildfire. Once the prescribed burn was declared a wildfire on February 8, 2020, the burn boss was not identified as the IC. Instead, another firefighter who was also on site assumed command of the newly identified Round Incident.

The approving agency administrator's qualifications, experience, and involvement.

- Agency Administrator (AA) was delegated to sign and approve Moderate and Low Complexity prescribed burns. Delegation for this authority was provided in a letter by the Forest Supervisor that is dated June 28, 2019. The letter is considered current until replaced.
- The AA's certification is at the Working level.

Findings: The AA is current on her qualifications to sign Moderate and Low Complexity burn plans. The AA has 20 plus years of fire experience before becoming an AA. She is heavily involved in the prescribed fire program and actively engaged in the forests hazardous fuels reduction program.

The qualifications and experience of key personnel involved.

According to the current Incident Qualification Records System (IQCS) records, the qualifications and experience of key personnel at time of ignition are as follows:

- Burn plan: Burn plan preparer Burn Boss Type 3 (RXB3) qualified for 7 years, Technical Reviewer Burn Boss Type 2 (RXB2) qualified 9 years. Both were current at time of signature.
- RXB3 and Incident Commander Type 4 (ICT4): The RXB3 was qualified in 2018, however, he was an ICT5 trainee. The burn plan required that the burn boss be RXB3 **and** ICT5 qualified. Since 2018, the burn boss does not have any recorded RXB3 assignment in IQCS. The ICT4 has been qualified for 12 years and has also been qualified as an RXB3 for 16 years. Both were current during ignition and conversion.

Findings: All personnel involved were qualified and current. Experience varies from approximately 1 year to 16 years. The RXB3 had not been to the location of the piles prior to implementation, however the ICT4 that was there during ignitions had been to the site previously.