

**Habitat Characterization and Rare Species Survey
for the proposed Low Level Waste Repository,
Andrews County, Texas**

Final Report

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Purpose:

To conduct a survey of a study area defined as within a 5km radius of the proposed low level waste repository in Andrews County, Texas in order to:

- Characterize the natural habitats present and their condition,
- Note the presence of wildlife species, and
- Perform focused surveys for the sand dune lizard (*Sceloporus arenicolus*) and ascertain the availability of suitable habitat for this and other rare species.

Methods:

The survey visit was conducted on 14 October 2004 between the hours of 07:00 and 17:30.

Qualitative methods were used to characterize the ecosystems of the study area.

Representative sites within each major quadrant were established and characterized with respect to dominant vegetation components. No trees were present, but shrubs, forbs, and grasses and the height of each vegetation layer was recorded. The general topography and physiographic character of the area (e.g., stabilized dunes, active blowouts) and general observations on habitat condition and use (e.g., grazing, presence of structures and roads) were also noted.

The date, approximate time of day, and general weather conditions (e.g., wind velocity, cloudiness, and temperature) were recorded. Vegetation height and distance measurements were recorded in metric system, for consistency. The elevation (feet above MSL) and location at each location was taken, using a hand held Etrex Global Positioning System (GPS). At least one digital photograph was taken at each location, and camera orientation was recorded.

Specific habitats known to support rare species, such as the sand dune lizard (*Sceloporus arenicolus*) were identified from topographic maps, recent aerial photography, and discussions with regional environmental personnel of WCS, who were familiar with the area. Stabilized dunes or active sand blowouts in areas of shinnery oak (*Quercus havardii*) mixed with sand sage (*Artemisia filifolia*) are known to be critical to this species. All such areas within the study area were visited to document conditions and look for lizards. Although conditions were cool (55-70⁰ F) during the October visit, many lizards were active. However, presence of habitat was deemed sufficient grounds not to rule out the possibility of species occurrence. Similar habitat in the vicinity of Eunice, New Mexico, only a few miles west of the site, had been documented as harboring populations of the species.

Observations of wildlife and wildlife sign were recorded at each site, and incidental observations between site locations were noted to document the presence of species in particular habitats

and locations within the study area. Because of recent heavy rains in the area, pools were present at locations north and south of site within the study area. These were noted and surveyed for evidence of wildlife use.

Results:

Eighteen sampling locations were established, characterized, and photographed within the study area during the survey. Table 1 summarizes the location, elevation, general habitat (including height of vegetation strata), and wildlife observed. Scientific names of plant species listed in the table and discussed in the text are presented in Table 2. Survey locations are shown in Figure 1.

Vegetation Cover and Habitat

Vegetation cover within 5km of the site is dominated by shrubs and grasses. With the exception of the RCRA permit area surrounding the site, most of the area is grazed by cattle. Shinnery oak is present in areas north, south, and west of the site, but not to the east. Overgrazing indicator species, such as snakeweed and soapweed, and weedy grass and forb species are common throughout most areas surveyed.

Soils within the study area are dominated by sandy loams and sandy soils. Stabilized sand dunes and small blowouts occur west, north, northeast, south, and southeast of the site. None of these are within 1.5 km of the site. All of these dune areas are dominated by mesquite (generally 1 – 2 m), shinnery oak, and a combination of other shrub species, including sand sagebrush, soapweed (*Yucca* sp.), and rabbitbrush (*Chrysothamnus pulchellus*) (45 -80 cm) (Figure 2). Mixed forbs and grasses comprise the understory. Some grass and forb species (e.g., sunflowers) attain heights up to 1 m, but these are not generally dominant. Much of the quadrant southwest of the site and outside the RCRA permit area boundary is dominated by grasses, but shinnery oak, mesquite, and soapweed are scattered throughout the area (Figure 3).

All areas visited suffer from some level of human-induced disturbance. Oil well pads, pipelines, transmission line corridors, gravel pits, and access roads are found throughout most portions of the study area. In spite of the surface disturbance, vegetation cover in much of the study area is relatively dense, probably due in part to the unseasonably heavy rainfall during the past several months. Bare soil areas are associated with surface disturbance, and many of these are sparsely vegetated with weedy invasive species such as Russian thistle (*Salsola iberica*).

Wildlife

Incidental wildlife observations during the visit were made along roads and at sampling locations. Weather conditions during the visit were mostly sunny, breezy (wind speeds 5-15 mph), and temperatures were cool (55° – 70° F).

The mourning dove was the most abundant and widespread bird species observed. Other bird species included scaled quail, Chihuahuan raven, roadrunner, American kestrel, brown-headed cowbird, and savanna sparrow.

The only mammals observed or positively identified from sign were black-tailed jackrabbit, coyote, and gopher. Previous surveys have identified a variety of rodents (e.g., Ord's kangaroo rat, silky pocket mouse, deer mouse, northern grasshopper mouse, southern plains woodrat, and plains harvest mouse) (Ortega et al. 1997). Collared peccaries (*Tayasu tajacu*) were observed east of the site during the March 2004 survey, but the area was not visited during the October site visit. Rodent tracks were abundant, particularly in sandy areas, but species identification could not be made.

No evidence of amphibians was found at the ephemeral pools located north and south of the site. Reptiles observed in the study area included whiptail lizards (*Cnemidophorus* sp.), southern prairie lizard (*Sceloporus undulates consubrinus*), and sand dune lizard (*Sceloporus arenicolus*). A western hognose snake (*Heterodon nasicus*) (Figure 4) was observed crossing a dirt road approximately 4km northeast of the site.

Common invertebrate species were observed at various locations. Grasshoppers were abundant at all sites, and most sites harbored one or more ant species. Flies, including mosquitoes, were also common. A variety of beetles, butterflies, and spiders was also observed, but not further identified.

Rare species

The Texas horned lizard (*Phrynosoma cornutum*) has been reported as present on the site by previous surveys. Suitable habitat is present throughout much of the study area, and it is likely that the species is widespread in the region, as reported by previous investigators. None were observed during the October 2004 survey.

The sand dune lizard has been reported for the area west of the site (Degenhardt et al. 1996). Habitat characteristics favorable for the species include open sandy blowouts near shinny oak (Garrett and Barker 1987, Degenhardt et al., 1996). As such habitat was found in much of the study area, the species may occur in the area. However, such areas of habitat are small and

isolated from each other, so no estimate of actual distribution or abundance could be made on the basis of present surveys.

Suitable habitat for the sand dune lizard does not appear to occur within 1.5 km of the site, but areas west, north, northeast, south, and southeast of the site appear to be suitable. A juvenile lizard, presumably of this species, was captured, photographed, and released from a sandy blowout location approximately 4km southeast of the site (Figure 5). The habitat in which the specimen was collected is a small blowout with shinners oak, sand sage, soapweed, and sparse grasses present at the periphery (Figure 6).

Summary:

Natural habitats in the study area (5km radius of the proposed site) are mostly shrubland with grassy patches, which are typical of the larger surrounding region. Species observed in these areas are typical of the region. Two species of concern, the Texas horned lizard and sand dune lizard, occur within the area. The former is widespread in Texas and is considered threatened because of over-collecting, incidental loss, and habitat disturbance. The latter has a specialized habitat that occurs throughout much of the region of the site. It is a proposed candidate for protection due to the loss of habitat, primarily due to spraying to remove shinners oak to improve grazing. The species is the subject of intensive studies in New Mexico.

Development and operation of the proposed low level radioactive waste facility at the site will potentially result in the loss of some individual horned lizards and an incrementally small area of potential habitat. As suitable habitat for the sand dune lizard does not occur on or within 1.5km of the proposed areas of site disturbance, no impacts are anticipated. Protection of the area immediately surrounding the site may result in improved habitat quality for both species over time.

References:

- Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. *Amphibians and reptiles of New Mexico*, University of New Mexico Press, Albuquerque.
- Garrett, J.M., and D.G. Barker. 1987. *A field guide to reptiles and amphibians of Texas*. Gulf Publishing Company, Houston, Texas.
- Ortega, I.M., F.C. Bryant, R.D. Petit, and K. Rylander. 1997. *Ecological Assessment of the Low Level Waste Repository, Andrews County, Texas*. Final Report.

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Table 1 - Sampling location data for 14 October 2004 survey.

LOCATION NUMBER	VEGETATION	WILDLIFE
1	Stabilized dunes <u>Dominants:</u> shinnery oak (40-50 cm) sand sage (40 – 60 cm) scattered mesquite (1.5 – 2.0 m) soapweed (35 – 50 cm) Mixed forbs and grasses including annual buckwheat, snakeweed, broomweed, sunflowers, asters, silverleaf nightshade, mixed grasses. Grazed	scaled quail mourning dove Chihuahuan raven
2	Stabilized dunes <u>Dominants:</u> shinnery oak (40 – 50 cm) forbs (fleabane, snakeweed, sunflowers)(30 – 45 cm) mesquite (1.0 – 2.0 m) Scattered sand sage, soapweed, and ragweed. Grazed	cattle Chihuahuan raven grasshoppers
3	Shinnery oak shrub area <u>Dominants:</u> shinnery oak (30 – 45 cm) mesquite (1.5 – 2.0 m) Mixed cover of rabbitbrush, sunflowers (0.7 – 1.2 m), asters, soapweed, snakeweed, purple aster, other forbs and grasses. Grazed	Greater roadrunner grasshoppers ants
4	Stabilized dunes; small blowouts <u>Dominants:</u> shinnery oak (35 – 45 cm) mesquite (2.2) Mixed sparse cover forbs and bunch grasses; <i>Salsola</i> common. Grazed	Lizard tracks (<i>Cnemidophorus</i> ?) tracks, gopher mound away from blowout
5	Disturbed shinnery oak shrubland <u>Dominants:</u> shinnery oak (30 – 45 cm) Mixed shrubs, forbs, and grass cover of snakeweed, rabbitbrush, soapweed. Heavily grazed	Cattle brown-headed cowbirds flies grasshoppers
6	Blowout by oil well head <u>Dominants:</u> shinnery oak (30 -45 cm) Sparsely scattered grasses and weedy forbs on mostly bare sand. Grazed	ants, grasshoppers flies

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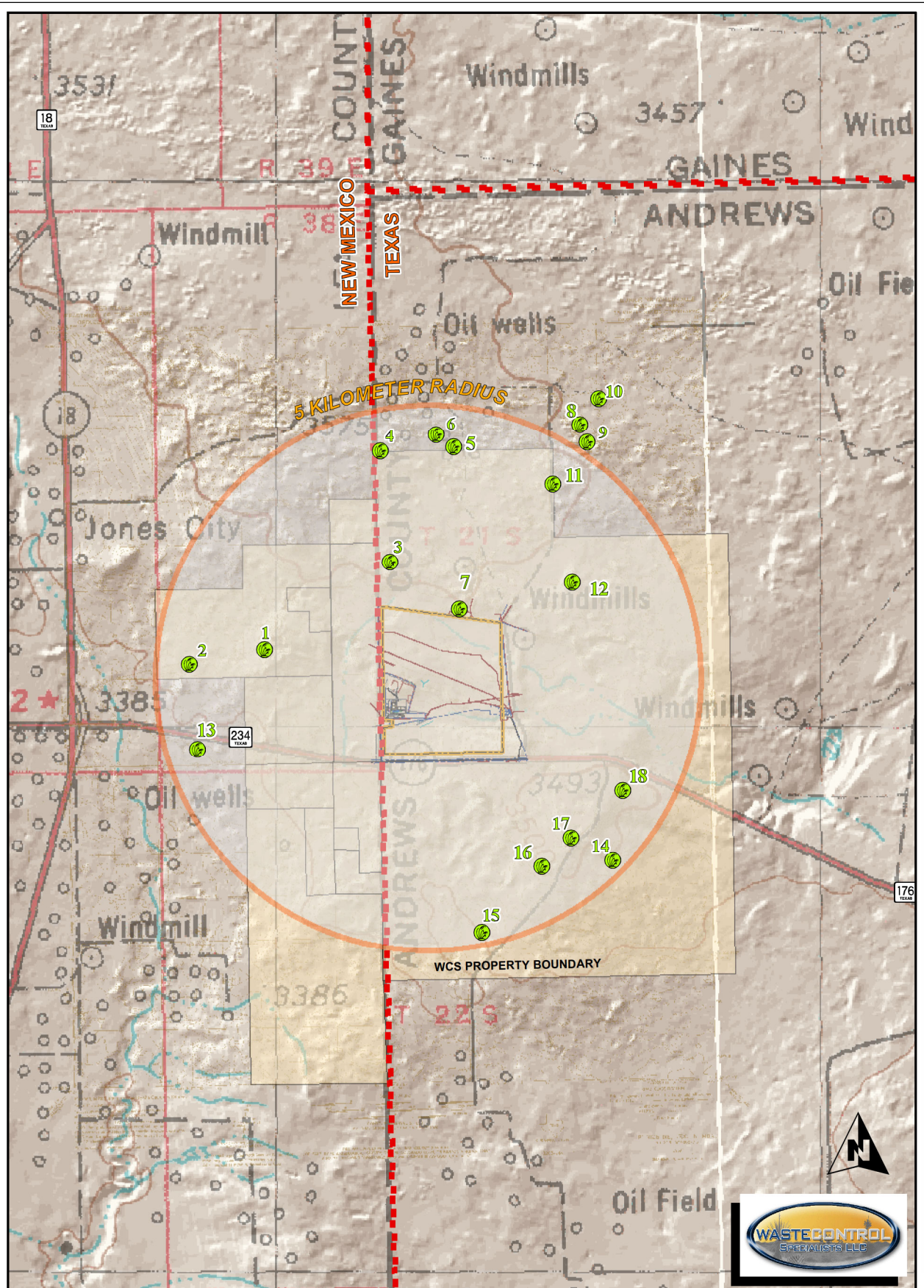
LOCATION NUMBER	VEGETATION	WILDLIFE
7	Border of gravel pit, pools <u>Dominants:</u> shinnery oak (40 – 50 cm) mesquite (1.2 – 1.8 m) Mixed low cover of grasses and forbs; nightshade, snakeweed, primrose, <i>Salsola</i> . Grazed.	mourning dove American kestrel Savanna sparrows grasshoppers mosquitoes flies
8	Small blowout in shinnery oaks <u>Dominants:</u> shinnery oak (35 – 45 cm) soapweed (40 – 50 cm) mesquite (1.6 - 2.0 m) Sparse overall cover (<5%), composites, <i>Salsola</i> , snakeweed, locoweed, thistle, sunflowers, bunchgrasses	grasshoppers flies
9	Masonry octagon 2m in diameter and 0.7m high in small blowout <u>Dominants:</u> soapweed (45 cm) Sparse (<5%) cover of <i>Salsola</i> and tall grasses. Grazed	black-tailed jackrabbit flies grasshoppers
10	Large blowout (approx. 20X20 m) <u>Dominants:</u> shinnery oak (30 – 45 cm) soapweed (40 -50 cm) Mesquite (3+ m) Sparse grasses, <i>Salsola</i> . Grazed	mourning dove <i>Cnemidophorus</i> grasshoppers flies
11	Dirt road in shinnery oak stabilized dune habitat <u>Dominants:</u> shinnery oak (25 – 40 cm) soapweed (35 – 70 cm) Scattered low mesquite (1.4 – 1.9 m), sunflowers, mixed low grasses. Grazed	Western hognose snake grasshoppers
12	Disturbed stabilized dunes <u>Dominants:</u> Shinnery oak (30 – 40 cm) Mesquite (1.4 – 2.2) Scattered thin cover of oak, asters, soapweed, grasses, snakeweed, prickly pear. Grazed	grasshoppers ants
13	Predominantly grassland with low shrubs <u>Dominants:</u> grasses (Table 2) (0.8 – 1.0 m) shinnery oak (30 – 45 cm) Mesquite (0.5 – 1.6 m) Scattered mixed shrubs among dense grasses – typical of larger area in all directions. Not grazed?	southern prairie lizard grasshoppers

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LOCATION NUMBER	VEGETATION	WILDLIFE
14	Dense mesquite grassland <u>Dominants:</u> Mesquite (2.0 – 3.2 m) Scattered forb (snakeweed, asters, <i>Salsola</i> , <i>Solanum</i>); almost no grass. Grazed	Cattle mourning dove
15	Shrubland – grassland <u>Dominants:</u> Snakeweed (40 – 50 cm) Mixed grasses and forbs (40 – 70 cm) Scattered diverse vegetation (basket flower, asters, soapweed); heavily grazed area; little mesquite	<i>Cnemidophorus</i> mosquitoes roadrunner and coyote on road in general area
16	Sandy blowout in shinnery oak habitat <u>Dominants:</u> shinnery oak (35 – 45 cm) salsola (40 cm) soapweed (35 – 55 cm) Broad sparsely vegetated sandy dune area, sparsely vegetated by rabbitbrush, aster, finged sage, globe mallow. Grazed	southern prairie lizard sand dune lizard? Mosquitoes
17	Caliche borrow pit; large pool <u>Dominants:</u> Mesquite (1.6 – 2.4 m) Little vegetation, much mud. Cattle use area	no waterfowl!? mourning dove
18	Mesquite shrubland <u>Dominants:</u> Mesquite (0.5 – 1.6 m) Scattered understory of grasses and forbs (blue grama grass, snakeweed, <i>Panicum</i> , <i>Solanum</i>). Grazed	mosquitoes grasshoppers

Table 2 - Representative plant species observed during the October 2004 survey.

Common Name	Scientific Name
Shrubs	
Mesquite	<i>Prosopis glandulosa</i>
Prickly pear cactus	<i>Opuntia</i> sp.
Rabbitbrush	<i>Chrysothamnus pulchellus</i>
Shinnery oak	<i>Quercus havardii</i>
Sand sagebrush	<i>Artemisia filifolia</i>
Soapweed	<i>Yucca</i> sp.
Forbs	
Western ragweed	<i>Ambrosia psilostachya</i>
Lambsquarter	<i>Chenopodium</i> sp.
Thistle	<i>Cirsium</i> sp.
Groundsel	<i>Scenico longilobus</i>
Fleabane	<i>Erigeron</i> spp.
Annual buckwheat	<i>Eriogonum annuum</i>
Loco weed	<i>Astragalus</i> sp.
Snakeweed (perennial broomweed)	<i>Gutierrezia sarothrae</i>
Annual broomweed	<i>Xanthocephalum dracunculoides</i>
Primrose	<i>Oenothera</i> sp.
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>
Russian thistle	<i>Salsola iberica</i>
Globe mallow	<i>Sphaeralcea coccinea</i>
Grasses	
Sand bluestem	<i>Andropogon hallii</i>
Little bluestem	<i>Schizachyrium scoparium</i>
Purple three-awn	<i>Aristida purpurea</i>
Black grama	<i>Bouteloua eriopoda</i>
Blue grama	<i>Bouteloua gracilis</i>
Buffalo grass	<i>Buchloe dactyloides</i>
Muhly	<i>Muhlenbergia</i> sp.
Sand dropseed	<i>Sporobolus cryptandrus</i>



Habitat Survey Location

Drawing 1

Figure 1 - Location #1 Looking Southwest, Approximately 3.5km West of the Site



Note stabilized dunes, shinnery oak, and sand sagebrush cover.

Figure 2 - Location #2, Looking North



Figure 3 - Location #2, Looking Northwest



Figure 4 - Location #3



Figure 5 - Location #3, Looking North



Figure 6 - Location #3, Shinnery Oak



Figure 7 - Location #3, Rabbitbrush



Figure 8 - Location #4, Looking Northwest



Figure 9 - Location #4, Looking West



Figure 10 - Location #4, Looking West



Figure 11 - Location #4, Gopher Mound



Figure 12 - Location #5, Looking West



Figure 13 - Location #6, Looking West



Figure 14 - Location #8, Looking East



Figure 15 - Location #9, Looking Northeast



Figure 16 - Location #10, Looking Northeast



Figure 17 - Location #10, Looking West



Figure 18 - Location #10, Looking East



Figure 19 - Location #11, Hognosed Snake



Figure 20 - Location #11, Western hognose snake



Western hognose snake observed at location #11 on 14 October 2004, approximately 4km northeast of the site.

Figure 21 - Location #11, Hognose Snake in Shin Oak



Figure 22 - Location #12, Looking East



Figure 23 - Location #12, Ant Hill



Figure 24 - Location #13, Looking South, Approximately 4 km SW of the Site



Photograph taken on 14 October 2004 of location #13 looking south, approximately 4km southwest of the site. Note shinnery oak beneath grass stratum and shinnery oak understory.

Figure 25 - Location #14, Near Well and Pool



Figure 26 - Location #14, Basidiomycete



Figure 27 - Near Location #14



Figure 28 - Location #15, Looking Northwest



Figure 29 - Location #16, Sandy Blowout habitat



Photograph of sandy blowout habitat at location #16 taken on 14 October 2004 looking north.

Figure 30 - Location #16, Possible Juvenile Sand Dune Lizard



Sand dune lizard? Found in sandy blowout area at location #16 on 14 October 2004.

Figure 31 - Location #16, Sizing of Possible Sand Dune Lizard



Figure 32 - Location # 16, *S. undulatus*



Figure 33 - Location #16, Looking Northwest



Figure 34 - Location #17, Looking West



Figure 35 - Cow North of RCRA Permit Boundary

