



# CONSERVATION LANDS PROGRAM: *Season Highlights 2015*

Morgan Valliant  
Missoula Parks & Rec.  
March 9, 2016



# *The Numbers*

- **ROW and Parkland Mowing:** 140 acres (113.5 ac. in 2014)
- **Revegetation :**
  - Seeded 2450 lbs. seed across 143 acres!! (*1400lbs./84ac. in 2014*)
  - Planted 4418 native trees, shrubs and herbs across 9 acres!! (*3694 across 13.5 ac. in 2014*)
- **Herbicide Applications:**
  - 105 ac. weeds sprayed across 525 ac. of land. (*84.2ac. Across 885 ac. in 2014*)
- **Handpulling:**
  - Dames rocket, Hemlock, Houndstongue, knapweed & buckthorn across 42 acres!! (*17ac. in 2014*)
- **Sheep Grazing:**
  - 600ac. in 77 days (*1099 ac. in 106 days in 2014*)

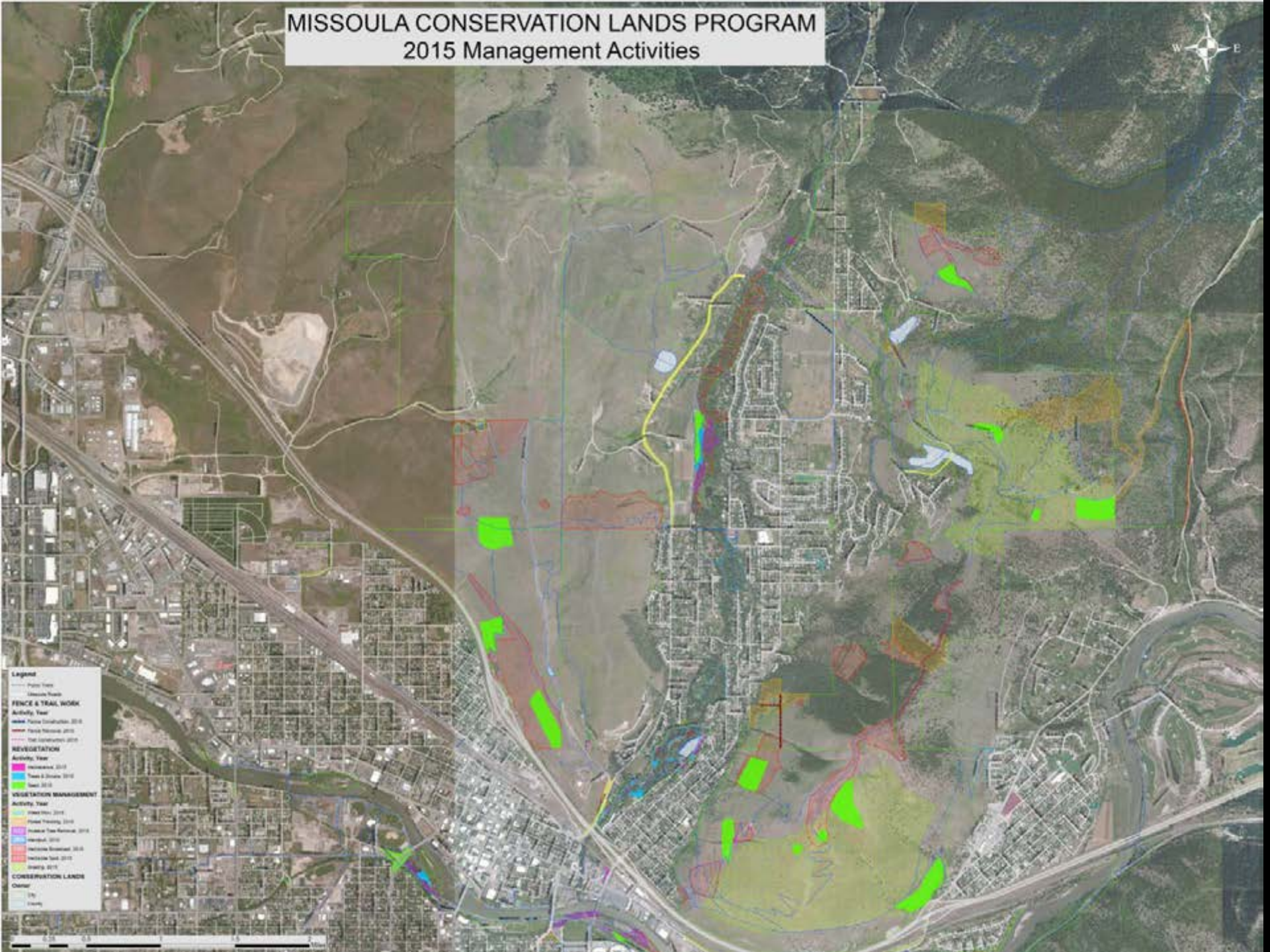


# *The Numbers Cont.*

- **Volunteers :**
  - 755 people, 4180 hrs. for approx. \$50,160 in labor (*1634 hours in 2014*)
  - *Clark Fork Coalition Coordinated 2118 hours!!!*
- **Trail Construction:** 0.25mi. of new trail. (*1.05 mi. in 2014*)
- **Fencing:**
  - Repair/construction 0.27mi. (*427ft. in 2014*)
  - Removal .35 mi. (*.61 mi. in 2014*)
- **Forest Thinning:** 96.6 ac. on Mt. Jumbo (*33 ac. in 2014*)
- **Invasive Tree Removals (N. maple, S. Elm, G. Willow & C. Buckthorn):**
  - Removed Invasive trees from 21 acres in the Tower St. C.A., Rattlesnake GB, and along the Clark Fork River! (*6.8 ac. in 2014*)



# MISSOULA CONSERVATION LANDS PROGRAM 2015 Management Activities

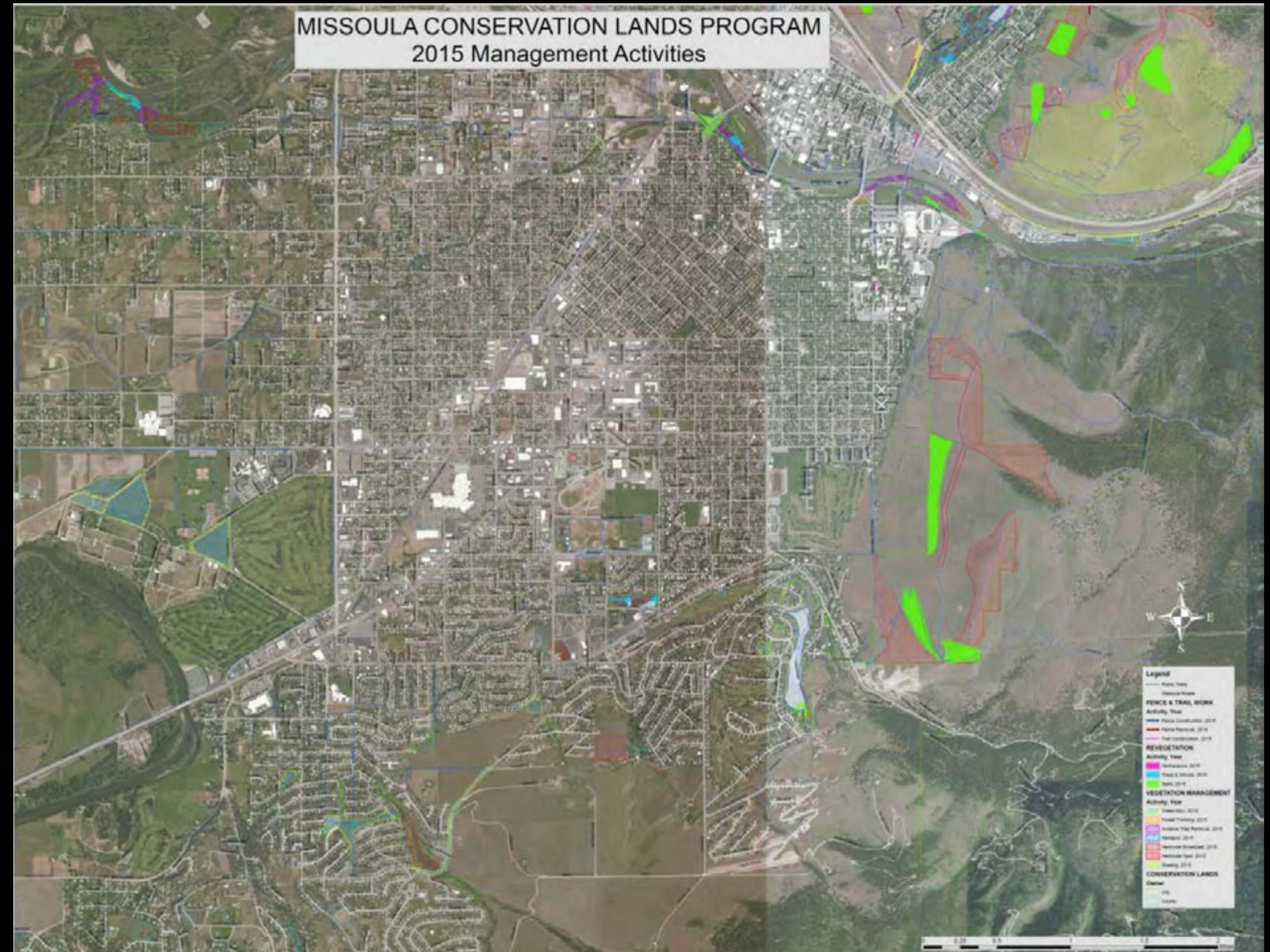


- Legend**
- Public Lands
  - Conservation Lands
- FENCE & TRAIL WORK**
- Activity, Year
- Fence Construction 2015
  - Fence Removal 2015
  - Fence Construction 2016
- REVEGETATION**
- Activity, Year
- Reforestation 2015
  - Tree & Shrub 2015
  - Seed 2015
- VEGETATION MANAGEMENT**
- Activity, Year
- Forest Mgmt 2015
  - Forest Thinning 2015
  - Prescribed Fire Removal 2015
  - Harvest 2015
  - Prescribed Fire 2015
  - Prescribed Fire 2016
  - Prescribed Fire 2017
- CONSERVATION LANDS**
- Owner
- USFS
  - Private





# MISSOULA CONSERVATION LANDS PROGRAM 2015 Management Activities





# *The Numbers Cont.*

- **Grants, Donations, Fees:**

- Awarded \$50,000, Clark Fork River Planning (Mt. DNRC)
- Awarded \$15,000, Vegetation Management (Msla Co. Weed District)
- Awarded \$10,200, Weed Manage. & Seed, Mt. Sentinel (Dept. or Ag. NWTF)
- Awarded \$5,000, Winch Shed Restoration (Msla. County History Grant)
- Awarded \$3000, Ben Hughes HOA for park improvements (Neighborhood grants)
- Awarded \$1000, Landon Edwards for knapweed research (The Garden Club of America)
- Generated \$5,682.17 from the Special Use Permits on CL (Elk Ramble, Pengelly DD, MOLA)

- **2015 Total: \$89,880.17** (2014 Total: \$53,071.76)



# *Leveraging Your Dollars in 2015*

- From 2008 to 2015 the CLM Program budget has grown from \$253,067 to \$394,395 (includes all salaries, supplies and contracted services)
- Since 2008, the CLM Program has been awarded \$690,254 in grants and donations.
- On average the CLM Program has brought in \$0.28 for every dollar received!



# *2015 Major Accomplishments*

- Completed a Trails Inventory and Assessment
  - GPS all system and user made trails
  - Quantified conditions of all trails
  - Data directs work plans to address trail issues
- Implemented a Herptile Monitoring Program
  - Revisited historic areas of occurrence
  - Develop accurate list of Herps that utilize City Conservation Lands
  - Identified important habitats and areas with restoration potential
- Commencement of Clark Fork River Access Project Planning



# *2015 Trails Inventory*

- GPS all System and Non-System (aka. user- made trails) trails and all trail infrastructure (eg. signs, benches, waterbars stairs)
- Document trail conditions
  - Characteristics= slope, cross-slope, width, surface type
  - Problems= erosion, widening/braiding, cupping, clearance
- First accurate depiction of trails and trail conditions on CL's!

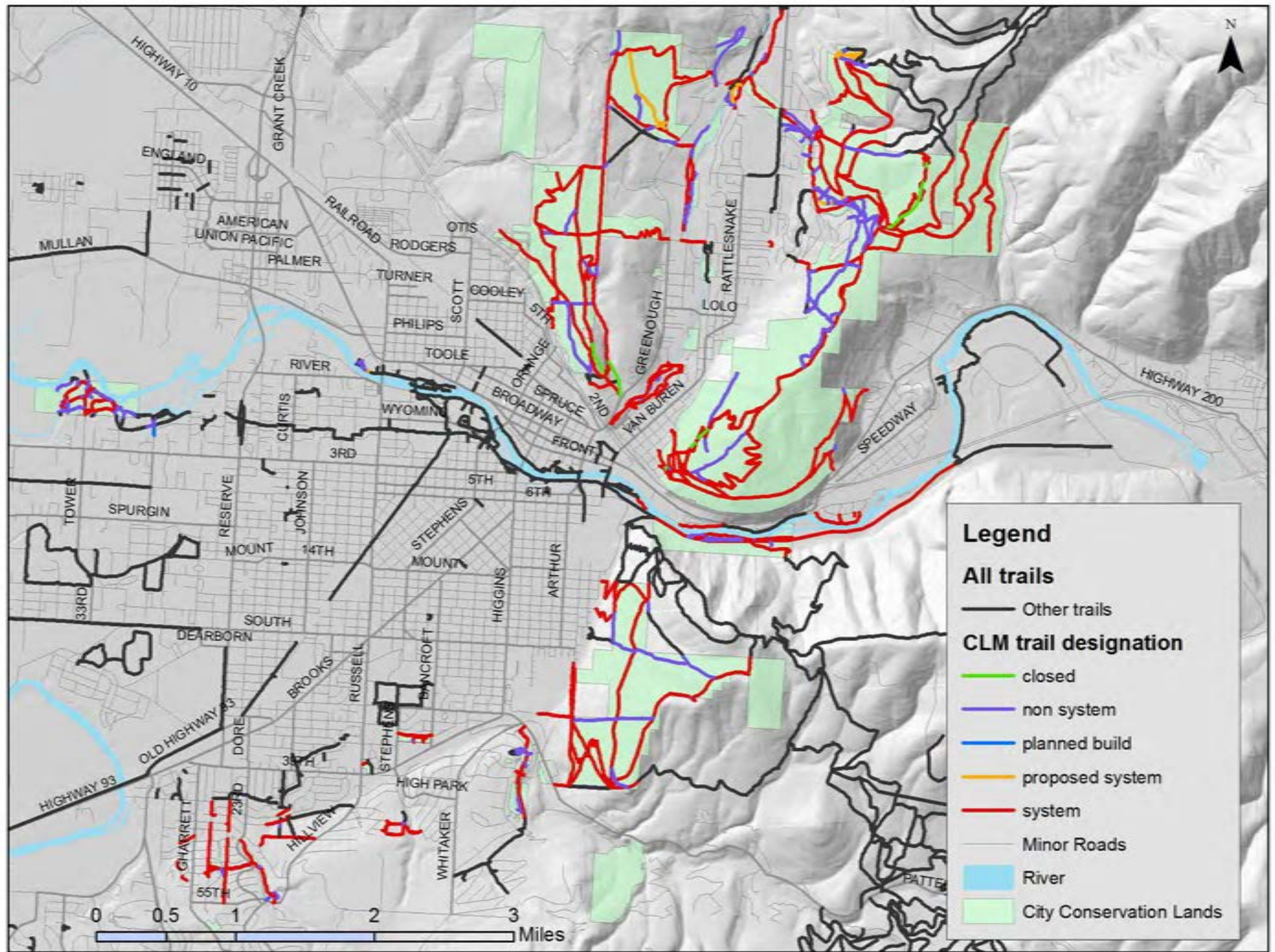


# Trail Mileage

2015 CLM Trail mileage (2008 mileage)	System	Non- System	Area Total
Hellgate / Rattlesnake	7.33 (8.19)	2.82 (0.65)	10.15 (8.84)
Mt Jumbo / Marshall	22.25 (17.79)	8.43 (4.94)	30.68 (22.73)
Mt Sentinel	6.72 (6.55)	2.42 (0.82)	9.15 (7.37)
North Hills	11.46 (9.72)	3.86 (1.75)	15.33 (11.47)
South Hills	4.35 (2.52)	0.76 (0.30)	5.11 (2.82)
Tower Street	1.52 (0.79)	1.60 (1.48)	3.12 (2.27)
<b>Total 2015 Trail Miles (2008 miles)</b>	<b>53.63 (45.56)</b>	<b>19.89 (9.94)</b>	<b>73.53 (55.50)</b>



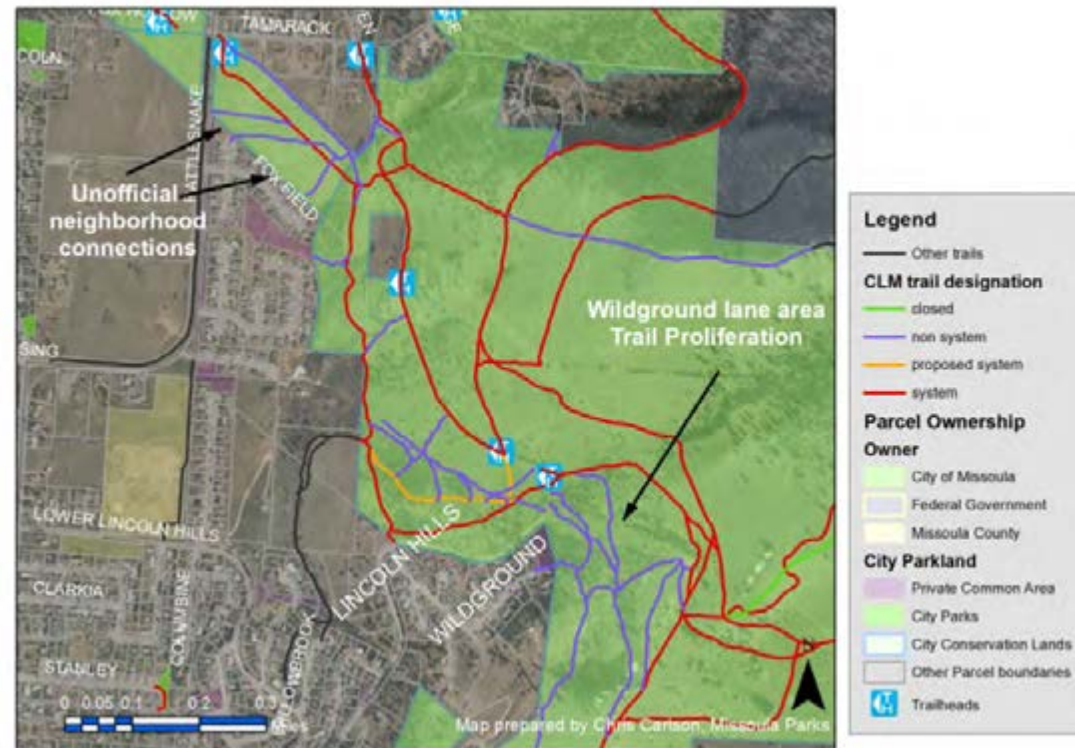






# Challenge Areas

**Challenge Area:** Lincoln Hills neighborhood trails, Wildground Lane area



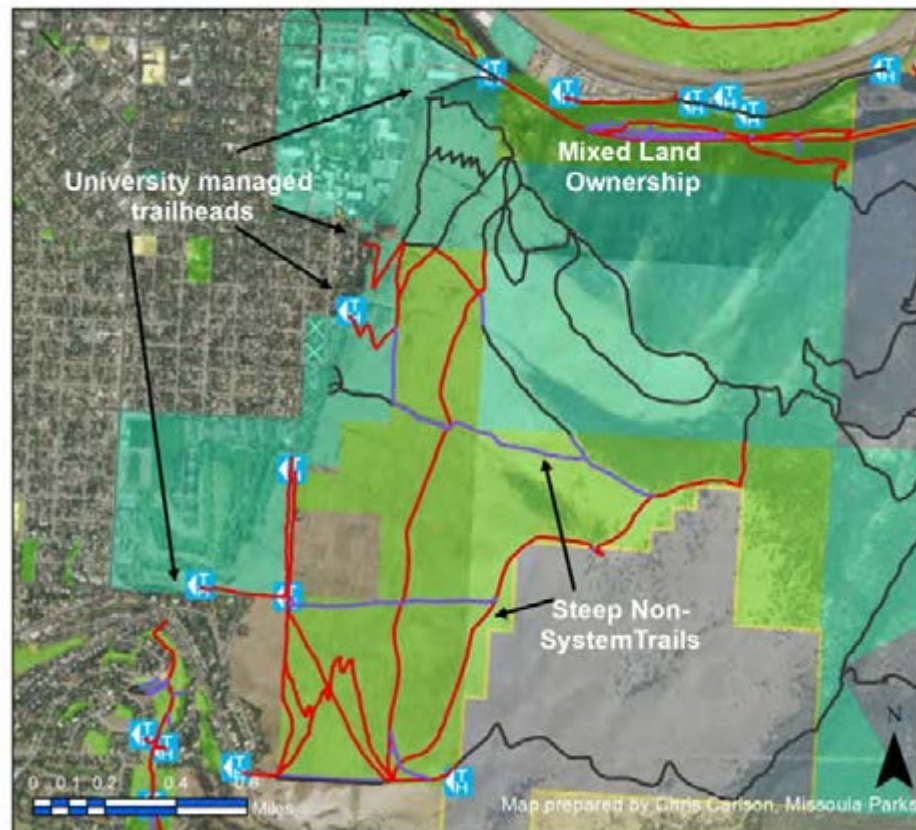
**Challenge Area:** Tower St. Conservation Area





# Challenge Areas

Challenge Area: Mt. Sentinel



## Legend

— Other trails

## CLM trail designation

— non system

— system

## Parcel Ownership

### Owner

City of Missoula

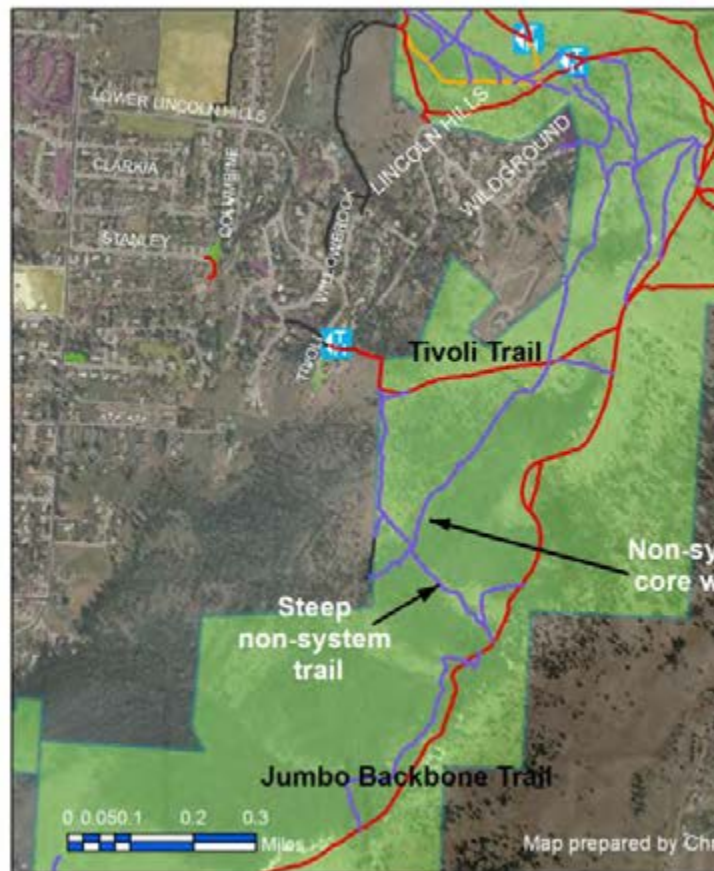
Federal Government

Missoula County

State of Montana

T Trailheads

Challenge Area: Tivoli Trail, Jumbo Backbone Area



— closed

— non system

— proposed system

— system

## Parcel Ownership

### Owner

City of Missoula

Missoula County

State of Montana

## City Parkland

Private Common Area

City Parks

City Conservation Lands

T Trailheads



# *Desired Trail* *Conditions*

CLM Plan Trail Construction Guidelines			
Designated Use	Hiker	Biker	Equestrian
Tread Width	18" – 48"	24" – 48"	48" – 96"
Target Grade (% slope)	Desirable 1 – 10% Max 20%	Max 15%	5% Max 10%
Target Cross-slope Range	3 – 7% Max 10%	3 – 7% Max 10%	5% Max 10%
Vegetation Clearing Width	12" – 18" outside of tread edge	36" – 72" outside of tread edge	36" – 76" Outside of tread edge
Clearing Height	8'	8'	10 – 12'
Minimum switchback Radius	4'	8' – 12'	10' – 12'
Surface type	Native or imported materials		
Surface obstacles	Smooth with few obstacles. Occasional protrusions 2-3" above trailbed		





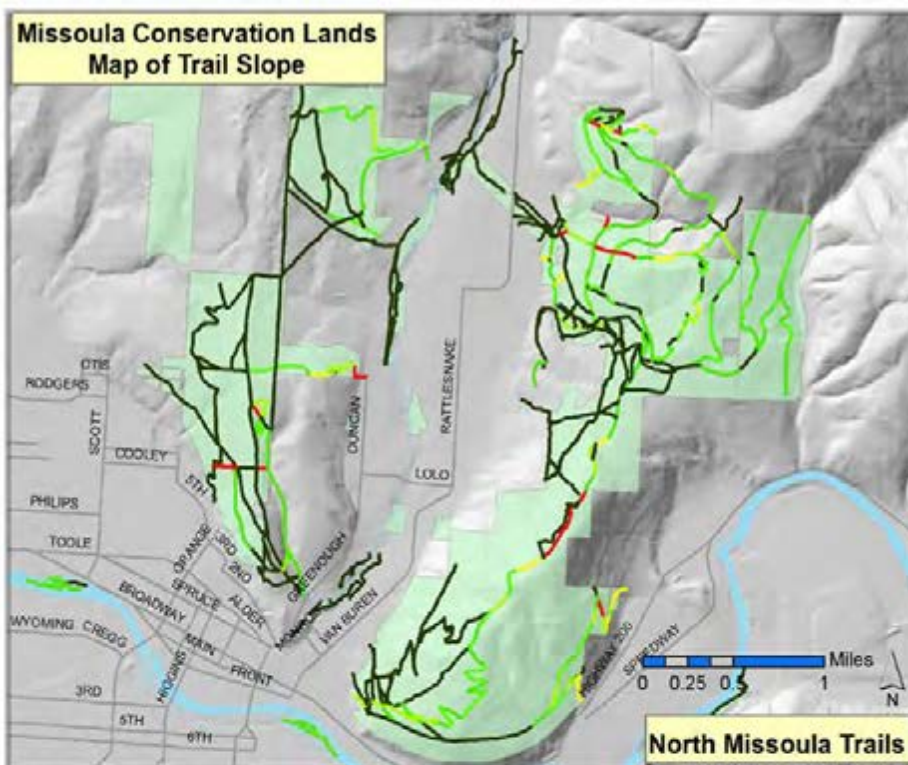
# *Current Trail Conditions*

%SLOPE OF TRAILS:	0% or unrecorded	1-5%	6-10%	11-15%	16-18%	20-25%	26-30%	31%+	Grand Total
Hellgate / Rattlesnake	6.84	0.47	0.03						7.33
Mt Jumbo / Marshall	8.69	6.00	4.26	1.91	0.82	0.35	0.16	0.05	22.25
Mt. Sentinel	1.97	1.86	0.60	0.63	0.12	1.18	0.23	0.13	6.72
North Hills	7.46	1.67	1.29	0.79	0.02	0.16	0.07		11.46
South Hills	0.93	2.08	0.76	0.43	0.04	0.09			4.35
Tower St.	0.97	0.55							1.52
<b>TOTAL SYSTEM:</b>	26.86	12.62	6.94	3.77	1.00	1.79	0.46	0.19	53.63
<b>TOTAL NON-SYSTEM:</b>	14.29	2.14	0.71	0.65	0.37	0.60	0.64	0.50	19.89

PROBLEM POINTS:	drainage	switchback	widening
Hellgate / Rattlesnake	0	0	0
Mt Jumbo / Marshall	0.58	0.19	1.12
Mt. Sentinel	0.10	0.03	1.59
North Hills	0.38	0.18	3.64
South Hills	0.38	0	0.44
Tower St.	0	0	0
<b>GRAND TOTAL:</b>	1.44	0.41	6.79

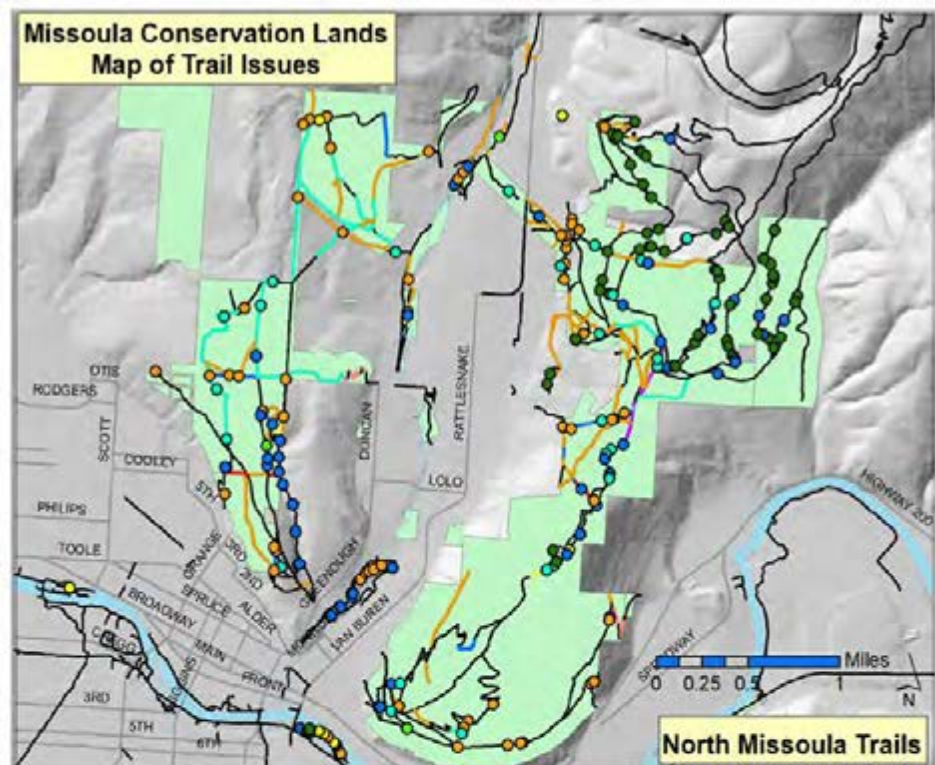


## Missoula Conservation Lands Map of Trail Slope

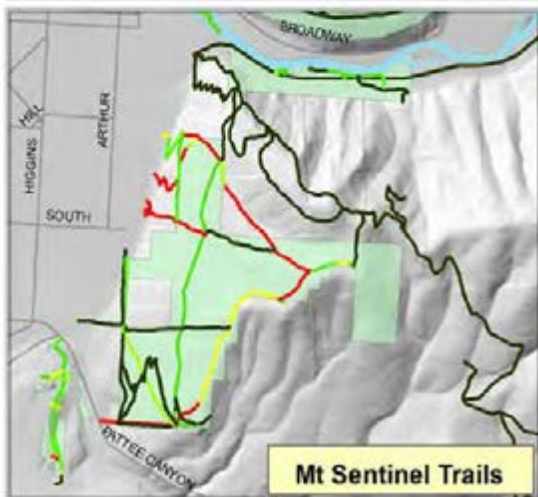


North Missoula Trails

## Missoula Conservation Lands Map of Trail Issues



North Missoula Trails



Mt Sentinel Trails

### Legend

Wetland type	Trails
River	Slope Percent
Missoula Conservation Lands	0 or unrecorded
	1-5%
	5-10%
	10-15%
	15-20%
	20% +



Mt Sentinel Trails

### Legend

Problem Points	Trails
Problem Code	Other trail segment
Switchback	Cupped trail
Drainage issue	Drainage
Vegetation Clearance	Other problem
Widening/ Braiding	Slope > 20%
"other" trail damage	Social Trail
Sign Missing/needed	Switchback
Social Trail Junction	Widening
Unauthorized structure	Wetland type
	River
	Missoula Conservation Lands



# *How will we use this Inventory?*

- Non-System Trails work plan
  - Some provide trail connections that make sense and should be considered for adoption as System Trails
  - Majority are unsustainable (eg. steep & eroded), redundant (access areas already served by System trails), and/or impact important wildlife areas. These should be closed.
- System Trails work plan
  - Address minor issues (eg. clearance and drainage/erosion) in 2016
  - Prioritize major issues (slopes, cupping, widening, braiding) and begin implementing solutions.
- Development of public education
  - Updated trail maps, directional signage, Trailhead improvements
  - Target campaigns to increase responsible recreation















# Trail Usage Data

*From 2014 User Surveys*

	Users Per week		Users Per year (*50)	
Trailhead	Low	High	Low	High
<i>Orange Street</i>	230	1033	11500	51650
<i>Waterworks Hill</i>	700	1700	35000	85000
<i>Cherry Street</i>	475	700	23750	35000
<i>Mt. Jumbo Saddle</i>	150	250	7500	12500
<i>Gasworks</i>	400	700	20000	35000
<i>Mt. Sentinel Fire Road</i>	650	1300	33800	67600
<i>Tower Street</i>	130	350	6760	18200
<b>Total:</b>	<b>2735</b>	<b>6033</b>	<b>138,310</b>	<b>337,550</b>



# *TLC for our Trailheads*

*"Trailheads are the last place where we can manage our users"*





# Missoula's Trailhead Guidelines

**8 Primary Trailheads-** *major gateways to our trail system at a minimum provide: kiosk, parking for over 10 cars, trail maps, bike racks, bear can, mutt-mitt, possibly restrooms and picnic facilities*

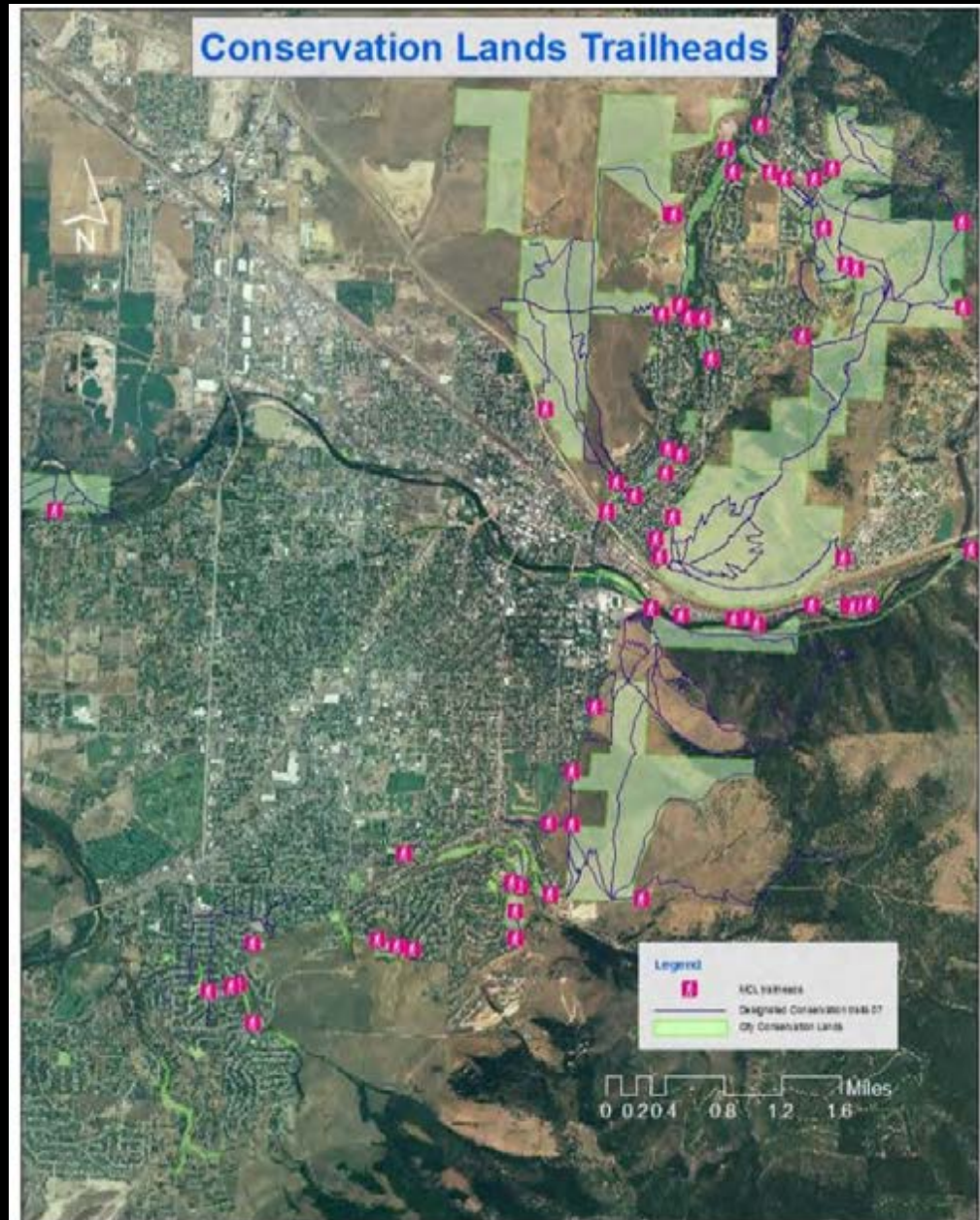
**ONLY 1 COMPLYS**

**25 Secondary Trailheads-** *A “side entrance” to our trail systems. Less developed with less use than major TH at a min. provide: rules & reg signs, trail maps, parking for 2-10 cars, trash & muttmitt*

**ALL LACK MAPS, MANY NEED BEAR CAN UPGRADES**

**30 Local Access Points-** *provide neighborhood access or mark ownership boundaries. At a min. provide: rules & reg sign, fencing/access gate may provide: trail map, trash & muttmitt*

**ABOUT ½ LACK BASIC SIGNAGE**



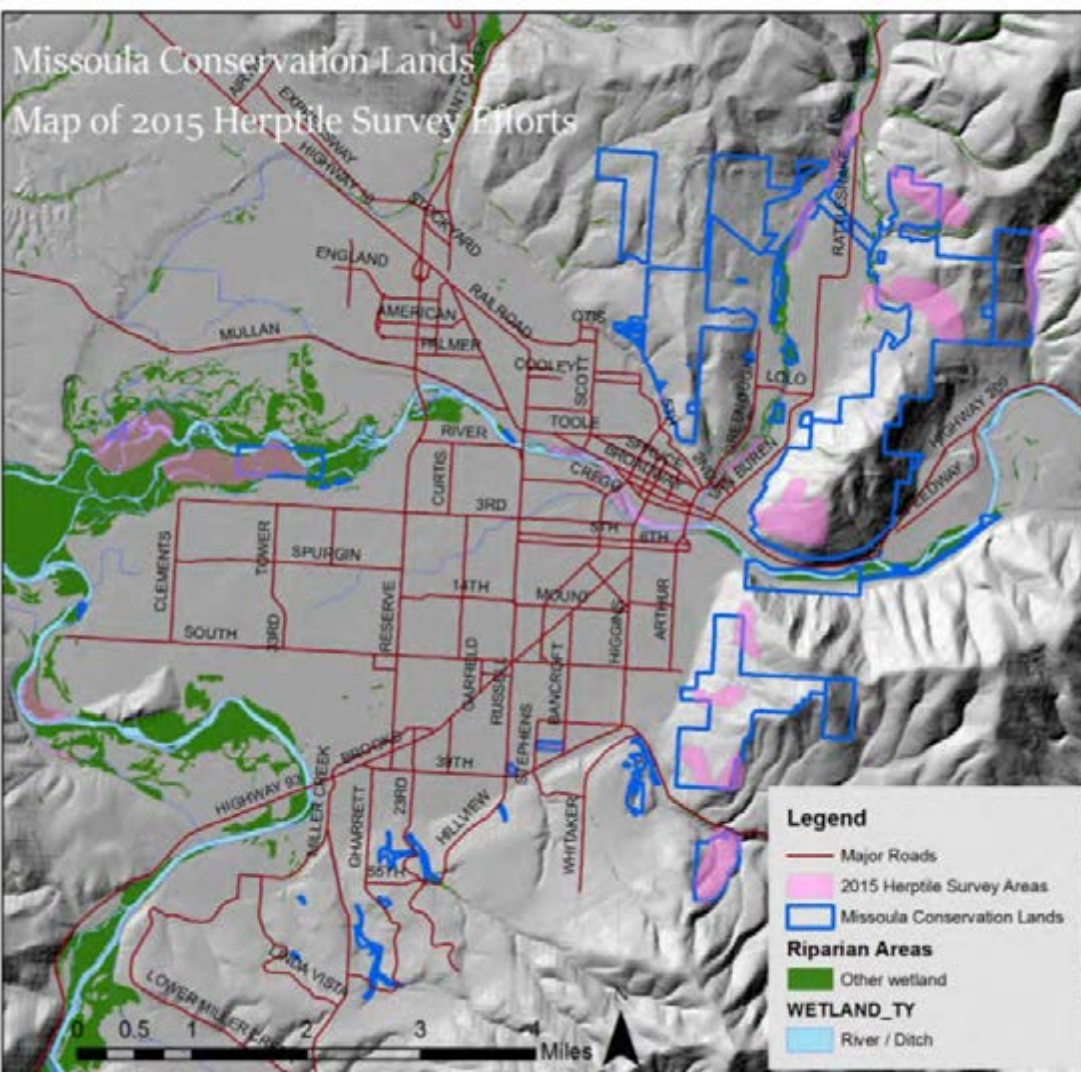


# *2015 Herptile Monitoring Program*





# Missoula Conservation Lands Map of 2015 Herptile Survey Efforts



Species Found	# of records	total # individuals
American Bullfrog	2	2
Columbia Spotted Frog	21	20
Gophersnake	4	4
Long-toed Salamander	7	1109
North American Racer	9	12
Northern Leopard Frog		
S.O.C.	1	1
Northern Rubber Boa	3	7
Red Eared Slider	1	1
Terrestrial Gartersnake	25	36
Western Painted Turtle	2	9
Western Skink*S.O.C.	1	8
Western Toad S.O.C.	2	2
Grand Total	78	1211



# *The Reptiles*





# *The Amphibians*

**INVASIVE**



ontana Natural Heritage Program



**S.O.C.**



**S.O.C.**





# *Plans for 2016*

- Expand monitoring efforts
  - Visit unsurveyed areas and newly acquired properties
  - Increase number of night surveys
- Use data to direct recreation management (eg. trails on new parcels, trail reroutes/closures, educational awareness)
- Assess habitat suitability where amphibians are found
  - Begin development of appropriate restoration & enhancement plans  
*(immediately remove 2 American bullfrogs from Bancroft Ponds!)*
  - Identify areas where habitat creation may be feasible



# Integrated Spotted Knapweed Control

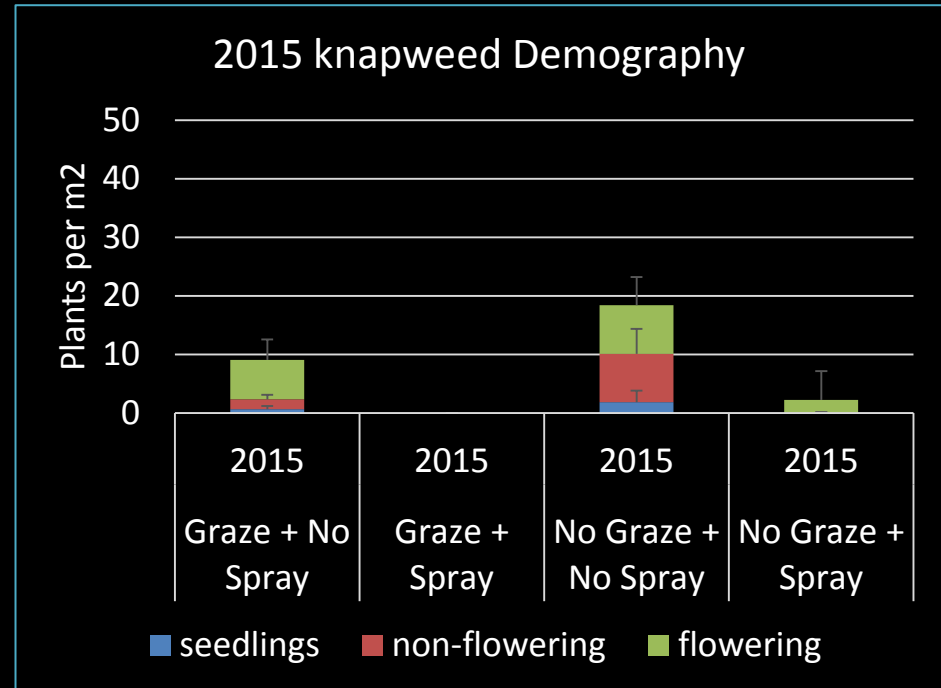
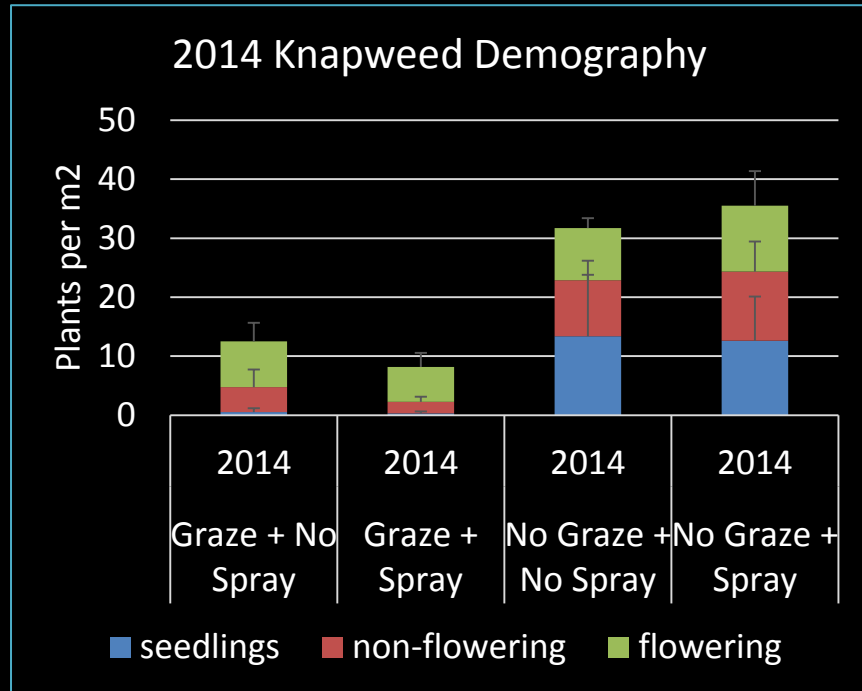
**Background:** Grazed knapweed on Saddle for 5-7 years  
Released *Cyphocleonus* 10+ yrs ago  
We have seen big reductions in knapweed on Jumbo,  
*apparently* due to grazing

**Questions:** Is a 1 time spray an effective “exit strategy” from grazing?  
What is the role of bio-control insects in the observed  
knapweed decline?

**2015 activities:** Volunteer university intern surveyed bio-controls  
Surveyed vegetation plots for 2<sup>nd</sup> year



# Integrated Spotted Knapweed Control



**2014 Findings:** Grazing is impacting knapweed via demographic process

**2015 findings:** Many fewer seedlings in 2015 (drought?)

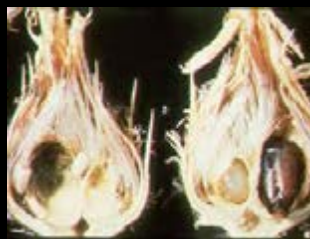
Spraying reduced knapweed, but also impacted sensitive natives.

**2016 steps:** Monitor for secondary invasion, recovery of knapweed in sprayed plots



# Integrated Spotted Knapweed Control

Biocontrol Species	% of plot pairs (n=10)
Cyphocleonus achates	100%
Agapeta zoegana	80%
Sphenoptera jugoslavica	80%
Metzneria paucipunctella	0%
Terelia virens	20%
Urophora affinis	70%
Urophora quadrifasciata	0%
Bangasternus fausti	0%
Larinus minutus	0%
Larinus obtusus	10%





# *Other Accomplishments*

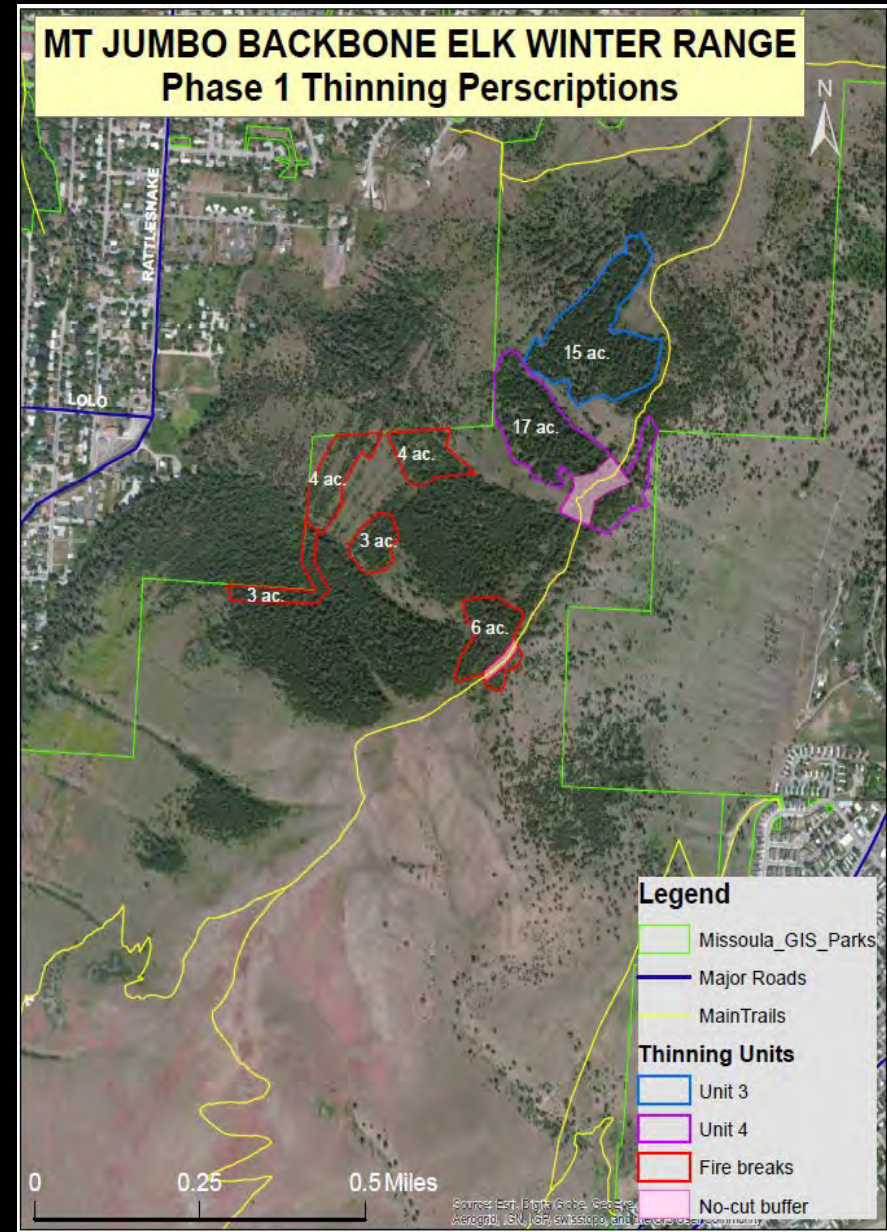




# Jumbo Forest Management Plan

## PHASE 1 (2015-2016)

- Establish long-term monitoring plots across all units. *Completed in 2014*
- Thin Units 3 & 4 = 32ac.
  - Mark units to ensure visual and snow intercept cover along elk trails & bedding areas. *Completed in 2014*
  - Thinned Unit 3 in 2014 and Unit 4 in 2015
- Create strategic vertical and horizontal fuel breaks between units (*hopefully in 2016*)





# Unit3 point D....2014





# Unit3 point D....2015





# Unit3 point D....2014





# Unit3 point D....2015





# Unit 3 point 352 south...2014





# Unit 3 point 352 south...2015





Unit 3 point 343 north...2014





Unit 3 point 343 north...2015





# Unit 4 point 704 east....2014





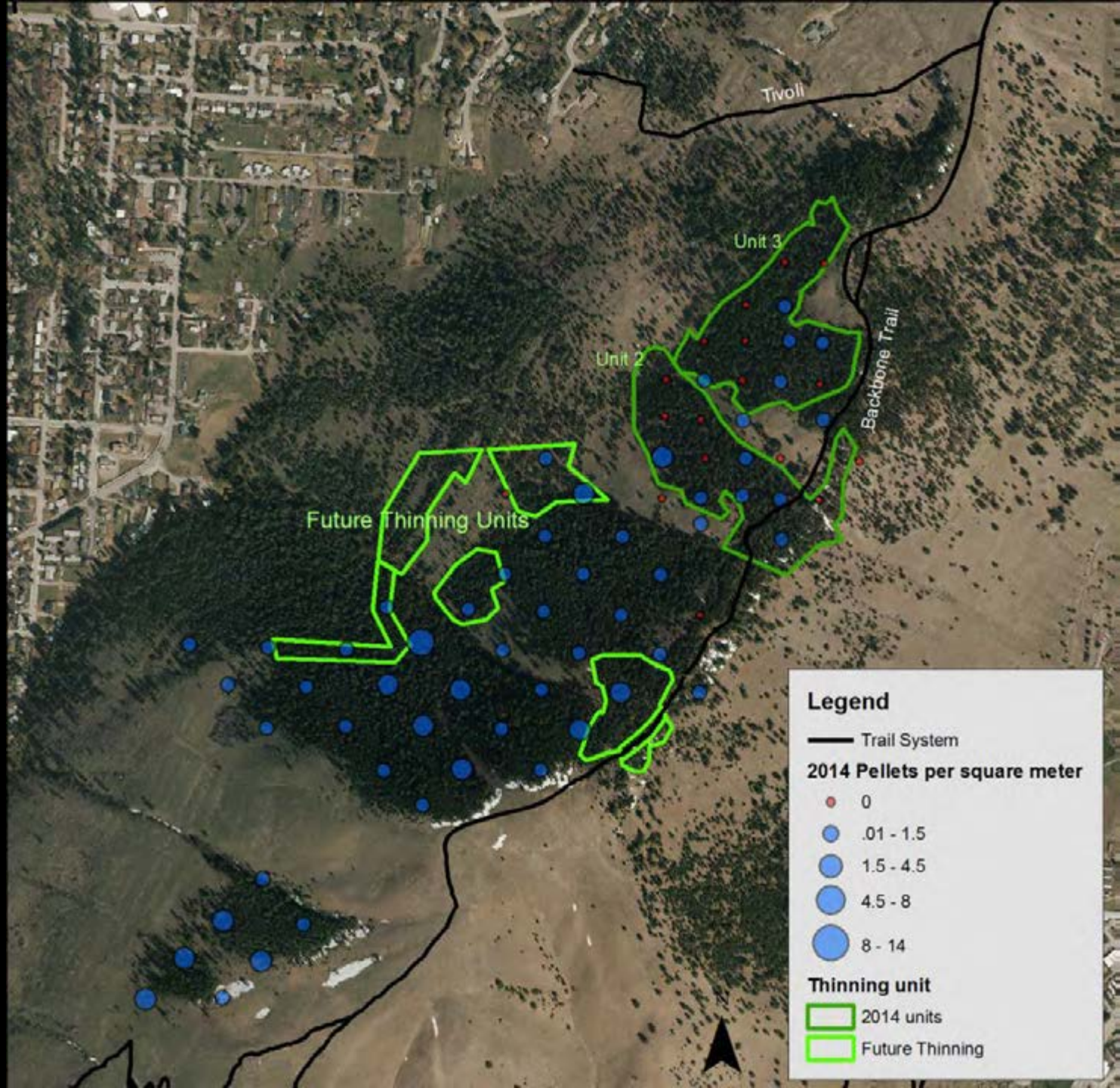
Unit 4 point 704 east....2015





2 units thinned in  
2014

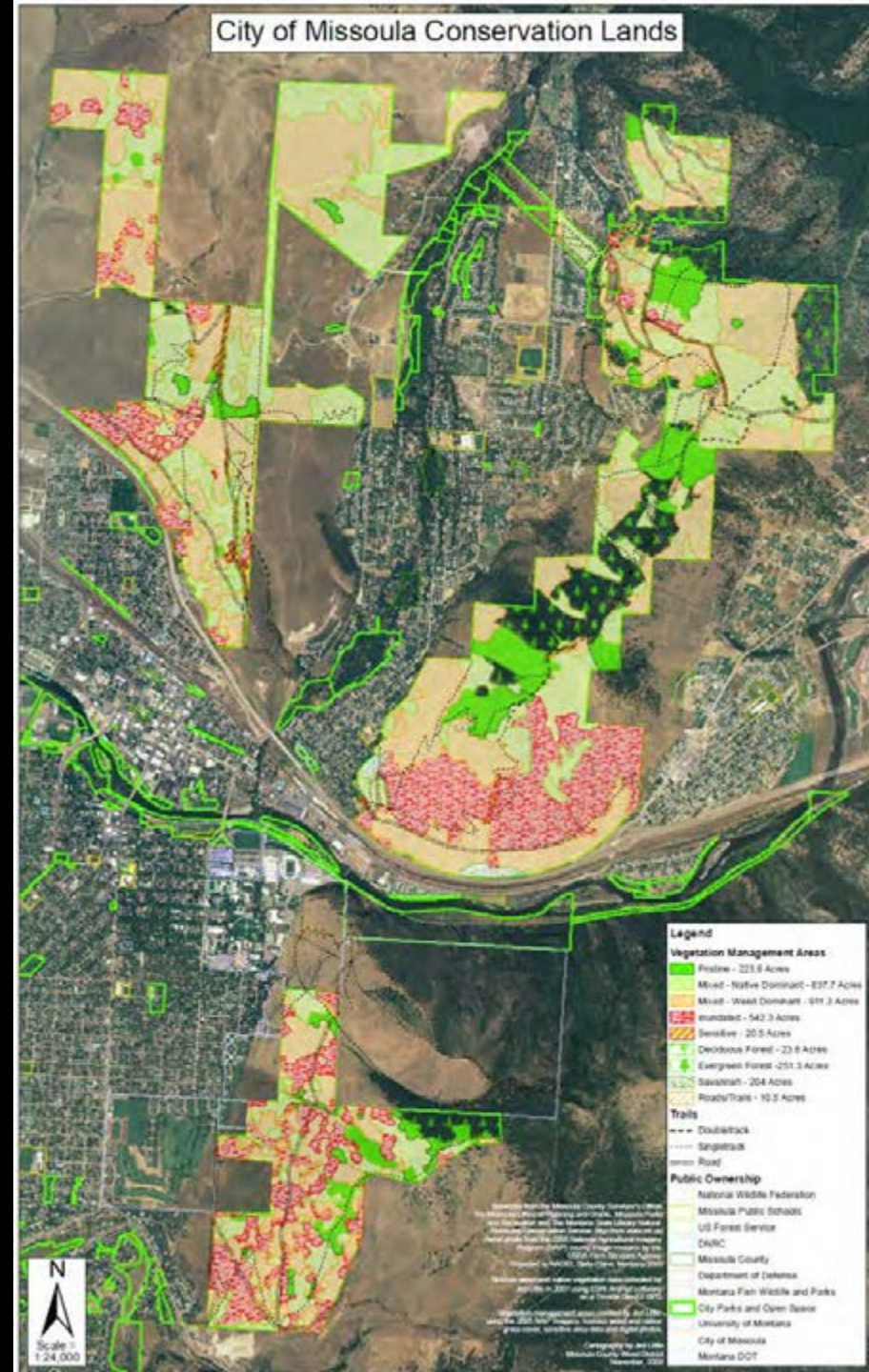
Monitoring  
shows: Elk use of  
these units did  
not decrease  
between winter of  
2013 and winter of  
2014





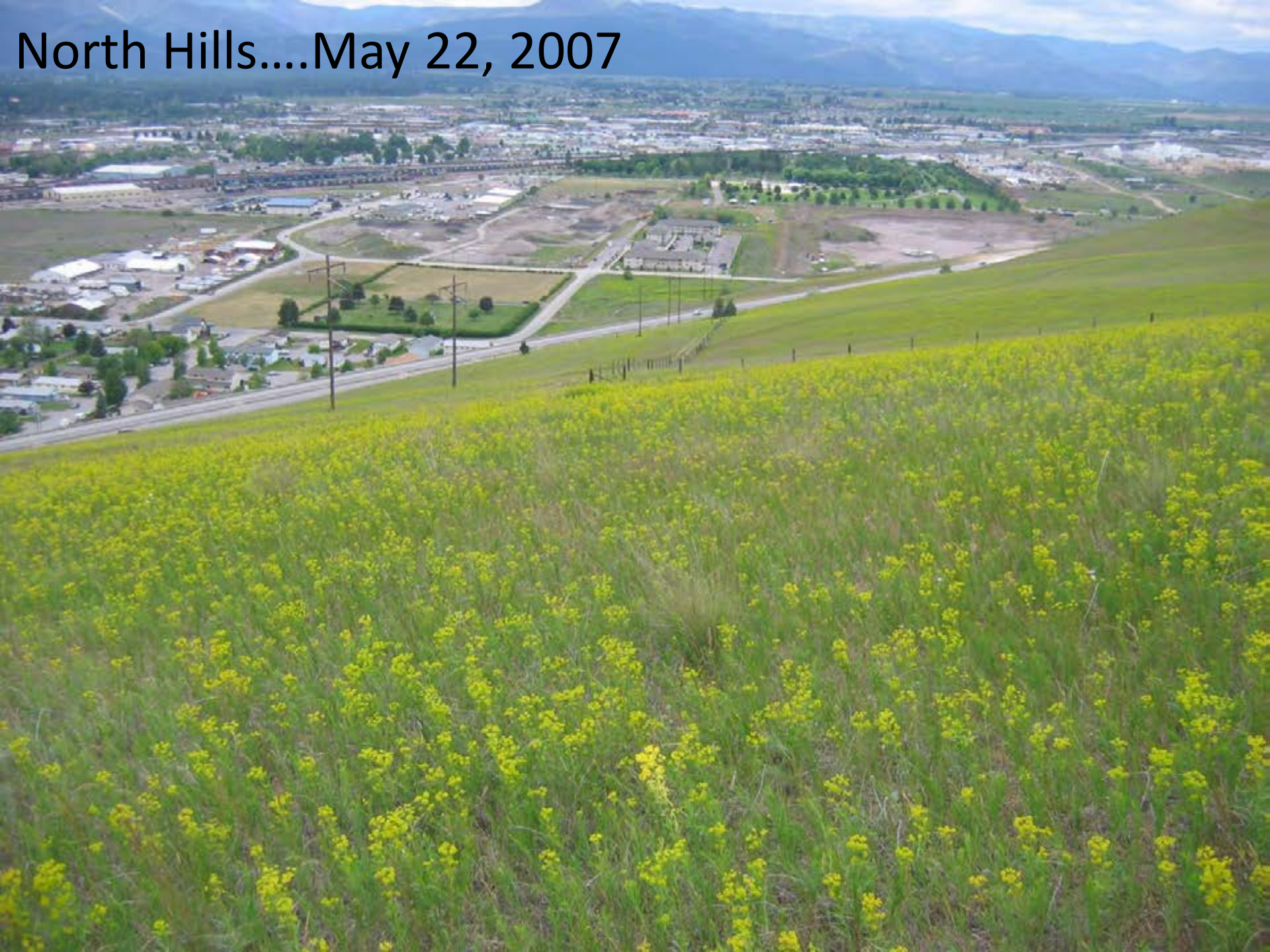
# Remapping Grassland VMAs

- Provides critical information about:
  - Weed densities
  - Location of new invaders
  - Native grass densities
- Depicts a broad interpretation of grassland health
- Sets weed management and restoration goals





North Hills....May 22, 2007





North Hills....May 29, 2015





# *Priorities for 2016*

- Develop a system for CLAC to score and rank newly acquired parcels
  - Provides baseline information on natural, cultural and recreational resources
  - Helps define broad management goals
  - Assists w/ subsequent development of recreational infrastructure
- Develop maintenance plans for Missoula's CL trail system
  - Address deferred maintenance needs
  - Close and restore the most deleterious Non-System Trails
  - Prioritize solutions to major trail issues
- Complete mapping grassland health across CLs.
- Restoration of the Homestead winch shed
- Clark Fork River Access Project Planning and Fundraising



# ***FY 15 Budget Requests***

- CLM Operating Budget: \$24,829
  - Primary use is to provide materials and services for repair and upgrades of trails and trailheads (\$15k) but also add hours to seasonal staff (\$9829)
  - Upgrade CL maps and trail signage, install directional signage across trail system, Improve and maintain TH parking areas.
  - This is a component of the Park Asset Management Plan





# ***THANK YOU***

*Special Thanks to: Msla. Water Quality Dist., Clark Fork Coalition, Msla. Co. weed District, North Msla. Community Development Coalition, Ben Hughes HOA, Mt. DNRC, Mt. Conservation Corps, Landon Edwards and multiple CLM crew members*