

**BASIN ELECTRIC
POWER COOPERATIVE**

1717 EAST INTERSTATE AVENUE
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September 30, 2009

RECEIVED

Darrell Nitschke
Director of Administration
Public Service Commission
600 East Boulevard Avenue, Dept 408
Bismarck, ND 58505-0480

OCT 01 2009

PUBLIC SERVICE COMMISSION

Re: Case Number PU-04-109
Route Permit No. 95 for Antelope Valley Station Raw Water Pipeline
Beulah, North Dakota

Dear Mr. Nitschke:

The following is an annual update report for the Antelope Valley Raw Water Pipeline project activities that has occurred in 2009.

Reseeding occurred in the three areas that were identified in the 2008 survey. In addition efforts to support the noxious weed control program occurred on the project's right of way.

In September 2009, KDK Consulting performed a Grassland Vegetative Cover reassessment. (Attachment A)

A Woodland species survivability assessment was also performed in 2009. (Attachment B)
This assessment still indicates a survivability ratio greater than the 3:1 ratio requirement of the project.

Sincerely,

Cris Miller
Sr. Environmental Project Administrator

/gmj

Enclosure

cc: Mark Nelson (AVS)
Jack Holt

125 PU-04-109 Filed: 10/1/2009 Pages: 14
Annual Update Report

Basin Electric Power Cooperative

Attachment A

**GRASSLAND ASSESSMENT OF VEGETATIVE COVER WITHIN 3 AREAS
ALONG AVS RAW WATER PIPELINE**

Conducted by KDK Consulting on September 21, 2009

GRASSLAND ASSESSMENT OF VEGETATIVE COVER WITHIN 3 AREAS ALONG AVS RAW WATER PIPELINE

**Conducted by KDK Consulting on September 21, 2009
In accordance with Agreement #571349**

An assessment of plant cover and species frequency, within 3 areas of concern along the AVS raw water pipeline, as outlined by Basin Electric Power Cooperative (BEPC) was conducted by KDK Consulting on September 21st, 2009. Mr. Jack Holt of BEPC assisted with field identification of the 3 areas prior to initiation in 2008. Thirty samples using a 1/4m² frame for aerial cover and species frequency were taken randomly within each of the 3 sites. Tables 1 through 6 show the sampling results. The following are interpretation of results and recommendations for each area of concern.

Segment A

Segment A had an overall aerial cover of 96.1% (bare ground = 3.9%) which is above the 83% needed within restored native grasslands to meet PSC guidelines as seen in Table 1 and an improvement compared to 2008. Of the aerial cover, 84.7% was perennial grass which is well above the amount of 33.9% seen in 2008. This shows a positive trend in the development of the grass stand as was expected following the 2008 assessment. Based on experience, this site will continue establish into a diverse native grassland as the perennial natives out-compete the annual forbs for niches and available resources. This process could be accelerated through timely mowing which would stress the annual forbs and allow the perennial natives to dominate. The negative issue regarding this area was the presence of noxious weeds in 2008. A potentially harmful amount of absinth wormwood (17% frequency) was recorded, and though not recorded, leafy spurge was present within the segment. Timely spraying of these noxious weeds is imperative to the successful development of this area was the initial recommendation. In 2009, no noxious weeds were recorded in the sampling. Absinth wormwood was still present in the area, but spraying controlled a majority of the noxious weed in 2009. Continuing this spraying into 2010 will be imperative to continuing this positive trend in weed control.

Segment B

Segment B had an overall aerial cover of 94.4% (bare ground = 5.6%) which is above the 83% needed within restored native grasslands to meet PSC guidelines as seen in Table 3 and an improvement compared to 2008. Of the aerial cover, the perennial grass component improved to 67.9%. Based on experience, this site will continue establish into a diverse native grassland as the perennial natives out-compete the annual forbs for niches and available resources. This process could be accelerated through timely mowing which would stress the annual forbs and allow the perennial natives to dominate. This is a change compared to what was seen in 2008. The grass species are now as robust as the plants seen in Segment A. There are still patchy areas of limited grass establishment. However, if the area continues to improve yearly as it did from 2008 to

2009 the grassland site will likely become self-sustaining in the near future. One positive issue is the lack of noxious weeds across the site. Absinth wormwood was observed along the fence on the south boundary, but not within the site itself. This area does provide obstacles in successful reestablishment due to the soils appearing to have an increased level of salinity in it (Saline Lowland ecological site). The presence of foxtail barley in 20% of the plots, even though it was not likely planted, provides insight into the soils characteristics. The increased amount of moisture in 2009 may have provided decreased saline conditions allowing for the development of the plant community at an accelerated rate. Continued assessment of this area in the future may be necessary to ensure negative soil conditions will not hamper continued positive plant community development seen from 2008 to 2009.

Segment C

Segment C had an overall aerial cover of 91.8% (bare ground = 8.2%) which exceeds the 83% needed within restored native grasslands to meet PSC guidelines as seen in Table 5 and an improvement compared to 2008 where the percentage barely met standards. Of the aerial cover, the perennial grass component was up to 29.5% from a mere 2.8% in 2008. Based on experience, this site will continue to establish into a diverse plant community. There are still patchy areas of limited grass establishment especially towards the east end of the segment. However, if the area continues to improve yearly as it did from 2008 to 2009 the grassland site will likely become self-sustaining in the near future. One positive issue is the lack of noxious weeds across the site. This area does provide obstacles in successful reestablishment due to the soils appearing to have an increased level of salinity in it (Saline Lowland ecological site) as was seen in Segment B. The presence of foxtail barley in 67% of the plots, even though it was not likely planted, provides insight into the soils characteristics. The increased amount of moisture in 2009 may have provided decreased saline conditions allowing for the development of the plant community at an accelerated rate. Continued assessment of this area in the future may be necessary to ensure negative soil conditions will not hamper continued positive plant community development seen from 2008 to 2009.

Table 1. Aerial cover for AVS Raw Water Pipeline ROW for Segment A

PLOT	Litter	Bare	Perennial Forb	Annual Forb	Perennial Grass	Annual Grass	Yellow Sweetclover
1	10	5	0	0	85	0	0
2	5	0	0	5	90	0	0
3	7	1	0	2	90	0	0
4	4	1	1	1	93	0	0
5	5	0	2	5	88	0	0
6	3	0	0	2	95	0	0
7	4	0	0	1	95	0	0
8	3	0	0	2	95	0	0
9	2	0	0	1	97	0	0
10	2	0	0	1	97	0	0
11	5	3	0	2	90	0	0
12	1	5	1	1	92	0	0
13	3	0	0	1	96	0	0
14	10	5	0	35	50	0	0
15	10	5	0	2	83	0	0
16	10	20	0	2	68	0	0
17	5	25	0	5	65	0	0
18	7	8	0	5	80	0	0
19	3	2	2	3	90	0	0
20	5	4	0	1	90	0	0
21	7	2	0	1	90	0	0
22	7	0	0	2	90	1	0
23	10	15	0	25	50	0	0
24	3	2	0	5	90	0	0
25	13	2	0	2	83	0	0
26	12	3	0	0	85	0	0
27	9	1	0	0	90	0	0
28	17	3	0	2	78	0	0
29	12	3	0	20	65	0	0
30	8	2	0	0	90	0	0
AVERAGE	6.73	3.90	0.20	4.47	84.67	0.03	0.00
STANDARD DEVIATION	3.89	5.97	0.55	7.94	12.73	0.18	0.00
STANDARD ERROR	0.71	1.09	0.10	1.45	2.32	0.03	0.00

Table 2. Presence/Absence by species for AVS Raw Water Pipeline ROW Segment A

Scientific Name	Common Name	Frequency																														Standard Deviation	Standard Error	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
<i>Agropyron cristatum</i>	Crested Wheatgrass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.05
<i>Agropyron repens</i>	Quackgrass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.05	
<i>Agropyron smithii</i>	Western Wheatgrass	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.63	0.09		
<i>Agropyron trachycaulum</i>	Slender Wheatgrass	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00		
<i>Aster ericoides</i>	Heath Aster	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18		
<i>Bouteloua curtipendula</i>	Sidecoats Grama	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.53	0.09		
<i>Bouteloua gracilis</i>	Blue Grama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.23	0.43		
<i>Bromus inermis</i>	Smooth Brome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.63	0.18		
<i>Bromus japonicus</i>	Japanese Brome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.03		
<i>Hordeum jubatum</i>	Foxtail Barley	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	0.03		
<i>Kochia scoparia</i>	Kochia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.90	0.31		
<i>Panicum virgatum</i>	Switchgrass	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.06		
<i>Ratibida columiflora</i>	Prairie Coneflower	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.25		
<i>Setaria ibérica</i>	Russian Thistle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18		
<i>Setaria glauca</i>	Yellow Foxtail	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18		
<i>Sonchus arvensis</i>	Field Sow Thistle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.25		
<i>Stipa viridula</i>	Green Needlegrass	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.33	0.09		
<i>Taraxacum officinale</i>	Common Dandelion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	0.03		

Nomenclature follows Flora of the Great Plains (1986)

Table 3. Aerial cover for AVS Raw Water Pipeline ROW for Segment B

PLOT	Litter	Bare	Perennial Forb	Annual Forb	Perennial Grass	Annual Grass	Yellow Sweetclover	Absinth Wormwood	Total
1	15	5	0	10	70	0	0	0	100
2	10	10	0	15	65	0	0	0	100
3	10	10	5	10	65	0	0	0	100
4	10	15	0	5	70	0	0	0	100
5	15	2	0	10	73	0	0	0	100
6	20	5	0	10	65	0	0	0	100
7	10	3	0	5	82	0	0	0	100
8	10	2	5	20	63	0	0	0	100
9	20	10	0	10	60	0	0	0	100
10	25	5	0	10	60	0	0	0	100
11	15	2	0	10	73	0	0	0	100
12	15	10	0	5	70	0	0	0	100
13	20	15	0	15	50	0	0	0	100
14	10	2	0	10	78	0	0	0	100
15	10	3	0	15	72	0	0	0	100
16	5	2	5	20	68	0	0	0	100
17	10	2	0	30	58	0	0	0	100
18	15	5	0	20	60	0	0	0	100
19	15	10	0	15	60	0	0	0	100
20	20	5	0	10	65	0	0	0	100
21	10	2	0	5	83	0	0	0	100
22	10	5	0	10	75	0	0	0	100
23	10	2	0	15	73	0	0	0	100
24	5	2	0	15	78	0	0	0	100
25	10	5	0	20	65	0	0	0	100
26	10	5	0	35	50	0	0	0	100
27	5	10	1	9	75	0	0	0	100
28	10	5	2	8	75	0	0	0	100
29	15	5	0	15	65	0	0	0	100
30	10	5	0	15	70	0	0	0	100
AVERAGE	12.50	5.63	0.60	13.40	67.87	0.00	0.00	0.00	100
STANDARD DEVIATION	4.87	3.84	1.54	6.91	8.22	0.00	0.00	0.00	
STANDARD ERROR	0.89	0.70	0.28	1.26	1.50	0.00	0.00	0.00	

Table 4. Presence/Absence by species for AVS Raw Water Pipeline ROW Segment B

Scientific Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Frequency	Standard Deviation	Standard Error				
<i>Agropyron cristatum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.13	0.35	0.06				
Crested Wheatgrass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.67	0.48	0.09			
<i>Agropyron smithii</i>	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00			
<i>Agropyron trachycalium</i>	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00			
<i>Agropyron trachycalium</i>	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00			
<i>Andropogon scoparius</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03			
<i>Aster ericoides</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03			
<i>Bouteloua curtipendula</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00		
<i>Bouteloua curtipendula</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00		
<i>Bouteloua gracilis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.40	0.50	0.09		
<i>Blue Grama</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.17	0.38	0.07		
<i>Chenopodium album</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03		
<i>Lamb's Quarters</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03		
<i>Grindelia squarrosa</i> var. <i>squarrosa</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.31	0.06		
<i>Curly-top Gumweed</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.31	0.06		
<i>Hordeum jubatum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0.41	0.07		
<i>Foxtail Barley</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0.41	0.07		
<i>Kochia scoparia</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00		
<i>Panicum virgatum</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.31	0.06	
<i>Switchgrass</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.10	0.31	0.06	
<i>Salisola iberica</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03	
<i>Russian Thistle</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03	
<i>Saralia glauca</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.25	0.05	
<i>Yellow Foxtail</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.25	0.05	
<i>Sida viridula</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00
<i>Green Needlegrass</i>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.00	0.00
<i>Field Pennycress</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03	

Nomenclature follows Flora of the Great Plains (1986)

Table 5. Aerial cover for AVS Raw Water Pipeline ROW for Segment C

PLOT	Litter	Bare	Perennial Forb	Annual Forb	Perennial Grass	Annual Grass	Yellow Sweetclover	Absinth Wormwood	Total
1	15	10	2	38	35	0	0	0	100
2	25	5	0	30	40	0	0	0	100
3	15	15	0	20	50	0	0	0	100
4	20	20	0	5	55	0	0	0	100
5	10	25	0	5	60	0	0	0	100
6	25	10	0	50	15	0	0	0	100
7	20	10	0	50	20	0	0	0	100
8	25	10	0	40	25	0	0	0	100
9	15	5	0	30	50	0	0	0	100
10	20	20	0	25	30	5	0	0	100
11	20	5	0	30	40	5	0	0	100
12	15	10	0	30	45	0	0	0	100
13	25	5	0	35	35	0	0	0	100
14	20	2	0	48	30	0	0	0	100
15	20	10	0	40	25	5	0	0	100
16	15	5	0	50	30	0	0	0	100
17	10	3	2	45	35	5	0	0	100
18	15	5	0	60	20	0	0	0	100
19	20	5	0	60	15	0	0	0	100
20	25	10	0	40	25	0	0	0	100
21	25	2	0	38	35	0	0	0	100
22	30	5	0	35	20	10	0	0	100
23	15	5	0	75	5	0	0	0	100
24	20	10	0	55	15	0	0	0	100
25	20	2	0	73	5	0	0	0	100
26	10	3	0	72	15	0	0	0	100
27	15	5	0	55	25	0	0	0	100
28	20	5	0	25	50	0	0	0	100
29	25	10	0	45	15	5	0	0	100
30	10	10	0	60	20	0	0	0	100
AVERAGE	18.83	8.23	0.13	42.13	29.50	1.17	0.00	0.00	100
STANDARD DEVIATION	5.36	5.64	0.51	17.64	14.52	2.52	0.00	0.00	
STANDARD ERROR	0.98	1.03	0.09	3.22	2.65	0.46	0.00	0.00	

Table 6. Presence/Absence by species for AVS Raw Water Pipeline ROW Segment C

Scientific Name	Common Name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Frequency	Standard Deviation	Standard Error
		<i>Agropyron cristatum</i>	Crested Wheatgrass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.17
<i>Agropyron smithii</i>	Western Wheatgrass	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.93	0.49	0.09
<i>Agropyron trachycaulum</i>	Slender Wheatgrass	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.53	0.51	0.09
<i>Bouteloua gracilis</i>	Blue Grama	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03
<i>Bromus inermis</i>	Smooth Brome	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03
<i>Bromus japonicus</i>	Japanese Brome	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.20	0.41	0.07
<i>Ctenopodium album</i>	Lamb's Quarters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03
<i>Girardinia squarrosa var. squarrosa</i>	Curly-top Gunweed	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03
<i>Hordeum jubatum</i>	Foxtail Barley	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.00	0.48	0.09
<i>Kochia scobaria</i>	Kochia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.67	0.48	0.09
<i>Rumex crispus</i>	Curly Dock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.03	0.18	0.03
<i>Salsola iberica</i>	Russian Thistle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.25	0.05
<i>Silpha viridula</i>	Green Needlegrass	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0.23	0.43	0.08

Nomenclature follows Flora of the Great Plains (1986)

Attachment B

**WOODLAND PLANT SURVIVABILITY MONITORING
IN HARMONY LAKE WMA**

Conducted by KDK Consulting on September 4-5, 2009

**WOODLAND PLANT SURVIVABILITY MONITORING
IN HARMONY LAKE WMA**

**Conducted by KDK Consulting September 4-5, 2009
In accordance with Agreement #571349**

A survival count within 5 block plantings within the Harmony Lake WMA, planted in the spring of 2007, was conducted by KDK Consulting on September 4 and 5, 2009. Variable results were seen within and across blocks as found in Tables 1 through 6. The overall survival for the third growing season was 81.6% (4654 living trees/shrubs from a total of 5702 potential trees/shrubs evaluated); this is slightly lower than the overall survival of 84.7% for the second growing season and the 90% survivability anticipated prior to project initiation. However, the 4654 living replanted trees/shrubs is greater than the 3:1 ratio for individuals that were disturbed (1,368 disturbed * 3= 4,104) based upon the January 2007 Woody Species Planting Plan submitted for NDPSC review.

The survival within individual blocks ranged from 73.1% in Block 3 to 88.3% in Block 1. The overall survival rate amongst the five areas is 81.6%. Survival among rows within each block was highly variable as well. Eleven of the 52 rows had a survival percentage higher than the anticipated 90%. Block 1 alone had seven rows with a survival percentage over 90%. Blocks 2 and 3 each had two rows that met the anticipated percentage. Blocks 4 and 5 had no rows that met the 90% threshold. Overall, survival varied among the rows from a low of 48.0% to a high of 97.2%.

Field conditions during and subsequent to planting may have led to the lower than anticipated result. Also, there appeared to be browsing within the plantings which may have caused the death of certain palatable species. The data provided within the tables provides sufficient information to aid in any additional efforts that may need to be undertaken based on this evaluation.

Basin Electric Power Cooperative
 Woodland Plant Survivability Monitoring: Harmony Lake WMA
 September 4-5, 2009

Table 6: All Block Plantings- Tree Survivability following 3 growing seasons

		<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Block 1	Row 1	86	99	86.9
	Row 2	96	106	90.6
	Row 3	89	106	84.0
	Row 4	106	109	97.2
	Row 5	92	104	88.5
	Row 6	90	100	90.0
	Row 7	99	111	89.2
	Row 8	80	106	75.5
	Row 9	93	101	92.1
	Row 10	99	113	87.6
	Row 11	92	113	81.4
	Row 12	102	112	91.1
	Row 13	111	121	91.7
	Row 14	112	124	90.3
Block 2	Row 1	108	122	88.5
	Row 2	74	126	58.7
	Row 3	88	123	71.5
	Row 4	104	123	84.6
	Row 5	104	116	89.7
	Row 6	116	120	96.7
	Row 7	92	112	82.1
	Row 8	120	125	96.0
	Row 9	95	111	85.6
	Row 10	92	105	87.6
	Row 11	101	115	87.8
	Row 12	83	111	74.8
Block 3	Row 1	85	115	73.9
	Row 2	73	106	68.9
	Row 3	76	107	71.0
	Row 4	58	113	51.3
	Row 5	47	98	48.0
	Row 6	108	116	93.1
	Row 7	99	107	92.5
	Row 8	97	116	83.6
	Row 9	87	105	82.9
	Row 10	85	114	74.6
	Row 11	72	113	63.7
	Row 12	85	120	70.8
Block 4	Row 1	89	111	80.2
	Row 2	76	107	71.0
	Row 3	87	103	84.5
	Row 4	89	101	88.1
	Row 5	82	96	85.4
	Row 6	61	89	68.5
	Row 7	84	97	86.6
	Row 8	83	102	81.4
	Row 9	92	117	78.6
	Row 10	100	119	84.0
Block 5	Row 1	83	103	80.6
	Row 2	83	103	80.6
	Row 3	65	95	68.4
	Row 4	84	95	88.4
		4654	5702	81.6