# Utah Smoke Bulletin

February 2019 Part 1 of 2: Smoke Planning

Greetings Utah Burners! As this is burn planning season for many of you, here is some guidance on addressing smoke in your burn plan and complexity analysis. A second bulletin, out shortly, will review smoke emission and dispersion models.

The Utah Prescribed Fire Plan Template Element 19 (Smoke Management and Air Quality) has sections A,B,C, and D.
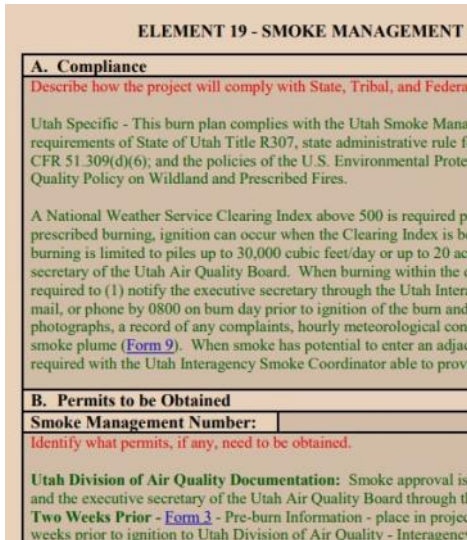
Section A: You can change the green text to black, and delete the red text.

Section B: Same as A. The smoke management number (e.g. DIF1901) you get when filling out the "burn project" web form, aka "form 2". At the moment this is just done once for each burn, not annually. In cases where you don't have one, you could put "TBD" or "N/A" for the number.

Section C: Here you are required to identify non-attainment or class I areas within 15 miles, and smoke sensitive receptors. Receptors are defined as: "population centers such as towns and villages, campgrounds and trails, hospitals, nursing homes, schools, roads, airports, areas whose air quality monitoring data indicate pollutant levels that are close to health standards, and any other areas where smoke and air pollutants can adversely affect public health, safety and welfare." According to the smoke plan/rule, receptors within 15 miles are to be identified.   In cases where this would result in a high number of receptors (let's say 6 or more), you could identify the largest ones, and general areas, and discuss further in section D.

Section D. Potentially Affected Areas: If you are writing a new plan which is inside of a nonattainment or class I area, or within 15 miles of one, let me know and I will get you some additional guidance on this section. This section is also where you would elaborate on your receptor choices as needed, as well as mention areas more than 15 miles away that might be impacted, including where you expect smoke will be visible from.

Section E. Mitigation Strategies: Discuss the emissions reduction technique(s) you plan to employ. Keep in mind *ERTs are also good visibility mitigations*. Also address the intersection of smoke with notification, public/ff safety, and monitoring strategies. Here is a great example:

"Ensure that the clearing index is above 500 prior to ignition. Smoke production and drift will be monitored by the FEMO and observations will be broadcast to the Burn Boss along with the regular weather readings as needed. The observations of the smoke plume will also be recorded on the fire behavior and weather observation form and kept as part of the project file.

Post signage at appropriate places along Hwy 89 in both directions.

Using aerial ignition and igniting the majority of the unit in one burn period should allow the unit to build enough energy to lift the smoke higher in the atmosphere and allow the transport winds to carry the smoke away. This mass ignition also creates an environment where the fuels burn hot and quick and reduces the smoldering phase which causes smoke to linger in the vicinity (ie increased burn efficiency).

Mop-up may be utilized in order to minimize smoke production.

Burn when fuels are dry and available for consumption so they consume quickly and efficiently and reduce the smoldering phase"

The Rx Complexity Rating System Guide (2017 edition) has a smoke management element, like the prior version. As with all elements you will rate smoke three times in the process: pre and post-plan risk, and technical difficulty.

Risk: Most of the risk descriptors you will have to assess on a project specific basis. A NAAQS violation can only be *proven* if it registers on one of Utah's 14 official PM monitors. A burn would usually have to be quite close to a monitor for this to occur. How close? That depends on the amount of PM you are expecting to create; reach out to me if you have questions on a specific project. That said, we don't want to exceed the NAAQS at any receptor even if it goes undetected. See the next bulletin on modeling for more on this.

Technical Difficulty: Utah burns cover the whole spectrum for smoke technical difficulty. Proximity to receptors, class I, and nonattainment areas will generally increase technical difficulty rating. Keep in mind the required dispersion conditions are harder to meet on burns planned for the fall and winter months.

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

Calculated Summary Prescribed
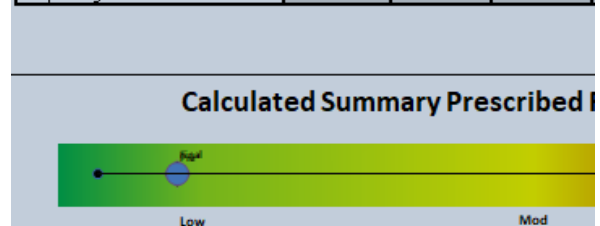
Thanks everyone and please feel free to reach out if you have any questions on this topic