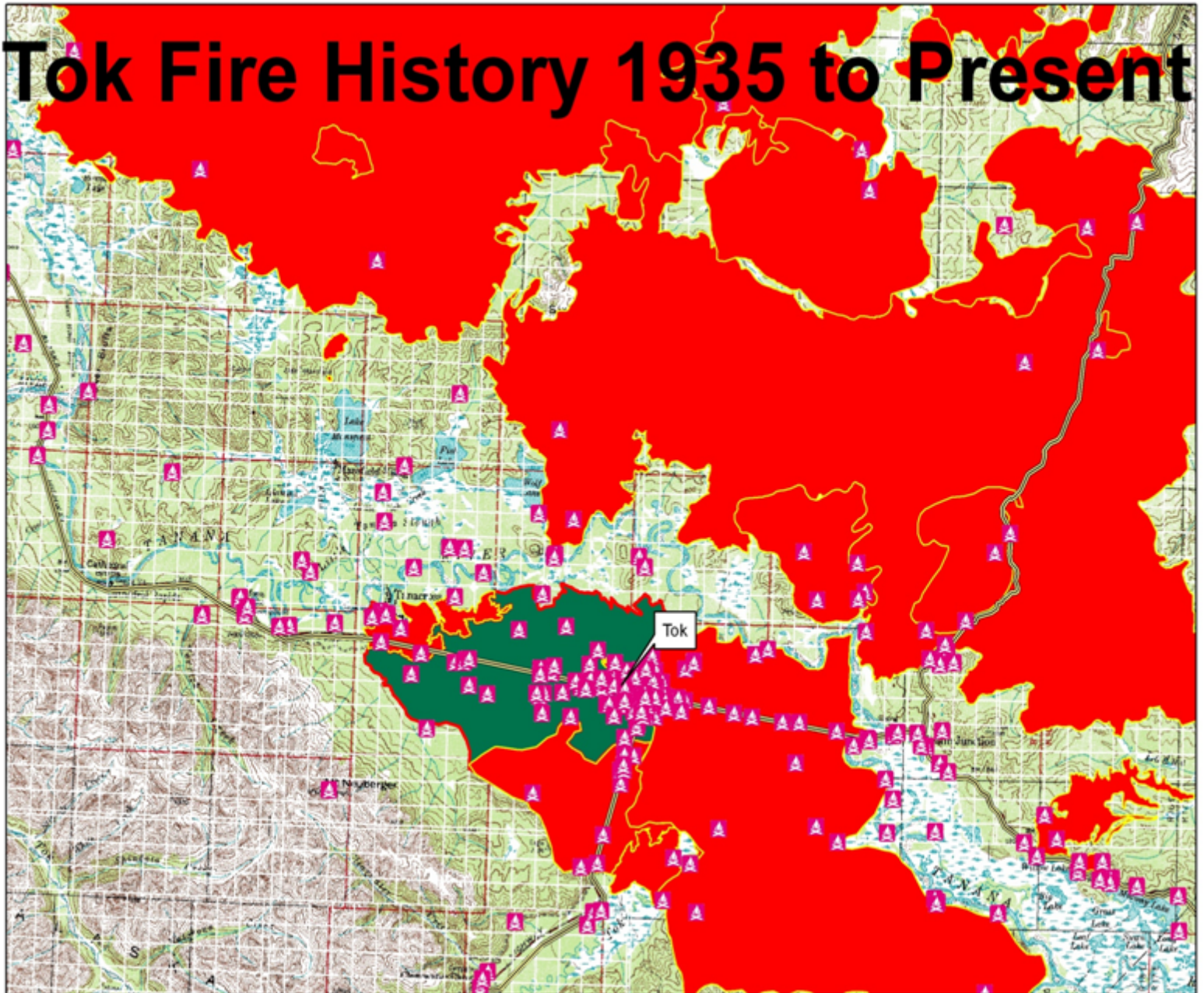
A large, intense bonfire of wood is burning in a forest clearing. The fire is bright yellow and orange, with thick smoke rising from it. The background is filled with tall, dark evergreen trees under a grey, overcast sky. The ground is covered with dry, brown grass and some scattered wood.

Tok Hazardous Forest Fuels and Wood Energy House Energy Meeting March 25, 2010

Tok Area Forestry Perspective

Tok Fire History 1935 to Present



1990 Tok River Fire Lightning Start









TOK RV

VILLAGE

STAR
GAS
DIESEL
R.V. PARK - GROC - LAUNDRY

GAS
DIESEL

TIRE
GARAGE
AUTO ELECTRIC





2001 Red Fox Fire Human Caused



An aerial photograph showing a large, dark, irregularly shaped area of charred forest. The fire scar is elongated and runs diagonally across the frame. It is surrounded by dense, green forest. A dirt road or path is visible on the left side, and a power line or similar linear feature crosses the fire scar. The overall scene is a landscape affected by a wildfire.

Red Fox Fire – 2001

Wind Driven

Start
Location





Good defensible space saved this house



No defensible space



Cost of Fires in the Tok Area

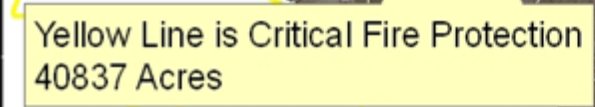
- 50 Million Dollars in
State money over the
last 25 years!!



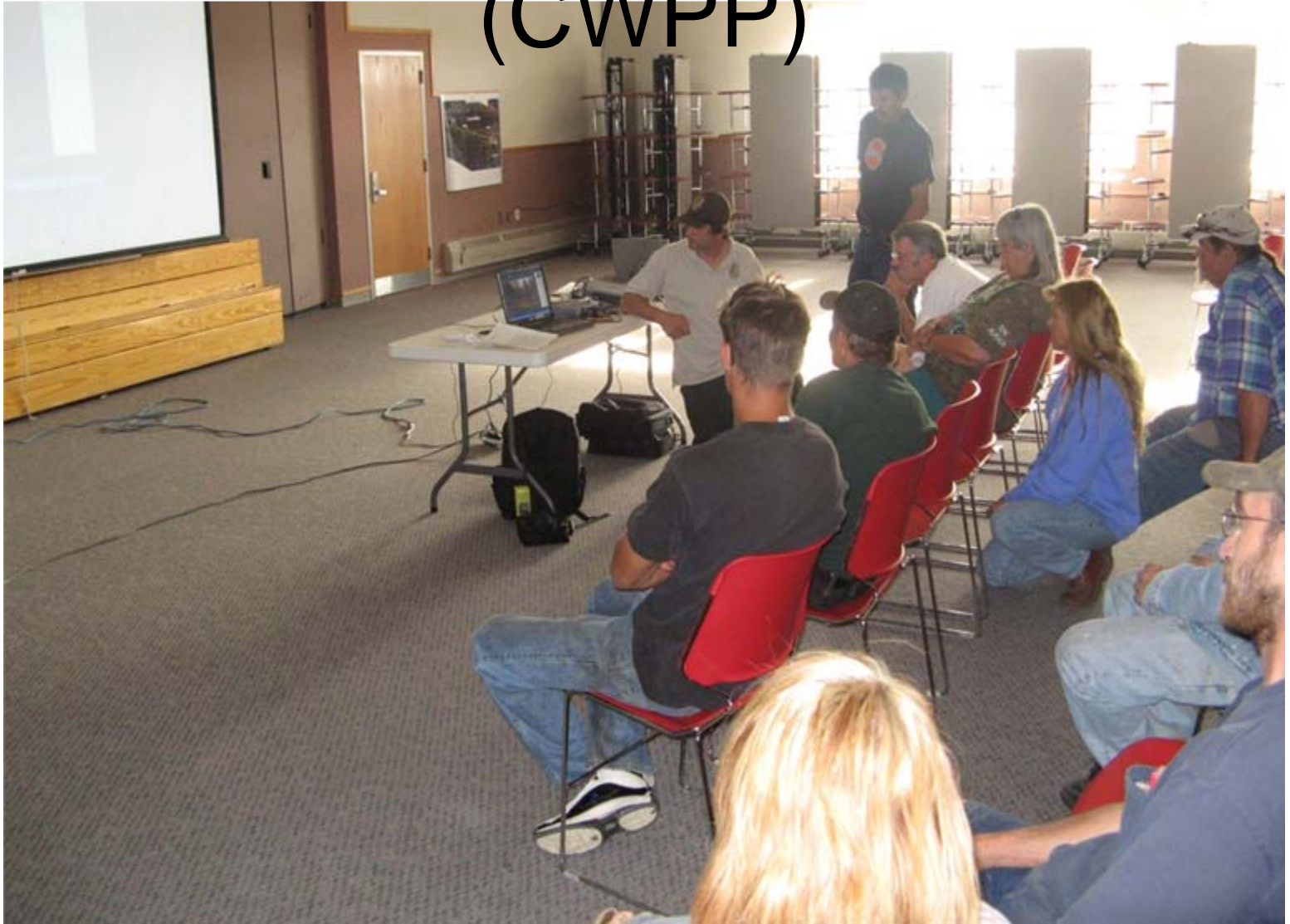
What has changed in 20 years

- We are nearly as dangerous as we were in 1990.
- Contiguous dense high volume hazardous fuels
- No breaks or anchor points except the incomplete Red Fox fuel breaks
- More people living within the Tok Area.
- 20 years of lands sales by the state.

Tok Area



Tok Community Wildfire Protection Plan Meeting (CWPP)

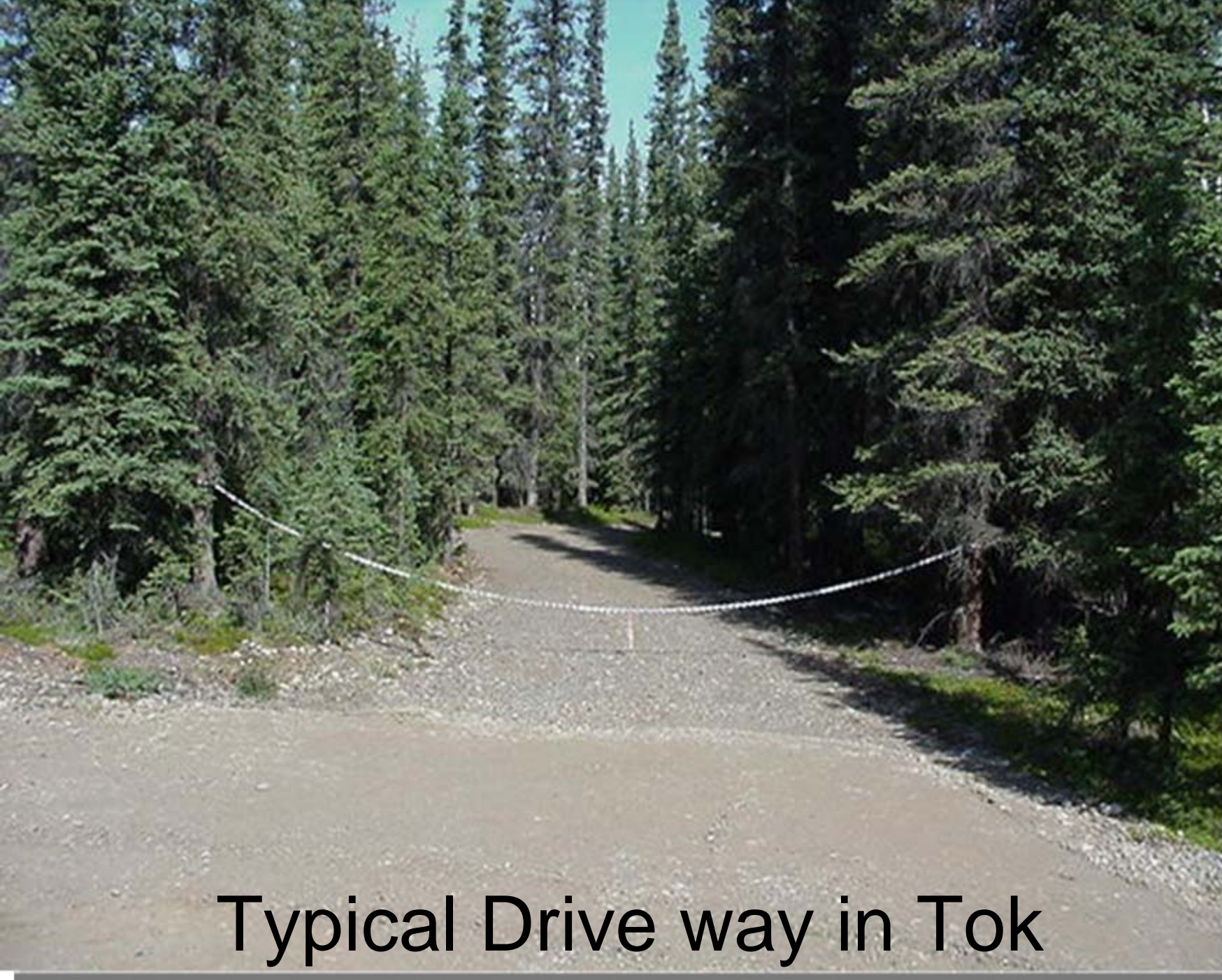


Red Fox before 2001 fire



Typical Road Right of Way in Tok





Typical Drive way in Tok



Fire wise Concept
Remove the fuel within 100 feet



HOME IGNITION ZONE

Fires from within the community
Good Defensible Space Saved the day



Defensible?



Contiguous Spruce Fuels



Tanacross

38,000 Acres High Volume Hazardous Fuels

Alaska Highway

Red Fox Fire

1990 Tok Fire

Tok School

Tok Cutoff Highway

Legend

Tok High Hazardous Fuel Load



Communication Towers

smallfires

<all other values>

Cause



LIGHTNING



Man

sections

4,900

Feet



Taylor Highway 2004 Contiguous Fuels Crown Fire

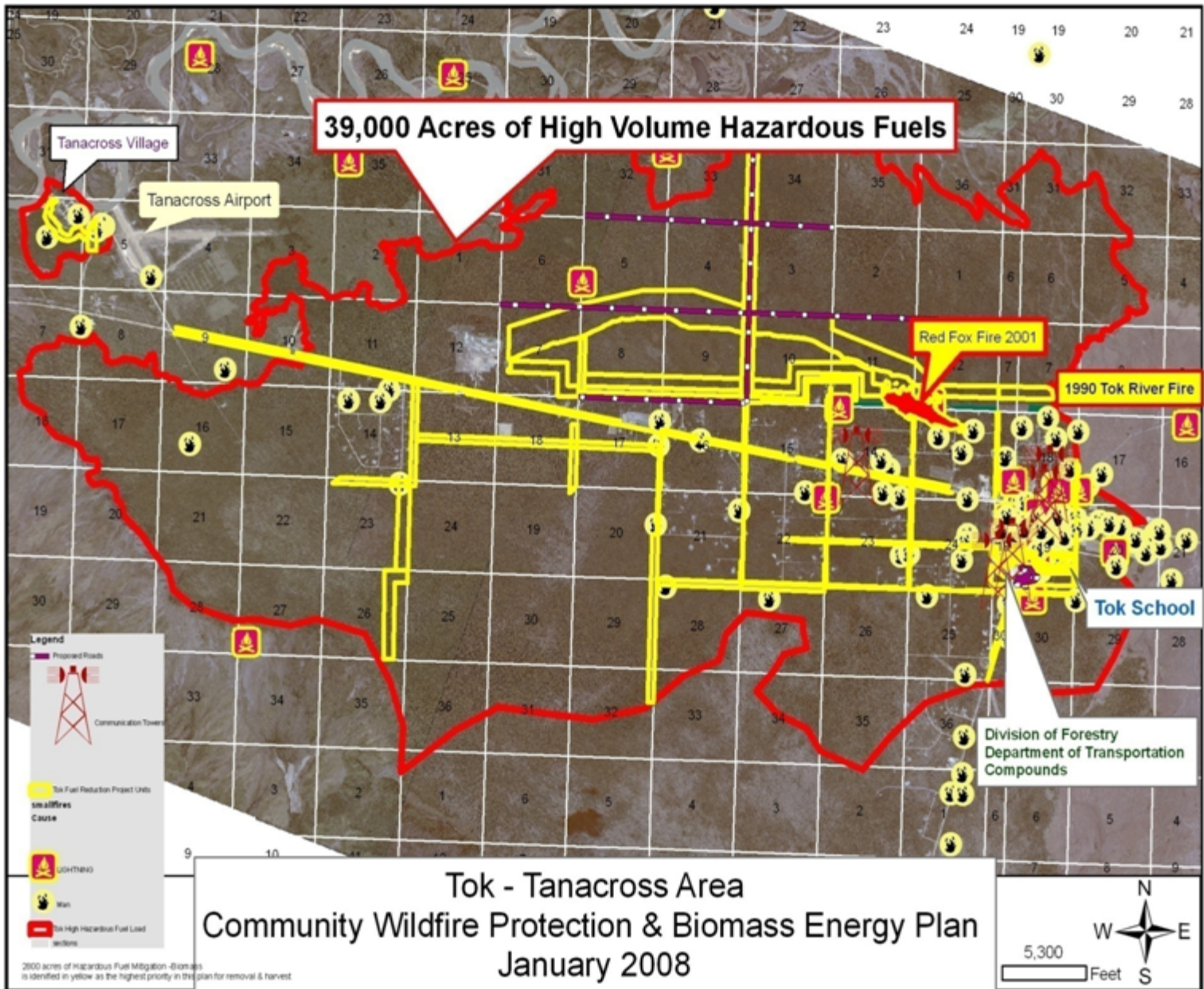


CWPP Principles

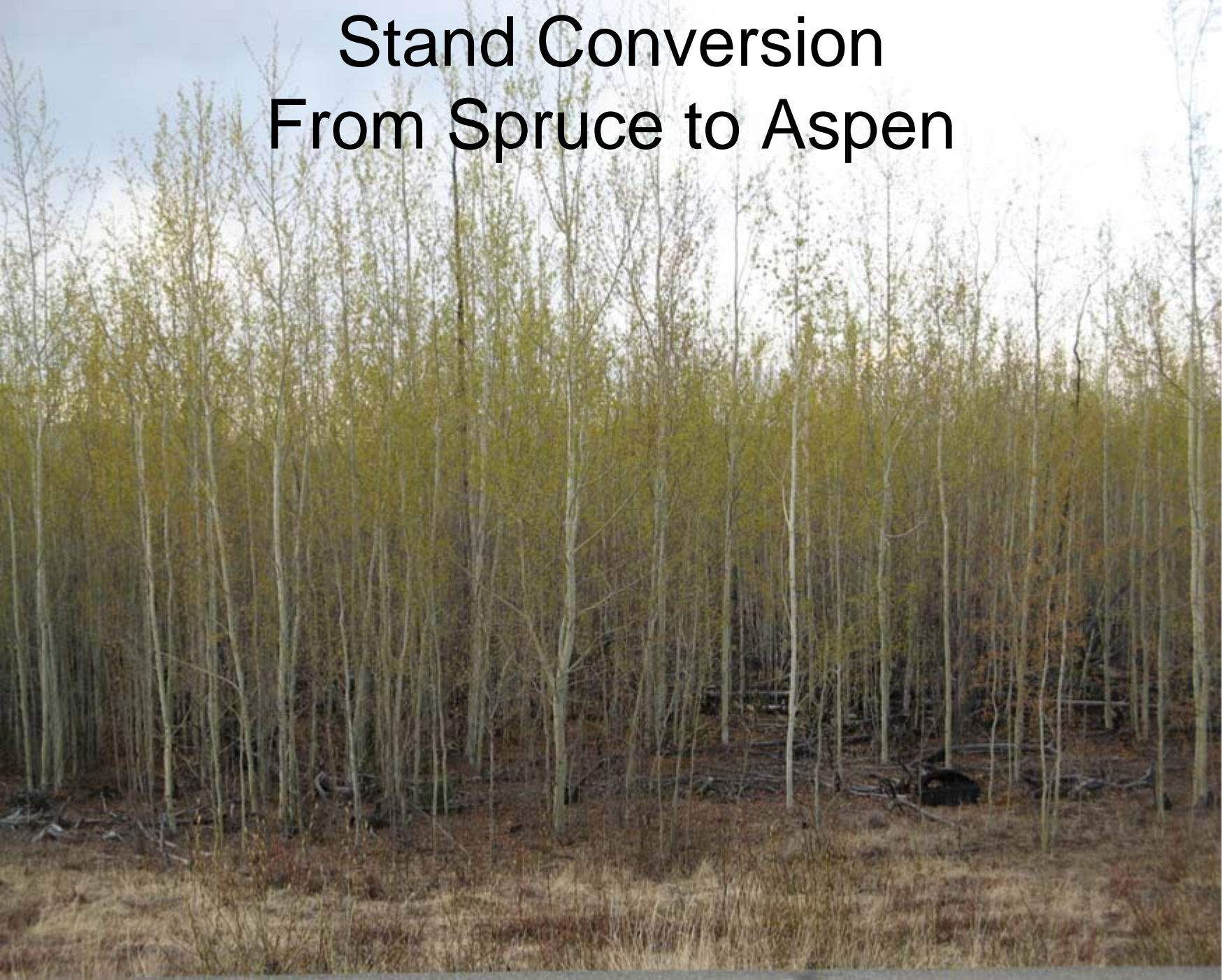
- Work from the inside out – remove the fuels closest to the values at risk – Fire wise Basics
- Use Fuel Reduction moneys effectively – treating the most acres.
- Don't be cute
- Use solid science
- Don't pull any punches with the public
- Educate the public on what must be done.
- Create a value for the fuel removed

Failures of Fire wise

- Why don't people remove the fuels when they know how dangerous it is?
 1. They cannot physically remove the fuels themselves. 2000 to 10000 stems per acre of spruce fuels.
 2. They cannot afford to remove the fuels. From \$1500 to \$5000 dollars an acre.



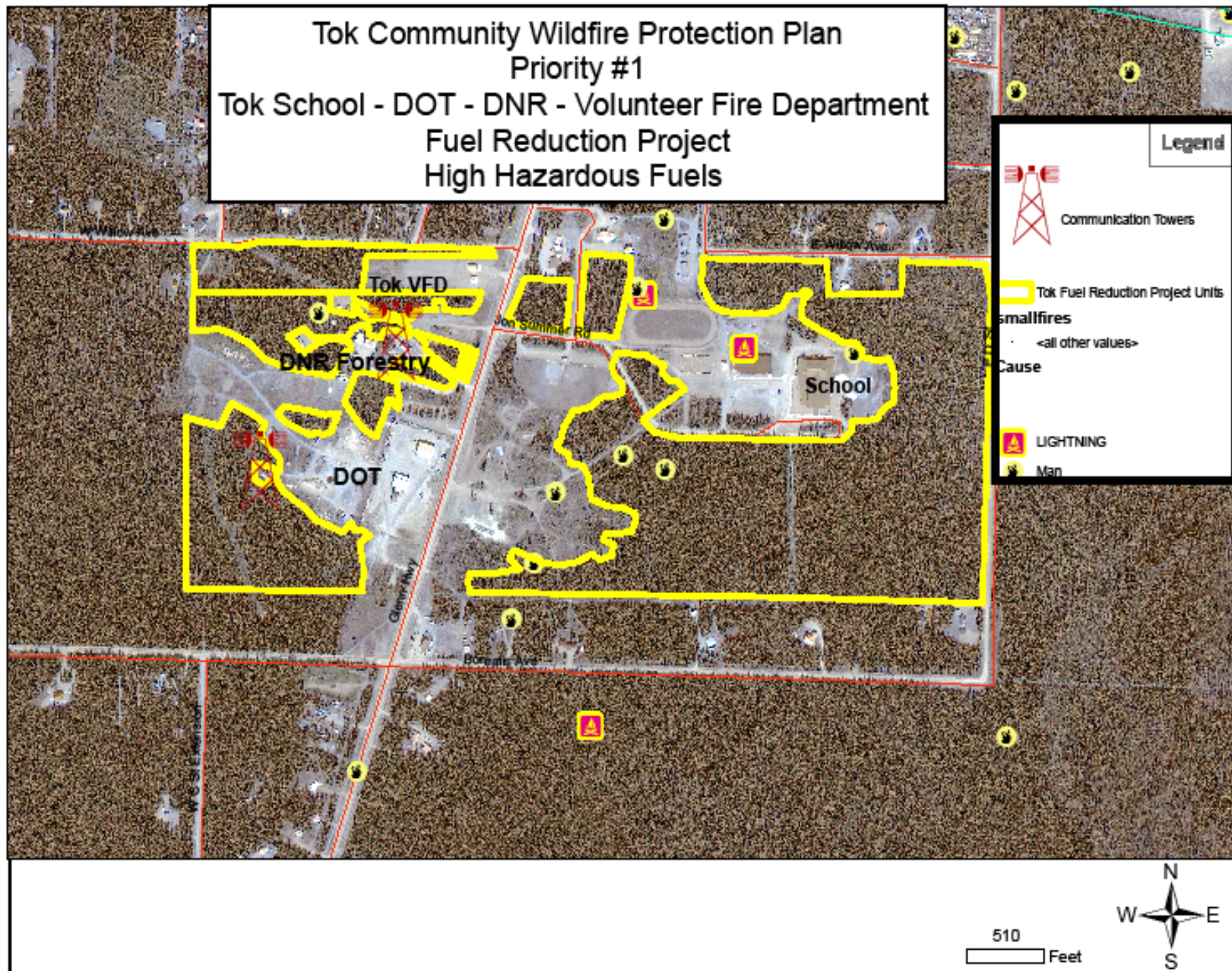
Stand Conversion From Spruce to Aspen



Tok CWPP Priorities

1. Remove fuels from - Tok School - DOT and Forestry / State Communication tower.
2. Safe evacuation routes and road ROWs.
3. Senior Citizens Defensible Space
4. Create effective fuel breaks and anchors for our firefighters.

**Tok Community Wildfire Protection Plan
Priority #1
Tok School - DOT - DNR - Volunteer Fire Department
Fuel Reduction Project
High Hazardous Fuels**



Backfire or burnout



Must have a solid safe line to fire from

How large should our fuel
breaks be?



How Dangerous is Tok?
How much energy is there?

How much Energy ?



How much energy?



How Much Biomass is there per acre?



Biomass Inventory Work At -28 below zero!!



Measuring trees at -25 to determine energy of our forest



Chipping the Trees



Weighing each tree on Digital Scales



Forest Techs on Summer Plots





What did we find out?

- There was far more energy per acres than we had previously thought.
- 100th acre plots with up to 64 trees representing 6400 per acre
- From 33 to 187 Tons per acre

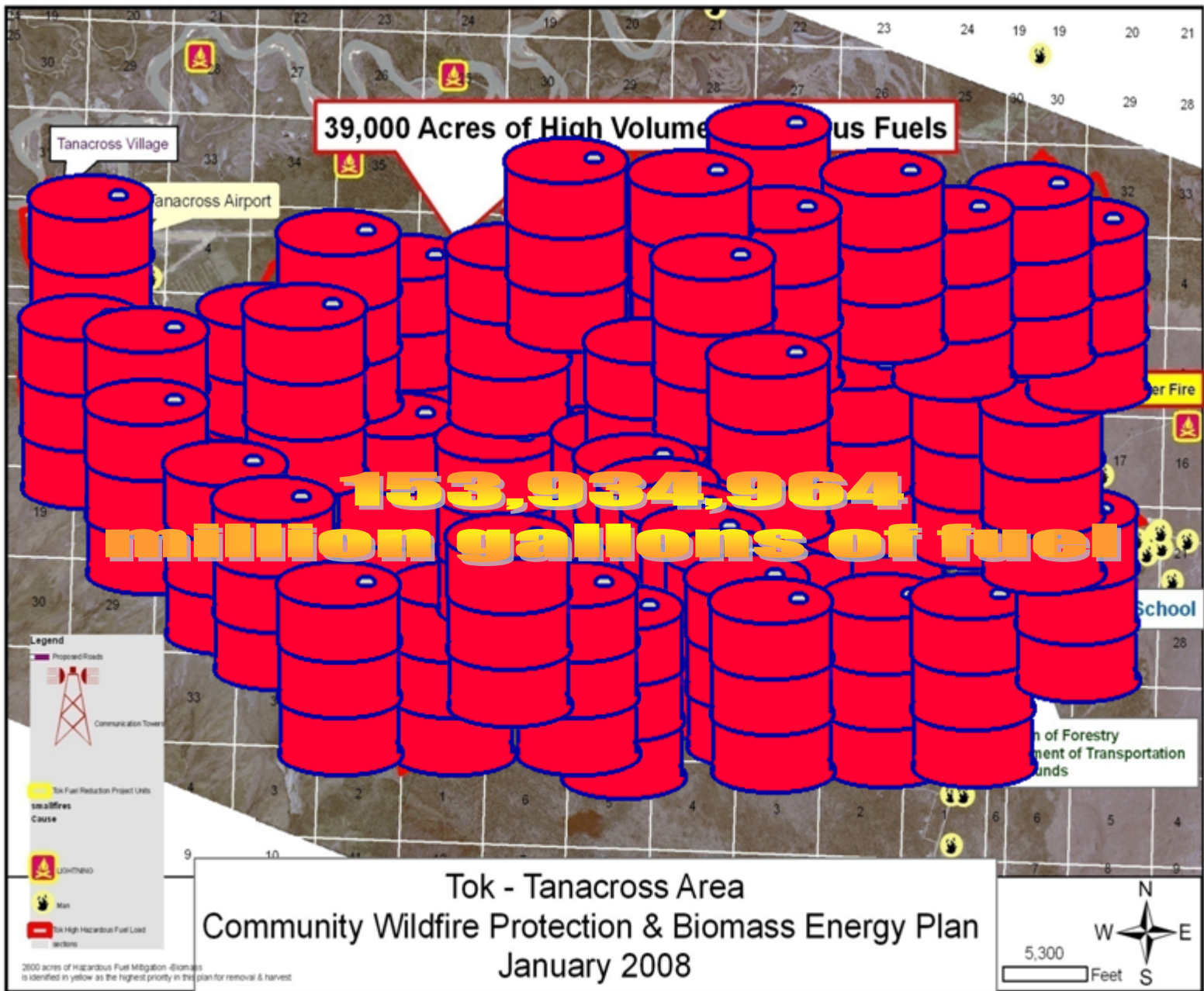
Computed Energy - BTU totals

- $60 \text{ tons} \times 2000 \text{ lbs} \times 4,572 \text{ BTUs per lb} = 548,640,000 \text{ BTU per acre of green 50\% moisture Hazardous Fuels}$
- $548,640,000 \text{ BTU per acre} \times 39,000 \text{ acres of highly volatile hazardous spruce fuel} =$
- $21,396,960,000,000 \text{ BTU}$
- That is a lot of energy!!



Fuel Oil Equivalent

- 1 gallon of fuel oil has 139,000 BTU
- 1 acre of hazardous fuel / Biomass
 $548,640,000 \text{ BTU} / \text{divided by } 139,000 \text{ BTU per gallon of fuel oil} = 3947 \text{ gallons of fuel oil per acre}$
- $39,000 \text{ acres} \times 3947 \text{ gallons per acre} = 153,934,964 \text{ million gallons}$
- $153,934,964 \text{ Gallons} / 3,665,118 \text{ barrels of fuel oil (BTU equivalent of the hazardous fuels biomass equivalent) that we are surrounded by.}$



Dollar value of forest fuels

153,934,964 gallons of fuel oil @ \$2.00
per gallon = \$307,869,928
Fuel oil BTU value equivalent

39,000 acres x 60 tons per acre x \$60
per ton = \$140,400,000
Value of hazardous Fuels / energy

How many acres of hazardous fuels need to be removed right now?

- 500 acres – private property (defensible space) current estimate
- 39,000 acres – total # of acres of hazardous fuels
- 2,800 acres – transportation routes, state facilities and fuel breaks
- 3,300 acres total requiring removal out of 39,000 acres equals only 8% of the total fuel load.



What Does Hazardous Fuel Removal Cost?

- Past manual projects (by hand with chainsaw) have cost from \$3,500 to \$5,500 per acre.
- Past mechanized projects (with feller buncher and skidder) have cost \$1,100 to \$2,000 per acre.

Cost to remove current identified hazardous fuel priorities

- 500 acres on private property x \$3,000 per acre = \$1,500,000 (combination of mostly manual removal with some mechanized)
- 2800 acres on state lands x \$1,500 per acre = \$4,200,000 (combination of mostly mechanized removal with some manual)
- **Total \$5,700,000 million dollars**

Funding received since the 1990 Tok River Fire

- Tok has received \$320,000 federal funding for fuel reduction from the US Fish and Wildlife.
- The State of Alaska has not funded any fuel reduction in the entire state.
- The outlook for fuel reduction funding is not bright. Alaska does not do well competing with California for these federal funds.

We want to harvest 50 acres of forest around the Tok School!

- Presented the concern expressed through the Community Wildfire Protection Plan to the School Principle, Superintendant, School Board and Tok Public

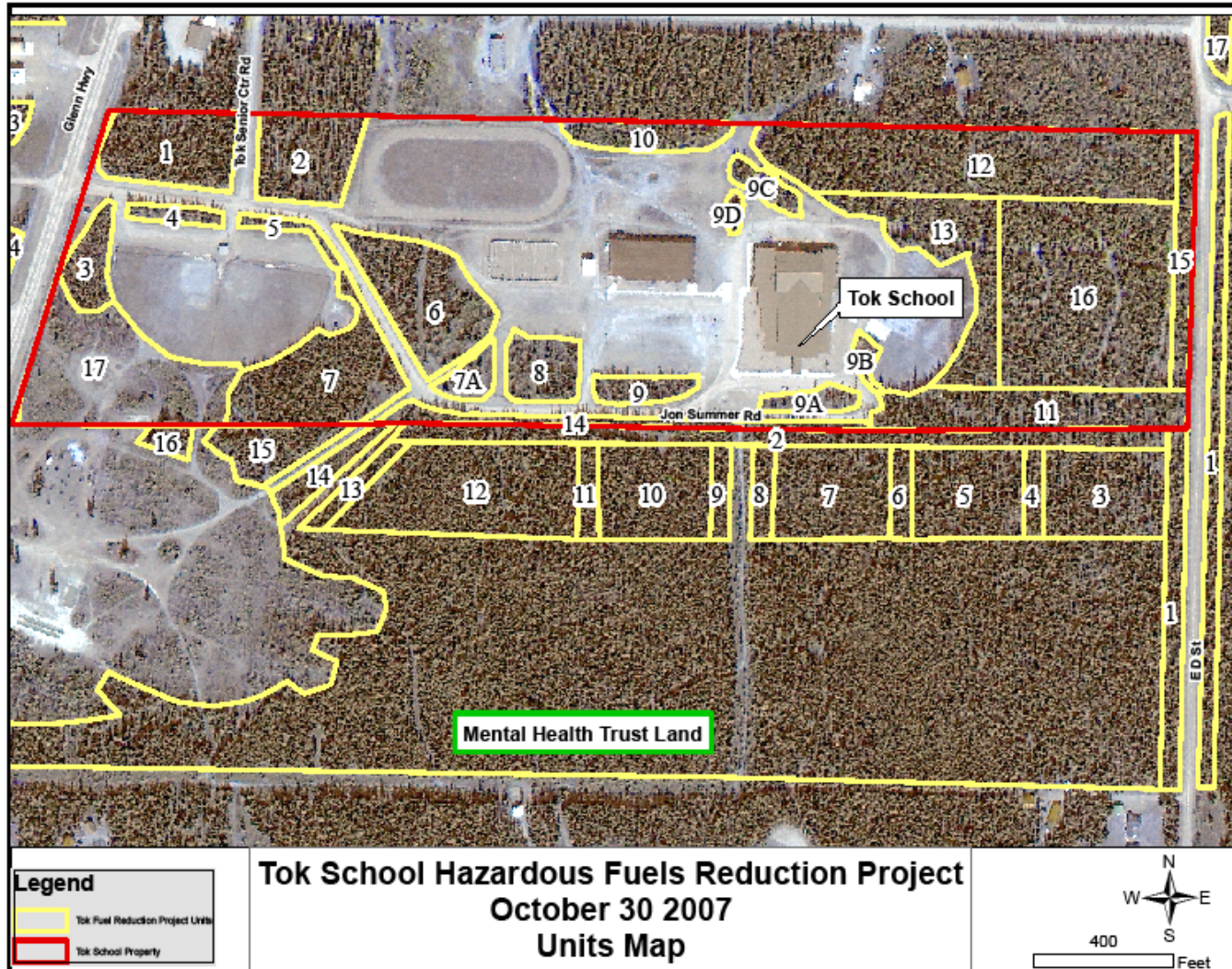
One of several Field Trips



Getting the Funding Fuel Reduction Project

- \$50,000 Dollars from the USF&W for Hazardous Fuels Reduction
- Agreement – Remove 50 Acres of Fuel
- Safely Harvest while kids attending school.
- Meet the Schools criteria for land use and aesthetics
- Have useable bio-fuels decked ready for processing.

Tok School Hazardous Fuels Project 50 acres – 1200 Tons



Red Fox Fire Field Trip



Road into School Before Fuel Removal



Conventional Timber Harvest Equipment





Small wood for conventional
Logging Equipment

After Hand Thinning



Hazardous Fuels ready for
Processing into Wood Energy /
Bio-fuel estimated 1200 tons



Contractor directional tree length hand felled – skid with grapple log skidder



Public Approval

- We did not receive a single phone call complaining about the harvest activities.
- We did get many phones asking if they could cut firewood out the decks.
- We did get many compliments.

Where will the money come from to remove the hazardous fuel?

- What if we could create a value for the hazardous fuel that needs to be removed?
- If instead of being only a liability to the community it became an asset.

Wood Energy - Bio-fuel



What we have done with the Hazardous fuels in past projects



What is the difference between hazardous fuels and bio-fuels?

- Absolutely nothing
- Hazardous fuel is the material before it is processed into bio-fuels.
- We can cut the hazardous fuels, grind it into a usable form of bio-fuel, transport it to a school and burn it in a high efficient boiler to generate heat.
- This is a better alternative to cutting hazardous fuel and setting a match to it –

What we plan to do with all future
hazardous fuel – process it into
bio-fuels to heat our schools.



Tok Community Received a \$500,000 state CIP
To purchase the equipment to process
Hazardous fuels into bio- fuels







We love trees!!!!



What's the difference?

- Remember?
- 2800 acres on state property x \$1,500 per acre = \$4,200,000 (combination of mostly mechanized removal with some manual)
- 500 acres on private property x \$3,000 per acre = \$1,500,000 (combination of mostly manual removal with some mechanized)
- **Total \$5,700,000 million dollars**

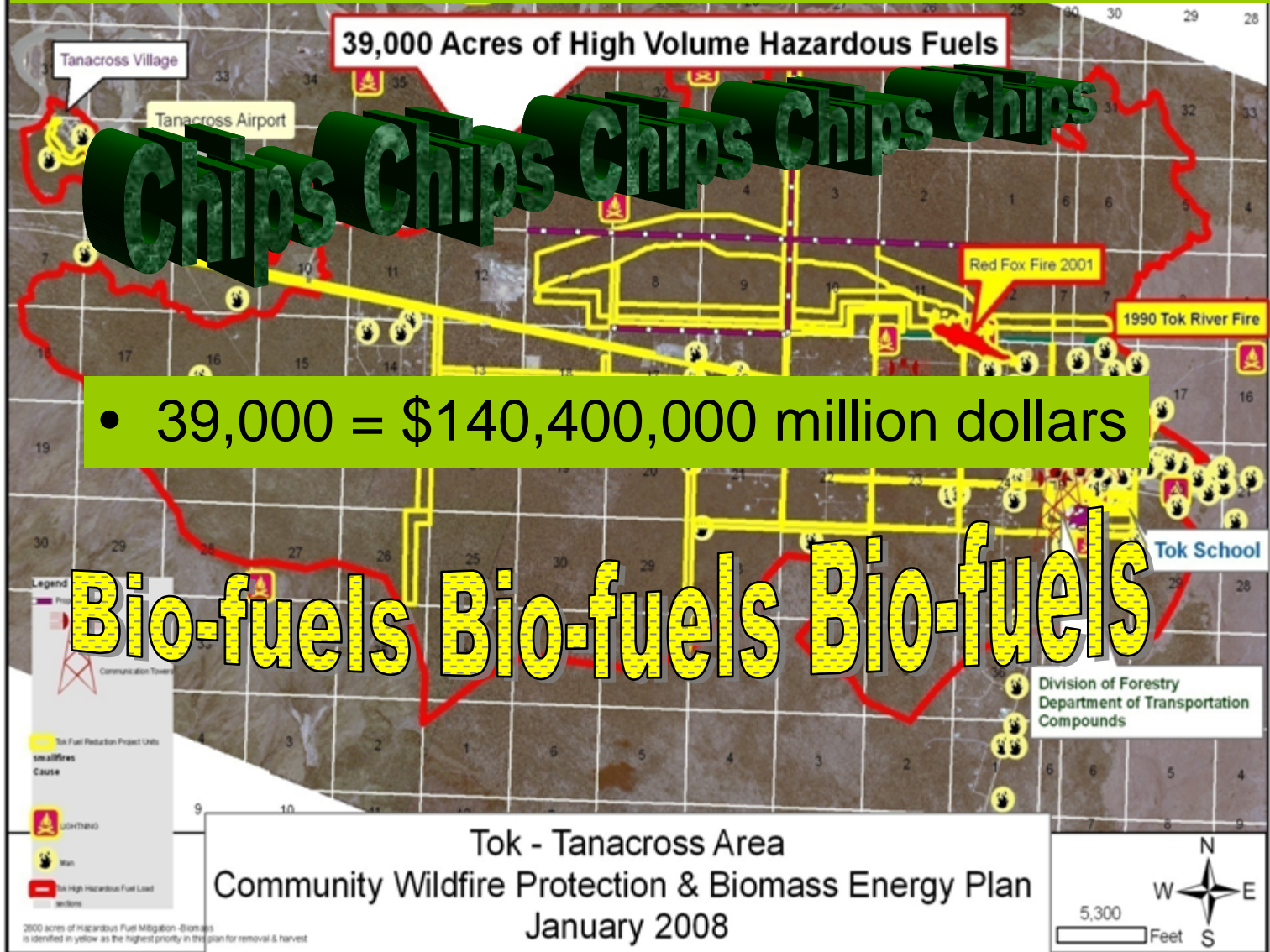
Hazardous Fuel processed into biofuels has real value

- Biomass delivered to the School will have a value up to \$60 a ton or more.
- Our 3,300 acres of hazardous fuels have an estimated average of 60 tons per acre.
- That is 30 - 90 years of fuel for the Tok School.
- 3,300 acres x 60 tons per acre x \$60 per ton of biomass = **\$11,880,000**

What's the difference?

- How about going from spending **\$5,700,000** to remove the hazardous fuels to a potential positive value of **\$11,880,000** as delivered biofuels.
- **That is \$17,580,000 difference.**

Value of 39,000 acres as Bio-fuels?



Tok School – Center Piece for Fuel Reduction and wood energy Received a renewable energy grant



Montana School Fuels for Schools























What is the value in savings to the School?

- \$100,000 annual savings in heating cost
- \$160,000 additional savings in electricity
- \$2,600,000 in ten year savings
- \$7,800,000 in thirty years

Value of Tok School – Project

- The Tok School will require 1200 tons of wood energy a year.
- At \$60 per ton - \$72,000 annually
- That is 30 acres of hazardous fuel removed annually.
- That is 900 acres over 30 year life of project.
- At \$1200 per acre for fuel reduction this worth \$36,000 annually.
- \$1,080,000 over 30 year life of project!!



Direct Cost of Urban Interface Fires

- The cost of an urban interface fire is at least \$10,000 per acre.
- This is 3 to 10 times the cost of fuel reduction and or harvest of wood energy per acre.
- This is 2 to 10 times the cost of land DNR Lands is selling in Tok.

Conclusion

- We need the State of Alaska to declare that fuel reduction is in the best interest of the state.
- We need annual state funding for fuel reduction work.
- We need develop wood energy projects to use the hazardous forest fuels.
- We need the state committed to using renewable wood energy in state facilities to help create the stable market demand.

- We need a detailed statewide inventory of our forest resources.
- We need 25 year detailed forest harvest plans to show where the harvest would occur and develop the cost for harvesting.
- We need to commit to long term contracts for supply of forest fuels.
- We need trained people to plan and do the field work to implement these projects.
- Educate the public about the incredible energy in our forest.
- Educate the public on the benefits of renewable wood energy products and projects

Has that crazy Tok Area
Forester gone positively
Mad?

NO

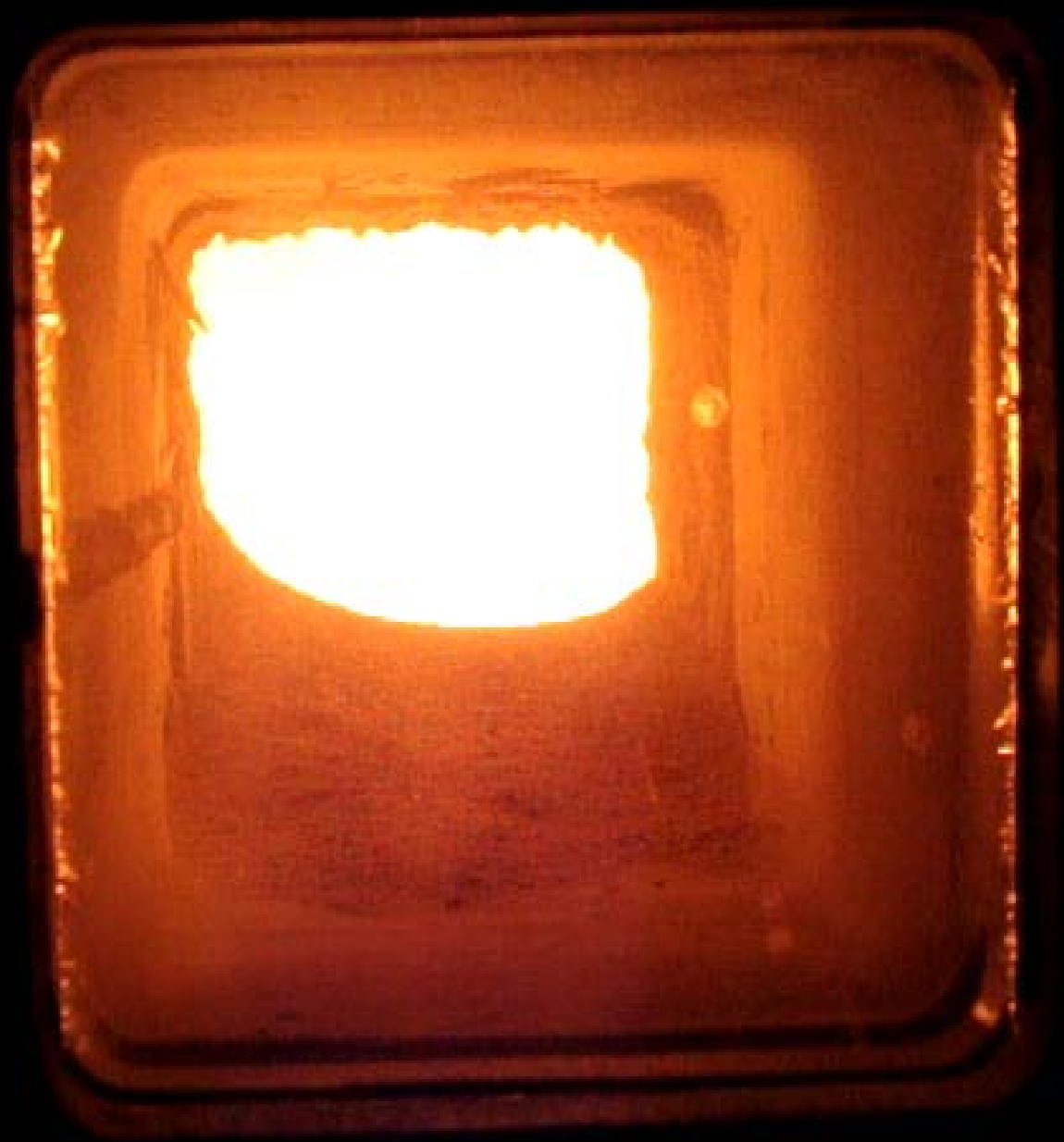
We not going to
clear-cut Tok and grind
all the trees into bio-
fuels.

We just want people to start
looking at our dangerous situation
and our incredible renewable
forest resources with a new
perspective!!



How will it burn ?





Hopefully this won't be the summer Tok burns!!

