

2013 GOVERNMENT FLAT COMPLEX FIRE: A WATER UTILITY'S RESPONSE STRATEGIES



Dave Anderson
Public Works Director
City of The Dalles

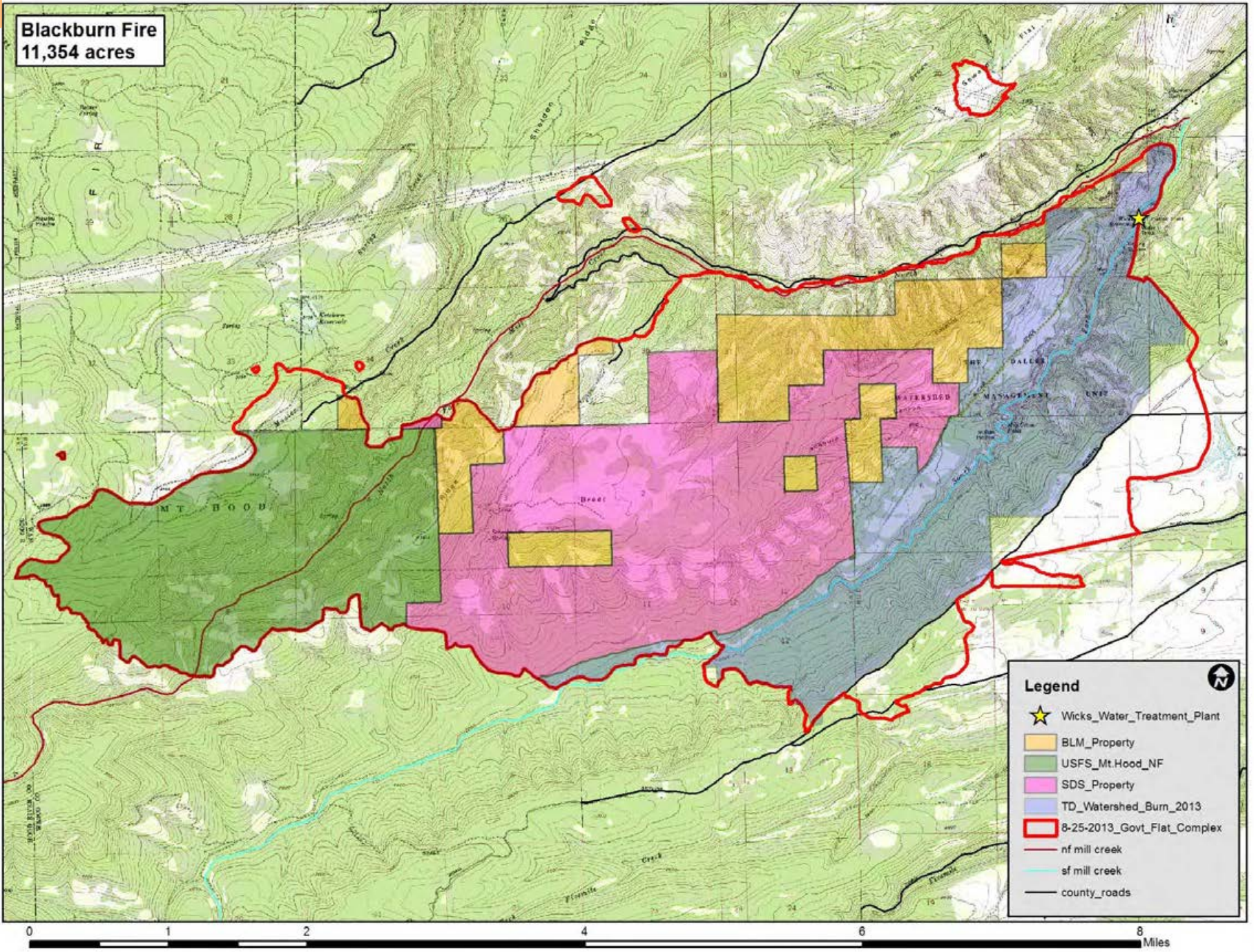
City of The Dalles Water System

- ▣ Service population – 12,500
- ▣ Annual water supply – 90+% surface water
- ▣ 22,000-acre Watershed cooperatively managed for protection of water quality
- ▣ Wicks Water Treatment Plant – Class 4 conventional water treatment, staffed 24/7, one operator per shift
- ▣ Rated capacity of 6.05 MGD (max flow for 2.5-log Giardia removal); realistic max treatment rate of about 5.6 MGD
- ▣ Plant is a member of the Partnership for Safe Water; 0.1 NTU finished water goal

Fire Statistics

- ▣ Fire occurred in August 2013
- ▣ Blackburn Fire, inside Watershed, was one of three fires started by lightening that became the Government Flat Complex Fire
- ▣ Total area burned = 11,354 acres
- ▣ Area burned within The Dalles Municipal Watershed = 5400 acres
- ▣ Burned area extends from City water treatment plant 4 miles upstream
- ▣ Fire was in same area that burned in 1967; adverse water quality impacts for about 20 years

Blackburn Fire
11,354 acres



Legend

- ★ Wicks_Water_Treatment_Plant
- BLM_Property
- USFS_Mt.Hood_NF
- SDS_Property
- TD_Watershed_Burn_2013
- 8-25-2013_Govt_Flat_Complex
- nf mill creek
- sf mill creek
- county_roads

0 1 2 4 6 8 Miles

Impact and Recovery Planning

- ▣ City initiated Watershed rehabilitation discussions during fire
- ▣ Immediately after fire, larger inter-agency Watershed rehab work group formed:
 - Natural Resource Conservation Service (NRCS)
 - Wasco Co Soil & Water Conservation District (SWCD)
 - Oregon Dept of Environmental Quality (DEQ)
 - Oregon Dept of Forestry (ODF)
 - US Forest Service
 - The Dalles Area Watershed Council
 - City of The Dalles

Post-fire Concerns

- ▣ Increased raw water turbidity from erosion of burned area
- ▣ Increased potential for landslides
- ▣ Potential debris flows
- ▣ Residual fire retardant contamination
- ▣ Increased risk of flooding along Mill Creek and within downtown The Dalles











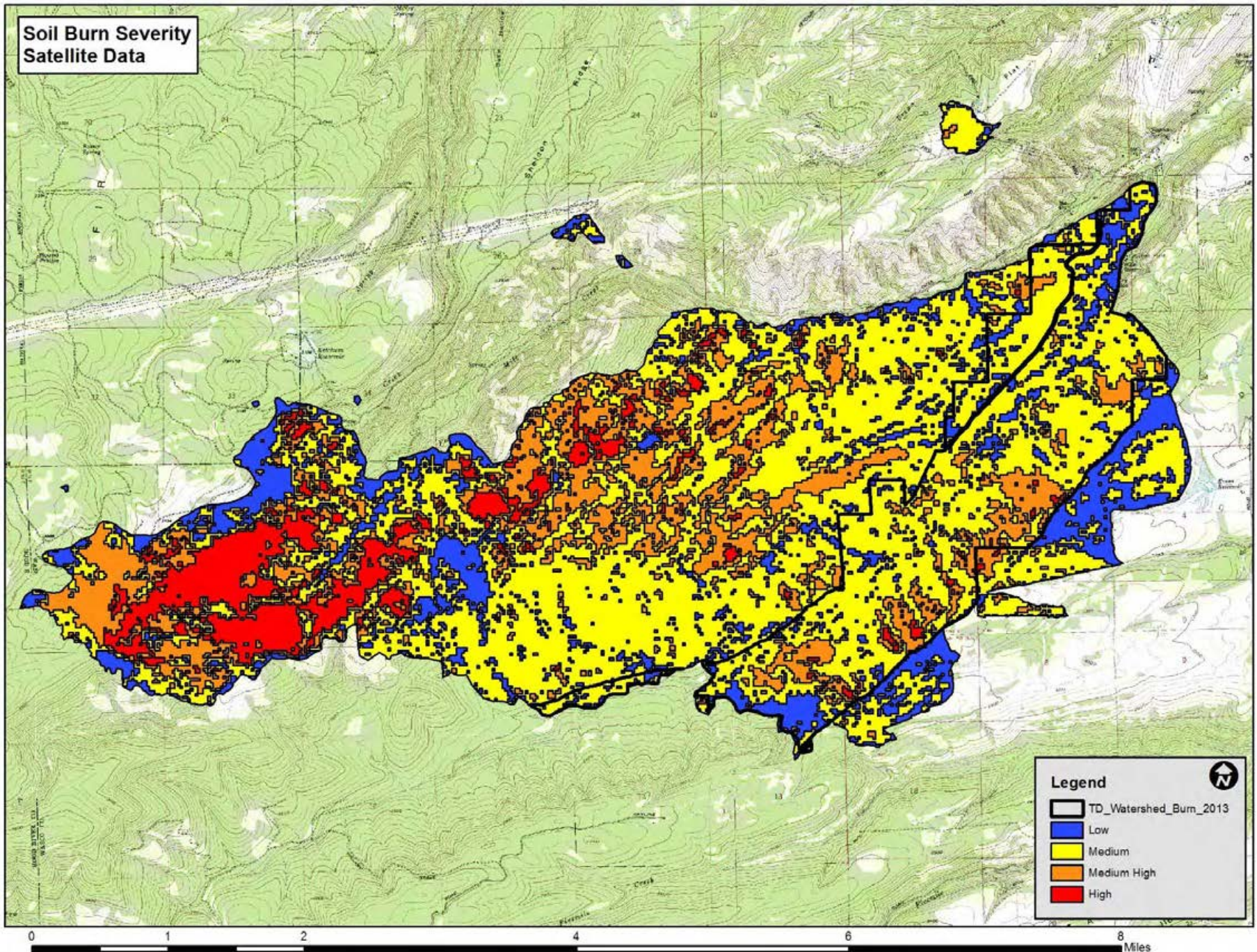








Soil Burn Severity
Satellite Data



Legend

- TD_Watershed_Burn_2013
- Low
- Medium
- Medium High
- High

0 1 2 4 6 8 Miles







Rehabilitation Plan

- ▣ Immediate stabilization plan - What's been done:
 - Dozer lines and hand lines were water-barred and/or scattered with brush – suppression crews
 - Bare-earth areas were roughed up and/or scattered with brush – suppression crews
 - Natural recovery occurred in the first fall in lower burn-severity areas
 - Aerial grass seeding of 100 high-priority acres
 - Inter-agency analyses and development of longer-term rehabilitation plan
 - Contact with state and federal legislators for support of funding applications















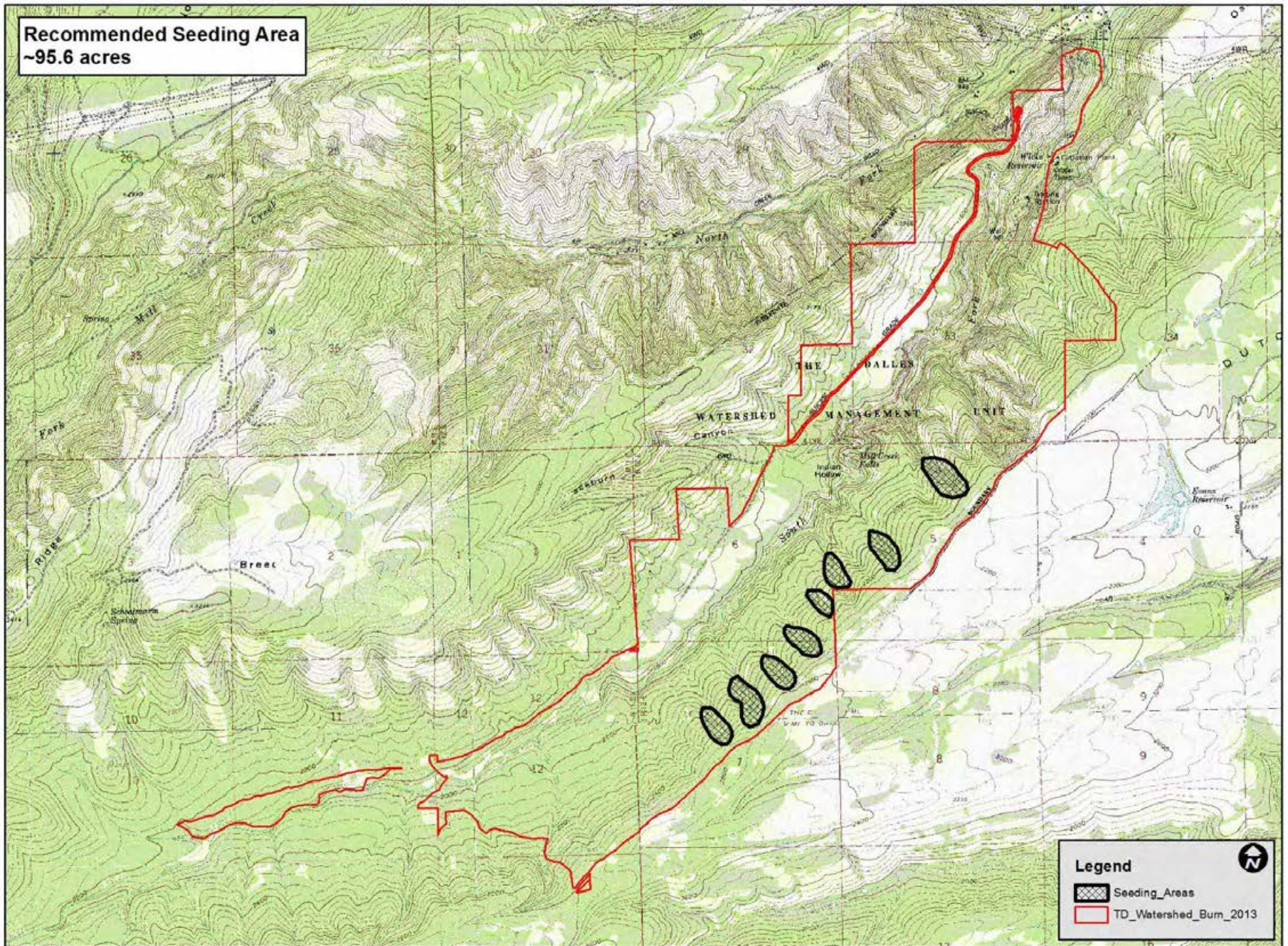










Recommended Seeding Area
~95.6 acres



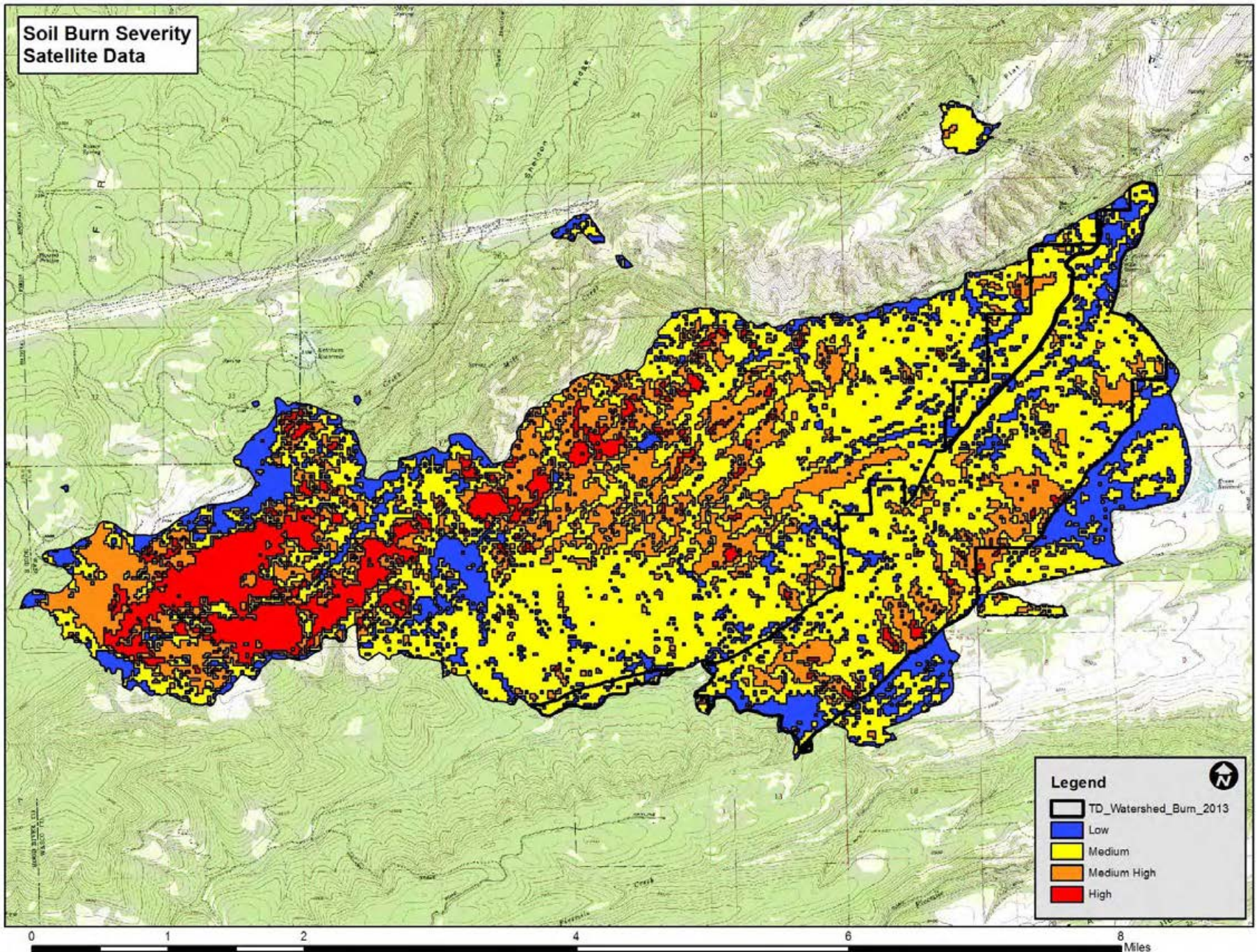
Legend

-  Seeding_Areas
-  TD_Watershed_Burn_2013



0 0.75 1.5 3 4.5 6 Miles

Soil Burn Severity
Satellite Data



Legend

- TD_Watershed_Burn_2013
- Low
- Medium
- Medium High
- High

0 1 2 4 6 8 Miles

Rehabilitation Plan – cont'd

- ▣ Mid-term (2-yr) active stabilization – options evaluated:
 - Salvage logging of stands with high tree mortality was conducted in spring 2014
 - Contour falling of trees in burned area in spring 2014
 - Treatment considered but not implemented
 - Aerial mulching with ag straw or wood shreds
 - Sediment detention systems – silt fencing or wattles

Rehabilitation Plan – cont'd

- ▣ Long-term (5-yr) stabilization plan:
 - Planting of Ponderosa Pine/Douglas fir to restore conifer component – 165,660 trees in 2 plantings

Funding

- ▣ Preliminary rehabilitation budget - \$1.083M
- ▣ Pledged contributions - \$61,260
 - Oregon Safe Drinking Water State Revolving Fund
\$30,000 grant
 - Oregon Wildlife Heritage Foundation
\$10,000 grant
 - City-County Insurance Services
\$7,500 grant
 - DEQ Supplemental Environmental Projects
\$5,760 grant
 - Wasco Co. SWCD
\$5,000 grant
 - ODFW
\$3,000 grant

Funding – cont'd

- ▣ Grant application was submitted for USDA Emergency Watershed Protection program; federal government shutdown delayed submission; application unsuccessful
- ▣ Oregon Watershed Enhancement Board funding - \$115,122
- ▣ Local funds from City water rates and salvage logging

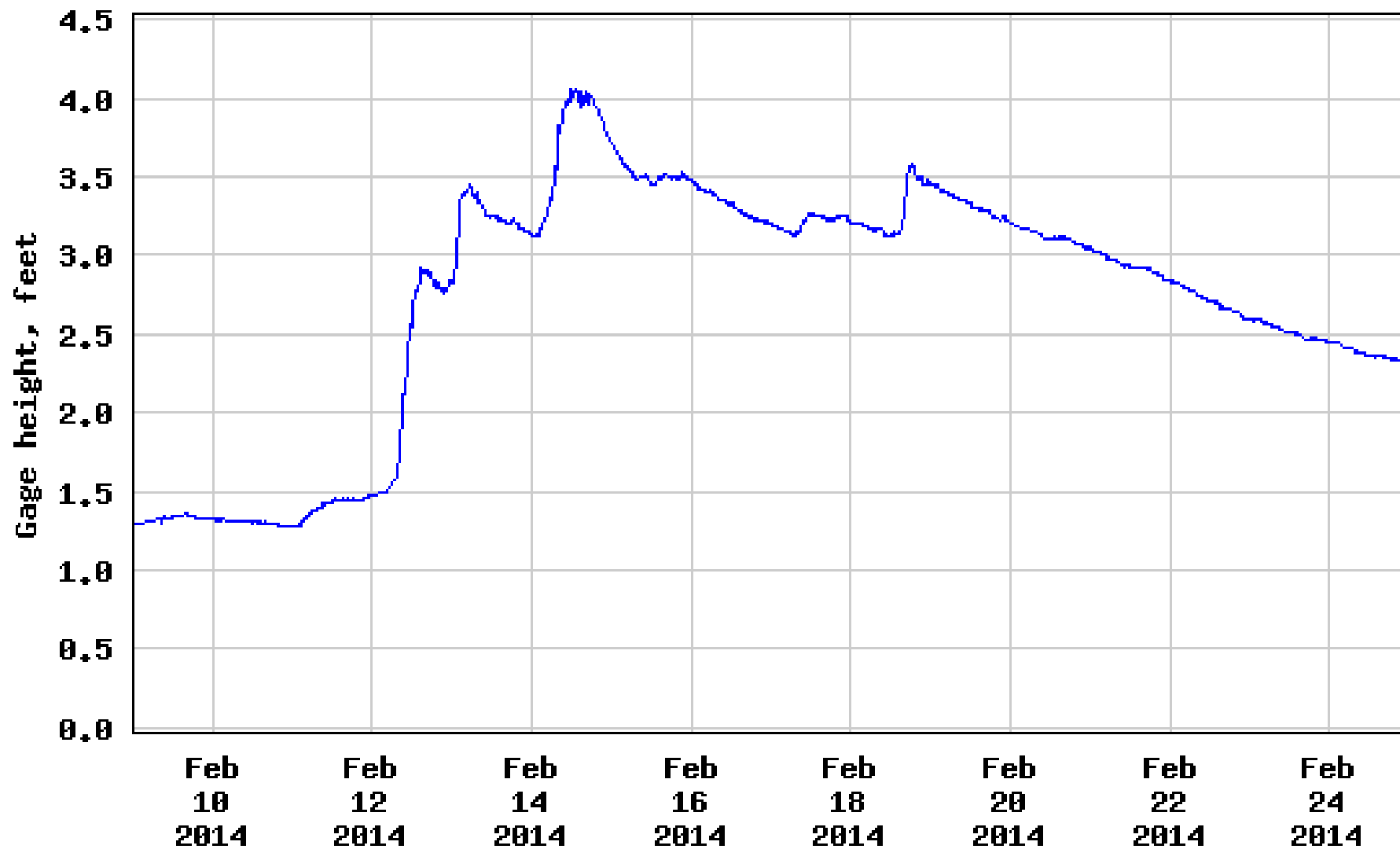
Monitoring/Early Warning

- ▣ Installed temporary precipitation monitoring station with telemetry within the burned area in cooperation with SWCD
- ▣ Installed temporary stream level gaging station with telemetry on North Fork Mill Creek in cooperation with USGS and SWCD
- ▣ Conducted post-fire and “first flush” raw water sampling at WTP intake by DEQ – all results negative for fire retardant indicators

Observed Water Quality Impacts

- ▣ September 2013 –
 - First significant rain on the burn, heavy at times, total about 1" rain in 3 days
 - No adverse water quality impacts
- ▣ February 2014 –
 - Rain-on-snow event
 - About 18" snow on the burn area, frozen ground, then gradual warming with fairly continuous rain over 3 days
 - Stream flow at WTP increased from 6 MGD to 96 MGD.
 - Raw water turbidity spiked at 1760 NTU, several excursions >200 NTU; finished water quality <0.1 NTU

USGS 14105800 NF HILL CR ABV SF MILL CR, NR THE DALLES, OR



---- Provisional Data Subject to Revision ----





Questions

Contact information:

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Grass seed mix

- | | | |
|-----------------------------------|------------------------------------|--------|
| □ Slender Wheatgrass (Revenue) | <i>Elymus tracycaulus</i> | 2 lbs |
| □ Sheep Fescue (Covar or VNS) | <i>Festuca ovina</i> | 1 lb |
| □ Thickspike Wheatgrass (Bannock) | <i>Elymus lanceolatus</i> | 2 lbs |
| □ Hard Fescue | <i>Festuca brevipila</i> | 1 lb |
| □ Orchard Grass | <i>Dactylis glomerata</i> | 2 lbs |
| □ Pubescent Wheatgrass (Luna) | <i>Agropyron trichophorum</i> | 3 lbs |
| □ Ladak Alfalfa | <i>Medicago sativa</i> | 2 lbs |
| □ Small Burnett | <i>Sanguisorba minor</i> | 1 lb |
| □ Spring Wheat or Spring Oats | <i>Triticum spp. or Avena spp.</i> | 8 lbs |
| □ Total | | 22 lbs |
- Broadcast (including aerial) application rate = 38-48 lbs/acre
 - All seed certified to be noxious-weed free