

Wildfire smoke and PM2.5 trends on the Umatilla Indian Reservation

June 14th 2018 NW Air Quest Meeting

General info

- 2,000-3,500 Native and Non-Native residents on CTUIR lands.
- Managed by various government agencies ranging from National Forest Service, Oregon Department of Forestry, Blue Mountain interagency dispatch center, CTUIR Forestry and Bureau of Indian Affairs Fire Management.
- Land Base of roughly 6 million acres on diminished boundaries.
- Checkerboard ownership is comprised of a diverse mix of small farming operations supporting dry wheat operations, stick built home sites and 300 HUD mixed family homes.
- Land features: High desert environment on western edge, rolling foothills with wheat, alfalfa, peas and culturally sensitive protected areas in the central portion and small tributaries from the eastern boundaries are fed from the steep draws of the blue mountains annual snow pack.

More info on CTUIR Air Quality....

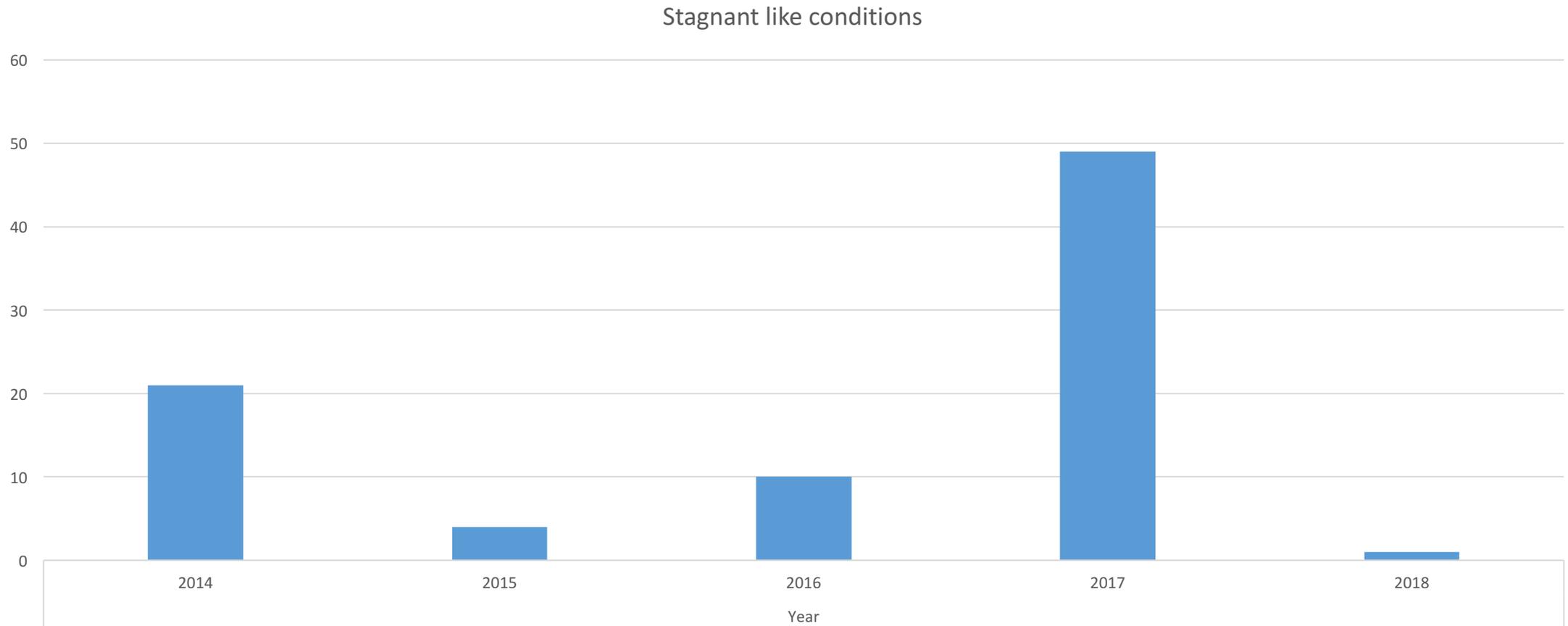
- CTUIR Burn program implements EPA-FARR regulations.
- Around 200 small burn permits issued annually.
- 150-200 tons of fuel burned in the small permitting program.
- 80-500 wheat field acres/tons burned every other year or so depending on annual rains, soil composition, and market demand for Oregon wheat products.
- Various human factors play into the overall quality of our air shed over CTUIR (Coal fire plant(s), LNG plants, CAFO's, off gassing from AG chemical use, and of course automobile, locomotive, and agricultural diesel use).

Stagnation Breakdown by year

- Air stagnation.. A few anomalies but last year was the highest frequency of stagnant days spread out.

| | | | | Year | | | | |
|----------|------|------|------|------|------|------|------|----------|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Stagnant | 27 | 11 | 32 | 21 | 4 | 10 | 49 | 1 so far |

Stagnant days over CTUIR since 2014



Ceded and Diminished Treaty Boundaries in green.

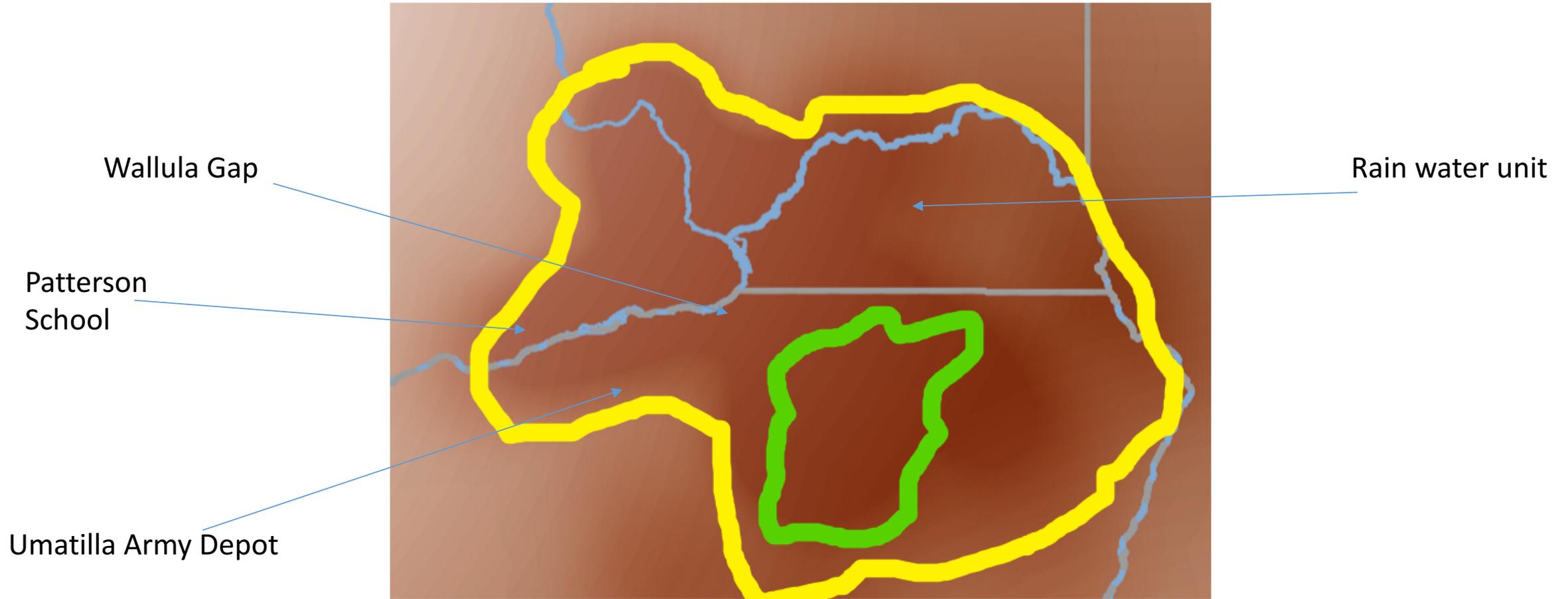
Red dots indicate past fire activity within Ceded & Diminished boundaries

Green dots indicate tribal partial ownership of the allotment

Green lines are both diminished and ceded boundaries of the Treaty of 1855



Another over lay of our boundaries where smoke intrusion may impact human activity.



PM 2.5 trends observed

- Average observed readings from Nephelometer:
- Low end ranges during fire seasons hover around 1-3 UG/M³
- Higher readings during fire season will surpass 25 UG/M³
- However true readings will be a ways out as we build out our capacity to monitor real time ambient conditions.
- CTUIR co-manages 2 air monitoring sites alongside OR-DEQ and EPA region 10. Additionally we are owners of a thermo fisher 5030i particulate monitor currently being re-calibrated.

Currently being re-calibrated offsite with Thermo Scientific

Old TEOM unit



Outreach and community health

- During exceptional events CTUIR has a wide network of resources to mitigate human exposure to PM 2.5/Wildfire smoke:
 - KCUW radio station 104.3 is tribally owned
 - Public Safety includes Tribal Police and Tribal Fire Station
 - CTUIR climate adaption outreach initiatives
 - I personally work with 200-300 landowners that burn wood products, lumber, weeds/grasses, old hay, tumbleweeds, wheat stubble.. And unfortunately sometimes undesirable items such as plastics which can land produce air toxics.
 - CTUIR Yellow Hawk tribal health services provide youth outreach on healthy lungs initiatives
 - And new owners of EPA AIRNOW Flag program being developed with local charter school and additional location not decided yet.

Special thanks to

- Oregon Department of Environmental Quality
- Washington Equality
- Idaho DEQ
- Environmental Protection Agency Region 10
- And of course Northwest Air Quest for cross reference materials

Any questions or comments?

