GUNDERSON | PALMER | NELSON | ASHMORE LLP

506 Sixth Street
Post Office Box 8045
Rapid City, South Dakota 57709
Main: (605) 342-1078
Fax: (605) 342-9503

www.gpna.com

May 9, 2024

Matthew E. Naasz
Email: mnaasz@gpna.com
Direct Dial: (605) 719-3424

Roberta Hudson
Engineering Manager I
Department of Agriculture and Natural Resources
Minerals and Mining Program
Joe Foss Building
523 East Capitol Avenue
Pierre, SD 57501-3182

Re: Lotus Minerals, LLC
GPNA File No. 16461.0002

Dear Ms. Hudson:

On behalf of our client, Lotus Minerals, LLC ("Lotus") we are submitting this Exploration Notice of Intent (EXNI) and supplemental information.

At this time, the application for the EXNI only includes private land in Custer County, South Dakota.

Included in this Exploration Notice of Intent are the following:

- The EXNI application form - SD form 0429;
- A Plan of Reclamation Pursuant to Section 8 and figures referenced therein;
- A Topographic Map Pursuant Section 9;
- A fee of $250.00 pursuant to Section 17 in check form;
- A completed Certification of Applicant form for Lotus Minerals, LLC;
- Confidential Figures 5 – 7;
- Confidential Resolution of Board of Directors of Iris Metals, Inc.; and
- Information provided from the NRCS office regarding the reclamation seed plan for the subject properties.

All reasonable efforts have been made to verify the accuracy and validity of information regarding the proposed activities for exploratory drilling and associated reclamation.

If there are any questions or concerns, please do not hesitate to contact me. Thank you in advance for your time and attention.

Sincerely,

Matthew E. Naasz

MEN:aa

Department of Agriculture and Natural Resources
Minerals and Mining Program
523 East Capitol Avenue
Pierre, South Dakota 57501-3182
605 773-4201; Fax: 605 773-5286

NOTICE OF INTENT TO CONDUCT MINERAL EXPLORATION OPERATION (Excluding Uranium)

Pursuant to SDCL 45-6C

Operator's name: *Lotus Minerals L.L.C.*

Mailing Address:
25497 Flynn Creek Road
Custer
South Dakota
57730

Telephone: *+1 605 517 1012*

Resident agent (if out-of-state corporation):

Resident agent address:

Telephone:

Legal description of area to be explored by Section, Township, and Range:

Section 35 Township 3 South, Range 3 East Black Hills Principal Meridian

County: *Custer County*

Give a brief description of the type of exploration to be conducted. Include a list of all minerals to be explored and a description of methods (e.g. drill rig type, number of holes to be drilled, number of drill pads to be constructed, proposed depth for each test hole, length of existing access roads and/or new access road construction).

New drill pads:

Lotus Minerals L.L.C., wishes to conduct exploratory drilling for pegmatite minerals particularly spodumene. The exploration will be by means of Diamond Core Drilling. Drilling is proposed on one property:

1. *Land owned by Brian D. Stewart.*

There are 10 drill pads proposed. Up to 10 drill holes will be drilled on one drill pad, but the total number of holes will be dependent on the results of the first hole(s) drilled. Holes will be a maximum depth of 1250 feet deep dependent on geology and test results. Any new access points will be reclaimed in accordance with the reclamation plan. See Figure 4, Figure 5, Figure 6, and Figure 7 for drill site locations.

Flexibility has been built into this application to ensure the correct drill holes can be drilled in the correct places, as the geometry of the pegmatites is little known prior to drilling. As such, geological interpretation will be updated as new drill data is acquired which will mean some drill pads will not be required. With more flexibility (10 holes per pad) Lotus Minerals L.L.C. will minimize disturbance by not constructing drill pads that do not need to be drilled. This will also provide flexibility if a drill hole has issues such as hole collapse or intercepted voids which must be plugged and re drilled to get to the target depth.

Table 1: Proposed number of new drill pads, drill holes and new trill track

Property	New Pads	Holes	m2 Pads	m Drill Track	m2 Drill Track
Brian Stewart	10	100*	1000	200**	800**

**This number is the maximum number of holes that may be drilled assuming the request to drill up to 10 holes per pad is approved, but as results are analysed this may be less if no further drilling is warranted on that drill pad.*

*** There are existing drill tracks to the old drill holes drilled on the property as well as new tracks which will need to be cleaned up by an excavator to mobilize drill equipment for this program.*

Additional Information attached:

1. *Water Well location*
2. *Diamond core drilling methodology*
3. *Location Plans*

Date exploration will commence:

Pursuant to SDCL 45-6C-13 exploration will commence thirty days after filing the Notice of Intent or upon receipt of the written restrictions provided for in SDCL Sections 45-6C -10 to 45-6C-12 inclusive

What legal authority does the operator have to conduct exploration on the above-described land? Include a copy if available.

__ Deed _X_ Lease _____ US Forest Service Permit ____ Pending US Forest Service Permit _____ Other

Will the operator conduct uranium exploration?_____Yes _X_ No If yes, a permit pursuant to SDCL 45-6D must be obtained.

INSTRUCTIONS:

Please reference SDCL 45-6C. This Notice of Intent must be accompanied by:

1. A plan of reclamation pursuant to Section 8.
2. A topographic map pursuant to Section 9.
3. A fee of $250 payable to the Department of Agriculture and Natural Resources pursuant to Section 17.
4. A surety in an amount to be determined by the department pursuant to Section 19.
5. Any written landowner consultations giving alternative preferences for the reclamation of the affected land pursuant to Section 16.

Applicant affirms that the surface owner has been notified of the proposed mineral development and that said surface owner is aware of his rights to compensation for damages to property pursuant to SDCL 45-5A. Applicant hereby affirms that the mineral exploration will be conducted pursuant and subject to the provisions of SDCL 45-6C, and all regulations promulgated thereunder, that he will grant access to the SD Board of Minerals and Environment or its agents to the area under notice from the date of the notice and thereafter to assure compliance with the provisions of SDCL 45-6C.

I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Nathan Channing
Signature

Date: 05/08/2024

Title: Agent

STATE OF South Dakota

COUNTY OF Pennington

On this 8th day of May, 20 24, before me personally appeared Nathan Channing, who acknowledged himself to be the Agent
(Title)

For Lotus Minerals, LLC
.
and that he is authorized to execute the Notice of Intent for the(Operator)
purposes contained therein

Anna Applegate
Notary Public

My Commission Expires: 9/11/2025

SEAL ANNA APPLEGATE NOTARY PUBLIC SOUTH DAKOTA

FOR DEPARTMENT USE ONLY

DATE APPROVED: BOND AMOUNT: EXNI NUMBER:
Chairman, SD Board of Minerals & Environment

Department of Agriculture and Natural Resources
Minerals and Mining Program
523 East Capitol Avenue
Pierre, South Dakota 57501-3182
605 773-4201; Fax: 605 773-5286

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EXPLORATION RECLAMATION PLAN

Pursuant to SDCL 45-6C-8 and 45-6D-9

In preparing this reclamation plan, please address each item in detail, referencing SDCL 45-6C-8 and 45-6D-9. Please refer to the reclamation standards outlined in SDCL 45-6C-27 through 45-6C-34, SDCL 45-6D-33 through 45-6D-39, and the state's hole plugging regulations as detailed in ARSD 74:11.

1. Describe the type of reclamation the operator proposes to achieve in the reclamation of the affected land.

   (See reclamation plan attached)

2. Provide a proposed timetable for seeding and replanting indicating when and how the reclamation plan will be implemented. Such timetable shall be developed in consultation with the County District Conservationist as to the natureof the soils and native vegetation in the area of the proposed operation. These recommendations shall be followed, if anyare provided, and copies of all correspondence shall be provided to the Department.

   (See reclamation plan attached)

3. Describe how the reclamation plan will rehabilitate the affected land.

   (See reclamation plan attached)

4. Describe the anticipated temporary and permanent plugging and capping procedures to be used. Please refer to SDCL45-6C-28 through 45-6C-30, SDCL 45-6D-33 through 45-6D-35, and the state's hole plugging regulations as detailed inARSD 74:11.

   (See reclamation plan attached)

5. Provide the estimated cost of implementing and completing the proposed reclamation, and the estimated cost of plugging and sealing each test hole.

   (See reclamation plan attached)

I declare and affirm under the penalties of perjury that this claim (petition, application, information) has been examined by me, and to the best of my knowledge and belief, is in all things true and correct.

Date: 05/08/2024

Signature: Matthew Clausing

Title: Agent

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RECLAMATION PLAN

1. **Describe the type of reclamation the operator proposes to achieve in the reclamation of the affected land.**

The proposed exploratory drilling project will be conducted entirely on private land in Custer County, South Dakota on land owned by Brian Stewart. All surface reclamation (regarding contouring, travel route rehabilitation, seeding, etc) travel restrictions and time will be as directed by Lotus minerals LLC in accordance with SDCL 45-6C-16

Lotus minerals LLC and its contractors will strive to minimize the surface impact of the exploratory drilling program by minimizing the disturbed area and maintaining open communication with DANR. Reclamation will continue during the course of the project following completion of drilling.

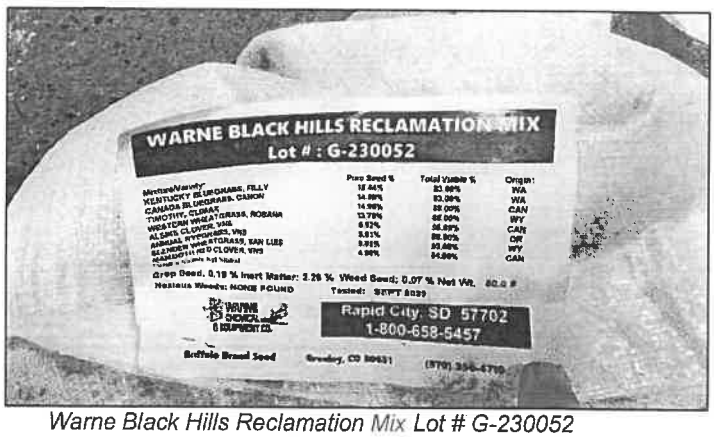
In the event that bones, artifacts, foundation remains, or other evidence of previous unrecorded past human use is uncovered during exploration, the area will be avoided, and the South Dakota Archaeological Research Center will be contacted.

2. **Provide a proposed timetable for seeding and replanting indicating when and how the reclamation plan will be implemented. Such timetable shall be developed in consultation with the County District Conservationist as to the natureof the soils and native vegetation in the area of the proposed operation. These recommendations shall be followed, if anyare provided, and copies of all correspondence shall be provided to the Department.**

Replanting and reseeding will take place following recontouring and regrading of disturbed area as seasonally acceptable. All reclamation processes, seed mixes, seasonal constraints and timing and guidance will be based on Custer County NRCS or DANR guidance and requirements. To the extent not otherwise controlled by DANR, the land will be reclaimed as directed by Lotus minerals LLC, pursuant to SDCL 45-6C-16

Species	Pure Seed Percent
Kentucky Bluegrass (Poa pratensis)	19.44
Canada Bluegrass (Poa compressa)	14.96
Timonthy (Phleum pratense)	14.96
Western wheatgrass (*Pascopyrum smithii*)	13.78
Alsike Clover (Trifolium hybridum)	9.92
Annual rye (*Lolium multiflorum*)	9.81
Slender wheatgrass (*Elymus trachycaulus*)	9.65
Mammoth Red Clover (Trifolium pratense)	4.96

Application Rate: 20 Pounds Live Seed/Acre



Warne Black Hills Reclamation Mix Lot # G-230052

3. **Describe how the reclamation plan will rehabilitate the affected land.**

The goal of the reclamation process will be to restore surface impacts of the proposed exploratory drilling program to pre-project conditions, or as near as possible. Any deviation from this objective will be guided by respective property owner Brian Stewart as the surface owner, and DANR. Reclamation actions will include recontouring to conform with surrounding topography where practical. Stockpiled topsoil will be used where available. Seeding with local native species and/or growth medium may be used to encourage regrowth of native species, the use of which will be directed by DANR.

Reclamation will be completed within 12 months of completion of all exploration activities under this EXNI

4. **Describe the anticipated temporary and permanent plugging and capping procedures to be used. Please refer to SDCL45-6C-28 through 45-6C-30, SDCL 45-6D-33 through 45-6D-35, and the state's hole plugging regulations as detailed inARSD 74:11.**

Plugging, capping and sealing of test holes will be consistent with ARSD 74:11:08. Pursuant to ARSD 74:11:08:04, test holes that encounter no water or only low-permeability formation such as clays, shales and till will be back filled to restore natural condition as nearly as possible. Except as provided in ARSD 74:11:08:05 to ARSD 74:11:07:02, inclusive, the test hole plugging method will return the excess drill cuttings to the drill hole to a point not less than eight feet below the ground surface. Back fill material will be free of contamination and have a permeability equal to or less than the permeability of the formations encountered in the borehole. A no degradational nonslip plug will be placed at a point not less than eight feet below the ground surface, and a five foot column of cement grout will be placed above the plug. Topsoil or material representative of the undisturbed surface material will be tamped into the upper three feet of the drill hole.

In some instances, an RC (Reverse Circulation) percussion drill hole may be drilled as a pre collar for the Diamond Core drill rig to run in and complete. This is in cases where the target pegmatite is deep, and a cheaper quicker method of drilling is required in the top section. The PVC collar will be temporarily capped with a PVC cap until the Diamond drill rig can set up and drill on to completion.

In the unlikely event that a drill hole needs to remain open for more than 30 days for down hole data collection purposes, Lotus minerals LLC will apply in writing to DNAR for permission to temporarily keep the test hole open.

5. **Provide the estimated cost of implementing and completing the proposed reclamation, and, the estimated cost of pluggingand sealing each test hole.**

Lotus minerals LLC will place a statewide surety bond of $20,000 in lieu of drill program specific surety bonds with the state of the South Dakopta prior to project commencement (SDCL 45-6C-19)

CONFIDENTIAL

Additional Information:

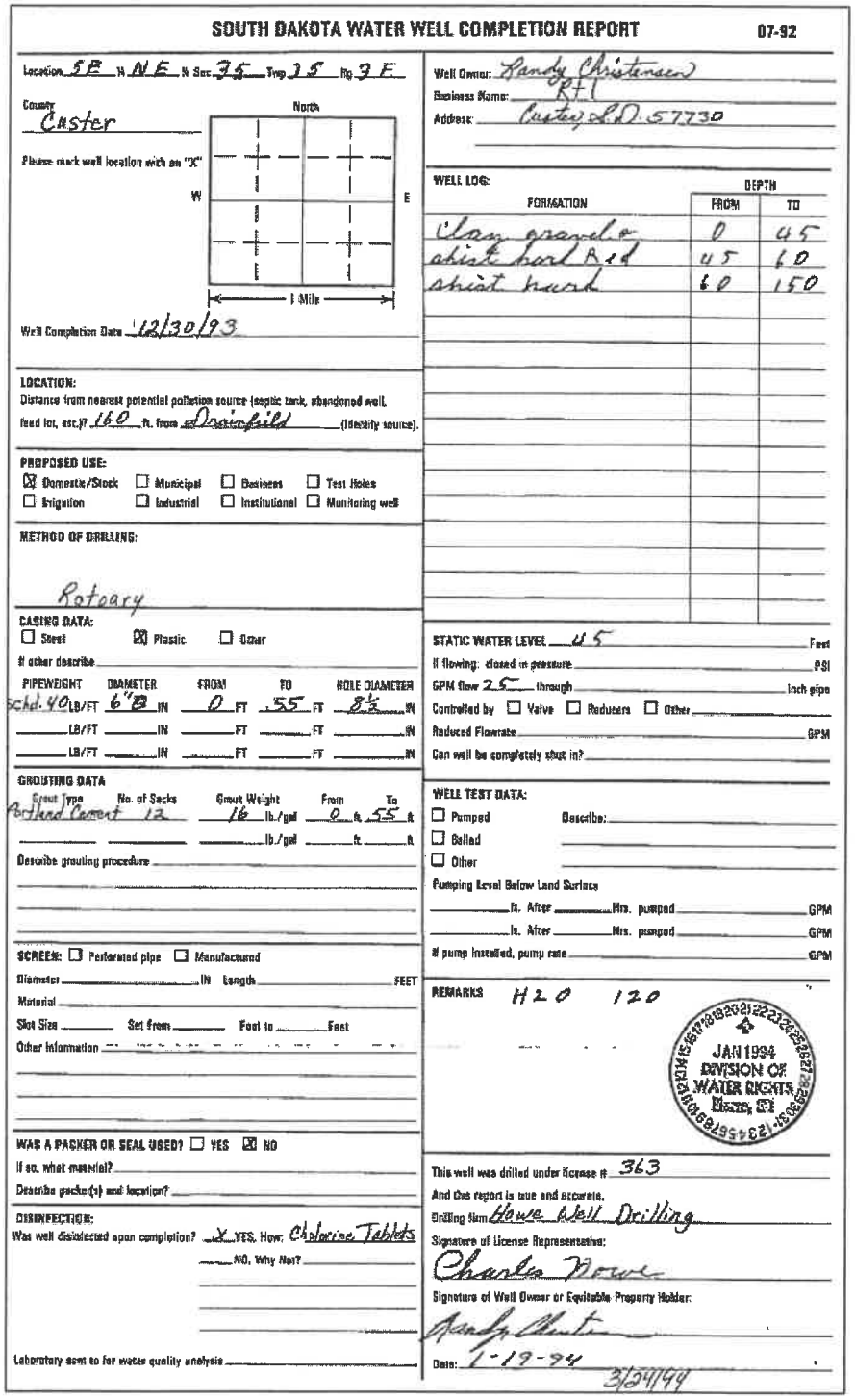
The following figures are attached:

1. Water well location.

Note: in investigation with the original well driller Charles Howe, there is no well bore on this property. The wrong section is recorded on the well bore log (recorded as section 35 and should have been section 2).

On the South Dakota Department of Agriculture and Natural Resources web site there is a water well located on Brian Stewarts property. The location plan and completion report, showing the known water wells in the vicinity of the exploration area are shown in Figure 1 and Figure 2 below. Lotus Minerals staff tried unsuccessfully to locate the well and reached out to the original well borer Charles Howe of Howe Well Drilling, who indicates the well was on another property in a different section.

Figure 1: Well Bore INCORECT location



SOUTH DAKOTA WATER WELL COMPLETION REPORT 07-92

Location SE ¼ NE ¼ Sec. 35 Twp 15 Rg 3 E

County Custer

Please mark well location with an "X"

North / W / E / 1 Mile

Well Completion Date 12/30/93

Well Owner: Randy Christensen RT 1

Business Name:

Address: Custer, S.D. 57730

WELL LOG:

FORMATION	DEPTH FROM	DEPTH TO
clay gravel	0	45
shist hard Red	45	60
shist hard	60	150

LOCATION:

Distance from nearest potential pollution source (septic tank, abandoned well, feed lot, etc.)? 160 ft. from Drainfield (identify source).

PROPOSED USE:

☒ Domestic/Stock ☐ Municipal ☐ Business ☐ Test Holes
☐ Irrigation ☐ Industrial ☐ Institutional ☐ Monitoring well

METHOD OF DRILLING:

Rotoary

CASING DATA:

☐ Steel ☒ Plastic ☐ Other

If other describe

PIPE WEIGHT	DIAMETER	FROM	TO	HOLE DIAMETER
Schd. 40 LB/FT	6"0 IN	0 FT	55 FT	8¼ IN
LB/FT	IN	FT	FT	IN
LB/FT	IN	FT	FT	IN

GROUTING DATA

Grout Type	No. of Sacks	Grout Weight	From	To
Portland Cement	12	16 lb./gal	0 ft.	55 ft.
		lb./gal	ft.	ft.

Describe grouting procedure

SCREEN: ☐ Perforated pipe ☐ Manufactured

Diameter IN Length FEET

Material

Slot Size Set from Feet to Feet

Other information

WAS A PACKER OR SEAL USED? ☐ YES ☒ NO

If so, what material?

Describe packer(s) and location?

DISINFECTION:

Was well disinfected upon completion? X YES. How: Chlorine Tablets

NO. Why Not?

Laboratory sent to for water quality analysis

STATIC WATER LEVEL 45 Feet

If flowing: closed in pressure PSI

GPM flow 2.5 through Inch pipe

Controlled by ☐ Valve ☐ Reducers ☐ Other

Reduced Flowrate GPM

Can well be completely shut in?

WELL TEST DATA:

☐ Pumped Describe:

☐ Bailed

☐ Other

Pumping Level Below Land Surface

ft. After Hrs. pumped GPM

ft. After Hrs. pumped GPM

If pump installed, pump rate GPM

REMARKS H20 120

JAN 1994 DIVISION OF WATER RIGHTS Pierre, SD

This well was drilled under license # 363

And this report is true and accurate.

Drilling firm Howe Well Drilling

Signature of License Representative:

Charles Howe

Signature of Well Owner or Equitable Property Holder:

Randy Christensen

Date: 1-19-94

3/24/94

Figure 2: Well Bore log with incorrect section location details.

2. Diamond core drilling methodology

a) Diamond core drilling does use water ("drill mud") pumped down through the drill rods and returned up the annulus of the drill hole with drill cuttings. The cuttings will be removed from the drill mud by being pumped through a "solids control unit", and the drill mud re-used by being pumped back down the hole.

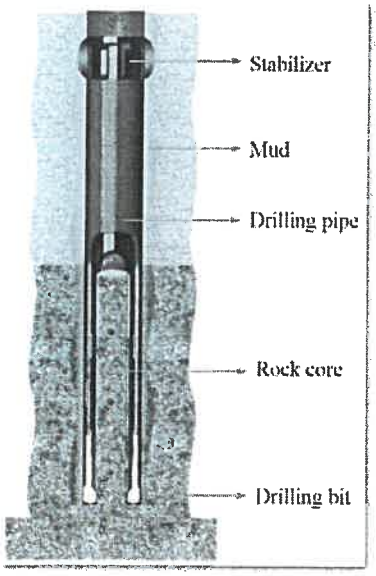


Figure 3: Diamond core drilling cross section

b) Additives may be added to the drill mud to change the viscosity, lubricate the bit, minimize losses to formation and assist in bringing cuttings to surface. The additives will be polymer passed and nontoxic to the environment. Drill cuttings will be added to rehabilitation material and dispersed on site during the reclamation process.

c) Lotus Minerals shall notify the department, in writing, when exploration drilling penetrates an aquifer. Notification shall be provided as soon as possible, but not more than 90 days after penetration of the aquifer. Notification shall include the location of the test hole penetrating the aquifer.

d) The drill core will be taken to a core shed facility for logging and sampling. One half of the core will be sent away to the laboratory for analysis.

e) The project shall be conducted and reclaimed in such a manner as to prevent any violation of the beneficial uses of specified water quality of any water resources in the area.

f) Any Discharge from site will shall be directed into a settling pond or flat vegetated area to allow suspended solids to settle out.

g) Lotus minerals LLC will construct all roads and trails developed for the exploration project to minimize sedimentation and erosion by the placement of water bars and similar structures, road placement on the contour, revegetation of roadwork and embankment slopes or by using other methods in accordance with SDCL 45-6C-32.

h) Topsoil will be salvaged and stockpiled for later use in reclamation.

i) Drill returns will be captured in a mud pit and or mud tanks and recirculated down the hole. No drilling fluids will be discharged overland or into waterways.

j) Mud pits will be constructed away from highwalls.

k) Weed control will be established up to 50 feet from disturbed areas and shall continue until the EXNI is released of reclamation liability by the Board of Minerals and Environment.

l) Weekly reporting shall be provided to the department stating when and where drill holes will be drilled.

m) Lotus LLC shall maintain a 50-foot operational buffer from any existing private wells.

n) If casing is used it shall be removed if possible or cut off at least 1 foot below surface.

o) If artifacts, bones, foundation remains or other historical unrecorded human activity is discovered during the exploration program, activities will be halted, and the State Archaeologist notified.

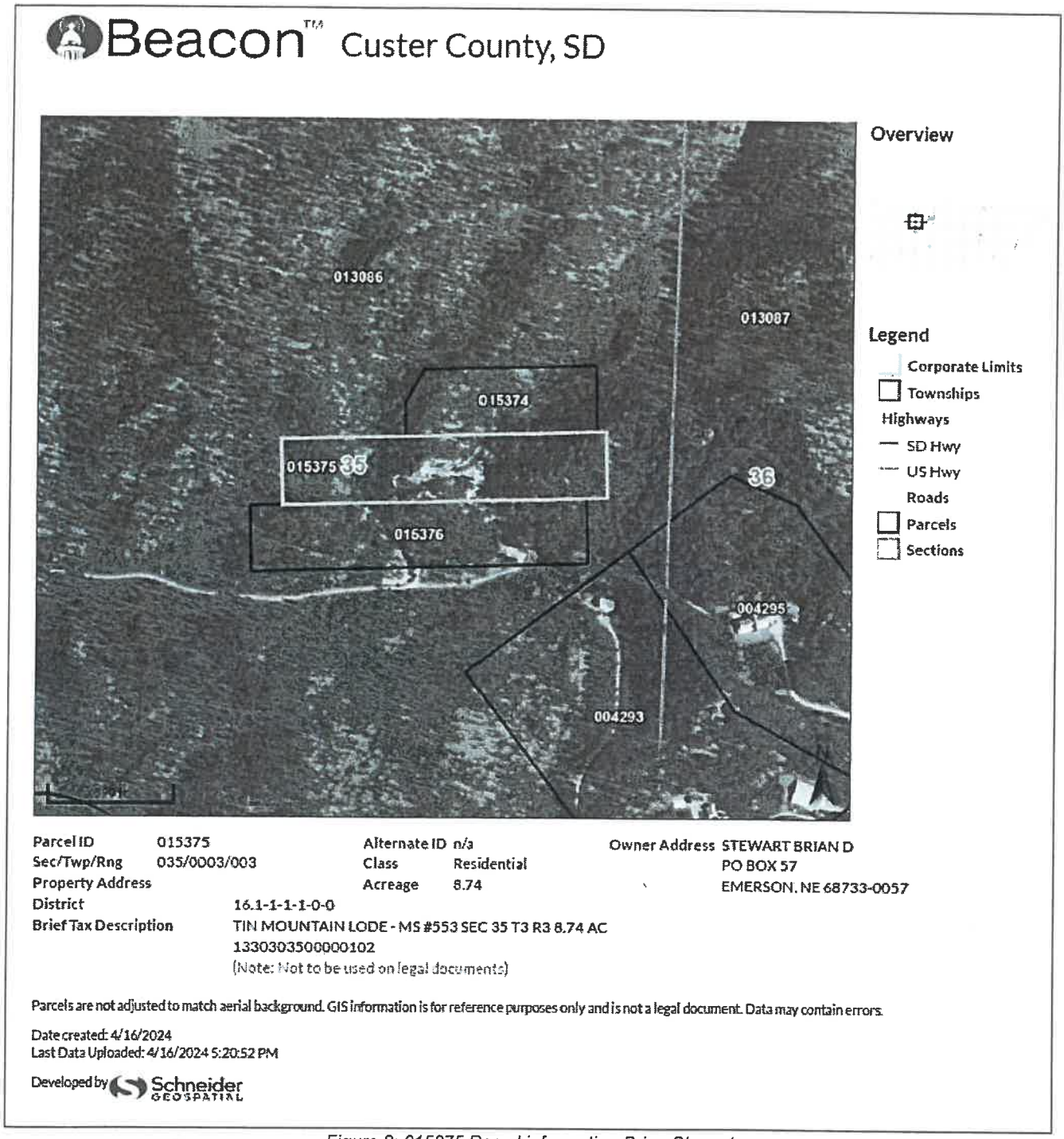


Figure 8: 015375 Parcel information Brian Stewart

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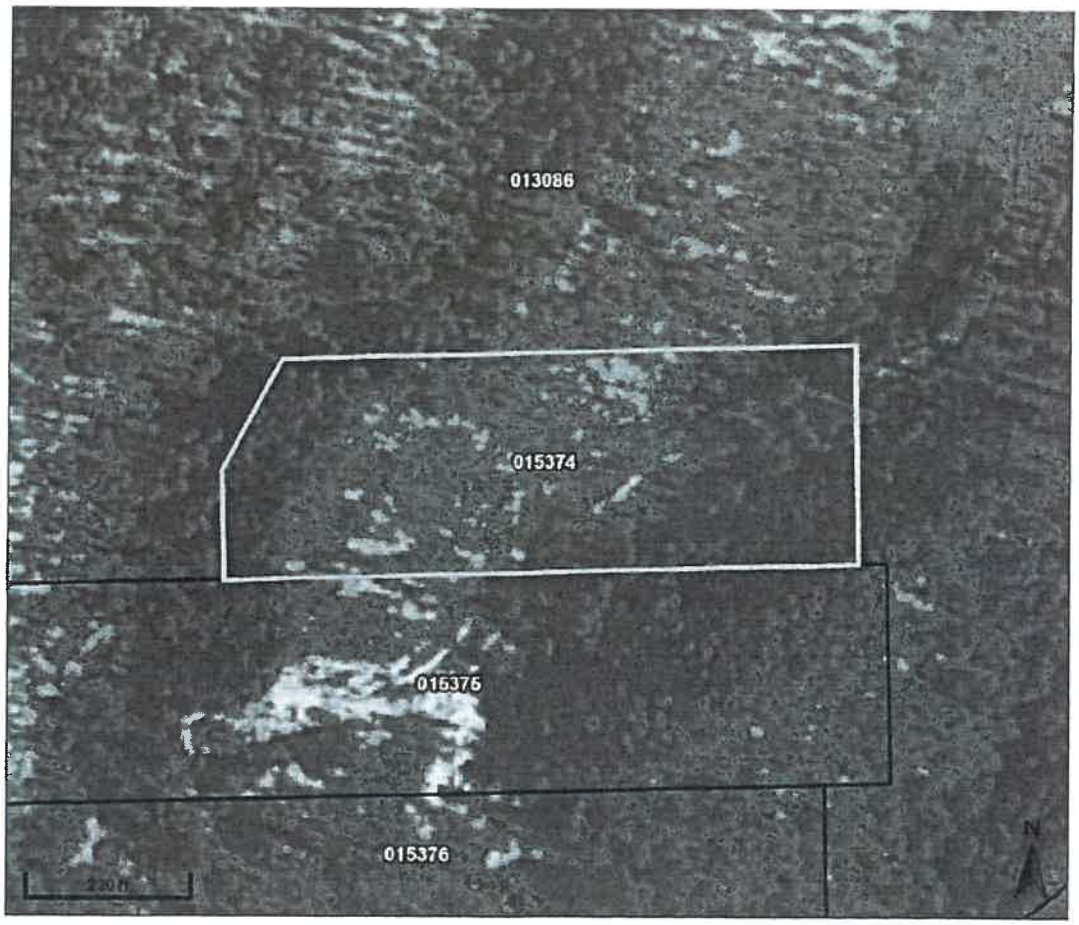
Beacon™ Custer County, SD



Parcel ID	015374	Alternate ID	n/a	Owner Address	STEWART BRIAN D
Sec/Twp/Rng	035/0003/003	Class	Residential		PO BOX 57
Property Address		Acreage	5.7		EMERSON, NE 68733-0057
District	16.1-1-1-1-0-0				
Brief Tax Description	EMPIRE LODE - MS #552 SEC 35 T3 R3 5.7 AC 1330303500000101 (Note: Not to be used on legal documents)				

Parcels are not adjusted to match aerial background. GIS information is for reference purposes only and is not a legal document. Data may contain errors.

Date created: 4/17/2024
Last Data Uploaded: 4/17/2024 10:25:37 AM

Developed by Schneider GEOSPATIAL

Figure 9: 015374 Parcel information Brian Stewart

U.S. DEPARTMENT OF AGRICULTURE
RVATION SERVICE

Instructions

SD-CPA-4 3/16
PLANNED

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SEEDING PLAN

Producer: Lotus Minerals, LLC Conservation District: Custer MLRA: 62

Program: CTA Practice No.: 342 Practice Name: Critical Area Seeding

CI or Referral No.: ID: 015375 Contract #:

Resource Concern (CPPE Impact)	Purpose:
	342- Stabilize areas with existing or expected high rates of soil erosion by wind or water

PLANNED

Tract			Seedbed Preparation
Field		Parcel ID: 015375	Clean, smooth, weed free seedbed will be prepared
Acres		8.74	
Group or Site		Critical Area Group	
Site	Web Soil Survey	Loamy or Silty Texture	
Date to be Planted	TechNote4	Early Spring Prior to 5/15	
Alternative planting dates			Protection Provided
Alternative planting dates			
Seeding Equipment		Special Grass Drill	
Companion Crop			

PLANNED

Species * **	1/ Select Improved Variety (recommended) or select common seed (see note below)	Percent in Mixture 105	Pure Live Seeds (PLS) per square foot 41.25	Pure Live Seed (PLS) lbs/ac Needed	Acres to Seed	Pure Live Seed (PLS) lbs Required
Big bluestem		15.0	6.75	1.67	8.74	14.60
Sideoats grama		10.0	4.50	1.09	8.74	9.52
Western wheatgrass		50.0	18.75	7.29	8.74	63.74
Green needlegrass		3.0	1.35	0.33	8.74	2.86
Slender wheatgrass		18.0	6.75	1.90	8.74	16.58
Canada wildrye		5.0	1.50	0.57	8.74	4.97
Little bluestem		2.0	0.90	0.14	8.74	1.20
Purple prairie clover		2.0	0.75	0.11	8.74	0.98

To meet SD NRCS Standards Please Note:

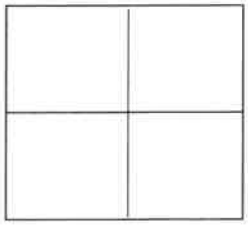
1/ Improved varieties recommended above have no restrictions on their origin.
1/ Origin of Common grass seed must be ND, SD, NE, MT, WY, MN, or IA. Exception: Smooth Bromegrass any locale.
1/ Common Native forbs and legumes will originate or be grown in (USA): ND, SD, NE, MT, IA, WY, ID, WA, OR, MN, WI, and (CAN): AB, BC, MB, ON, SK.

- Seed test must be completed according to SD Seed laws (see link below) and no more than 9 months prior to the date planted.
- All legumes must be pre-inoculated . Producer will provide all seed tags to NRCS Legume inoculants
- Tetrazolium (TZ) tests may be used as a substitute for germination tests ONLY for Green Needlegrass
- For Alfalfa Salinity tolerence use F or G from the web site link ---> Alfalfa Variety Ratings

* Pubescent wheatgrass and Intermediate wheatgrass are the same species and can be substituted for one another at any time.
** Thickspike wheatgrass may be substituted for western wheatgrass if the later is not available but only west of the Missouri River. To calculate the amount needed multiply the western wheatgrass seeding rate by .72

SD Seed Laws Codified Laws Statute 38-12A Seed testing SD state seed-lab

LOCATION MAP



N

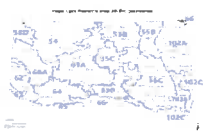
Tract
S.
T.
R.

Planning Assistance By: Andrea Westlake (Name) 5/9/2024 (Date)

Plan Meets SD Standards (if no explain) Yes ☐ No ☐

The seeding plan was developed from recommendations based on the NRCS Soil Survey and South Dakota Field Office Technical Guide.

Critical Area Group	Loamy or Silty Texture
This seeding is planned in Major Land Resource Area (MLRA)	62



Varieties/Cultivars that are approved for South Dakota include.

Common Name			
Big bluestem			
Bison	**Bonanza**	Bonita	**Bounty**
Central Iowa Germplasm	**Champ**	Common	Northern Iowa Germplasm
Pawnee	**Rountree**	Sunnyview	
Sideoats grama			
Butte	Central Iowa Germplasm	Common	Killdeer
Northern Iowa Germplasm	Pierre	Southern Iowa Germplasm	Trailway
Western wheatgrass			
Arriba	**Barton**	**Common**	Flintlock
Rosana	**Rosana**	**Rosana**	Walsh
Green needlegrass			
AC Mallard Ecovar	**Common**	**Lodorm**	
Slender wheatgrass			
AC Pintail Ecovar (Bearded)	**AC Sand Ecovar (Bearded)**	**Adanac**	**AEC Hilcrest**
Common	**Ebee**	FirstStrike	Primar
Prior	**Revenue**		
Canada wildrye			
Common	Mandan		
Little bluestem			
Badlands Ecotype	**Blaze**	**Camper**	**Central Iowa Germplasm**
Common	**Itasca**	**Northern Iowa Germplasm**	**Southern Iowa Germplasm**
Purple prairie clover			
Bismarck	**Common**	**Kaneb**	

Guidance for Critical Area Planting (342)

The following is an excerpt from RANGE TECHNICAL NOTE NO. 4 PERENNIAL VEGETATION ESTABLISHMENT GUIDE.
For detailed information see Range Tech Note 4 at: https://efotg.sc.egov.usda.gov/#/details
Click link, Pick State (SD), Select Section 1, Pick All Tech Notes, Range, then Tech Note 4

Seeding of a critical area may take place at any time of the year as long as a reasonable expectation of a successful seeding establishment is expected.

Site Preparation:
Follow guidance for seedbed preparation (Section 2 above) and the additional following criteria.
If necessary, divert offsite water away from the critical area. This may require a permanent conservation practice, or in other instances, a temporary measure that will be effective during the period of establishment.
Where practical, grade to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring. Cabling of equipment to prevent rollover may be necessary on some slopes such as newly constructed dams.
On construction sites where the exposed and underlying soil material will not support adequate vegetation, minimum topsoil dressing of six inches will be applied as part of construction.
After construction is complete, the seedbed will be worked to a depth of three to five inches to break up compacted areas and permit rapid root development. Drag or pack to break up large clods and firm the seedbed.
Where slopes are steeper than 1.5:1, use some means other than vegetation to stabilize slopes.

Species Selection:

Allowable species will be selected from Table 7 for the appropriate MLRA.

A minimum of 75% of the mixture will be made up of sod forming species. Grass mixtures may include all native species, all introduced species, or a mixture of native and introduced species. Mixing smooth bromegrass, Kentucky bluegrass, and/or crested wheatgrass with native species is not typically recommended.

When smooth brome is to be seeded in a mixture, do not include more than 10% of other native or introduced species for early establishment.
Single species may be used on saline or wet areas (Table 7).
Do not select aggressive species such as smooth bromegrass when the adjacent area is dominated by native species.
When quick growth and/or protection of a critical area is needed, a quick establishing grass can be added in addition to the selected permanent seeding mixture. Use either slender wheatgrass or annual ryegrass. Slender wheatgrass can be used statewide and annual rye grass can be used in MLRAs 102A, 102B, 102C, 53B, 53C, 55B, 55C, 63B, 66, and 62. Add a maximum of three PLS pounds per acre of slender wheatgrass or a maximum of two PLS pounds per acre of annual ryegrass to the selected full seeding.
Conventional Seeding:
Seeding activities will follow recommendations found elsewhere in this technical note unless otherwise stated in this section.
Seeding rates will be 1.5 times those recommended in Table 2 when using a drill (recommended rate multiplied by 1.5).
When possible, drilling will be accomplished perpendicular to the slope. On grassed waterways, drilling will follow a serpentine pattern.

Broadcasting:
Many critical area plantings are too steep or too small to efficiently and safely utilize a drill. In these cases, seed may be broadcast and incorporated by harrowing, packing, or raking by hand. When broadcast seeding, increase the seeding rates found in Table 2 by two times (recommended rate multiplied by two).
Hydroseeding:

On sites that are too steep for regular equipment to operate, the use of a hydro seeder is an acceptable alternative. Seed, fertilizer, and mulch materials will be applied in one operation. Limit the application of 150 pounds of solids per 100 gallons of water. If a legume seed is included in the mixture, any lime or fertilizer should be applied separately. A second trip may also be needed to apply an asphalt emulsion to long fiber mulches.
When using hydroseeding technique, increase seeding rates found in Table 2 by a factor of two (recommended rate multiplied by two).

Sodding:

Sod may be used on areas requiring immediate cover to prevent erosion. The sod should be in strips or blocks of native grass mixture, switchgrass, prairie cordgrass, reed canary grass, or other suitable grasses. Bluegrass sod is to be used only when the areas is irrigated and is desired for aesthetic purposes. Sod materials are to be taken from solid, thick growing stands.
Sod will be cut in strips of uniform width and to a uniform thickness of at least three inches for tall grass and ½ to 1½ inches for short grasses. Lay sod within 24 hours after it was cut.

Sod strips should be carefully placed in rows across (at right angles) to the direction of slope. The sod strips will be placed together tightly so that no open joints are left between the strips or between the end of strips. Joints between the end strips will be staggered. Any spaces between the joints will be filled with topsoil and all edges covered with topsoil at least two inches deep. The edge of the sod at the top of slopes will be turned under and a layer of soil compacted over the edge so as to conduct surface water over and onto the top of the sod. The sod will be well tramped to help it remain in place.

Fertilizing:

Do not fertilize predominantly warm-season grass seeding unless the soil material is very infertile.
Thoroughly mix all fertilizer into the upper three to five inches of the soil during final seedbed preparation.
Apply fertilizer based on the recommendations from a soil test or apply 30 to 40 lbs. of actual Nitrogen (N) and 40 to 60 pounds of Phosphorus pentoxide (P_2O_5) per ac. Ten to 15 tons of manure per ac may be used in lieu of the commercial fertilizer and will also increase organic matter.
On medium textured soils, the addition of 5 to 10 lbs. of zinc per ac may speed up growth.

Mulching:

All mulching will be done in accordance with the SD CPS for Mulching (484). Mulching of critical area plantings is required for any of the following conditions:

Where seeding cannot be accomplished during the approved seeding periods and a cover crop is not used;

On grassed waterways, where a cover crop or companion crop is not used, and seeding is placed on a bare seedbed, and the design velocity is more than 2.5 feet per second;

Where a grassed waterway is established at the time of terrace construction, and the channel slope is 2% or greater;

On slopes 3:1 or steeper that are 10 feet or more in vertical height or longer than 20 feet; on cut south and west facing slopes; On all saline and alkaline areas.

Drill grass in the prepared seedbed, immediately prior to mulching or at the next suitable seeding period after mulching.

Management of Critical Areas During and After Establishment :

Weeds will be controlled as described elsewhere in this technical note. All use will be excluded until vegetation is well established.
Mow grassed waterways for hay annually after establishment. Other critical areas may be mowed as needed for stand maintenance.
Fertilize as necessary to maintain stand.
Inspect critical areas each spring and following heavy rain. Reshape and reseed eroded areas promptly.
Reinforce grass seeding where stands are thin.

Manage any grazing use to ensure long-term survival of the stand
Lift tillage implements and shut off sprayers when crossing critical areas. Do not till parallel to grassed waterways.
Avoid vehicular travel on critical areas.
Providing Food, Cover, and Shelter for Wildlife:
Wildlife habitat should be considered when developing critical area planting plans and species selection. For plant species to improve wildlife habitat, refer to the SD CPS Upland Wildlife Habitat Management (645).

U.S. DEPARTMENT OF AGRICULTURE
RVATION SERVICE

Instructions

RECEIVED
MAY 13 2024
MINERALS & MINING PROGRAM

SD-CPA-4 3/16
PLANNED

SEEDING PLAN

Producer: Lotus Minerals, LLC | Conservation District: Custer | MLRA: 62

Program: CTA | Practice No.: 342 | Practice Name: Critical Area Seeding

CI or Referral No.: ID: 015374 | Contract #:

Resource Concern (CPPE Impact)	Purpose:
	342- Stabilize areas with existing or expected high rates of soil erosion by wind or water

PLANNED

Tract		Seedbed Preparation
Field	Parcel ID: 015374	Clean, smooth, weed free seedbed will be prepared
Acres	5.70	
Group or Site	Critical Area Group	
Site (Web Soil Survey)	Loamy or Silty Texture	
Date to be Planted (TechNote4)	Early Spring Prior to 5/15	
Alternative planting dates		Protection Provided
Alternative planting dates		
Seeding Equipment	Special Grass Drill	
Companion Crop		

PLANNED

Species * **	1/ Select Improved Variety (recommended) or select common seed (see note below)	Percent in Mixture 105	Pure Live Seeds (PLS) per square foot 41.25	Pure Live Seed (PLS) lbs/ac Needed	Acres to Seed	Pure Live Seed (PLS) lbs Required
Big bluestem		15.0	6.75	1.67	5.70	9.52
Sideoats grama		10.0	4.50	1.09	5.70	6.21
Western wheatgrass		50.0	18.75	7.29	5.70	41.57
Green needlegrass		3.0	1.35	0.33	5.70	1.86
Slender wheatgrass		18.0	6.75	1.90	5.70	10.81
Canada wildrye		5.0	1.50	0.57	5.70	3.24
Little bluestem		2.0	0.90	0.14	5.70	0.78
Purple prairie clover		2.0	0.75	0.11	5.70	0.64

To meet SD NRCS Standards Please Note:

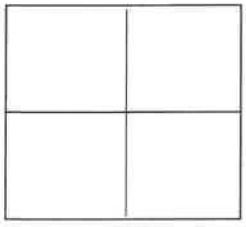
1/ Improved varieties recommended above have no restrictions on their origin.
1/ Origin of Common grass seed must be ND, SD, NE, MT, WY, MN, or IA. Exception: Smooth Bromegrass any locale.
1/ Common Native forbs and legumes will originate or be grown in (USA): ND, SD, NE, MT, IA, WY, ID, WA, OR, MN, WI, and (CAN): AB, BC, MB, ON, SK.

- Seed test must be completed according to SD Seed laws (see link below) and no more than 9 months prior to the date planted.
- All legumes must be pre-inoculated . Producer will provide all seed tags to NRCS — Legume inoculants
- Tetrazolium (TZ) tests may be used as a substitute for germination tests ONLY for Green Needlegrass
- For Alfalfa Salinity tolerence use F or G from the web site link ---> Alfalfa Variety Ratings

* Pubescent wheatgrass and Intermediate wheatgrass are the same species and can be substituted for one another at any time.
** Thickspike wheatgrass may be substituted for western wheatgrass if the later is not available but only west of the Missouri River. To calculate the amount needed multiply the western wheatgrass seeding rate by .72

SD Seed Laws: Codified Laws Statute 38-12A | Seed testing: SD state seed-lab

LOCATION MAP



N

Tract
S.
T.
R.

Planning Assistance By: Andrea Westlake (Name) 5/9/2024 (Date)

Plan Meets SD Standards (if no explain) Yes ☐ No ☐

This seeding plan was developed from recommendations based on the NRCS Soil Survey and South Dakota Field Office Technical Guide.

Critical Area Group: **Loamy or Silty Texture**

This seeding is planned in Major Land Resource Area (MLRA): **62**

Varieties/Cultivars that are approved for South Dakota include

Common Name			
Big bluestem			
Bison	Bonanza	**Bonita**	**Bounty**
Central Iowa Germplasm	Champ	**Common**	**Northern Iowa Germplasm**
Pawnee	Rountree	**Sunnyview**	
Sideoats grama			
Butte			
Northern Iowa Germplasm	Central Iowa Germplasm	Common	Killdeer
	Pierre	Southern Iowa Germplasm	Trailway
Western wheatgrass			
Arriba	**Barton**	**Common**	Flintlock
Recovery	**Rodan**	**Rosana**	Walsh
Green needlegrass			
AC Mallard Ecovar	**Common**	**Lodorn**	
Slender wheatgrass			
AC Pintail Ecovar (Bearded)	AC Sora Ecovar (Bearded)	Adanac	AEC Hillcrest
Common	Ebee	FirstStrike	Primar
Prior	Revenue		
Canada wildrye			
Common	Mandan		
Little bluestem			
Badlands Ecovar	**Blaze**	**Camper**	**Central Iowa Germplasm**
Common	**Itasca**	**Northern Iowa Germplasm**	**Southern Iowa Germplasm**
Purple prairie clover			
Bismarck	**Common**	**Kaneb**	

Guidance for Critical Area Planting (342)

The following is an excerpt from RANGE TECHNICAL NOTE NO. 4 PERENNIAL VEGETATION ESTABLISHMENT GUIDE.

For detailed information see Range Tech Note 4 at: https://efotg.sc.egov.usda.gov/#/details

Click link, Pick State (SD), Select Section 1, Pick All Tech Notes, Range, then Tech Note 4

Seeding of a critical area may take place at any time of the year as long as a reasonable expectation of a successful seeding establishment is expected.

Site Preparation:

Follow guidance for seedbed preparation (Section 2 above) and the additional following criteria.
If necessary, divert offsite water away from the critical area. This may require a permanent conservation practice, or in other instances, a temporary measure that will be effective during the period of establishment.
Where practical, grade to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and anchoring. Cabling of equipment to prevent rollover may be necessary on some slopes such as newly constructed dams.
On construction sites where the exposed and underlying soil material will not support adequate vegetation, minimum topsoil dressing of six inches will be applied as part of construction.
After construction is complete, the seedbed will be worked to a depth of three to five inches to break up compacted areas and permit rapid root development. Drag or pack to break up large clods and firm the seedbed.
Where slopes are steeper than 1.5:1, use some means other than vegetation to stabilize slopes.

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Inspect critical areas each spring and following heavy rain. Reshape and reseed eroded areas promptly.
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Manage any grazing use to ensure long-term survival of the stand
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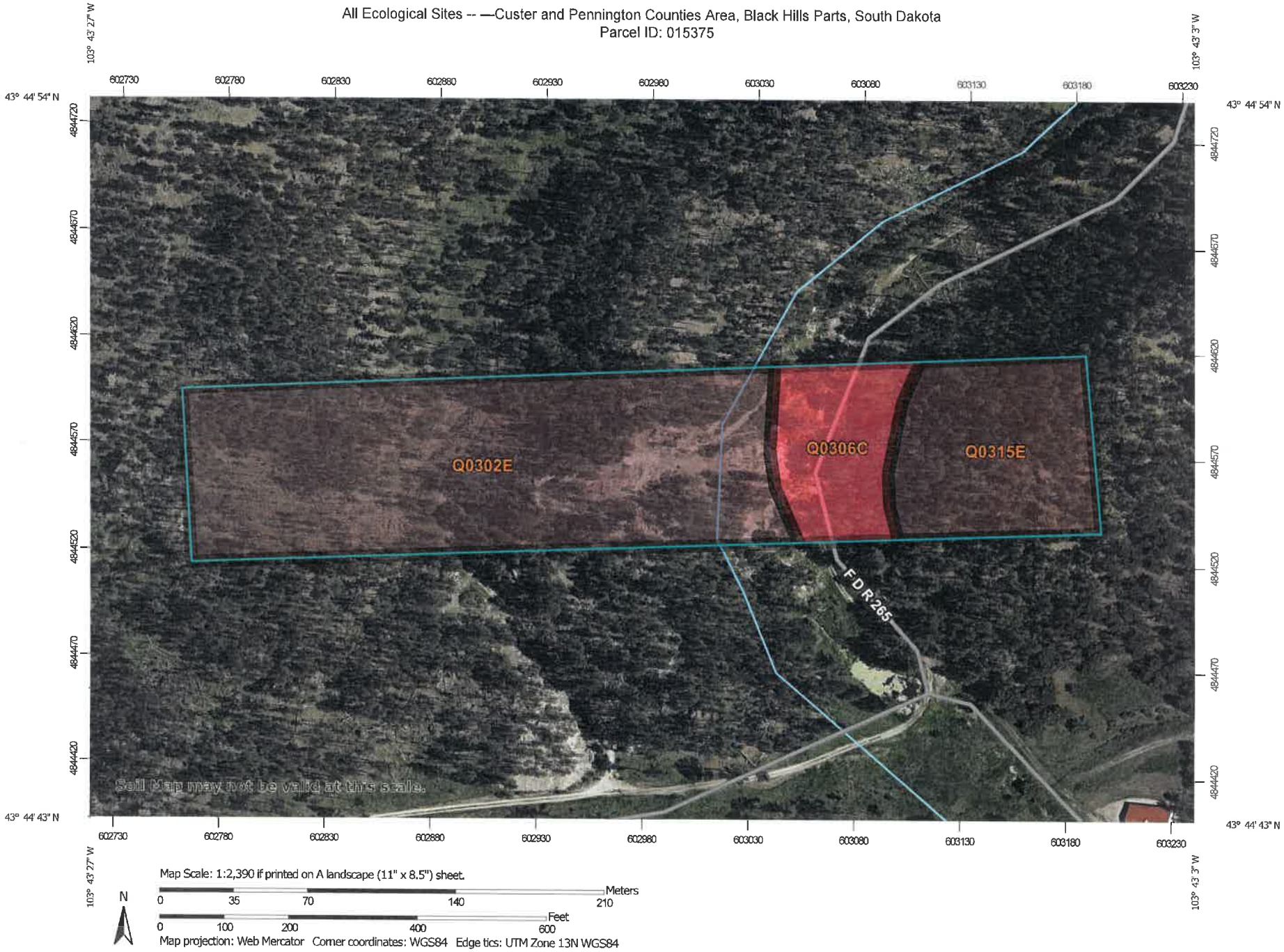
Avoid vehicular travel on critical areas.
Providing Food, Cover, and Shelter for Wildlife:
Wildlife habitat should be considered when developing critical area planting plans and species selection. For plant species to improve wildlife habitat, refer to the SD CPS Upland Wildlife Habitat Management (645).

All Ecological Sites -- —Custer and Pennington Counties Area, Black Hills Parts, South Dakota
Parcel ID: 015375



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

F062XB052SD

R062XY043SD

Not rated or not available

Soil Rating Lines

F062XB052SD

R062XY043SD

Not rated or not available

Soil Rating Points

F062XB052SD

R062XY043SD

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Custer and Pennington Counties Area, Black Hills Parts, South Dakota
Survey Area Data: Version 13, Sep 14, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

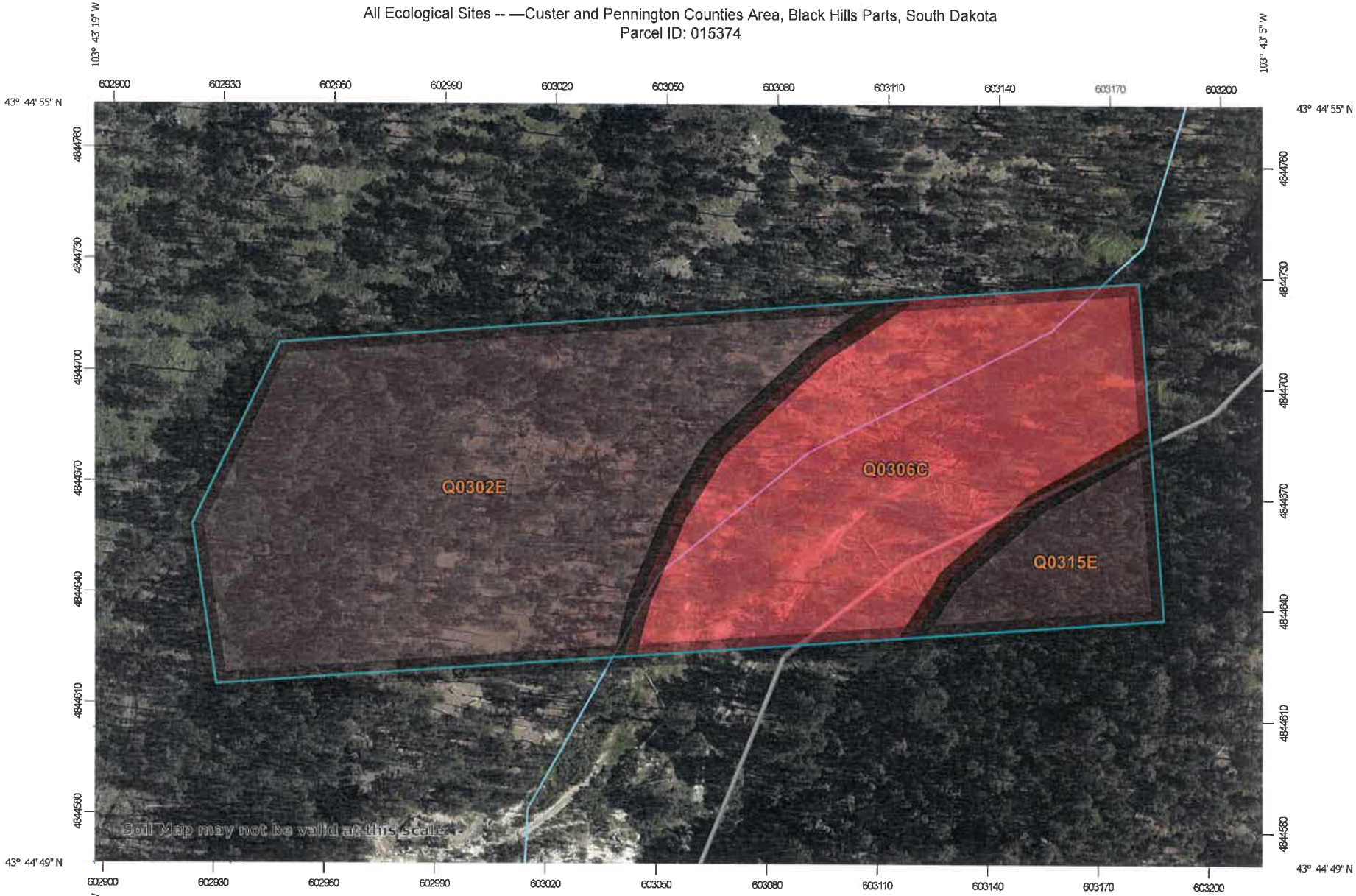
Date(s) aerial images were photographed: Jun 8, 2022—Jun 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

All Ecological Sites —

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
Q0302E	Buska, dry-Rock outcrop complex, 10 to 40 percent slopes	Buska, dry (55%)	F062XB052SD — LRU B Pine	5.7	64.7%
		Rock outcrop (25%)	R062XY999SD — Non-site		
		Cordeston, mica, dry (7%)	R062XY043SD — Valley Loam		
		Mocmont (7%)	F062XB052SD — LRU B Pine		
		Virkula, mica, dry (6%)	F062XB052SD — LRU B Pine		
Q0306C	Cordeston loams, dry, high mica, 2 to 10 percent slopes, flooded	Cordeston, mica, dry (65%)	R062XY043SD — Valley Loam	1.2	13.4%
		Cordeston, mica, dry, rarely flooded (20%)	R062XY043SD — Valley Loam		
		Bullflat, high mica, dry (4%)	R062XC010SD — Loamy - South		
		Marshbrook (4%)	R062XY003SD — Subirrigated		
		Pactola, dry (4%)	F062XC053SD — LRU C Pine		
		Rock outcrop (3%)	R062XY999SD — Non-site		
Q0315E	Pactola-Virkula-Rock outcrop complex, dry, 10 to 40 percent slopes	Pactola, dry (50%)	F062XB052SD — LRU B Pine	1.9	21.9%
		Virkula, dry (20%)	F062XB052SD — LRU B Pine		
		Rock outcrop, schist (15%)	R062XY999SD — Non-site		
		Cordeston, dry (5%)	R062XY043SD — Valley Loam		
		Heely, dry (5%)	R062XA032SD — Channery Loam - North		
		Mocmont (5%)	F062XB052SD — LRU B Pine		
Totals for Area of Interest				**8.8**	**100.0%**

All Ecological Sites -- —Custer and Pennington Counties Area, Black Hills Parts, South Dakota
Parcel ID: 015374



Map Scale: 1:1,450 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

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Soil Rating Polygons

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All Ecological Sites —

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
Q0302E	Buska, dry-Rock outcrop complex, 10 to 40 percent slopes	Buska, dry (55%)	F062XB052SD — LRU B Pine	3.0	53.2%
		Rock outcrop (25%)	R062XY999SD — Non-site		
		Cordeston, mica, dry (7%)	R062XY043SD — Valley Loam		
		Mocmont (7%)	F062XB052SD — LRU B Pine		
		Virkula, mica, dry (6%)	F062XB052SD — LRU B Pine		
Q0306C	Cordeston loams, dry, high mica, 2 to 10 percent slopes, flooded	Cordeston, mica, dry (65%)	R062XY043SD — Valley Loam	2.2	37.9%
		Cordeston, mica, dry, rarely flooded (20%)	R062XY043SD — Valley Loam		
		Bullflat, high mica, dry (4%)	R062XC010SD — Loamy - South		
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		Pactola, dry (4%)	F062XC053SD — LRU C Pine		
		Rock outcrop (3%)	R062XY999SD — Non-site		
Q0315E	Pactola-Virkula-Rock outcrop complex, dry, 10 to 40 percent slopes	Pactola, dry (50%)	F062XB052SD — LRU B Pine	0.5	8.9%
		Virkula, dry (20%)	F062XB052SD — LRU B Pine		
		Rock outcrop, schist (15%)	R062XY999SD — Non-site		
		Cordeston, dry (5%)	R062XY043SD — Valley Loam		
		Heely, dry (5%)	R062XA032SD — Channery Loam - North		
		Mocmont (5%)	F062XB052SD — LRU B Pine		
Totals for Area of Interest				**5.7**	**100.0%**