

REPORT

March 10, 2008

REVIEW OF THE DEPARTMENT OF ECOLOGY'S IMPLEMENTATION OF AGRICULTURAL BURNING RULES FOR CEREAL GRAINS FOR CALENDAR YEAR 2007

BY TIM CONNOR, for *SAVE OUR SUMMERS*

INTRODUCTION AND SUMMARY

In August 2006, the Department of Ecology began implementing new provisions of WAC 173-040, the revised administrative rules for regulating agricultural burning under the state's Clean Air Act (RCW 70.94). A central feature of the new rules is a smoke management index developed pursuant to a November 2001 settlement agreement between Ecology and Save Our Summers. The index is a management tool that also serves the purpose of giving the program more transparency in how burn decisions are made and in determining whether the decisions are successful. The rules require "yellow" sheets to be filed when burning is authorized at times when air quality has been marginal but is expected to improve. A "red" sheet is required if--subsequent to a yellow sheet being filed--air quality continues to significantly deteriorate.

The rule is nuanced to account for local variations in seasonal norms, but the basic parameters require a yellow sheet to be filed if and when Ag burning is allowed when the 24 hour PM 2.5 average has reached 16 $\mu\text{g}/\text{m}^3$. If, subsequent to a yellow sheet filing, PM 2.5 concentrations reach 33 $\mu\text{g}/\text{m}^3$ on a two hour average basis, then the filing of a red sheet is required. The purpose of the red sheet is to try to explain why the unexpected deterioration in air quality occurred and determine whether the burning allowed under the yellow sheet may have contributed to the measured deterioration.

In a January 2007 review, I evaluated the 2006 fall burn season to determine how the agricultural burning unit based in Ecology's Eastern Regional Office integrated the new rules into their already intensive daily responsibilities.

Save Our Summers wanted to know if the new rules were workable. More importantly, SOS wanted to know what the records showed about the kinds of decisions the Ag Burn Unit made and whether those decisions succeeded in keeping field smoke at or below the threshold levels described in the new rules. At Ecology's suggestion the work plan included a detailed examination of air monitoring data to see if Ecology had missed yellow and red sheet events and, if so, how many. Accordingly, hourly data from five monitoring locations

(LaCrosse, Pullman, Rosalia, Starbuck, and Walla Walla) was carefully examined and matched up with the record of daily burn decisions. The locations were selected because they are located in areas where most cereal grain burning occurs.

The findings from the review of the Fall 2006 burn season were very encouraging. There were eight yellow sheets and two red sheets filed, but no evident or plausible connection between yellow sheet burns and the deterioration resulting in the red sheet filings. There were minor management problems observed. The review revealed, for example, at least three instances where yellow sheets should have been filed based on air monitoring readings at the time.

Overall, however, I concluded and was able to report:

Ecology's burn decisions are well in synch with the intent of the statute to err on the side of protecting air quality while accommodating agricultural burning where it is deemed necessary. On a day to day basis, the Ecology decision-making process is a remarkable, and gradually improving, exercise that must account, daily, for literally hundreds of facts and reconcile clearly competing pressures. On this level, the program is succeeding in ways that should make it a model for the nation.

As I'll explain, there are continuing improvements in Ecology's decision making that are very encouraging. What is most distinguishing about the program, however, is how transparent it is and how the Ecology team is committed to being open and accountable for how it runs the program. The natural tendency of agencies under as much pressure and scrutiny as Ecology is in the Ag burning program is to find ways to be opaque, to provide some shelter from interest groups that put competing demands on the program. But that hasn't happened here and it's the sort of deep virtue that is actually more important to the health of the program than all of the management improvements combined. In short, this is the way citizens want government to work.

Summary of 2007 Results

By the numbers, the 2007 results are in line with what I found in reviewing the Fall 2006 data. The 17 yellow sheets and two red sheets for the year is almost exactly what one would expect in extrapolating the 2006 numbers, given that the number of acres actually burned in 2007 was roughly the same as in 2006. The six citizen complaints filed in 2007 regarding Ag burning are actually fewer than expected given that four complaints were registered just for the fall burn season in 2006. This compares with 12 agricultural burning complaints in 2005, 31 in 2004, and 12 in 2003. So the trend under the new rules is very positive.

Scope of the Review

Although the 2007 review includes all months, it was not the intent to replicate the intensive data review and analysis of the January 2007 report. Rather, the assignment was limited to three tasks:

- 1) Review the number of yellow sheet and red sheet events and evaluate the correlation between the two.
- 2) Review smoke complaints during the year and see if they're rising in number compared to recent years, and note any sub regional trends that are apparent. Determine if there's any correlation to filing of yellow/red sheets.
- 3) Include a final burn acreage count for the year and report this.

The scope of the review changed in part because most of the yellow sheet filings in the Ecology work files were actually printed on white paper. This meant that the review couldn't be conducted without thoroughly examining the work files to make sure no "yellow" sheets were missed. Ecology's Kary Peterson assisted me in this, as we randomly split the monthly work files in half and checked each other's analysis when there were any questions about how to read data and file notes. This is how the unfiled yellow and red sheet errors were detected.

<u>MONTHLY SUMMARIES</u>	<u>Yellow</u>	<u>Red</u>
January	1	0
February	3	1*
March	5	0
April	2	0
May	0	0
June	0	0
July	1	0
August	0	0
September	0	0
October	2	0
November	1	0
<u>December</u>	<u>2@</u>	<u>1</u>
Totals	17	2

*The red sheet listed for February was missed and not filed. The data

confirming it should have been filed were discovered in the course of this review.

@One of the December yellow sheets was missed and not filed. The data showing it should have been filed were discovered in the course of this review. However, it was not the "missed" yellow sheet (12/15/07) that was connected to the red sheet for that month, which was properly filed for 12/19/07).

Task 1

YELLOW SHEET/RED SHEET FILINGS

1) 1/20/07 Franklin, Adams, Walla Walla, Grant, Columbia
2) 2/1/07 Colville

RED

RED SHEET MISSED BECAUSE OF FOUR DAY DATA DELAY BECAUSE OF TELEMETRY PROBLEM. Data show a 33 µg/m3 two-hour average on 2/01. Cause determined to be wood stove smoke. No documented Ag burn near Colville.

3) 2/20/07 Stevens County
4) 2/23/07 Colville
5) 3/3/07 Walla Walla
6) 3/7/07 Colville
7) 3/8/07 Walla Walla, Colville
8) 3/10/07 Colville
9) 3/18/07 Walla Walla
10) 4/13/07 Wellpinit
11) 4/30/07 Pullman
12) 7/09/07 Moses Lake
13) 10/10/07 Walla Walla
14) 10/15/07 Ritzville, Rosalia, Pullman
15) 11/27/07 Moses Lake
16) 12/15/07 Starbuck (missed yellow sheet)
17) 12/19/07 Colville

RED

RED SHEET FILED BECAUSE A 1 HR READING OF 30.9 OCCURRED SEVERAL HOURS LATER. BUT THERE ACTUALLY WAS NO AG BURNING THAT DAY NEAR COLVILLE. WOOD SMOKE.

Task 2

CITIZEN COMPLAINTS, AG BURNING

- | | |
|------------|---------------------------------|
| 1) 7/21/07 | Walla Walla |
| 2) 8/17/07 | Walla Walla |
| 3) 8/17/07 | College Place (Walla Walla Co.) |
| 4) 9/5/07 | Palouse (Whitman Co.) |
| 5) 9/17/07 | Pullman |
| 6) 9/17/07 | Pullman |

ANALYSIS--No observed correlation to yellow/red sheet filings.

Task 3

CEREAL GRAIN BURN ACREAGE

	<u>Acres Permitted</u>	<u>Actual Burned</u>
2006	207,242	182,607
2007	176,631	165,581

OBSERVATIONS

Because of improved telemetry and data formatting one of the clear managerial enhancements in 2007 is that Ecology officials responsible for the daily burn calls can now look at a color-coded, consolidated print out of air quality trends throughout eastern Washington. When PM 2.5 levels reach 10 $\mu\text{g}/\text{m}^3$, the values appear against a yellow background, when the values reach 20 $\mu\text{g}/\text{m}^3$, the background color goes red. This scheme doesn't exactly match the yellow/red thresholds in the rule, but in practice it does tend to enforce the conservatism in the decision-making because the management tool thresholds are about 50% lower than the actual triggers in the rule.

The main value is in the consolidation, because now the person(s) making the burn call can see the whole field, as it were, on a rolling time basis. Likewise, it expedites, after the fact, the evaluation of how allowed burning affected air quality and whether the burning resulted in significant deteriorations in air quality.

It's noteworthy that about a third of the yellow sheet filings and both red sheet filings were off the Colville air monitor in colder months. There is relatively little Ag burning in the Colville area. Indeed, to assist with

management decisions on outdoor burning, Ecology will make a burn call and file a yellow sheet off the Colville monitor even when there are no active Ag burn permits in Stevens County. So, what's really happening here is Ecology is using the framework of the Ag burn program to try to help regulate the effects of other types of burning in an area where, in the colder months, the main problem is particulate from wood stove burning.

One major concern from the 2006 review, is that the daily burn call decision was complicated because the update for what is arguably the more reliable of the two atmospheric models Ecology uses comes in right at 9 a.m., right when Ecology has agreed to communicate its daily burn call decision to growers and the public. Ecology has largely resolved this problem by simply changing the nature of the burn call on those days when there appears to be a significant conflict between the two models that increases the risk of faulty burn decisions. Rather than making a generic burn or no burn decision, Ecology will only allow burning on a metered or call in basis, and this allows for at least a couple more hours of deliberation before making a final decision.

The one problem with the 2007 review is that most of the "yellow" sheet calls were logged on white paper, which defeated one of the purposes of the scheme which is to allow any interested stakeholder to review the file and locate the yellow and red sheet filings by color. By not using the yellow or red sheets, the reviewer has no choice but to pull apart the binding on the whole file and go through it sheet by sheet and this is not only much more time consuming but it also increases the risk of damaging and/or disorganizing the file.

Ecology acknowledged the problem and indicated it will correct it by preprinting the yellow sheets on paper that is actually yellow.

Tim Connor can be reached at (509) 838-4580, or via email at tjccamas@comcast.net.