

Challenges in Restoration Across the State of North Dakota

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Carl Piper

- Owner – Piper Land Resource Services, L.L.C.
- M.S. Range Science, NDSU
- Certified Professional in Range Management (CPRM) by Society of Range Management (SRM)
- Consultant / Contractor
- Native Seed Farm

Piper Land Resource Services, L.L.C.

- Restoration and Reclamation
- Natural Resource Consulting
- Land Management
- Seed Sales
- Mapping – GIS

Restoration and Reclamation

- Custom Seeding
- Consulting
- Seed Mixes
- Spraying
- Land Preparation
- GIS

Customers

- BNI Coal
- Southwest Water
- Pipeline Contractors
- NDSU/Forest Service
- GFAFB
- North Dakota Army National Guard
- NRCS
- Private Land Owners

Challenges in Restoration Across the State of North Dakota

- Specifications
- Land Preparation
- Seed
- Weather and Timing
- People

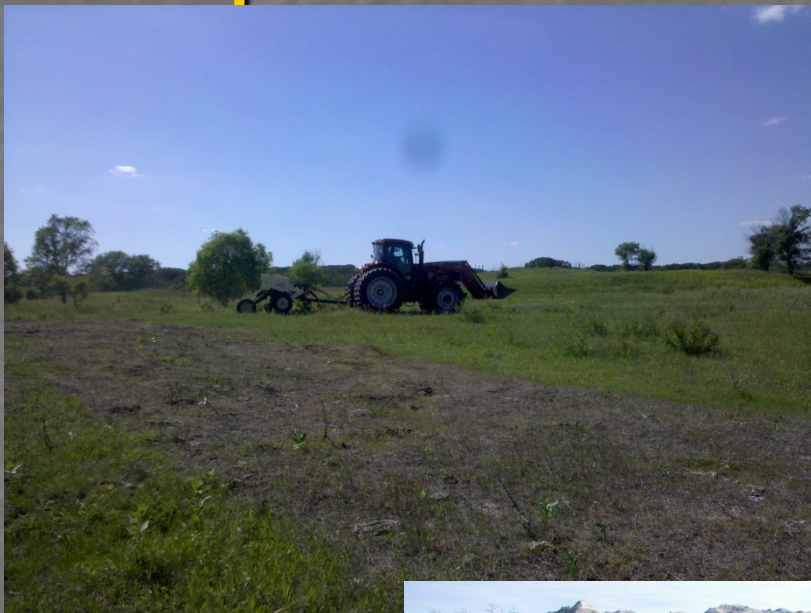
Land Preparation

- Tilled and Packed-Most Pipeline seeding
- No till
 - With or without mowing, grazing, chemical
 - Punch list items
- Chemical kill then seed
 - Recommend 2 applications of Glyphosate
 - Early Summer – Early fall
 - Fixes – Seeding mistakes

Land Preparation



Land Preparation



10/18/2011

Land Preparation



Specifications - Wrong

- Specification taken directly from a contract.
 - 3.1. SOIL PREPARATION
 - When pipeline installation operations have been completed and areas to be seeded have been brought to the proper grade, the pipeline contractor shall **thoroughly till to a depth of 1½ to 2 inches** by disking, harrowing, or by other approved methods **until the condition of the soil is sufficiently pulverized** for planting.

What it Should Read

- 3.1. SOIL PREPARATION
- When pipeline installation operations have been completed and areas to be seeded have been brought to the proper grade, the pipeline **contractor shall prepare a firm seed bed** by cultivating; and harrowing or packing, or by other approved methods until the condition of the soil is sufficiently prepared for planting.

Seed – Species Selection

- Poor species specification – Example
- Water pipelines in North central North Dakota - PLS not specified
 - 4# Rye grass
 - Lawn
 - 6# Kentucky bluegrass
 - Lawn - Invasive
 - 6# Slender wheatgrass
 - Native
 - 6# Brome grass
 - Hayland – Invasive
- Water pipeline in Western North Dakota - PLS not specified
 - ROW requirement - did not address native
 - 20# Smooth brome grass
 - Hayland - Invasive
 - 10# Western wheatgrass
 - Native

Seed – Species Selection

- Currently working on new recommendations for pipeline and small disturbance recovery mixes based on regions of the state.
 - NDSU Extension Service, NRCS, and Piper Land Resource Services, LLC
- There are some sound mixes out there
 - Southwest Water and Bartlett and West have put together a sound mix.
 - Others

Seed – Species Selection

- Region, Soils, and Ecological Sites
 - Sandy
 - Loamy
 - Clayey
- Scope – Purpose
 - Basic restoration – back to what we think it was
 - Recovery - Pipelines and relatively small disturbance
 - Specific purpose
 - Hay
 - Native
 - CRP
 - Public Land
- Adjacent Land Use
 - What affect is our planting going to have on adjacent land?
 - What affect is adjacent land going to have on our planting?

Seed

- Species selection
 - Varieties
- Quality
 - Pure Live Seed (PLS)
 - Cleaned
 - De-Bearded
- Placement
 - ¼ inch – rule of thumb

Seed - Varieties

- Proven Commercial Seed
 - Selected based on vigor and production
 - Fit a relatively large growing region
- Locally Sourced Seed – (Minnesota)
 - Collect and increase seed found locally
 - Specific to the area
 - Vigor and production ???

Seed Quality

- Clean
- De-bearded
- Free of weeds
- Pure Live Seed (PLS)
 - Important
 - Most seed purchased in this way
 - Order and pay for PLS
NOT BULK



Seed Quality

CUSTOMER NAME: Piper Land Resource Services
 LOT NUMBER: 26138
 PROJECT NAME: Keene Pipeline- Native Mix

ACRES: 1
 SEEDING RATE/ACRE: 12.08

SPECIES	LOT NUMBER	% MIX	ACTUAL PURITY	GERM	HARD/ DORMANT	TOTAL VIABLE	ORIGIN	LBS/BAG	PLS/BAG
Lodorm Green Needlegrass	1480kmgroa	20.69	97.42	20	72	92	CAN	2.57	2.30
Certified Rosana Western Wheatgrass	1356636	33.11	88.53	89	1	90	WA	4.52	3.60
Bison Big Bluestem	a3029	15.68	85.89	74	21	95	MX	2.21	1.80
Butte Sideoats Grama	m1543	15.85	80.61	94	0	94	MX	2.38	1.80
Certified Revenue Slender Wheatgrass	17918ava0457	3.41	99.29	92	5	97	CAN	0.42	0.40

OTHER CROP:	0.01		
INERT MATTER:	11.13	TOTALS/BAG:	12.08
WEED SEED:	0.11		9.90
TEST DATE:	Jan-13		
NOXIOUS WEED SEEDS:	NONE FOUND	PLS FACTOR:	0.8194
NET WEIGHT:	12.08	BULK POUNDS	
TOTAL PLS:	9.90	PURE LIVE SEED POUNDS	

MILLBORN SEEDS, INC. - 1335 WESTERN AVE. - BROOKINGS, SD 57006 - AMS #704

The seller warrants that this seed conforms to the label description as required by federal and state seed laws.
 We make no other warranties, expressed or implied. Liability for any damages with respect to the sale of this seed
 is limited to the purchase price of the seed. This remedy is exclusive. In no event shall the seller be liable for any
 incidental or consequential damages or losses.

Seed Placement

- Preferred
 - ¼" deep
- Critical
 - **DO NOT SEED TOO DEEP**
 - Will result in diminished stands
 - Soil Preparation
 - Firm Seed Bed
 - Equipment
 - Grass Drill with Depth Bands
- Acceptable
 - OK to see some seed on the surface

Seed Placement



Depth Bands

and

Firm Seed Bed



Seed Placement



Seed Placement



Acceptable



Seed Placement



Weather and Timing



Weather and Timing

- Spring
 - Normally mid April to mid June
 - Can continue into mid July or later (often recommended) if adequate moisture and favorable forecast
- Fall Dormant
 - Have soil temps under 50° F and forecast for cooler trend when seeding commercial projects such as pipelines and construction disturbance
 - Have soil temps near 45° F when seeding large areas such as fields
- Late Summer
 - Most risky
 - Mid August to early September
 - Risk of immature seedlings succumbing to winter kill without adequate establishment due to dry conditions

Weather and Timing

Mid-July seeding 2013 – Sentinel Butte, ND



People

- Knowledge
 - Range sites / Soil types
 - Plant communities
 - Adaptable, vigorous, and sustainable varieties
- Experience
 - Dates are relative
 - Seed when conditions are favorable
 - The smaller or narrower the disturbance area the more you can push it – The purpose is recovery. The adjacent will do the rest.
- Savvy
 - Anyone can run a drill
 - Not everyone can be successful

Consulting Resources

- **NRCS** is a great resource
 - Local offices are dealing with seeding guidelines reflective of EQIP, CRP, and WRP contracts for seeding large fields
 - If you are under NRCS program contract you need to abide
- **NDSU**
 - Currently doing pipeline research near Tioga, ND
 - **NRM** Department, Rangeland Extension excellent resource
- **Certified Professional in Range Management (CPRM)**
 - Overseen by Society for Range Management
 - Certifies professionals who have experience, education, and have passed certification testing as well as further credits in rangeland management



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