

**BASIN ELECTRIC
POWER COOPERATIVE**

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September 20, 2010

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

RECEIVED

SEP 21 2010

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:

In August 2010, a reassessment of the three grassland areas that were identified in the 2008 post construction survey as needing follow-up care and the final woodland survivability assessment was performed by KDK Consulting.

The Grassland Vegetative Cover reassessment is included as Attachment A. The survey indicated that with continued diligent weed control efforts, the three previously identified grassland's areas re-establishment of suitable cover will be adequate. Appendix B describes the weed control efforts in 2010 and Basin Electric's commitment for continuing diligence for noxious weed control.

The Woodland Species Survivability Assessment is included as Attachment C. The survivability assessment still indicates a survivability ratio greater than the 3:1 ratio requirement for the project. The overall survival for the fourth growing season was 87.8% which is slightly lower than the 90% survivability anticipated prior to project initiation. However, the 5006 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 North Dakota Public Service Commission review.

This submittal is the 3rd and final annual post-construction assessment report for this project. As the woodland survivability rate exceeds the minimum survivability requirements for the project, Basin Electric believes that we have satisfactorily completed all woodland mitigation requirements for the project.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Cris Miller'.

Cris Miller
Sr. Environmental Project Administrator

/gmj

Enclosure

cc: Mark Nelson (AVS)
Mike Murray
Dave Nilson

126 PU-04-109 Filed: 9/21/2010 Pages: 12
Annual update report

Appendix A

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

Conducted by KDK Consulting on August 19, 2010

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

**Conducted by KDK Consulting on August 19, 2010
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 August 19, 2010. 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 97.8% (bare ground = 2.2%) which is above the 83% needed within restored native grasslands to meet PSC guidelines as seen in Table 1 and an improvement compared to 2009. Of the aerial cover, 82.1% was perennial grass which is well above the amount of 33.9% seen in 2008 and only a slight decrease from 2009. This continues to show 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 2010, 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 2010. Continuing this spraying into 2011 will be imperative to continuing this positive trend in weed control.

Segment B

Segment B had an overall aerial cover of 89.8% (bare ground = 10.2%) 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 and a slight decrease compared to 2009. Of the aerial cover, the perennial grass component slightly decreased to 65.3%. 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 2010 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 33% of the plots, even though it was not likely planted, provides insight into the soils characteristics. The increased amount of moisture in 2010 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 will likely not be necessary as the positive plant community development seen from 2008 to 2010 should be capable of long-term sustainability.

Segment C

Segment C had an overall aerial cover of 86.6% (bare ground = 13.4%) 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 and a slight decrease in cover compared to 2009. Of the aerial cover, the perennial grass component was up to 51.6% from a mere 2.8% in 2008 and 29.5% in 2009. 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 2010 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 53% of the plots, even though it was not likely planted, provides insight into the soils characteristics. The increased amount of moisture in 2010 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 will likely not be necessary as the positive plant community development seen from 2008 to 2010 should be capable of long-term sustainability.

Appendix B

AVS Water Pipeline Vegetation Establishment and Management

AVS Water Pipeline Vegetation Establishment and Management

David J. Nilson

August 26, 2010

This is the 3rd growing season and established grasses have improved significantly in the 3 grassland study areas. Spraying for noxious weeds continued this year. Our procedure is to spray when vegetation is most susceptible and follow up with another application a couple of days later primarily to pick up plants that were missed. This year spraying was conducted on June 8th and again on June 10th. A total of about 20 acres were treated with Milestone at a rate of 5 ounces per acre. The contractor was instructed to traverse the entire grassland portion of the right-of-way to search for young plants below the established grass canopy.

I recommend we continue spraying on an annual basis. The amount of time and chemical used is minimal at this point as our weed control program has been very successful.

Appendix C

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

Conducted by KDK Consulting August 15, 2010

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

**Conducted by KDK Consulting August 15, 2010
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 August 15, 2010. Variable results were seen within and across blocks as found in Tables 1 through 6. The overall survival for the fourth growing season was 87.8% (5006 living trees/shrubs from a total of 5702 potential trees/shrubs evaluated); this is higher than the overall survival of 84.7% and 81.6% for the second and third growing seasons respectively, and slightly lower than the 90% survivability anticipated prior to project initiation. However, the 5006 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 84.5% in Block 4 to 91.7% in Block 3. The overall survival rate amongst the five areas is 87.8%. Survival among rows within each block was highly variable as well. Sixteen of the 52 rows had a survival percentage higher than the anticipated 90%. Block 3 alone had eight rows with a survival percentage over 90%. Block 1 had three rows that met the anticipated percentage. Block 2 had four rows that met the anticipated percentage. Block 5 had one row that met the anticipated percentage. Block 4 had no rows that met the 90% threshold. Overall, survival varied among the rows from a low of 73.0% to a high of 98.9%.

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
August 15, 2010**

Table 1: Block 1 (South of Lake: West Planting- Rows numbered from Northwest to Southeast)

	<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Row 1	86	99	86.9
Row 2	96	106	90.6
Row 3	92	106	86.8
Row 4	105	109	96.3
Row 5	92	104	88.5
Row 6	83	100	83.0
Row 7	95	111	85.6
Row 8	78	106	73.6
Row 9	85	101	84.2
Row 10	85	113	75.2
Row 11	98	113	86.7
Row 12	101	112	90.2
Row 13	104	121	86.0
Row 14	<u>111</u>	<u>124</u>	<u>89.5</u>
	1311	1525	86.0

**Basin Electric Power Cooperative
Woodland Plant Survivability Monitoring: Harmony Lake WMA
August 15, 2010**

Table 2: Block 2 (South of Lake: Middle Planting- Rows numbered from North to South)

	<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Row 1	103	122	84.4
Row 2	113	126	89.7
Row 3	86	123	69.9
Row 4	107	123	87.0
Row 5	101	116	87.1
Row 6	109	120	90.8
Row 7	95	112	84.8
Row 8	120	125	96.0
Row 9	95	111	85.6
Row 10	89	105	84.8
Row 11	109	115	94.8
Row 12	<u>106</u>	<u>111</u>	<u>95.5</u>
	1233	1409	87.5

**Woodland Plant Survivability Monitoring: Harmony Lake WMA
August 15, 2010**

Table 3: Block 3 (South of Lake: East Planting- Rows numbered from Southwest to Northeast)

	<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Row 1	110	115	95.7
Row 2	101	106	95.3
Row 3	105	107	98.1
Row 4	99	113	87.6
Row 5	96	98	98.0
Row 6	110	116	94.8
Row 7	103	107	96.3
Row 8	106	116	91.4
Row 9	97	105	92.4
Row 10	102	114	89.5
Row 11	88	113	77.9
Row 12	<u>102</u>	<u>120</u>	<u>85.0</u>
	1219	1330	91.7

**Basin Electric Power Cooperative
Woodland Plant Survivability Monitoring: Harmony Lake WMA
August 15, 2010**

Table 4: Block 4 (West of Lake: South Planting- Rows numbered from North to South)

	<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Row 1	98	111	88.3
Row 2	84	107	78.5
Row 3	92	103	89.3
Row 4	90	101	89.1
Row 5	84	96	87.5
Row 6	65	89	73.0
Row 7	87	97	89.7
Row 8	85	102	83.3
Row 9	92	117	78.6
Row 10	<u>104</u>	<u>119</u>	<u>87.4</u>
	881	1042	84.5

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Woodland Plant Survivability Monitoring: Harmony Lake WMA**

August 15, 2010

Table 5: Block 5 (West of Lake: North Planting)

	<u>Trees Alive</u>	<u>Total Trees</u>	<u>% Survival</u>
Row 1	92	103	89.3
Row 2	92	103	89.3
Row 3	84	95	88.4
Row 4	<u>94</u>	<u>95</u>	<u>98.9</u>
	362	396	91.4

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Woodland Plant Survivability Monitoring: Harmony Lake WMA
August 15, 2010**

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	92	106	86.8
	Row 4	105	109	96.3
	Row 5	92	104	88.5
	Row 6	83	100	83.0
	Row 7	95	111	85.6
	Row 8	78	106	73.6
	Row 9	85	101	84.2
	Row 10	85	113	75.2
	Row 11	98	113	86.7
	Row 12	101	112	90.2
	Row 13	104	121	86.0
	Row 14	111	124	89.5
Block 2	Row 1	103	122	84.4
	Row 2	113	126	89.7
	Row 3	86	123	69.9
	Row 4	107	123	87.0
	Row 5	101	116	87.1
	Row 6	109	120	90.8
	Row 7	95	112	84.8
	Row 8	120	125	96.0
	Row 9	95	111	85.6
	Row 10	89	105	84.8
	Row 11	109	115	94.8
	Row 12	106	111	95.5
Block 3	Row 1	110	115	95.7
	Row 2	101	106	95.3
	Row 3	105	107	98.1
	Row 4	99	113	87.6
	Row 5	96	98	98.0
	Row 6	110	116	94.8
	Row 7	103	107	96.3

	Row 8	106	116	91.4
	Row 9	97	105	92.4
	Row 10	102	114	89.5
	Row 11	88	113	77.9
	Row 12	102	120	85.0
Block 4	Row 1	98	111	88.3
	Row 2	84	107	78.5
	Row 3	92	103	89.3
	Row 4	90	101	89.1
	Row 5	84	96	87.5
	Row 6	65	89	73.0
	Row 7	87	97	89.7
	Row 8	85	102	83.3
	Row 9	92	117	78.6
	Row 10	104	119	87.4
Block 5	Row 1	92	103	89.3
	Row 2	92	103	89.3
	Row 3	84	95	88.4
	Row 4	<u>94</u>	<u>95</u>	<u>98.9</u>
		5006	5702	87.8

Overall AVS Tree Replacement Program survivability success rate of 87.8%