

ADDENDUM 3.5-E

UTE LADIES TRESSES ORCHID SURVEY REPORT

UTE LADIES' TRESSES ORCHID SURVEY

INTRODUCTION

The Ute Ladies' Tresses orchid (*Spiranthes diluvialis*) was the only federally listed threatened or endangered plant species for which a survey was required in the Ludeman Project area. Based on a request from Uranium One personnel, BKS Environmental Associates, Inc. (BKS) of Gillette, Wyoming conducted the survey from August 27-28, 2008. The survey area is located in Converse County and is described as follows:

- T34N R74W – All of Sections 12-14, 23-24 and the east half of Section 22.
- T34N R73W – All of sections 3-5, 7-10, 14-23, 26-27, 34-35, the west half of the west half of Section 2, the south half of Section 6, the west half of the west half of Section 11, the south half of Section 24, the west half of Section 25, the west half of the east half of Section 25, the northeast quarter of the northeast quarter of Section 25, the east half of Section 28, the west half of Section 36, and the west half of the east half of Section 36.
- T34N R72W – The southwest quarter of Section 19 and the north half of the northwest quarter of Section 30.
- T33N R73W – The northwest quarter of the northeast quarter of Section 1, the north half of the northwest quarter of Section 1, the north half of the north half of Section 2, and the north half of the north half of Section 3.

See figure at the end of this report.

METHODOLOGY

The following documents were reviewed prior to the field survey to evaluate the potential for orchid occurrence within the survey area:

1. U.S. Fish and Wildlife Service Interim Guidelines for *Spiranthes diluvialis* Surveys (1992);
2. U.S. Fish and Wildlife Service Recommendations and Guidelines for Ute Ladies' Tresses orchid (*Spiranthes diluvialis*) Recovery and Fulfilling Section 7 Consultant Responsibilities (1995); and

3. Bureau of Land Management orchid Habitat Survey Decision Tree for the Casper Field Office (2004).

Review of this documentation indicated that ephemeral and stock ponds/reservoirs had the potential to provide orchid habitat and required a field visit.

A general field reconnaissance was conducted throughout the Ludeman Project area to evaluate if any potential habitat or species were present in the project area. Ephemeral drainages and stock ponds/reservoirs were initially identified as potential habitat requiring further consideration. Pedestrian reconnaissance of these areas was performed at the level necessary to determine habitat suitability and species composition, as necessary.

In habitat suitability determinations, characteristics considered included approximate distance from a perennial water source, slope, soil texture, soil drainage class, vegetative competition, soil alkalinity/salinity, and current or historical management practices. The following six specific factors, listed in order of importance, were utilized to determine and rate Ute Ladies' Tresses orchid habitat:

1. Presence of adequate late season perennial water source;
2. Presence of hydrophytic and mesic edge vegetation;
3. Presence of generally sandy or loamy textured soil;
4. Appropriate topography (not too steep or too flat banks);
5. Appropriate vegetative competition (not too dense); and
6. Absence of excess salt accumulation.

Based on the reconnaissance, a determination of nonexistent, poor, marginal, or good habitat potential was made. Item No. 1 was required either as surface water or subsurface moisture within the root zone during the growing season in all areas rated as potential habitat. The presence of four or more of the six factors listed above (and inclusion of Item No. 1) yielded a marginal or good habitat determination, and qualified the area as a potential habitat. The presence of three or less of the above factors (or exclusion of Item No. 1) yielded a poor or nonexistent habitat determination, and the area was not considered potential habitat. Based on the timing of the survey, all resulting potential habitat was surveyed.

The nearest known population of the Ute Ladies' Tresses orchid occurs on an unnamed tributary to Antelope Creek in northern Converse County, Wyoming. BKS personnel

conducted one site visit to this population on August 25, 2008 to verify the phenological (flowering) state of the orchid in order to determine the appropriate survey period. On August 25, a total of twenty-eight individuals were observed at the site in northern Converse County with approximately 2/3 of these individuals flowering and one individual was grazed.

The orchid population occurring along the Antelope Creek tributary exists along the lower portion of channel bank slopes adjacent to a *Typha latifolia* (common cattail) dominated vegetation community. At the base of the slopes soils are moist. However, these soils are not inundated or saturated to the surface like most of the cattail community. The soils are generally well-drained loamy sands or sandy loams. Sandy terraces supporting upland vegetation communities occur above the slope. A late season water source is generally available through subirrigation with little or no channelized flow. Little or no salt accumulation is noted. The vegetation community within which the orchid exists is generally diverse and is not exceedingly dense. The size of the orchid population is moderate with 28 individuals identified during the 2008 growing season.

RESULTS

A total of 33 locations were surveyed within the Ludeman Project area. Each site is discussed individually and photographs of each sample location can be found at the end of this document

U1

The seasonality and duration of the water source in this area did not provide adequate orchid habitat. This area had been significantly grazed and was actively being grazed at the time of the survey. No mesic edge vegetation was present at this site. *Elymus smithii* (western wheatgrass) and *Agropyron cristatum* (crested wheatgrass) were the dominant vegetation species found at the site. No orchid individuals were located at this site. This site provided non-existent habitat based on lack of an adequate late season water source.

U2

This area had also been significantly grazed. Refer to photos 3 and 4 at the end of this document to see the amount of grazing that occurred between the vegetation sampling in July and the orchid survey in August. The July 2008 sampling identified the following dominant species *Juncus balticus* (Baltic rush), *Phleum pratense* (Timothy), and *Poa secunda* (Sandberg bluegrass). No orchid individuals were located at this site. The site provided non-existent habitat based on lack of a late season perennial water source.

U3

Mesic edge vegetation was present at this site. A fence line divided the drainage from survey point U2. The dominant vegetation identified at this site was *Beckmannia*

syzigachne (American sloughgrass), Baltic rush, Timothy, crested wheatgrass, *Hordeum jubatum* (foxtail barley), *Schoenoplectus pungens* (leafy bulrush), *Setaria pumila* (yellow foxtail), *Panicum virgatum* (switchgrass), and *Equisetum laevigatum* (smooth horsetail). The late season perennial water source was not present. The appropriate topography was present. The soil was high in clay and was identified by the presence of large surface cracks. The vegetation was highly dense while ideal orchid habitat should be moderately dense. Hydrophytic vegetation was present. No orchid individuals were found at this site. This site provided non-existent habitat based on lack of an adequate late season water source.

U4

A late season water source was present at the surface of this site. It had the appropriate topography for the species as a definable channel was present. The vegetation had a mesic edge. However, it was very dense and tall. The soil at this site was identified as a clay loam. The dominant vegetation at this site was Baltic rush, yellow foxtail, leafy bulrush, switchgrass, *Mentha arvensis* (field mint), *Scirpus pallidus* (pale bulrush), smooth horsetail, *Asclepias speciosa* (showy milkweed), common cattail, and *Schoenoplectus tabernaemontani* (softstem bulrush). No orchid individuals were found at this site. This site provided marginal potential habitat based on the presence of the late season water source, the hydrophytic vegetation, the lack of salt accumulation, and the presence of appropriate topography.

U5

The vegetation had a mesic edge but was very dense and tall at this site. A late season water source was present. No salt accumulations were present at this site. A definable channel was present at the site. The soil had a clay texture. The dominant vegetation present at this site was American sloughgrass, *Carex nebrascensis* (Nebraska sedge), *Spartina pectinata* (prairie cordgrass), switchgrass, foxtail barley, and *Melilotus officinalis* (yellow sweetclover). No orchid individuals were found at this site. This site provided marginal potential habitat based on the presence of an adequate late season water source, hydrophytic vegetation, lack of salt accumulation and presence of appropriate topography.

U6

The late season perennial water source was present. A dam was present which stopped the water source from extending beyond the site. The bank's slopes at this site were between 60 and 65 percent which is steeper than the typical habitat. The soil had a clay texture. There was a presence of hydrophytic and mesic edge vegetation as well as an absence of salt accumulation. The dominant vegetation species at this site was softstem bulrush, American sloughgrass, leafy bulrush, Baltic rush, foxtail barley and yellow foxtail. No orchid individuals were found at this location. This site provided marginal potential habitat based on the presence of an adequate late season water source,

hydrophytic vegetation, and absence of excess salt accumulation.

U7

A late season water source was not present at this site. The soil at this site was clay and was identified by the presence of large surface cracks. Hydrophytic vegetation was present at this location. The dominant vegetation species present at this site was leafy bulrush, Timothy, common cattail, foxtail barley, American sloughgrass, and yellow foxtail. No orchid individuals were found. This site provided non-existent habitat based on lack of an adequate late season perennial water source.

U8

A late season water source was present at this site. However, the site had been heavily trampled and grazed at the time of the survey. This area was very flat and did not have a defined bank. Hydrophytic and mesic edge vegetation was present. The vegetation cover for the site was sparse due to the heavy grazing occurring on the site. The dominant vegetation species at the site was leafy bulrush, softstem bulrush, Baltic rush, *Salix amygdaloides* (peachleaf willow), and *Populus deltoides* (plains cottonwood). No orchid individuals were found at this site. This site provided poor potential habitat based on lack of appropriate topography, appropriate vegetation competition (density), and intensity of grazing and disturbance to the site.

U9

The late season water source is not present on the surface of this site. The soil is very compacted clay. Hydrophytic vegetation is present. The area is also very flat and does not have a definable bank. This area has been heavily trampled and grazed resulting in a sparse vegetation cover. Hydrophytic vegetation is present in certain areas. The dominant species identified at this site was Nebraska sedge, softstem bulrush, Baltic rush, and peachleaf willow. No orchid individuals were identified. This site provided poor potential habitat based on lack of appropriate topography, lack of appropriate vegetation cover, lack of an adequate late season water source, and lack of a sandy textured soil.

U10

This site was identified as a stock pond. A late season water source was present. However, no hydrophytic or mesic edge vegetation was present. The area was heavily trampled by livestock, mainly cattle. The area surrounding the pond supported upland vegetation. The dominant species identified at this site was western wheatgrass, *Hesperostipa comata* (needleandthread), *Artemisia tridentata* (big sagebrush), and *Bouteloua gracilis* (blue grama). No orchid individuals were found. This area provided poor potential habitat based on lack of appropriate vegetation cover, topography and lack of hydrophytic and mesic edge vegetation.

U11

This area is classified as a depression in an ephemeral drainage. This area was mainly dominated by needleandthread and blue grama. It lacks the appropriate topography to be orchid habitat as a definable channel is not present. No orchid individuals were found. This site provided non-existent habitat based on lack of a late season perennial water source, hydrophytic and mesic edge vegetation, appropriate topography and sparse vegetation cover.

U12

This site was also classified as a stock pond. The late season water source was present. However, no hydrophytic or mesic edge vegetation was present. The area surrounding the pond was heavily trampled by livestock, mainly sheep. Upland vegetation surrounded the pond. The main vegetative species present were needleandthread, western wheatgrass, and blue grama. No orchid individuals were found. This area provided poor potential habitat based on lack of appropriate vegetation cover, topography and lack of hydrophytic and mesic edge vegetation.

U13

This area was also classified as a depression in an ephemeral drainage. This area was dominated by blue grama. The absence of the late season perennial water source and appropriate topography make it non-existent orchid habitat. No orchid individuals were found.

U14

A late season perennial water source was present at the site. This area lacked appropriate topography as a definable bank was not present. The vegetation community surrounding the water source was a monoculture of *Eleocharis palustris* (creeping spikerush). The soil for this area was clay. No orchid individuals were found. This area was considered poor potential habitat based on lack of appropriate topography, appropriate vegetation cover and lack of a generally sandy or loamy textured soil.

U15

This area was classified as a stock pond. The area surrounding the pond had been heavily trampled and was devoid of all vegetation. The dominant vegetation species surrounding the outer edge of the disturbance were creeping spikerush and *Suckleya suckleyana* (poison suckleya). The soil was predominantly clay or clay loam. No orchid individuals were found. This area was considered poor potential habitat based on lack of appropriate topography, mesic edge vegetation, appropriate vegetation cover and the lack of a sandy soil.

U16

This area was also a stock pond. No hydrophytic or mesic edge vegetation was present. The dominant vegetation species were big sagebrush, needleandthread and blue grama. This area lacked the appropriate topography as the bank was undefinable. No orchid individuals were found. This area was considered poor potential habitat based on lack of appropriate topography, hydrophytic and mesic edge vegetation and sparse vegetation cover.

U17

This area is classified as a diked drainage. This area was dominated by poison suckleya, creeping spikerush and *Amaranthus albus* (prostrate pigweed). The soil was clay and was defined by the large surface cracks at the site. The absence of the appropriate topography and the late season perennial water source make it non-existent orchid habitat. No orchid individuals were found.

U18

This area is classified as an ephemeral drainage. A late season water source was present. No mesic edge vegetation was present at this site. The channel did not have a definable bank. The dominant vegetation species at this site was western wheatgrass, foxtail barley, poison suckleya and creeping spikerush. No orchid individuals were found. The absence of mesic edge vegetation, appropriate topography and sandy soil make this area poor potential habitat.

U19

This area is classified as a stock pond. A late season water source was present at the site. This area is considered poor to non-existent potential habitat based on the clay soil and the lack of adequate vegetative cover. *Ambrosia tomentosa* (skeletonleaf bur ragweed) was the dominant species present. No orchid individuals were found. This area provided poor habitat based on lack of vegetative cover and lack of mesic edge vegetation.

U20

This area is an ephemeral drainage that drains into a stock pond. This area was heavily trampled and disturbed as it was the primary livestock water source for the area. Clay was the dominant soil texture for this area. The dominant vegetation species at this site was foxtail barley, Baltic rush, leafy bulrush, softstem bulrush and *Rumex occidentalis* (western dock). No orchid individuals were found. This area was considered poor potential habitat based on the extent of disturbance to the site, the soil type and the appropriate vegetation cover.

U21

This area was the drainage downstream from Waypoint U20. This area was also heavily disturbed due to grazing. A late season perennial water source was not present. Salt

deposits were present at this site. *Distichlis stricta* (inland saltgrass) and smooth horsetail were the dominant species higher on the banks. The vegetation in the channel was dominated by leafy bulrush, switchgrass, foxtail barley, yellow foxtail, and Baltic rush. No orchid individuals were found. The area was non-existent habitat due to lack of a late season water source.

U22

This area is an ephemeral drainage. An adequate late season perennial water source was not present. However, hydrophytic vegetation was present. This area had also been heavily grazed. The vegetation species included switchgrass, foxtail barley, Baltic rush and big sagebrush on the edge of the banks. No orchid individuals were found. The lack of a late season perennial water source made this area non-existent orchid habitat.

U23

This area was an ephemeral drainage. A late season perennial water source was present. The edge of the channel and near the pond was heavily trampled by cattle and devoid of all vegetation. The upper banks of the channel supported upland vegetation. The dominant vegetation species at this site was inland saltgrass, big sagebrush, *Opuntia polyacantha* (plains prickly pear), crested wheatgrass and western wheatgrass. The presence of the saltgrass indicates the soil had a higher salinity than other soils in the area. No orchid individuals were found. The higher soil salinity and the lack of adequate vegetation cover on the banks make this area poor potential orchid habitat.

U24

This area is part of an ephemeral drainage. The area to the south had been dammed. The channel and the surrounding area had been heavily grazed. A late season water source was not present. *Artemisia cana* (silver sagebrush), *Chrysothamnus viscidiflorus* (sticky-leaved rabbitbrush), plains cottonwood, *Bromus tectorum* (cheatgrass), and *Elaeagnus angustifolia* (Russian olive) were the dominant species in this area. No orchid individuals were found. Lack of a late season perennial water source made this area non-existent habitat.

U25

This area is an ephemeral drainage. A late season water source was present and stopped at a small pond below the site. A small amount of disturbance was present but it was not caused by grazing. The soil type was sandy with coarse fragments. Salt deposits were present. The dominant vegetation species at this site was inland saltgrass, foxtail barley, switchgrass, softstem bulrush, leafy bulrush, *Rosa woodsii* (Wood's rose), Baltic rush and prairie cordgrass. The area was flat and lacked a definable bank. No orchid individuals were found. The area was considered poor potential habitat based on lack of appropriate topography and the presence of salt accumulations.

U26

This area is downstream from Waypoint U25. This area was also flat and lacked a definable bank. The soil had a sandy texture with the presence of coarse fragments at the surface. The dominant species at this site was inland saltgrass, foxtail barley, yellow foxtail, switchgrass, softstem bulrush, Baltic rush, *Aristida purpurea* (purple threeawn) and prairie cordgrass. A late season perennial water source was present. No orchid individuals were found. Lack of appropriate topography and highly dense vegetation cover made this area marginal potential habitat.

U27

The late season perennial water source ended at a small pond below the site. Salt deposits were present and the slopes were eroded. The soil at this site had a sandy texture. The channel was flat and lacked a definable bank until it reached the pond. The top of the banks were predominantly inland saltgrass. The channel contained foxtail barley, softstem bulrush, leafy bulrush, prairie cordgrass and Baltic rush. The vegetation cover in the channel was highly dense. No orchid individuals were found. Highly dense vegetation cover, lack of appropriate topography and the presence of salt deposits made this area poor potential orchid habitat.

U28

This area is classified as an ephemeral drainage. A late season perennial water source was not present which made this area non-existent orchid habitat. The main vegetation species were foxtail barley, softstem bulrush, *Andropogon hallii* (sand bluestem) and *Carex filifolia* (threadleaf sedge).

U29

This area was classified as a dry stream bed. A perennial water source was not present. This area was predominantly coarse sand in the bottom and was devoid of vegetation. Due to the lack of a perennial water source, the habitat for this area is non-existent.

U30

This area is a drainage channel. The soil was poorly drained clay as water was present on the soil surface. Salt deposits were present at this site. The dominant species at this site was showy milkweed, *Melilotus albus* (white sweetclover), *Sporobolus airoides* (alkali sacaton), softstem bulrush, foxtail barley, sand bluestem, Nebraska sedge, leafy bulrush, Sandberg bluegrass and *Ambrosia psilostachya* (western ragweed). No orchid individuals were found. This area is considered poor potential habitat due to saturated soils and the presence of salt deposits.

U31

This area was downstream from Waypoint U31. The soils were highly saturated and

poorly drained clay at this site as well. The west side of the bank had a 30 percent slope while the east side had a near vertical slope. Salt deposits were also present. The dominant species at this site was *Epilobium ciliatum* (fringed willowherb), alkali sacaton, Nebraska sedge, softstem bulrush, Sandberg bluegrass, leafy bulrush and showy milkweed. No orchid individuals were found. This area was also considered poor potential habitat based on saturated soils, clay texture and the presence of salt deposits.

U32

This area was also an ephemeral drainage that had been dammed up. No late season perennial water source was present which made the orchid habitat non-existent. Cheatgrass and *Bromus japonicas* (Japanese brome) were the dominant vegetation species in this area. No orchid individuals were found.

U33

This site was a stock pond in a closed basin. A late season perennial water source was present; however, no mesic edge vegetation was present near the pond. The dominant species for this area were: alkali sacaton, Nebraska sedge, softstem bulrush, Sandberg bluegrass, and leafy bulrush. No orchid individuals were found. Lack of mesic edge vegetation and appropriate topography make this area marginal orchid habitat.

DISCUSSION

No Ute Ladies' Tresses orchids were identified during the 2008 survey of the Ludeman Project area. Most of the areas had two or three characteristics that would qualify as potential orchid habitat. Five areas were identified as marginal habitat. Those areas are U4, U5, U6, U26 and U33. These sites had the presence of a late season perennial water source, hydrophytic vegetation, the appropriate topography, clay soils and the absence of salt accumulations. The primary limiting factor for most areas was the lack of a late season perennial water source. The most common limiting secondary factors were: lack of sandy soils, the lack of mesic edge vegetation, lack of adequate vegetation cover (density), the lack of a definable channel or appropriate slope and the presence of salt deposits. If a perennial water source was present and one or more of the above features were absent then the area was considered marginal habitat.

UTE LADIE'S TRESSES ORCHID SAMPLE LOCATION

MAP

UTE ORCHID MAP

UTE LADIE'S TRESSES ORCHID SAMPLE LOCATION

PHOTOGRAPHS



Photo 1: Upstream from U1

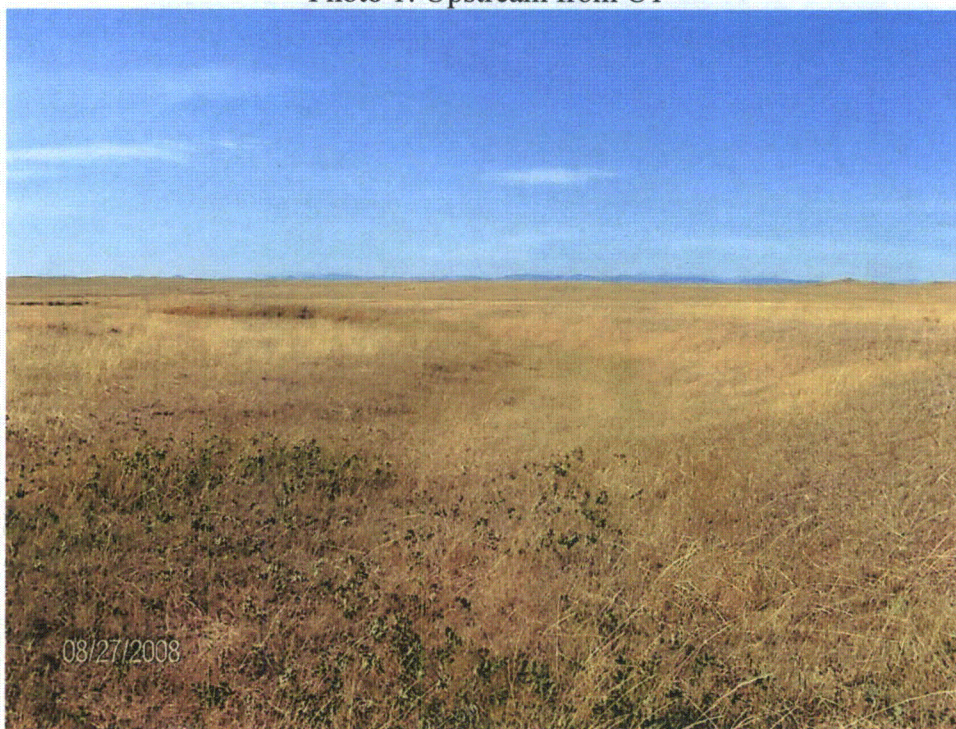


Photo 2: Downstream from U1



Photo 3: U2 during vegetation sampling (7/08)

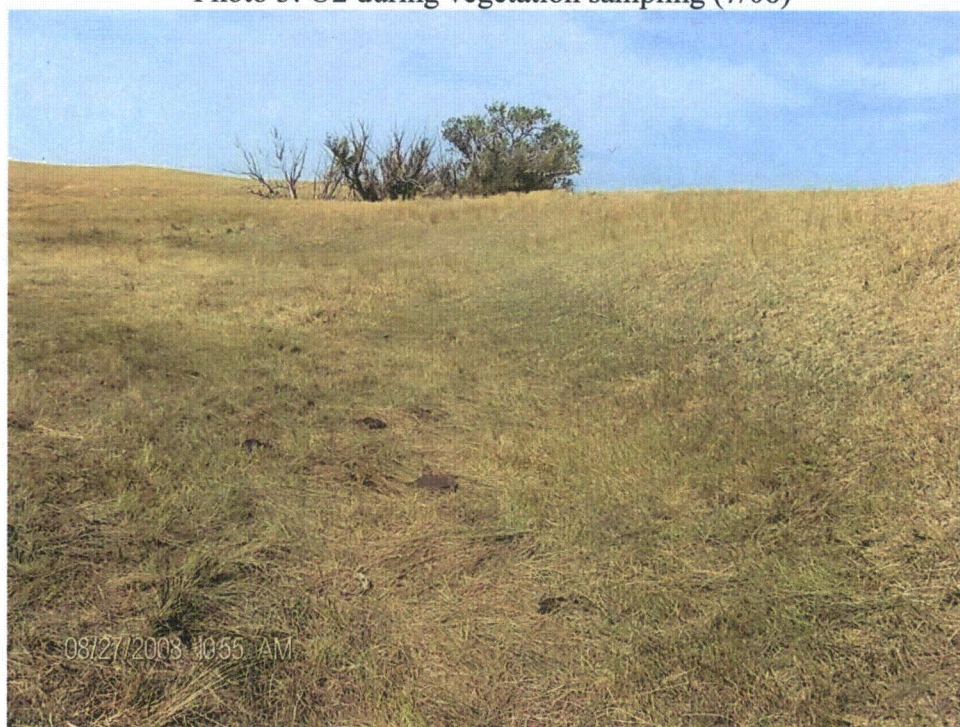


Photo 4: U2 during orchid survey after grazing (8/08)



Photo 5: Upstream facing north from U2

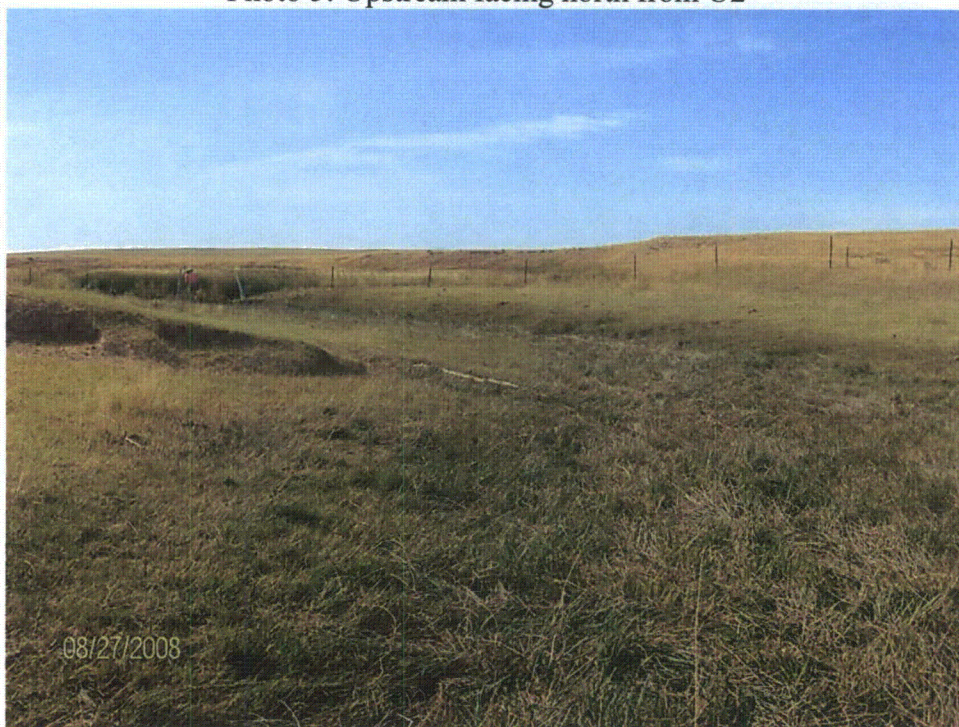


Photo 6: Downstream facing south from U2



Photo 7: Fence line between U2 and U3



Photo 8: Downstream facing south from U3



Photo 9: Upstream from U4

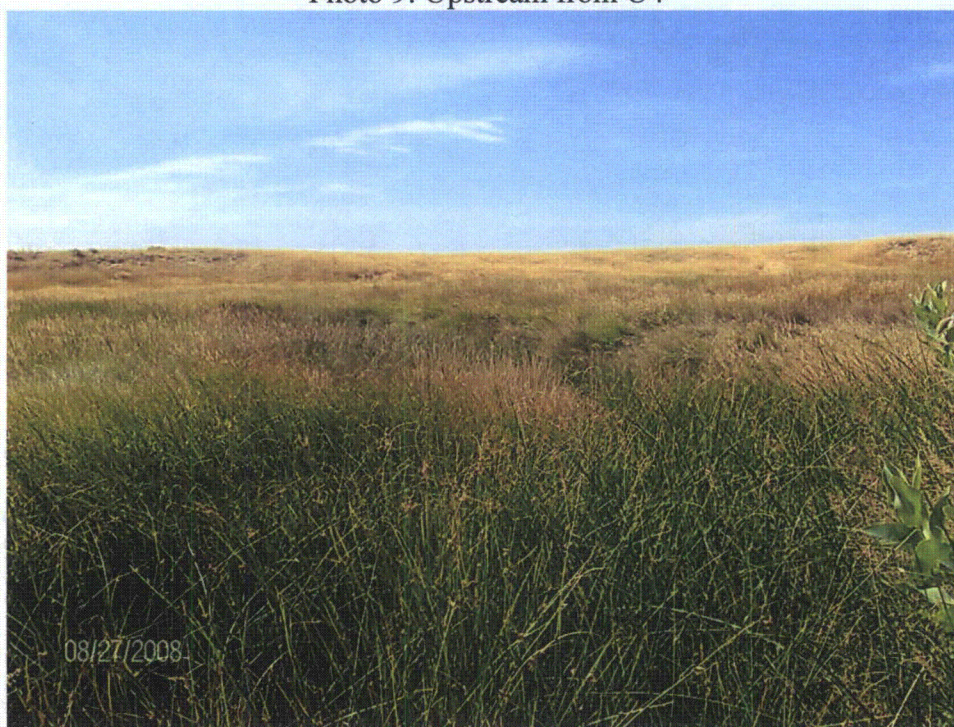


Photo 10: Downstream from U4



Photo 11: Upstream from U5



Photo 12: Downstream from U5



Photo 13: Upstream from U6



Photo 14: Downstream from U6



Photo 15: Upstream from U7



Photo 16: Downstream from U7



Photo 17: Upstream from U8

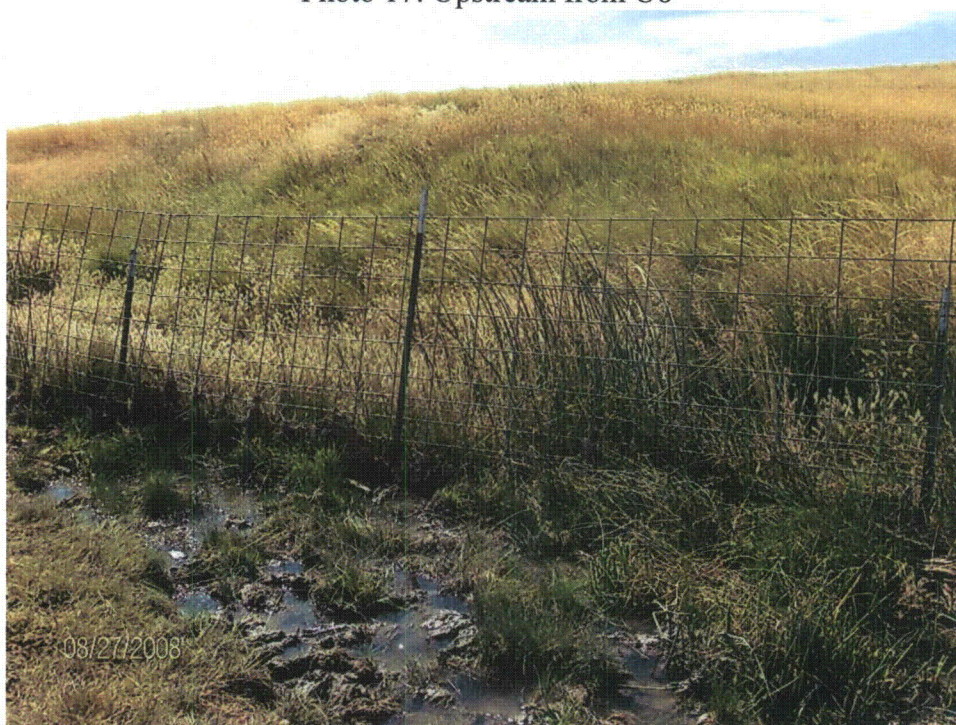


Photo 18: Downstream from U8



Photo 19: Facing east from U8



Photo 20: Downstream from U9



Photo 21: Upstream from U9



Photo 22: Edge of pond at U10



Photo 23: Vegetation surrounding pond at U10



Photo 24: Dry playa at U11



Photo 25: Close-up of the pond at U12



Photo 26: Dry playa at U13



Photo 27: Facing east from U14



Photo 28: Facing south from U14



Photo 29: Edge of pond at U15



Photo 30: Close-up of pond at U16



Photo 31: Facing east from U17



Photo 32: Facing north from U17



Photo 33: Facing east from U18



Photo 34: Upstream from U18



Photo 35: Downstream from U18



Photo 36: Facing north from U19



Photo 37: Facing northeast from U19



Photo 38: Facing west from U19



Photo 39: Facing north from U20

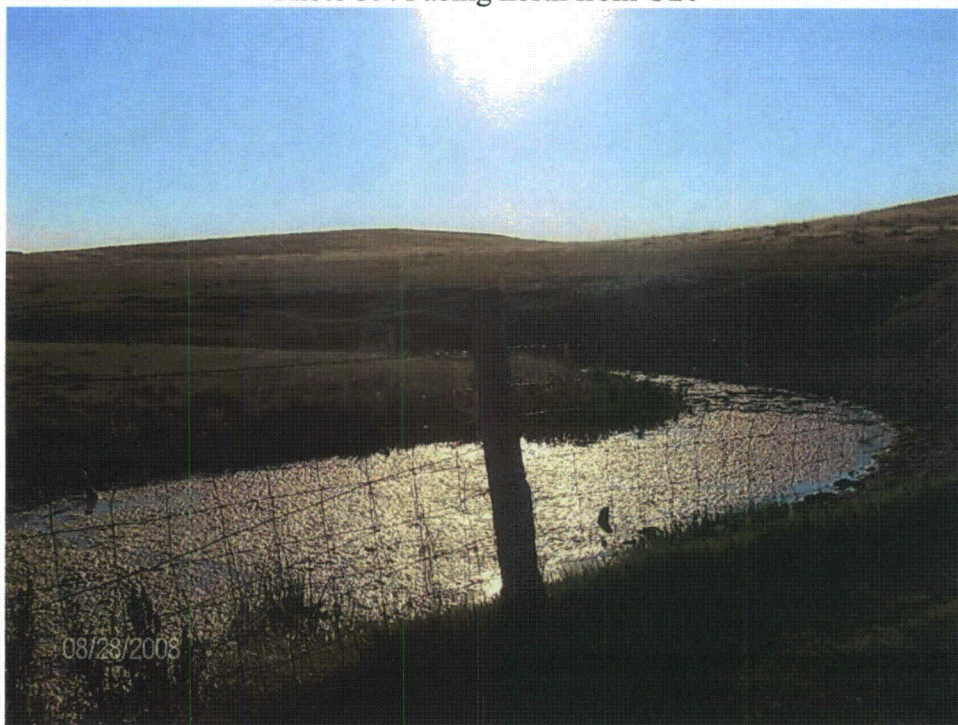


Photo 40: Facing east from U20



Photo 41: Facing west from U20



Photo 42: Upstream from U21



Photo 43: Downstream from U21



Photo 44: Facing east from U22



Photo 45: U22 the presence of hydrophytic vegetation in the channel



Photo 46: U22 facing west with the presence of a perennial water source



Photo 47: Close-up of the pond at U23



Photo 48: Facing southwest from U23



Photo 49: Facing west from U23



Photo 50: Facing south from U24



Photo 51: Facing northeast from U24

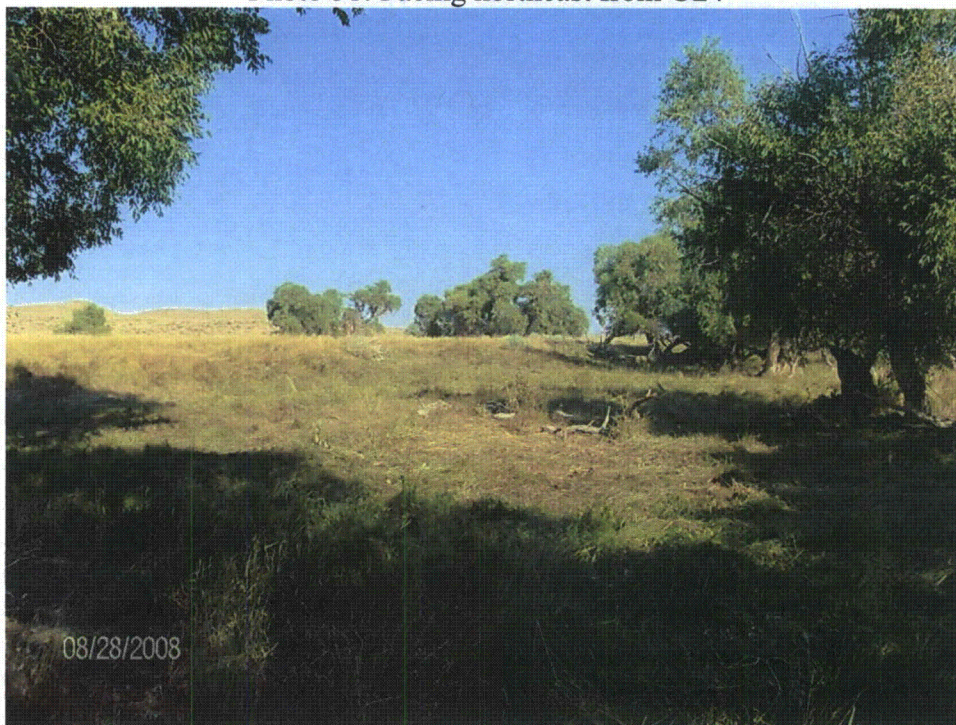


Photo 52: Facing north from the trees from U24



Photo 53: Facing southwest from the trees from U24



Photo 54: Pond at U25



Photo 55: Facing west from U25



Photo 56: Facing east from U25



Photo 57: Pond at U26



Photo 58: Downstream from U27



Photo 59: Facing northeast from U27



Photo 60: Pond at U27



Photo 61: Downstream from U28

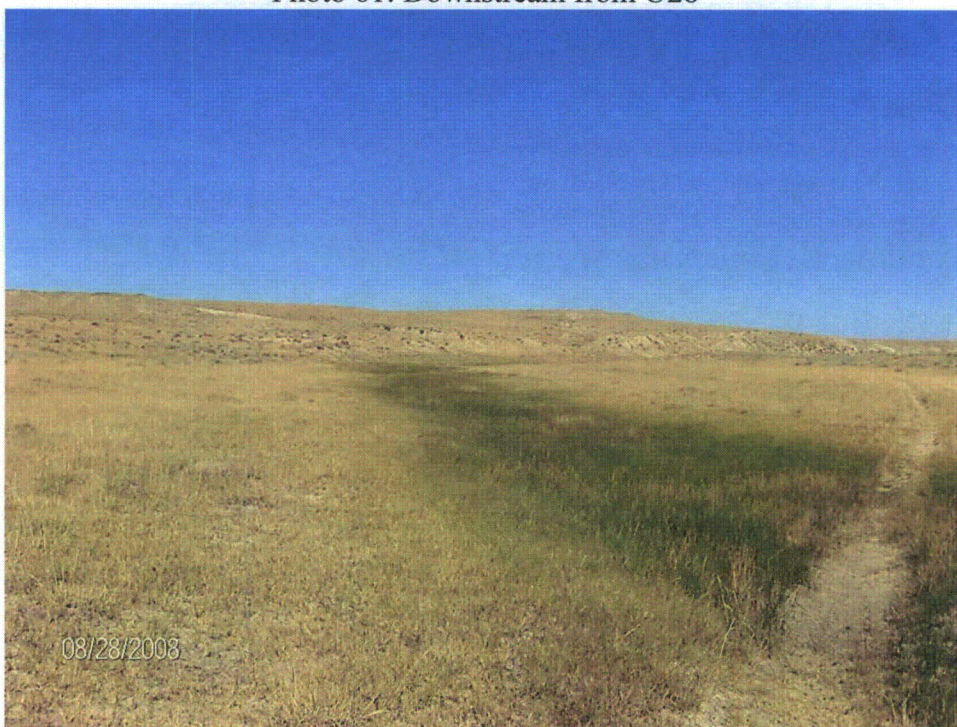


Photo 62: Upstream from U28



Photo 63: Upstream from U29



Photo 64: Downstream from U29



Photo 65: Downstream from U30



Photo 65: Upstream from U30



Photo 66: Salt crust at U31



Photo 67: Close-up of the bank at U31



Photo 68: Upstream from U31



Photo 69: Downstream from U32



Photo 70: Upstream from U32

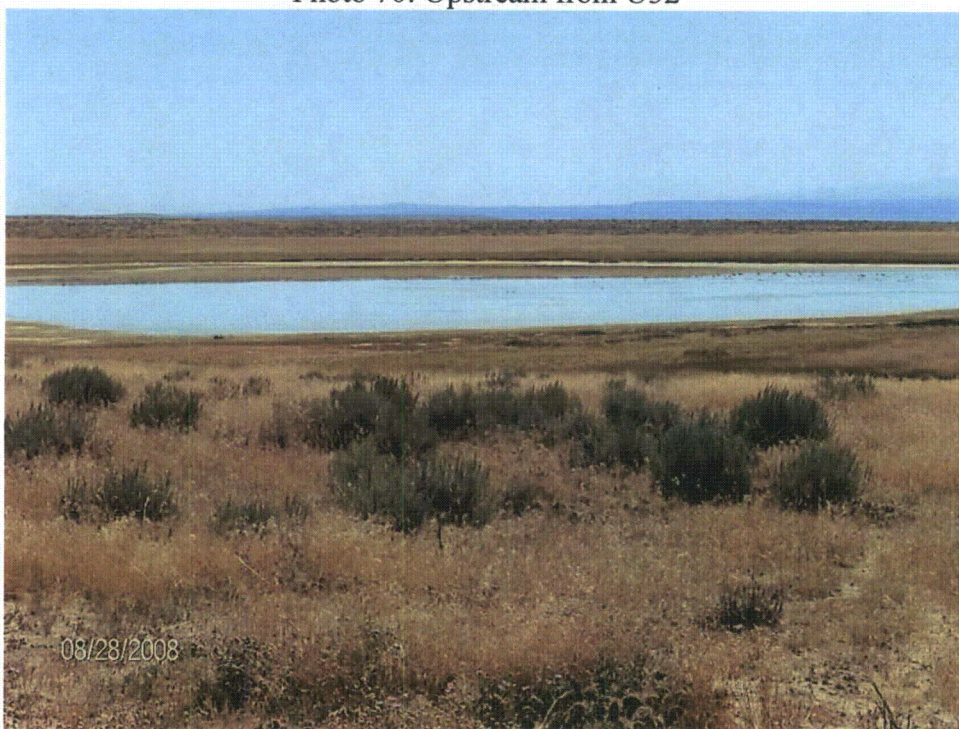


Photo 71: Close-up of pond at U33

**THIS PAGE IS AN
OVERSIZED DRAWING OR
FIGURE,
THAT CAN BE VIEWED AT THE
RECORD TITLED:**

**“UTE LADIES’ TRESSES ORCHID
(ULT) SURVEY MAP”**

WITHIN THIS PACKAGE

D-02