Livestock (ERO) & Tillage Assessments (Hangman Creek Watershed - WA) Fall 2012- Spring 2013

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DEPARTMENT OF ECOLOGY State of Washington

Are Livestock a Source?

- Cattle deposit up to 11% of manure and 9% of urine directly in the water
- 40 head can deposit 240 lbs of manure each day
- Access for 6 months equals 43,800 lbs of manure directly in the stream (73 lbs P)
- 7.8 times more waste deposited in the stream corridor than the rest of the pasture
- Does not include sediment and temperature impacts
- Does not include morphology/habitat impacts

Watershed Evaluations:

- What we look for:
  - Bare ground and exposed soil.
  - Contaminated runoff.
  - Slumping streambanks and erosion.
  - Overgrazing of grasses.
  - Feeding near the water.
  - Absence of woody vegetation.
  - Manure accumulations.
  - Extended animal access to water.
  - Livestock paths and trails within riparian areas.

- Information we gather:
  - GPS location.
  - Field observations.
  - Photographs.
  - Water Quality samples at some sites.

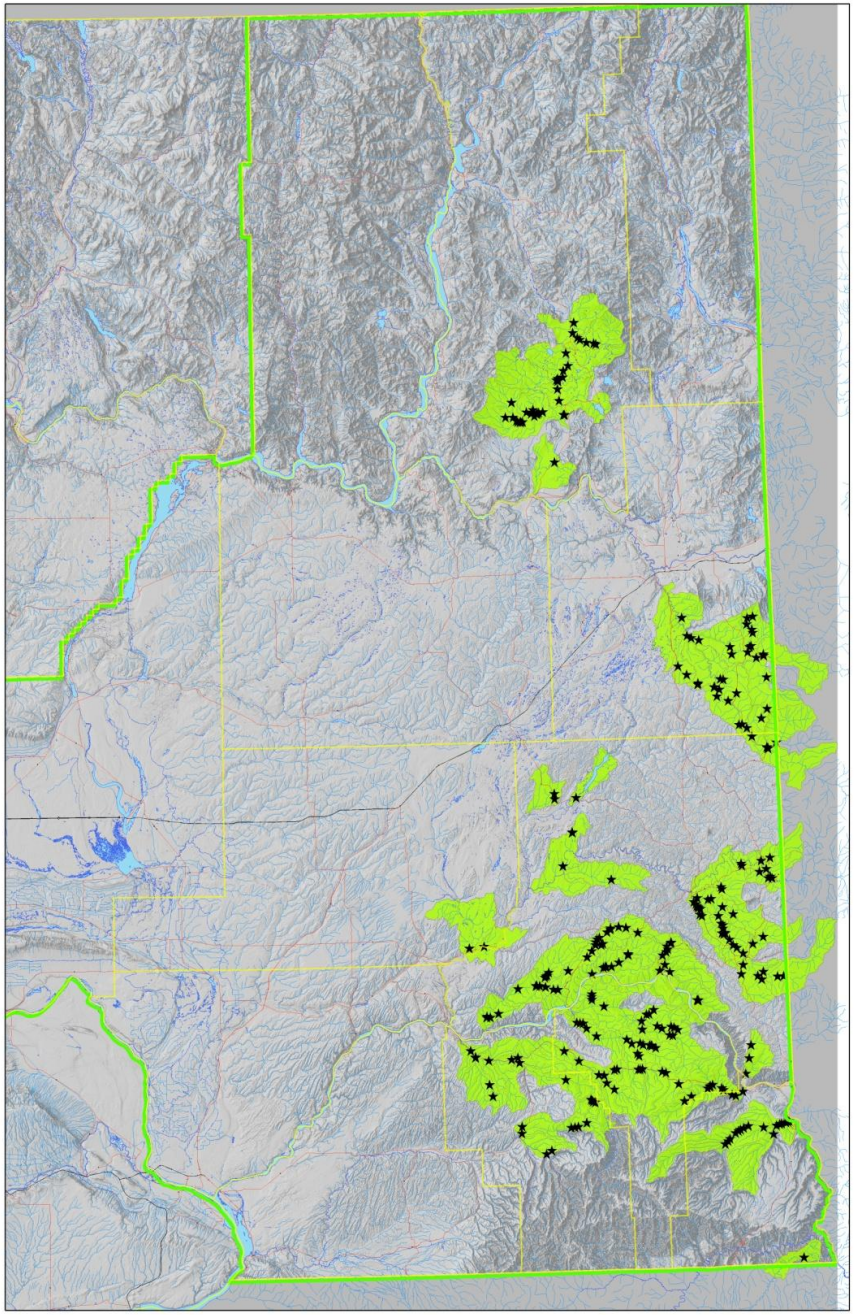
Areas Evaluated:

- NF Palouse R. Watershed
- SF Palouse R. Watershed
- Tucannon/Touchet R. Watersheds
- Asotin Crk. Watershed
- Hangman Crk. Watershed
- Chamokane Crk. Watershed
- Independent Snake R. Tributaries
- Alpowa Crk. Watershed
- Deadman/Meadow Crk. Watersheds
- Palouse-Rock Lake Watershed

All areas evaluated have TMDLs in place or 303(d) listings to address.

Spring 2013 ERO Livestock Water Quality Problem Sites

280+ sites – lots of region not assessed
110 sites – Whitman County



What We Do to Address Water Quality Problems:

- Prioritize sites.
- 2013 contacting 32 of 280+ sites.
- Send initial letter offering technical and financial assistance from a CD or Ecology.
- If first letter not successful, send a second TA/FA letter.
- If TA/FA letters don’t work, escalate (Warning, Order, Penalty).

Hangman Watershed Tillage Treatment Mapping - Goal:

- Try to estimate the percentage of different tillage treatments in the Washington portion of the Hangman Creek Watershed. Use this information to assess BMP implementation.
  - Use GIS and aerial photography to create field data collection maps.
  - Drive the watershed to visually assess tillage treatment types and map locations.
  - Input field data in GIS and generate map to estimate the extent of various tillage treatments.

Challenges:

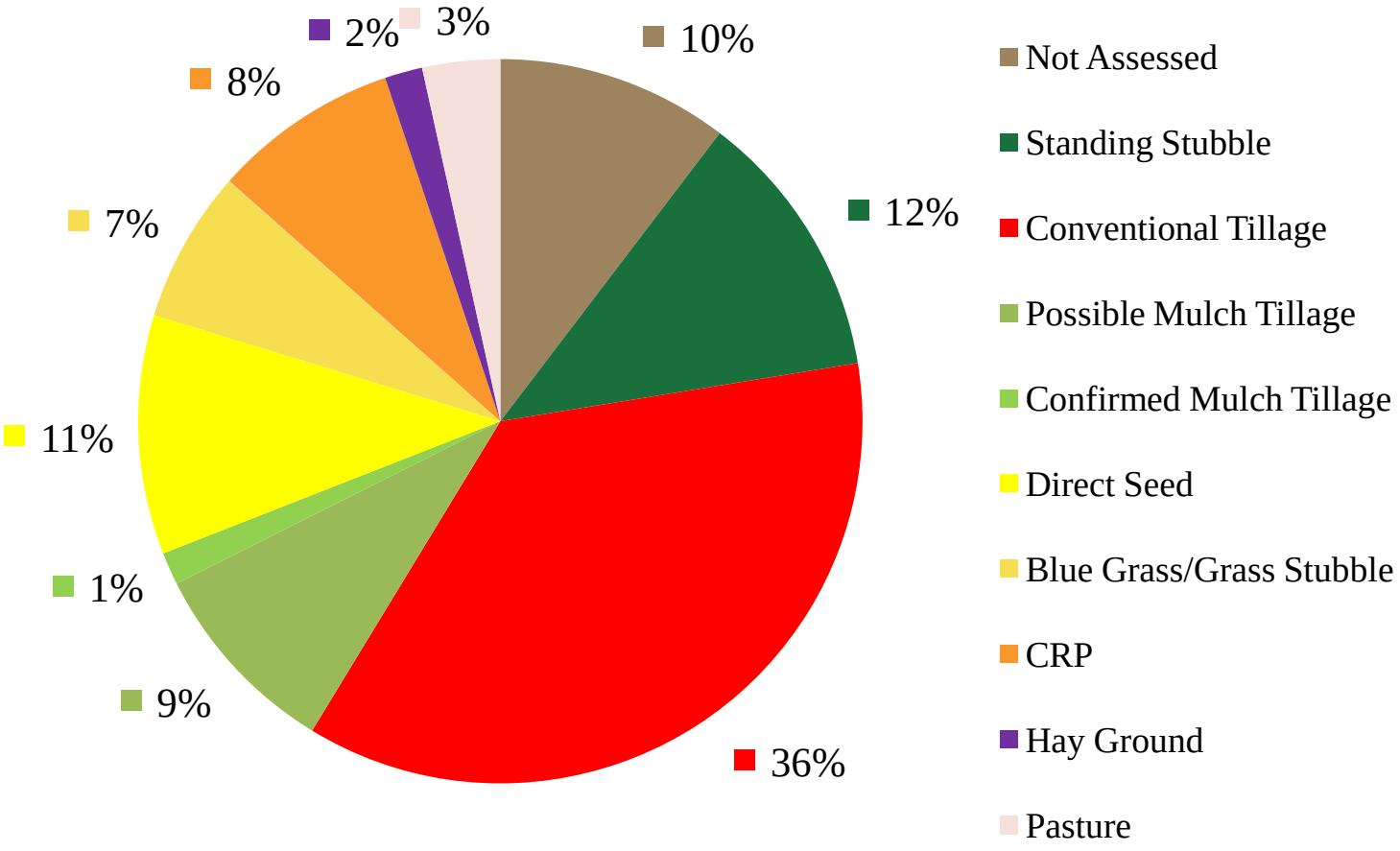
- Not all fields are visible from public roads.
- It was difficult to determine what tillage treatment was used in some fields.
- Fields are treated at different times depending on multiple variables (weather, owner's schedule, crop type, etc.). Fields were in various stages of treatment when we drove the watershed (freshly planted, several weeks new growth, standing stubble, etc.).
- Ran out of time to go back in Spring 2013 to check standing stubble fields.

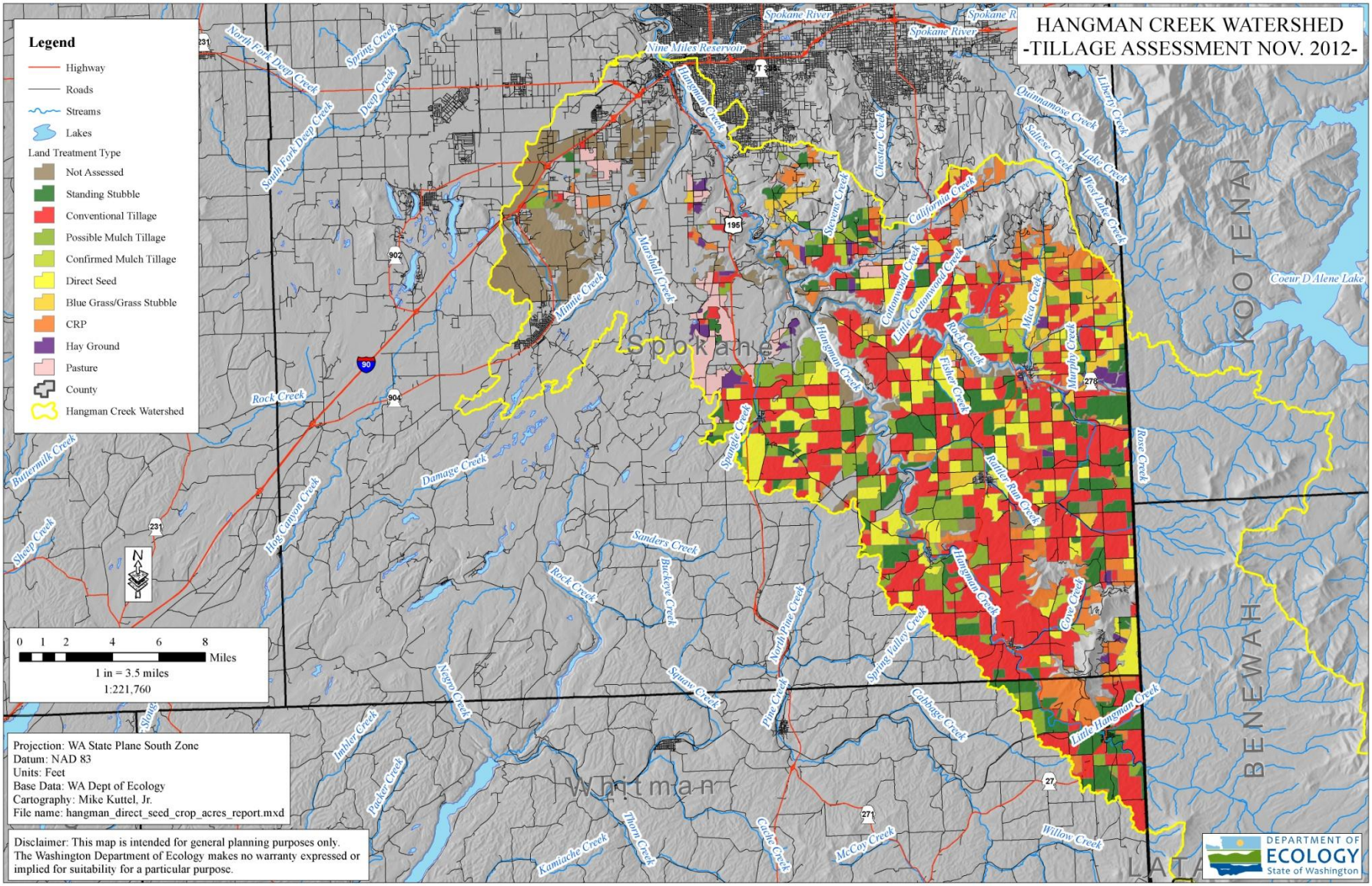
Assumptions:

- Field boundaries match those in aerial photos unless readily apparent to be different in the field.
- If a portion of a field was not visible because of topography, it was assumed to have been treated the same as the visible portion of the field and mapped according to the boundary on the aerial photo.
- Fields seeded with a direct seed drill that were harrowed were recorded as mulch till because the NRCS standard doesn't allow harrowing of no-till fields. Harrowing is considered full-width tillage.


T19NR45E
T20NR45E
T20NR46E
T19NR46E
Crockett
Winslow
Pittmann
Tom Norton
Bancroft
Summer
Roy Saint John
State Line
Griffin
Miles
Farming
Hanson
Sienknecht
Gumm
Tekoa Farmington
Tensed
Roy
Tekoa Oaksdale
Morgan
Farming
Sellice
Dipple
Warner
N Balthis Rd
Cole
Willow Creek
Kammerzell
Skyline Drive
White
Cokely
Doreen
McCoy Creek
Kelley
Kelley Creek
Pine Creek
Auvil
Wagner
Hume
Spring Creek
Black
Reuben Schultz
Zimmerman
Auvil Wagner
Farmington
Reuben Schultz
1 in = 0.6 miles

Results:


Hangman Creek Watershed Tillage Evaluation Nov. 2012
Approx. 90% of Ag Lands Assessed (163,000 of 182,000 acres)
10%
12%
36%
9%
1%
11%
7%
8%
2%
3%
Not Assessed
Standing Stubble
Conventional Tillage
Possible Mulch Tillage
Confirmed Mulch Tillage
Direct Seed
Blue Grass/Grass Stubble
CRP
Hay Ground
Pasture


HANGMAN CREEK WATERSHED
-TILLAGE ASSESSMENT NOV. 2012-
Legend
Highway
Roads
Streams
Lakes
Land Treatment Type
Not Assessed
Standing Stubble
Conventional Tillage
Possible Mulch Tillage
Confirmed Mulch Tillage
Direct Seed
Blue Grass/Grass Stubble
CRP
Hay Ground
Pasture
County
Hangman Creek Watershed
0 1 2 4 6 8 Miles
1 in = 3.5 miles
1:221,760
Projection: WA State Plane South Zone
Datum: NAD 83
Units: Feet
Base Data: WA Dept of Ecology
Cartography: Mike Kuttel, Jr.
File name: hangman_direct_seed_crop_acres_report.mxd
Disclaimer: This map is intended for general planning purposes only.
The Washington Department of Ecology makes no warranty expressed or implied for suitability for a particular purpose.
Spokane
Whitman
KOOTENAI
BENEWAH
Spokane River
Nine Miles Reservoir
Coeur D'Alene Lake
Hangman Creek
Little Hangman Creek
Rock Creek
Deep Creek
Spring Creek
Minnie Creek
Marshall Creek
Stevens Creek
California Creek
Cottonwood Creek
Little Cottonwood Creek
Mica Creek
Fisher Creek
Rattlesnake Creek
Cove Creek
Rose Creek
Damage Creek
Sanders Creek
Buckeye Creek
North Pine Creek
Spring Valley Creek
Cabbage Creek
Willow Creek
McCoy Creek
Kamiache Creek
Thorn Creek
Packer Creek
Inbler Creek
Negro Creek
Squaw Creek
Pine Creek
Hog Canyon Creek
Buttermilk Creek
Sheep Creek
Sponge Creek
Chester Creek
Quinnamose Creek
Saltese Creek
Lake Creek
West Lake Creek
Liberty Creek
Murphy Creek
Slate Creek
90
195
902
904
231
278
27
271
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Future:

- Possibly use Landsat data collected over multiple months to assess tillage with a Normalized Difference Tillage Index (NDTI) method developed by the USDA Agricultural Research Service.
- Possibly use models such as BASINS (EPA) or AnnAGNPS (USDA Annualized AGricultural NonPoint Source model) to estimate pollutant loading.

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