

Duration and cost effectiveness of fuel treatments in the Alaska boreal region: Assessing the continued longevity and maturation of existing projects.

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Research Team

- Stacy Drury – Senior Fire Ecologist, Sonoma Technology inc.
- Randi Jandt – Fire Ecologist, Alaska Fire Science Consortium
- Joseph Little – Associate Professor, Economics, UAF
- Nathan Lojewski – Forestry Manager, Chugachmiut
- William Putman, CF – Forestry Director, Tanana Chiefs Conference, inc.

Acknowledgements

- Joint Fire Science Program
- Alaska Fire Science Consortium
- You

Outline

- The goal: To develop a simplified set of suppression costs for two hypothetical fires in a WUI location.
 - We aren't focused on the "reality" of the scenario but want to know what suppression combo you feel would work best for a given set of fire conditions.
- In the survey you will:
 - Answer a few questions about your professional background
 - Review two fire scenarios and select a resource combination you think is most appropriate
 - Answer questions about potential evacuations, property damage, and changes you might make if conditions changed

To Keep it Simple

- We are presenting you with very basic fire behavior information and how far the fire has spread in a two hour period. For the scenario assume conditions will remain the same for the next day.
- Assume you have, after two hours, determined that you will need additional resources.
- We know that a variety of suppression resources are available. The combinations you will choose from represent one general set of resources available to order.
- Base your choice on what you think would be most appropriate given the information provided. Don't worry about dispatch times, deployment, etc.

Structure of the Survey

- Background Information
- Wildfire Scenarios and Details
- Resource Orders
- Follow-up Questions

Background Info

General information about your current agency, your wildland firefighting experience, and certifications/qualifications.

Example Question:

Which agency are you currently a member of?

BLM

DOF

USFS

Other

Fire Scenarios

- Each Scenario includes a photo or image of:
 - The general location with RVAR and identified ignition point
 - Fuel Types
 - Topography
 - Fire Size
- In addition:
 - You will be given information about weather conditions
 - Fuel Moisture
 - Flames lengths
 - Fire Size

Example: Weather, Fuels, RoS

Winds: 10 mph

Temperature: 85° F

rH: 25%

1 hr FM: 3% (GFM: 3%)

10 hr FM: 4% (FFMC ~96)

100 hr FM: 5% (DMC ~110 – 120)

Herbaceous FM: 30% (fully cured)

Live woody FM: 70%

Duration: 2 hrs

1st hr: fire size 1 acres

2nd hr: fire size 12 acres (2 hr run shown here)

avg flamelength: 8 ft

avg rate of spread:

3 chains/hr (198 ft/hr)

Example: Image of Local Fuels (TU 4/ TU 5)



If you need a reminder

- You will see clickable links to scenario images that will be available to you while you are making your decisions. Here are examples of the links you will see:

[Areas of Concern](#)

[Fuels](#)

[Elevation](#)

[Projected Fire Burn](#)

[Weather and Fire Data](#)

Resource Orders

- We will ask you to choose from six combinations of resources. Selecting the one the seems most appropriate to handle the scenario as described. The general resources available in the sets are:
 - water drops from aircraft
 - retardant drops from aircraft
 - engine strike teams
 - hot shot crews
 - state protection techs on ATVs with drip torches
 - terra torches
 - bulldozers
 - helitack crews
 - type-1 structure protection engines
 - aerial firing module

The Resource Order Choice

We want to see which combination of suppression response resource orders you think would be the most appropriate for the scenario as presented?

Please note that none of these may be realistic or ideal, however, you should still select your most preferred option.

- 10 water drops, 1 engine strike team (task force) and 1 hot shot crew.
- 10 water drops, 1 engine strike team (task force), 1 squad of state protection techs on ATV with drip torches, and 1 hot shot crew.
- 10 water drops, 2 engine strike teams (task forces), 2 hot shot crew, 1 terra torch, 1 bulldozer, and 5 retardant drops
- 10 water drops, 2 engine strike teams (task forces), 2 hot shot crews, 1 squad of state protection techs on ATV with drip torches, 10 retardant drops, 1 bulldozer and 1 helitack crew
- 20 water drops, 3 engine strike teams (task forces), 3 hot shot crews, 10 retardant drops, 2 bulldozer, 2 helitack crews, 2 type-1 structure protection engines, 1 terra torch
- 20 water drops, 4 engine strike teams (task forces), 4 hot shot crews, 10 retardant drops, 3 bulldozer, 3 helitack crews, and 4 Type-1 structure protection engines, 1 terra torch, 1 squad of state protection techs on ATV with drip torches, and an aerial firing module.

Follow Up Questions

- The follow up questions will ask about:
 - If you would order evacuations
 - Potential for property damage
 - Your assessment of the type of management team needed

It's Time to Log in

- Using your computer, tablet, or phone!
- If you have a “1” please use the following web address
 - <https://firemanagersurvey.sawtoothsoftware.com/v1/login.html>
- If you have a “2” please use the following web address
 - <https://FireManagerSurvey.sawtoothsoftware.com/v2/login.html>
- We are ready to help. If you have a question or technical difficulty please raise your hand and we will come assist you.

Using the survey

- The survey is formatted to fit the device your are using
- To enter text just click on the text box
- To choice an option just click on the “radio” button

One More Scenario

- To wrap up we wanted to present one more scenario to the group
- This scenario presents a fire more severe than presented in our original scenarios
- A fuel break is present

Conditions

Shaded Fuelbreak scenario with major flowpaths

Winds: 20 mph

Temperature: 85° F

rH: 25%

1 hr FM: 3% (GFM: 3%)

10 hr FM: 4% (FFMC ~96)

100 hr FM: 5% (DMC ~110 – 120)

Herbaceous FM: 30% (fully cured)

Live woody FM: 70%

Duration: 2 hrs

1st hr: fire size 5 acres

2nd hr: fire size 48 acres (2 hr run shown here)

Projected travel time from ignition pt to fuel break:

~ 3 hrs

avg flamelength: outside fuelbreak:

13 ft

avg expected flamelength: within fuelbreak:

12 ft

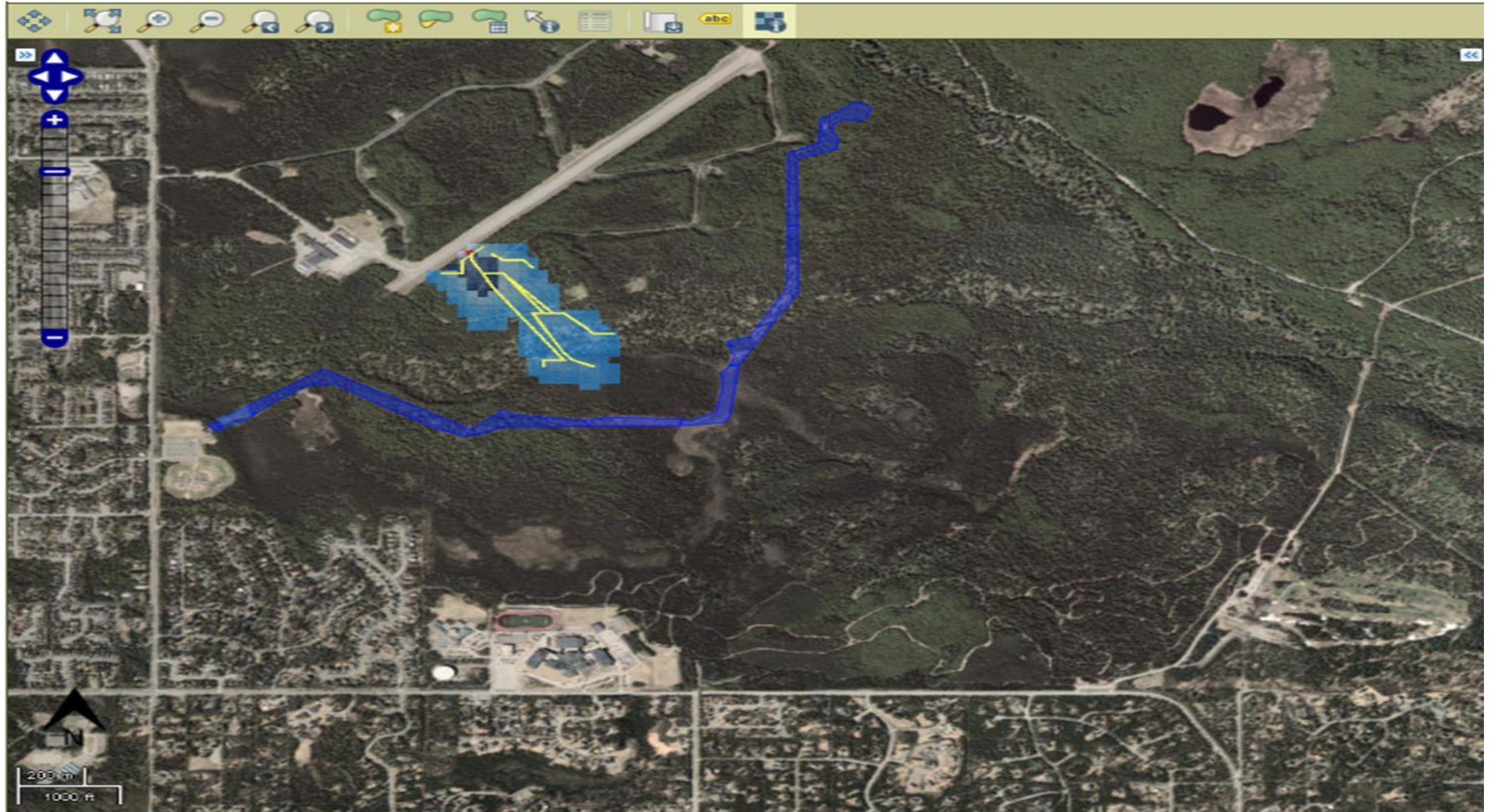
Avg rate of spread: outside fuelbreak:

10 chains/hr (660 ft/hr)

avg expected rate of spread: within fuelbreak:

12 chains/hr (780 ft/hr)

Group Scenario



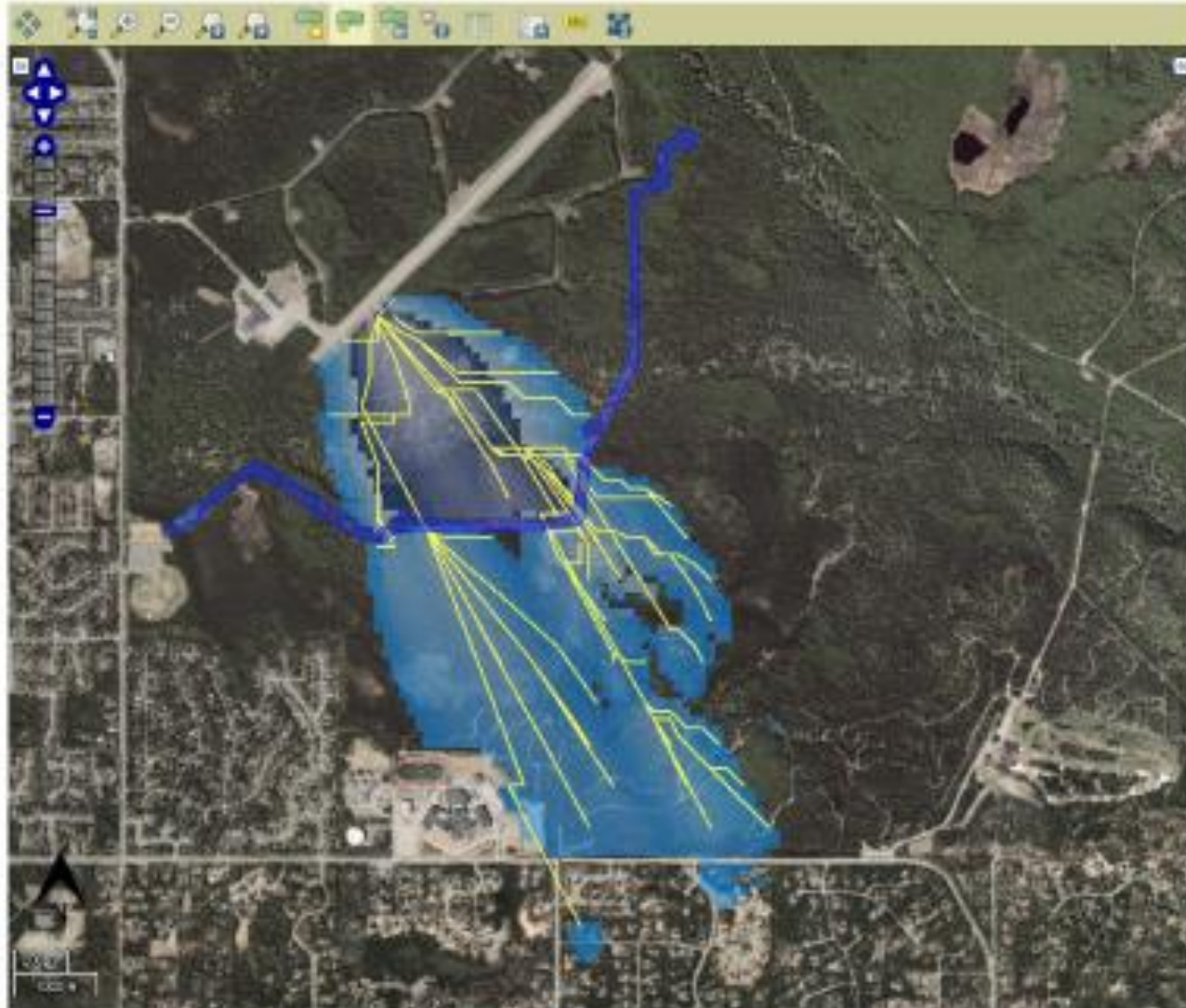
Could you effectively use the firebreak

- Which resource combination would you order?

Fire Behavior with the Fuel Treatment

- The next few slides illustrate model runs with changes to the fuel treatment
 - Retardant only
 - Retardant with widening through dozer or firing
 - Retardant with additional widening
- Conditions are the same except 25 mph wind out of the NW

Fire Behavior with Fuel Treatment Enhancement

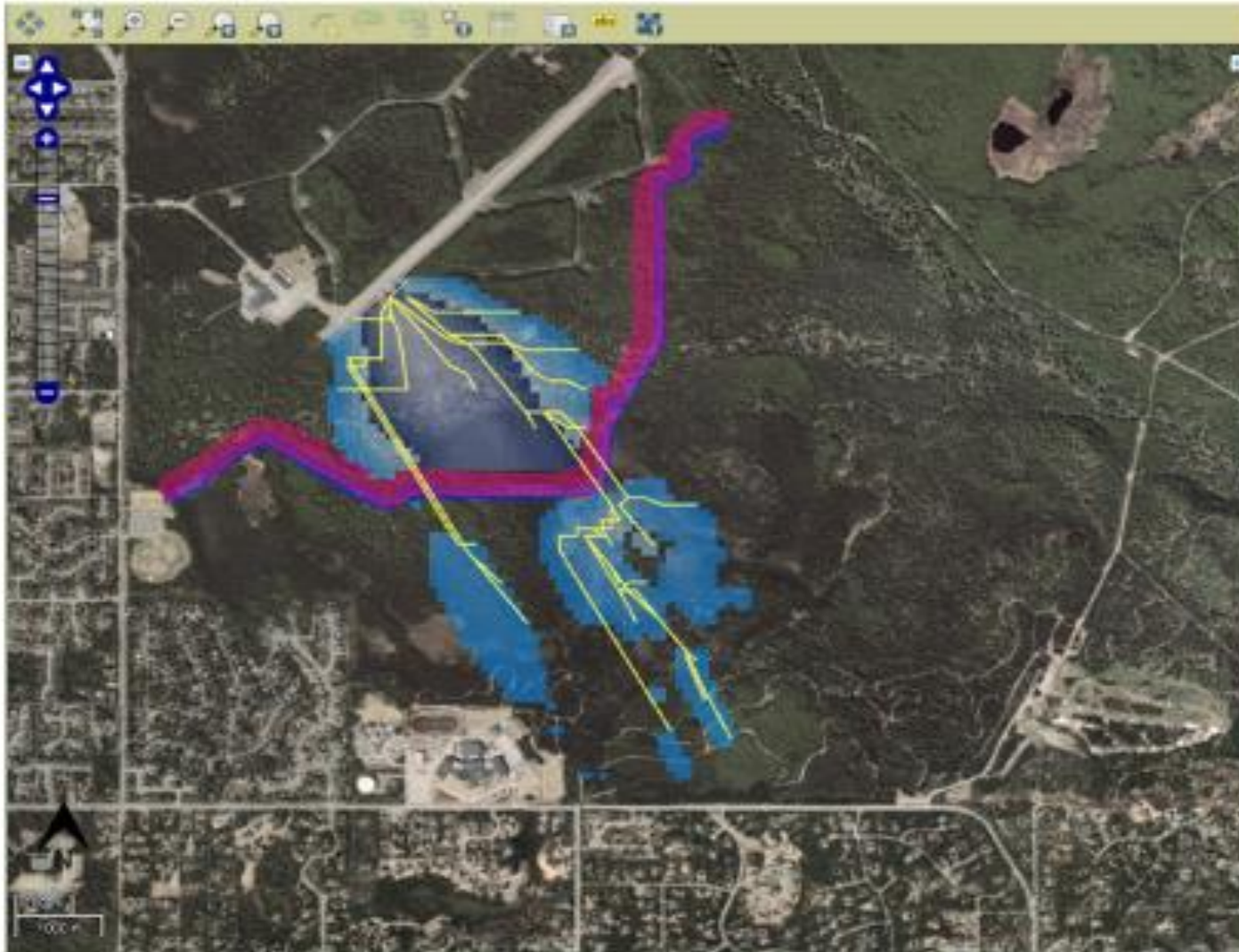


25 mph wind

2 hr duration

Original
fuelbreak burned
or covered with
retardant

Fire Behavior with Fuel Treatment Enhancement



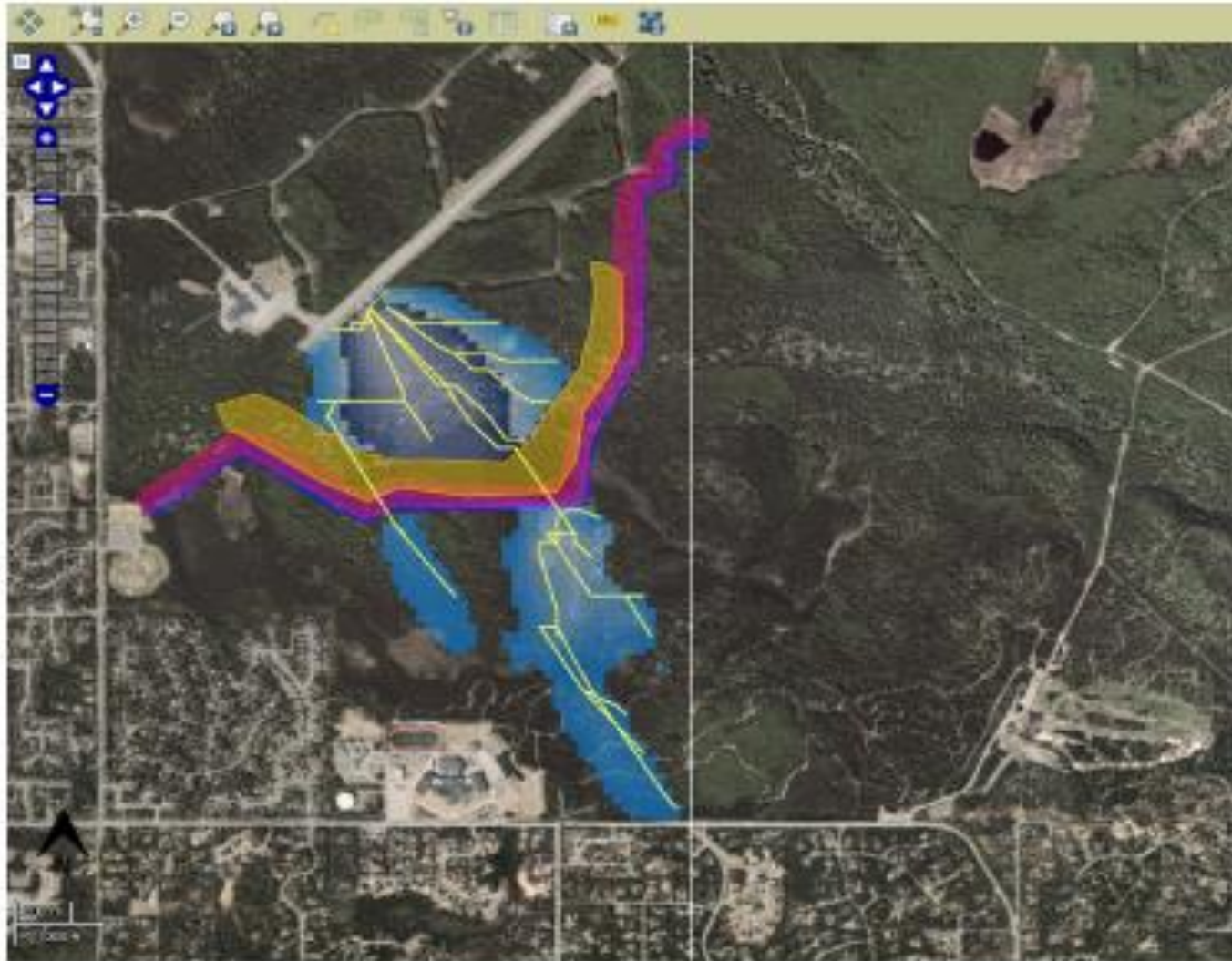
25 mph wind

2 hr duration

Original
fuelbreak burned
or covered with
retardant

Fuelbreak
expanded by
approximately
180 to 250 ft
wide by burning
or additional
retardant drops

Fire Behavior with Fuel Treatment Enhancement



25 mph wind

2 hr duration

Original fuelbreak
burned or covered
with retardant

Fuelbreak expanded
by approximately 180
to 250 ft wide by
burning or additional
retardant drops

Additional retardant
drops etc widen the
fuel break by another
180 to 250 feet
(orange polygon) –
fire still spots across
the line in two places

Thank You!

Questions