

PAT'S BOTTOM, WYOMING  
FIELD SUMMARY REPORT

I. INTRODUCTION

The purpose of this field trip was to ground truth aerial photography of the study area so that photointerpretation could be facilitated with a high degree of accuracy.

A. 1:100,000

Casper NW                      Rawlins NW  
Rawlins SW                      Rawlins SE

B. 7.5' Quadrangle Maps with Checksites

Graham Ranch                  Larsen Knoll  
Lankin Dome                    Hansen Lake NE  
Stampede Meadow               Creston  
Duck Lake                        Medicine Bow Peak  
Savery                            Encampment  
Rawlins Peak                    Saratoga

C. FIELD MEMBERS

C. Elliott                      U.S. Fish and Wildlife Service/Region VI  
B. Pearson                     U.S. Fish and Wildlife Service/Region VI  
F. Stabler                      Bureau of Land Management  
L. Ashby                        Geonex Martel, Inc.  
J. Fojtik                        Geonex Martel, Inc.

D. FIELD DATES

August 7 - 18, 1989

E. AERIAL PHOTOGRAPHY

Type:    Color Infrared Transparencies  
Scale:    1:58,000

<u>DATE</u>	<u>% COVERAGE</u>	<u>DATE</u>	<u>%COVERAGE</u>
07/21/80	12.50%	09/26/80	4.50%
07/22/80	8.50%	10/01/80	.50%
07/27/80	11.00%	07/07/81	2.50%
07/28/80	18.50%	09/08/81	5.00%
07/31/80	.50%	09/12/81	1.50%
08/28/80	12.00%	09/17/81	17.00%
09/04/80	2.50%	10/01/81	.50%
09/05/80	3.00%		



## II. OVERVIEW

Casper NW portion of the study area is located between 108° - 107° West longitude and 42° 30' - 43° North latitude. Bailey's Ecoregion Classification (1980) describes this area as the Wyoming Basin Province (Sagebrush-Wheatgrass Section).

The remainder of the study area is located between 106° - 108° West longitude and 41° - 42° North latitude. This area is classified as Wyoming Basin Province (Sagebrush-Wheatgrass Section) and Rocky Mountain Forest Province (Douglas Fir Forest Section). Elevation range from approximately 5,500 feet in the basin area to over 12,000 feet in the mountains.

### Wyoming Basin Province:

This area is best described as plains interrupted by isolated hills and low mountains. Broad expanses of sagebrush with numerous sandy streams and dry lake beds can be found throughout. Elevations here range between 6,000 and 8,000 feet. The climate in the Wyoming Basin consists of long cold winters and short hot summers with annual temperatures averaging from 40° F to 52° F. Annual precipitation is evenly distributed throughout the year, and ranges from 5 inches to 14 inches. The average growing season is fewer than 100 days. The primary vegetation is sagebrush, greasewood, and a mixture of short grasses. Willows and sedges are dominant along streams and valley bottoms.

### Rocky Mountain Forest Province:

The Medicine Bow National Forest is one area where elevations reach over 12,000 feet. The climate is a semiarid steppe regime in which precipitation occurs primarily in the winter. Precipitation ranges from 20 inches at the base to 40 inches in the higher elevations. A considerable amount of this falls as snow. Vegetation consist of aspen, Blue Spruce, Douglas Fir, and lodge pole pine.

### III. BIOLOGICAL CHARACTERISTICS OF WETLAND HABITATS

- A. Marine: Not present
- B. Estuarine: Not present
- C. Riverine:

The major rivers observed in the study area are the North Platte River and Savery Creek. These rivers are classified as riverine, upper perennial, unconsolidated bottom and permanently flooded (R3UBH) according to observation in field as well as information in the Wyoming Water Resource data book. Characteristics of these upper perennial rivers are low water temperatures, medium to high gradients and velocities, and large insect population. The Little Snake River is an upper perennial (R3) river in a portion of the study area and re-enters as a lower perennial unconsolidated bottom and permanently flooded (R2UBH) river. Oxbows and meander scars are indicators of a lower perennial river. The Sweetwater River is also classified lower perennial unconsolidated bottom, and permanently flooded.

Alluvium, such as cobble bars, sand, and mud flats, found along upper and lower perennial rivers will be classified as unconsolidated shore, seasonally flooded (R3/R2USC) respectively.

Smaller streams in the study area will be classified as riverine, intermittent, streambed, semipermanently, seasonally, or temporarily flooded (R4SBF/C/A). The U.S.G.S. Wyoming Water Resources Data, 1984, will be used to determine the classification of rivers and streams. Where information is unavailable photo signature will dictate classification.

Large irrigation canals will be classified as riverine, lower perennial, unconsolidated bottom, intermittently exposed (R2UBGx) or riverine, intermittent streambed, semipermanently flooded (R4SBFx). Classifications will be determined by photo signature and collateral information when available. The palustrine system will be used when emergents are evident in canals. The excavated modifier (x) will be used on all canals. Small irrigation ditches within agricultural fields will not be delineated.

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D. Lacustrine

Reservoirs and impoundments greater than 20 acres, such as Saratoga Lake will be classified as limnetic, unconsolidated bottom and permanently flooded (L1UBHh). Any exposed shoreline will be classified as littoral, unconsolidated shore and seasonally or temporarily flooded (L2USC/Ah). Aquatic bed found along these large reservoirs as well as shallow impoundments over twenty acres will be classified as littoral, aquatic bed, intermittently exposed or semipermanently flooded (L2ABG/Fh). Persistent emergents associated with these reservoirs will be classified under the palustrine system. All wetlands and deepwater habitats associated with reservoirs will be classified using the impounded modifier (h).

Sinclair Lake located in Rawlins NW will be classified littoral, unconsolidated bottom, and permanently flooded (L2UBFh) based on observations while ground truthing indicating that this lake is sterile due to the location of an oil refinery adjacent to it.

Alpine lakes over twenty acres with any part of its shoreline as bedrock will be classified as limnetic, unconsolidated bottom, permanently flooded (L1UBH). Lakes less than twenty acres with any bedrock shore will also be classified as L1UBH.

Natural lakes over twenty acres in sagebrush country will be classified as littoral, aquatic bed intermittently exposed (L2ABG). Large mining pits will be classified as limnetic, unconsolidated bottom, permanently flooded with an excavated modifier (L1UBHx).

Hogback Lake, located in Rawlins NW, was in a drawdown state while field checking, which contradicted what the signature on the photography looked like. Dried snails and aquatic bed were found on the lake bottom and information provided by Bureau of Land Management personnel indicates that the lake holds water only during the growing season. Since the photo shows open water and no breaks are evident it was decided the seasonally flooded water regime (C) would correctly dictate the overall condition of this lake. The classification therefore will be littoral, aquatic bed that is seasonally flooded (L2ABC).

## E. Palustrine

Palustrine emergent wetlands in the study area were found to occur along river floodplains, in wet meadows, swales, oxbows, around seeps and springs and in dry lake beds.

Temporarily flooded emergent wetlands (PEMA) are mainly found in wet meadows, along streams, sand dune areas and dry lake beds. Species found while ground truthing were basin wild-rye (Elymus cinereus), foxtail barley (Hordeum jubatum), red saltwort (Salicornia rubra), iodine bush (Allenrolfea occidentalis), western wheatgrass (Agropyron smithii), saltgrass (Distichlis sp.), rush (Juncus sp.), timothy (Phleum pratense), redtop (Agrostis alba), mint (Mentha sp.), and dock (Rumex sp.). While ground truthing the study area we encountered a temporary emergent species called basin wild-rye. We had not encountered this species on previous Wyoming field trips. We contacted Andy Warren, biologist for Bureau of Land Management, Rawlins, Wyoming, and discovered that basin wild-rye can be found in snowpockets, outer edges of irrigated fields, and on second terraces of intermittent streams. It can tolerate standing water for a few weeks and water can be found anywhere from surface to three feet below ground level.

Mud Springs Lake located in Rawlins NW is a large depression inhabited by small dead greasewood. Under a layer of dry cracked soil the ground was moist and consisted of a clay like substance indicating the lake is temporarily wet during the growing season and dries up late in the season (PEMA).

Located in Casper NW, Ice Slough has a solid white signature that was found to be temporarily flooded (PEMA), this was usually associated with streams and had no upland pockets associated with it. The land owner stated water stands in the temporary area during the months of March, April, and May. Seasonally flooded emergents (PEMC) can be found in the main channel of Ice slough. Information provided by the owner indicates water in this area dries up in the beginning of July. Historically settlers would find ice eighteen inches down throughout the month of July and into the first week of August.

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Chain of Lakes area located in Rawlins NW has shallow semipermanently flooded areas (PABF) that have standing water in them on the photo but were drawn down during the field reconnaissance. The drawn down area surrounding the open water was checked for soils types. Gley soil was present indicating that water is absent for only short periods of time. Therefore we decided to go PABF with the open water on the photo. The emergent areas surrounding the PABF's will be classified seasonally flooded emergent (PEMC). There are extensive areas of temporarily flooded emergents (PEMA) and scrub-shrub, temporarily flooded (PSSA) with unconsolidated shore, temporarily flooded (PUSA) and upland knolls scattered throughout.

Seasonally flooded emergent wetlands (PEMC) occur mainly in wet meadows, floodplains, seeps, springs, and sand dune areas. Species found were sedge (Carex sp.), nebraska sedge (Carex nebrascensis), water parsnip (Sium suave), arrowgrass (Triglochin sp.), redtop (Agrostis alba), rush (Juncus sp.), horsetail (Equisetum sp.), iris (Iris sp.), spikerush (Eleocharis sp.), reed canary grass (Phalaris arundinacea), and american sloughgrass (Beckmannia syzigachne).

Saturated water regime (B) will be used for springs and seeps located on or near slopes. The saturated regime will be used in emergent pockets in mountain ranges approximately 9,000 feet and higher. Species found in this situation are sedges (Carex sp.), Moss, Elephants head (Pedicularis groenlandica), and Marigold.

Semipermanently flooded wetlands (PEMF) can be found in old oxbows, pockets in wet meadows, around ponds and springs. Species found were three square bulrush (Scirpus pungens), hardstem bullrush (Scirpus acutus), and cattail (Typha latifolia).

Basins of sand and/or barren soil are found in the semiarid areas of the study area. These basins are void of vegetation but have soil characteristics that can contain moisture and rainfall for short periods throughout the year. These are classified as unconsolidated shore, temporarily or seasonally flooded (PUSA/C). Basins with a mixture of unconsolidated shore and elongated upland knolls will be classified PUSA.

Palustrine scrub-shrub wetlands occur both temporarily and seasonally flooded (PSSA/C). Both can be found on river floodplains, meadows, springs, around beaver ponds and the drainages. Willow (Salix sp.) is the only wet scrub-shrub found in these areas. Saturated scrub-shrub wetlands (PSSB) are found on slopes, near seeps and springs. Scrub-shrubs found at elevations approximately 9,000 feet and above will also be classified as saturated (PSSB) except those shrubs found lining drainages and along streams, these will stay seasonal or temporarily flooded (PSSC/A). Greasewood (Sarcobatus vermiculatus) is a temporarily flooded scrub-shrub (PSSA) when found in shallow basins and flats with an understory of unconsolidated shore. Greasewood found in these flats are much healthier than greasewood found in the upland areas surrounding these flats.

Historically large forested areas of river floodplains functioned as wetlands. Today, according to the Cowardin classification, these areas are non wetland due to water withdrawal for irrigation. Occasionally areas contiguous to the river channel may function as temporarily flooded forest (PFOA). Species include narrowleaf cottonwood (Populus angustifolia). Along the North Platte River at the Sinclair Recreation Area we spoke to golf course personnel who informed us that the river floods annually. Therefore the Cottonwoods near the river on the golf course will be classified as palustrine, forested, temporarily flooded (PFOA).

Open water bodies less than twenty acres in size, were found to support aquatic vegetation sometime during the growing season. Depending on the date of photography the aquatic bed signature may not always be evident. These will be classified as aquatic bed, semi-permanently flooded (PABF) on those in the Wyoming Basin Province and aquatic bed, intermittently exposed (PABG) in the Rocky Mountain Forest Province. Aquatic species include duckweed (Lemna sp.), pearlwort (Ruppia sp.) and a number of unidentified floating and submerged vegetation. Alpine lakes less than twenty acres with vegetated shoreline found in higher elevations of the Medicine Bow National Forest will be classified as unconsolidated bottom, permanently flooded (PUBH). Beaver ponds in the study area were found to support aquatic vegetation, and as a result will be classified as aquatic bed, intermittently exposed, with the beaver modifier (PABGb). Since the extent of beaver influence cannot be determined on vegetation surrounding the dams, the beaver modifier will be used only on the water bodies created by the dams.

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Impoundments less than twenty acres in size, with a strong open water signature, were also found to support aquatic bed vegetation sometime during the growing season. In the semiarid climate of the study area these will be classified as aquatic bed, semipermanently flooded (PABFh) and in the mountain elevations these will be aquatic bed, intermittently exposed (PABGh). Impoundments with little or no water present will be classified as unconsolidated shore, seasonally flooded (PUSCh) or temporarily flooded (PUSAh). Those with an emergent signature will be classified as emergent, temporarily, seasonally, or semipermanently flooded (PEMA/C/Fh) depending on signature. The impounded modifier (h) will be used on all impoundments. Irrigation canals with emergents in the channel will be classified as emergent, temporarily or seasonally flooded, with an excavated modifier (PEMA/Cx). Sewage and agricultural dugouts will be classified as aquatic bed, semipermanently flooded (PABFx) or unconsolidated shore, temporarily or seasonally flooded (PUSA/Cx) depending on signature. Golf course ponds, oil and gas pits and very small gravel pits will be classified as unconsolidated bottom, semipermanently flooded (PUBFx). Larger gravel pits but those still under twenty acres will be classified as unconsolidated bottom, intermittently exposed (PUBGx). The excavated modifier (x) will be used on all of the above.

Transitional flats observed while ground truthing proved to be upland. Photo signatures of these areas are not as white as an unconsolidated shore flat and are more spread out with no basin definition. In some of these areas greasewood may be present but the white unconsolidated shore is absent which would be typical of a greasewood flat. Some areas are more humicky and emergent wetland vegetation is absent.

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#### IV. PROBLEM AREAS

##### A. Hayed Fields

The hayed fields in this study area were located near Saratoga in Rawlins SE and near Baggs and along the Savery Creek in Rawlins SW.

One thing to remember when delineating hayed fields, do not let land use dictate breaks, carry wetland signature through into mowed fields. Evaluate the entire area before delineating these fields. In many cases we found upland fields associated with parallel ditches whereas wetland hayed fields were associated with contour ditches. Upland fields will be a smooth red signature where mottling is absent. Temporarily flooded fields ranged from bright red with an even light brown/black undertone to red and pink fields with very light even traces of mottling. Seasonally flooded fields seem to exhibit a darker mottling with more swales throughout and small pockets of semipermanently flooded emergents in these fields. Hayed fields, especially those with subtle breaks will be ground truthed again at draft map review.

The following is an overview of hayed fields observed while ground truthing:

###### Baggs (Rawlins SW)

Fields seen here were drier than other areas. Photography was flown in July and determining upland from temporarily flooded fields are difficult with this emulsion. Red fields with a dark undertone will be temporarily flooded PEMA. Dark swales and the more mottled fields will be seasonally flooded PEMC. Numerous channels and pockets supported semipermanently flooded emergents PEMF in this area.

Some field notes indicate upland but photo signature supports temporarily flooded emergents. These areas are to be delineated per photo signature and will be checked again at draft before mowing occurs.

###### Savery (Rawlins SW)

Hayed fields in the Savery area are mainly seasonally flooded with oxbows and pockets of semipermanently flooded emergents. Signatures on photography correlate with what was observed in the field. Signatures for seasonal hayed fields are mottled throughout. Semipermanent signatures range from a deep brown to a brilliant red with a clumpy texture and usually have areas of open water intermixed.

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Saratoga (Rawlins SE)

Photo signature for a majority of hayed fields in the Saratoga area indicate a seasonally flooded condition where as ground truthing proved more temporarily flooded conditions. These areas will have to be delineated according to the signature that has consistently been found to be seasonal. These areas will also be looked at more closely at draft review before mowing occurs.

Upland signatures have been consistent for the most part. These range from a bright smooth red, gray and also a green signature void of pink, red or brown tones.

V. SUMMARY

All photography was taken in July, August, September, and October 1980; July and September 1981. The field reconnaissance of the study area was conducted in August 1989. Photography of the work area was found to be fairly consistent with the field conditions.

COMMONLY FOUND SPECIES

PEMA

foxtail barley  
basin wild-rye  
dock  
iodine bush  
mint  
red saltwort  
redtop  
rush  
saltgrass  
timothy  
western wheatgrass

Hordeum jubatum  
Elymus cinereus  
Rumex sp.  
Allenrolfea occidentalis  
Mentha sp.  
Salicornia rubra  
Agrostis alba  
Juncus sp.  
Distichlis sp.  
Phleum pratense  
Agropyron smithii

PEMC

american sloughgrass  
arrowgrass  
horsetail  
iris  
nebraska sedge  
redtop  
reed canary grass  
rush  
sedge  
spikerush  
water parsnip

Beckmannia syzigachne  
Triglochin sp.  
Equisetum sp.  
Iris sp.  
Carex nebrascensis  
Agrostis alba  
Phalaris arundinacea  
Juncus sp.  
Carex sp.  
Eleocharis sp.  
Sium suave

PEMB

sedge  
marigold  
moss  
Elephant head

Carex sp.

Pedicularis groenlandica

PEMF

three square bulrush  
cattail  
hardstem bulrush

Scirpus pungens  
Typha latifolia  
Scirpus acutus

PABF and PABG

duckweed  
pearlwort

Lemna sp.  
Ruppia sp.

PSSA

greasewood  
willow

Sarcobatus vermiculatus  
Salix sp.

PSSC and PSSB

willows

Salix sp.

PFOA

narrowleaf cottonwood  
eastern cottonwood

Populus angustifolia  
Populus deltoides