United States
Department of
Agriculture

Forest
Service

March 2014

Environmental Assessment

Dutton Ditch Special Use Permit

Responsible Official: Ron Archuleta, Acting Forest Supervisor

Abstract:

This environmental assessment documents the environmental consequences of issuing a special use permit to Mr. Thomas Smith for the use of his share of the Dutton Ditch. Two alternatives are analyzed in detail. Alternative 1 (No Action) would not issue a special use permit and Mr. Smith would not be allowed to use the ditch. Alternative 2 would issue a special use permit to Mr. Smith for the use, operation, maintenance, and repair of the Dutton Ditch. Alternative 2 is the District's Proposed Action.

Location:

Pagosa Ranger District, San Juan National Forest

Archuleta County, Colorado

Portions of Township 37 North, Range 2 West, Section 35

and Township 36 North, Range 2 West, Sections 3, 9, 10, 16, 20, and 21 N.M.P.M.

For More Information Contact: Becca Smith
P.O. Box 310
Pagosa Springs, CO 81147
970-264-2268

TABLE OF CONTENTS

APPENDICES

INDEX OF FIGURES

INDEX OF TABLES

1 INTRODUCTION

1.1 Background

The original construction date of the Dutton Ditch is listed as June 3, 1909. Its original water right was decreed in 1913. Currently, there are 5 different water rights holders that use the Dutton Ditch/Pipeline: Pagosa Area Water and Sanitation District (PAWSD), Alice Christie, Gustav Mehrer, Marguerite Jackson, and Thomas Smith. In 2006-2007, PAWSD constructed a pipeline and put their water into the pipeline. All five users have their water in the pipeline from the point of diversion on Fourmile Creek to where the pipeline crosses Fourmile Road, which is approximately 3,800 feet. After this point, only PAWSD's water continues through the pipeline. The other four users' water is diverted from the pipeline into the Dutton Ditch after this point and is conveyed in the ditch to the private property. Ms. Christie, Mr. Mehrer, and Ms. Jackson have been issued ditch bill easements for their share of the Dutton Ditch and PAWSD has been issued a special use permit for the pipeline. Mr. Smith has applied to for a new special use permit for his share of the Dutton Ditch.

1.2 Document Structure

The Forest Service has prepared this Environmental Assessment (EA) to document the environmental effects of issuing a special use permit to Mr. Thomas Smith for the use, operation, maintenance, and repair of the Dutton Ditch. This analysis complies with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental effects of the District's Proposed Action, as well as No Action Alternative. The document is organized into six parts:

- *Introduction:* This section includes information on the purpose of and need for the project, and the agency's proposal for achieving that purpose and need.
- *Alternatives, including the Proposed Action:* This section details how the Forest Service informed the public of the proposal and how the public responded. This section also provides a more detailed description of the proposed action, any alternative methods for achieving the stated purpose.
- *Affected Environment and Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative (which provides a baseline for evaluation and comparison), and then the effects of the action alternatives.
- *List of Preparers:* This section provides a list of preparers of this analysis and associated assessment.
- *Literature Cited:* This section provides citations for documents referenced in this EA.
- *Appendix A:* Appendix A contains the Operations and Maintenance Plan (O&M Plan) for the Dutton Ditch. The O&M Plan itself contains the following three appendices:
    - *Appendix A* – Acceptable Headgate and Water Measurement Structures
    - *Appendix B* – Dutton Ditch and Pipeline Map
    - *Appendix C* – Step-Pool Drawings

Additional analysis documentation is on file at the District Office in Pagosa Springs, Colorado.

1.3 Best Available Science

This analysis is based on the best available science, as evidenced by the following:

- Recent site-specific field inspections and reviews of the analysis area by the Interdisciplinary (ID) Team, including site specific field investigations by hydrologists, engineers, wildlife biologists, ecologists, archeologists, and lands specialists.
- Expert opinions of ID Team resource specialists, and use of the most recent geographic information system (GIS) resource layers.
- Consultation with the US Fish and Wildlife Service (USFWS), consultation with the State Historical Preservation Officer (SHPO), and discussions with the Colorado Division of Wildlife (CDOW).
- Use of research, scientific studies, and information as documented in the literature cited and references section of this document.

1.4 Analysis Area

The analysis area includes the area covered by the Dutton Ditch, as well as the land 10 feet on either side of the centerline of the ditch and the identified motorized access routes. The Dutton Ditch is approximately 7.3 miles long, approximately 1.8 feet deep, 5.8 feet wide at the top, and 4.0 feet wide at the bottom. It covers a total area of approximately 15 acres. Figure 1 displays the location of the analysis area. The elevation of the project area is between approximately 7,880 and 8,600 feet.

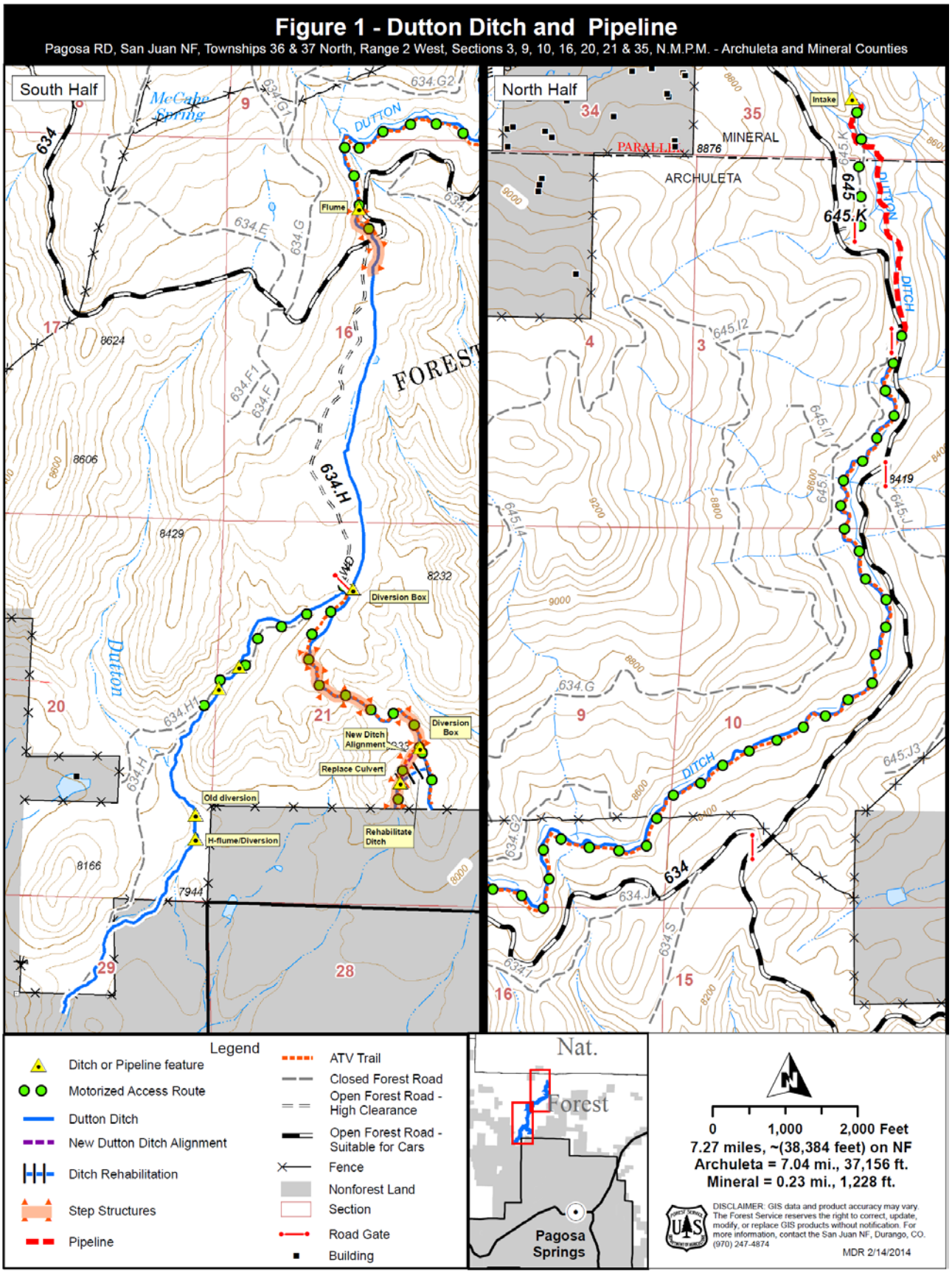


Figure 1 - Dutton Ditch and Pipeline
Pagosa RD, San Juan NF, Townships 36 & 37 North, Range 2 West, Sections 3, 9, 10, 16, 20, 21 & 35, N.M.P.M. - Archuleta and Mineral Counties
South Half
North Half
McCabe Spring
DUTTON
DITCH
Flume
Intake
Diversion Box
New Ditch Alignment
Replace Culvert
Rehabilitate Ditch
Old diversion
H-flume/Diversion
MINERAL
ARCHULETA
PARALLEL
FOREST
Legend
Ditch or Pipeline feature
Motorized Access Route
Dutton Ditch
New Dutton Ditch Alignment
Ditch Rehabilitation
Step Structures
Pipeline
ATV Trail
Closed Forest Road
Open Forest Road - High Clearance
Open Forest Road - Suitable for Cars
Fence
Nonforest Land
Section
Road Gate
Building
Nat. Forest
Pagosa Springs
0 1,000 2,000 Feet
7.27 miles, ~(38,384 feet) on NF
Archuleta = 7.04 mi., 37,156 ft.
Mineral = 0.23 mi., 1,228 ft.
DISCLAIMER: GIS data and product accuracy may vary. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For more information, contact the San Juan NF, Durango, CO. (970) 247-4874
MDR 2/14/2014

1.5 Regulatory and Administrative Framework

1.5.1 National Environmental Policy Act

This EA has been prepared in accordance with NEPA of 1969, as amended (42 U.S.C. Sections [§§] 4321-4374), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and Forest Service NEPA procedures (36 CFR Part 220).

1.5.2 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531-1544) requires federal agencies, in consultation with the United States Fish and Wildlife Service (USFWS) and/or the National Oceanic and Atmospheric Administration Fisheries Service, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "take" of ESA-listed species. A biological evaluation has been completed for this project which conforms to the legal requirements set forth under Section 7 of the Endangered Species Act.

1.5.3 National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. §§ 470 et seq.) establishes as federal policy the protection of historic properties in cooperation with state and local governments, Indian tribes, and other stakeholders. Section 106 of the NHPA directs federal agencies to take into account the effect of federally funded or licensed undertakings on any district, site, building, structure, or object either listed or eligible for listing on the National Register of Historic Places. NHPA Section 106 consultation has been completed with the SHPO regarding potential effects to historic properties, the outcome of which is documented in this EA.

1.5.4 National Forest Management Act

The National Forest Management Act of 1976 (16 U.S.C. §1600 et seq.) directs the Forest Service to prepare land management plans for units of the NFS. The Final San Juan National Forest and Proposed Tres Rios Field Office Land and Resource Management Plan, 2013 (the Forest Plan) establishes programmatic direction for the management of NFS lands.

Forest Plan Direction

The San Juan National Forest (SJNF) is broken into discrete Management Areas (MAs). MAs describe the intensity of management that can be expected within each MA, ranging from areas where natural processes dominate and shape the landscape to areas that are intensely managed. In addition to the level of management, MAs also provide a general sense of how the landscape will appear and identify uses and activities that are allowed. To varying degrees, multiple uses occur within all the MAs. Under the Forest Plan, the analysis area falls within Management Areas 3, 5, and 7. MA 3, Natural Landscapes with Limited Management, are relatively unaltered places where natural and ecological processes operate primarily free from human influences. MA 5, Active Management, are multiple-use areas where active management occurs in order to meet a variety of social, economic, and ecological objectives. MA 7, Public and Private Lands Intermix, are places where the public lands are in close proximity to private lands. The ID Team

reviewed the direction in the Forest Plan and determined that the alternatives analyzed in detail comply with the Forest Plan.

Environmental Justice

A specific consideration of equity and fairness in resource decision making is encompassed in the issue of environmental justice. As required by law and Title VI, all federal actions will consider potentially disproportionate negative impacts on minority or low-income communities. No disproportionate negative effect on or changes to low-income or minority communities associated with the analysis area due to the Proposed Action were identified.

1.6 Purpose and Need for Action

The purpose and need for this project is to issue a special use permit for the continued use, operation, maintenance, and repair of the Dutton Ditch, in order to transmit water from Fourmile Creek for use on the applicant's private property. Mr. Smith has submitted an application for a new special use permit for the existing Dutton Ditch across the Pagosa Ranger District National Forest System lands. Several acts of Congress authorize occupancy and use of National Forest System lands and interests in lands administered by the Forest Service.

1.7 Proposed Action

The proposed action is to issue a special use permit to Mr. Thomas Smith for the use, operation, maintenance, and repair of the Dutton Ditch. This would include the area covered by the ditch, as well as the land 10 feet on either side of the centerline of the ditch, and the identified motorized access routes for access, repair, and maintenance. The total area for which the permit is requested is approximately 15 acres. The special use permit would allow Mr. Smith to use the Dutton Ditch year round, but a majority of the use would be in the irrigation season (April through October). The water will be used primarily for irrigation and domestic use. The permit will also allow the use of motor vehicles to access, operate, maintain, and repair the ditch.

1.8 Decision Framework

The Responsible Official will review the purpose and need, the proposed action and alternatives, and the environmental consequences in order to make the following decision:

Should a special use permit be issued to Mr. Thomas Smith for the use, operation, maintenance, and repair of the Dutton Ditch?

2 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

This section presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker and the public.

2.1 Alternative Development

2.1.1 Public Involvement

The following public involvement activities have occurred for this project proposal.

- The proposal was first listed in the Schedule of Proposed Actions in the January-March 2013 edition and has been in every subsequent edition.
- The scoping effort for this project and the Notice and Comment period were combined. This was announced in a letter mailed to known interested parties, adjacent landowners, and government entities on December 18, 2013. It was also announced in a legal notice published in the Durango Herald on December 19, 2013. The comment period ended on January 21, 2014. No comments were received during the comment period.

2.1.2 Issues

No issues were identified during the combined scoping and Notice and Comment period.

2.2 Alternatives Considered in Detail

The two alternatives considered are explained in Sections 2.2.1 through 2.2.2 below.

2.2.1 Alternative 1 – No Action

Under the No Action Alternative, Mr. Smith would not be issued a special use permit and he would no longer be allowed to use the ditch, but the other permitted users would continue to use the ditch.

2.2.2 Alternative 2 (Proposed Action)

This alternative proposes to issue a special use permit to Mr. Thomas Smith for the use, operation, maintenance, and repair of the Dutton Ditch. This would include the area covered by the ditch, as well as the land 10 feet on either side of the centerline of the ditch for access, operation, maintenance, and repair. The total area covered by the permit is approximately 15 acres. The special use permit would allow Mr. Smith to use the Dutton Ditch year round, but a majority of the use would be in the irrigation season (April through October). The permit will allow the use of motor vehicles to access, operate, maintain, and repair the ditch. The permit would authorize repair work to be conducted on the ditch in 2014 including replacement of flumes, diversion boxes, and culverts along the ditch, construction of approximately 36 rock step structures to control grade within the ditch, armoring of the scour basin at the culvert outlet where the ditch crosses the Plumtaw Road, rerouting a portion of the ditch, and removal of approximately 13 trees. The repair work is described in more detail in the Operation and Maintenance Plan in Appendix A.

2.2.3 Design Criteria

All design criteria that will be applied to Alternative 2 are included in the Operation and Maintenance Plan (Appendix A) which will be made a part of the special use permit.

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Watershed, Soils, and Geology

Affected Environment

The proposed special use permit occurs within the boundaries of three 6th level HUCs (Table 3.1.1), all of which are tributary to the San Juan River. The ditch heading removes water from Fourmile Creek and is piped until it crosses FSR 645, after which the open ditch travels in a southwesterly direction. The ditch traverses the municipal supply watershed of the Pagosa Area Water and Sanitation District (PAWSD), and intercepts 5 intermittent drainages that flow east and south from Cade Mountain. The ditch subsequently bifurcates with all flow paths terminating in the Dutton Creek drainage.

Table 1: 6th Level Watersheds in the Analysis Area

HUC	Name	Acres
140801010403	Fourmile Creek	22,173
140801010405	McCabe Creek	12,820
140801020401	Dutton Creek-Martinez Creek	18,012

The dominant geology along the ditch course consists primarily of marine derived sedimentary shale and sandstone formations: Mancos Shale, Mesa Verde Formation, and Lewis Shale. The shale of the Mancos and Lewis Formations weathers to an olive brown silty clay soil that is highly erosive and often dissected by gullies. The Mancos, Mesa Verde and Lewis Formations are also susceptible to both large and small landslides, which are prevalent in the analysis area.

The existing ditch infrastructure is in poor condition with evidence of both vertical and horizontal instability present in many areas. Flow measuring and partitioning structures are frequently non-functional, and the culvert crossing at FSR 634 has a 7 foot vertical offset that is actively eroding at the foot of the road fill. On the southeastern legs of the ditch (Section 21, T36N, R2W), the final portion of the ditch has several severe headcuts immediately above private land.

Environmental Consequences

Alternative 1 – No Action

Under the No Action Alternative, the existing ditch uses other than those analyzed in this EA would continue. As a consequence, the identified erosion and instability problems would persist in both the short and long term, but would likely occur at a slower/lower intensity due to the reduction in ditch flow by up to 12.85 ft3/sec. Under Alternative 1, interception of intermittent drainages along the ditch course would continue at current levels, consequently no alterations (from current conditions) to channel morphology and riparian plant communities in these intermittent drainages would occur.

In a typical water year, senior downstream water rights (both on and off USFS lands) frequently place calls on the Dutton Ditch and pull water downstream in Fourmile Creek, consequently maintaining channel morphology and riparian habitat as a by-product of exercising their full water right. As a result of these water rights, denying the ability of the applicant to divert at the Dutton Ditch heading would not likely increase downstream flows (above their current levels) sufficiently to yield improvements in channel function and riparian conditions downstream.

Alternative 2 – Proposed Action

Under the Proposed Action, water transport in the Dutton Ditch would continue at current levels, but the erosion and instability problems identified in the ditch would be corrected as a condition of the permit. Relative to the No Action Alternative, the Proposed Action would reduce both short and long-term erosion and sedimentation along the ditch, increase the long-term stability of the road fill on FSR 634, and reduce the potential for ditch blowouts and subsequent resource damage. These impacts would result in an improvement in watershed condition relative to the No Action Alternative.

Under Alternative 2, interception of intermittent drainages along the ditch course would be identical to Alternative 1. Consequently, no differences in channel morphology and riparian plant communities in these intermittent drainages would be expected. The Proposed Action would allow the applicant to divert up to 12.85 ft3/sec of water from Fourmile Creek when the water is legally available for diversion within the State of Colorado priority system. Given the senior water rights downstream, diversions associated with this special use permit would be unlikely to significantly alter the channel function or riparian plant communities along Fourmile Creek downstream of the Dutton Ditch diversion.

3.2 Vegetation

3.2.1 General Vegetation

Affected Environment

Elevations along the Dutton Ditch corridor range from 7,880 to 8,600 feet. Vegetation types are variable as determined by topography and elevation. Cool moist and warm-dry mixed conifer stands are found at the higher elevations in the analysis area, with ponderosa pine/Gambel oak stands at the lower elevations. Individual aspen, stands of aspen, and open meadows are interspersed throughout. Common understory shrubs include Gambel oak, serviceberry, snowberry, wood's rose, and common juniper. A variety of noxious weeds are present along the ditch corridor, including bull thistle, Canada thistle, musk thistle, and yellow toadflax.

Environmental Consequences

Alternative 1 – No Action

Currently, vegetative in the project area is subject to trampling from hiking and vehicular access for maintenance along the approximately 15 acre ditch ROW. Tractors, backhoes, and dozers up to 16,000 pounds are also permitted within the ROW for maintenance and repair activities. Ongoing operation of the ditch has the potential to cause erosion, while maintenance and repair activities within the ROW have the potential to disturb soil and trample vegetation. Operation, maintenance, and repair activities that

cause erosion and soil disturbance have the potential to increase the amount of area within the ROW occupied by noxious weeds.

Alternative 2 – Proposed Action

Effects to general vegetation under Alternative 2 will be similar to those described for Alternative 1.

3.2.2 Forest Service Sensitive Plant Species

Affected Environment

There are 19 sensitive plant species known or suspected to occur on the Pagosa Ranger District on the SJNF. Of these, three have suitable habitat within the analysis area. They are: Missouri milkvetch (*Astragalus missouriensis* var.*humistratus*), yellow lady's slipper (*Cypripedium parviflorum*), and frosty bladderpod (*Lesquerella pruinosa*). Both Missouri milkvetch and frosty bladderpod are associated with Mancos Shale. Yellow lady's slipper is found in a variety of habitats, including ponderosa pine stands. Plant surveys were completed along the portions of the Dutton Ditch underlain by Mancos Shale geology and in areas with ponderosa pine on July 3, 2013 to determine presence/absence of these species and observe general habitat conditions. Other areas along the Dutton Ditch were surveyed for these sensitive plant species in the past in association with the 2004 Dutton Ditch pipeline EA. None of the 3 sensitive plant species was found during either of these surveys, but suitable habitat for these species was found. The remaining 16 sensitive plant species with no habitat in the project area have been eliminated from detailed evaluation.

Environmental Consequences

All Alternatives

Since Missouri milkvetch, yellow lady's slipper, or frosty bladderpod are not found in the analysis area, there will be no effect to these species from project activities. A more detailed analysis of this project as it relates to sensitive species is provided in the Biological Evaluation.

3.2.3 Federally Listed Threatened and Endangered Plant Species

Affected Environment

There are two federally listed plant species with potential to occur on the SJNF. They are Knowlton's cactus (*Pediocactus knowltonii*) and Pagosa skyrocket (*Ipomopsis polyantha*). Knowlton's cactus is known to occur at elevations around 6,200 to 6,300 feet in association with pinyon-juniper stands. There is no suitable habitat within the analysis area for Knowlton's cactus, so it was eliminated from detailed evaluation in this project. Pagosa skyrocket is found on barren shale in ponderosa pine and Gambel oak stands on the Mancos Shale Formation at elevations between 6,750 – 7,775 feet elevation. Portions of the Dutton Ditch fall within suitable habitat for Pagosa skyrocket. Plant surveys were completed along the portions of the Dutton Ditch underlain by Mancos Shale geology on July 3, 2013 to determine presence/absence of Pagosa skyrocket and observe general habitat conditions. No Pagosa skyrocket was found during these surveys, but low quality suitable habitat for this species was found in the project area during the survey. Most of the potentially suitable habitat for Pagosa skyrocket in the analysis area is dominated by ponderosa pine stands with a dense Gambel oak understory. The understory of these stands have high amounts of ground cover consisting of ponderosa pine needle litter, Gambel oak leaves, and various native and non-native grasses and forbs. Areas immediately adjacent to the ditch are disturbed on

a regular basis and are dominated by common timothy and other weedy forbs. There are also numerous patches of Canada thistle within the ROW. Given the high amount of ground cover, the presence of non-native grasses that are highly competitive with the native vegetation, and frequent disturbance within the ROW, the habitat for Pagosa skyrocket within this analysis area was judged to be of low quality.

Environmental Consequences

All Alternatives

Since Pagosa skyrocket is not found in the analysis area, there will be no effect to this species from project activities. A more detailed analysis of this project as it relates to Pagosa skyrocket is provided in the Biological Evaluation.

3.3 Wildlife and Fish

Habitat for wildlife and fish species in the analysis area is variable as determined by vegetation, presence of water, topography, and elevation. Dominant vegetation types include ponderosa pine/Gambel oak and warm-dry mixed conifer forests at the lower elevations between approximately 7,800 ft. to 8,500 feet elevation. Cool-moist mixed conifer stands are present on north and east aspects, found primarily above 8,500 feet. Individual aspen, stands of aspen and small grass-forb meadows are interspersed throughout. Conifer and deciduous forests are mostly mature and multi-story with moderate to high levels of insects and disease. Insects and disease have influenced habitat for wildlife by influencing stand structural characteristics such as canopy closure, and presence of standing dead (snags) and down trees. The area contains numerous white fir, Douglas-fir, and aspen snags of all size classes, especially in areas furthest from roads. Fourmile Creek is a perennial stream that provides an important water source for terrestrial wildlife, and supports populations of non-native fish species such as rainbow, brook, and brown trout.

Primary human influences on wildlife and fish species and their habitats in the project area include past timber harvest treatments, wildfire suppression, summer and winter motorized and non-motorized recreation, livestock grazing, and water diversions from Fourmile Creek. These activities have influenced vegetation structure and composition affecting foraging, breeding, and security habitat for species. Forest conditions are characterized has having moderate to high densities of trees and shrubs with minimal understory grasses and forbs, and moderate to high levels of insects and disease. Areas generally within ½ mile from designated motorized routes (Plumtaw and Fourmile Roads) receive moderate to high levels of human disturbance from spring through fall. Public cross-country travel via off-highway vehicles (OHV's) is prohibited with the exception of permitted travel within 300 feet of designated roads for dispersed camping and gathering firewood or rocks with a valid permit. Winter travel via snowmobile occurs primarily on the Plumtaw and Fourmile Roads due to the lack of large meadows or other "snowplay areas". The Plumtaw Road is groomed during winter by the local snowmobile club, and Fourmile Road is used daily by private residents accessing land in the Cade Flats Subdivision. Human disturbances in the analysis and surrounding areas, including adjacent private lands (Lost Valley of the San Juan subdivision) are well established thus wildlife behavioral patterns have been previously influenced by these disturbance levels. Despite all these influences, the project and surrounding area continues to provide seasonal and/or year-round habitat for a diverse compliment of species.

Water diversions from Fourmile Creek continue to be the most influential factor affecting fish populations in the analysis area.

3.3.1 Management Indicator Species

Affected Environment

One of the goals of managing National Forest lands is to provide for healthy ecosystems capable of sustaining viable populations of wildlife and fish species. These ecosystems include many different habitat types that support a variety of wildlife and fish species. Due to the large number of species potentially occupying any given area, it would be impossible to evaluate the status of all species in an area over time. Therefore, a subset of species is selected to represent larger groups of species which have similar habitat needs or similar population characteristics, and whose populations can be quantitatively ascertained. These are referred to as Management Indicator Species (MIS). Species identified as MIS are selected because their population changes are believed to indicate the effects of management activities on wildlife and fish populations as a whole (36 CFR 219.19 (a) (1)).

There are 8 MIS in the Forest Plan. Seven MIS are either present or contain habitat in the analysis area and will be affected by the proposed action. The seven MIS affected by the proposed action include: Abert's squirrel, American marten, hairy woodpecker, elk, brook trout, brown trout, and rainbow trout. These MIS species occupy the project area year-round. Habitat for them is fairly well connected to adjacent habitat, and all species have habitat that is well distributed across the Forest.

Abert's squirrels nest in mature ponderosa pine trees with interlocking crowns, and forage on pine cones, inner bark of needle clusters, bark of small twigs, and fungi in needle cast in ponderosa pine forests. Habitat quality is considered low to moderate for Abert's squirrel due to existing ponderosa pine stand structure. Squirrels prefer more open stands with small openings dispersed among clumps and groups of trees of different age classes. Existing pine stands are dense with minimal age-class diversity. American marten forages on small mammal prey species (voles, squirrels, rabbits, and hares) and dens in tree cavities, logs, rock piles, and burrows in mature cool-moist mixed conifer forests. Minimal habitat is present for marten due to the lack of cool-moist mixed conifer forest. Hairy woodpecker forages on bark beetles and other insects living in dead and dying trees and nests in tree cavities in ponderosa pine, aspen and mixed conifer forests. Habitat quality for hairy woodpecker is high based on abundant foraging and nesting habitat (snags). Most elk use occurs during spring and fall as the areas serves as an important migration corridor from low elevation winter range to high elevation summer range. The southern portion provides winter range and animals remain in the area until snow depths increase and force movement further south of the analysis area. A small number of elk utilize the area during summer. The analysis area does not provide good calving habitat due to the area's proximity to regularly travelled motorized routes and lack of water. Habitat quality for elk is moderate due to the lack of forage and juxtaposition to cover. Forest-wide habitat trends for all terrestrial MIS with the exception of elk are stable. The elk habitat trend is slightly downward due to declining habitat quality in winter range. Forest-wide population trends for all terrestrial MIS are stable.

Fourmile Creek is a fourth-order perennial stream of approximately 15.5 miles in length. Its headwaters are located in the Weminuche Wilderness Area. Approximately 11 miles of stream occur on NFS lands, 5.6 of which are located within the Wilderness Area. Approximately 4.5 miles of this stream are located on private lands. Much of the stream can be characterized as a high-gradient, step-pool system with above average habitat complexity. Fourmile Creek supports populations of brown trout, rainbow trout, brook trout, and non-endemic cutthroat trout.

Fish presence and distribution in Fourmile Creek has been influenced by water diversions to private lands downstream of the analysis area. The magnitude of flows in Fourmile Creek during spring and summer are sufficient to maintain trout habitat and populations in the creek; however, flows from fall through winter decrease, decreasing habitat suitability for fish. In addition to the Dutton Ditch/Pipeline users, there are approximately 19 additional water appropriations that remove water from Fourmile Creek. If available, these appropriations can take a total of 84.44 cfs from Fourmile Creek. These uses primarily occur during the spring and summer months and are mostly used for agricultural irrigation. These uses have priority over the Dutton Ditch uses and serve to maintain stream flows in the upper sections of the stream occurring on NFS lands. In effect, these diversions mitigate the potential effects of the Dutton Ditch diversion and any new diversions that would occur during irrigation season. However, these same diversions decrease flow and reduce aquatic habitats on NFS lands located downstream of their diversion points.

Habitat maintenance flow requirements have been established for Fourmile Creek per the terms and conditions of Special Use authorization for the Dutton Ditch Pipeline Environmental Analysis and Record of Decision (USDA Forest Service 2004). There is currently a minimum flow of three cubic-feet per second (or natural inflow, whichever is less) in Fourmile Creek immediately downstream of the Dutton diversion(s) to support populations of fish. The minimum flow was intended to provide habitat sufficient to support a viable, self-sustaining trout fishery.

Forest-wide habitat and population trends for all aquatic MIS are downward. The primary factors contributing to the downward trend include stress to populations due to reduced stream flows resulting from drought and water depletions, high temperatures, and poor water quality, all resulting in decreased habitat quality for fish.

Environmental Consequences

Alternative 1 – No Action

Currently, habitat for wildlife MIS along the 15 acre ditch ROW is being affected by trampling, minor tree removal, and soil disturbance associated with ongoing maintenance, operation, and repair activities from other permitted users. These activities have resulted in minimal overall impacts to MIS due to their localized nature and minimal affect to habitat attributes used for breeding, foraging, and security. Human disturbance from motorized and non-motorized use and access in the area could result in short-term displacement of species. Disturbance is unlikely to result in any appreciable impacts to species, or adversely impact habitat effectiveness due to the relatively short duration of disturbance, and ample habitat available in the surrounding area for species dispersal. These effects will continue regardless of issuing a permit to Mr. Smith.

Impacts to fish MIS are associated with water diversions from Fourmile Creek. The absence of any diversions would likely yield higher densities of trout given more optimal habitat conditions; however, effects from other factors such as drought would continue. Impacts to trout and trout habitat are minimized due to adequate flows maintained spring through summer as mentioned in the affected environment section. The water pulled downstream helps maintain channel morphology and is sufficient to support trout populations. As a result of these water rights, denying the ability of the applicant to

divert water via the Dutton Ditch would not likely increase downstream flows sufficiently to yield improvements in trout habitat, or increase trout population densities downstream.

Alternative 2 – Proposed Action

Affects to wildlife and fish MIS are the same as those listed for Alternative 1 as the same activities affecting species and habitats will continue over the same area.

The proposed action is not expected to affect forest wide-wide habitat or population trends for wildlife MIS, as proposed activities will not have any measurable adverse impacts to habitat or habitat effectiveness due to the small scale and associated minor disturbance impacts. Water diversions from Fourmile Creek will continue to affect trout habitat, contributing to the downward trend in trout habitat and population densities Forest-wide.

3.3.2 Migratory Birds

Affected Environment

A review of the U.S. Fish and Wildlife Service (FWS) Birds of Conservation Concern List (USDI Fish and Wildlife Service 2008) and Colorado Partners in Flight Bird Conservation Plan (Beidleman 2000) shows 23 migratory bird species of conservation concern with habitat present on the SJNF. Species reviewed for this analysis are broken into analysis groups based on their restriction to, or strong representation within a particular habitat type. Nine species are either present or contain habitat in the analysis area and will be affected by the proposed action. The nine migratory bird species affected by the proposed action include: green-tailed towhee, Virginia's warbler, band-tailed pigeon, Grace's warbler, broad-tailed hummingbird, red-naped sapsucker, violet-green swallow, dusky grouse, and Williamson's sapsucker. A brief description of habitats utilized and season of use for each species carried forward for analysis is given below.

Green-tailed towhee and Virginia's warbler are common breeding species in the area. Both species are present from spring through summer. They forage and nest on the ground or very close to it, frequently under Gambel oak. Band-tailed pigeons, Grace's warbler, and Williamsons' sapsucker are present in the area from spring through summer. All three species prefer mature ponderosa pine forest for nesting and foraging. Band-tailed pigeon and Grace's warbler nest in the forest canopy. Williamson's sapsucker is a primary cavity nester that constructs cavities in aspen or conifers that are later used by secondary cavity nesters. The species depends upon short-lived, diseased, dying or dead trees scattered throughout the forest for foraging. Broad-tailed hummingbird, red-naped sapsucker, and violet-green swallow, are all common breeding species in the area, and prefer foraging and nesting in aspen forests. Broad-tailed hummingbirds build nests along limbs of conifers and deciduous trees. Red-naped sapsucker is a primary cavity nester that constructs nest cavities in aspen which are later used by secondary cavity nesters such as green-tailed towhee. Dusky grouse are year-round residents in the analysis area. They breed during spring and early summer, and construct nests on the ground in branches of fallen trees, under shrubs, or next to logs. Some grouse remain in the area during winter, while others move to higher elevation coniferous and spruce-fir forests.

Environmental Consequences

All Alternatives

Currently, habitat for migratory birds along the 15 acre ditch ROW is being affected by trampling, minor tree removal, and soil disturbance associated with ongoing maintenance, operation, and repair activities from the other permitted users. Ground nesting species such as green-tailed towhee, Virginia's warbler, and dusky grouse may be affect by trampling of vegetation and soil disturbance associated with machinery use during maintenance and repairs. Canopy nesting species such as band-tailed pigeon, Grace's warbler, and broad-tailed hummingbird are unlikely to be appreciably impacted due to the limited removal of live trees that provide suitable nest sites. Williamson's sapsucker, red-naped sapsucker, and violet-green swallow are also unlikely to be appreciably impacted due to the limited removal of dead or live trees with cavities used for nesting. Human disturbance from motorized and non-motorized access in the area during the breeding season could result in short-term displacement of species. Disturbance is unlikely to result in any appreciable impacts to breeding activity due to the relatively short duration, and ample habitat available in the surrounding area for species dispersal. Overall, existing activities have likely resulted in minimal environmental consequences to migratory birds, due to their localized nature and minimal affect to habitat attributes used for nesting and forging, and short duration during the spring and summer breeding seasons. These effects will continue regardless of issuing a permit to Mr. Smith.

3.3.3 Forest Service Sensitive Species

Affected Environment

Sensitive species are designated by the Regional Forester in each Region of the Forest Service. Species are designated as sensitive due to concerns over their population status, trends, or habitat conditions. A review of the Regional Forester's sensitive species list shows 34 species with habitat present on the SJNF (USDA Forest Service 2013b).

Eight terrestrial sensitive species contain habitat in the analysis area and will be affected by the proposed action. Terrestrial species affected by the proposed action include: American marten, fringed myotis, hoary bat, flammulated owl, Lewis' woodpecker, northern goshawk, olive-sided flycatcher, and northern leopard frog. Two aquatic sensitive species will be affected by the proposed action which include bluehead sucker and flannel mouth sucker. A brief description of habitats utilized and season of use for each species carried forward for analysis is given below. More detailed habitat information, status and distribution across the Forest, species biology, risk factors, etc., can be found in Forest-wide species assessments on file at the Pagosa District Office.

Existing habitat for American marten and season of use in the analysis area is described in the MIS section. Fringed myotis and hoary bats may occupy the area from spring through summer. Fringed myotis utilize snags for roosting, while hoary bats roost in foliage in the forest canopy. Both species feed on insects captured along forest edges, small openings, or near riparian areas. Flammulated owls and Lewis' woodpecker may occupy the area from spring through summer. Lewis' woodpecker has been observed breeding in the analysis area. Both species are associated with mature, park-like ponderosa pine forests. Lewis' woodpecker is a primary cavity nester that constructs cavities in dead or dying trees that are used later by secondary cavity nesters such as flammulated owl. Northern goshawk and olive-sided flycatcher have been observed in the analysis area. Goshawks are year-round residents, and flycatchers are

present from spring through summer. Goshawks nest and forage in mature ponderosa pine and mixed aspen/coniferous forests. Breeding activity has not been detected in the analysis area. Olive-sided flycatchers are often observed during the breeding season in the analysis area; however no nests sites have been detected. Northern leopard frogs are associated with riparian and wetland areas. Although suitable wetland breeding habitat is lacking in the analysis area, the species has been observed using ditches during the spring breeding season.

Bluehead and flannelmouth suckers are present downstream in the San Juan River, and may be affected by the proposed action. Of the two, the flannelmouth is most rare. These species prefer larger rivers and rely on riffle habitats with large cobbles to provide forage. As a "scraper" forage species, the bluehead is especially reliant on large cobble substrates, which have relatively high primary productivity on which the bluehead relies. Altered stream flow regimens resulting from diversions, that reduce the quantity and quality of habitats, can present a significant risk to bluehead and flannelmouth population viability.

Environmental Consequences

All Alternatives

This analysis tiers to the sensitive species analysis in the Biological Evaluation for Water Developments on the San Juan National Forest Authorized under the Colorado Ditch Bill (USDA Forest Service 2005a) referred to as the Ditch Bill BE. The Ditch Bill BE addressed impacts to sensitive species based on terms and conditions associated with ongoing effects of water developments across the SJNF. The terms and conditions are intended to ensure compliance with current laws, regulations, and policies including the Forest Plan. Many of the terms and conditions are intended to minimize environmental impacts and should benefit sensitive species. Specific terms and conditions include those for headgate installation, instream flows, noxious weed control, access stipulations, and routine facility maintenance.

Activities proposed under the no action and proposed action alternatives are consistent with the activities and corresponding effects documented in the Ditch Bill BE for American marten, fringed myotis, flammulated owl, Lewis' woodpecker, northern goshawk, olive-sided flycatcher, northern leopard frog, bluehead sucker, and flannelmouth sucker A determination of "may adversely impact individuals, but not likely to result in a loss of population viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide" was made for these species in the Ditch Bill BE. Hoary bat was not addressed in the Ditch Bill BE due to its inclusion as a Regional sensitive species after the evaluation was completed. Direct and indirect effects to hoary bat are expected to be similar to other bat species (fringed myotis) and sensitive bird species that utilize the forest canopy for nesting or roosting, therefore a determination of "may adversely impact individuals, but not likely to result in a loss of population viability on the planning area, nor cause a trend to federal listing or a loss of species viability range wide" is made for the species.

In summary, direct and indirect effects to sensitive wildlife species are similar to those described previously for MIS and migratory birds and include minor impacts to habitats used for foraging and breeding due to vegetation trampling, noxious weed treatments, minor tree removal, and soil disturbance from repair, operation, and maintenance activities. These minor impacts to habitat along with disturbance associated with human presence and operation of equipment/machinery are expected to be short-term and occur over a relatively small scale, thus minimizing impacts to sensitive species. Potential impacts to

sensitive species more sensitive to human disturbance such as northern goshawk will be reduced by application of project design criteria

When considered alone, the No Action and Action Alternatives present little risk to the sucker populations in the San Juan River. However, in combination with the many other water uses that alter stream flows and aquatic habitats in the San Juan River, water diversions associated with the proposed action would contribute to the overall negative cumulative effects to the species (see cumulative effects section).

3.3.4 Federally Listed Threatened and Endangered Species

Affected Environment

Federally listed species reviewed for this analysis are based on the most recent species list from the FWS (USDI Fish and Wildlife Service 2013). There are nine federally listed species, and four species proposed for Federal listing under the Endangered Species Act with habitat present on the SJNF. A brief description of habitats utilized and season of use for each species carried forward for analysis is given below. More detailed habitat information, status and distribution across the Forest, species biology, risk factors, etc., can be found in Forest-wide species assessments on file at the Pagosa District Office.

The Canada lynx is the only federally listed species with habitat present in the analysis area. Cool-moist mixed conifer stands are present in the northern portion of the analysis area. These stands provide habitat for primary prey species such as snowshoe hare, along with habitat for alternate prey species such as red squirrel. Although suitable habitat is present, it is considered low quality because of its juxtaposition to larger blocks of primary habitat (spruce-fir forest) north of the analysis area, and the very close proximity to non-lynx habitat. There has been no sign of lynx use in the area based on nearly 10 years of snow track surveys/monitoring of snowshoe hare and other small mammal populations conducted by Colorado Parks and Wildlife and Forest Service wildlife managers/biologists in the Plumtaw area. There is no FWS designated critical habitat for lynx on the SJNF, nor does the project area lie in a lynx linkage area.

The Colorado pikeminnow and razorback sucker reside off Forest in the Lower San Juan River. The FWS has determined that water depletions associated with Forest Service actions will affect downstream habitat for the endangered fish. The proposed action has resulted in a minor water depletion from the Upper San Juan River Basin, affecting downstream habitat for the endangered fish.

Environmental Consequences

All Alternatives

This analysis tiers to the federally listed species analysis in the Biological Assessment for Water Developments on the San Juan National Forest Authorized under the Colorado Ditch Bill (USFS 2005b) referred to as the Ditch Bill BA. The BA addressed impacts to federally listed species based on terms and conditions associated with ongoing effects of water developments across the SJNF. The terms and conditions are intended to ensure compliance with current laws, regulations, and policies including the Forest Plan. Many of the terms and conditions are intended to minimize environmental impacts and should benefit federally listed species. Specific terms and conditions include those for headgate installation, instream flows, noxious weed control, access stipulations, and routine facility maintenance.

Activities proposed under the No Action and Proposed Action Alternatives are consistent with the activities and corresponding effects documented in the Ditch Bill BA for Canada lynx, Colorado pikeminnow, and razorback sucker.

A determination of "may affect but not likely to adversely affect" was made for Canada lynx in the Ditch Bill BA. Direct and indirect effects to lynx were associated with minor impacts to lynx habitat, and short-term displacement during routine maintenance, repair, and operation. The BA also noted that changes in access have the potential to effect lynx habitat and result in temporary short-term displacement. The BA states "changes in access will be considered a separate Federal action and will be subject to evaluation and applicable guidance found under ESA, Canada lynx Conservation Strategy and the Forest Plan." The proposed action does not involve any changes to access. Access to maintain the Dutton Ditch is limited to approved motorized access routes (limited to existing roads and ditch channel) and will not result in snow compaction, as the permit does not authorize snow plowing or snow removal. ESA Section 7 Consultation with the FWS has been completed for lynx under the Ditch Bill BA (USDI Fish and Wildlife Service 2006) therefore, no further consultation is required.

A determination of "may affect and likely to adversely affect" was made for Colorado pikeminnow and razorback sucker" in the BA which analyzed the depletion of 1,687 acre feet annually from Fourmile Creek for the Dutton Ditch Diversion. ESA Section 7 Consultation with the FWS has been completed for Colorado pikeminnow and razorback sucker under the Ditch Bill BA (USDI Fish and Wildlife Service 2006) therefore, no further consultation is required.

3.4 Cultural Resources

Affected Environment

In 2012 and 2013, a Class III cultural resource inventory was conducted on 130 acres of Forest Service lands along the Dutton Ditch; no eligible cultural resources were recorded within the proposed Special Use Permit Area. A report detailing the findings of this inventory, Dutton Ditch Special Use Permit (SJNF#12-062), Class III Inventory, Archuleta and Mineral Counties, Colorado, was submitted to Colorado SHPO on November 25, 2013. Seven previous surveys had also been conducted within the project area(s).

Environmental Consequences

All Alternatives

The alternatives examined regarding the Dutton Ditch Special Use Permit result in a determination of *no historic properties affected*. SHPO was consulted regarding this project and concurred with this determination.

3.5 Cumulative Effects

3.5.1 Past, Present and Reasonably Foreseeable Future Actions Considered

This section considers the effects on the environment resulting from the incremental impact of the alternatives analyzed in detail, when added to other past, present, and reasonably foreseeable actions and trends. Where no cumulative effects have been identified, such is noted.

For the cumulative effects analysis, unless otherwise stated, the spatial scale is the analysis area and the temporal scale is 20 years into the future.

Past and Present Actions

Below are the main past and present actions considered in the cumulative effects analysis:

- Use of the Dutton Ditch and Pipeline

  The Dutton Ditch has been in use since 1909. Its primary use has been agricultural irrigation. The Dutton Pipeline was constructed in 2006-2007. Its primary use has been municipal water supply.

- Ongoing Ditch Maintenance
- Other water diversions from Fourmile Creek
- Recreational Use
- Livestock Grazing
- Timber Harvest
- Residential Development on Private Property

Reasonably Foreseeable Future Actions

- Continued use of the Dutton Ditch
- Continued Ditch Maintenance
- Continued water diversions from Fourmile Creek
- Recreational Use
- Livestock Grazing
- Timber Harvest

3.5.2 Affected Resources and Consequences

The ID Team considered past, present and reasonably foreseeable future actions, combined with the action alternatives, to determine if there were cumulative impacts to each resource addressed in this EA. No cumulative effects were identified for watershed, soils, geology, vegetation, wildlife or cultural resources. For aquatic species, when considered alone, the No Action and Action Alternatives present little risk to trout habitat and populations in Fourmile Creek. However, in combination with the many other water uses that alter stream flows and aquatic habitats from Fourmile Creek, the proposed action would contribute cumulative effects to fish species.

There are approximately 19 additional water appropriations that remove water from Fourmile Creek. If available, these appropriations can take a total of 84.44 cfs from Fourmile Creek. These uses primarily occur during the spring and summer months and are mostly used for agricultural irrigation. These uses have priority over the Dutton Ditch uses and serve to maintain stream flows in the upper sections of the stream occurring on NFS lands. In effect, these diversions help mitigate the potential effects of the Dutton Ditch diversion and any new diversions that would occur during irrigation season. However, these same diversions decrease flow and reduce aquatic habitats on NFS lands located downstream of their diversion points affecting fish MIS in Fourmile Creek and sensitive fish species in the San Juan River.

4 LIST OF PREPARERS

Becca Smith – Lands Program Specialist

Sara Brinton – NEPA, Ecology/Botany

Ivan Geroy – Hydrologist

Anthony Garcia – Wildlife Biologist

Mark Roper – GIS Specialist

Wendy Sutton – Archeologist

5 LITERATURE CITED

Beidleman, C. A. 2000. Partners in Flight Land Bird Conservation Plan, Colorado, Ver. 1.0. Colorado Division of Wildlife, Denver, CO. 320 pp.

USDA Forest Service. 2013a. Land Resource Management Plan for the San Juan National Forest and Tres Rios Field Office. On file at the Pagosa Range District Office. 328 pp.

USDA Forest Service. 2013b. Region 2 Regional Forester's Sensitive Species List, FSM Supplement 2600-2013-1, August 24, 2013

USDA Forest Service. 2005a. Biological Evaluation for Water Developments on the San Juan National Forest Authorized under the Colorado Ditch Bill. On file at the Pagosa Range District Office. 112 pp.

USDA Forest Service. 2005b. Biological Assessment for Water Developments on the San Juan National Forest Authorized under the Colorado Ditch Bill. On file at the Pagosa Range District Office. 50 pp.

USDA Forest Service. 2004. Environmental Analysis and Record of Decision, Dutton Ditch Pipeline Project. On file at the Pagosa Range District Office.

USDI Fish and Wildlife Service. 2013. Unit Species List of Federal Threatened, Endangered, Proposed, and Candidate species for the San Juan National Forest, December 10, 2013. Email from USDI Fish and Wildlife Service, Grand Junction, CO. On file at the Pagosa Ranger District Office, Pagosa Springs, CO.

USDI Fish and Wildlife Service. 2008. Birds of Conservation Concern (Southern Rockies/Colorado Plateau), U.S. Fish and Wildlife Service, Division of Migratory Bird Management. On file at the Pagosa Range District Office.

USDI Fish and Wildlife Service. 2006. Biological Opinion for the Biological Assessment for Water Developments on the San Juan National Forest Authorized under the Colorado Ditch Bill. File Code: ES/GJ-6-CO-05-F-005, MS 65412 GJ. U.S. Fish and Wildlife Service Ecological Services, Grand Junction, CO. 69 pp.

Appendix A

San Juan National Forest Service
Operation and Maintenance Plan
PAG486

Water Conveyance Facility: **Dutton Ditch**
Permit Holder: **Thomas Smith**

Routine Operation and Maintenance

The Special Use Permit for the above facility incorporates this Operation and Maintenance Plan (O&M Plan) and any attachments thereto. The Holder agrees to operate and maintain the authorized facility and use the occupied National Forest System lands in accordance with the following stipulations:

1) Regulate flows so that adequate freeboard is maintained above the high water line of the Ditch. Flow measuring device(s) shall be installed and maintained. Maintain diversion, headgate, partitioning, and conveyance structures in good functioning condition and clear of sediment and other debris to ensure proper operation (see Appendix A). The Holder shall close the headgate at the end of each irrigating season.

2) Routine maintenance includes the following practices and tools:
   i. Any hand tools (eg. shovel, pick, maddox, pulaski, etc.),
   ii. Chain saw, axe etc. for removal of dead down or dead standing trees that interfere with the ditch operation. Wood cannot be removed from National Forest System land without additional authorization.
   iii. Removal of debris from the ditch with nonmotorized equipment.
   iv. Reinforcement of the ditch berm with nonmotorized equipment.
   v. Removal of beaver dams, downed trees, and brush that interferes with proper function of the ditch.
   vi. Placement of rock for reinforcement as needed to control erosion.
   vii. Increase height of ditch bank so that freeboard is maintained above the high water line.
   viii. Upon removal of excess sediment, deposit sediment only in upland locations, not into the ditch or natural drainage. Break down dirt clods and revegetate or otherwise stabilize spoil piles according to number 6 below.

3) Motorized Access Routes and Motorized Equipment: Use only maintenance routes in accordance with the Motor Vehicle Use Map or depicted on the attached map in Appendix B, and only the equipment listed below is permitted. Repair all damage resulting from said use. Unless otherwise approved, motorized vehicles and equipment will not be allowed to operate on or off Forest Service roads when soils are saturated such that ruts 4 or more inches deep are created on un-graveled surfaces, or ruts 1 or more inch deep are created on graveled roads. In the event that larger ruts are created, the Holder will rehabilitate ruts by filling them in, providing drainage and seeding as necessary. For those routes outside of public travel routes, use is approved for water facility operation and maintenance needs only. Holders must have this O&M Plan with them at all times while using routes outside of public traveled routes. No snow removal or damage to the

snowmobile trail is authorized. Road closure gates will be kept closed and locked during the closure periods. Holder will open gates and drive through, then close and lock the gates, rather than driving around the gates.

- Motorized access of ditch channel and headgate by ATV or dirt bike is allowed.
- Motorized access of ditch channel and headgate on Fourmile Road, Plumtaw Road, 634.H Road, and 645.K road by full-sized, passenger vehicle, ATV, or dirt bike is allowed.
- Maintenance may be conducted using a tractor/backhoe/caterpillar, not to exceed 16,000 pounds.

4) Immediate operation and maintenance needs:

- Per number 6 below, Canada thistle currently growing along ditch needs to be treated with herbicide.
- See below for non-routine repair work to be conducted in 2014.

5) The Holder shall be responsible for prevention and control of soil erosion and gullying resulting from operations and maintenance of the granted use. This includes lands identified by the permit, and lands adjacent thereto. Maintain ditch channel to prevent down-cutting and bank failure, remove obstructions from the channel that may cause erosion, and promptly repair pipeline breaks and ditch failures. In the event of an uncontrolled breech of the ditch channel, the holder will contact the Forest Officer. The addition of foreign or hazardous materials to the ditch structure is not permitted (e.g. carpet, appliances, etc.).

6) The Holder shall revegetate or otherwise stabilize all ground where the soil has been exposed, and be responsible for control of and spread of noxious weeds as identified by the USDA Forest Service and the local county weed list. Prior to seeding, dirt clods should be broken up. Areas of disturbance must be seeded with weed free seed of the mix detailed in the chart below. The purpose of seeding is to prevent the introduction of noxious weeds that thrive in disturbed areas. Holder may use non-restricted chemical herbicides for weed control along access route and water facility within the confines of the permit. Strictly follow label instructions in the application of herbicides and the disposal of excess materials and containers.

Species	PLS lbs/acre	Seeds/sq.ft.
Mountain Brome - *Bromus marginatus* **	6	12.4
Slender Wheatgrass (Wild Rye) – *Elymus trachycaulus*	4	14.6
Western Wheatgrass - *Pascopyrum smithii*	4	10.1
Nodding Brome – *Bromus porteri* (*anomalus*)**	2	4.1
Arizona Fescue – *Festuca arizonica* *	0.5	6.3
Spring Wheatgrass (annual) – *Triticum aestivium* *	5	2.25
Annual Ryegrass - *Lolium multiflorum*	5	1.6
Totals	24.5 lbs/acre	64.7

*Omit in those elevations above ponderosa pine.

**Omit if in ponderosa pine

7) The Holder shall inspect the facility prior to use each year and after all major storm events and make necessary repairs. Work other than routine maintenance and/or minor repairs shall be approved

in advance with the Forest Officer. All repairs shall be completed by the date agreed to by the Holder and the Forest Officer.

8) The Holder will acquire approval from the Forest Officer before proceeding with work that deviates from routine operations. Examples of these activities include, but are not limited to:

a) Use of motorized equipment other than that defined above as routine maintenance and as motorized access to ditch (numbers 2, 3, and 4).
b) Using other than approved maintenance routes for access.
c) Changes in construction of the facility including but not limited to the installation of a new head gate or segment of pipe.
d) Removal of significant amounts of vegetation and silt and deposition of same.
e) Burning or other means of vegetation control measures.
f) Removal of live standing trees.

Requests for non-routine maintenance approval should be submitted to the approving Officer as soon as the need is identified. Allow a minimum of sixty days for approval. Exceptions may be made for emergency maintenance situations.

9) If any items of archeological, paleontological, or historic value, including but not limited to historic or prehistoric artifacts, structures, monuments, human remains and funerary objects (grave artifacts) are discovered, the Holder will immediately cease operations in the area so affected. The Holder will notify the Forest Officer and will not resume operations until the authorized officer provides written approval. Failure to comply with this stipulation may result in civil or criminal penalties under the Archaeological Resources Protection Act of 1979.

10) The Pagosa District Wildlife Biologist will be notified immediately if northern goshawks are discovered in the project area. The biologist will evaluate site occupancy and determine a course of action to minimize adverse impacts to the species in compliance with the Forest Plan.

11) Habitat Maintenance Requirements: The Holder's water right for this facility provides for the diversion of up to twelve and 85/100 (12.85) cubic feet per second of water from Fourmile Creek, tributary to the San Juan River. Diversion in excess of this amount is beyond the scope of the permit and may require other forms of land use authorization. Contact the Forest Service Authorized Officer before diverting flows in excess of this amount.

In addition, the diversion of flow from Fourmile Creek into the Dutton Ditch is made through the diversion structure for the Dutton Pipeline. Habitat maintenance flow requirements are established for Fourmile Creek, per the terms and conditions of Special Use authorization for the Pipeline. The diversion of flow into the Dutton Ditch via the Dutton Pipeline are subject to the terms and conditions of the Pipeline authorization.

12) This Operation and Maintenance Plan will be reviewed annually by the Holder and the Forest Officer. The authorized Officer may unilaterally revise or modify this Operation and Maintenance Plan pursuant to those circumstances described in clause I.E. of the permit. This Operation and

Maintenance Plan may also be amended by mutual agreement when signed and dated by the Holder and the District Ranger.

Non-Routine Repair Work to be Conducted in 2014

1) The flume above where the ditch crosses Plumtaw Road (NFSR 634) will be replaced.

2) The diversion box where the ditch splits near the closure gate on National Forest System Road (NFSR) 634.H will be replaced.

3) The diversion box where the ditch splits in the southeast portion will be moved to the new ditch alignment (see map in Appendix B).

4) The culvert in the ditch under the access route in the southeast portion of the ditch will be replaced (see map). All of the old culvert(s) will be removed from National Forest System land.

5) Approximately 36 step structures will be constructed of rock and geotextile fabric in accordance with the drawings attached to this O&M Plan. These will be located above and below where the ditch crosses the Plumtaw Road (NFSR 634) and along the southeast branch of the ditch (see map).

6) At the culvert outlet where the ditch crosses the Plumtaw Road, dirt or gravel will be put in the bottom of the scour basin, then geotextile fabric, then about 3 feet of rock. One of the step structures will be installed downstream to control grade.

7) A portion of the southeast portion of the ditch will be rerouted (see map). The new ditch alignment will be down a swale roughly along the motorized access route. The motorized access route may be moved slightly to the west to keep it out of the water. No ground disturbance, blading, or excavation will occur along this new alignment. The portion of the old ditch where the ditches split on the flat will be filled in in such a way that water will not continue to flow down it. The fill dirt may come from immediately adjacent to the section of ditch to be filled in.

8) Equipment to be used is a trackhoe, track truck, track skidsteer, and a 10 wheeler tandom truck.

9) Approximately 13 trees less than 12” diameter at breast height (dbh) will be removed. One tree approximately 36” dbh that is leaning over the ditch and will fall in the ditch will be removed. Trees will be felled, in a practicably safe manner, to avoid concentrating tree boles and slash vertically above the ground. Stumps will not exceed 12” in height as measured from the ground on the uphill side. Trees will not be felled in such a way as to obstruct roads, ditches, culverts, or stream courses. Debris resulting from felling operations will be removed from roads, ditches, culverts and streamcourses. Live trees over 4 feet in height damaged from felling of hazard trees will also be felled and treated as slash if one or more of the following types of damage has occurred: a) tree is now leaning over 15 degrees or more, b) tree has been stripped of 50 percent or more of its crown, c) the top 15 percent of the crown has been knocked out, or d) 50 percent of more of the bark around the circumference of the bole has been stripped to the cambium.

Trees that are removed along the ditch between the Plumtaw Road and the gate on the 634.H Road will be cut and left whole. The limbs will not be removed from the tree. The trees should not be piled nor placed against other trees. The trees should not be pushed or dragged around so that they become

full of dirt. JR Ford will be removing trees in this area and will be able to utilize the trees that are cut along the ditch.

If it is not possible to leave some of the trees whole in the above area or if trees are removed along other areas of the ditch the following will apply. The bole of the felled tree will be bucked and limbed to lie in contact with the ground. Limbs will be severed from the bole, on the top and side surfaces, from the butt to a point where the stem diameter is 2" or less. At approximately 2.0" stem diameter, the top will be severed from the bole. Slash is to lie as flat on the ground as possible. At no point will slash exceed a height of 18" above ground level.

10) Motorized access routes for this work will be the Fourmile Road, Plumtaw Road, 634.H Road, the existing ATV route along the southeast branch of the ditch, an existing route from Plumtaw Road to the ditch above where the ditch crosses Plumtaw Road, and along the east side of the ditch from Plumtaw Road south along the area where the step structures will be installed.

11) Rocks that are in the ditch (between the ditch banks) that are in the vicinity of the step structures and that can be used without destabilizing the ditch or ditch banks may be utilized in the step structures. No other rocks, gravel, or dirt may be gathered from National Forest System lands (other than what is authorized in #7 above).

12) The holder will provide written notification to the Pagosa Area Water and Sanitation District (PAWSD) prior to crossing or working within 15 feet of either side of the buried Dutton Pipeline. Written notification will be provided to PAWSD, Attn: Gregg Mayo, P.O. Box 4610, Pagosa Springs, CO 81157, gregg@pawsd.org. Please provide a copy of the notification to Becca Smith at the Pagosa Ranger District. The holder must avoid damaging the Dutton Pipeline.

13) The holder will revegetate and stablize all areas where the soil has been exposed as a result of this repair work (both within and outside of the permit area) in accordance with item 6 on page 2.

14) The repair work will not begin prior to the Fourmile and Plumtaw Roads being open to the public in 2014. The repair work will be completed by September 30, 2014.

Appendices to the Operation and Maintenance Plan:

Appendix A – Acceptable Headgate & Water Measurement Structures
Appendix B – Map of Dutton Ditch and Pipeline
Appendix C – Step-Pool Drawings

Appendix A - Acceptable Headgate & Water Measurement Structures

For most ditches on NFS lands, there are a number of commercially available headgates, splitters, and water measuring devices (flumes, weirs) available by special order from many rural hardware stores. These are acceptable as long as they are properly installed and maintained. These devices have been designed and engineered at the factory. A copy of the manufacture's installation and maintenance instructions should be part of the permit file.

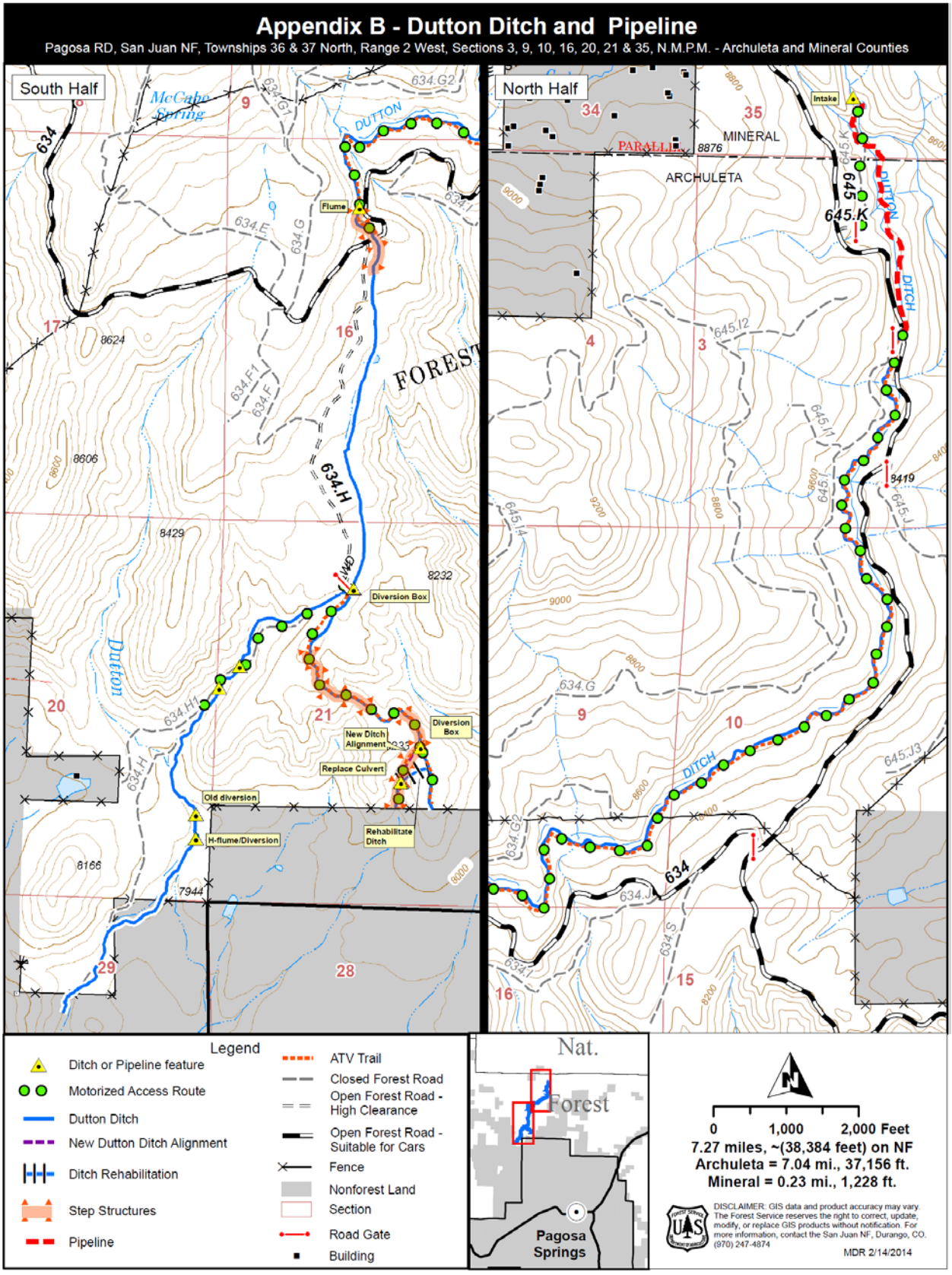
Custom made gates or splitters made of wood or concrete constructed by the permittee are acceptable. Custom made water measuring devices should be designed by and the construction supervised by an engineer certified for such work to reliably measure the volume of water. Larger ditches, headgates and water measuring devices may have to be custom engineered for a given site. Contact the local NRCS office for assistance.

Generally in a gate or measuring device, we are looking for something that

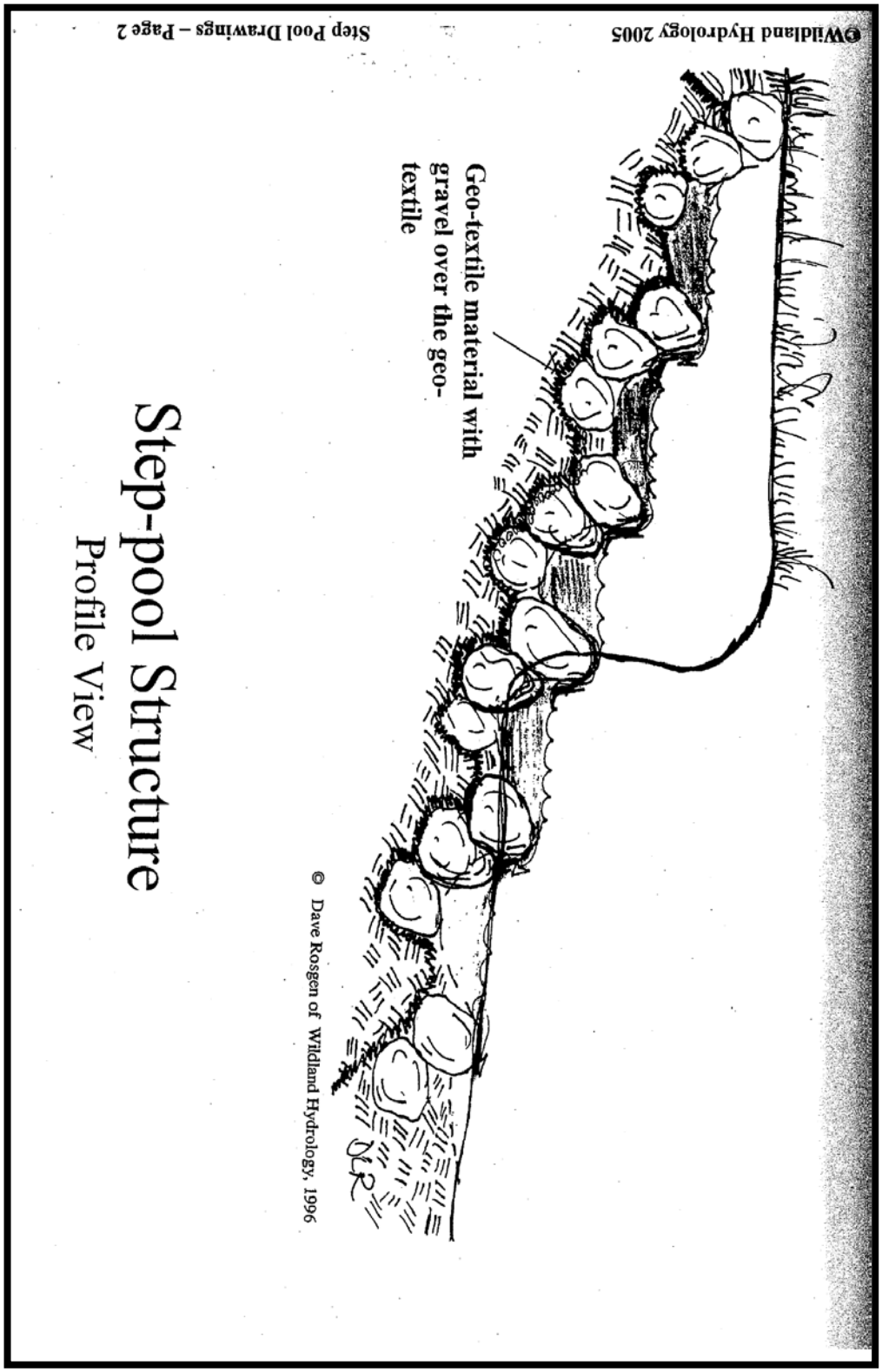
1. Can control and/or reliably measure the amount of water depending on their purpose.
2. Is designed to be relatively permanent (10+ year life).
3. Once stabilized, will not add sediment to natural streams.
4. Does not stop the passage of fish in the natural stream channel, where such passage is currently occurring.

The following are two standard references on headgate and water measurement design for the larger custom facilities

- USDI Bureau of Reclamation - Design of Small Canal Structures
- USDI Bureau of Reclamation - Water Measurement Manual


Appendix B - Dutton Ditch and Pipeline
Pagosa RD, San Juan NF, Townships 36 & 37 North, Range 2 West, Sections 3, 9, 10, 16, 20, 21 & 35, N.M.P.M. - Archuleta and Mineral Counties
South Half
North Half
McCabe Spring
DUTTON
Flume
Diversion Box
New Ditch Alignment
Replace Culvert
Old diversion
H-flume/Diversion
Rehabilitate Ditch
Intake
DITCH
MINERAL
ARCHULETA
PARALLEL
FOREST
Dutton
634.H
645.K
Legend
Ditch or Pipeline feature
Motorized Access Route
Dutton Ditch
New Dutton Ditch Alignment
Ditch Rehabilitation
Step Structures
Pipeline
ATV Trail
Closed Forest Road
Open Forest Road - High Clearance
Open Forest Road - Suitable for Cars
Fence
Nonforest Land
Section
Road Gate
Building
Nat. Forest
Pagosa Springs
0 1,000 2,000 Feet
7.27 miles, ~(38,384 feet) on NF
Archuleta = 7.04 mi., 37,156 ft.
Mineral = 0.23 mi., 1,228 ft.
DISCLAIMER: GIS data and product accuracy may vary. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For more information, contact the San Juan NF, Durango, CO. (970) 247-4874
MDR 2/14/2014

Appendix C – Step-Pool Drawings

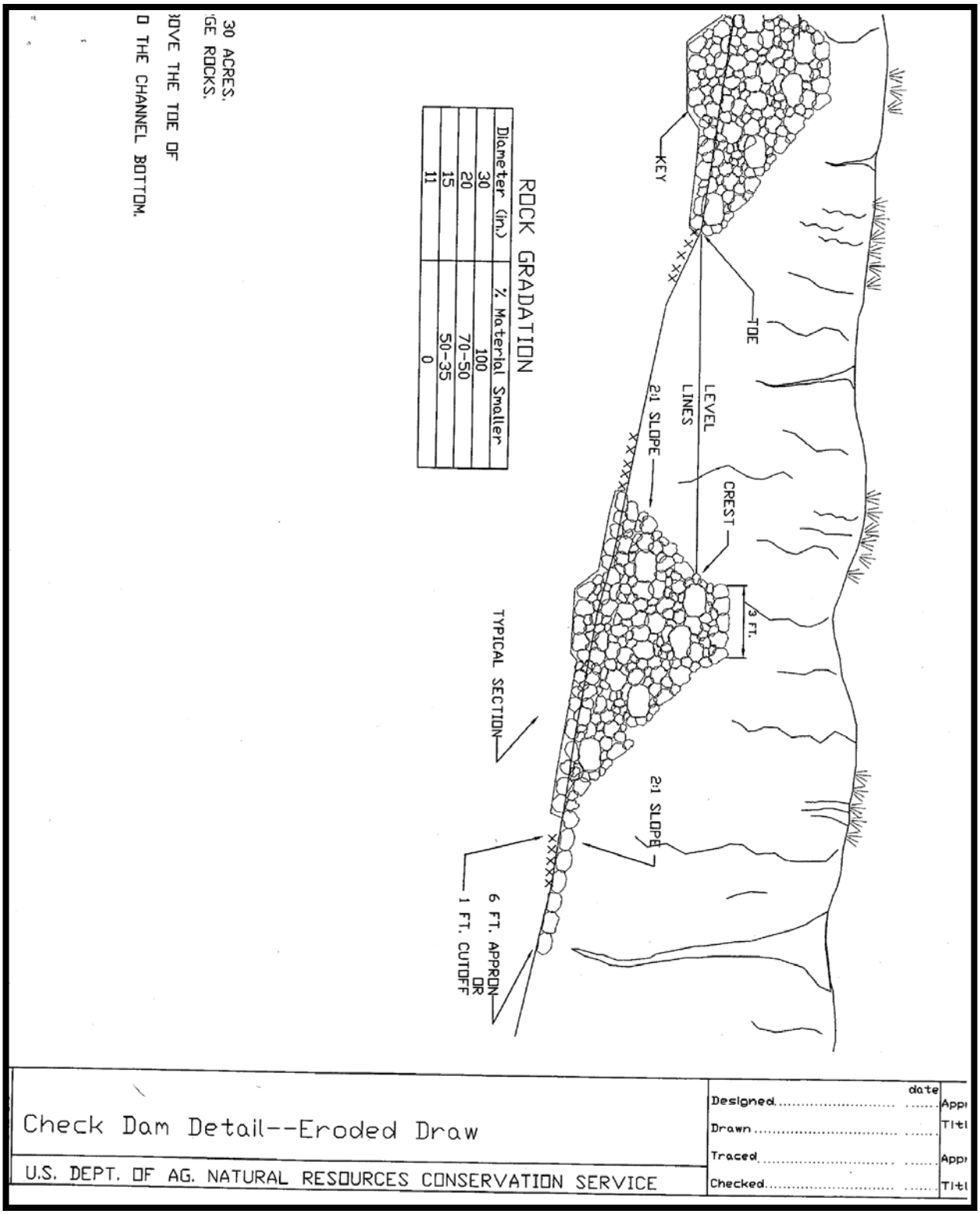


ROCK GRADATION

Diameter (in.)	% Material Smaller
30	100
20	70-50
15	50-35
11	0

GENERAL STATEMENTS:

1. ROCK AND BRUSH CHECKS WILL NOT BE PLACED ON DRAINAGES OVER 30 ACRES.
2. SMALL ROCKS WILL BE USED TO FILL THE VOIDS WETWEEN THE LARGE ROCKS.
3. APPRONS WILL BE USED BELOW TH ELAST CHECK IN EACH SERIES.
4. THE CREST OF THE DOWNSTREAM CHECK WILL BE LEVEL WITH OR ABOVE THE TOE OF THE STRUCTURE IMMEDIATELY UPSTREAM.
5. NO STRUCTURES SHLL EXCEED 3 FEET IN HEIGHT FROM THE CREST TO THE CHANNEL BOTTOM.
6. THE SIDE SLOPES SHALL NOT BE STEEPER THAN THOSE SHOWN.
7. KEY IN STRUCTURE 1.5 FT. ON SIDE KEY.


30 ACRES.
GE ROCKS.
OVE THE TOE OF
O THE CHANNEL BOTTOM.
ROCK GRADATION
Diameter (in.) | % Material Smaller
30 | 100
20 | 70-50
15 | 50-35
11 | 0
KEY
TOE
LEVEL LINES
2:1 SLOPE
CREST
3 FT.
TYPICAL SECTION
2:1 SLOPE
6 FT. APPRON
OR
1 FT. CUTOFF
Check Dam Detail--Eroded Draw
U.S. DEPT. OF AG. NATURAL RESOURCES CONSERVATION SERVICE
date
Designed
Drawn
Traced
Checked