VEGETATION OF

WESTERN KANSAS PLAYA LAKES--1993-1995

by

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ABSTRACT

Vegetation of twelve playa lakes in western Kansas was intensively sampled during 1993 through 1995. Twenty-seven cropped playas were sampled in 1994 and 21 in 1995. Playas not disturbed by agriculture (rangeland sites) were dominated by wetland plant species. Playas disturbed by agriculture were often covered by non-wetland plant species. The two dominant wetland plant species found on undisturbed playas were the spikerushes (Eleocharis macrostachya) and (E. acicularis). Other frequently encountered wetland indicator species were toothcup (Ammania spp.), umbrella sedge (Cyperus acuminatus), and western water clover (Marsilea vestita).

INTRODUCTION

Playa lakes represent a challenge for scientists and resource managers charged with identifying and delineating wetlands in western Kansas. The highly variable climatic conditions, coupled with the extensive use of conservation tillage, terraces, irrigated agriculture, and other hydrological alterations, contribute to the alternating wet and dry cycles of these basins. In response to these changing moisture conditions, the vegetation of playa lakes can change dramatically through time and space. According to federal guidelines, the floristic composition of a given site (i.e., dominant plants and their tolerance to wet environments) is one of the three diagnostic environmental characteristics used to determine whether the site is a wetland. The soil and hydrological aspects of the site are the remaining criteria used for wetland determination and delineation. We collected data on the vegetation of these playa lakes in June and September from 1993-1995 to determine if these playa lakes met the definition of wetlands outlined in the 1987 Wetland Delineation Manual. The vegetation of a wetland is defined as consisting of: "macrophytes that are typically adapted to areas having hydrologic and soil conditions described in the definition of wetlands. Hydrophytic species, due to morphological, physiological, and/or reproductive adaption(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions." This study focuses on the vegetation of selected playa lakes to gain insight into how floristic composition may influence wetland determinations of these upland depressions.

The objective of this project was to examine the wetland status of selected playa lakes in western Kansas by collecting and analyzing plant species data. Because a given site contains a set of plant species adapted to localized conditions, vegetation can represent the integration of many site features, such as climate, soil type and hydrology. Thus, a floristic analysis of these playas with their highly variable moisture conditions could facilitate a determination of their wetland status. In addition, all study sites had hydric (wetland) soil.

Table 1. Name and location of the seven sites sampled during May and September of 1993-1995. [1]Sampled only during 1993; [2]Sampled only during 1994 and 1995; [3]Landowner permission for sampling fall 1995 was not granted.

SITE	COUNTY	USGS 7.5' QUAD	SECTION	TOWNSHIP & RANGE
Wild Turkey[1]	Ford	Ensign	NW4 9	27S 26W
Chorus Frog[2]	Lane	Dighton SW	SW4 31	19S 28W
Meadowlark	Lane	Amy	S2 35	18S 30W
Bull Lake	Meade	Plains	W2 4	32S 30W
Dead Cow[2]	Meade	Kismet NE	NW4 24	33S 30W
Oklahoma View[2]	Meade	Proffitt Lake SW	SE4 11	35S 27W
Plains	Meade	Plains	SW4 20	31S 30W
Sand Creek[2]	Meade	Fowler SW	NE4 22	32S 27W
Jackson[3]	Morton	Richfield	SE4 10	32S 42W
Soil Bank	Morton	Richfield SW	SE4 2	32S 43W
Howard	Thomas	Oakley North	NW4 12	10S 32W
Mohrman Ranch	Thomas	Dewey Ranch SW	NW4 18	6S 36W

STUDY AREAS

Plant data were collected from a total of thirty-nine playas during the study period (1993-1995). Twelve of the playas were either rangeland sites, or not currently in crop production. The other twenty-eight were cropped sites and were sampled with line transects, a less intensive method.

Twelve intensively-sampled sites in five western Kansas counties represent the main study areas for this project. Five sites were originally selected, but Wild Turkey playa was dropped from the study because it was plowed and disked for waterfowl management in 1994. Seven additional sites were added in 1994 and 1995. A list of the names and locations of these sites is provided in Table 1, and maps of the sites are contained in the appendix. A brief description of each site follows the site name listed in Table 1. Information on hydric soils was obtained from the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Lab, 1987).

Wild Turkey playa is located in western Ford county about 10 miles west of Dodge City. This site is owned and managed as a wildlife area by the Kansas Department of Wildlife and Parks. This basin is moderately large, measuring about 43 acres as mapped on the USGS topographic map. From the Ford County Soil Survey, the soil of the basin is mapped as Randall clay, which is a hydric soil. Soils of the Randall series are "deep, poorly drained, nearly level, gray clays that are in depressions ... on nearly level upland" (USDA, SCS 1965). Wild Turkey playa is cultivated land and was last tilled in the spring of 1991. It was tilled again before the

1994 field season, so was not sampled in subsequent years.

Chorus Frog playa is located in south-central Lane County about 9.5 miles south of Dighton. The basin as mapped on the USGS quad is large (100 acres). Surrounding land use is pasture and cropland. The site is mapped as "intermittent" in the Lane County Soil Survey, but is a similar landscape feature to nearby areas mapped as Ness soil. Due to finding standing water and frogs during our first sampling, it was named Chorus Frog playa. Soils of the Ness series are hydric and are described as deep, poorly drained, nearly level soils on the floor of depressions and formed in calcareous fine-textured sediment (USDA, SCS, 1972).

Meadowlark playa is located in western Lane county about 7 miles west and 3 miles south of Dighton. This is the largest basin sampled inj the study (over 160 acres in size) and at its widest, the bottom in over ½ mile wide. The surrounding land use is rangeland and cropland, perhaps leading to a preponderance of meadowlarks at the site. The site is also mapped as "intermittent," and has similar landscape features nearby that are mapped as the hydric Ness soil (USDA, SCS, 1972).

Bull Lake playa is located about 2 miles north of Plains, Kansas. The basin depicted on the USGS map is moderately large, measuring over 60 acres. The soil is mapped in the Meade County Soil Survey as Ness silty clay, a hydric soil (USDA, SCS, 1977). The sampled area contains mostly native vegetation and is a grazed pasture.

Dead Cow playa is located eight miles southeast of Plains in Meade County. It is the smallest basin (about 10 acres) sampled in the study and had a dead cow in it, when sampling began. It has an unusual horseshoe shape. It is primarily surrounded by rangeland, but cropland is within the watershed. The soil is also mapped as the hydric Ness silty clay. On site sampling showed that the Ness soil extended beyond the edges of the depression, indicating that the soil formed before the current surface features.

Oklahoma View playa is located in southern Meade County, only one mile from the Oklahoma border. It is mapped as a 30-acre basin. Surrounding land use is Conservation Reserve Program land and rangeland. The soil is mapped as the hydric Ness silty clay.

Plains playa is located in northwest Meade county about 5 miles north of Plains. The basin as mapped on the USGS map is large (150+ acres), and contains cultivated fields and some pasture. In the sampled area, the soil is mapped as Ness silty clay (USDA, SCS, 1977).

Sand Creek playa is located in central Meade County in the Sand Creek watershed, two miles south and 6.5 miles east of Meade. It is a 20-acre basin. Surrounding land use is cropland and rangeland. The soil is mapped as the hydric Ness silty clay. Upon examination by a NRCS soil scientist, it was determined that 8-10 inches of upland soil from adjacent cropland had buried the hydric soil. Due to this situation, this site was considered as disturbed by agriculture.

Soil Bank playa is located in northwest Morton County about 9 miles west of Richfield. The sampled area was part of the 1957 soil bank program designed to revegetate cultivated sites. The playa area to the south of the sampled area (in Section 11 - see map) was enrolled in the Conservation Reserve Program in 1986. Basin size is moderately large, occupying about 50 acres on the USGS topographic map. From the Morton County Soil Survey, the playa soil is mapped as Lofton clay loam. The Lofton soil series "consists of poorly drained, dark-colored clayey soils in upland depressions" (USDA, SCS 1963), and it is not certain that this is a hydric soil.

The Jackson Pothole playa, also located in northwest Morton County, is about 4 miles west of Richfield. Basin size is moderate, occupying about 34 acres as mapped on the USGS topographic map. According to the soil survey, the basin contains the same soil type as the Soil Bank playa - Lofton clay loam. Land use in the sampled area is for crop cultivation with some grazed pasture to the south in Section 15.

The Howard playa is located in southeastern Thomas County about 5 miles north of Oakley. Basin size is small, occupying about 4 acres as mapped on the USGS topographic map. The playa soil is hydric and is mapped as Pleasant silty clay loam. This deep, moderately well-drained soil occurs on nearly level upland depressions (USDA, SCS, 1980). Current land use of this playa is also rangeland and contains mostly native vegetation.

The Mohrman Ranch playa is located in far northwestern Thomas County along the Thomas-Sherman County line, and is about 12 miles north of Brewster. Basin size is moderately small, occupying about 12 acres as mapped on the USGS map (the majority of the basin lies within Thomas County with a small portion in Sherman County). From the Thomas County Soil Survey, the basin soil is mapped as Pleasant silty clay loam, which is a hydric soil. The current land use of the playa is 2/3 rangeland and and 1/3 cropland. We sampled the vegetation on the rangeland portion.

Ninety-five playas were identified in the northwest corner of Meade County from USGS topographic maps. All 95 playas were visited in July 1994, with 27 playas surveyed. Due to land ownership changes, an inability to get permission to resurvey some playas, and recent tillage on two playas, only 21 playa lakes were sampled in 1995. Basin sizes of all playas were moderately small. All basins were mapped as Ness silty clay, a hydric soil.

VEGETATION SAMPLING METHODS

Two different methods of data collection were used. For the twelve intensively-sampled playas, vegetation was sampled using 1 m^2 plots. For the cropped sites, a simplified procedure was used--point sampling. At each intensively-collected playa lake, two vegetation transects were established for sampling purposes. The transects originated in the bottom of the basin and ran toward the uplands for all sites except Jackson Pothole. For this playa, because of its weedy, non-native nature, and for efficient sampling, two transects were sampled

randomly within the bottom of the basin. The playa maps in Appendix 1 show the approximate placement of transects at each site. At least 20 plots along each transect were sampled at two transects per playa for a total of 40 plots per site. For the Jackson Pothole site, ten plots were sampled along each randomly placed transect for a total of 20 plots.

The 1 m^2 plots were spaced evenly along the transect. However, the distances between plots varied between playas to adjust for the dimensions of each basin. Thus, distances between plots varied from two to 15 m, and the longer transects contained gaps between the basin bottom and the transition zone.

For all species that were found along a transect, one or more specimens were collected and pressed for species identification and future verification. Species identifications were verified using keys, and all species names and common names conform to the nomenclature in the Flora of the Great Plains (Great Plains Flora Association, 1991).

All plant species found in the playas were categorized into one of five basic wetland groups as defined in the 1987 Wetland Delineation Manual and listed in the National List of Plant Species that Occur in Wetlands (Reed, 1988).

1) *obligate wetland plants* (OBL) occur almost always (estimated probability > 99%) in wetlands, but occasionally are found in nonwetlands (estimated probability <1%);
2) *facultative wetland plants* (FACW) usually occur in wetlands (estimated probability 67% to 99%), but occasionally are found in nonwetlands (estimated probability 1% to 33%);
3) *facultative plants* (FAC) share an equal likelihood (estimated probability 33% to 67%) of occurring in either wetlands or nonwetlands;
4) *facultative upland plants* (FACU) usually occur in nonwetlands (estimated probability 67% to 99%), but occasionally are found in wetlands (estimated probability 1% to <33%); and
5) *obligate upland plants* (UPL) occur almost always (estimated probability >99%) in nonwetlands.

When the average value of all species found on the majority of transects at a site was below 3.0 (where OBL =1.0, FACW = 2.0, FAC = 3.0, FACU = 4.0, and UPL = 5.0), it was determined that wetland vegetation was prevalent in the playa.

Two sampling techniques were used to estimate the prevalence of wetland vegetation in each plot. First, the aerial percent cover of each species occurring within the plot was estimated to derive a measure of plant species composition. To facilitate data collection, six cover classes were used to estimate plant cover (Table 2). The combined cover of bare ground and litter was also estimated at each plot using these classes. Total cover within a plot could exceed 100% because of overlapping plant canopies. For analytical purposes, the midpoint values of the cover class for each species occurring within a plot were entered into an IBM-compatible computer using the software package Quattro Pro (Borland, 1992) and were manipulated using

Table 2. Cover classes and their midpoint values used to estimate plant species composition at each plot.

Cover Class	Percent Cover	Class Midpoint (%)
1	0 - 5	2.5
2	5 - 25	15.0
3	25 - 50	37.5
4	50 - 75	62.5
5	75 - 95	85.0
6	95 - 100	97.5

Paradox software (Borland, 1992). These data are available for export to other software packages and will be of interest for future statistical analyses of wetland vegetation changes over time.

The second sampling technique involved point sampling, which is a simplified and less time-consuming method of data collection. For each plot within a playa at one corner of the plot, a pin was lowered and the first species (or bare ground) that the pin "hit" was identified and recorded. The point sampling technique was used at all cropped sites since these sites were tilled at different times in the recent past. Subsequently, all points with bare ground were ignored until 50 points (vegetative samples) had been recorded.

RESULTS

Plant Species Composition for Plant Sampling

Data are summarized for each playa in Tables 3-14 (the original field data for each plot are available upon request for each playa). Each table lists plant species by sampling period (June and September) by averaging the 40 plots within the two transects. The dominant species in six of the playas (Bull Lake, Plains, Chorus Frog, Dead Cow, Mohrman, and Howard) were obligate wetland spikerushes (Eleocharis macrostachya and E. acicularis). In contrast, the dominant species in the Soil Bank, Jackson, and Sand Creek playas were the facultative upland species--western wheatgrass (Agropyron smithii), fireweed (Kochia scoparia), and sand dropseed, Sporobolus cryptandrus) respectively. Oklahoma View was dominated by the facultative bur ragweed, (Ambrosia grayi). Meadowlark playa was also dominated by buffalos grass (Buchloe dactyloides), and the facultative little barley, (Hordeum pusillum). Turkey Playa was dominated by the facultative wetland barnyard grass (Echinochloa crusgalli).

Table 15 contains a summary of these data by wetland category (prevalence index) and shows that Bull Lake, Plains, Chorus Frog, Dead Cow, Mohrman, and Howard playas were dominated by wetland vegetation, and especially obligate wetland species. In contrast, Soil

Bank and Jackson were dominated by upland vegetation. Based on prevalence index values, Soil Bank, Sand Creek, and Jackson would not be classified as wetlands by the 1987 Federal Manual, while Wild Turkey, Chorus Frog, Meadowlark, Bull Lake, Dead Cow, Oklahoma View, Plains, Mohrman, and Howard playas would be classified as wetlands. Table 16 provides the summary of prevalence indexes for all sites..

Plant Species Composition for Point Sampling

The point data (Table 17) corroborate the above results, showing that the vegetation of Wild Turkey, Chorus Frog, Bull Lake, Dead Cow, Oklahoma View, Plains, Mohrman, and Howard playas was dominated by wetland species, while Sand Creek, Soil Bank and Jackson playas had a prevalence of upland vegetation. Overall, the results of the two sampling methods both found that the eight sites had wetland vegetation, while Jackson, Soil Bank, Meadowlark, and Sand Creek playas, were dominated by upland vegetation.

CONCLUSION

The species composition of the playas varied by site, season, and year, similar to results from the Rainwater Basins of south-central Nebraska (Gilbert, 1989). However, these variations (Tables 16 and 17) were not large during the time of our study, which included both significant wet and dry periods. Average wetland values for the playas ranged from 1.07 to j4.07, with rangeland sites averaging below 3.0, indicating wetland status or wetland vegetation.

Our results indicate that for the playas we studied, those which have not previously been disturbed by agricultural production, were dominated by wetland vegetation--especially spikerush (Eleocharis spp.). The vegetation of the agriculturally-disturbed sites (no matter how recently they had been in crop production) were more variable and often dominated by non-wetland species. Based on their current vegetation, many agriculturally-disturbed wetlands would not be determined to be wetlands, even though similar sites on rangeland (undisturbed by agricultural tillage), have wetland-indicating prevalence indexes. This result has significant implications for wetland determinations based on comparative sites. If the comparative site has been tilled, or been adversely impacted by adjacent crop production, its wetland vegetation has been altered, and may not have recovered. We believe that once the perennial cover has been removed (through tillage), weedy annuals (many not indicative of wetlands) will dominate the site for years or decades into the future.

Grazing of rangeland sites may affect the plant species composition of these playas, but even in cases of overgrazing, it would likely discourage, rather than encourage, perennial plant species. Enclosures, designed to exclude cattle from the rainfall monitoring equipment at the Howard and Mohrman playas, provided evidence that absence of grazing increased the cover of perennial wetland species, especially spikerush (Eleocharis macrostachya).

Wetland determinations can be made, even on sites disturbed by agricultural practices, by looking for key playa lake wetland indicator species--including the spike rushes (Eleocharis macrostachya) and (E. acicularis), toothcup (Ammania spp.), umbrella sedge (Cyperus acuminatus), and western water clover (Marsilea vestita). Under normal conditions, locating any of these species is a good indicator of a potential wetland site. Obviously, if the site had recently been tilled for crop production, or if the weather had been drier than normal, even finding one example of these species may not be possible. The point method of sampling was significantly quicker, and usually produced results similar to plot sampling. The above data will be further analyzed and statistical comparison will be made. At least two papers are being prepared for submission to scientific journals. Copies will be sent to the Natural Resource Conservation Service.

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Wild Turkey Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993
Aster subulatus	Saltmarsh aster	1	0.2%	0.0%
Eleocharis macrostachya	Spikerush	1	0.1%	0.2%
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	19.6%
Veronica peregrina	Speedwell	1	6.8%	0.0%
Amaranthus arenicola	Rough pigweed	2	2.4%	0.0%
Echinochloa crusgalli	Barnyard grass	2	50.4%	35.0%
Myosurus minimus	Mouse-tail	2	0.8%	0.0%
Polygonum bicorne	Pink smartweed	2	3.9%	22.1%
Rorippa sinuata	Spreading yellow cress	2	3.5%	0.1%
Ambrosia grayi	Bur ragweed	3	14.2%	21.9%
Chenopodium berlandieri	Pitseed goosefoot	3	2.4%	0.0%
Ellisia nyctelea	Waterpod	3	1.9%	0.0%
Lactuca serriola	Prickly lettuce	3	0.1%	0.0%
Myosotis verna	Forget-me-not	3	0.2%	0.0%
Oenothera canescens	Spotted evening primrose	3	2.2%	0.6%
Triodanis perfoliata	Venus' looking glass	3	0.3%	0.0%
Conyza canadensis	Horseweed	4	0.7%	0.2%
Euphorbia maculata	Mat spurge	4	0.1%	0.2%
Setaria sp.	Foxtail	4	1.4%	0.0%
Verbena bracteata	Prostrate vervain	4	0.6%	0.0%
Descurainia pinnata	Tansy mustard	5	7.6%	0.1%
Salsola iberica	Russian-thistle	5	0.1%	T
TOTAL			100.0%	100.0%
AVERAGE WETLAND VALUES			2.42	2.03

Table 3. Percent species composition of Wild Turkey Playa for June and September sampling dates in 1993. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Chorus Frog Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1994	Sept 1994	June 1995	Sept 1995
Ammania auriculata	Toothcup	1	0.0%	0.0%	0.7%	2.1%
Bergia texana	Texas bergia	1	0.0%	0.0%	0.0%	1.4%
Eleocharis acicularis	Spikerush	1	0.1%	0.0%	T	48.1%
Eleocharis macrostachya	Spikerush	1	49.7%	36.5%	44.5%	0.0%
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	7.1%	0.1%	7.6%
Marsilea vestita	Western water clover	1	0.7%	1.0%	2.3%	1.1%
Veronica peregrina	Speedwell	1	4.0%	0.0%	1.8%	0.0%
Alopecurus carolinianus	Carolina foxtail	2	0.0%	0.0%	0.2%	0.0%
Cyperus acuminatus	Umbrella sedge	2	0.0%	0.1%	0.0%	0.9%
Echinochloa crusgalli	Barnyard grass	2	0.3%	0.0%	0.0%	0.2%
Myosurus minimus	Mouse-tail	2	0.2%	0.0%	0.0%	0.0%
Polygonum bicorne	Pink smartweed	2	0.2%	0.0%	0.1%	0.2%
Rorippa sinuata	Spreading yellow cress	2	0.0%	0.0%	0.1%	0.2%
Ambrosia grayi	Bur ragweed	3	16.2%	18.8%	20.9%	23.3%
Chenopodium berlandieri	Pitseed goosefoot	3	0.9%	0.1%	0.0%	0.0%
Hordeum pusillum	Little barley	3	1.6%	0.0%	12.2%	1.9%
Lepidium densiflorum	Peppergrass	3	0.2%	0.0%	0.0%	0.0%
Oenothera canescens	Spotted evening primrose	3	0.1%	0.2%	0.0%	0.1%
Panicum capillare	Common witchgrass	3	0.9%	4.8%	2.0%	0.1%
Polygonum ramosissimum	Knotweed	3	1.0%	0.5%	0.5%	1.5%
Portulaca oleracea	Purslane	3	0.1%	0.1%	0.0%	0.0%
Buchloe dactyloides	Buffalo grass	4	0.0%	0.1%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	0.1%	0.7%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.3%	1.0%	0.1%	0.0%
Bromus tectorum	Downy brome	5	0.1%	0.0%	0.0%	0.0%
Chloris verticillata	Windmill grass	5	0.2%	0.1%	0.0%	0.0%
Conyza canadensis	Horseweed	5	0.1%	0.0%	0.0%	0.0%
Schedonnardus paniculatus	Tumblegrass	5	0.1%	0.1%	0.0%	0.0%
Bare ground/litter/water			23.5%	28.9%	14.3%	11.3%
TOTAL			100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			1.21	1.25	1.79	1.62

Table 4. Percent species composition of Chorus Frog Playa for June and September sampling dates in 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Meadowlark Playa transect percentages

Species Name	Common name	Prevalence Index	June 1994	Sept 1994	June 1995	Sept 1995
Eleocharis acicularis	Spikerush	1	0.3%	0.0%	0.1%	1.6%
Eleocharis macrostachya	Spikerush	1	8.1%	1.9%	21.2%	23.0%
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	3.7%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.2%	0.1%	0.0%	0.0%
Veronica peregrina	Speedwell	1	0.6%	0.0%	0.2%	0.0%
Euphorbia maculata	Mat spurge	2	0.0%	0.0%	0.0%	0.1%
Rorippa sinuata	Spreading yellow cress	2	0.1%	0.0%	0.0%	0.8%
Ambrosia grayi	Bur ragweed	3	13.9%	25.8%	9.9%	8.0%
Bouteloua gracilis	Blue grama	3	0.0%	0.1%	0.0%	0.0%
Chenopodium berlandieri	Pitseed goosefoot	3	0.2%	0.1%	0.0%	0.0%
Hordeum pusillum	Little barley	3	20.0%	19.5%	23.6%	15.3%
Lactuca serriola	Prickly lettuce	3	0.0%	0.1%	0.4%	0.4%
Lepidium densiflorum	Peppergrass	3	0.3%	0.0%	0.2%	0.4%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	15.7%	12.5%	18.0%	16.8%
Oenothera canescens	Spotted evening primrose	3	0.8%	0.6%	0.6%	0.7%
Panicum capillare	Common witchgrass	3	1.5%	0.0%	0.1%	1.0%
Polygonum ramosissimum	Knotweed	3	0.3%	0.7%	0.0%	0.4%
Agropyron smithii	Western wheat grass	4	2.7%	3.3%	0.4%	2.5%
Buchloe dactyloides	Buffalo grass	4	19.1%	14.2%	22.5%	23.0%
Conyza canadensis	Horseweed	4	0.2%	0.1%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	T	0.2%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.1%	0.0%	0.0%	0.0%
Kochia scoparia	Fire-weed	4	1.1%	0.2%	0.0%	0.0%
Taraxacum officinale	Common dandelion	4	0.0%	0.0%	0.0%	T
Verbena bracteata	Prostrate vervain	4	T	0.0%	0.0%	0.0%
Bouteloua gracilis	Blue grama	5	0.0%	0.0%	0.1%	0.1%
Bromus tectorum	Downy brome	5	0.0%	0.0%	0.1%	1.4%
Leptochloa fascicularis	Bearded sprangletop	5	0.0%	0.0%	0.0%	0.6%
Descurainia pinnata	Tansy mustard	5	0.0%	0.2%	0.0%	0.0%
Schedonnardus paniculatus	Tumblegrass	5	T	0.6%	0.5%	1.2%
Tragopogon dubius	Goat's beard	5	0.0%	0.0%	0.1%	0.1%
Bare ground/litter/water			14.6%	16.2%	2.1%	2.5%
TOTAL			100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			3.05	3.09	2.82	2.82

Table 5. Percent species composition of Meadowlark Playa for June and September sampling dates in 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Bull Lake Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Ammania coccinea	Toothcup	1	0.0%	0.8%	0.0%	0.2%	0.0%	0.0%
Aster subulatus	Saltmarsh aster	1	0.0%	0.0%	1.5%	3.4%	30.9%	0.0%
Cyperus acuminatus	Sedge	1	0.0%	0.0%	0.0%	T	0.0%	0.0%
Eleocharis macrostachya	Spikerush	1	39.7%	42.0%	44.8%	41.0%	48.6%	52.7%
Heteranthera limosa	Mud plantain	1	0.0%	0.0%	0.0%	0.0%	0.0%	T
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	1.2%	0.1%	8.9%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.9%	1.0%	1.9%	1.1%	0.1%	0.0%
Veronica peregrina	Speedwell	1	1.8%	0.0%	0.1%	0.0%	0.7%	0.0%
Alopecurus carolinianus	Carolina foxtail	2	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
Amaranthus arenicola	Rough pigweed	2	T	T	0.0%	0.0%	0.0%	0.0%
Echinochloa crusgalli	Barnyard grass	2	0.0%	T	0.0%	0.3%	0.0%	0.0%
Myosurus minimus	Mouse-tail	2	1.4%	0.0%	0.0%	0.0%	0.7%	0.0%
Polygonum bicorne	Pink smartweed	2	1.0%	T	0.0%	0.0%	0.0%	0.1%
Rorippa sinuata	Spreading yellow cress	2	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambrosia grayi	Bur ragweed	3	12.9%	13.5%	13.0%	17.4%	15.4%	31.4%
Chenopodium berlandieri	Pitseed goosefoot	3	0.2%	0.1%	2.3%	0.3%	0.0%	0.0%
Coreopsis tinctora	Plains coreopsis	3	T	0.0%	0.0%	0.0%	0.0%	0.0%
Hordeum pusillum	Little barley	3	0.3%	T	0.2%	0.0%	0.3%	4.4%
Lactuca serriola	Prickly lettuce	3	0.2%	0.0%	0.3%	0.0%	0.0%	0.0%
Lepidium densiflorum	Peppergrass	3	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	3.6%	2.9%	0.0%	2.0%	0.2%	0.1%
Oenothera canescens	Spotted evening primrose	3	0.2%	0.2%	0.1%	0.1%	0.0%	2.4%
Polygonum ramosissimum	Knotweed	3	1.7%	T	0.4%	1.1%	1.0%	0.2%
Agropyron smithii	Western wheatgrass	4	0.0%	0.0%	0.0%	0.0%	0.0%	1.4%
Buchloe dactyloides	Buffalo grass	4	14.4%	16.3%	0.0%	0.0%	0.0%	0.0%
Conyza canadensis	Horseweed	4	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	T	0.0%	0.4%	T	0.0%	0.0%
Helianthus annuus	Annual sunflower	4	0.1%	T	0.1%	0.0%	T	0.0%
Kochia scoparia	Fire-weed	4	0.1%	0.1%	0.0%	0.0%	0.0%	0.9%
Sporobolus cryptandrus	Sand dropseed	4	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
Taraxacum officinale	Dandelion	4	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Verbena bracteata	Prostrate vervain	4	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Aster sp.	Aster	5	0.2%	1.6%	0.0%	0.0%	0.0%	0.0%
Astragalus sp.	Locoweed	5	T	0.1%	0.0%	0.0%	0.0%	0.0%
Descurainia pinnata	Tansy mustard	5	T	0.0%	0.0%	0.0%	0.0%	0.0%
Festuca octoflora	Sixweeks fescue	5	0.1%	T	0.0%	0.0%	0.0%	0.0%
Mentzelia sp.	Blazing star	5	T	0.0%	0.0%	0.0%	0.0%	0.0%
Plantago patagonica	Patagonian plantain	5	1.4%	0.2%	0.0%	0.0%	0.0%	0.0%
Ratibida columnifera	Prairie coneflower	5	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Salsola iberica	Russian thistle	5	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
Schedonnardus paniculatus	Tumblegrass	5	0.0%	0.0%	0.0%	0.0%	0.0%	T
Setaria sp.	Foxtail	5	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Talinum parviflorum	Flame flower	5	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Thlaspi arvense	Field pennycress	5	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Tragopogon dubius	Goat's beard	5	T	0.0%	0.0%	0.0%	0.0%	0.0%
Bare ground/litter/water			18.2%	18.9%	34.8%	24.1%	1.7%	6.3%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			1.79	1.75	2.04	1.90	1.36	1.82

Table 6. Percent species composition of Bull Lake Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Dead Cow Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1994	Sept 1994	June 1995	Sept 1995
Aster subulatus	Saltmarsh aster	1	0.0%	0.0%	0.1%	0.0%
Eleocharis acicularis	Spikerush	1	3.5%	9.9%	2.4%	2.5%
Eleocharis macrostachya	Spikerush	1	49.3%	46.3%	81.6%	75.4%
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	0.3%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.1%	0.5%	0.9%	T
Veronica peregrina	Speedwell	1	0.0%	0.0%	0.4%	0.0%
Alopecurus carolinianus	Carolina foxtail	2	0.0%	0.0%	0.7%	0.3%
Amaranthus arenicola	Rough pigweed	2	0.1%	1.5%	0.0%	0.0%
Echinochloa crusgalli	Barnyard grass	2	0.0%	0.8%	0.0%	0.0%
Polygonum bicorne	Pink smartweed	2	0.0%	0.0%	0.1%	0.1%
Rorippa sinuata	Spreading yellow cress	2	0.0%	0.3%	0.0%	0.2%
Ambrosia grayi	Bur ragweed	3	3.1%	6.0%	9.6%	9.4%
Chenopodium berlandieri	Pitseed goosefoot	3	2.7%	1.9%	0.0%	0.0%
Hordeum pusillum	Little barley	3	0.1%	0.1%	0.3%	0.3%
Lepidium densiflorum	Peppergrass	3	0.3%	0.3%	0.0%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	0.7%	0.1%	0.1%	0.3%
Oenothera canescens	Spotted evening primrose	3	1.8%	1.6%	0.3%	0.8%
Panicum capillare	Common witchgrass	3	0.0%	0.6%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	3	0.1%	0.1%	0.0%	0.0%
Portulaca oleracea	Purslane	3	0.1%	1.7%	0.0%	0.0%
Agropyron smithii	Western wheat grass	4	0.0%	0.3%	0.1%	0.3%
Buchloe dactyloides	Buffalo grass	4	1.2%	1.0%	1.5%	4.6%
Euphorbia maculata	Mat spurge	4	0.0%	1.1%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.1%	0.0%	0.0%	0.0%
Grindelia squarrosa	Curly-cup gumweed	4	0.2%	0.3%	0.1%	0.1%
Kochia scoparia	Fire-weed	4	0.1%	0.4%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	4	0.0%	0.0%	0.0%	T
Sporobolus airoides	Sand dropseed	4	0.0%	0.1%	0.0%	T
Aristida purpurea	Three-awn	5	0.0%	0.1%	0.0%	0.0%
Chloris verticillata	Windmill grass	5	0.0%	0.1%	0.0%	0.0%
Descurainia pinnata	Tansy mustard	5	0.1%	0.0%	0.0%	0.0%
Festuca octoflora	Six weeks fescue	5	0.2%	0.0%	0.0%	0.0%
Hedeoma hispidum	Rough false pennyroyal	5	0.0%	0.0%	0.0%	T
Plantago patagonia	Patagonian plantain	5	0.0%	0.4%	0.0%	0.0%
Ratibida pinnata	Grayhead prairie coneflower	5	0.0%	0.0%	0.0%	0.2%
Salsola iberica	Russian thistle	5	0.4%	1.0%	0.0%	0.0%
Spermolepis inermis	Scale-seed	5	0.0%	0.0%	0.0%	0.1%
Bare ground/litter/water			35.6%	22.3%	2.0%	5.4%
TOTAL			100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			1.98	1.62	1.26	1.42

Table 7. Percent species composition of Dead Cow Playa for June and September sampling dates in 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Oklahoma View Playa transect data

Species Name	Common Name	Prevalence Index	June 1994	Sept 1994	June 1995	Sept 1995
Ammania coccinea	Tooth cup	1	0.0%	0.0%	0.0%	17.6%
Echinodorus rostratus	Burhead	1	0.0%	0.0%	0.0%	0.6%
Eleocharis macrostachya	Spikerush	1	0.0%	0.0%	2.0%	7.1%
Heteranthera limosa	Mud plantain	1	0.0%	0.0%	0.0%	3.6%
Marsilea vestita	Western water clover	1	0.9%	0.0%	0.6%	0.2%
Sagittaria graminae	Arrowhead	1	0.0%	0.0%	0.0%	1.3%
Typha angustifolia	Narrow-leaved cat-tail	1	0.0%	0.0%	0.4%	0.7%
Veronica peregrina	Speedwell	1	0.0%	0.0%	1.2%	0.0%
Amaranthus arenicola	Rough pigweed	2	0.6%	0.1%	0.0%	T
Echinochloa crusgalli	Barnyard grass	2	0.7%	1.9%	0.0%	0.0%
Polygonum bicorne	Pink smartweed	2	23.9%	13.4%	9.8%	20.0%
Rorippa sinuata	Spreading yellow cress	2	1.3%	0.0%	0.9%	0.2%
Ambrosia grayi	Bur ragweed	3	22.9%	24.2%	15.1%	29.2%
Chenopodium berlandieri	Pitseed goosefoot	3	11.1%	19.9%	0.0%	0.0%
Oenothera canescens	Spotted evening primrose	3	7.3%	6.5%	0.1%	1.1%
Panicum capillare	Common witchgrass	3	0.7%	T	0.0%	0.1%
Panicum dichotomiflorum	Fall panicum	3	0.1%	0.0%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	3	0.2%	0.0%	0.1%	0.3%
Grindelia squarrosa	Curly-cup gumweed	4	0.0%	1.9%	0.0%	0.0%
Kochia scoparia	Fire-weed	4	3.6%	5.1%	0.0%	0.0%
Bromus tectorum	Downy brome	5	0.3%	0.0%	0.0%	0.0%
Salsola iberica	Russian thistle	5	0.2%	0.3%	0.0%	T
Bare ground/litter/water			26.2%	26.4%	69.9%	17.9%
TOTAL			100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			2.76	2.91	2.37	2.00

Table 8. Percent species composition of Oklahoma View Playa for June and September sampling dates in 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Sand Creek Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1994	Sept 1994	June 1995	Sept 1995
Aster subulatus	Saltmarsh aster	1	0.3%	0.2%	0.0%	0.1%
Eleocharis macrostachya	Spikerush	1	0.1%	0.0%	0.0%	0.0%
Amaranthus arenicola	Rough pigweed	2	0.3%	0.7%	0.0%	0.0%
Echinochloa crusgalli	Barnyard grass	2	0.1%	0.0%	0.0%	0.0%
Rorippa sinuata	Spreading yellow cress	2	0.1%	4.7%	0.0%	T
Ambrosia grayi	Bur ragweed	3	2.1%	1.5%	2.2%	3.8%
Chenopodium berlandieri	Pitseed goosefoot	3	0.1%	0.0%	0.1%	0.0%
Hordeum pusillum	Little barley	3	0.0%	0.0%	T	0.0%
Lepidium densiflorum	Peppergrass	3	0.0%	0.0%	0.1%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	0.2%	0.7%	T	0.9%
Oenothera canescens	Spotted evening primrose	3	1.0%	0.9%	0.7%	0.7%
Panicum capillare	Common witchgrass	3	0.5%	0.1%	0.1%	0.2%
Panicum obtusum	Vine-mesquite	3	0.0%	4.8%	1.7%	3.8%
Polygonum ramosissimum	Knotweed	3	0.0%	0.0%	0.0%	T
Solanum eleagnifolium	Silver-leaf nightshade	3	0.0%	2.6%	0.7%	0.4%
Solanum rostratum	Nightshade	3	0.0%	0.0%	T	T
Viola rafinesquii	Johnny jump-up	3	0.1%	0.0%	0.5%	0.0%
Agropyron smithii	Western wheat grass	4	42.2%	12.9%	23.7%	30.7%
Artemesia ludoviciana	White sage	4	0.1%	T	0.0%	0.2%
Aster ericoides	Heath aster	4	0.2%	T	T	T
Buchloe dactyloides	Buffalo grass	4	5.6%	3.8%	1.3%	1.5%
Cirsium sp.	Thistle	4	0.0%	0.0%	0.0%	1.2%
Conyza canadensis	Horseweed	4	0.0%	0.0%	0.9%	1.6%
Euphorbia maculata	Mat spurge	4	0.0%	1.1%	0.4%	0.7%
Euphorbia marginata	Snow-on-the-mountain	4	0.2%	0.0%	0.0%	0.1%
Helianthus annuus	Annual sunflower	4	0.1%	0.0%	0.2%	0.2%
Kochia scoparia	Fire-weed	4	1.6%	0.2%	T	0.3%
Sporobolus asper	Tall dropseed	4	16.1%	0.0%	0.0%	2.1%
Sporobolus cryptandrus	Sand dropseed	4	0.0%	32.6%	10.1%	4.0%
Taraxacum officinale	Dandelion	4	0.0%	0.0%	T	0.0%
Andropogon saccharoides	Silver bluestem	5	0.0%	0.0%	T	1.3%
Aristida purpurea	Three-awn	5	2.7%	2.0%	2.4%	5.5%
Astragalas sp.	Locoweed	5	0.0%	T	0.1%	T
Bouteloua gracilis	Blue grama	5	0.0%	0.0%	0.1%	0.0%
Bouteloua hirsuta	Hairy grama	5	0.0%	0.0%	0.0%	0.2%
Bromus tectorum	Downy brome	5	5.7%	6.7%	41.2%	18.8%
Chloris verticillata	Windmill grass	5	0.0%	7.6%	T	0.5%
Convolvulus arvensis	Morning glory	5	0.9%	0.0%	0.2%	0.0%
Descurainia pinnata	Tansy mustard	5	0.6%	0.0%	0.5%	0.2%
Erysimum asperum	Western wallflower	5	0.0%	0.0%	0.9%	0.7%
Euphorbia dentata	Spurge	5	0.0%	0.1%	0.2%	T
Festuca octoflora	Six-weeks fescue	5	0.0%	0.0%	0.1%	0.0%
Gaura coccinea	Scarlet gaura	5	0.0%	0.0%	T	T
Kuhnia eupatoriodes	False boneset	5	0.0%	0.0%	0.1%	T
Lactuca serriola	Prickly lettuce	5	0.0%	0.0%	0.1%	T
Opuntia macrorhiza	Prickly-pear	5	0.0%	0.1%	0.0%	0.0%
Psoralea tenuiflora	Wild alfalfa	5	0.0%	0.0%	0.1%	6.7%
Ratibida columnifera	Praire coneflower	5	0.0%	0.0%	0.1%	0.1%
Salsola iberica	Russian thistle	5	0.6%	1.0%	0.1%	0.2%
Schedonnardus paniculatus	Tumblegrass	5	5.7%	1.6%	9.4%	8.2%
Tragapogon dubius	Goat's beard	5	0.2%	0.0%	0.1%	0.1%
Bare ground and litter			12.9%	14.1%	1.2%	4.7%
TOTAL			100.0%	100.0%	100.0%	100.0%
			3.99	3.84	4.50	4.34

Table 9. Percent species composition of Sand Creek Playa for June and September sampling dates in 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Plains Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Aster subulatus	Saltmarsh aster	1	0.1%	0.3%	0.3%	0.1%	0.2%	12.4%
Eleocharis macrostachya	Spikerush	1	41.5%	31.7%	51.9%	38.5%	37.5%	19.3%
Heteranthera limosa	Mud plantain	1	0.0%	0.0%	0.0%	0.0%	T	0.0%
Leptochloa fascicularis	Bearded sprangletop	1	0.0%	2.0%	0.0%	0.2%	0.0%	7.3%
Marsilea vestita	Western water clover	1	0.2%	0.0%	0.0%	0.0%	0.2%	0.3%
Salsola iberica	Russian-thistle	1	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%
Veronica peregrina	Speedwell	1	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%
Amaranthus arenicola	Rough pigweed	2	1.0%	0.2%	0.1%	0.4%	0.0%	0.0%
Echinochloa crusgalli	Barnyard grass	2	0.0%	0.1%	0.3%	0.5%	0.0%	0.0%
Myosurus minimus	Mousetail	2	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Polygonum bicorne	Pink smartweed	2	0.6%	0.4%	0.0%	0.0%	0.0%	0.0%
Rorippa sinuata	Spreading yellow cress	2	1.4%	0.0%	0.0%	0.7%	0.4%	0.0%
Rumex sp.	Sourdock	2	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Ambrosia grayi	Bur ragweed	3	22.6%	22.8%	40.9%	25.6%	22.9%	8.2%
Chenopodium berlandieri	Pitseed goosefoot	3	1.1%	1.2%	0.4%	0.4%	0.0%	0.0%
Hordeum pusillum	Little barley	3	6.0%	4.6%	0.0%	0.0%	19.6%	0.0%
Lactuca serriola	Prickly lettuce	3	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Lepidium densiflorum	Peppergrass	3	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	4.2%	1.7%	0.0%	0.4%	3.4%	0.5%
Oenothera canescens	Spotted evening primrose	3	1.3%	3.0%	0.0%	0.0%	0.2%	0.0%
Panicum capillare	Common witchgrass	3	0.3%	3.7%	0.0%	0.4%	0.0%	0.0%
Panicum dichotomiflorum	Fall panicum	3	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	3	0.8%	3.8%	0.0%	0.7%	0.2%	1.8%
Portulaca oleracea	Purslane	3	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Agropyron smithii	Western wheatgrass	4	6.9%	11.0%	5.7%	2.2%	4.0%	0.0%
Buchloe dactyloides	Buffalo grass	4	2.1%	1.8%	0.0%	0.0%	2.6%	T
Eriochloa contracta	Prairie cupgrass	4	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.3%	T	0.0%	0.0%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	0.2%	0.1%	0.0%	1.5%	0.0%	0.0%
Helianthus annuus	Annual sunflower	4	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%
Kochia scoparia	Fire-weed	4	1.3%	5.9%	0.0%	4.4%	0.4%	0.0%
Proboscidea louisianica	Devil's claw	4	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%
Setaria sp.	Foxtail	4	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Sitanion hystrix	Squirreltail	4	0.0%	T	0.0%	0.0%	0.0%	0.0%
Sporobolus cryptandrus	Sand dropseed	4	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Taraxacum officinale	Dandelion	4	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Verbena bracteata	Prostrate vervain	4	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Astragalas sp.	Locoweed	5	2.7%	0.3%	0.0%	0.0%	0.0%	0.0%
Bromus tectorum	Downy brome	5	T	0.5%	0.3%	0.1%	1.1%	0.0%
Chloris verticillata	Windmill grass	5	0.1%	T	0.0%	0.0%	0.0%	0.0%
Cryptantha minima	Cryptantha	5	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Descurainia pinnata	Tansy mustard	5	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Ratibida columnifera	Prairie coneflower	5	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Salsola iberica	Russian-thistle	5	0.0%	0.0%	0.0%	0.0%	T	0.0%
Schedonnardus paniculatus	Tumblegrass	5	0.0%	0.9%	0.0%	0.4%	0.6%	0.0%
Thlaspi arvense	Field pennycress	5	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Draba sp.	Whitlow grass	5	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Bare ground/litter/water			0.0%	0.0%	0.0%	21.8%	6.1%	50.0%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			2.27	2.54	2.02	2.32	2.30	1.43

Table 10. Percent species composition of Plains Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Jackson Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995
Polygonum bicorne	Pink smartweed	2	0.4%	0.8%	0.0%	0.0%	0.5%
Rorippa sinuata	Spreading yellow cress	2	0.6%	0.0%	0.0%	0.0%	0.1%
Rumex crispus	Curly dock	2	0.9%	0.0%	0.0%	0.0%	0.0%
Ambrosia grayi	Bur ragweed	3	8.4%	6.9%	2.0%	1.1%	5.1%
Chenopodium berlandieri	Pitseed goosefoot	3	1.7%	0.7%	1.6%	1.2%	2.4%
Ellisia nyctelea	Waterpod	3	0.0%	0.0%	0.0%	0.0%	0.1%
Lactuca serriola	Prickly lettuce	3	0.1%	0.0%	0.6%	1.7%	0.3%
Oenothera canescens	Spotted evening promrose	3	0.6%	0.3%	0.2%	0.4%	0.8%
Agropyron smithii	Western wheatgrass	4	0.0%	0.1%	0.0%	0.0%	0.0%
Helianthus annus	Annual sunflower	4	0.1%	0.0%	0.0%	0.0%	0.0%
Kochia scoparia	Fire-weed	4	87.2%	91.2%	89.0%	87.0%	88.0%
Asclepias sp.	Milkweed	5	0.1%	0.0%	0.0%	0.0%	0.0%
Sphaeralcea coccinea	Scarlet globe mallow	5	0.0%	0.0%	1.2%	0.6%	0.1%
Bare ground/litter/water			0.0%	0.0%	5.3%	8.0%	2.6%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUES			3.85	3.90	3.84	3.85	3.90

Table 11. Percent species composition of Jackson Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland.

Soil Bank Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Eleocharis macrostachya	Spikerush	1	0.1%	0.0%	0.0%	0.5%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.0%	0.0%	0.0%	0.5%	1.9%	0.6%
Hordeum jubatum	Foxtail barley	2	1.5%	0.0%	0.0%	0.0%	0.0%	1.2%
Polygonum bicorne	Pink smartweed	2	0.2%	0.0%	0.0%	0.0%	0.5%	0.2%
Oenothera canescens	Spotted evening primrose	3	3.2%	1.7%	2.1%	0.0%	3.2%	3.8%
Ambrosia grayi	Bur ragweed	3	3.9%	11.0%	2.0%	1.5%	36.4%	22.8%
Chenopodium berlandieri	Pitseed goosefoot	3	3.1%	23.3%	0.6%	0.0%	21.2%	28.6%
Hordeum pusillum	Little barley	3	2.8%	0.7%	0.0%	0.0%	0.4%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	0.5%	1.0%	0.0%	0.0%	0.0%	0.0%
Panicum capillare	Common witchgrass	3	0.0%	0.2%	0.0%	0.0%	T	0.5%
Polygonum ramosissimum	Knotweed	3	0.0%	0.1%	0.0%	0.0%	0.0%	0.7%
Agropyron smithii	Western wheatgrass	4	28.3%	28.2%	45.1%	1.5%	11.4%	15.2%
Bromus japonicus	Japanese brome	4	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Conyza canadensis	Horseweed	4	0.0%	0.0%	0.0%	0.0%	2.2%	1.5%
Elymus canadensis	Canada wild rye	4	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.0%	0.0%	0.0%	0.0%	0.2%	T
Helianthus annuus	Annual sunflower	4	0.5%	0.2%	0.0%	0.0%	0.0%	1.5%
Kochia scoparia	Fire-weed	4	42.7%	23.4%	11.0%	2.5%	15.0%	11.2%
Proboscidea louisianica	Devil's claw	4	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Sitanion hystrix	Squirreltail	4	0.1%	5.5%	2.0%	0.0%	1.8%	0.4%
Astragalus sp.	Locoweed	5	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Cuscuta sp.	Dodder	5	0.0%	0.0%	0.0%	0.0%	4.0%	1.4%
Descurainia pinnata	Tansy mustard	5	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%
Lactuca serriola	Prickly lettuce	5	5.6%	2.6%	6.8%	0.0%	0.0%	0.0%
Quincula lobata	Purple ground cherry	5	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Ratibida pinnata	Grayhead prairie coneflower	5	0.0%	0.7%	0.0%	0.0%	0.1%	0.6%
Salsola iberica	Russian-thistle	5	1.1%	0.6%	0.0%	0.0%	0.3%	0.4%
Schedonnardus paniculatus	Tumblegrass	5	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
Solanum sp.	Nightshade	5	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%
Sphaeralcea coccinea	Red false mallow	5	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Tragopogon dubius	Goat's beard	5	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Bare ground and litter			0.0%	0.0%	29.6%	94.0%	1.0%	9.4%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			3.80	3.61	3.70	3.04	3.32	3.32

Table 12. Percent species composition of Soil Bank Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Howard Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Alopecurus carolinianus	Carolina foxtail	1	0.0%	T	3.0%	0.0%	5.7%	0.1%
Ammania auriculata	Toothcup	1	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
Bacopa rotundifolia	Water hyssop	1	0.0%	1.0%	0.0%	0.0%	0.4%	0.0%
Eleocharis acicularis	Spikerush	1	23.0%	7.3%	66.2%	32.1%	6.1%	29.0%
Eleocharis macrostachya	Spikerush	1	57.0%	66.1%	4.2%	32.6%	61.4%	25.3%
Heteranthera limosa	Mud plantain	1	0.0%	[illegible]%	0.0%	0.1%	0.0%	0.0%
Leptochloa fascicularis	Bearded sprangletop	1	4.2%	0.0%	0.0%	0.8%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.9%	1.1%	1.2%	1.0%	0.9%	3.8%
Veronica peregrina	Speedwell	1	0.4%	0.0%	0.5%	0.0%	1.3%	0.0%
Echinochloa crusgalli	Banyard grass	2	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%
Myosurus minimus	Mouse-tail	2	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Rorippa sinuata	Spreading yellow cress	2	0.1%	T	0.0%	0.1%	0.1%	0.1%
Ambrosia grayi	Bur ragweed	3	0.4%	0.8%	2.2%	0.0%	1.1%	0.5%
Chenopodium berlandieri	Pitseed goosefoot	3	0.0%	0.1%	1.0%	0.0%	0.0%	0.0%
Hordeum pusillum	Little barley	3	0.6%	T	0.8%	0.3%	0.4%	T
Lepidium densiflorum	Peppergrass	3	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	T	0.3%	1.5%	0.1%	0.3%	0.2%
Oenothera canescens	Spotted evening primrose	3	0.4%	0.4%	0.5%	0.4%	0.1%	0.2%
Panicum capillare	Common witchgrass	3	T	0.0%	0.5%	1.0%	0.0%	0.0%
Panicum dichotomiflorum	Fall panicum	3	0.0%	3.3%	0.0%	0.0%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	3	0.1%	0.4%	8.1%	0.1%	0.0%	0.0%
Agropyron smithii	Western wheatgrass	4	4.6%	6.7%	4.4%	3.5%	5.7%	10.4%
Buchloe dactyloides	Buffalo grass	4	7.2%	7.0%	1.7%	17.9%	5.2%	18.9%
Cirsium undulatum	Wavy-leaf thistle	4	0.0%	0.0%	0.0%	0.0%	0.0%	T
Conyza canadensis	Horseweed	4	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
Euphorbia maculata	Mat spurge	4	0.1%	T	0.0%	0.0%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.1%	T	0.0%	0.0%	T	0.0%
Helianthus anuus	Annual sunflower	4	0.0%	0.0%	0.0%	0.0%	0.0%	T
Verbena bracteata	Prostrate vervain	4	0.0%	T	0.0%	0.0%	0.0%	0.0%
Bouteloua gracilis	Blue grama	5	0.0%	0.0%	0.0%	0.0%	T	1.2%
Carex eleocharis	Sedge	5	0.0%	0.7%	0.1%	1.1%	1.0%	0.4%
Carex gravida	Sedge	5	T	0.0%	0.0%	0.0%	0.0%	0.0%
Cirsium ochrocentrum	Yellowspine thistle	5	0.0%	T	0.0%	0.0%	0.0%	0.0%
Euphorbia dentata	Toothed spurge	5	0.0%	T	1.0%	0.0%	0.0%	0.0%
Latuca serriola	Prickly lettuce	5	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%
Leptochloa fascicularis	Bearded sprangletop	5	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Plantago patagonica	Patagonian plantain	5	T	0.0%	0.0%	0.0%	0.0%	0.0%
Ratibida pinnata	Grayhead prairie coneflower	5	0.0%	T	0.0%	0.0%	0.0%	0.0%
Schedonnardus paniculatus	Tumblegrass	5	0.0%	T	0.0%	0.0%	0.0%	0.0%
Bare ground/litter/water			0.0%	0.0%	1.5%	9.2%	10.1%	8.0%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			1.76	1.54	1.55	1.64	1.46	2.04

Table 13. Percent species composition of Howard Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Mohrman Playa transect percentages

Species Name	Common Name	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Amaranthus tuberculatus	Rough pigweed	1	0.0%	1.4%	0.0%	T	0.2%	0.0%
Ammania auriculata	Toothcup	1	0.0%	0.4%	0.0%	0.1%	0.0%	0.0%
Bacopa rotundifolia	Water hyssop	1	0.0%	0.5%	0.0%	0.0%	0.7%	T
Cyperus acuminatus	Umbrella sedge	1	0.0%	T	0.0%	T	0.0%	0.0%
Elatine triandra	Waterwort	1	0.0%	0.5%	0.0%	0.0%	3.4%	0.0%
Eleocharis macrostachya	Spikerush	1	0.6%	1.0%	1.1%	1.5%	5.5%	2.8%
Eleocharis acicularis	Spikerush	1	46.5%	57.7%	45.5%	42.4%	38.0%	48.7%
Leptochloa fascicularis	Bearded sprangletop	1	0.4%	0.0%	0.0%	1.5%	0.0%	0.0%
Marsilea vestita	Western water clover	1	0.3%	1.7%	0.8%	0.9%	1.4%	0.2%
Veronica peregrina	Speedwell	1	1.9%	0.0%	1.0%	0.0%	0.4%	0.0%
Alopecurus carolinienus	Carolina foxtail	2	0.0%	0.0%	0.8%	0.0%	0.7%	0.0%
Echinochloa crusgalli	Barnyard grass	2	0.0%	4.2%	1.0%	5.1%	0.0%	0.8%
Myosurus minimus	Mouse-tail	2	1.8%	0.0%	2.4%	0.0%	0.0%	0.0%
Polygonum bicorne	Pink smartweed	2	0.3%	0.3%	0.1%	0.2%	0.0%	0.1%
Rorippa sinuata	Spreading yellow cress	2	0.3%	0.0%	0.3%	0.0%	0.3%	0.0%
Teucrium canadense	American germander	2	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Ambrosia grayi	Bur ragweed	3	28.2%	19.6%	18.4%	12.3%	13.5%	15.2%
Hordeum pusillum	Little barley	3	4.3%	T	0.1%	0.0%	8.3%	0.7%
Lepidium densiflorum	Pepper grass	3	0.0%	0.0%	0.0%	0.0%	T	T
Lactuca serriola	Prickly lettuce	3	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	3.1%	2.4%	0.1%	0.1%	2.3%	3.3%
Oenothera canescens	Spotted evening primrose	3	1.6%	0.9%	1.8%	1.2%	0.7%	1.7%
Panicum capillare	Common witchgrass	3	0.0%	0.6%	0.0%	0.4%	0.2%	0.2%
Panicum dichotomiflorum	Fall panicum	3	1.7%	1.3%	0.1%	0.0%	0.0%	0.0%
Agropyron smithii	Western wheatgrass	4	0.0%	T	0.0%	0.0%	T	0.1%
Buchloe dactyloides	Buffalo grass	4	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%
Conyza canadensis	Horseweed	4	0.4%	0.2%	0.0%	T	0.0%	T
Euphorbia maculata	Mat spurge	4	0.0%	T	0.0%	0.0%	0.0%	0.0%
Euphorbia marginata	Snow-on-the-mountain	4	0.0%	0.1%	T	0.0%	0.0%	T
Helianthus annuus	Annual sunflower	4	0.0%	0.0%	0.0%	T	0.0%	0.0%
Kochia scoparia	Fire-weed	4	0.0%	T	0.0%	0.0%	0.0%	0.0%
Polygonum ramosissimum	Knotweed	4	4.0%	1.4%	0.9%	1.6%	T	0.1%
Setaria sp.	Foxtail	4	0.0%	T	0.0%	0.0%	0.0%	0.0%
Sporobolus asper	Rough dropseed	4	0.0%	0.1%	T	0.0%	0.0%	T
Sporobolus cryptandrus	Sand dropseed	4	0.8%	1.0%	0.0%	0.0%	0.0%	0.0%
Taraxacum officinale	Dandelion	4	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Verbena bracteata	Prostrate vervain	4	0.0%	0.3%	0.0%	T	T	T
Andropogon scoparius	Little bluestem	5	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Bouteloua gracilis	Blue grama	5	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Bromus tectorum	Downy brome	5	0.5%	0.2%	0.0%	0.0%	0.2%	2.5%
Carex eleocharis	Sedge	5	0.0%	0.5%	0.0%	0.0%	0.0%	1.3%
Carex gravida	Sedge	5	1.1%	1.3%	0.0%	0.0%	0.0%	0.1%
Draba reptans	White whitlowort	5	0.0%	0.0%	0.0%	0.0%	T	0.0%
Euphorbia dentata	Toothed spurge	5	0.0%	T	0.0%	0.0%	0.0%	0.0%
Schedonnardus paniculatus	Tumblegrass	5	0.6%	1.5%	0.0%	0.0%	0.0%	0.5%
Bare ground/litter/water			0.0%	0.0%	25.5%	32.4%	23.9%	21.2%
TOTAL			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
AVERAGE WETLAND VALUE			1.98	1.67	1.99	2.02	1.70	1.80

Table 14. Percent species composition of Mohrman Playa for June and September sampling dates in 1993, 1994 and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species. If the average wetland value is less than 3 it suggests that the area sampled is a wetland. T (trace) indicates that the species was present, but total cover was less than .05%.

Percent Plant Cover by Wetland Prevalence Index

Location	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Wild Turkey Ford County	1	7.1%	19.8%	NA	NA	NA	NA
	2	61.1%	57.3%	NA	NA	NA	NA
	3	21.4%	22.5%	NA	NA	NA	NA
	4	2.8%	0.4%	NA	NA	NA	NA
	5	7.7%	0.1%	NA	NA	NA	NA
Chorus Frog Lane County	1	NA	NA	71.0%	62.7%	57.8%	68.0%
	2	NA	NA	0.9%	0.7%	0.5%	1.8%
	3	NA	NA	27.2%	33.8%	41.7%	30.2%
	4	NA	NA	0.5%	2.5%	0.1%	0.0%
	5	NA	NA	0.4%	0.3%	0.0%	0.0%
Meadowlark Lane County	1	NA	NA	10.9%	8.3%	21.9%	25.2%
	2	NA	NA	0.1%	0.0%	0.0%	0.9%
	3	NA	NA	61.7%	63.7%	53.9%	44.2%
	4	NA	NA	27.2%	26.8%	23.4%	26.2%
	5	NA	NA	0.0%	1.2%	0.8%	3.4%
Bull Lake Meade County	1	51.8%	55.6%	74.1%	72.2%	81.7%	56.4%
	2	3.2%	0.1%	0.0%	0.4%	1.0%	0.1%
	3	23.2%	20.6%	25.0%	27.4%	17.3%	41.0%
	4	18.4%	20.9%	0.8%	0.1%	0.0%	2.5%
	5	3.5%	2.8%	0.1%	0.0%	0.0%	0.0%
Dead Cow Meade County	1	NA	NA	82.5%	13.1%	9.4%	3.0%
	2	NA	NA	0.1%	42.3%	76.1%	59.8%
	3	NA	NA	13.9%	33.7%	14.5%	34.5%
	4	NA	NA	2.5%	3.2%	0.0%	0.8%
	5	NA	NA	1.0%	7.8%	0.0%	2.0%
Oklahoma View Meade County	1	NA	NA	1.2%	0.0%	13.7%	37.9%
	2	NA	NA	35.9%	20.9%	35.7%	24.7%
	3	NA	NA	57.4%	69.1%	50.6%	37.3%
	4	NA	NA	4.8%	9.5%	0.0%	0.0%
	5	NA	NA	0.6%	0.4%	0.0%	0.0%
Plains Meade County	1	43.6%	34.0%	52.2%	49.6%	40.4%	78.7%
	2	4.2%	1.6%	0.5%	2.1%	0.5%	0.0%
	3	36.7%	43.0%	41.3%	35.5%	49.6%	21.2%
	4	12.0%	19.1%	5.7%	12.2%	7.5%	0.1%
	5	3.6%	2.2%	0.3%	0.6%	2.0%	0.0%
Sand Creek Meade County	1	NA	NA	0.4%	0.2%	0.0%	0.1%
	2	NA	NA	0.4%	6.2%	0.0%	0.0%
	3	NA	NA	4.6%	12.3%	6.3%	10.3%
	4	NA	NA	75.7%	59.0%	37.0%	44.9%
	5	NA	NA	19.0%	22.3%	56.6%	44.7%

Location	Prevalence Index	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995
Jackson Morton County	1	0.0%	0.0%	0.0%	0.0%	0.0%	NA
	2	1.9%	0.8%	0.0%	0.0%	0.6%	NA
	3	10.8%	7.9%	4.7%	4.8%	9.0%	NA
	4	87.3%	91.3%	94.0%	94.6%	90.3%	NA
	5	0.1%	0.0%	1.2%	0.6%	0.1%	NA
Soil Bank Morton County	1	0.1%	0.0%	0.0%	15.4%	2.0%	0.6%
	2	1.8%	0.0%	0.0%	0.0%	0.5%	1.5%
	3	14.0%	38.2%	6.6%	23.1%	62.0%	62.3%
	4	75.5%	58.0%	83.0%	61.5%	31.0%	32.9%
	5	8.7%	3.8%	10.4%	0.0%	4.6%	2.7%
Howard Thomas	1	85.5%	79.5%	76.3%	73.2%	84.3%	64.5%
	2	0.8%	0.5%	0.0%	0.1%	0.1%	0.1%
	3	1.6%	6.1%	14.8%	3.1%	2.3%	1.0%
	4	12.1%	13.8%	6.4%	23.6%	12.2%	32.4%
	5	0.0%	0.2%	2.5%	0.0%	1.2%	1.9%
Mohrman Thomas	1	49.8%	63.4%	65.0%	68.8%	65.3%	65.9%
	2	2.7%	4.5%	6.1%	7.7%	1.3%	1.1%
	3	45.1%	28.0%	28.8%	23.2%	32.9%	26.9%
	4	1.2%	2.3%	0.1%	0.2%	0.1%	0.6%
	5	1.2%	1.7%	0.0%	0.0%	0.3%	5.6%

Table 15. Plant cover by wetland category of species composition for June and September sampling dates in 1993, 1994, and 1995. Prevalence index is defined in text, where 1=obligate wetland species; 2=facultative wetland species; 3=facultative species; 4=facultative upland species; and 5=upland species.

Average Wetland Prevalence Index by Plot Data

Playa Name	County	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995	Total Average
Wild Turkey	Ford	2.42	2.03	NA	NA	NA	NA	2.23
Chorus Frog	Lane	NA	NA	1.21	1.25	1.79	1.62	1.47
Meadowlark	Lane	NA	NA	3.05	3.09	2.82	2.82	2.95
Bull Lake	Meade	1.79	1.75	2.04	1.90	1.36	1.82	1.78
Dead Cow	Meade	NA	NA	1.98	1.62	1.26	1.42	1.64
Oklahoma View	Meade	NA	NA	2.76	2.91	2.37	2.00	2.51
Plains	Meade	2.27	2.54	2.02	2.32	2.30	1.43	2.15
Sand Creek	Meade	NA	NA	3.99	3.84	4.50	4.34	4.17
Jackson	Morton	3.85	3.90	3.84	3.85	3.90	NA	3.87
Soil Bank	Morton	3.80	3.61	3.70	3.04	3.32	3.32	3.47
Howard	Thomas	1.76	1.54	1.55	1.64	1.46	2.04	1.67
Mohrman	Thomas	1.98	1.67	1.99	2.02	1.70	1.80	2.64
Average		2.55	2.43	2.56	2.50	2.43	2.26	2.54

Table 16. Average wetland values of plot data for June and September sampling dates in 1993, 1994 and 1995.

Average Wetland Prevalence Index by Point Species Data

Playa Name	County	June 1993	Sept 1993	June 1994	Sept 1994	June 1995	Sept 1995	Total Average
Wild Turkey	Ford	2.44	1.87	NA	NA	NA	2.44	2.25
Chorus Frog	Lane	NA	NA	1.70	2.00	1.40	1.21	1.58
Meadowlark	Lane	NA	NA	3.10	3.15	2.77	3.89	3.23
Bull Lake	Meade	1.95	1.55	2.05	1.55	1.00	1.52	1.60
Dead Cow	Meade	NA	NA	1.65	1.80	1.00	1.00	1.36
Oklahoma View	Meade	NA	NA	2.85	3.10	2.00	1.97	2.48
Plains	Meade	2.12	1.73	2.05	2.40	1.59	1.13	1.84
Sand Creek	Meade	NA	NA	3.85	3.85	4.57	4.28	4.14
Jackson	Morton	4.00	4.00	3.95	3.90	4.00	NA	3.97
Soil Bank	Morton	3.91	3.84	3.73	3.00	3.39	3.39	3.54
Howard	Thomas	2.04	1.91	1.95	1.68	1.96	2.07	1.93
Mohrman	Thomas	2.29	2.00	2.20	2.35	2.08	2.19	2.18
Average		2.68	2.41	2.64	2.62	2.34	2.28	2.51

Table 17. Average wetland values of point data for June and September sampling dates in 1993, 1994 and 1995.

Species Composition of Cropped Playas for 1994 and 1995

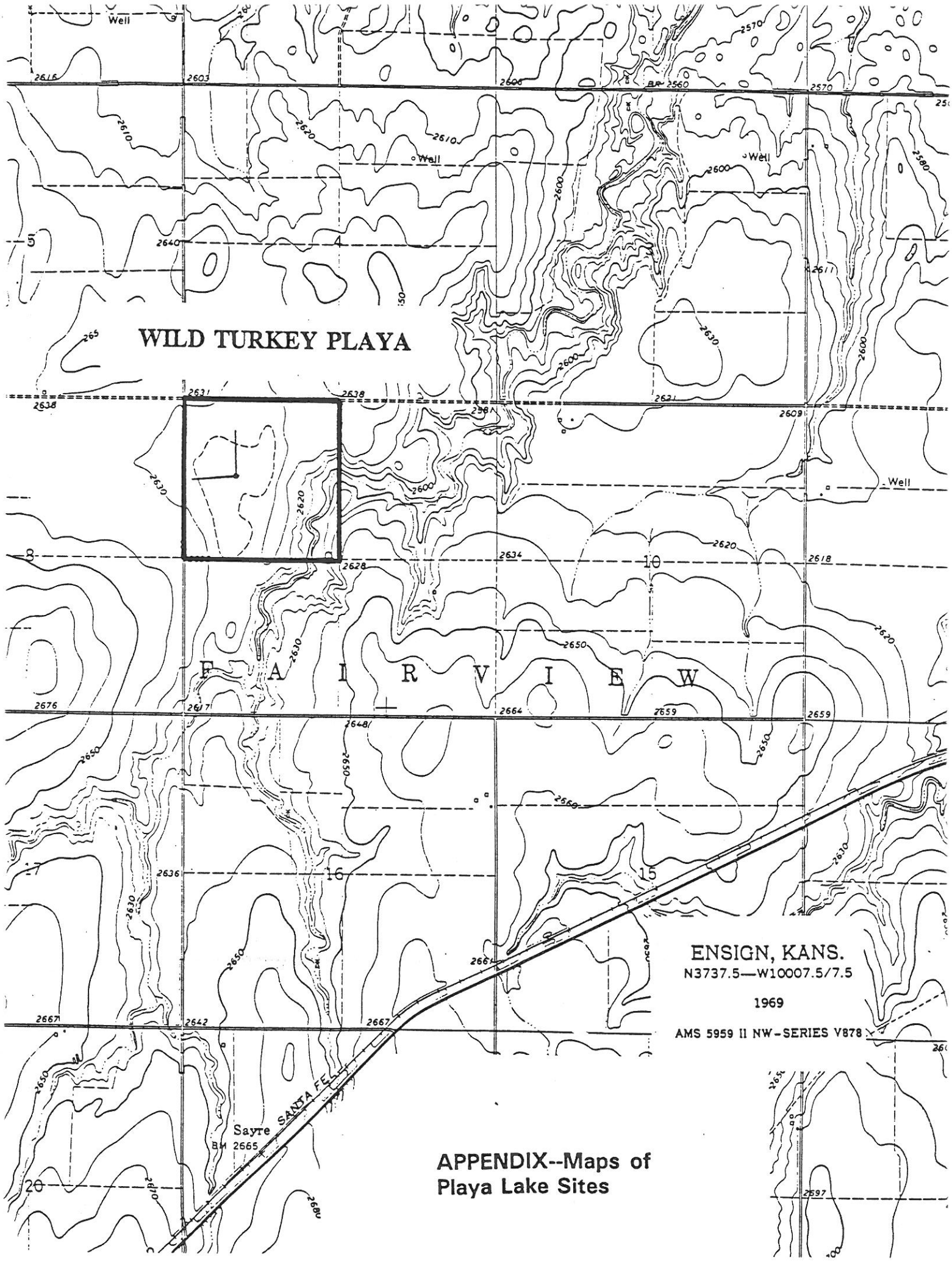
Species Name	Common Name	Prevalence Index	1994	1995
Ammania sp.	Toothcup	1	0.0%	0.7%
Aster subulatus	Saltmarsh aster	1	0.0%	0.3%
Eleocharis acicularis	Spikerush	1	1.0%	0.2%
Eleocharis macrostachya	Spikerush	1	4.0%	4.0%
Leptochloa fascicularis	Bearded sprangletop	1	1.0%	0.0%
Marsilea vestita	Western water clover	1	0.0%	0.2%
Polygonum lapathifolium	Pale smartweed	1	0.0%	0.1%
Scirpus sp.	Bulrush	1	1.0%	0.0%
Carex sp.	Sedge	2	0.0%	0.3%
Echinochloa crusgalli	Barnyard grass	2	15.0%	11.5%
Polygonum bicorne	Pink smartweed	2	1.0%	4.6%
Rumex maritimus	Golden dock	2	0.1%	1.1%
Ambrosia grayi	Bur ragweed	3	25.0%	28.6%
Chenopodium berlandieri	Pitseed goosefoot	3	10.0%	0.3%
Lactuca serriola	Prickly lettuce	3	0.0%	0.2%
Lippia cuneifolia	Wedgeleaf fog-fruit	3	0.0%	0.8%
Oenothera canescens	Spotted evening primrose	3	2.0%	1.4%
Panicum capillare	Common witchgrass	3	7.0%	6.8%
Panicum virgatum	Switchgrass	3	0.0%	2.5%
Physalis sp.	Ground cherry	3	0.0%	0.3%
Polygonum ramossissimum	Knotweed	3	0.1%	1.1%
Populus deltoides	Cottonwood	3	0.0%	0.1%
Portulaca oleracea	Purslane	3	5.0%	4.6%
Setaria sp.	Foxtail	3	2.0%	0.1%
Xanthium strumarium	Cocklebur	3	0.0%	0.2%
Agropyron smithii	Western wheat grass	4	1.0%	1.4%
Amaranthus arenicola	Rough pigweed	4	6.0%	5.9%
Andropogon saccharoides	Silver bluestem	4	0.0%	0.1%
Bouteloua curtipendula	Sideoats grama	4	0.0%	0.1%
Cirsium altissimus	Yellow-spined thistle	4	0.0%	0.1%
Eragrostis cilianensis	Stinkgrass	4	0.0%	0.1%
Eriochloa contracta	Prairie cupgrass	4	2.0%	7.5%
Euphorbia maculata	Mat spurge	4	0.0%	0.6%
Euphorbia marginata	Snow-on-the-mountain	4	0.0%	0.2%
Helianthus annuus	Annual sunflower	4	3.0%	0.6%
Kochia scoparia	Fire-weed	4	5.0%	2.4%
Sporoblous cryptandrus	Sand dropseed	4	1.0%	0.0%
Bromus tectorum	Downy brome	5	1.0%	0.0%
Cenchrus longispinus	Sandbur	5	0.0%	1.7%
Convolvulus arvensis	Bindweed	5	2.0%	0.0%
Euphorbia dentata	Spurge	5	1.0%	0.0%
Salsola iberica	Russian thistle	5	1.0%	0.8%
Solanum carolinense	Carolina horse-nettle	5	0.0%	0.1%
Thlaspi arvense	Pennycress	5	0.0%	0.3%
Tragopogon dubius	Goat's beard	5	0.1%	0.0%
Triticum aestivum	Wheat (volunteer)	5	4.0%	7.5%
TOTAL			100.0%	100.0%
AVERAGE WETLAND VALUE FOR ALL PLAYAS			3.10	3.09

Table 18. Percent plant cover for 27 cropped playa lakes in Meade County sampled in June 1994 and 1995.

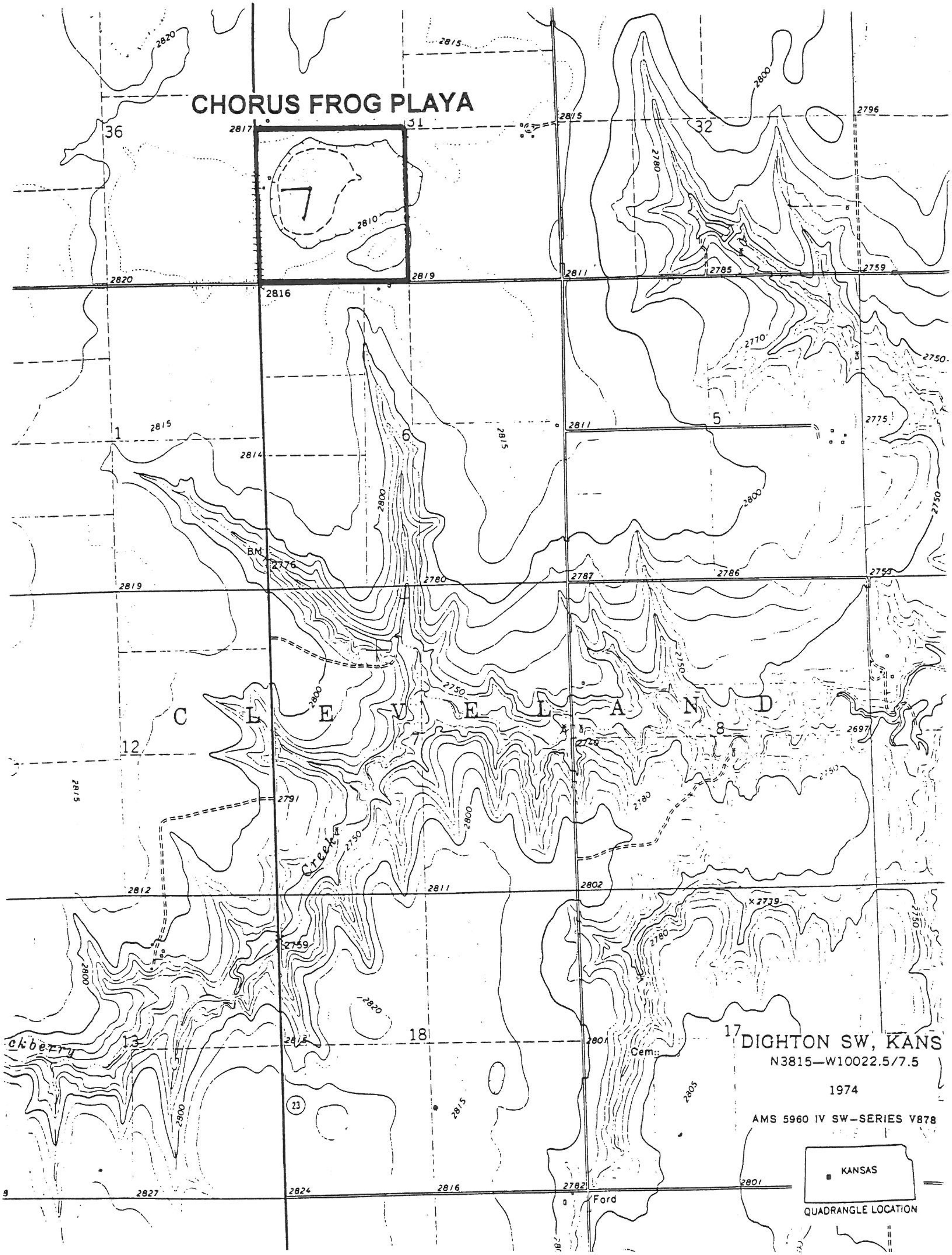
Average Wetland Values for Cropped Playas

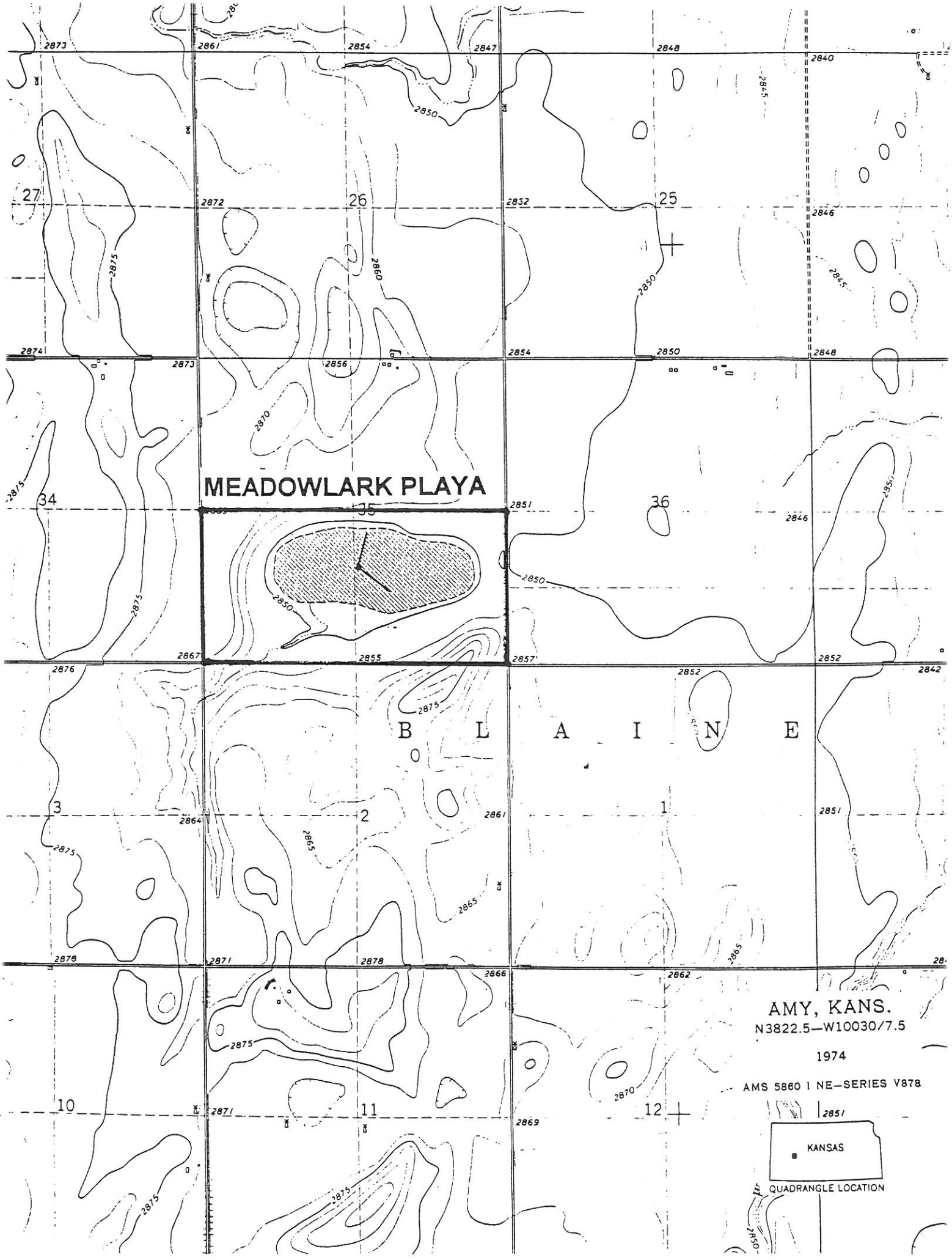
Location	Average Wetland Value	
	1994	1995
Playa 1	3.56	3.08
Playa 2	3.56	4.02
Playa 3	3.28	3.60
Playa 4	2.40	NA
Playa 5	3.00	NA
Playa 6	3.56	3.00
Playa 7	3.66	2.46
Playa 8	1.12	2.52
Playa 9	3.26	3.04
Playa 10	2.06	4.00
Playa 11	3.10	2.31
Playa 12	2.62	3.36
Playa 13	3.26	2.60
Playa 14	2.36	NA
Playa 15	3.72	3.38
Playa 16	2.84	2.78
Playa 17	3.54	3.66
Playa 18	3.18	3.26
Playa 19	3.30	2.22
Playa 20	2.90	3.98
Playa 21	3.00	3.00
Playa 22	2.22	2.90
Playa 23	2.08	2.46
Playa 24	4.22	NA
Playa 25	2.16	NA
Playa 26	2.90	NA
Playa 27	2.76	3.10

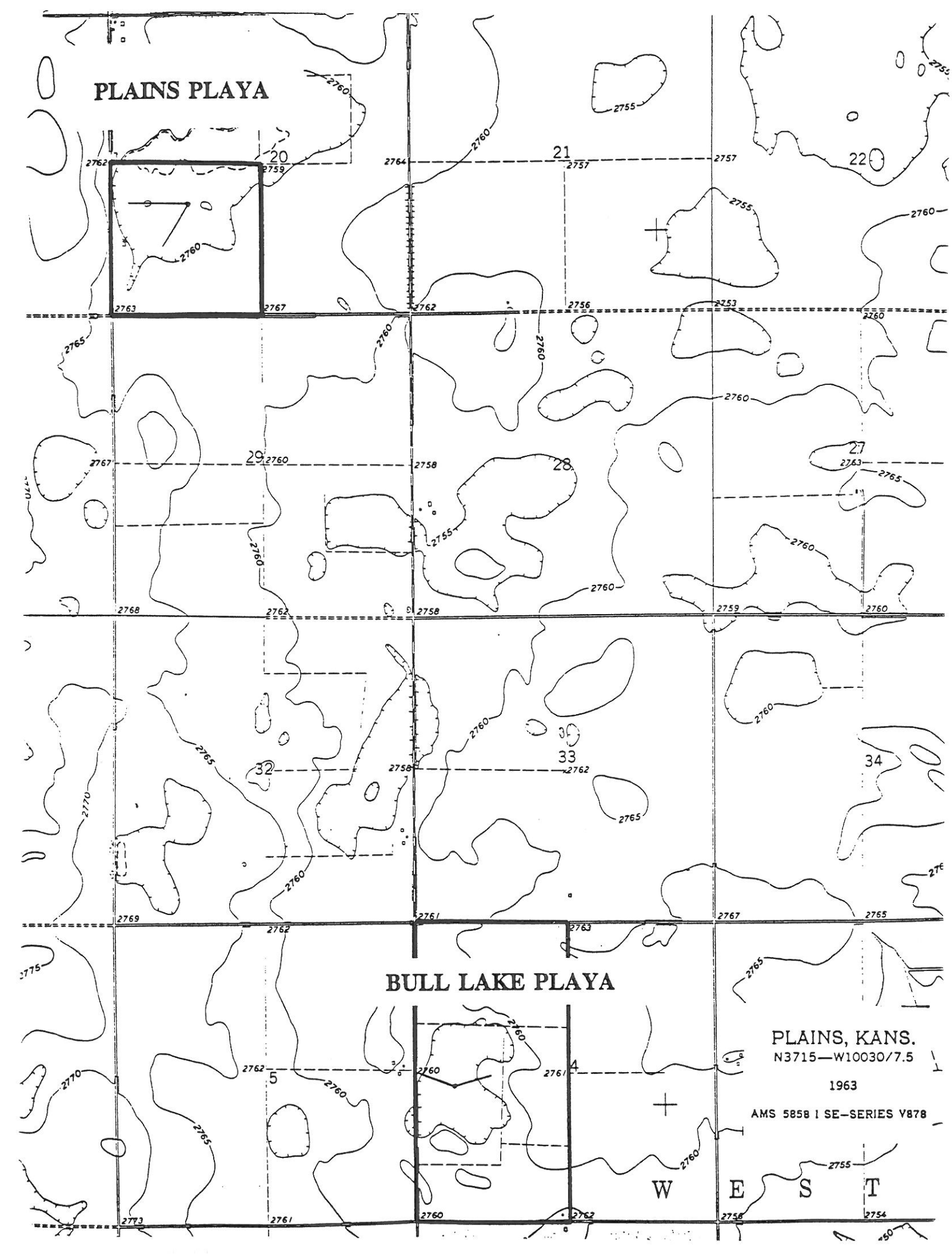
Table 19. Average wetland values of plant species in 27 cropped playa lakes in Meade County sampled in June 1994 and 1995.

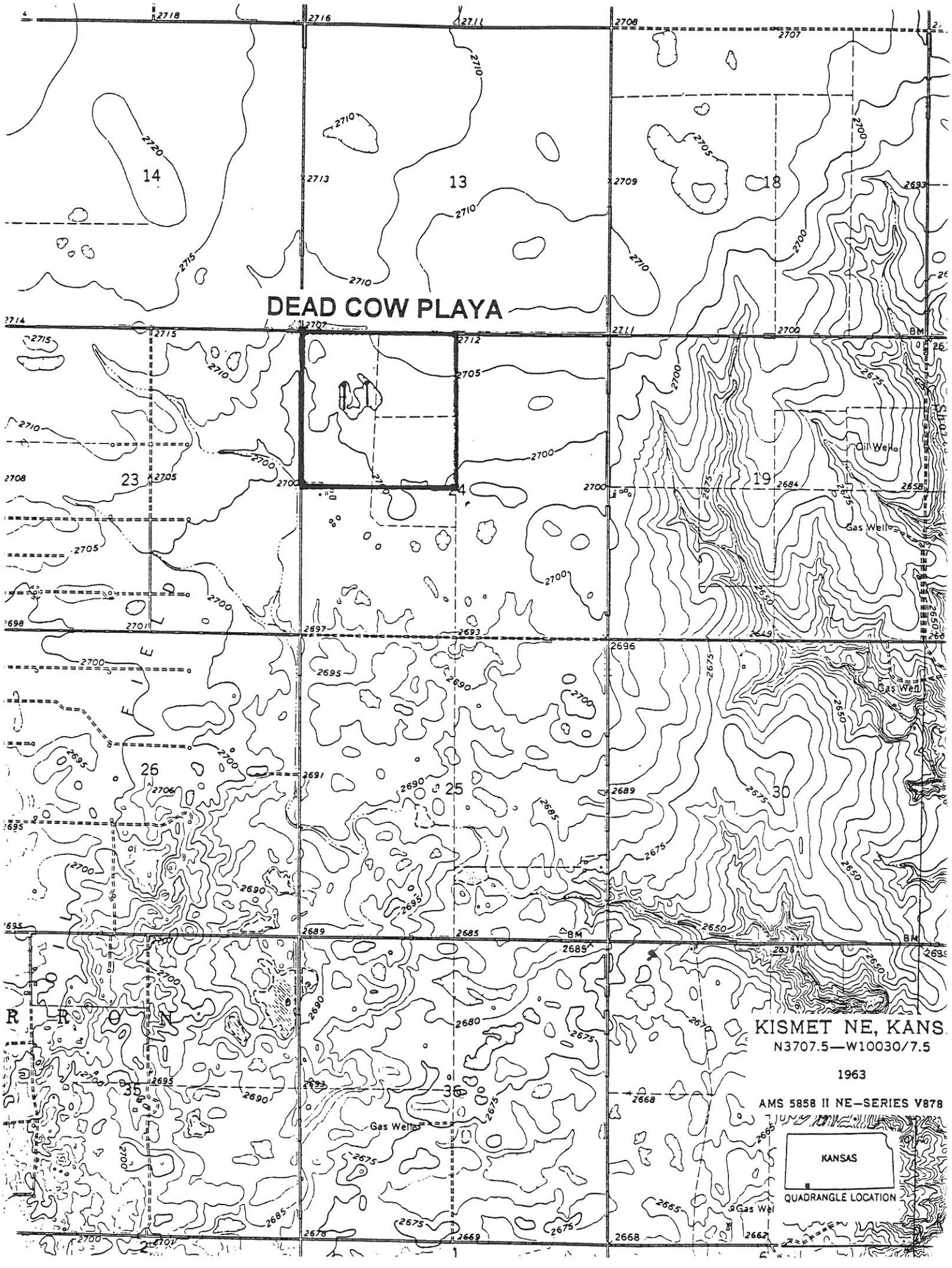


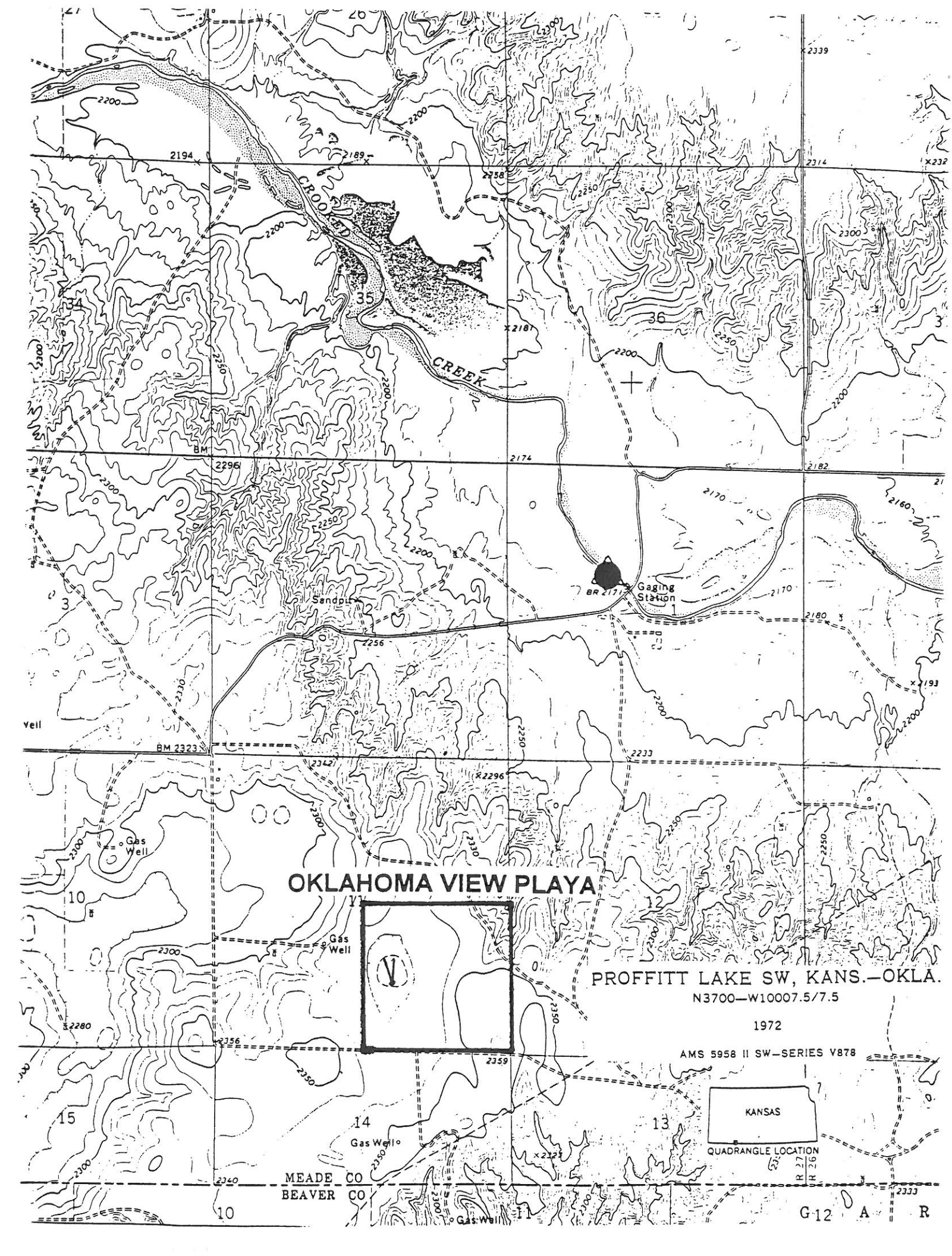
APPENDIX--Maps of Playa Lake Sites

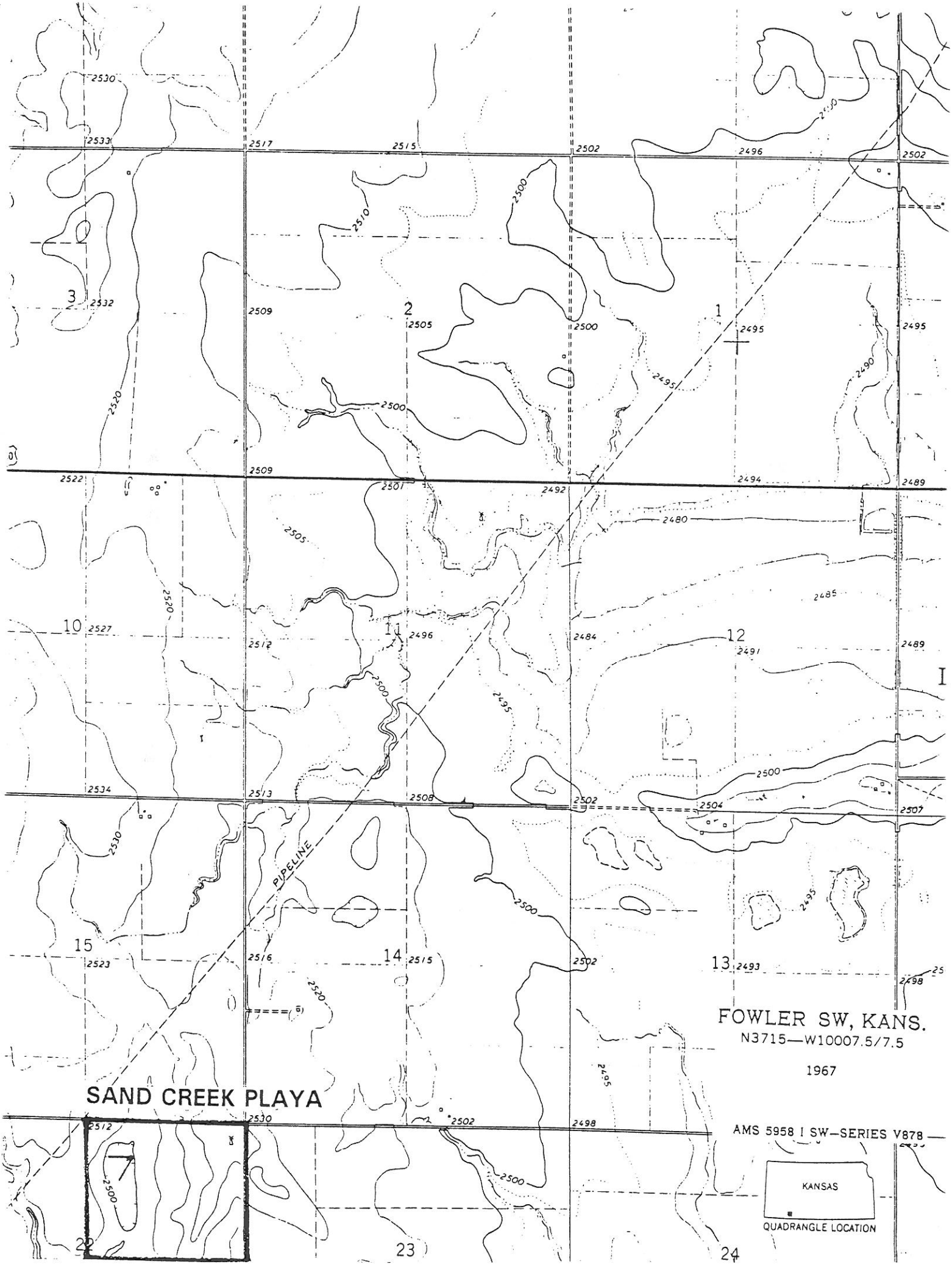

CHORUS FROG PLAYA
C L E V E L A N D
Creek
DIGHTON SW, KANS
N3815—W10022.5/7.5
1974
AMS 5960 IV SW–SERIES V878
KANSAS
QUADRANGLE LOCATION
Cem.
Ford

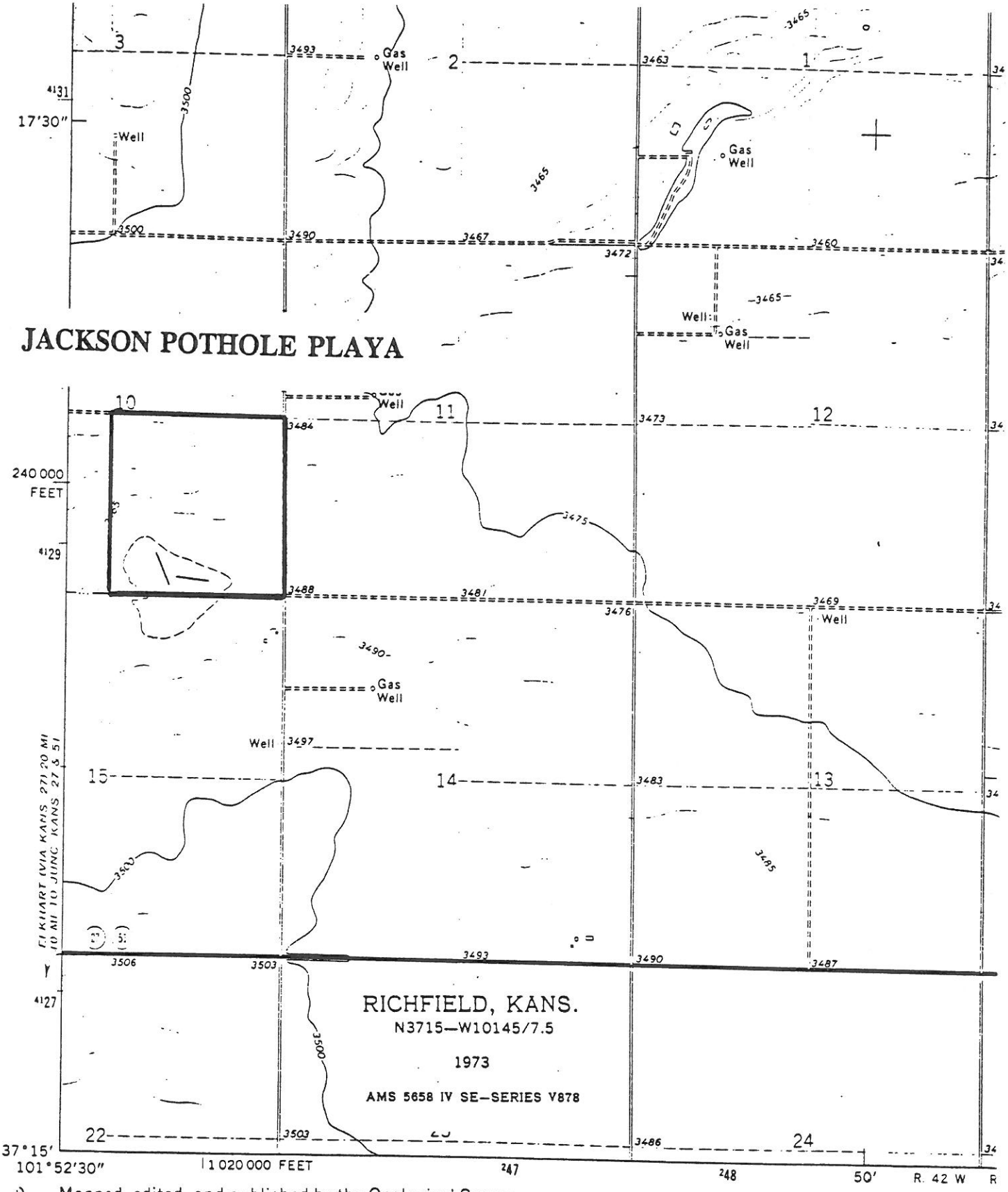

MEADOWLARK PLAYA
B L A I N E
AMY, KANS.
N3822.5—W10030/7.5
1974
AMS 5860 I NE—SERIES V878
KANSAS
QUADRANGLE LOCATION


PLAINS PLAYA
BULL LAKE PLAYA
PLAINS, KANS.
N3715—W10030/7.5
1963
AMS 5858 I SE—SERIES V878
W E S T


DEAD COW PLAYA
14
13
18
19
23
24
25
26
30
35
36
Oil Well
Gas Well
Gas Wells
KISMET NE, KANS.
N3707.5—W10030/7.5
1963
AMS 5858 II NE—SERIES V878
KANSAS
QUADRANGLE LOCATION


OKLAHOMA VIEW PLAYA
V
PROFFITT LAKE SW, KANS.—OKLA.
N3700—W10007.5/7.5
1972
AMS 5958 II SW—SERIES V878
KANSAS
QUADRANGLE LOCATION
CROOKED CREEK
Gaging Station
Sandpit
Gas Well
MEADE CO
BEAVER CO
BM 2296
BM 2323
BR 2171
G-12 A R


SAND CREEK PLAYA
PIPELINE
FOWLER SW, KANS.
N3715—W10007.5/7.5
1967
AMS 5958 I SW—SERIES V878
KANSAS
QUADRANGLE LOCATION



Mapped, edited, and published by the Geological Survey in cooperation with State of Kansas agencies

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1972. Field checked 1973

Projection and 10,000-foot grid ticks: Kansas coordinate system, south zone (Lambert conformal conic) 1000-meter Universal Transverse Mercator grid ticks, zone 14, shown in blue. 1927 North American datum

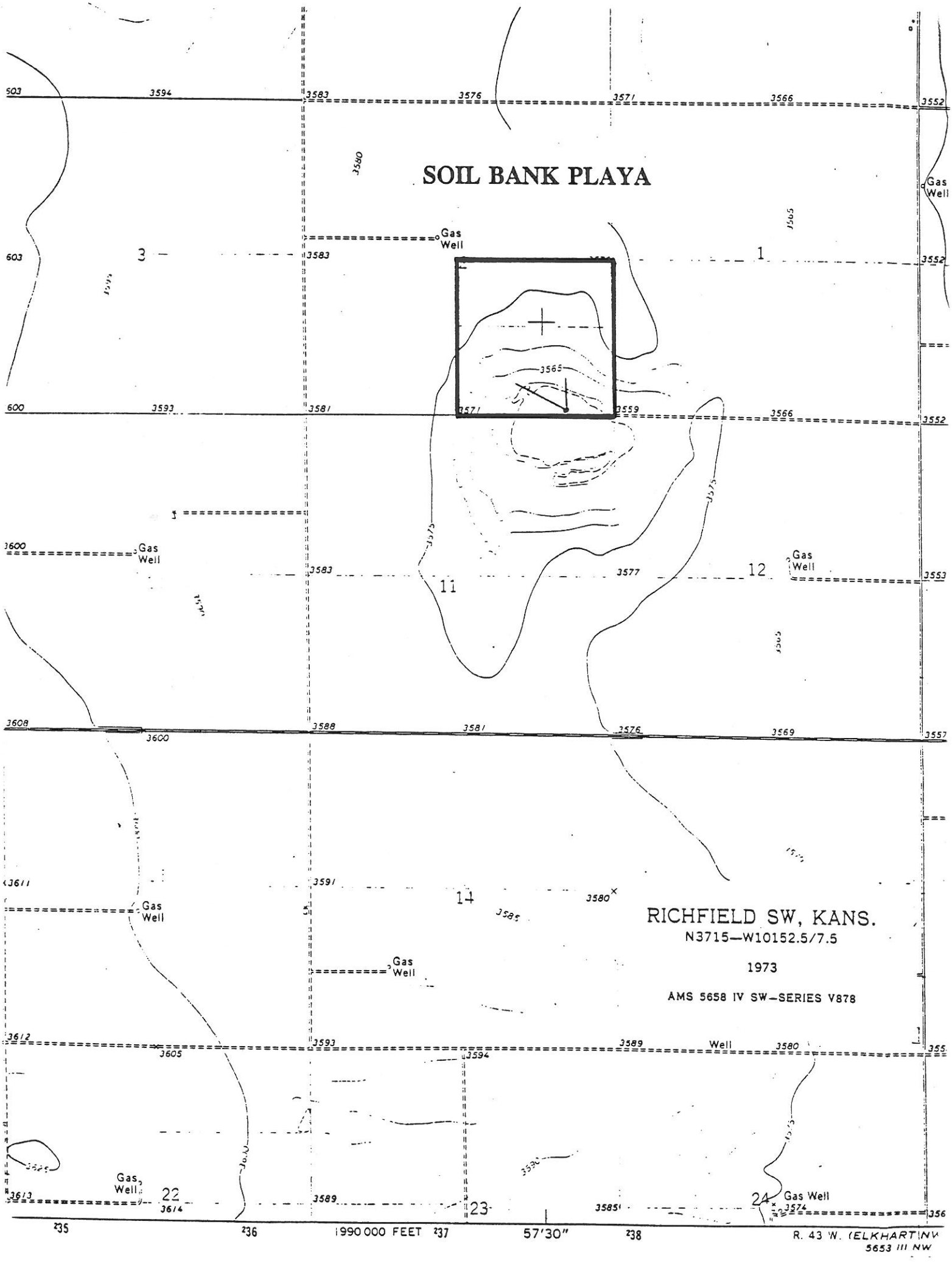
Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

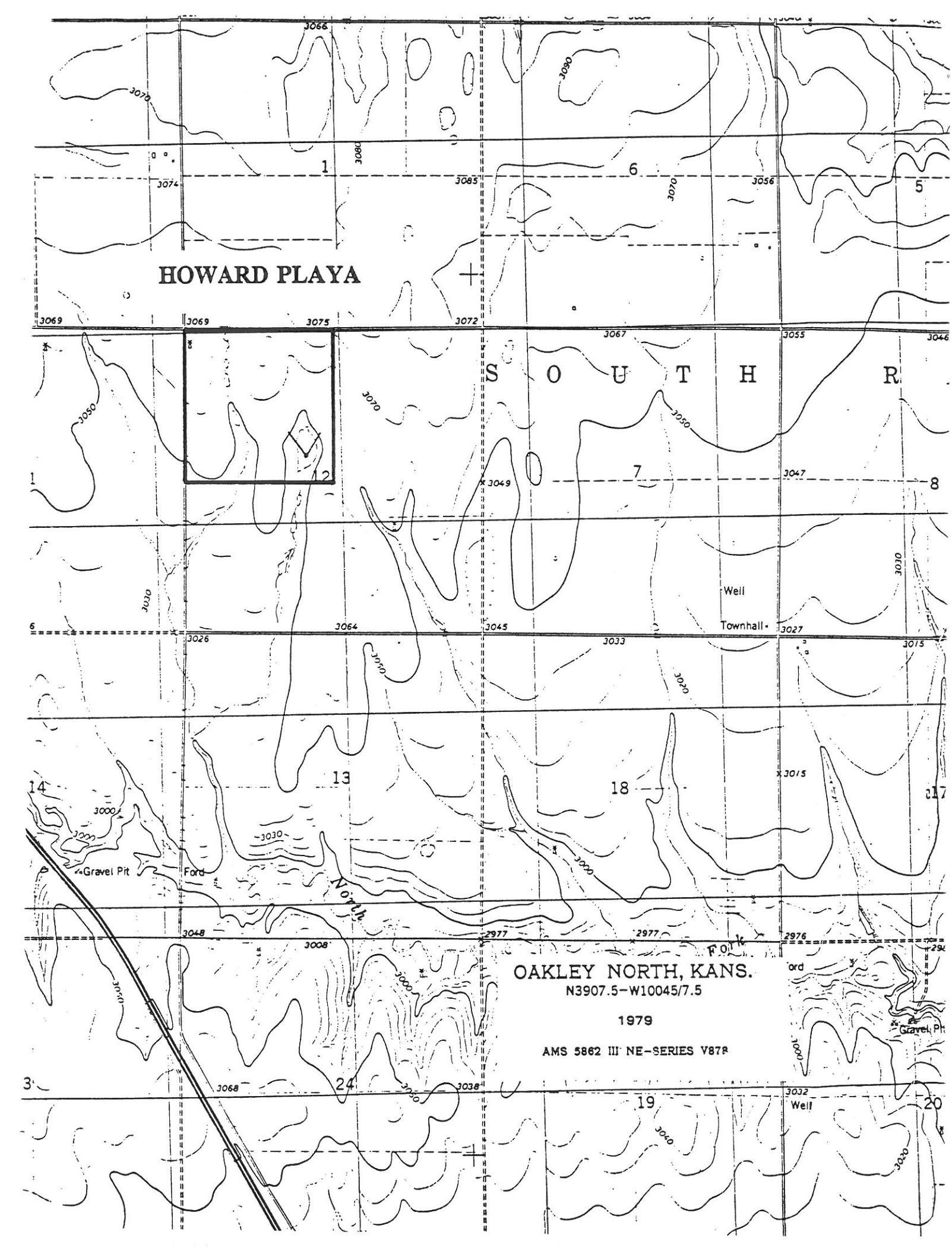
UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

GN MN 11° 196 MILS 1°42' 30 MILS

(ELKHART NW) 5658 III NW

FOR SALE


SOIL BANK PLAYA
Gas Well
Gas Well
Gas Well
Gas Well
Gas Well
Gas Well
Gas Well
Well
Gas Well
1
3
11
12
14
22
23
24
RICHFIELD SW, KANS.
N3715—W10152.5/7.5
1973
AMS 5658 IV SW—SERIES V878
1990 000 FEET
57'30"
R. 43 W. (ELKHART) NW
5653 III NW


HOWARD PLAYA
SOUTH
Well
Townhall
Gravel Pit
Ford
North
Fork
Gravel Pit
Well
OAKLEY NORTH, KANS.
N3907.5—W10045/7.5
1979
AMS 5862 III NE-SERIES V878