

**Riparian Assessment
Of the
North Fork Gunnison River
And
Lower Gunnison River**

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INTRODUCTION

The lower Gunnison River and the North Fork Gunnison tributary are two of Colorado's scenic western slope mountain river valleys. From its alpine sources above Paonia Reservoir, the North Fork flows through orchards and ranchlands, unique rock formations, and narrow canyons before its confluence with the Gunnison River approximately 11 miles upstream from the town of Delta. From the North Fork, downstream to the confluence with the Colorado River at Grand Junction, the Gunnison River flows through narrow canyons popular for recreation, wildlife habitat, water supply, and agriculture. These valleys include many ecological, recreational, scenic, and agricultural values of regional and statewide significance. The Gunnison River valley has been settled for over one hundred years, has been, and continues to be an important agricultural region of the State.

The Delta Soil Conservation District seeks to preserve the ranching, agricultural, biological, and open space values within the valley by identifying various land conservation opportunities. Project goals include protecting the river's sensitive resources from encroaching development, maintaining the ranching and agricultural character of the valley, minimizing erosion of the riverbanks and down cutting of the river within its channel, and maintaining the valley's unique scenic and recreational amenities.

The Delta Soil Conservation District focused on a river corridor approximately 150 km (93.15 miles) long. The section under consideration for this project begins on the North Fork Gunnison River just below Paonia Reservoir and continues downstream to the confluence with the Gunnison River. It then follows the lower Gunnison River downstream to its confluence with the Colorado River at Grand Junction. The project area is shown in Figure 1.

The Colorado Natural Heritage Program (CNHP) reviewed riparian sites along the project corridor to identify areas with unique or significant riparian vegetation communities and prioritize their relative value for conservation. The following report provides the methods used to complete the assessment, descriptions of the locations identified, and a discussion of the relative ranking of the different locations.

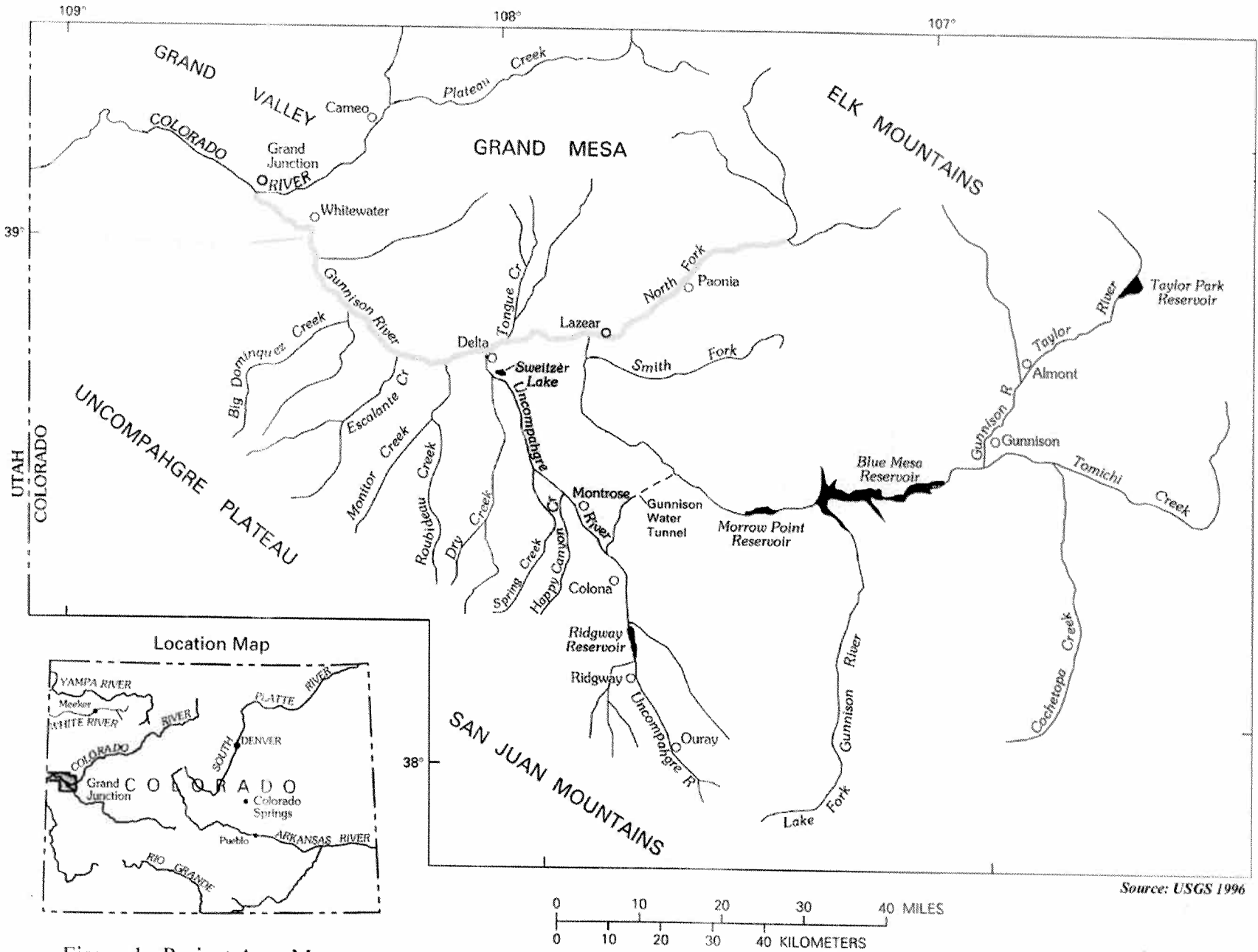


Figure 1. Project Area Map

THE COLORADO NATURAL HERITAGE PROGRAM AND ELEMENT RANKING SYSTEM

CNHP is the state's primary comprehensive biological diversity data center, gathering information and field observations to help develop statewide conservation priorities. The multi-disciplinary team of scientists and information managers gathers comprehensive information on rare, threatened, and endangered species and significant plant communities of Colorado. Life history, status, and locational data are incorporated into a continually updated data system. Sources include published and unpublished literature, museum and herbaria labels, and field surveys conducted by knowledgeable naturalists, experts, agency personnel, and our own staff of botanists, ecologists, and zoologists. Information management staff track data on the occurrence of rare elements of biological diversity within a database and geographic information system (Arc/INFO and ArcView GIS). The Element Occurrence (EO) database includes information on taxonomic group, global and state rarity rank, federal and state legal status, source, observation date, county, quadrangle map, watershed, management area, township, range, and section, precision, and conservation unit. CNHP is part of an international network of conservation data centers that use the Biological and Conservation Data System (BCD) . Numerous local governments, state and federal agencies, and private entities work closely with CNHP. Use of these data by many different individuals and organizations, including Great Outdoors Colorado, encourages a proactive approach to development and conservation thereby reducing the potential for conflict. Information collected by the Natural Heritage Programs around the globe provides a means to protect species before the need for legal endangerment status arises.

Information is gathered by CNHP on Colorado's plants, animals, and natural plant communities. Each of these species and plant communities is considered an element of natural diversity, or simply an element. Each element is assigned a rank that indicates its relative degree of imperilment on a five-point scale (e.g., 1 = extremely rare/imperiled, 5 = abundant/secure). The primary criterion for ranking elements is the number of occurrences, i.e., the number of known distinct localities or populations. This factor is weighted more heavily because an element found in one place is more imperiled than something found in twenty-one places. Also of importance is the size of the geographic range, the number of individuals, trends in both

population and distribution, identifiable threats, and the number of already protected occurrences.

Element imperilment ranks are assigned both in terms of the element's degree of imperilment within Colorado (its State or S-rank) and the element's imperilment over its entire range (its Global or G-rank). Taken together, these two ranks give an instant picture of the degree of imperilment of an element. For example, the lynx, which is thought to be secure in northern North America but is known from less than five current locations in Colorado, is ranked G5S1. The Rocky Mountain Columbine which is known only from Colorado, from about 30 locations, is ranked a G3S3. Further, a tiger beetle that is only known from one location in the world at the Great Sand Dunes National Monument is ranked G1S1. CNHP actively collects, maps, and electronically processes specific occurrence information for elements considered extremely imperiled to vulnerable (S1 - S3). Those with a ranking of S3S4 are "watchlisted," meaning that specific occurrence data are collected and periodically analyzed to determine whether more active tracking is warranted. A complete description of each of the Natural Heritage ranks is provided in Table 1. This single rank system works readily for all species except those that are migratory. Those animals that migrate may spend only a portion of their life cycles within the state. In these cases, it is necessary to distinguish between breeding, non-breeding, and resident species. As noted in Table 1, ranks followed by a "B", e.g., S1B, indicate that the rank applies only to the status of breeding occurrences. Similarly, ranks followed by an "N", e.g., S4N, refer to non-breeding status, typically during migration and winter. Elements without this notation are believed to be year-round residents within the state.

Heritage ranks are not legal designations and should not be interpreted as such. Although most species protected under state or federal endangered species laws are extremely rare, not all rare species receive legal protection. Legal status is designated by either the USFWS under the Endangered Species Act or by the CDOW under Colorado Statutes 33-2-105 Article 2. The USFS recognizes some species as "Sensitive," as does the BLM. Table 2 defines the special status assigned by these agencies to the elements identified from the project corridor and provides a key to the abbreviations used.

Table 1. Definitions of Colorado Natural Heritage Program Element Conservation Ranks.

Global ranks are based on the range-wide status of a species. State ranks are based on the status of a species in an individual state. Global and State ranks are denoted, respectively, with a "G" or an "S" followed by a character. These ranks should not be interpreted as legal designations.

G/S1 Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction.

G/S2 Imperiled globally/state because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range.

G/S3 Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences).

G/S4 Apparently secure globally/state, though it might be quite rare in parts of its range, especially at the periphery.

G/S5 Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

GX Presumed extinct.

G#? Indicates uncertainty about an assigned global rank.

G/SU Unable to assign rank due to lack of available information.

GQ Indicates uncertainty about taxonomic status.

G/SH Historically known, but not verified for an extended period, usually.

G#T# Trinomial rank (T) is used for subspecies or varieties. These species or subspecies are ranked on the same criteria as G1-G5.

S#B Refers to the breeding season imperilment of elements that are not permanent residents.

S#N Refers to the non-breeding season imperilment of elements that are not permanent residents. Where no consistent location can be discerned for migrants or non-breeding populations, a rank of SZN is used

SZ Migrant whose occurrences are too irregular, transitory, and/or dispersed to be reliably identified, mapped, and protected.

SA Accidental in the state.

SR Reported to occur in the state, but unverified.

S? Unranked. Some evidence that species may be imperiled, but awaiting formal rarity ranking.

Notes: Where two numbers appear in a state or global rank (e.g., S2S3), the actual rank of the element falls between the two numbers.

represents rank (1-5)

Table 2. Plant associations and rare plant and animal occurrences within the project area

Scientific Name	Common Name	G-rank*	S-rank*	ESA	Federal Sensitive
Animals					
<i>Gambelia wislizenii</i>	Longnose leopard lizard	G5	S1		BLM
<i>Gila cypha</i>	Humpback chub	G1	S1	LE	
<i>Gila robusta</i>	Roundtail chub	G2G3	S2		BLM
<i>Hesperopsis libya</i>	Mohave sooty-wing	G5	S2		
<i>Ochloides yuma</i>	Yuma skipper	G5	S2S3		
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	G1T?Q	S1	LE	
<i>Rana pipiens</i>	Northern leopard frog	G5	S3		FS/BLM
<i>Spea intermontana</i>	Great basin spadefoot	G5	S3		BLM
<i>Xyrauchen texanus</i>	Razorback sucker	G1	S1	LE	
Plant Communities					
<i>Populus angustifolia/Alnus incana</i>	Montane riparian forest	G3?	S3		
<i>Populus angustifolia/Rhus trilobata</i>	Narrowleaf cottonwood/skunkbrush	G3	S3		
<i>Populus deltoides ssp. wislizenii/Rhus trilobata</i>	Fremont's cottonwood forests	G2	S2		
<i>Sarcobatus vermiculatus/Suaeda torreyana</i>	Saline bottomland shrublands	G2G3	S2S3		
Plants					
<i>Centaureum arizonicum</i>	Arizona centaury	G5?	S1		
<i>Epipactis gigantea</i>	Helleborine	G4	S2		FS
<i>Lomatium concinnum</i>	Colorado desert-parsley	G2	S2		BLM
<i>Sclerocactus glaucus</i>	Uinta basin hookless cactus	G3	S3	LT	

Key to ESA and Federal Sensitive Ranks

1. **ESA Status:** U.S. Fish and Wildlife Service (58 Federal Register 51147, 1993) and (61 Federal Register 7598, 1996)

LE Endangered; species or subspecies formally listed as endangered.

LT Threatened; species or subspecies formally listed as threatened.

2. **Federal Sensitive** U.S. Forest Service (Forest Service Manual 2670.5) (noted by the Forest Service as "S")

FS Sensitive: those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

a. Significant current or predicted downward trends in population numbers or density.

b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Bureau of Land Management (BLM Manual 6840.06D) (noted by BLM as "S")

BLM Sensitive: those species found on public lands, designated by a State Director, that could easily become endangered or extinct in a state. The protection provided for sensitive species is the same as that provided for C (candidate) species.

* See Table 1. Definitions of Colorado Natural Heritage Program Conservation Ranks.

METHODS

Potential riparian conservation locations along the Lower Gunnison River and North Fork Gunnison River were identified using aerial photography to select locations for detailed field assessments. Using the aerial photography, 16 riparian locations with potential for conservation were identified. The locations were selected by assessing such factors as the size of the area, connections to the hydrology of the river, evidence of human modifications, and the character of the vegetation. Large areas that appeared to have existing hydrological connections, very little human modifications, and natural vegetation were delineated on the photos and identified for later ground survey. While most of the locations are somewhat small and isolated from one another, some of the locations form large semi-contiguous reaches (e.g., location #14 spans several miles of the Lower Gunnison River downstream of Delta). Using the aerial photographs, it was possible to differentiate pasture and cropland from native woodlands, but it was not possible to determine the quality of the native woodlands or if the locations were occupied by native or non-native species.

Delineation of potential conservation sites was completed in late September 1999 using aerial photography. Field survey of the identified sites was completed during the period of October 1-5, 1999. Of 16 locations identified from aerial photographs, site visits were conducted at various accessible locations. Some sites identified from the aerial photographs were not visited because they were either inaccessible or dropped from consideration after further review and discussion.

The locations in the North Fork Gunnison River Valley were accessible by road. The locations located in the lower Gunnison River valley were accessed by canoe from the river. At each of the locations visited, Riparian Site Survey forms were completed to document the vegetation present and the communities observed, location, size, condition, and landscape context of the location. The Riparian Site Survey forms completed for each of the locations visited are included at the end of this report.

To compare and prioritize the sites, relative ranks were assigned to each site based on the riparian community present, and its condition, size, and landscape location. Using these criteria, each site was assigned a relative rank of A through D, with A representing an excellent location and D representing a poor location. Although these criteria and methodology are similar to the element occurrence ranking method of the Natural Heritage Program, they differ in that these locations do not represent element occurrences and therefore are not given actual element occurrence ranks.

DISCUSSION

The following sections describe the characteristics of the project corridor and the specific riparian locations selected for detailed evaluation. The general characteristics of the project area are presented first, followed by a detailed description of each location visited.

GENERAL PROJECT AREA CHARACTERISTICS

The arrival to this area of European pioneers in the mid- to late 1800's brought many changes to the riparian vegetation of the western slope and the Gunnison River valley. Agricultural development on the rich floodplains adjacent to the river converted large areas from wooded floodplain forests and woodlands, wet meadows, and willow carrs to fruit orchards, hay meadows, and cultivated cropland. Concomitant with agricultural development of the riparian lands came the diversion, storage, and distribution of river water to irrigate crops and control flooding.

The pioneers and others that followed brought numerous non-native species that often invade and tend to dominate the natural communities. Often these weedy species form monocultures and completely displace the species that previously inhabited an area.

Although a majority of the riparian acreage along the North Fork of the Gunnison River is privately held and is in agricultural production, several reaches still exhibit a relatively natural riparian vegetation community. With exception of several larger floodplain terraces, the majority of the riparian land along the lower Gunnison River is in public ownership and

therefore has not been converted to other uses. However, these public land sites do exhibit a similar or greater degree of weedy species invasion as the private lands in the upper valley.

It is certain that water storage and diversions in the upper basin reduce the frequency and magnitude of flooding and consequently have modified the ecology of the riparian communities all along the river. It is also certain that the presence of the weedy species tamarisk (*Tamarix ramosissima*) has resulted in a draw down of ground water levels along many riparian reaches. Where these factors have occurred the natural riparian vegetation has degraded and in some areas disappeared.

Riparian Resources

Many rare and imperiled plant and animal species, and natural communities are found along the riparian zones of the Gunnison River Basin. One of the riparian communities that occur on the North Fork River floodplain is the narrowleaf cottonwood/strappleaf willow-silverberry woodland (*Populus angustifolia*/*Salix eriocephala* var. *ligulifolia*-*Shepherdia argentea*). It is an example of a globally rare Colorado montane riparian plant association and is only known from the western slope of Colorado. In addition to the rare cottonwood forest association, several other rare and/or unique riparian woodland communities occur along the lower Gunnison and North Fork Gunnison Rivers.

These natural riparian communities are interspersed amongst dry uplands, agricultural fields, hay meadows, residential and municipal areas, and other components such as roads, railroads, and utility corridors. Because of the unique position riparian areas occupy on the landscape and the competition with humans for those areas, most of Colorado's natural riparian communities have declined in quality and quantity over the last century. Those that are naturally rare are more threatened by human impacts than those that naturally are more widespread. Accordingly, even degraded examples of rare communities and habitats should be considered potentially valuable for conservation. With appropriate restoration efforts many of the degraded areas can be enhanced to support native riparian communities and to provide the range of functions and values that are attributed to them.

CNHP has documented a number of riparian plant communities and rare plant and animal elements that occur in and around the Gunnison River valley. Table 2 lists the rare plant associations and rare plant and animal species known to occur within 500 m (1,640 feet) of the river along the project corridor. The specific occurrences include 24 vertebrate and invertebrate records, 5 plant community records, and 32 plant records.

DETAILED LOCATION CHARACTERISTICS

The following site summaries describe location, plant communities observed, size, vegetation condition, and landscape context. Site location maps and photographs are included if available. The location description outlines the character of the site and its relative rank for conservation of natural riparian vegetation. The communities observed description discusses existing vegetation and, when possible, speculates as to what natural vegetation communities may have previously existed on the site. Topographic maps indicate approximate location relative to the surrounding landscape with polygons marking the approximate area where plant communities were observed. Photographs (when available) show representative views of the site.

Figure 2 shows the locations of the 16 potential conservation sites identified from aerial photograph interpretation. For the 16 sites, fifteen site visits were conducted at various accessible locations. Site visits were conducted during the period of October 1st to the 5th. Some sites were accessed at numerous locations while others were not visited since they were inaccessible or dropped from consideration after further review and discussion. Site visits began along the North Fork above the Town of Bowie, continued down the North Fork Gunnison valley, and then proceeded to locations in the lower Gunnison valley. Listed below are sites that were not visited:

- Location #0: Lower Gunnison River – river mile 5.0 to 5.6
- Location #1: Lower Gunnison River – river mile 8.4 to 9.4
- Location #2: Lower Gunnison River – river mile 12.4 to 12.8
- Location #7A: Lower Gunnison River – river mile 34.1 to 35.2
- Location #8: Lower Gunnison River – river mile 40.0 to 40.9
- Location #14: North Fork Gunnison River – river mile 15.6 to 16.7

The following sections characterize the riparian locations visited as part of this project.

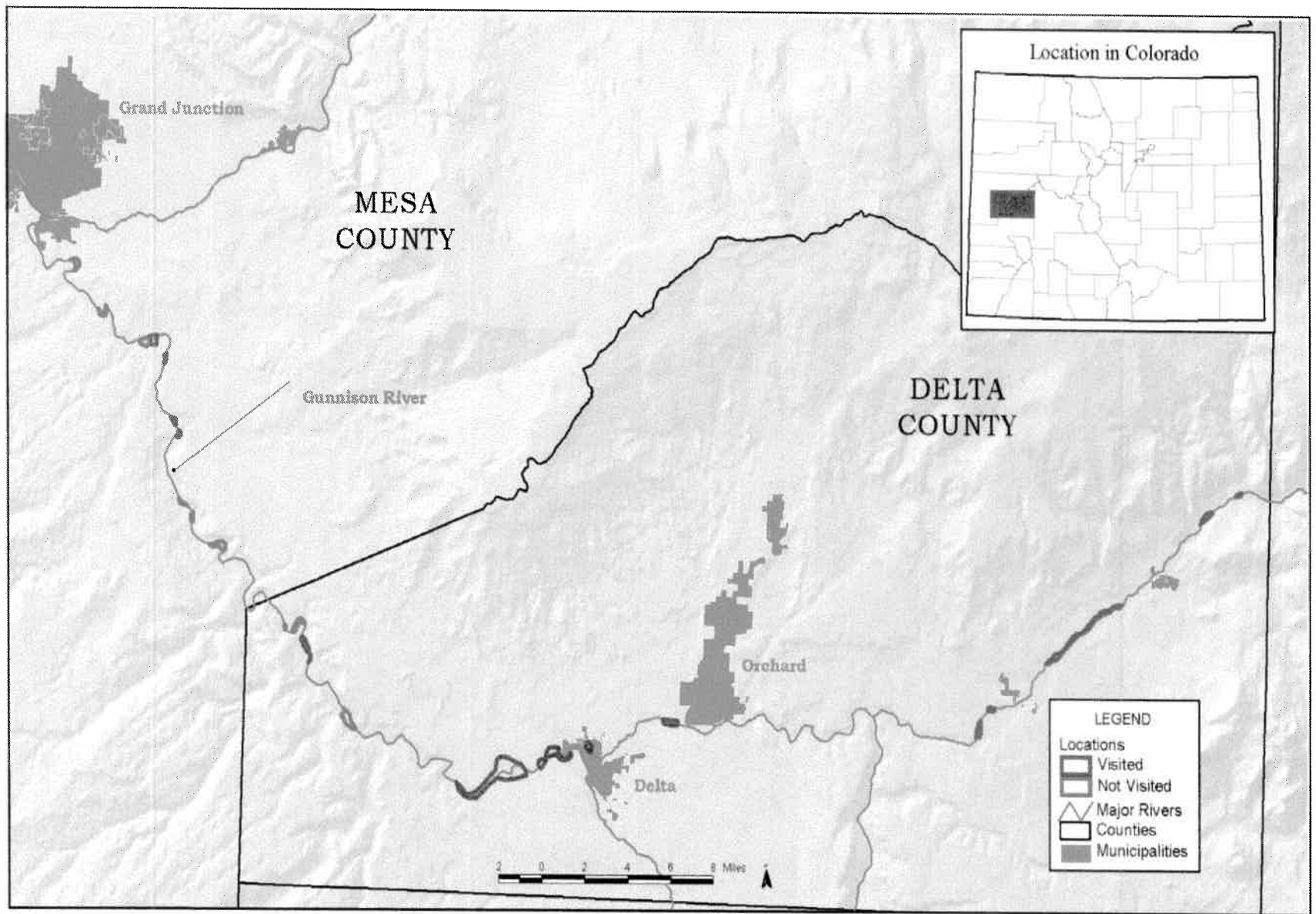


Figure 2: Distribution of study sites in the Gunnison River project area

Location #3: Lower Gunnison River – River Mile 12.8 to 13.6

Location Description: This location is on a gooseneck bend in the Gunnison River approximately 13 river miles upstream of Grand Junction. The location is located on river-right downstream from the Town of Whitewater. It is private owned land isolated by the railroad on the uphill side and the river on the other three sides. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: Historically, the natural community that occurred on this location was probably either a Fremont’s cottonwood (*Populus deltoides* var. *wislizenii*)/mesic graminoid or possibly a Fremont’s cottonwood/skunkbush (*P. deltoides* var. *wislizenii*/*Rhus trilobata*) community. Today, however, this location is occupied by an overstory of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) with an understory of tamarisk (*T. ramosissima*), Russian olive (*Elaeagnus angustifolia*), and mostly herbaceous weeds.

Size: This location is about 400 m (1,312 feet) wide by 600 m (1,968 feet) deep.

Condition: Although the location appears to have very little disturbance in the form of developed or modified land, the natural communities that were once present on the location have been largely replaced by a variety of weedy species. While the location retains its overstory of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*), the shrubby species tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*) dominate the understory. Yellow toadflax (*Linaria vulgaris*), Russian knapweed (*Acroptilon repens*), and Russian thistle (*S. iberica*) were present in the herbaceous layer. The invasion by weedy species has altered the ecological characteristics and reduced the value for conservation of biological diversity. Although the upstream banks of the site are elevated from the river by as much as 3 m (10 feet) in some areas, numerous active flood channels dissect the site. Despite the evidence of recent floods on the site, regeneration of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) was not apparent. Invasion of the site by tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*) may also be determining factors in the lack of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) regeneration.

Landscape Context: This location is isolated from the surrounding agricultural fields and the Town of Whitewater by the railroad tracks that traverse the northern perimeter of the site. An active gravel quarry occupies the opposite bank of the Gunnison River in this reach and detracts from the aesthetic qualities. This location is less than 16 km (10 miles) from the Town of Grand Junction and could be valuable from a local recreational and natural areas perspective. Restoration to remove the invasive species and restore a mesic graminoid or skunkbush (*R. trilobata*) understory would improve the biodiversity value of the site. Encouraging regeneration of the Fremont's cottonwood (*P. deltoides* var. *wislizenii*) overstory would help to ensure the permanence of that community. The eventual fate of the adjacent quarry after it is closed could either enhance or detract from the natural and recreational qualities of this site.

Location Map:

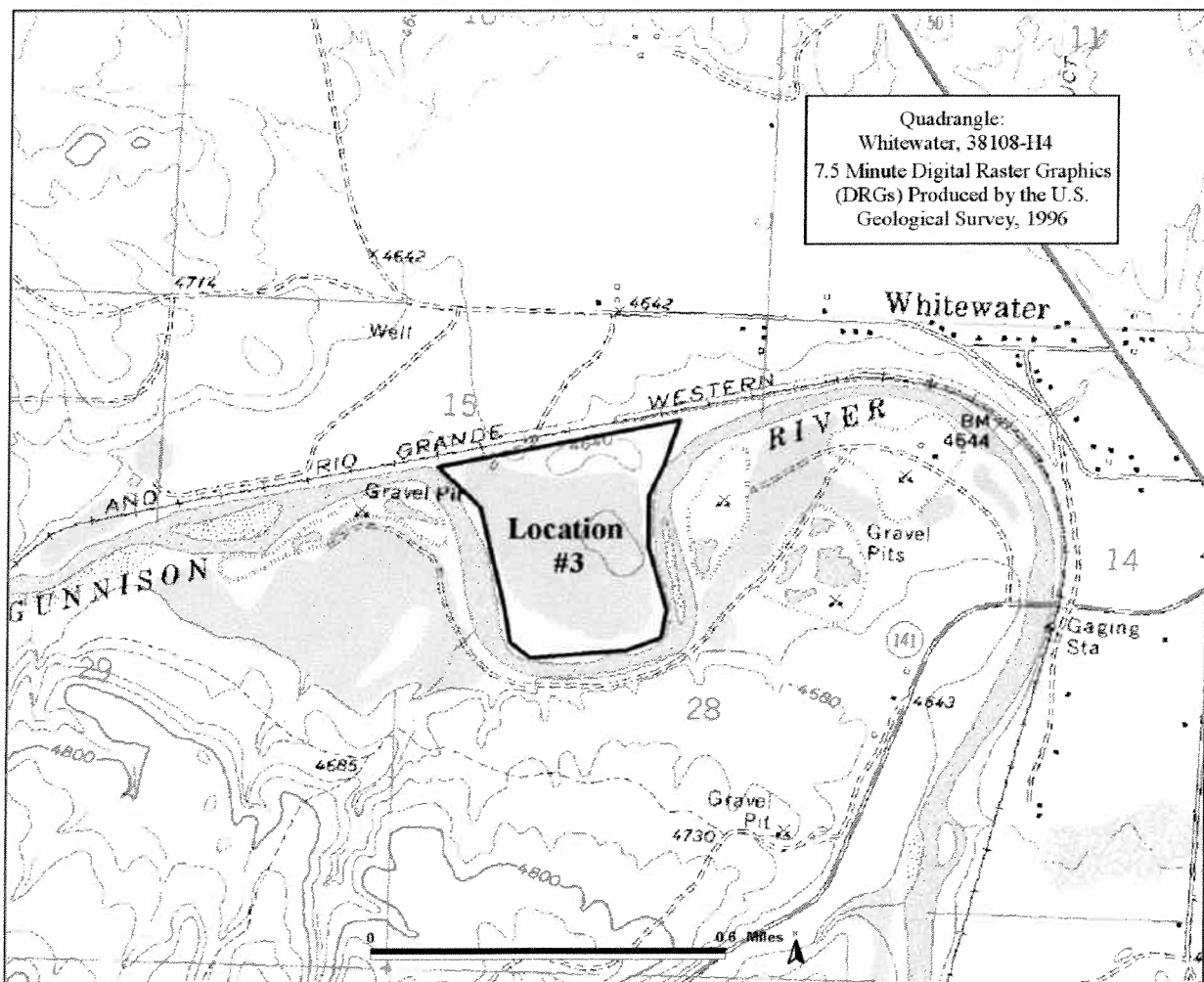


Photo: Interior view of location #3. Note overstory of Fremont's cottonwood (*P. deltoides* var. *wislizenii*) with understory containing tamarisk (*T. ramosissima*), Russian knapweed (*A. repens*), and yellow toadflax (*L. vulgaris*)



Location #4: Lower Gunnison River – River Mile 15.0 to 15.6

Location Description: This location is directly across from the Whitewater take-out on river left. It includes the area at the confluence of the East Creek with the Gunnison River and a narrow floodplain bench that extends a short distance upstream from there. It is rather small, narrow, and elevated above the river by about 1.5 m (5 feet). Due to its small size, disturbed vegetation community, and landscape context this location has only minimal value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: The vegetation on this site includes an overstory of *Populus deltoides* var. *wislizenii* with a weedy understory of tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), Russian knapweed (*A. repens*), cocklebur (*Xanthium stumarium*), and goosefoot (*Chenopodium* spp.). Some coyote willow (*Salix exigua*) was present along the riverbank. It is not certain what the native community here was before its disturbance by European pioneers and recent residents. However, the overstory was likely Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) with an understory of either mesic graminoids or shrubby species such as skunkbush (*R. trilobata*), big sagebrush (*Artemisia tridentata*), and rubber rabbitbrush (*Chrysothamnus nauseosus*).

Size: This location is somewhat small and narrow. It is approximately 600 m (1,968 feet) long by about 100 meters (328 feet) wide at its widest point.

Condition: This location appears to have very little disturbance in the form of developed or modified landform. A variety of weedy species has largely replaced the natural communities that were once present here. The Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) overstory is present and some coyote willow (*S. exigua*) does occur along the riverbank. The understory is dominated by tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*) and herbaceous weeds such as cocklebur (*X. stumarium*), Russian knapweed (*A. repens*), and goosefoot (*Chenopodium* spp.). There was no evidence of cottonwood (*P. deltoides* var. *wislizenii*) regeneration on this site.

Landscape Context: This location is on private land on the opposite bank of the Gunnison River from the Whitewater take-out point. The Denver and Rio Grande Western Railroad parallels the river along the river right bank. Residential development has occurred on the private property immediately upstream of this location. There is a large gravel quarry on the other side of the ridge from this site.

Location Map:

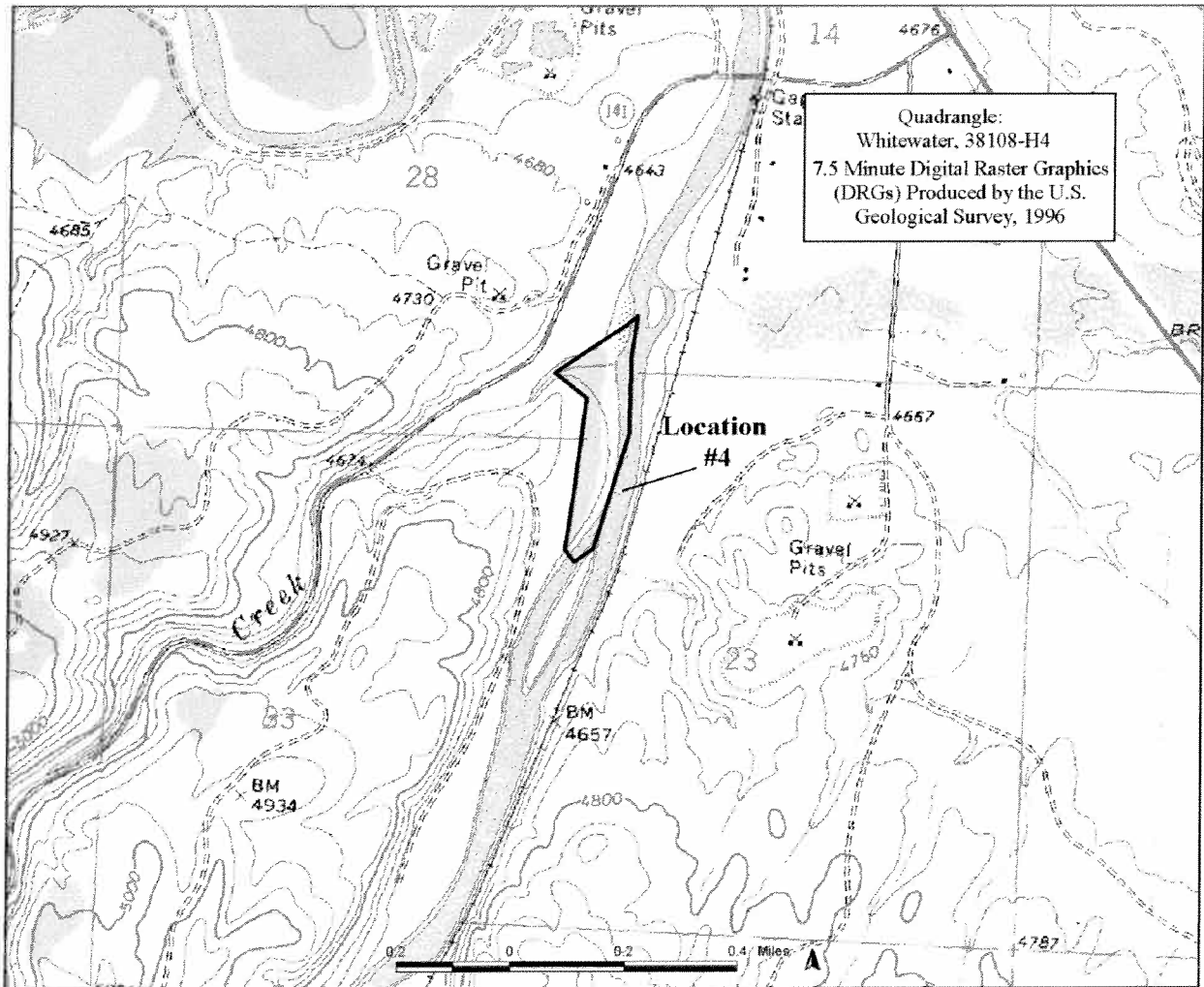


Photo: View of location from parking lot at Whitewater Put-In



Location #5: Lower Gunnison River – River Mile 18.1 to 18.5

Location Description: This location is a valley bottom river bench at the confluence of Kannah Creek with the Gunnison River. The location is on river right approximately 18 river miles upstream of Grand Junction. The Denver and Rio Grande Western Railroad tracks that run parallel to the river separate most of the site from the Gunnison River. Only a thin strip of land remains between the river and the tracks. The site is perched approximately 3 meters above the level of the river and Kannah Creek. The vegetation has been disturbed in the past by cattle grazing and changes in the hydrology of Kannah Creek and the Gunnison River. Due to its small size, disturbed vegetation community, and landscape context this location has only minimal value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: The community observed on this location consisted largely of weedy shrubs and herbaceous species. A small number of older Fremont’s cottonwood (*Populus deltoides* var. *wislizenii*) trees exist at the northern edge of the site. The weedy species present included tamarisk (*T. ramosissima*) along the river bank, with Russian thistle (*S. iberica*) and Russian knapweed (*A. repens*) dominating the higher floodplain bench area. It is not certain what natural community existed here before the invasion of the site by the weedy species. A narrow depositional fan occupied by thick stands of tamarisk (*T. ramosissima*) is located at the point where Kannah Creek empties into the Gunnison River. One or more native willow species certainly occupied the river margin of this depositional fan before tamarisk (*T. ramosissima*) invaded and replaced the native vegetation.

Size: This site is rather small, measuring approximately 500 m (1,644 feet) wide by about 100 m (30 feet) deep.

Condition: Several weedy species dominate most of the area on this site and severely degrade its condition. The older cottonwood trees that are present are aging and decadent. There was no evidence of regeneration of the older cottonwood trees on this site.

Landscape Context: The railroad tracks that run parallel to the river edge separate this site from the Gunnison River. A two-track road extends down the Kannah Creek canyon, through the site, to the edge of the river. Several residential buildings have been constructed on the top of the canyon rim overlooking the site. These landscape factors, as well as weed impacts, diminish the quality of this location for potential conservation of natural riparian communities.

Location Map:

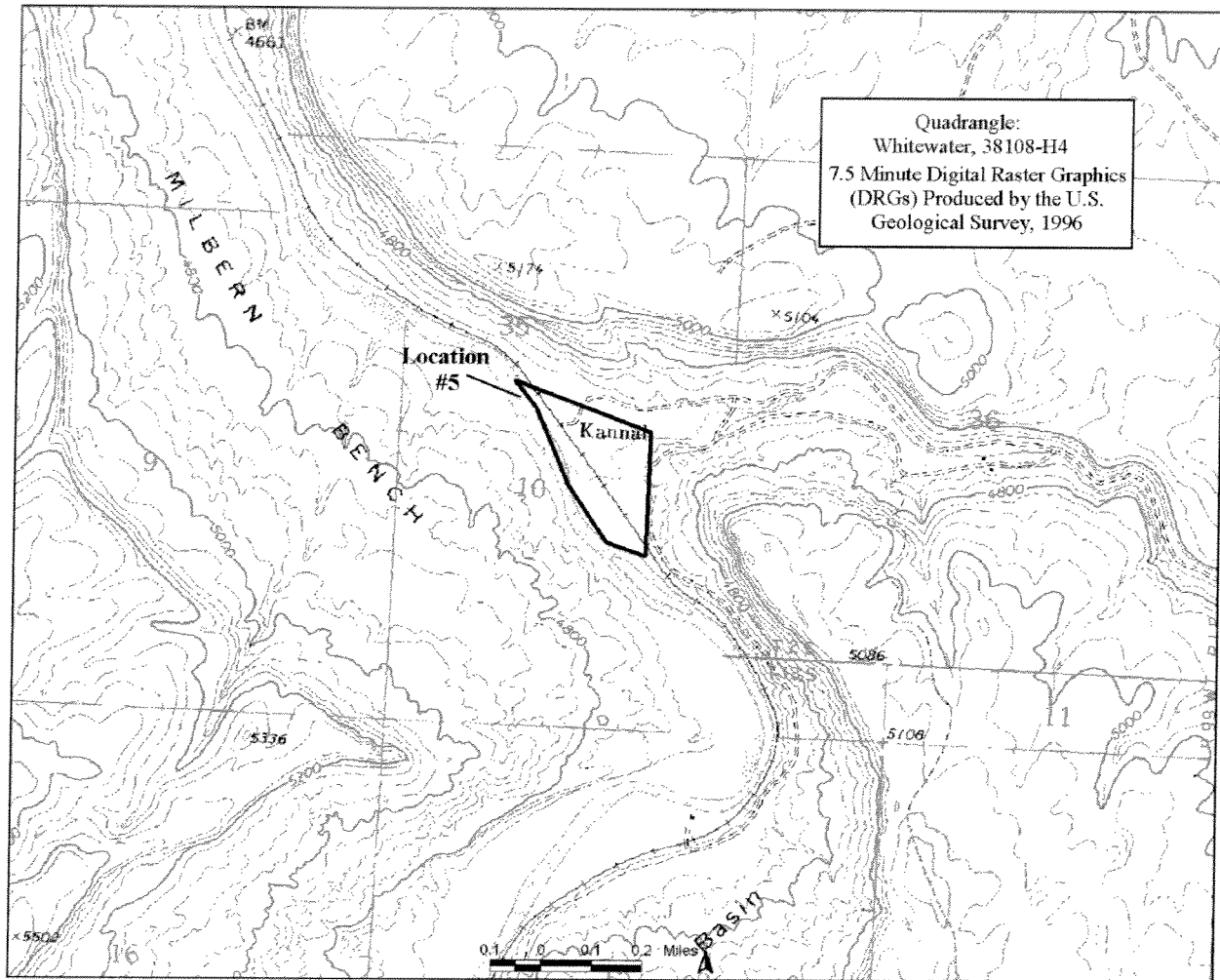


Photo: Not Available

Location #6: Lower Gunnison River – River Mile 18.8 to 19.2

Location Description: This point bar site is located on a broad floodplain bench on river left, just upstream of the Kannah Creek confluence. A small back channel separates the narrow riparian terrace along the river edge from the older floodplain bench. A small stand of large old cottonwood (*P. deltoides*) trees lines the margin between the back channel and the older and more elevated floodplain. A thick cover of tamarisk (*T. ramosissima*) and herbaceous weeds occupy the narrow floodplain bench along the river edge. There are a number of cottonwood (*P. deltoides*) seedlings and saplings sprouted on the still active floodplain bench, although beavers appear to have repeatedly cut these down. Although this site does exhibit cottonwood (*P. deltoides*) regeneration and an active floodplain area, its small size and disturbed vegetation community limit its value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: The communities present on the active floodplain bench consist mostly of the weedy invasive species tamarisk (*T. ramosissima*). Some scattered individuals of strapleaf willow (*S. eriocephala* var. *ligulifolia*) were present. The Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) trees located on the site are old and located at the margin of the active floodplain. The understory around them is mostly bare ground.

Size: This site is rather small, measuring only about 75 m (247 feet) wide by about 150 m (493 feet) long.

Condition: Tamarisk (*T. ramosissima*) have invaded the site and displaced the strapleaf willow (*S. eriocephala* var. *ligulifolia*), coyote willow (*S. exigua*), or other willow species that likely were dominant there at one time.

Landscape Context: The site is located on the river left. A small unknown two-track extends to the point bar, but is mostly unobtrusive. The railroad and other larger two-tracks are located on the opposite bank of the river, as is a ranch house or other residence. There are no structures located on the site or adjacent upland. This location is isolated from most of the human disturbance in the area by its position on river left.

Location Map:

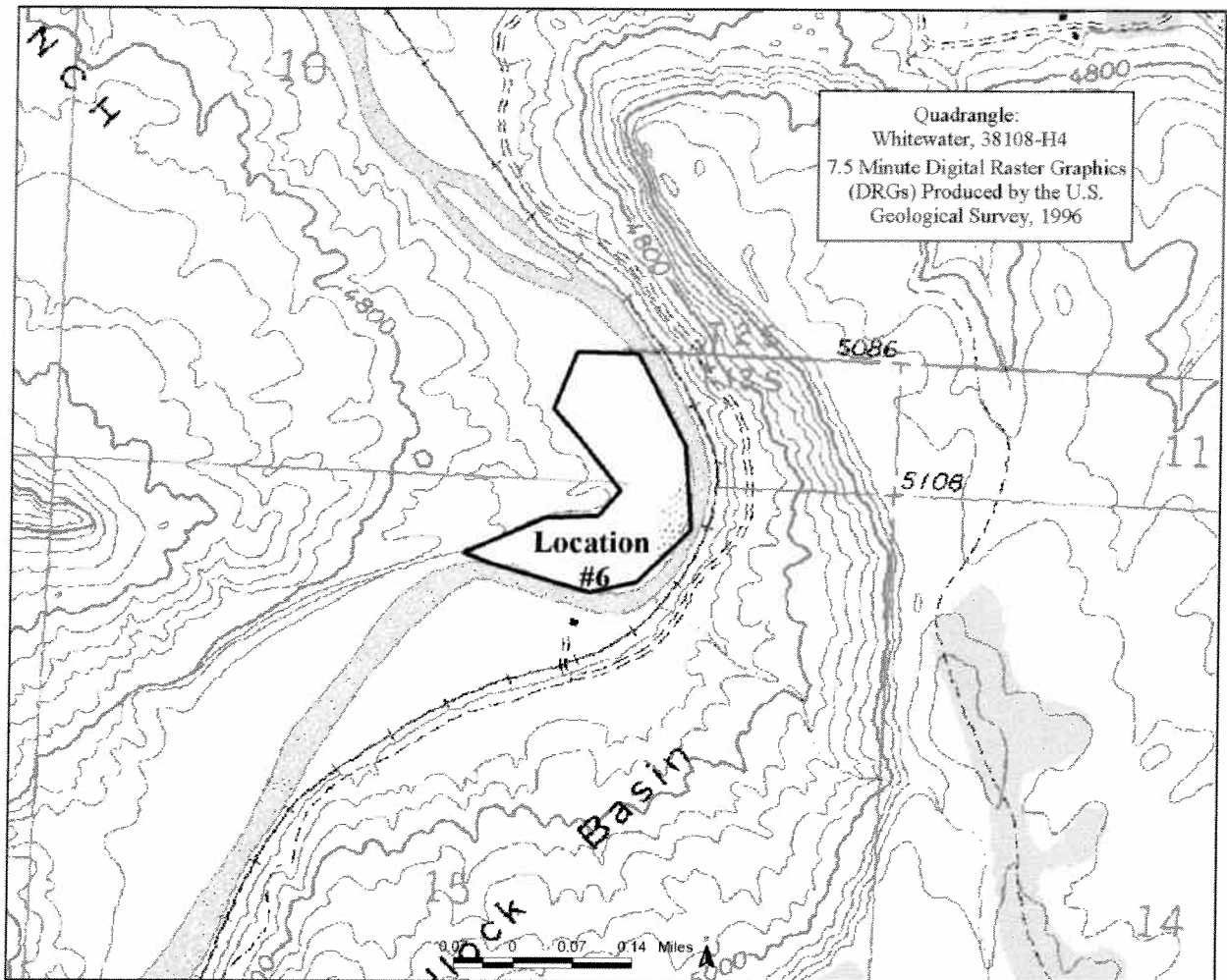


Photo: Not Available

Location #7B: Lower Gunnison River – River Mile 35.6 to 36.0

Location Description: This location is the lower end of the broad point bar across from the Dominquez put-in point and is on river left opposite the Broughton orchards. This location begins at the point where the intermittent creek/back channel exits the main portion of the point bar that extends upstream. The site is on an elevated terrace about 33 feet (10 m) above the river surface and appears to have a relatively intact older successional stage vegetation community present. The site appears to have very little weedy species present. This site may have some limited value for conservation of the natural vegetation community present. However it is contiguous with the site 7C, which is a lower elevation terrace of earlier successional stage vegetation and is completely occupied by weedy species. Based on its size, the condition of the vegetation present, and the landscape context this location has moderate value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “C”. With further investigation to determine the range of weedy species present, this site may be suitable as a reference site for the Fremont’s cottonwood/skunkbush (*P. deltooides* var. *wislizenii* /*R. trilobata*) plant association.

Communities Observed: This location is occupied by a stand of Fremont’s cottonwood (*P. deltooides* var. *wislizenii*) with an understory of skunkbush (*R. trilobata*) and rubber rabbitbrush (*C. nauseosus*). The graminoid species sand dropseed (*Sporobolus cryptandrus*) and alkali sacaton (*Sporobolus airoides*) are dominant grasses throughout most of the understory. There is a thin strip of tamarisk (*T. ramosissima*) along the river edge; however, this has not expanded up onto the elevated terrace. The CNHP tracks Fremont’s cottonwood/skunkbush (*P. deltooides* var. *wislizenii* /*R. trilobata*) as a G2S2 community.

Size: This location is approximately 1.0 km (0.62 miles) long by about 100 m (328 feet) wide.

Condition: This location is in good condition with no sign of land modification and very few weedy species. It does appear to be somewhat elevated above the river level, but it is not certain how much of this is due to recent river down cutting.

Landscape Context: The setting for this location is relatively intact. The river right bank across from this location is the site of the Broughton Orchards, and is traversed by the Denver and Rio Grande Western railroad tracks.

Location Map:

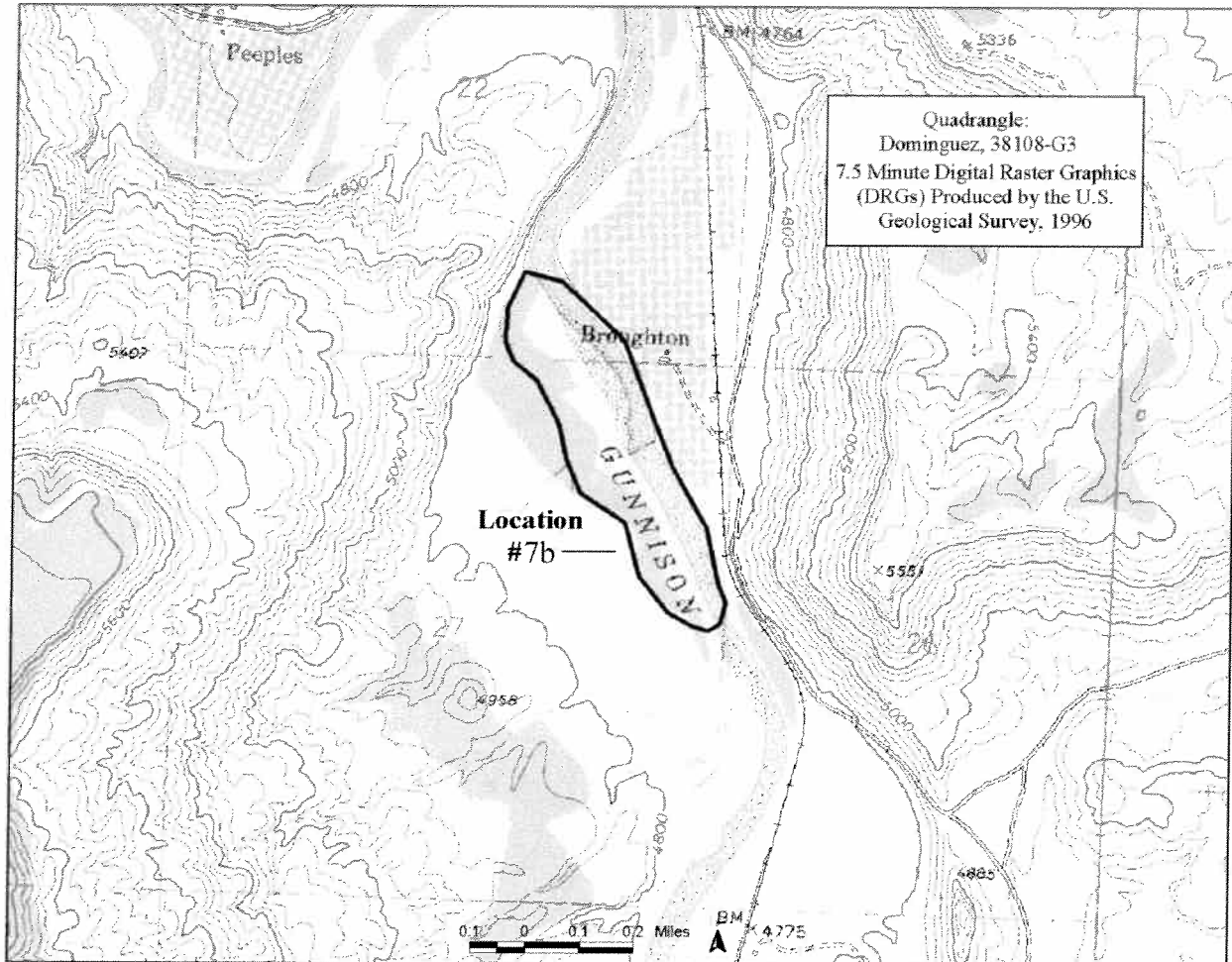


Photo: Not available

Location #7C: Lower Gunnison River – River Mile 36.4 to 36.9

Location Description: This site is the large point bar located directly across from the Dominquez put-in location. It is on river left and transected by several small flood channels and bars. Tamarisk (*T. ramosissima*) and coyote willow (*S. exigua*) are the dominant species, although some of the drier bars support scattered individuals of Siberian elm (*Ulmus pumila*) and groundsel tree (*Baccharis salicina*). There are no cottonwood (*Populus* spp.) trees present. Based on its size, the condition of the vegetation present, and the landscape context, this location has low value for conservation of riparian vegetation communities. It could possibly serve as a good restoration site, however. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: Coyote willow (*S. exigua*)/bare ground was probably the original community on this active point bar. Coyote willow (*S. exigua*) does still exist in some of the moister, more frequently flooded areas. The weedy species tamarisk (*T. ramosissima*) has invaded the site and is the dominant cover species. Some of the drier bars and older terraces support scattered individuals of Siberian elm (*U. pumila*). One groundsel tree (*Baccharis salicina*) was noted amongst the tamarisk (*T. ramosissima*).

Size: Approximately 0.5 km (0.31 miles) by 0.5 km (0.31 miles).

Condition: This location is heavily invaded by tamarisk (*T. ramosissima*), Siberian elm (*U. pumila*), Russian knapweed (*A. repens*), and other weedy species.

Landscape Context: The site is on river left on an unmodified point bar. The Denver and Rio Grande Western railroad tracks are on the river right across from this location. It is positioned upstream of the Broughton terrace location and could serve as a good site for restoration of the natural willow community.

Location Map:

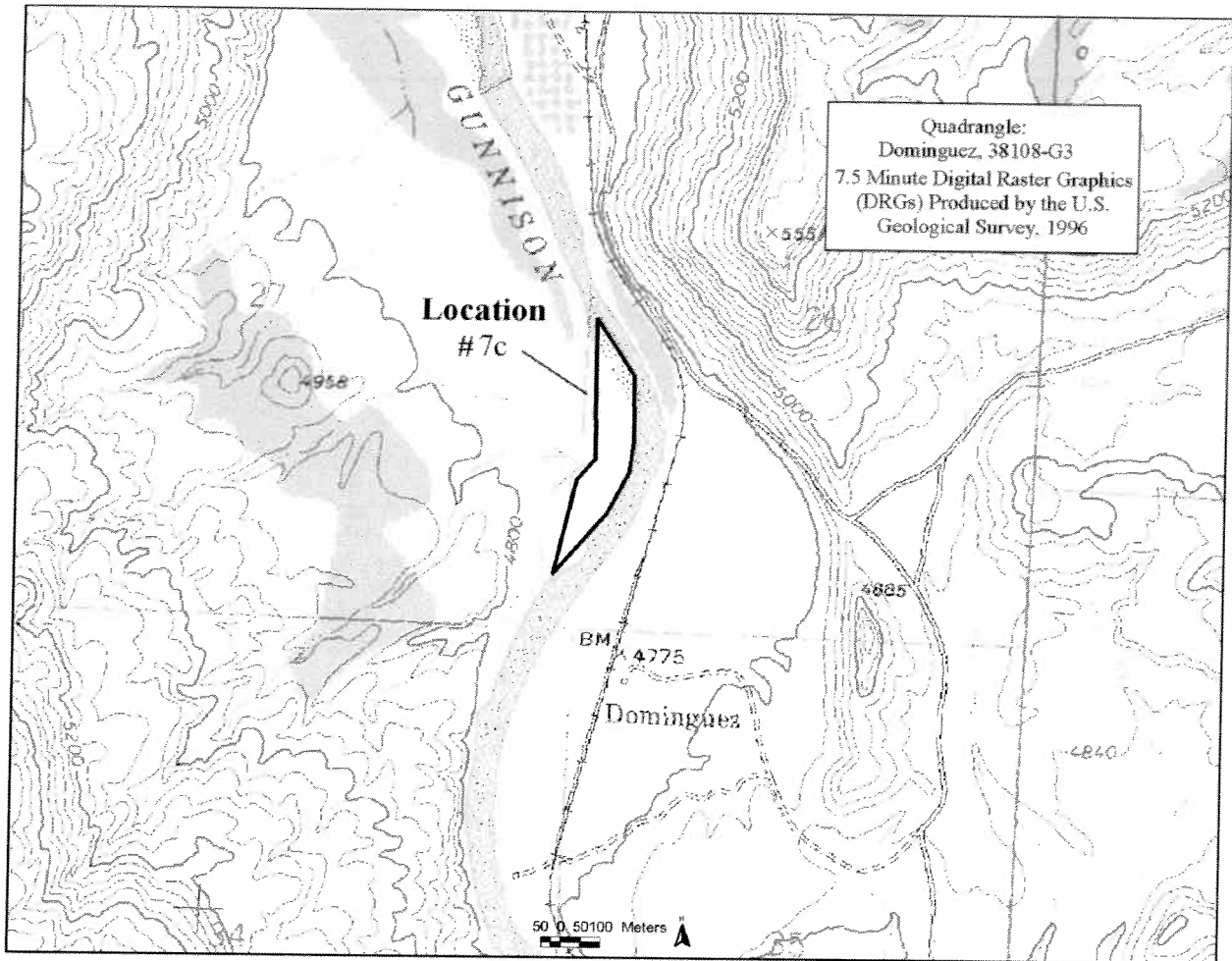


Photo: Not available

Location #9A: Lower Gunnison River – River Mile 49.7 to 52.0

Location Description: This location encompasses a long stretch of the river downstream from the Town of Delta. It is located primarily in the area upstream and downstream from the confluence of Roubideau Creek. As with most of the sites visited, this area includes groves of mature cottonwood (*Populus* spp.) with a weedy understory of tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), and herbaceous weeds. What sets this site apart from others is its size. Along its 3-4 km (2-2.5 mile) length, it encompasses several point bars, floodplain benches, depositional fans, backwater areas, and other river features valuable as riparian habitat. Although weedy species have replaced the natural vegetative communities, this area provides the largest contiguous block of riparian habitat available on the lower Gunnison and North Fork Rivers. Restoration efforts to remove non-native weedy species and encourage the presettlement natural communities would be appropriate in this area and raise its conservation value. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “C”.

Communities Observed: The natural communities present include stands of cottonwood (*P. deltoides* var. *wislizenii*) with an understory of tamarisk (*T. ramosissima*). Other areas that at one time probably supported willow or mesic graminoid communities have also been replaced with tamarisk (*T. ramosissima*). The woody shrub skunkbush (*R. trilobata*) occurs in some areas and may have been a common understory to the cottonwoods (*P. deltoides* var. *wislizenii*) before invasion by the tamarisk (*Tamarix ramosissima*) and Russian olive (*E. angustifolia*). The CNHP tracks Fremont’s cottonwood/skunkbush (*P. deltoides* var. *wislizenii*/*R. trilobata*) as a G2S2 community. The non-native species observed include tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), and Russian knapweed (*A. repens*). There was no evidence of cottonwood (*P. deltoides* var. *wislizenii*) regeneration observed.

Size: This area is large and encompasses riparian areas on both banks of the river. It extends for approximately 2 km. (1.24 mi.) on either side of the confluence with Roubideau Creek and approximately averages 1 km. (0.6 mile) wide.

Condition: The weedy species tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*) have invaded this location and replaced the understory vegetation that was natural there. Modifications to the landforms of the site include construction of the railroad through part of the area and some small two-track roads. The approaches to the railroad trestle are elevated above the flood level of the river and divide parts of the floodplain on either side of the river. Woody flood debris was evident over most of the areas.

Landscape Context: This reach of the river provides a dense concentration of wildlife habitat relative to most of the other reaches. The landscape context for this location includes the Escalante State Wildlife Area and portions of the Roubideau Creek confluence. Several heron rookeries are known to occur in this area of the river. The Denver and Rio Grande Western Railroad passes through the site and crosses the river just below the Roubideau Creek confluence. The remainder of the site is relatively undisturbed and isolated.

Location Map:

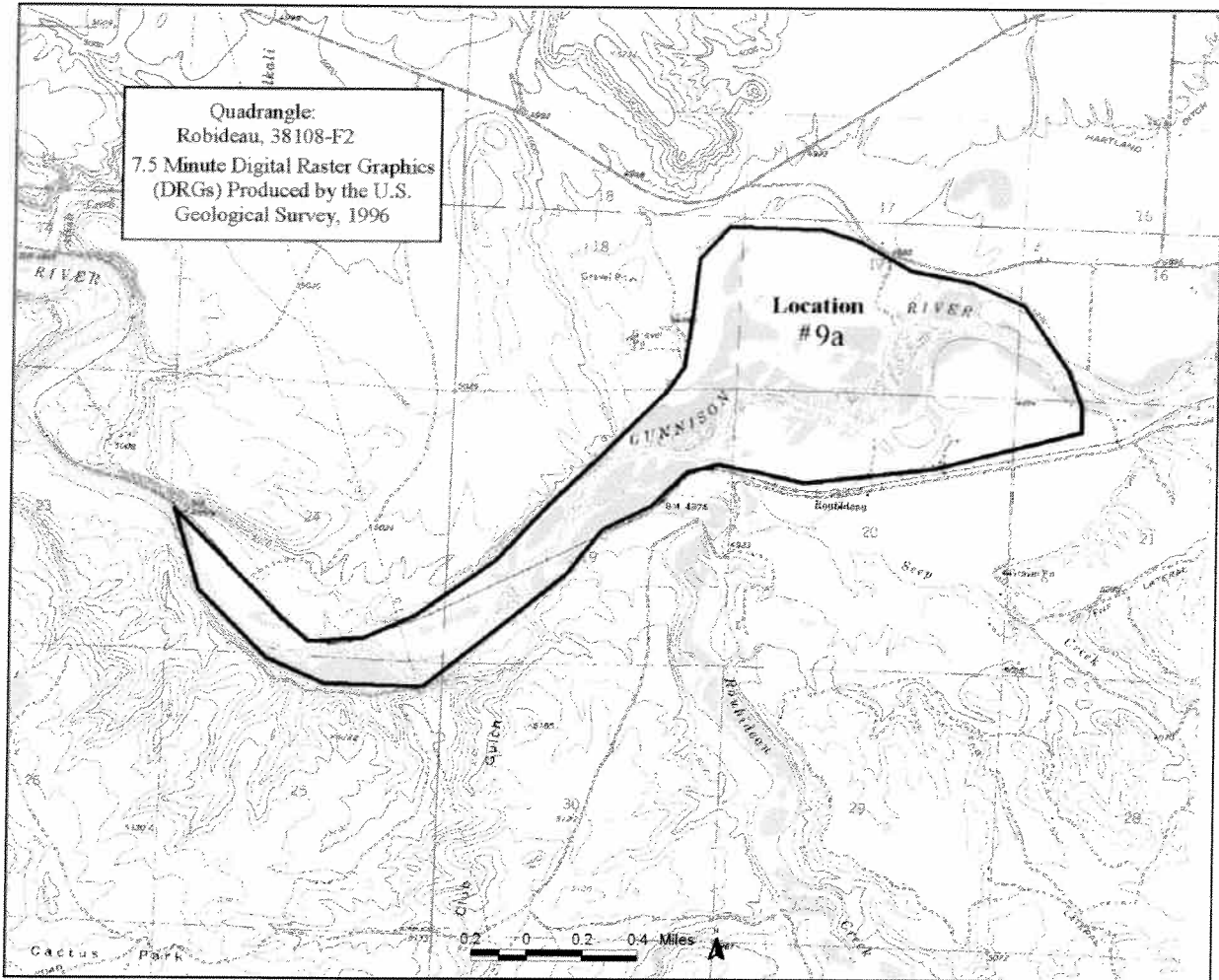
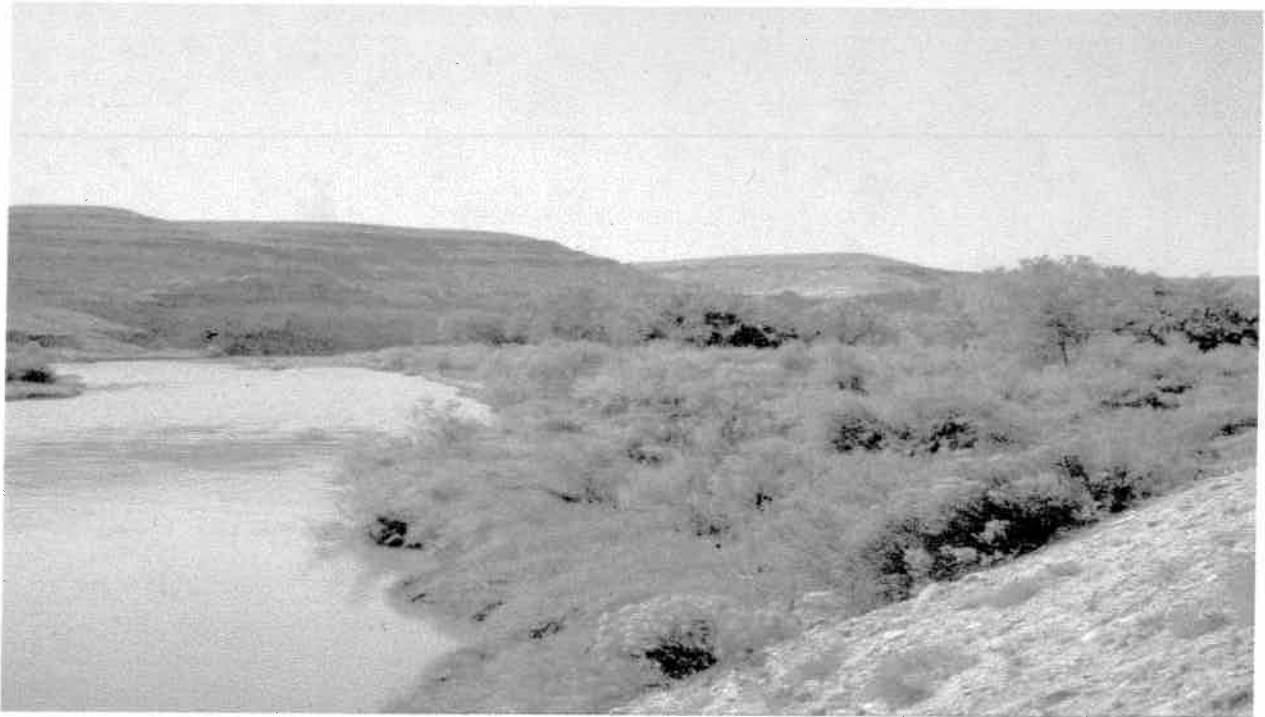


Photo:View of river right downstream of railroad trestle



View of river left upstream of railroad trestle



Location #9B: Lower Gunnison River – River Mile 54.2 to 55.0

Location Description: This large point bar location on river left below the Town of Delta includes numerous low swales and flood channels. Its average elevation is slightly higher than that of the river and almost certainly allows flooding in most years. The entire site includes several terraces at various successional stages. The uppermost and driest terraces support an open woodland of mature cottonwoods (*P. deltoides* var. *wislizenii* and *P. angustifolia*) with an understory of big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*C. nauseosus*), and upland herbaceous species. The lower terraces include a closed canopy of cottonwoods (*P. deltoides* var. *wislizenii* and *P. angustifolia*) with mesic graminoids, skunkbush (*R. trilobata*), coyote willow (*S. exigua*), and tamarisk (*T. ramosissima*). The outermost reaches of the point bar are active flood zones occupied by coyote willow (*S. exigua*), *Kochia* (*Kochia scoparia*), and bare sandbars. Landform modifications have not occurred on this site, but some invasive weedy species are present. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium to high value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “B”.

Communities Observed: This point bar supports a partially intact community of Fremont’s riparian cottonwood forest (*P. deltoides* var. *wislizenii*/*R. trilobata*). Some areas of the site are occupied by tamarisk (*T. ramosissima*) and Siberian elm (*U. pumila*), and it is certain that with time the remaining areas of the Fremont’s riparian cottonwood forest (*P. deltoides* var. *wislizenii*/*R. trilobata*) will be invaded by these species. The CNHP tracks Fremont’s riparian cottonwood forest (*P. deltoides* var. *wislizenii*/*R. trilobata*) as a G2S2 community. The coyote willow (*S. exigua*)/bare ground community occupies the outer margins of the site. The CNHP tracks coyote willow (*S. exigua*)/bare ground as a G5S5 community.

Size: This location is somewhat larger than most of the point bars observed on the lower Gunnison and North Fork Rivers. It measures approximately 0.5 km (0.3 mi.) long by 0.5 km (0.3 mi.) deep.

Condition: This is a good condition location with no landform modification and limited impacts by invasive weedy species. The weedy species observed include tamarisk (*T. ramosissima*), Siberian elm (*U. pumila*), and *Kochia* (*K. scoparia*). Relatively minimal

restoration and management input would be needed to return this point bar location to its historic condition.

Landscape Context: The site is located at the bottom of a high river bluff. The Denver and Rio Grande Western Railroad tracks mark the upland boundary of the site and are located along the toe of the bluff. The lands on the top of the bluff above the site include a several rural residences, a small gravel quarry, and cultivated fields. The closest residence has several Siberian elms (*U. pumila*), planted around it as shade trees and probably was the seed source for the elms noted growing on the lower terraces. Areas on river right adjacent to this location were not visited but do appear to support a somewhat natural community of Fremont's cottonwoods (*P. deltoides* var. *wislizenii*).

Location Map:

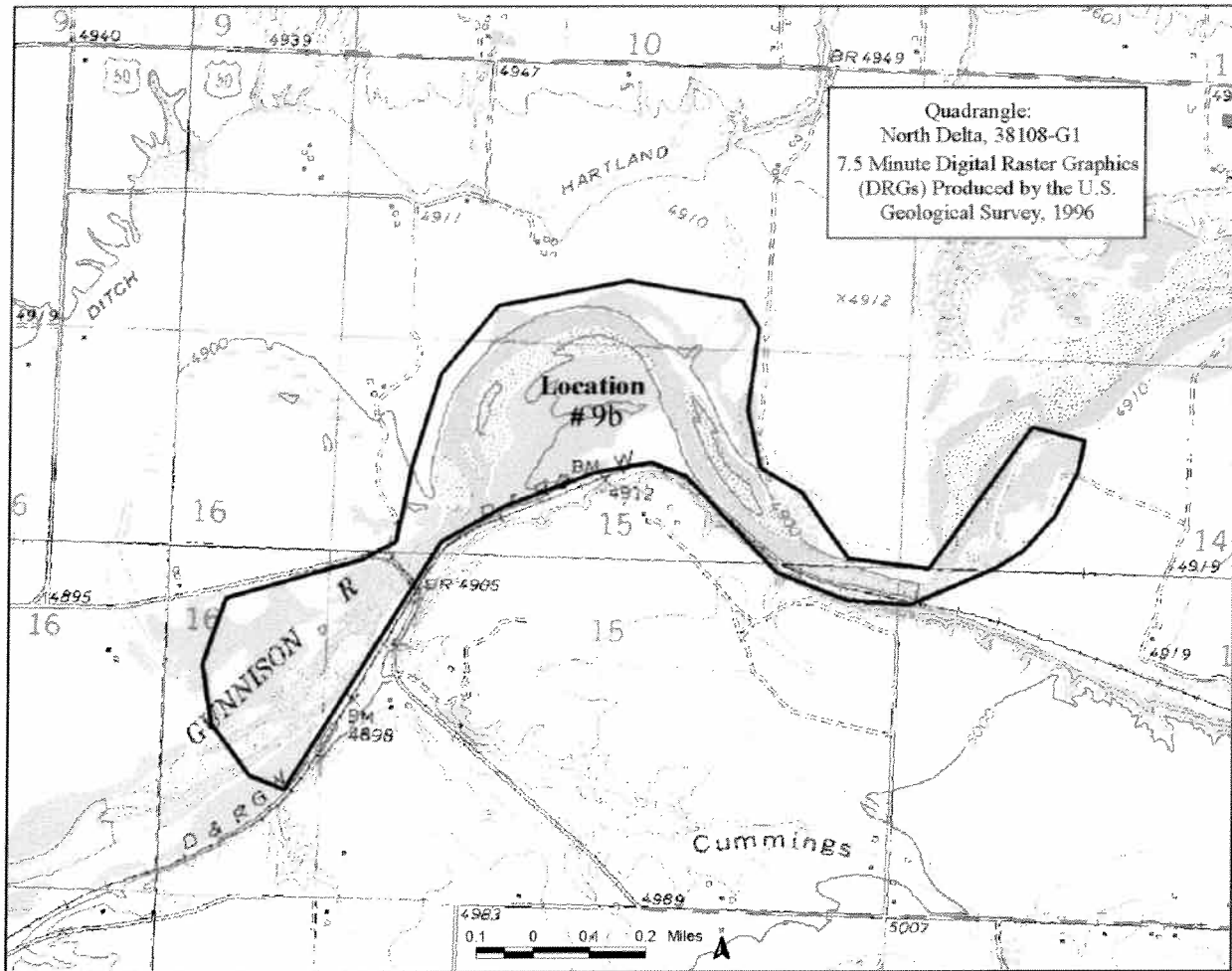


Photo:







Location #9C: Lower Gunnison River – River Mile 56.6 to 57.5

Location Description: This location is on river right just across from the confluence park in the Town of Delta. It encompasses a large river oxbow with areas of marsh, riparian woodland, and open water ponds. The woodland of mature cottonwood trees supports a heron rookery. Access to the interior of the site was not possible, however, observations from several vantage points on the periphery suggest that the location would be valuable for conservation of riparian habitat. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium to high value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “B”.

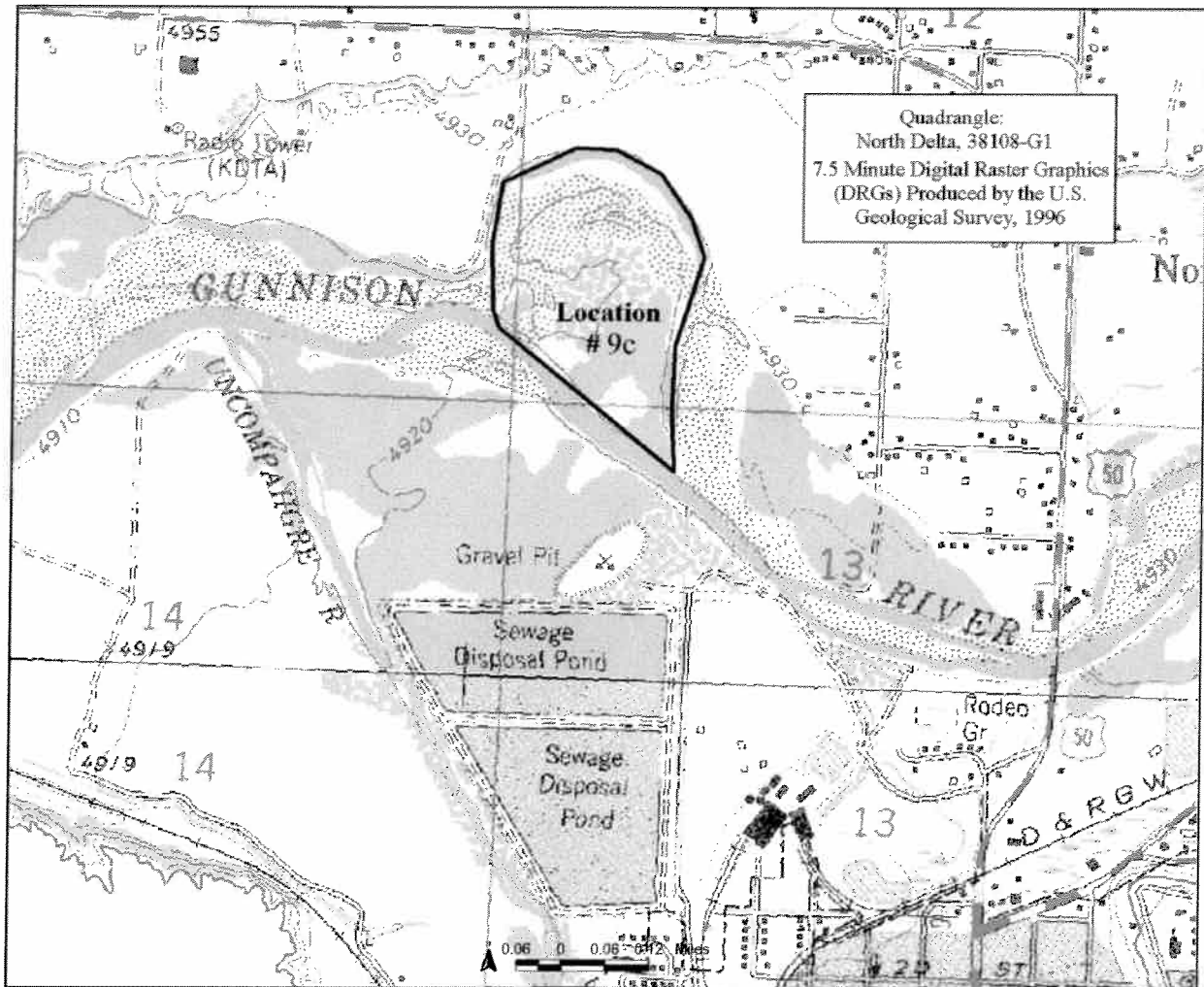
Communities Observed: Open water marshes occupy the remnant main channel of the oxbow with cattail marshes (*Typha* sp.) bordering these on the shallower channel margins. A forest of Fremont’s cottonwood (*Populus deltoides* var. *wislizenii*) occupies the center “island” of the oxbow. The weedy species tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*) have invaded and displaced the understory vegetation of skunkbush (*R. trilobata*).

Size: This location is fairly large and measures approximately 0.7 km. (0.43 mi.) wide by .65 km. (0.40 mi.) deep.

Condition: The condition of this location appears to be good, although further investigation should be conducted to determine the degree to which weedy species have invaded the site.

Landscape Context: This location is adjacent to the Confluence park on river left in the Town of Delta. It is surrounded by low density residential areas and cultivated fields. This site is already targeted for protection using a conservation easement by the Valley Land Conservancy.

Location Map:



Photos:





Location #10: Lower Gunnison River – River Mile 61.5 to 62.3

Location Description: The Tongue Creek site is located at the confluence of Tongue Creek with the Gunnison River. The site is situated on the “tongue” of land formed where the Gunnison River and Tongue Creek run parallel to one another. The eastern end of the site is a marsh of cattails (*Typha* sp.) and giant reed (*Phragmites* sp.). The central and western parts of the site support a cottonwood forest. Although the understory of the cottonwood forest is occupied by invasive weedy species, there was some cottonwood regeneration occurring. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “C”. This location is probably a suitable candidate for a riparian restoration effort.

Communities Observed: The site is occupied by an overstory forest of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) with a shrubby understory of tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), Siberian elm (*U. pumila*). The herbaceous layer is very weedy and includes Russian knapweed (*Acrotilon repens*), Russian thistle (*Salsola* spp.), Kochia (*K. scoparia*), and yellow sweet clover (*Melilotus officinalis*). The understory includes some skunkbrush (*R. trilobata*) and boxelder (*Acer negundo*), suggesting that this location may have supported a Fremont’s cottonwood/skunkbrush (*Populus deltoides* var. *wislizenii*/*Rhus trilobata*) community before the introduction of the tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*). There is a marsh of cattails (*Typha* sp.) and giant reed (*Phragmites* sp.) at the east end of the site where Tongue Creek turns west to follow the toe of the slope located to the north side of the site.

Size: This location is long and narrow and measures approximately 1.25 km (0.78 miles) long by 0.3 km (0.19 miles) wide.

Condition: This location appears to be in fair condition. There are no landform modifications evident, however the presence of weedy shrub and herbaceous species throughout most of the site does degrade the condition of the remaining cottonwood forest. Removal of the

weedy species and maintenance of the natural hydrology would improve the site and potentially allow the natural riparian community to re-establish itself.

Landscape Context: A gravel quarry borders the north side of the site. A diversion ditch carries water from Tongue Creek across the slope at the north side of the site. The river left side of the Gunnison River, south of the site is ranch land.

Location Map:

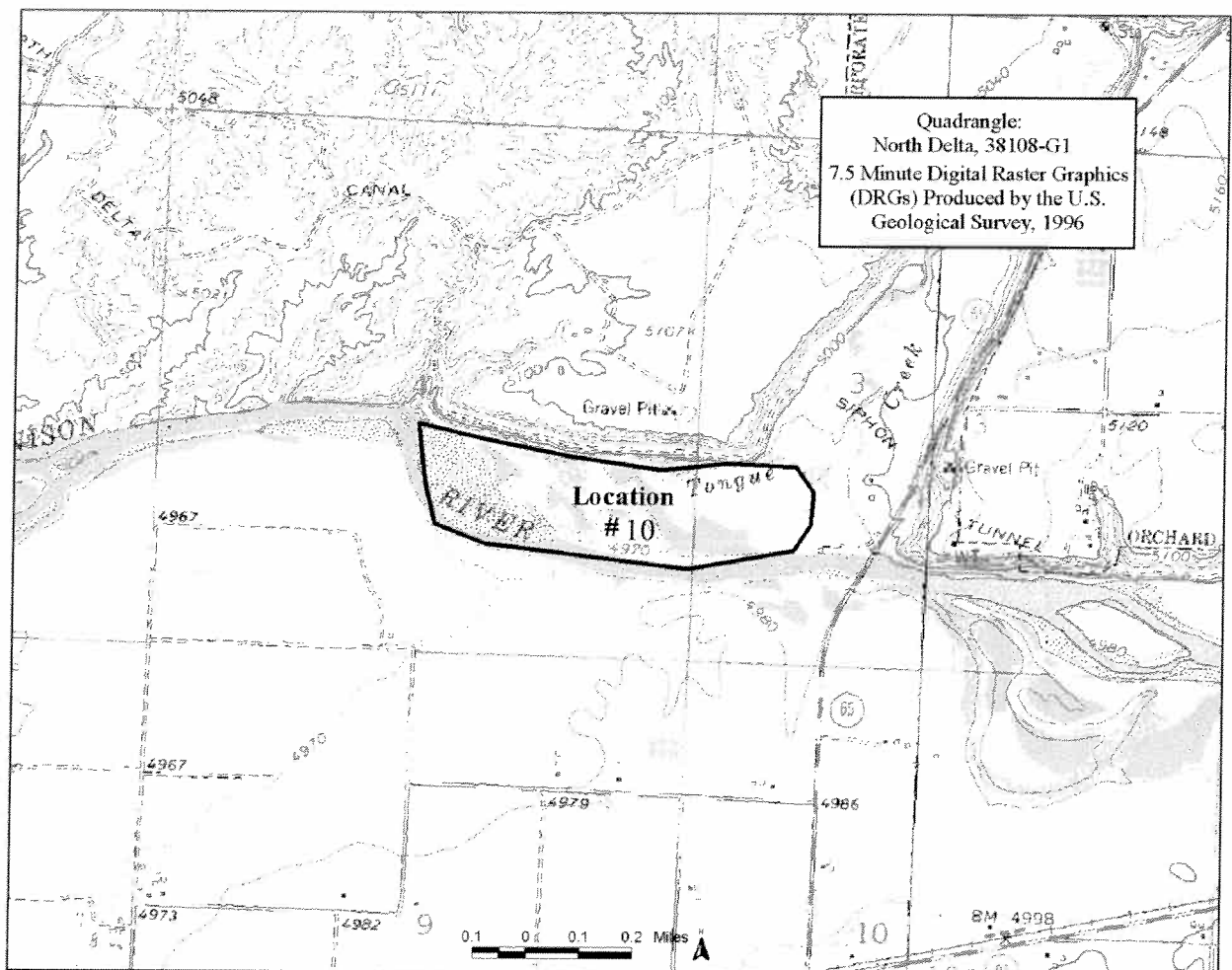


Photo:





Location #11: North Fork Gunnison – River Mile 6.2 to 7.9

Location Description: This location occupies both sides of the North Fork of the Gunnison River in the reach that begins at the Town of Hotchkiss wastewater treatment plant and extends downstream to the river oxbow near the old Chipeta fish hatchery. The site is long and narrow with a length of approximately 1.0-km (0.62 miles). It includes mixed cottonwood riparian forest, riparian sandbars, and an old river oxbow. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “C”.

Communities Observed: The upstream end of the site has a mixed forest of Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) and narrowleaf cottonwood (*P. angustifolia*). Russian olive (*E. angustifolia*) and mesic graminoids occupy the understory. The site also includes some tamarisk (*T. ramosissima*), Siberian elm (*U. pumila*), and scattered individuals of rubber rabbitbush (*R. trilobata*). Coyote willow (*S. exigua*) was present as scattered clumps in some of the area

Size: The upstream portion of the site near the Town of Hotchkiss wastewater treatment plant is approximately 0.5 km (0.3 miles) long by 0.2 km (0.1 mile) wide; the downstream portion of the site near the old Chipeta Fish Hatchery is approximately 1.0 km (0.6 miles) long by 0.4 km (0.25 miles) wide.

Condition: The weedy species tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), and Russian knapweed (*A. repens*) degrade the condition of this site. There was only a minimal amount of cottonwood (*Populus* sp.) regeneration occurring at the downstream portion of the site.

Landscape Context: The site is proximate to the Town of Hotchkiss, the Town wastewater treatment plant, and the old Chipeta Fish Hatchery. The mesa top above the site includes residences, ranching, and cultivated agriculture.

Location Map:

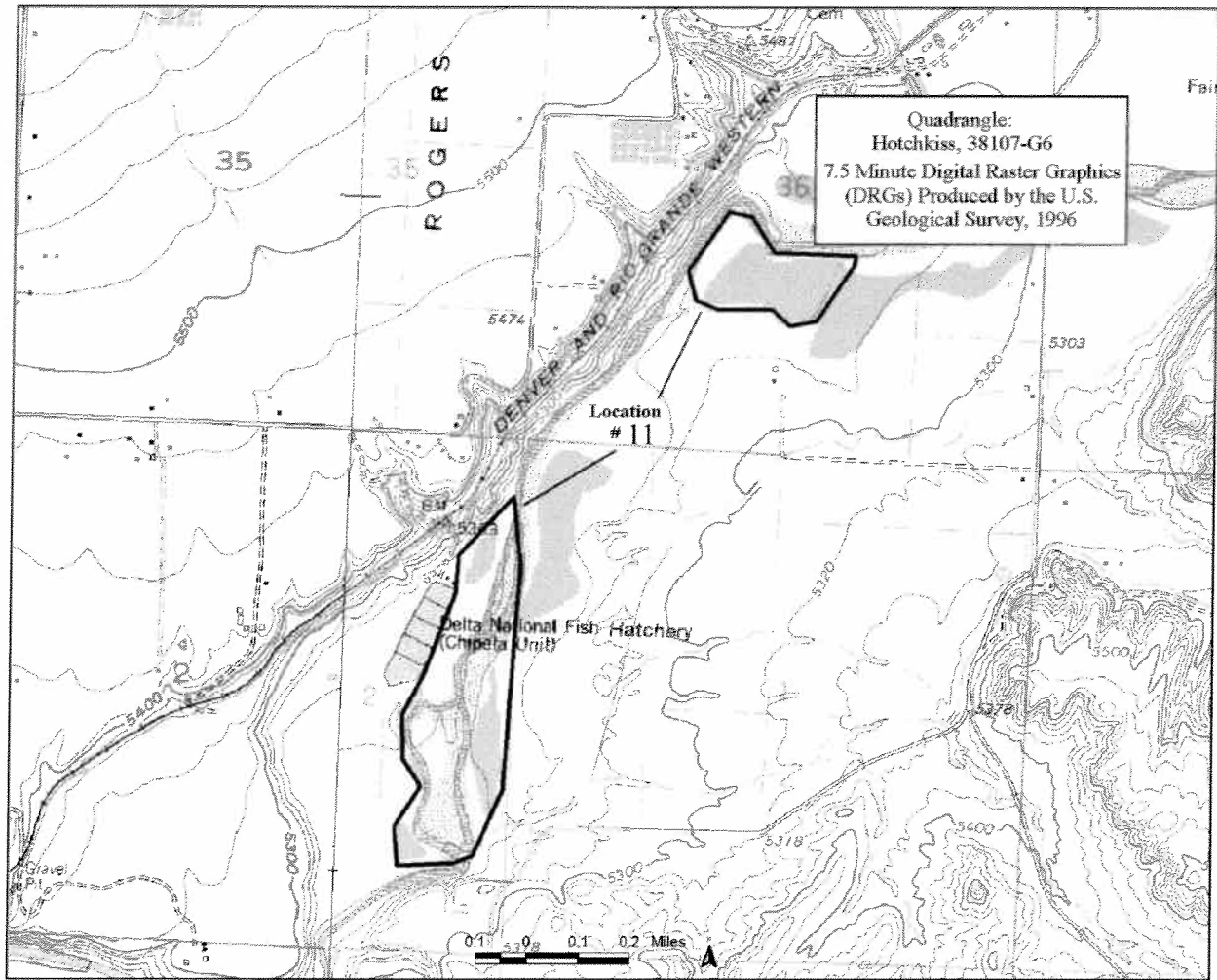


Photo:







Location #12: North Fork Gunnison – River Mile 11.9 to 14.2

Location Description: This location is on a low floodplain upstream of the Town of Hotchkiss. Weedy non-native species have heavily infested the site, and the original landform of the floodplain has been extensively modified in an attempt to control flooding. Based on its size, the condition of the vegetation present, and the landscape context, this site has low value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “D”.

Communities Observed: The communities on the site are all dominated by non-native weedy species. Adjacent sites that connect this reach were not inspected but appear similar when viewed from the road.

Size: This site is very small. Measuring less than 0.2 km (0.1 mile) long by less than 0.2 km (0.1 mile) wide. It is however, part of an approximately 2 mile long reach consisting of a mosaic of degraded and partially degraded riparian parcels.

Condition: Past landuse practices have heavily impacted this site. The site is heavily infested with weedy species and has been physically modified from its original floodplain form. A large dike and several large piles of river cobbles line the bank of the North Fork River in this reach. Livestock corrals, barns, and the property owners residence are located on the former floodplain behind the dike. A small fishpond has been excavated behind the owner’s residence. This site has the lowest conservation potential of all the sites reviewed.

Landscape Context: This site is set in a more densely settled reach of the North Fork Gunnison River than the other sites reviewed. This site is part of an approximately two mile long reach of low flood plain and braided river channels. Other adjacent sites near this reach were not inspected directly, but appear to have similar characteristics when viewed from the road.

Location Map:

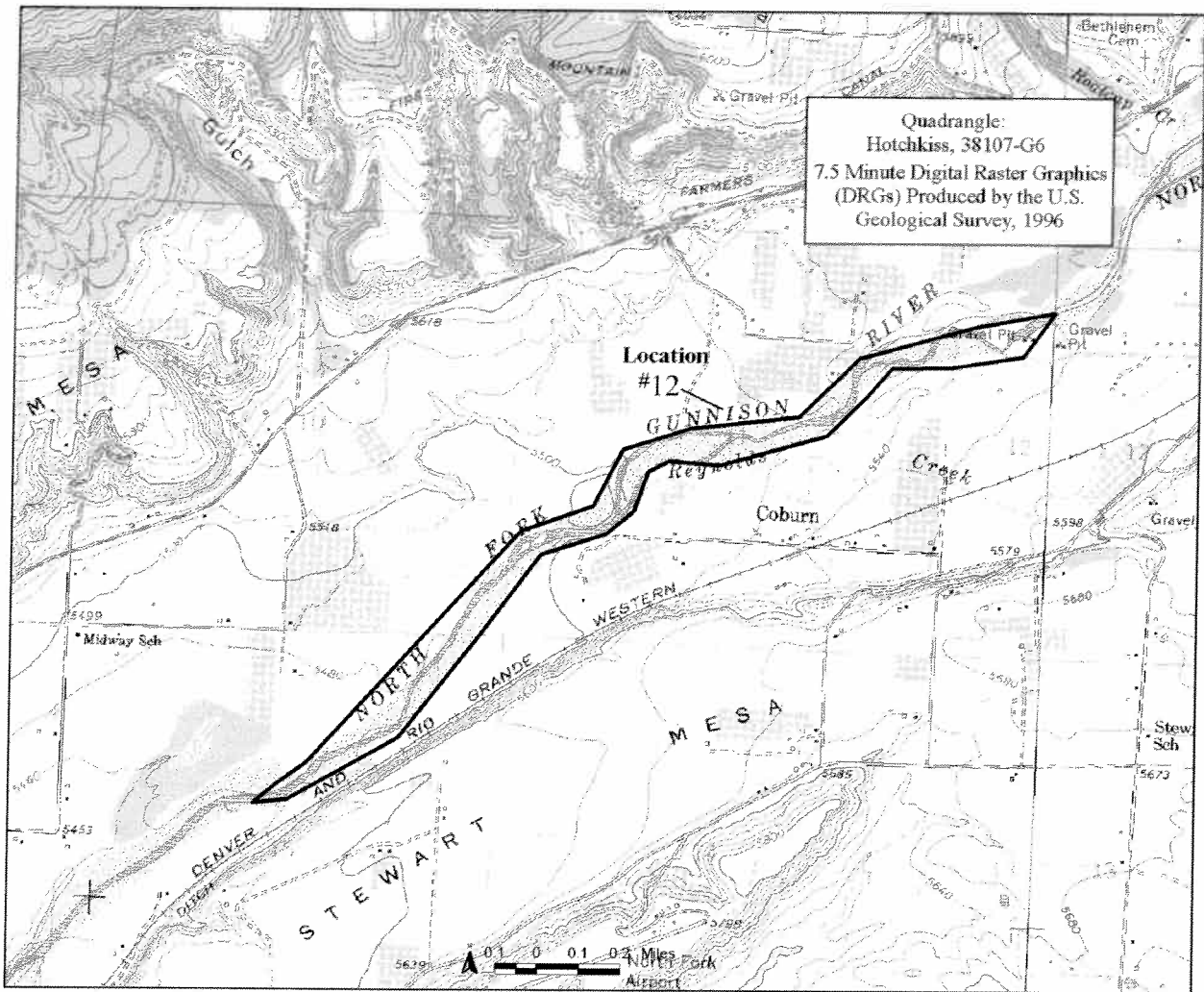


Photo:



Location #13: North Fork Gunnison – River Mile 14.2 to 15.6

Location Description: This location is a very large mosaic of riparian types upstream of the Town of Hotchkiss. The site includes a broad reach of the North Fork River where the channel is braided and several side channels exist. The riparian vegetation in this reach includes cottonwood forest and river bed willow stands with a broad mix of species including Fremont's cottonwood (*P. deltoides* var. *wislizenii*), narrowleaf cottonwood (*P. angustifolia*), boxelder (*A. negundo*), coyote willow (*S. exigua*), skunkbush (*R. trilobata*), silver buffaloberry (*S. argentea*), river hawthorn (*Crataegus rivularis*) and river birch (*Betula occidentalis*). Portions of the site are in rangeland and contain pastures, corrals, and ranch buildings. The invasive species tamarisk (*T. ramosissima*) and Russian olive (*E. angustifolia*), are present here. Landowner attempts to direct the river flow toward diversion ditches has left piles of river cobbles scattered over the area. Based on its size, the condition of the vegetation present, and the landscape context, this location has medium value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of "C".

Communities Observed: Some portions of the site support a Fremont's cottonwood (*P. deltoides* var. *wislizenii* forest) with a mesic graminoid understory. Skunkbush (*R. trilobata*) is present, although not as a dominant understory species. The active floodplain includes numerous braided channels with stands of coyote willow (*S. exigua*) interspersed with Fremont's cottonwood (*P. deltoides* var. *wislizenii* forest) seedlings.

Size: Overall this site is relatively large. It extends for approximately 1.0 km (0.6 miles) along the North Fork Gunnison River and is approximately .25 km (0.16 miles) wide.

Condition: The landform and species composition of this location are modified from the natural riparian conditions. Water diversions have modified the stream channel and left large piles of river cobbles in and around the streambed. Weedy shrub and herbaceous species have invaded the site.

Landscape Context: The site is located in an agriculturally developed reach of the river downstream from Paonia. Ranching and fruit orchards are prominent land uses on the adjacent upland parcels.

Location Map:

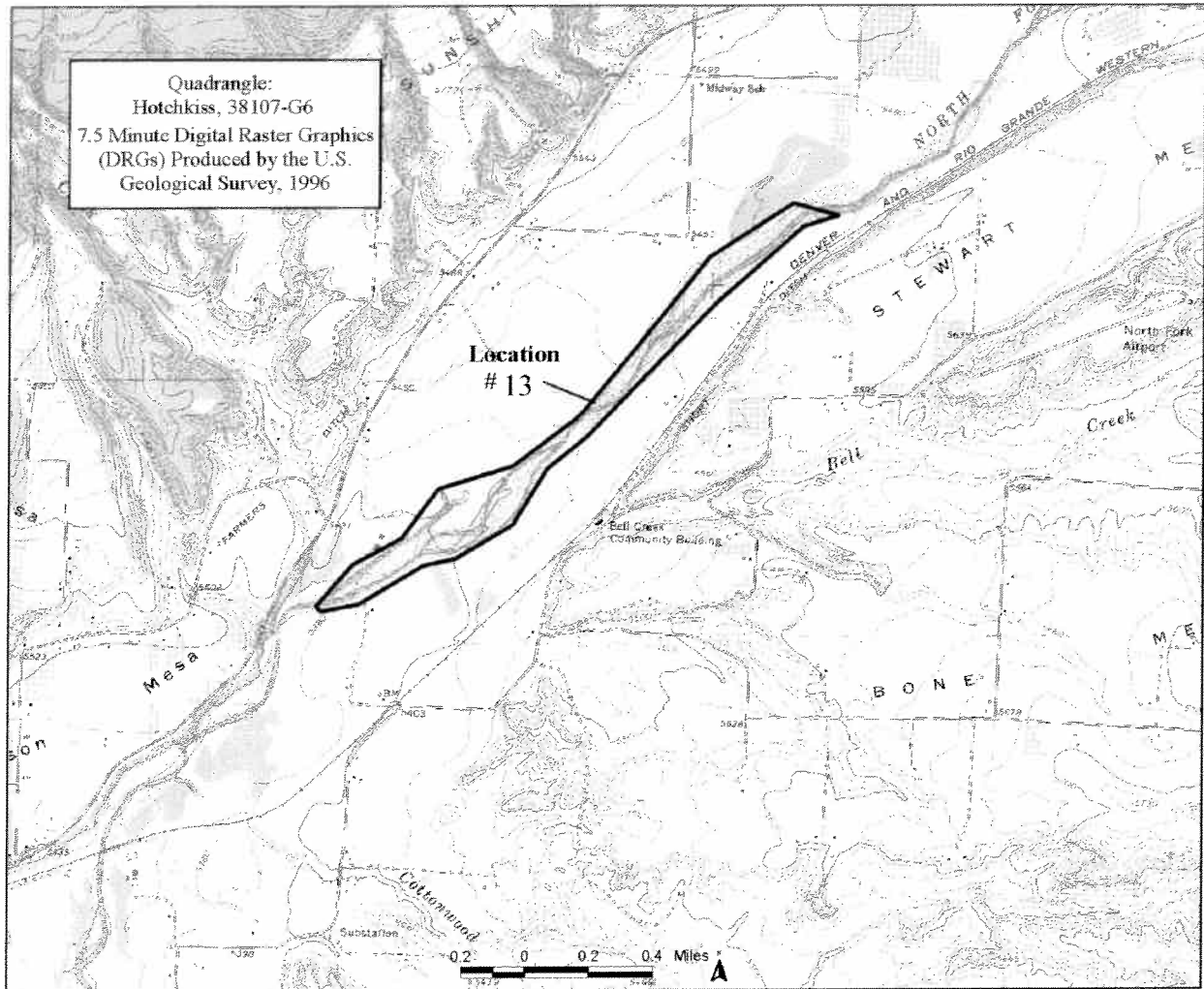


Photo: Not available

Location #15: North Fork Gunnison – River Mile 22.2 to 23.4

Location Description: This location is on the river left floodplain terrace approximately 10 km upstream from Paonia. The terrace is perched approximately 2 to 3 meters (7-10 feet) above the level of the river. This site supports a good example of a G2S2 narrowleaf cottonwood community (*P. angustifolia*/*S. eriocephala* var. *ligulifolia*-*S. argentea*). From the perspective of riparian vegetation, this site is the most unique of those evaluated here. Based on its size, the condition of the vegetation present, and the landscape context, this site has high value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “A”.

Communities Observed: The narrowleaf cottonwood community (*P. angustifolia*/*S. eriocephala* var. *ligulifolia*-*S. argentea*) occurs on the site. This plant association is tracked by the CNHP as a G2S2 community. The overstory canopy is dominated by narrowleaf cottonwood (*P. angustifolia*) with silver buffaloberry (*S. argentea*) as diagnostic understory shrub. Fremont’s cottonwood (*P. deltoides* var. *wislizenii*) is present in the overstory but is not dominant. Other understory species present include skunkbush (*R. trilobata*), red cedar (*Sabina scopulorum*), and boxelder (*A. negundo*). The later occurring only as a few scattered and small understory trees. The herbaceous layer consists of a dense cover of mesic graminoids.

Size: This location is moderate in size and measures approximately 1.5 km (0.93 miles) long by 0.25 km (0.16 miles) wide. Additional investigations are recommended to determine the full extent of the community on both sides of the river.

Condition: This community is in good condition. There is no tamarisk (*T. ramosissima*), Russian olive (*E. angustifolia*), or weedy herbaceous species present in this location. The physical landform of the site is in its natural state. Parts of the site nearest to the upland margin are presently in hay meadow. An eroded gully toward the upstream end of the site may be the result of a failure in the Stewart Ditch that runs on the hillside above the site. There are a large number of young narrowleaf cottonwood (*P. angustifolia*) seedlings throughout the site.

Landscape Context: This location is above the town of Paonia and appears to be at the upper limit of the fruit orchard operations. The riparian zone in this area of the river is in a more natural state than further downstream. There appears to be fewer residential properties in this area as well. The Stewart Ditch traverses the hillside above the site, as does a small road.

Location Map:

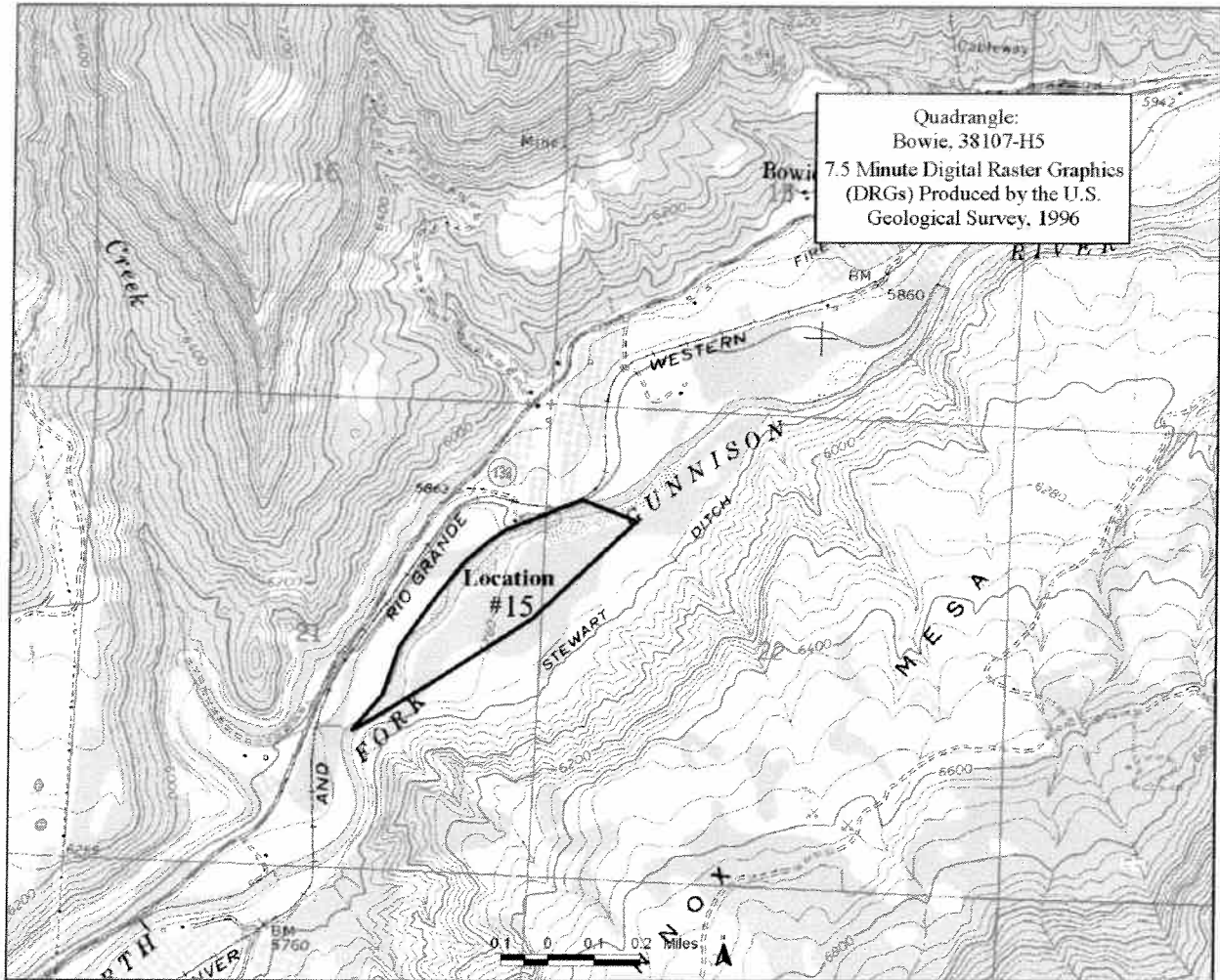


Photo:



Location #16: North Fork Gunnison – River Mile 24.4 to 24.9

Location Description: This site is located where the recently constructed bridge on Highway 133 crosses the North Fork Gunnison River above Bowie. The construction project disturbed and divided the natural riparian community at this location. Additionally, portions of the site appear to have been reworked for wetland mitigation purposes. The site now consists of four separate areas. The areas on the northwest and southeast sides of the road are the assumed wetland mitigation sites. The area to the northeast is a meadow, while the area to the southwest side of the bridge supports a remnant of riparian cottonwood forest (*P. deltoides* var. *wislizenii*-*P. angustifolia*). Based on its size, the condition of the vegetation present, and the landscape context, this location has low to moderate value for conservation of riparian vegetation communities. Based on the ranking criteria this location has an overall rank of “C”.

Communities Observed: The southwest portion of this location supports a mixed stand of cottonwoods (*P. deltoides* var. *wislizenii*-*P. angustifolia*). Understory species noted included coyote willow (*S. exigua*), silver buffaloberry (*S. argentea*), thinleaf alder (*Alnus tenuifolia*), and strapleaf willow (*S. eriocephala* var. *ligulifolia*). Numerous seedlings of both cottonwood species as well as both willow species were noted on the active flood channels. Blue spruce (*Picea pungens*) occurs as small, scattered understory trees in the downstream portions of the site.

Size: This location is somewhat small measuring approximately 0.5 km (0.31 miles) long by 0.1 km (0.06 miles) wide.

Condition: This location has not been invaded by weedy species other than small areas of Canada thistle and yellow sweet clover. The construction of the highway bridge over the river has divided the site into four areas. Large levees have been constructed to protect the bridge approaches from river flooding and erosion.

Landscape Context: This site is located along and dominated by State Highway 133. Scattered private residences occur along the stretch of the river.

Location Map:

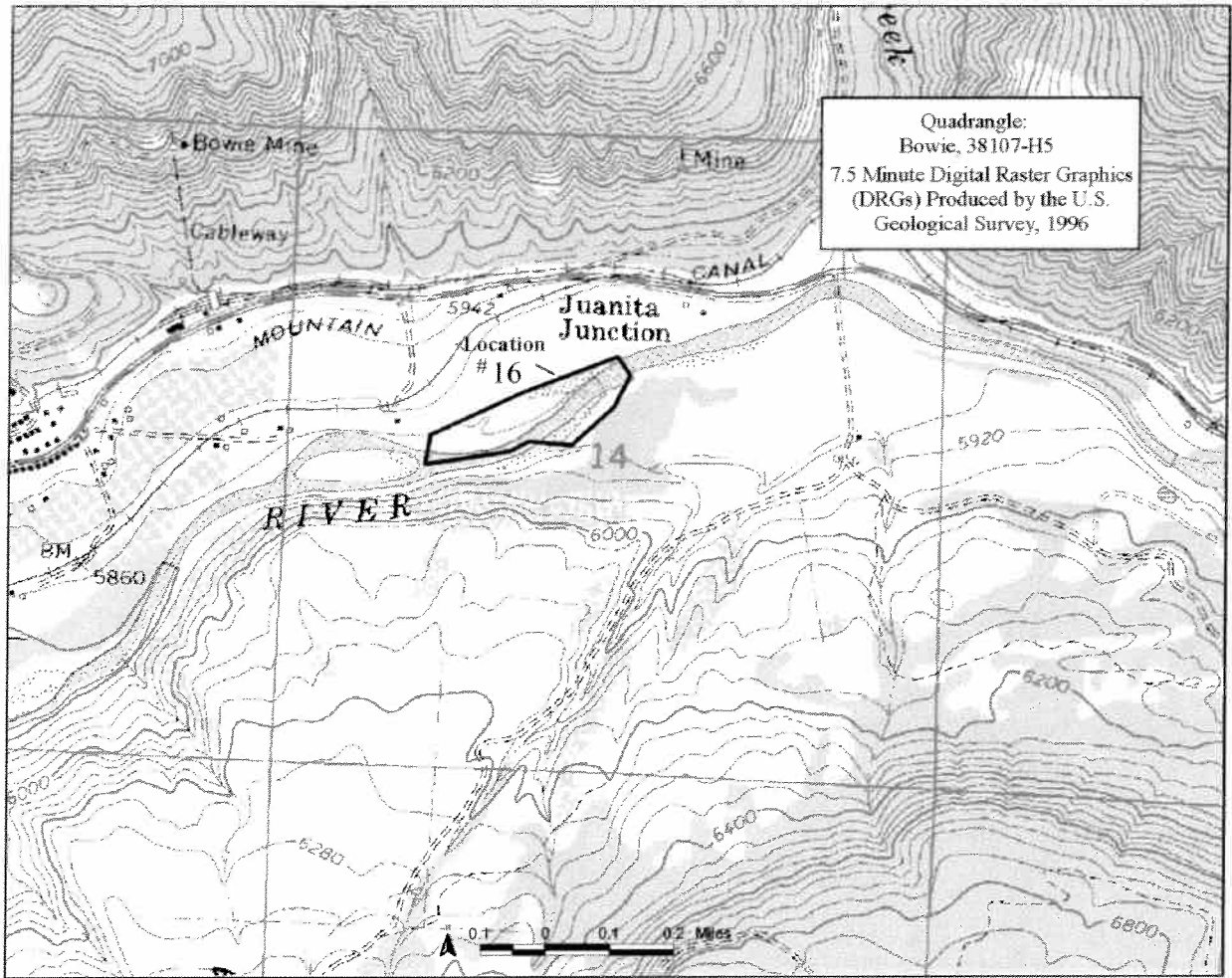


Photo:







SUMMARY

The CNHP conducted an assessment along the North Fork Gunnison River and the lower Gunnison River to identify sites with high quality riparian vegetation. The evaluation used aerial photography to identify a total of sixteen sites with potentially high quality vegetation. For the 16 sites, fifteen site visits were conducted at various accessible locations. Some sites were accessed at numerous locations while others were not visited since they were inaccessible or dropped from consideration after further review and discussion. Based on the field evaluation, each visited site was ranked from A to D according to the riparian community present, and its condition, size, and landscape context.

Throughout the project corridor, as in other parts of the arid west, riparian areas (and the watercourses they depend on) provide a wide range of values and are important to society for many commercial, agricultural, and recreational activities. However, the heavy demands placed on these resources have resulted in widespread impacts by water diversion, stream modification, land use conversions, pollution, and introduction of non-native species. Human impacts have degraded and/or replaced natural riparian vegetation throughout the arid western states. Currently, only fragments of the natural riparian communities that once existed along the Gunnison River remain.

In the lower Gunnison River corridor, the natural riparian vegetation has been severely impacted by the introduction of non-native species, regulation and diversion of river flows, and land use conversion. Throughout the length of the river, the most important factor impacting the native riparian vegetation is the introduction of the weedy species tamarisk (*T. ramosissima*) which in many reaches has completely taken over and replaced the native riparian vegetation. Other weedy species that have also had a significant impact include Russian thistle, Russian knapweed and other knapweed species, Russian olive, and others. These same species are problematic in riparian areas on many western rivers.

In the North Fork Gunnison River, historical land use conversions to agriculture and diversion of stream flow have been the primary factors effecting the riparian vegetation of the valley. Large areas of the riparian zone have been converted from natural riparian vegetation to hay meadows,

orchards, and cultivated fields. Diversion of stream flow has altered the hydrological characteristics of the riparian zone and in some areas has prompted a shift to types characteristic of dryer upland sites. Decreases in the frequency of flooding have reduced the recruitment of cottonwood and other early seral species. Many of the areas have also been heavily impacted by introduced species as well.

Although the above factors have impacted all of the locations to a greater or lesser degree, several of the locations contain at least some of the components of a natural riparian community. The following site summaries describe the important characteristics of the top ranked sites.

Based on the riparian quality rankings summarized in Table 2, location #15 contains the most intact and valuable riparian vegetation. Location #15 on the upper reaches of the North Fork Gunnison River is the only location to receive a quality rank of "A". The riparian vegetation at this location is a good condition example of the rare narrowleaf cottonwood/silverberry cottonwood (*P. angustifolia/S. argentea*) riparian forest community. This plant association is tracked as a G2S2 element by CNHP. The site has had relatively few human modifications, contains few weedy species, is moderately large, and has relatively natural landscape surrounding it.

The Locations #9B and #9C were the only two sites to receive a rank of "B". Both of these locations are on the lower Gunnison River below Delta. Location #9B is a fair condition example of the rare narrowleaf cottonwood/skunkbush (*P. angustifolia/R. trilobata*) riparian forest community. This plant association is tracked by CNHP as a G2S2 element. This location could be an "A" ranked occurrence if the weedy species were not present. To preserve and enhance the quality of this riparian site, activities to eliminate and manage exotic weedy species should be implemented.

Location #9C is an ecologically diverse site with several different habitat types present. It is a large site with good connectivity to the hydrology of the river. There has been very little land modification on the site. The site is invaded by some weedy species, however these may still be

at controllable densities. Activities to eliminate and manage exotic weedy species should be initiated on this site.

The remaining “C” and “D” ranked sites do not warrant further consideration for conservation based on the type and quality of riparian vegetation alone. Some of these locations may be suitable as conservation sites when considered together with the full range of resource values present. However, due to the character of the “C” and “D” ranked sites some restoration of the riparian vegetation would be essential when considering these sites for conservation. Additionally, since riparian vegetation is typically a linear mosaic of several different communities, and since not all of the natural community types are represented by A or B ranked sites, some of the C or D ranked sites could be considered further as reclamation sites or source sites for seed and other propagules.

Table 2: Quality Ranking of Riparian Vegetation at Survey Sites

Site ID	River Mile	Riparian Vegetation Quality Ranking
Location #3: Lower Gunnison River	River Mile 12.8 to 13.6	D
Location #4: Lower Gunnison River	River Mile 15.0 to 15.6	D
Location #5: Lower Gunnison River	River Mile 18.1 to 18.5	D
Location #6: Lower Gunnison River	River Mile 18.8 to 19.2	D
Location #7B: Lower Gunnison River	River Mile 35.6 to 36.0	C
Location #7C: Lower Gunnison River	River Mile 36.4 to 36.9	D
Location #9A: Lower Gunnison River	River Mile 49.7 to 52.0	C
Location #9B: Lower Gunnison River	River Mile 54.2 to 55.0	B
Location #9C: Lower Gunnison River	River Mile 56.6 to 57.5	B
Location #10: Lower Gunnison River	River Mile 61.5 to 62.3	C
Location #11: North Fork Gunnison	River Mile 6.2 to 7.9	C
Location #12: North Fork Gunnison	River Mile 11.9 to 14.2	D
Location #13: North Fork Gunnison	River Mile 14.2 to 15.6	C

Location #15: North Fork Gunnison	River Mile 22.2 to 23.4	A
Location #16: North Fork Gunnison	River Mile 24.4 to 24.9	C

General Recommendations

The site rankings provided above are based on the existing condition of the riparian vegetation, size of the site, and the context of the surrounding landscape. Other factors, however, can play an important role in the long term viability and conservation value of riparian vegetation communities and should be considered in evaluating different sites for that purpose. To facilitate long-term conservation success, the following general recommendations should be considered when determining priorities for riparian conservation sites.

1. Any conservation efforts should include development of a site management plan to define the objectives for the site and the practices or land management actions that will be used to achieve the site objectives;
2. Any conservation efforts should include a weed management plan to address the issue of invasive species, including such factors as:
 - Species present,
 - Current extent and invasiveness,
 - Controllability,
 - Level of threat posed to native community and dependent species;
3. Conservation sites should be evaluated for hydrologic conditions to ensure appropriate conditions to establish and maintain riparian vegetation, including such factors as:
 - Elevation of the site relative to river,
 - Site topography that limits or accentuates natural hydrological functioning,
 - Potential to provide or ensure adequate surface water flows, groundwater levels, and periodicity over the long-term,
 - Potential for site to experience periodic floods typical of the river's natural flood regime,
 - Potential for, and impact of, sediment erosion and deposition at the site;