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Water Rights in Wilderness: The Influence of Reserved Rights Language on Protection of Wilderness Water in Arizona and Colorado

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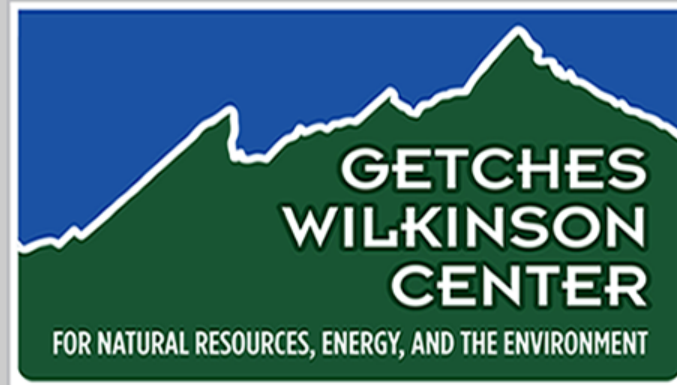
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ARIZONA AND COLORADO**

**Natural Resources Law Center
University of Colorado School of Law**



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March, 2006

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Cover Photo: Mt. Zirkle Wilderness, Colorado, from USDA Forest Service Air Quality web page at http://www.fs.fed.us/r6/air/natarm/r2/mt_zirkel.htm

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EXECUTIVE SUMMARY

A. INTRODUCTION

This report describes a two-state study in Arizona and Colorado designed to determine whether water rights language in wilderness statutes has affected how wilderness water is protected. The project studied the 90 wilderness areas in Arizona and 40 in Colorado plus three special non-wilderness areas in Colorado (see Maps 1 and 2).¹ Sixty-nine of the areas are classified as headwaters areas; 64 are downstream areas.² For purposes of the study, waters rights language is classified as:

- Denied reserved rights – 4 percent of areas studied;
- Non-assertion of reserved rights – 7 percent of areas studied;
- Express reserved rights – 32 percent of areas studied; and
- Silence as to reserved rights – 57 percent of areas studied.³

Four agencies manage 130 wilderness areas and three special areas in these two states:

- Bureau of Land Management (BLM) – 50 wilderness areas
- U.S. Forest Service (Forest Service) – 69 wilderness and 3 non-wilderness areas
- National Park Service (NPS) – 7 wilderness areas
- U.S. Fish and Wildlife Service (FWS) – 4 wilderness areas.

See Tables 1 and 2 for water rights language, headwaters/downstream designations, and managing agency for each wilderness area in Arizona and Colorado.

Arizona water law provides for establishing water rights through a state permit system administered by the Arizona Department of Water Resources (ADWR) and through general stream adjudications. Federal, state and private entities can all hold Arizona instream flow rights. In Colorado, water rights are determined by specialized water courts and recorded with the Colorado Division of Water Resources (CDWR) rather than through a permit system. In general, the Colorado Water Conservation Board (CWCB) has exclusive authority to hold instream flow rights.

¹ For this executive summary and the report, “wilderness areas” includes the three non-wilderness areas that are managed as wilderness, unless otherwise noted.

² Headwaters areas have little or no surface waters originating outside the wilderness area and only minor inholdings (either private, state or other federal entity) where water might be developed for non-wilderness purposes. Downstream areas are generally lower in a watershed with large areas of public or private land upstream of the wilderness area or large private or state lands inholdings.

³ With express language in a designating statute, Congress explicitly reserves a quantity of water sufficient to fulfill the purposes of the wilderness designation. In Arizona, express language is accompanied by a mandate for the Secretary of the Interior to protect those rights in appropriate stream adjudications. Denial language expressly states that the law does not constitute either an express or implied reservation of water. Non-assertion language does not expressly recognize or deny existence of reserved rights, but precludes assertion or adjudication of claims to wilderness reserved rights. Wilderness areas in the silence category are designated without reference to federal reserved rights. Depending on the context, “silence” as to reserved rights is also described as “lack of reserved rights language” and “implied rights” where the issue is assertion of federal reserved rights where the reservation is silent as to a inclusion of water.

B. METHODS

The study investigated the impact of specific water rights language through interviews, literature searches, and analysis of surface water rights data.⁴ First, we conjectured that differences in agency standards or methods for protecting wilderness water (potentially prompted by differences in water rights language), may be manifest in differences between pre- and post-wilderness designation water rights recorded by the states' water rights agencies. To evaluate this, we:

- Compiled data on water rights within and upstream of wilderness areas (see sample area maps and data sheets in Appendix C and large format Tables 3 and 4); and
- Identified categories of data that may indicate either a threat to wilderness water values (see large format Tables 5A-5F):
 - water-related conflicts identified in the literature and through agency interviews,
 - private and state post-designation water rights, and
 - large water rights; or
- A protective action taken by wilderness managing agencies (see large format Tables 5G-5I):
 - assertion of federal reserved rights,
 - post-designation federal acquisition of appropriative rights, and
 - acquisition of instream flows.

We then compared these indicators for the four reserved rights language categories (see Tables 6A-6D) to identify any broad patterns of potential threats and/or protective measures among the categories of water rights language that may indicate if statutory language influences agency action to protect wilderness water values.⁵ Table 7A-7B and Figures 1-6 summarize the threats and protective measures for each category of wilderness area.

While we report patterns observed in these indicators, several factors temper our confidence in drawing any conclusions from these data:

- Irregular distribution of wilderness areas by categories hampers direct comparisons among the categories by state or agency;
- Electronic summary data from state agencies is somewhat incomplete and imprecise causing overestimation of water rights within wilderness areas;
- Hydrology of areas was not investigated leaving questions about the amount of water available to appropriate, the threat to wilderness values of either pre- or post-designation

⁴ Researchers extracted data on groundwater but obtained no useful results owing to problems with electronic groundwater data and lack of comparability between Arizona and Colorado regarding groundwater.

⁵ Comparison tables report absolute numbers of rights, number of wilderness areas affected, and the percentage of wilderness areas affected. Within each category of threat and protective measure, data on the 133 areas are discussed as a whole and by state, agency, and by headwaters/downstream categories. The descriptive summaries which follow the tables primarily report the percentages of wilderness areas in each category affected by each potential threat or protective measure. Using percentages of wilderness areas rather than absolute number of water rights or wilderness areas compensates for both the size of areas and the difference in numbers of areas in each language category.

state and private rights, and the value of agency protective actions, including instream flows;

- No attempt was made to statistically analyze the data, although only large differences between categories are reported as likely to be significant;
- Even strong data patterns may suggest, but cannot prove, any causal relationship between reserved rights language and agency action.

We also conducted a literature search and interviews with agency staff. The literature search identified water-related developments that might pose a risk to wilderness values, documented official agency policy regarding wilderness water (see Appendix D for a summary of agency policy), and provided some historical perspective on the major Arizona and Colorado wilderness bills (see Appendix A for a legislative history summary). Informal interviews questioned agency staff about wilderness water protection and solicited opinions on the relevance of statutory language to their activities. The results of interviews are primarily reflected in the agency-specific discussion in Section IV regarding assertion of reserved rights and alternative measures for protecting wilderness water.

C. INDICATORS OF THREATS TO WILDERNESS WATER

The comparison of individual threat indicators across the range of reserved water rights language categories does not suggest consistently higher threat to areas in any language category (Table 6A, Table 7A, and Figure 1):

- Literature searches and interviews identified conflicts associated with only 20 percent of Arizona and Colorado wilderness areas with an upward trend in conflict from non-assertion (11 percent) and express (12 percent) to silent (24 percent) and denial language (40 percent) categories.
- Water rights data indicate that only 11 percent of areas have private, municipal and state held post-designation rights within them, but a majority of these are in areas silent as to reserved rights (18 percent of silence areas affected).⁶
- Upstream post-designation rights of all areas are more equally distributed across language categories, with silence, denied, and express language areas sharing the effect of these rights about equally (20-24 percent of each category affected). When only downstream areas are considered, upstream post-designation rights vary from affecting 25 of denied right areas to 37 percent of express areas to 47 percent of silence areas.
- Overall, large water rights affect the greatest percentage of wilderness areas with 31 percent of all areas affected. Large rights similarly affect non-assertion (33 percent), denial (40 percent) and silence language areas (43 percent), compared to only seven percent of express language areas. About 49 percent of Forest Service areas have large rights compared to only 14 percent of BLM areas. Almost all large rights are pre-designation, as there are only two large post-designation rights (in Colorado Forest Service areas silent as to reserved rights, see large format Table 5E), affecting only two percent of all areas.

⁶ A more detailed analysis of some of the post-designation rights suggest even less impact from post-designation rights as some of the rights filed have been successfully contested or were inaccurately mapped within the wilderness areas.

When indicators of threats are combined, silence and denied language areas are most affected by one or more threat (66 and 60 percent, respectively), non-assertion areas are less affected (44 percent of areas), and express language areas are least affected (30 percent). Overall, our indicators suggest that wilderness water is in some way threatened in 53 percent of all Arizona and Colorado wilderness areas.

D. INDICATORS OF PROTECTIVE MEASURES FOR WILDERNESS WATER

Through water rights data analysis and interviews, the study identified several means for agencies to protect wilderness water. Overall, federal and state agencies use one or more of these measures to protect 65 percent of all areas studied (Table 7B), protecting, at least to some degree:

- 80 percent of denied language areas;
- 75 percent of silence areas;
- 67 percent of non-assertion areas; and
- 47 percent of express language areas.

1. Wilderness Reserved Rights

A comparison of indicators of protective measures supports the logical conjecture that express reserved rights language is the most likely to prompt agency assertion of wilderness reserved rights (Table 6A). Assertion of reserved rights is the protective measure most often used in express rights areas (Table 7B). It is not possible to determine from the data whether express language must include a requirement to assert rights in adjudications in order to prompt agency action. It is likely, however, that there must be an active adjudication in progress to prompt agency assertion of these rights.

- Agencies have asserted wilderness reserved rights in 14 areas in Arizona; 12 are BLM-managed areas located in active adjudication basins; each was designated with express reserved rights language that requires the agency to protect those rights in stream adjudications.
- BLM has filed for wilderness reserved rights in over 50 percent of its express rights areas in active adjudication basins and is preparing to file in the remainder of its areas in these basins.

The data suggest, however, that express language is neither necessary nor sufficient to prompt assertion of reserved rights (large format Table 5G):

- A few wilderness reserved rights have been asserted in two NPS areas with language silent as to reserved rights. NPS has filed for these wilderness reserved rights in conjunction with national monument and park reserved right filings in active adjudication areas.
- Agencies have asserted wilderness reserved water rights in only 11 percent of all Arizona and Colorado wilderness areas while about 32 percent of areas in these states were designated with express reserved rights language.
- Furthermore, FWS manages four express language areas (two in active adjudication basins), but has not filed for wilderness reserved rights in any of these areas.

Lack of express language, i.e., the other three types of reserved rights language used to establish Arizona and Colorado wilderness areas, prevents or discourages agencies from filing for reserved rights. Both denial and non-assertion language practically or explicitly preclude agencies from filing for reserved rights.⁷ Silence as to reserved rights contributes to agency hesitation to assert reserved rights. Interviews suggest that this hesitation is related to agency desire and policy to cooperate with states as well as a desire to avoid the political controversy of asserting implied reserved rights.

Interviews did, however, suggest plausible explanations – unrelated to statutory language – for not filing for reserved rights. These include lack of agency resources to conduct field work and file paperwork, lack of threat to prompt filing, lack of unappropriated water on which to file, and lack of sufficient progress in on-going Arizona adjudications to necessitate immediate filings.

2. Alternatives to Reserved Rights

All agencies also have means, other than assertion of wilderness reserved water rights, to protect wilderness water. Analysis of water rights data shows some differences between language categories for individual alternative protective measures, but overall a large percentage of areas are protected by one or more alternative measure (see Table 7B and Figure 4-6). Interviews suggest that agencies are not specifically influenced by statutory language, but by a variety of other factors and use whatever methods seem most appropriate to protect wilderness water.

a. Post-Designation Assertion of Rights:

The comparison of pre- and post-designation water data suggests some minor differences between language categories regarding federal agencies filing for post-designation water rights. Overall, areas silent as to reserved rights have a larger percentage of “protective” post-designation rights within and upstream of them than other language categories (Table 6A). The denied right category also has a significant percentage of upstream, post-designation rights (20 percent), but this represents only one area with post-designation rights because of the small number of denied rights areas in the two states.

When agencies are evaluated separately, (Table 6C), BLM areas as a whole are protected less than Forest Service areas, but none of the Forest Service post-designation rights are in Colorado (Table 6D). The relative dearth of BLM post-designation water rights may be a result of the agency’s use of limited resources to file for federal reserved rights (noted above). The dearth of Forest Service post-designation rights in Colorado may be a reflection of and compensated by the large number of instream flow rights in these areas (described below).

Only the silence category has both Forest Service and BLM federal, post-designation rights. Within this category, Forest Service has a larger percentage of areas with post-designation rights within the wilderness areas than does BLM (23 percent versus 13 percent); BLM has a larger percentage of areas with post-designation rights upstream of them than does Forest Service (25 percent versus 11 percent).

⁷ Non-assertion language explicitly precludes agencies and others from asserting reserved rights based on the wilderness designation. Denial language does not explicitly preclude assertion, but clearly states the intent of Congress to not reserve water.

b. Acquisition of Instream Flow Rights:

Water rights data suggest that there are differences between categories of areas regarding instream flows, with all but express areas having high percentages of total instream flows and silent areas also having a high percentage of post-designation instream flows (Table 6A). Despite the differences suggested by these data, it is doubtful that wilderness statutory language has influenced acquisition of instream flows in Arizona or Colorado. Forest Service in Colorado rarely participates in acquisition of instream flows on national forest system lands in large part because it cannot generally hold instream flows under Colorado law. Further, while the agency might be able to influence acquisition by objecting to or commenting on CWCB acquisition of rights, it rarely does so. CWCB acquisitions are influenced by value of the water resource and threats to it, tempered by a desire to avoid controversy, rather than by statutory language.

The Arizona instream flow program, on the other hand, is supported by both BLM and Forest Service. Unfortunately, the challenge to constitutionality of the program by Phelps-Dodge has put a damper on agency filings for instream flows and state certification of existing applications, meaning that the instream flow data for Arizona may not accurately represent the agencies' use of instream flows to protect wilderness water.

E. AGENCY-SPECIFIC RESPONSES TO STATUTORY LANGUAGE

This study found that agencies are motivated by a number of different factors, including statutory language, in protecting wilderness water. Because wilderness areas are not evenly distributed among the agencies and language categories, it was difficult to directly compare agency responses, but interviews and the analysis of water rights data suggested a few generalizations about each agency.

1. Bureau of Land Management (BLM):

Water rights data (Table 6C), interviews and literature searches suggest a difference between express reserved right language and all other categories of language regarding BLM protection of wilderness water. Express reserved water rights language requiring agency participation in state adjudications prompts BLM to file for wilderness reserved rights; no other language category has prompted the agency to file for reserved water rights.

BLM has asserted wilderness reserved rights and implemented other measures to actively protect about 50 percent of its wilderness areas (see large format Table 7D). BLM's use of alternatives to reserved rights to protect wilderness water appears to be based in part on the agency's preference for cooperation with state agencies over assertion of federal rights. This preference is evident in formal BLM policy and revealed in the legislative history of wilderness bills.

Water rights data and interviews do not strongly suggest any conclusion regarding the effect of specific water rights language on BLM use of alternative means to protect wilderness water resources. BLM appears to opportunistically use whatever means are available to protect wilderness water, regardless of statutory language. These methods include filing for appropriative rights, acquisition (in Arizona) or recommendations for acquisitions (in Colorado) of instream flow rights, and acquiring inholdings and adjacent properties with water rights. The

relative dirth of federal post-designation water rights and instream flow rights in BLM wilderness areas, at least in Arizona, may be due in part to concentration of BLM resources on reserved rights filings for express language areas and in part of the problems with Arizona's instream flow program. There are so few BLM wilderness areas in Colorado that it is difficult to draw any conclusions about its actions in that state.

2. Forest Service:

Assessing water rights data, interviews, and literature search data, it does not appear that statutory language has as yet made any difference in protection of wilderness water in Forest Service areas in Arizona and Colorado. While there are indications that express rights language *would* make a difference – *would* prompt the agency to file for reserved rights – this conjecture cannot be supported or refuted since there are no Forest Service express rights areas in the two states studied.

Forest Service and the CWCB have used a variety of alternative measures to protect wilderness water (appropriative rights, instream flows, administrative controls), protecting about 74 percent of all Forest Service areas (large format Table 7D) to some degree. However, in general, these do not appear to be prompted by legislative language. Failure to file for reserved rights or to more actively use alternative measures to protect wilderness water does not necessarily mean that wilderness water is at risk in either Arizona and Colorado or that the agency might not assert these rights in the future. There are many reasons for delaying both filing for reserved rights or actively employing alternative measures – only some of which are related to statutory language. These include differences between state water rights systems, preferring to work cooperatively with the states, interest in avoiding the political controversy of a filing for implied reserved rights, low risk to wilderness values with inaction, the timing of adjudications does not require filing, limited Forest Service resources require prioritizing activities, and limited ADWR resources make immediate filings futile.

3. U.S. Fish and Wildlife Service (FWS):

Because there are so few areas and all of them have express wilderness reserved rights, it is impossible to compare the impact of various types of statutory language on the agency's wilderness water protection. Formal agency policy, interviews and water rights data suggest, however, that wilderness statutory language has not influenced FWS protection of wilderness water. Even with express language, FWS has done nothing to assert wilderness reserved water rights for these areas. Further, there is no evidence that FWS has actively used alternative means to protect wilderness water. This inaction is not necessarily a failure to protect the areas, but rather a recognition that the more senior reserved rights associated with establishment of the refuges (Table 7B, "Other reserved rights") protects 50 percent of FWS areas (large format Table 7D). This coupled with limited water that could be claimed with a wilderness reserved right reduces the utility of asserting a wilderness right or use of other alternative measures.

4. National Park Service (NPS):

Because all NPS areas are within the same language category, it is impossible to compare the impact of various types of statutory language on the agency's wilderness water protection. Review of water rights data and interviews with agency staff and others suggest, however, that

wilderness designation itself makes little difference for protection of water in national park system areas. First, the Arizona parks or monuments containing wilderness areas have federal reserved rights associated with their original reservation. Consequently, the priority date for any wilderness reserved water right that might be claimed would be junior to a park or monument reservation right. Furthermore, since the "unimpairment" standard for protecting NPS lands is comparable to the wilderness standard, the national park standard probably can, if applied by the agency, adequately protect a wilderness area.

In Arizona and Colorado, lack of explicit reserved rights language (i.e., silence) has made little difference in protection of wilderness water. NPS wilderness areas have been largely protected in conjunction with reserved rights filings for the associated national park units, post-designation rights, and instream flows. The latter include rights obtained through normal state instream flow processes and others mandated by Congress. Through these means, NPS has protected 86 percent of its wilderness areas (large format Table 7D).

F. THE BOTTOM LINE

In Arizona and Colorado, the spectrum of wilderness reserved water rights language ranges from express reservation of rights to lack of language (silence) to non-assertion language and explicit denial of reserved rights. At one end of the spectrum of statutory language, an express reservation of water that explicitly requires assertion of these rights in state stream adjudications, prompts agencies to assert them. At the other end, language explicitly denying a reservation of water rights and non-assertion language both prevent agencies from asserting reserved rights. The impact of language between these two extremes – wilderness designation with silence as to reserved rights – is less clear. It appears, however, that Congressional silence regarding a water reservation may at least discourage assertion of reserved rights.

Assertion of reserved rights is, however, only one method of protecting wilderness water. Regardless of whether agencies assert wilderness reserved rights, they use alternative measures to protect wilderness water and statutory language does not appear to affect which measures the agencies use.

I. INTRODUCTION

The Wilderness Act, of 1964 set up the National Wilderness Preservation System – a system of lands “where the earth and its community of life are untrammelled by man, where man himself is a visitor.” Lands of the system are administered by various federal agencies for the use and enjoyment of the American people so as to “leave them unimpaired for future use and enjoyment as wilderness.”⁸

The act contained very little language on water, providing only that the President could authorize water projects in wilderness if approving the projects would better serve the public than would denial, and that the Act did not constitute a claim or denial by the Federal Government of exemption from State water laws.⁹ For the next two decades, the Congress dealt only sporadically with the issue of water rights in wilderness. In 1969 – 1980, the Congress included language to protect pre-existing rights (savings language) in bills (affecting Utah and Colorado). In 1984, the Congress began inserting state law savings language adapting the original act’s text (affecting Arizona and Wyoming), language related to facility access (affecting Utah), and protecting water projects contemplated at the time (in Wyoming). In court cases in the early 1980s Sierra Club tried to establish that a wilderness designation in Colorado with silence as to reserved rights created an implied right, but the lower court decision to that effect was vacated as not ripe for adjudication.¹⁰

Following these court decisions, the battles over water language in wilderness bills began in earnest resulting in the Congress expressly reserving sufficient water to carry out the purposes of a wilderness reservation in New Mexico in 1987. The Congress followed in 1990 with similar language for Arizona and California. In the Arizona bill, the Congress took the unusual step of directing the Secretaries of Agriculture and Interior to take those steps necessary to protect the new reserved rights, including filing claims for quantification of the rights in state stream adjudications.¹¹ In the Colorado Wilderness Act of 1993, the Congress achieved a compromise between advocates and opponents of reserved water rights in several headwaters areas. The Congress precluded assertion of either an express or implied wilderness reserved right for these areas, without explicitly recognizing or denying existence of such rights. This language was philosophically more desirable than denial language for many conservationists. It is, however, effectively comparable to denial language in terms of the agency’s ability to quantify federal water rights on the basis of a wilderness designation. At the same time, the Colorado bill provided additional protection from development within wilderness areas by expressly

⁸ Public Law 88-577 sec. 2, 88th Congress, S. 4, September 3, 1964.

⁹ Id. at sec. (d)(4) and (7).

¹⁰ See, Wendy Weiss, *The Federal Government's Pursuit of Instream Flow Water Rights*, 1 U. DENV. WATER L. REV. 151, 165 (1998) (In 1984, the Sierra Club sued the Secretary of Agriculture and the Chief of the Forest Service, seeking both a declaratory judgment that wilderness reserved water rights exist and the federal defendants' failure to assert the rights was unlawful and an order requiring that the defendants take action to protect the rights. *Sierra Club v. Block*, 622 F. Supp. 842, 846 (D. Colo. 1985)). . . On appeal, the Tenth Circuit held that the issues presented were not ripe for adjudication because the harm sought to be alleviated was remote and speculative and that the district court had erred in taking jurisdiction and declaring that the Wilderness Act creates federal reserved water rights. (*Sierra Club v. Yeutter*, 911 F.2d 1405, 1408-10 (10th Cir. 1990)).

¹¹ Arizona Desert Wilderness Act, Public Law 98-406, 98th Congress, August 29, 1984.

eliminating the President's authority to permit water projects within any of the areas designated in that act. Later the Congress would use variations of this Colorado language in desert areas to explicitly disclaim federal reserved rights and preclude presidential authorization of projects (affecting western Colorado and Nevada). In 1999, Congress simply and expressly disclaimed wilderness reserved rights in both Arizona and Colorado.¹²

These four decades of legislation leave the West with a variety of wilderness bill reserved water rights language ranging from explicit denial of reserved rights (denial language) to silence on reserved rights, to explicit recognition of reserved rights (express language). Somewhere within this range is the unique Colorado language that is silent on whether there is a reserved right, but precludes anyone from asserting wilderness reserved rights or courts from adjudicating them (non-assertion language). Given this wide spectrum of language and the intense debates that water rights language inspires, the logical question is: What impact – if any – has federal reserved water rights language in wilderness bills had on protection of water for wilderness? In essence: Are the arguments over language worth it?

This report describes a two-state study in Arizona and Colorado designed to help answer this question. The project studied the 90 wilderness areas in Arizona and 40 in Colorado. The study also included three special areas in Colorado – the Piedra, Roubideau and Tabeguache – that were designated as “areas” to be protected as wilderness, but that were not afforded “wilderness” status primarily because of a dispute over legislative water language.¹³ Arizona wilderness areas are depicted on Map 1; Colorado wilderness areas are depicted on Map 2. The Bureau of Land Management (BLM), U.S. Forest Service (Forest Service), the National Park Service (NPS) and the U.S. Fish and Wildlife Service (FWS) manage wilderness areas in these two states.

In order to answer this question, we must first ask whether – in general – wilderness designation has had any impact on agency action to protect water for the designated areas. Specifically, how do agencies protect water within their management areas and do they treat wilderness areas any differently regarding protection of water? Only if the answer is “yes” need we try to parse out whether differences in water rights language result in differences in either the method or level of protection. If there appear to be differences based on statutory language, we might then ask whether the answers differ based on the land management agency managing the wilderness, and how state politics and/or water law systems might affect the answers.

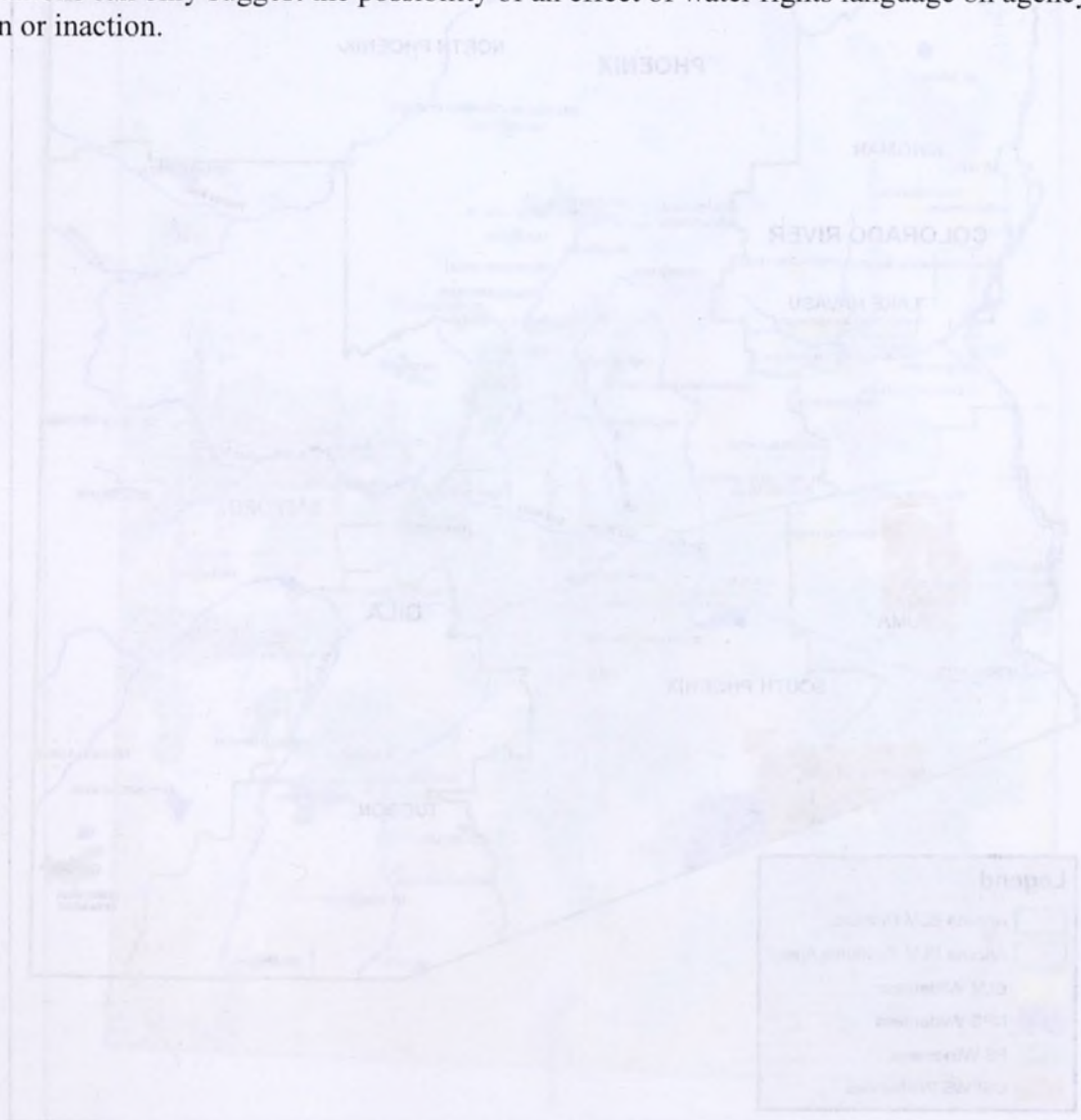
This study addressed the more general question of the effect of wilderness designation on protection of water resources through a literature search and interviews with federal and state agency personnel on agency policy regarding protection of wilderness water. The study investigated the more specific question of the effect of water rights language on wilderness water

¹² P.L. 106-65, sec. 3034 disclaimed reserved water rights for Cabeza Prieta, although the bill did not add any land to the existing wilderness area (Nothing in this subtitle shall be construed to establish a reservation to the United States with respect to any water or water right on lands; P.L. 106-76, sec 10(a)(1) disclaimed reserved rights for the Black Canyon of the Gunnison and Gunnison Gorge (Nothing in this Act shall constitute an express or implied reservation of water for any purpose).

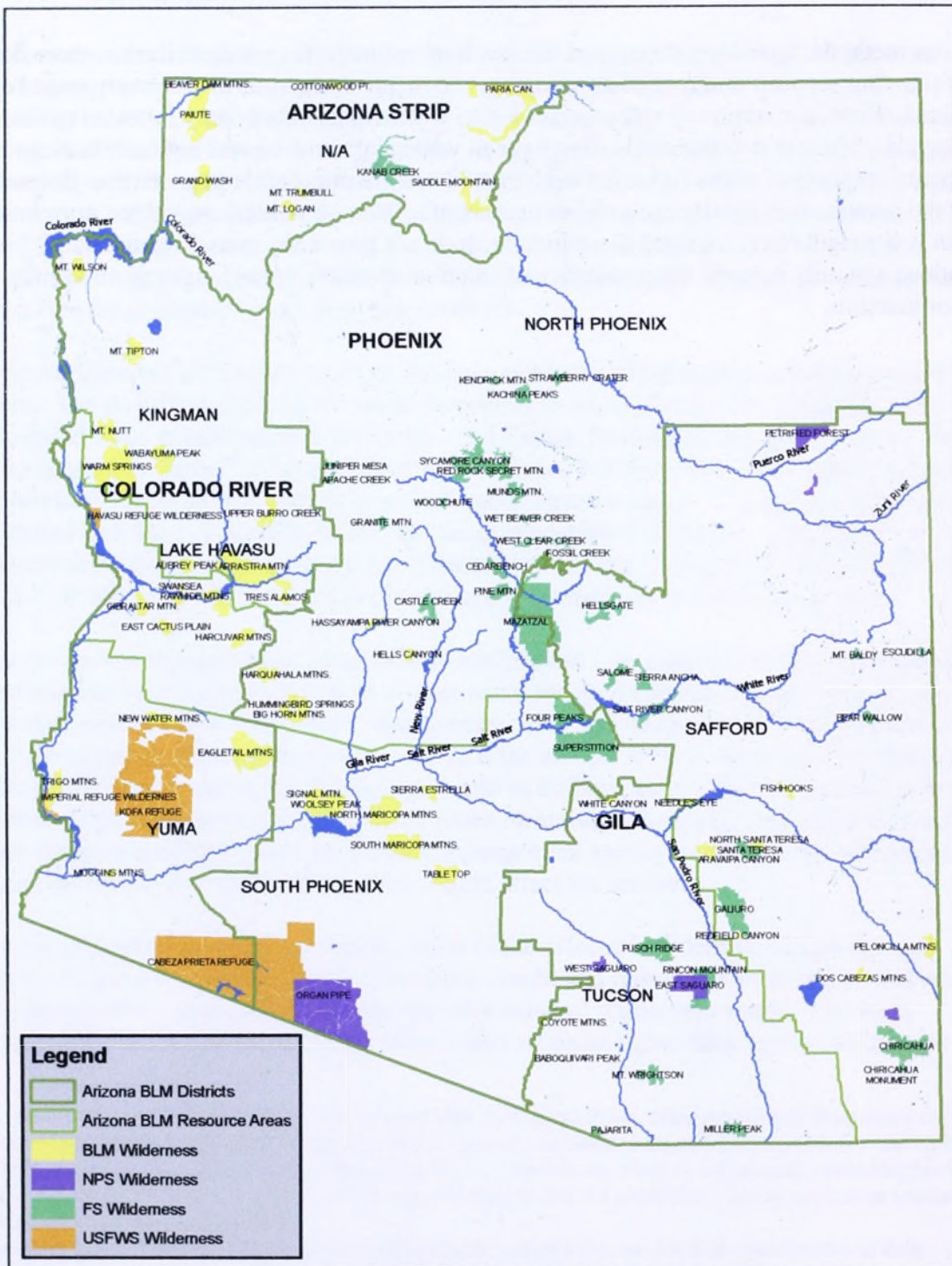
¹³ These three areas, established in the Colorado Wilderness Act of 1993, are not in the headwaters of their watersheds. Consequently, they did not fit the description of headwaters used to justify the non-assertion language used in designating the wilderness areas in that act. Conservationists were unwilling to have the areas designated wilderness without some type of water rights protection; others were not willing to afford this protection.

protection through additional interviews with agency staff and indirectly by comparing water rights within and upstream of wilderness areas before and after wilderness designation. In this analysis, we look at whether agencies have asserted federal reserved rights for wilderness as well as changes in state-based appropriative rights that may either protect or threaten wilderness values.

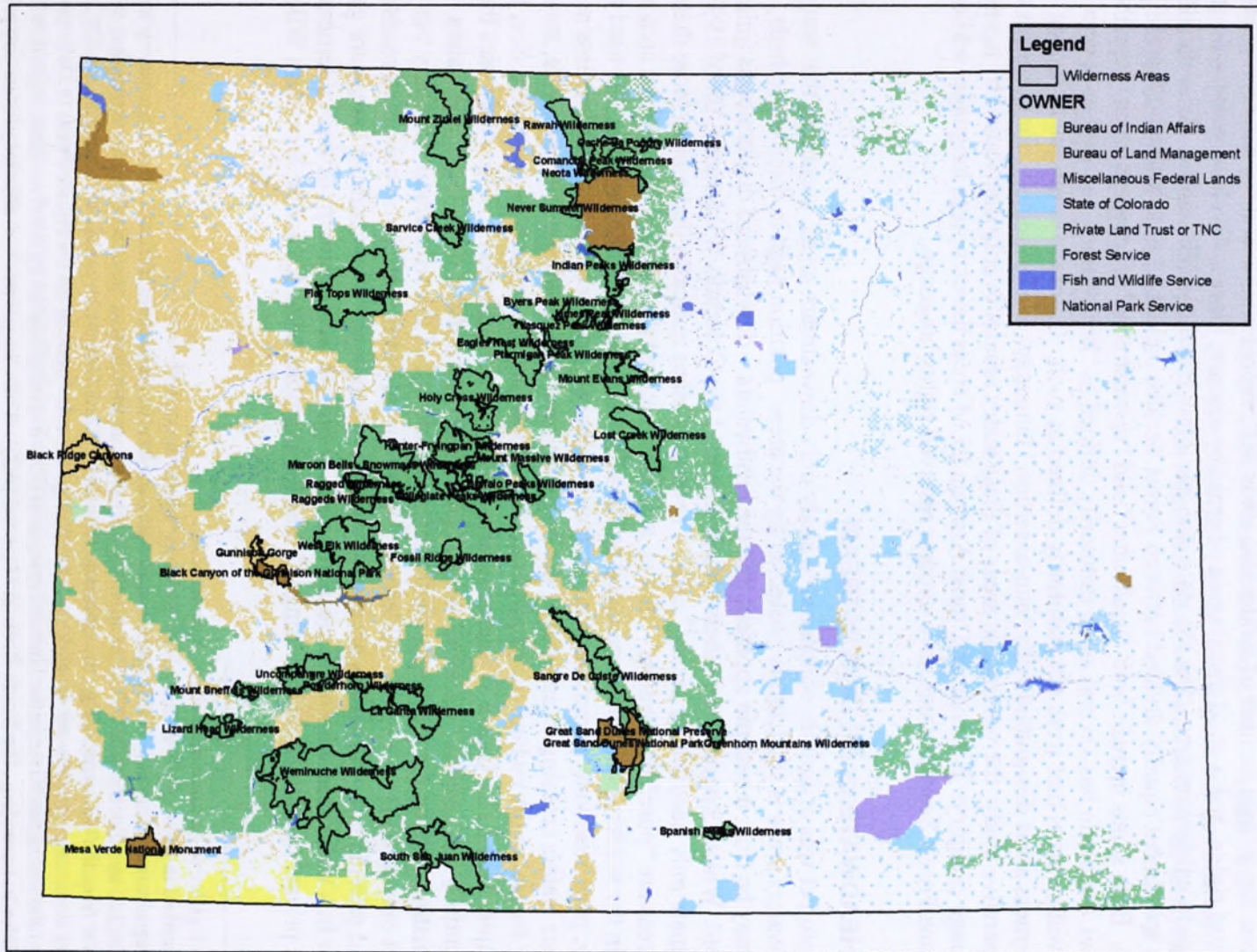
While our methods, their limitations, and the result of our inquiries are described in more detail in the following sections and related appendices, two major limitations of this study must be recognized. First, our summary and comparison of water rights data is only intended to detect major trends. Without detailed evaluation of each water right and a hydrologic evaluation of the areas, actual impacts of water rights on wilderness areas are impossible to ascertain. Second, even if the patterns we identify are valid indicators of impact on wilderness values, correlations between water rights language and these indicators do not prove any causal relationship. These correlations can only suggest the possibility of an effect of water rights language on agency action or inaction.



Map 1. Wilderness Areas in BLM Districts – Arizona



Map 2. Wilderness Areas – Colorado



II. BACKGROUND AND SCOPE

The study focused on Arizona and Colorado because both states have areas with a variety of reserved rights language and relatively easily available, electronic water rights information. Arizona has a large number of wilderness areas with express rights and silence regarding reserved rights, and a good distribution of areas by agency. Forest Service manages most Colorado wilderness areas, but the state also has a few BLM and NPS areas. Arizona wilderness areas are almost equally divided between Forest Service and BLM with a few NPS and FWS areas. Both states include both "headwater" and "downstream" wilderness areas (described below). Colorado has several areas statutorily defined as "headwaters," as well as several other headwaters areas that were not statutorily defined as such. Colorado is unique in having wilderness areas designated with "non-assertion" language. Unfortunately, for purposes of this comparative study, the wilderness areas of these states are not evenly distributed by agency or language category. For example, most Arizona BLM areas have express language, while no Arizona Forest Service areas have express reserved rights language.

A. HEADWATERS OR DOWNSTREAM

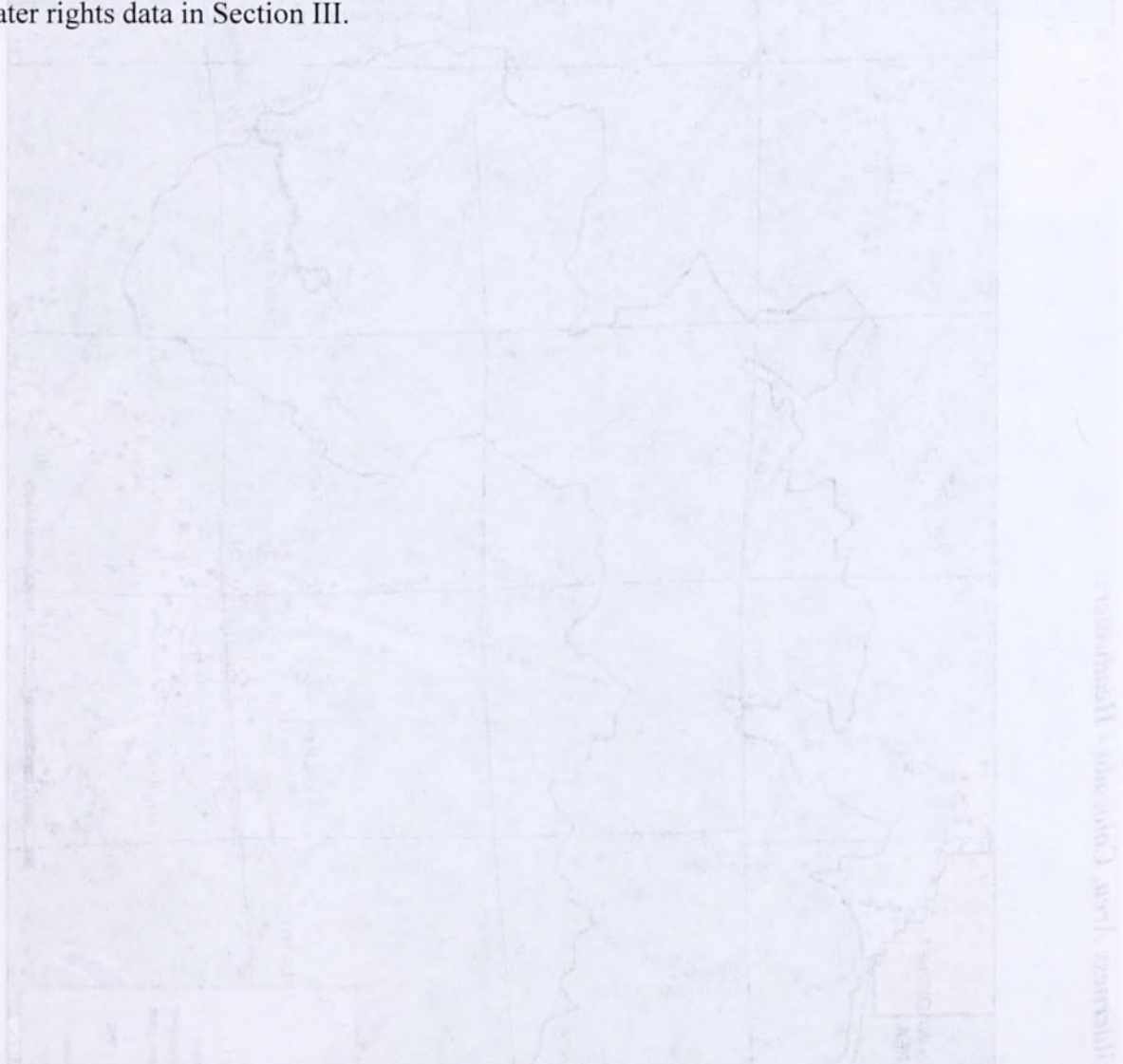
The project was originally conceived to study only downstream areas, assuming that water of headwaters areas is sufficiently protected by the areas' position high in their watersheds. While this may be true, it became apparent that the headwaters – downstream distinction is quite blurred. While Congress and others clearly intended the Colorado Wilderness Act of 1993 to designate only headwaters areas,¹⁴ careful review of maps indicates that a little more than half of the areas are "pure" headwaters – that is, areas in which all the surface water of the area arises within the wilderness on land managed by the wilderness management agency. As used in this study, pure headwaters areas have no surface waters originating outside the wilderness area, no surface waters crossing in and out of the boundary, and no inholdings (either private, state or other federal entity) where water might be developed for non-wilderness purposes. See, for example, Map 3, La Garita Wilderness Area, Colorado – Headwaters. This study uses the term "essentially headwaters" for areas which have a small proportion of their surface waters originating outside the area, streams that cross in and out of the wilderness boundary but which affect only a small area of the wilderness¹⁵ or minor inholdings or cherry stemmed roads that would provide non-wilderness access for water developments. "Downstream" areas are generally lower in a watershed with large areas of public or private land upstream of the wilderness area or large private or state lands inholdings.¹⁶ See for example, Map 4, Granite Mountain Wilderness

¹⁴ See legislative history summary in Appendix A.

¹⁵ Described in some of the data analysis tables as "border impacts."

¹⁶ Categorization of areas as headwaters or downstream was also made more difficult, or perhaps simply less meaningful, by wilderness boundary manipulations that created wilderness areas bordered by a river but excluding the river from the wilderness (e.g., the Colorado River near Black Ridge Canyons (CO) and Havasu (AZ)) or "cherry stemming" streams out of wilderness areas (e.g., Lincoln Creek in the Collegiate Peaks (CO) or the South Fork of the Fryingpan River in the Hunter-Fryingpan (CO)) instead of including the river as an important feature of the wilderness area (e.g., the Verde River in Mazatzal (AZ)). While the presence or absence of state and private water rights within wilderness areas or upstream of them seems generally related to the headwaters/downstream categorization, there are exceptions in both categories. That is, there are headwaters areas with non-federal water

Area, Arizona – Essentially Headwaters, which portrays an area labeled “headwaters” by Congress in the Colorado Wilderness Act of 1993 but mapped as “essentially headwaters” in this study. Map 5, Rawhide Mountains Wilderness Area, Arizona – Downstream portrays a downstream area. In categorizing areas as headwaters or downstream, federal land upstream of a wilderness area was treated the same as non-federal land, i.e., as providing potential for development that might threaten the wilderness water resources.¹⁷ In the end, the headwaters/downstream distinction was sufficiently blurred that most water rights data collection, the literature searches, and interviews included both headwaters and downstream areas.¹⁸ Distinctions between headwaters and downstream areas are discussed in the analysis of water rights data in Section III.

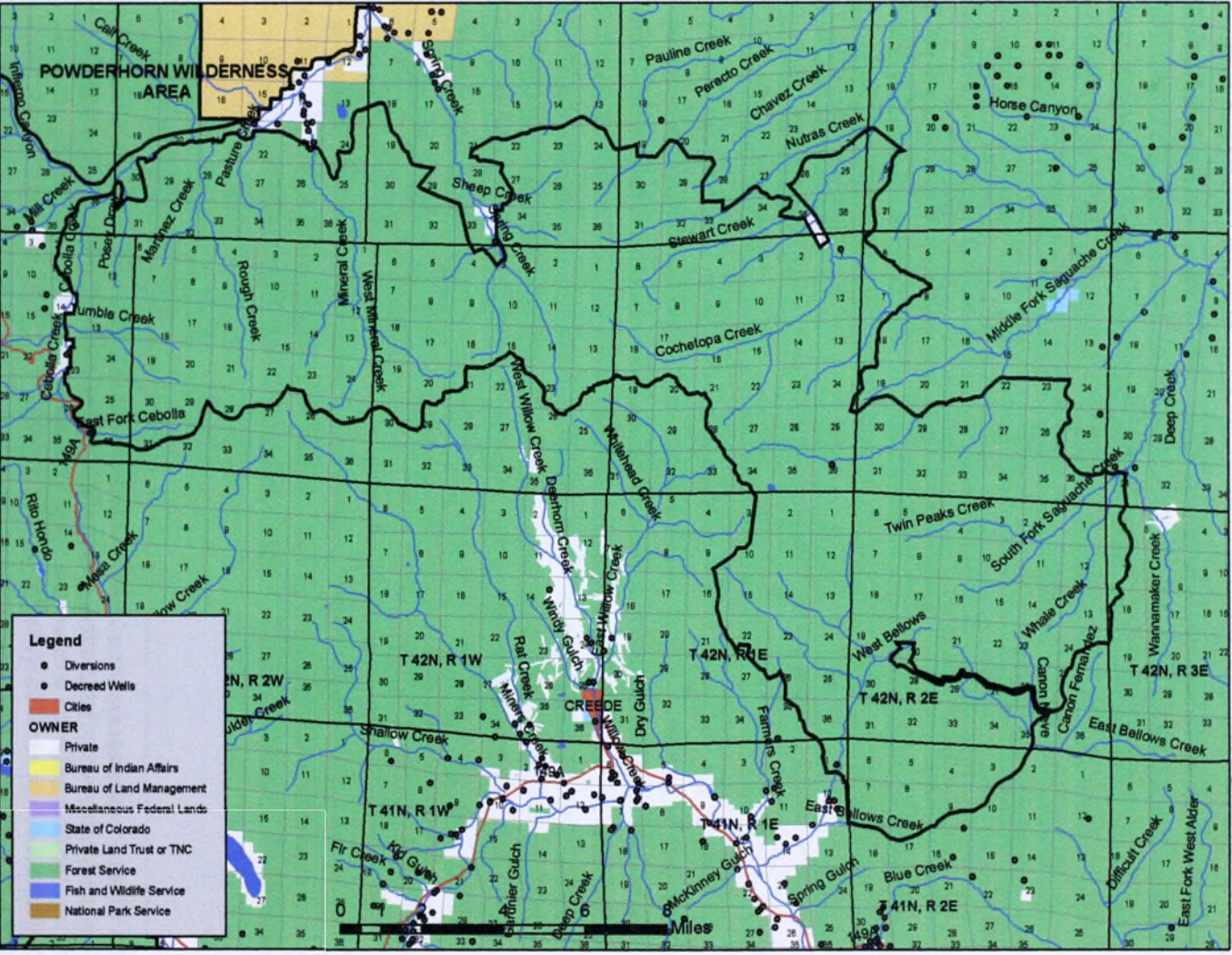


rights within or upstream (e.g., Apache Creek, (AZ) Chiricahua (AZ), Fossil Ridge (CO)) and downstream areas without non-federal water rights within or upstream (e.g., Eagletail Mountain (AZ), Gibraltar Mountains (AZ)).

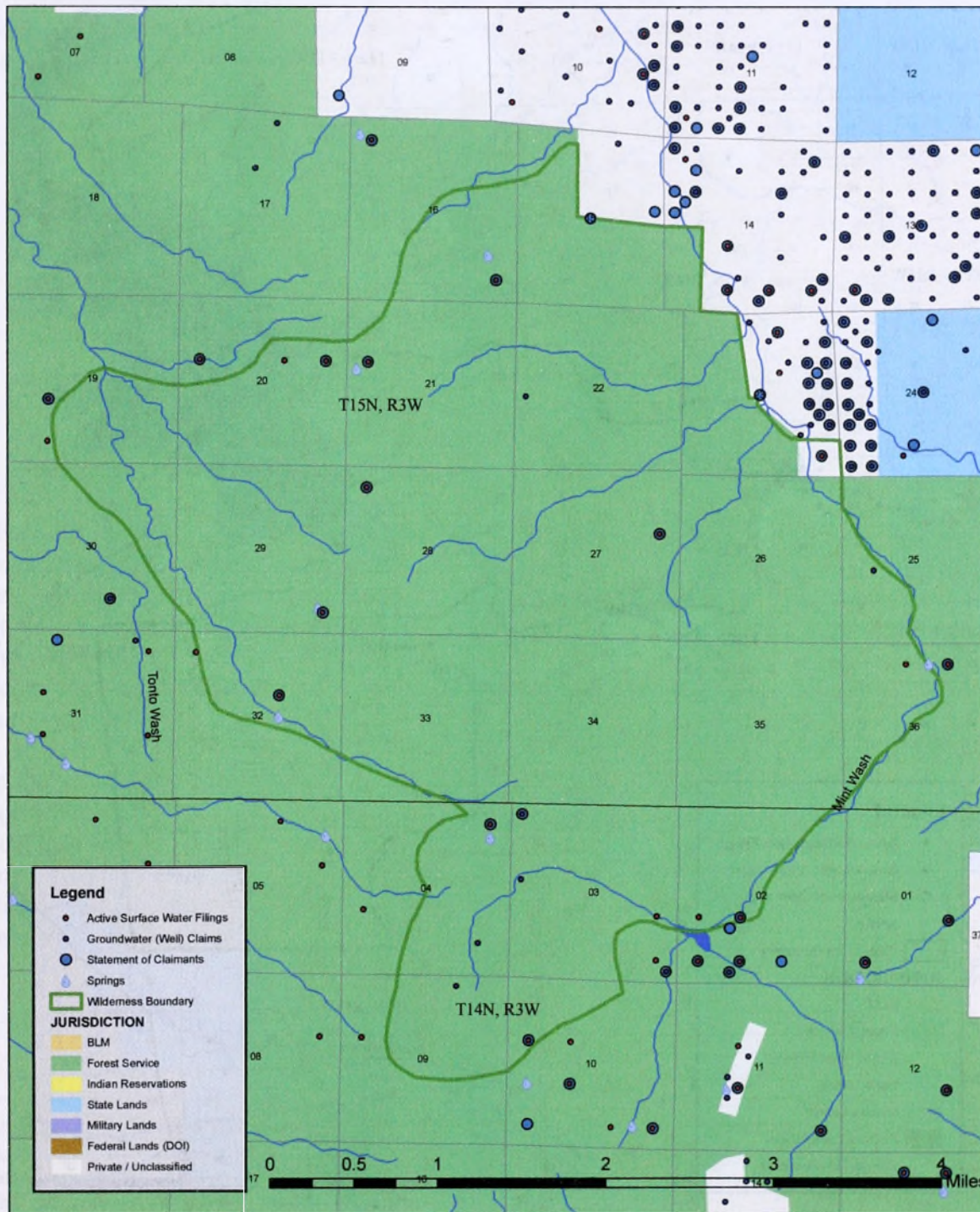
¹⁷ At least the Arizona Desert Wilderness Act was clear that the Act did not create buffer zones. H.R. Report 101-405. Congress did not intend to create “protective perimeters or buffer zones” around the wilderness areas. While the legislative history suggests that this was designed primarily to protect existing mining activities adjacent to the proposed areas, it could easily be read to prevent land management agencies from denying development of water resources upstream from wilderness areas to specifically protect the wilderness resources.

¹⁸ The exception is for groundwater data in Arizona that was only gathered on downstream areas.

Map 3. La Garita Wilderness Area, Colorado - Headwaters

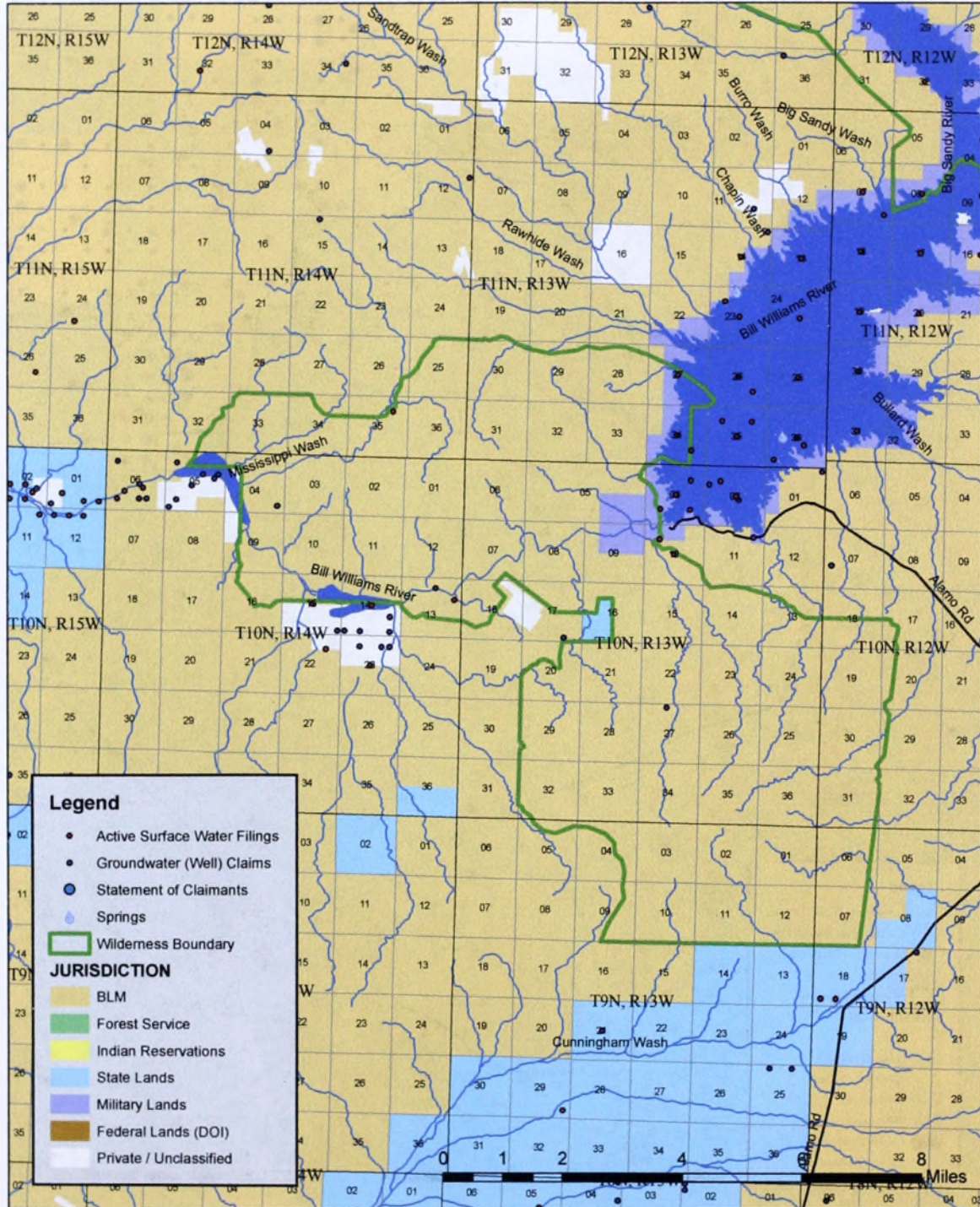


Map 4. Granite Mountain Wilderness Area, Arizona – Essentially Headwaters



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Map 5. Rawhide Mountains Wilderness Area, Arizona – Downstream



B. WATER RIGHTS LANGUAGE WILDERNESS LEGISLATION

Congress designated Arizona wilderness areas in two major groups (in 1984 and 1990) and through seven additional bills (1964 – 1978). Congress designated Colorado wilderness areas in two major groups (1980 and 1993) and through 10 additional bills (1964 – 2002).¹⁹ The water-related language of these wilderness bills is excerpted in Tables 1 and 2. Reserved rights language is categorized as “express,” “silence,” “denied,” or “non-assertion”:

- With **express language**, Congress explicitly reserves a quantity of water sufficient to fulfill the purposes of the wilderness designation. In Arizona, express language is accompanied by a mandate for the Secretary of the Interior to protect those rights in appropriate stream adjudications (see e.g., P.L. 101-628 in Table 1).
- Statutes are **silent** as to reserved rights where the statute lacks explicit language addressing reserved rights (see e.g., most statutes in Tables 1 and 2).
- **Denial language (reserved rights denied)** expressly states that the law does not constitute either an express or implied reservation of water (see e.g., P.L. 106-76 in Table 2).
- **Non-assertion language** does not expressly recognize or deny existence of reserved rights, but precludes assertion or adjudication of claims to wilderness reserved rights (see e.g., P.L. 103-77 in Table 2). In terms of the ability of agencies to assert reserved rights, non-assertion language is functionally equivalent to denial language.

These tables also list the wilderness areas designated in each statute, their managing agency, and whether they are headwaters (including pure and essentially headwaters areas) or downstream areas. Wilderness area names in **bold text** indicate that the area was first designated in that particular statute. Names in *italicized text* indicate that the law expanded or otherwise modified previously designated wilderness areas.²⁰ While this report only addresses the impact of the federal reserved rights language on protection of wilderness water, Tables 1 and 2 also provide other water-related language (see box) for reference.²¹

Water-related language included in Large format Tables 1 and 2:

Express – express reservation of water rights for purposes of the wilderness
Silence – no language addressing reserved water rights
Denied – explicit denial of federal reserved water rights
Non-assertion – wilderness reserved rights may not be asserted based on designation under the act
Prior – savings language for pre-existing water rights
State – claims no exemption from state water law or explicitly requires compliance with state water law
Compact – protects existing compacts
Facilities – grandfathers existing facilities and access to them

¹⁹ Additional bills have added to or otherwise modified existing wilderness areas in both states. The Platte River area, primarily in Wyoming, is not included in the wilderness language summary table, nor is it discussed in this report.

²⁰ The reserved water rights language applicable to each wilderness area is also indicated in column J of large format Tables 3 and 4. These large format tables are described in detail in Section III.

²¹ For a more complete discussion of special provisions in wilderness legislation, please see the Natural Resources Law Center's wilderness project web page at <http://www.colorado.edu/law/centers/nrlc/projects/wilderness>.

Table 1. Arizona Water-Related Legislative Language.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 88-577 (3-Sep-64) Language applies to all WAs unless specifically excluded in future designations	USFS	Chiricahua Galiuro Sierra Ancha Superstition	Mazatzal	Silence	No specific reserved water rights language
				Facilities	Within wilderness areas in the national forests designated by this Act, (1) the President may, within a specific area and in accordance with such regulations as he may deem desirable, authorize prospecting for water resources, the establishment and maintenance of reservoirs, water-conservation works, power projects, transmission lines, and other facilities needed in the public interest, including the road construction and maintenance essential to development and use thereof, upon his determination that such use or uses in the specific area will better serve the interests of the United States and the people thereof than will its denial.
				State	Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws.
Pub.L. 91-504 (23-Oct-70)	USFS NPS	Mount Baldy	Petrified Forest	Silence	No specific reserved water rights language
Pub.L. 92-230 (15-Feb-72)	USFS		Pine Mountain	Silence	No specific reserved water rights language
				Facilities	Forest Service may maintain livestock water by means consistent with primitive character of the area. (Sen. Rep. 92-329)
Pub.L. 92-241 (6-Mar-72)	USFS		Sycamore Canyon	Silence	No specific reserved water rights language

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub.L. 94-567 (20-Oct-76)	NPS	Chiricahua NM Saguaro		Silence	No specific reserved water rights language
Pub.L. 95-237 (24-Feb-78)	USFS		Pusch Range	Silence	No specific reserved water rights language
Pub.L. 95-625 (10-Nov-78)	NPS		Organ Pipe Cactus	Silence	No specific reserved water rights language

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 98-406 (28-Aug-84)	USFS	Apache Creek Bear Wallow Cedar Bench <i>Chirichahua</i> Escudilla <i>Galiuro</i>	Castle Creek Fossil Springs Four Peaks Hellsgate Kachina Peaks Kendrick Mountain	Silence	No specific reserved water rights language
Pub. L. 98-406 Sec. 101(e)(1)	----- BLM	Granite Mountain Juniper Mesa Mt. Wrightson Rincon Mountain Strawberry Crater <i>Superstition</i> Woodchute ----- Mount Logan Mount Trumbull	<i>Mazatzal</i> Miller Peak Munds Mountain Pajarita Red Rock-Secret Mtn Saddle Mountain Salome Salt River Canyon Santa Teresa <i>Sycamore Canyon</i> West Clear Creek Wet Beaver ----- Aravaipa Canyon Cottonwood Point Grand Wash Cliffs Kanab Creek Paiute Wilderness Paria Canyon- Vermilion Cliffs	State	As provided in paragraph (6) of section 4(d) of the Wilderness Act, nothing in this Act or in the Wilderness Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from Arizona State water laws.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
P.L. 101-628 (g) (28-Nov-90)	BLM	Baboquivari Peak Coyote Mountains Doz Cabezas Mtns East Cactus Plain Fishhooks Harquahala Mtns Hummingbird Sp Mount Wilson Muggins Mtn New Water Mtns N Maricopa Mtns Peloncillo Mtns Signal Mountains S Maricopa Mtns Table Top	<i>Aravaipa Canyon</i> Arrastra Mountain Aubrey Peak Big Horn Mountain Eagletail Mountains Gibraltar Mountain Harcuvar Mountains Hassayampa R Can Hells Canyon Mount Nutt Mount Tipton Needle's Eye North Santa Teresa Rawhide Mountains Redfield Canyon Sierra Estrella Swansea Tres Alamos Trigo Mountain Upper Burro Creek Wabayuma Peak Warm Springs White Canyon Woolsey Peak	Express	WATER.--(1) With respect to each wilderness area designated by this title, Congress hereby reserves a quantity of water sufficient to fulfill the purposes of this title. The priority date of such reserved rights shall be the date of enactment of this Act. (2) The Secretary and all other officers of the United States shall take steps necessary to protect the rights reserved by paragraph (1), including the filing by the Secretary of a claim for the quantification of such rights in any present or future appropriate stream adjudication in the courts of the State of Arizona in which the United States is or may be joined and which is conducted in accordance with the McCarran Amendment (43 U.S.C. 666). (4) The Federal water rights reserved by this title are specific to the wilderness areas located in the State of Arizona designated by this title. Nothing in this title related to reserved Federal water rights shall be construed as establishing a precedent with regard to any future designations, nor shall it constitute an interpretation of any other Act or any designation made pursuant thereto.
P.L. 101-628 (a)(3)				Prior	Nothing in this title shall be construed as a relinquishment or reduction of any water rights reserved or appropriated by the United States in the State of Arizona on or before the date of enactment of this Act.
P.L. 101-628 Title III, Sec. 302	----- FWS	----- Imperial Refuge	----- Cabeza Prieta Havasu Kofa	State	Nothing in titles I, II, or III of this Act shall amend, construe, supersede, or preempt any State law, Federal law, interstate compact, or international treaty pertaining to the Colorado River (including its tributaries) in the Upper Basin, including, but not limited to, the appropriation, use, development, storage, regulation, allocation, conservation, exportation, or quality of those waters.
				Compact	Nothing in titles I, II, or III of this Act shall amend, construe, supersede, or preempt any State law, Federal law, interstate compact, or international treaty pertaining to the Colorado River (including its tributaries) in the Upper Basin, including, but not limited to, the appropriation, use, development, storage, regulation, allocation, conservation, exportation, or quality of those waters.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
P.L. 103-365 (14-Oct-94)	USFS	<i>Apache Creek</i> <i>Juniper Mesa</i>		Silence	No specific reserved water rights language
Pub.L. 106-65, Title XXX, Subtitle B, SEC. 3034. (5-Oct-99)	FWS		<i>Cabeza Prieta</i>	Denied	N/A in 101-628 but Pub.L. 106-65, Title XXX, Subtitle B, SEC. 3034. WATER RIGHTS. Nothing in this subtitle shall be construed to establish a reservation to the United States with respect to any water or water right on lands [in the Cabeza Prieta Wilderness]. This provision taken together with the following language should not negate the explicit federal reserve water rights language for Cabeza Prieta in P.L. 101-628
N/A in 101-628 but Pub.L. 106-65, Title XXX, Subtitle B, SEC. 3034.				Prior	This section shall not be construed to affect water rights acquired by the United States before the date of the enactment of this Act.
Pub.L. 106-65, Title XXX, Subtitle B, SEC. 3034.				State	No provision of this subtitle shall be construed as authorizing the appropriation of water on lands [in the Cabeza Prieta Wilderness] by the United States after the date of the enactment of this Act, except in accordance with the law of the State in which such lands are located.

* **Type of Language:**

Express: Express wilderness federal reserved water right
Silence: No specific reserved water rights language
Denied: Denial of wilderness federal reserved water right
Non-assertion: No one may assert wilderness reserved water rights based on the statute
Prior: Recognition and protection of prior rights
State: State processes recognized and sometimes required
Compacts: Compacts recognized and protected
Facilities: Facilities recognized and protected

** **Bold text for wilderness area names indicates a new designation, italic text indicates an addition/change to the wilderness area**

Table 2. Colorado Water-Related Legislative Language

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 88-577 (3-Sep-64)	USFS	La Garita Mt. Zirkel Rawah West Elk	Maroon Bells - Snowmass	Silence	No specific reserved water rights language.
Pub. L. 88-577 Sec. 4(d)(7)				State	Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws.
Pub. L. 88-577 Sec. 4(d)(4)				Facilities	Within wilderness areas in the national forests designated by this Act, (1) the President may, within a specific area and in accordance with such regulations as he may deem desirable, authorize prospecting for water resources, the establishment and maintenance of reservoirs, water-conservation works, power projects, transmission lines, and other facilities needed in the public interest, including the road construction and maintenance essential to development and use thereof, upon his determination that such use or uses in the specific area will better serve the interests of the United States and the people thereof than will its denial.
Language applies to all WAs unless specifically excluded in future designations					
Pub. L. 94-146 (12-Dec-75)	USFS		Flat Tops	Silence	No specific reserved water rights language.
Pub. L. 94-352 (12-Jul-76)	USFS	Eagles Nest		Silence	No specific reserved water rights language.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 94-567 (20-Oct-76)	NPS	Mesa Verde	Black Canyon of the Gunnison Great Sand Dunes	Silence	No specific reserved water rights language.
Pub. L. 95-237 Sec. 2(e) (24-Feb-78)	USFS	Hunter-Fryingpan		Silence	No specific reserved water rights language.
				Prior	No right, or claim of right, to the diversion and use of the waters of Hunter Creek, the Fryingpan or Roaring Fork Rivers, or any tributaries of said creeks or rivers, by the Fryingpan- Arkansas Project ...under the laws of the State of Colorado, shall be prejudiced, expanded, diminished, altered, or affected by this Act.
Pub. L. 95-450 (11-Oct-78)	USFS	Indian Peaks		Silence	No specific reserved water rights language.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 96-560 Sec. 102(a)(5) (22-Dec-80)	USFS		Holy Cross	Silence	No specific reserved water rights language.
				Prior	Provided, That no right, or claim of right, to the diversion and use of existing conditional water rights for the Homestake Water Development project by the cities of Aurora and Colorado Springs shall be prejudiced, expanded, diminished, altered, or affected by this Act.
Pub. L. 96-560 Sec. 102(a)(5)		<i>La Garita</i> Lizard Head Lost Creek Mt. Evans Mt. Massive Mt. Sneffels <i>Mt. Zirkel</i> Neota Never Summer <i>Rawah</i> S. San Juan Uncompahgre <i>West Elk</i>	Cache La Poudre Collegiate Peaks Comanche Peak <i>Maroon Bells-Snowmass</i> Raggeds Weminuche	Silence	No specific reserved water rights language.
				Facilities	Nothing in this Act shall be construed to expand, abate, impair, impede, or interfere with the construction, maintenance or repair of said project, nor the operation thereof, or any exchange or modification of the same agreed to by the cities and the United States, acting through any appropriate agency thereof.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 103-77 Sec. 8(b)(2)(A) (5-Jan-93)	USFS ----- USFS, BLM		Piedra Area Roubideau Area ----- Tabeguache Area	Denied	Nothing in this Act shall constitute or be construed to constitute either an express or implied reservation of any water or water rights with respect to the Piedra, Roubideau, and Tabeguache areas identified in section 9 of this Act, or the Bowen Gulch Protection Area or the Fossil Ridge Recreation Management Area identified in sections 5 and 6 of this Act.
Pub. L. 103-77, Sec 8	USFS ----- BLM	Buffalo Peaks Byers Peak Fossil Ridge Greenhorn Mtns. <i>Hunter-Fryingpan</i> <i>La Garita</i> <i>Lost Creek</i> <i>Mt. Zirkel</i> <i>Never Summer</i> Ptarmigan Sangre de Cristo Sarvis <i>S. San Juan</i> <i>Uncompahgre</i> Vasquez ----- Powderhorn	<i>Raggeds</i> <i>Weminuche</i>	Non-Assertion	<p>(a) FINDINGS, PURPOSE, AND DEFINITION.--(1) Congress finds that--</p> <p>(A) the lands designated as wilderness by this Act are located at the headwaters of the streams and rivers on those lands, with few, if any, actual or proposed water resource facilities located upstream from such lands and few, if any, opportunities for diversion, storage, or other uses of water occurring outside such lands that would adversely affect the wilderness values of such lands; and</p> <p>(B) the lands designated as wilderness by this Act are not suitable for use for development of new water resource facilities, or for the expansion of existing facilities; and</p> <p>(C) therefore, it is possible to provide for proper management and protection of the wilderness value of such lands in ways different from those utilized in other legislation designating as wilderness lands not sharing the attributes of the lands designated as wilderness by this Act.</p> <p>(2) The purpose of this section is to protect the wilderness values of the lands designated as wilderness by this Act by means other than those based on a Federal reserved water right.</p> <p>(b) RESTRICTIONS ON RIGHTS AND DISCLAIMER OF EFFECT.--(1) Neither the Secretary of Agriculture nor the Secretary of the Interior, nor any other officer, employee, representative, or agent of the United States, nor any other person, shall assert in any court or agency, nor shall any court or agency consider any claim to or for water or water rights in the State of Colorado, which is based on any construction of any portion of this Act, or the designation of any lands as wilderness by this Act, as constituting an express or implied reservation of water or water rights.</p> <p>Also see: (g) INTERSTATE COMPACTS AND NORTH PLATTE RIVER</p>

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
<p>Pub. L. 103-77 Sec. 8 (b)(2); ***also Sec. 2(a)(13) contained above in Pub L. 95-237</p>				Prior	<p>(B) Nothing in this Act shall be construed as a creation, recognition, disclaimer, relinquishment, or reduction of any water rights of the United States in the State of Colorado existing before the date of enactment of this Act, except as provided in subsection (g)(2) of this section. (C) Except as provided in subsection (g) of this section, nothing in this Act shall be construed as constituting an interpretation of any other Act or any designation made by or pursuant thereto. (D) Nothing in this section shall be construed as establishing a precedent with regard to any future wilderness designations.</p>
<p>Pub. L. 103-77 Sec. 8(g)</p>				Compact	<p>INTERSTATE COMPACTS AND NORTH PLATTE RIVER.-- (1) Nothing in this Act, and nothing in any previous Act designating any lands as wilderness, shall be construed as limiting, altering, modifying, or amending any of the interstate compacts or equitable apportionment decrees that apportion water among and between the State of Colorado and other States. Except as expressly provided in this section, nothing in this Act shall affect or limit the development or use by existing and future holders of vested water rights of Colorado's full apportionment of such waters. (2) Notwithstanding any other provision of law, neither the Secretary of Agriculture nor any other officer, employee, or agent of the United States, or any other person, shall assert in any court or agency of the United States or any other jurisdiction any rights, and no court or agency of the United States shall consider any claim or defense asserted by any person based upon such rights, which may be determined to have been established for waters of the North Platte River for purposes of the Platte River Wilderness Area established by Public Law 98-550, located on the Colorado-Wyoming State boundary, to the extent such rights would limit the use or development of water within Colorado by present and future holders of vested water rights in the North Platte River and its tributaries, to the full extent allowed under interstate compact or United States Supreme Court equitable decree. Any such rights shall be exercised as if junior to, in a manner so as not to prevent, the use or development of Colorado's full entitlement to interstate waters of the North Platte River and its tributaries within Colorado allowed under interstate compact or United States Supreme Court equitable decree.</p>

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
<p>Pub. L. 103-77 Sec. 8</p>				<p>Facilities</p>	<p>(a)(3) As used in this section, the term "water resource facility" means irrigation and pumping facilities, reservoirs, water conservation works, aqueducts, canals, ditches, pipelines, wells, hydropower projects, and transmission and other ancillary facilities, and other water diversion, storage, and carriage structures.</p> <p>(c) NEW OR EXPANDED PROJECTS.--Notwithstanding any other provision of law, on and after the date of enactment of this Act neither the President nor any other officer, employee, or agent of the United States shall fund, assist, authorize, or issue a license or permit for the development of any new water resource facility within the areas described in sections 2, 5, 6, and 9 of this Act or the enlargement of any water resource facility within the areas described in sections 2, 5, 6, and 9 of this Act.</p> <p>(d) ACCESS AND OPERATION.--(1) Subject to the provisions of this subsection (d), the Secretary shall allow reasonable access to water resource facilities in existence on the date of enactment of this Act within the areas described in sections 2, 5, 6, and 9 of this Act, including motorized access where necessary and customarily employed on routes existing as of the date of enactment of this Act.</p> <p>(2) Existing access routes within such areas customarily employed as of the date of enactment of this Act may be used, maintained, repaired, and replaced to the extent necessary to maintain their present function, design, and serviceable operation, so long as such activities have no increased adverse impacts on the resources and values of the areas described in sections 2, 5, 6, and 9 of this Act than existed as of the date of enactment of this Act.</p> <p>(3) Subject to the provisions of subsections (c) and (d), the Secretary shall allow water resource facilities existing on the date of enactment of this Act within areas described in sections 2, 5, 6, and 9 of this Act to be used, operated, maintained, repaired, and replaced to the extent necessary for the continued exercise, in accordance with Colorado State law, of vested water rights adjudicated for use in connection with such facilities by a court of competent jurisdiction prior to the date of enactment of this Act: Provided, That the impact of an existing facility on the water resources and values of the area shall not be increased as a result of changes in the adjudicated type of use of such facility as of the date of enactment of this Act.</p> <p>(4) Water resource facilities, and access routes serving such facilities, existing within the areas described in sections 2, 5, 6, and 9 of this Act on the date of enactment of this Act shall be maintained and repaired when and to the extent necessary to prevent increased adverse impacts on the resources and values of the areas described in sections 2, 5, 6, and 9 of this Act.</p> <p>(e) EXISTING PROJECTS.--Except as provided in subsections (c) and (d) of this section, the provisions of this Act related to the areas described in sections 2, 5, 6, and 9 of this Act, and the inclusion in the National Wilderness Preservation System of the areas described in section 2 of this Act, shall not be construed to affect or limit the use, operation, maintenance, repair, modification, or replacement of water resources facilities in existence on the date of enactment of this Act within the boundaries of the areas described in sections 2, 5, 6, and 9 of this Act. (f) MONITORING AND IMPLEMENTATION.--The Secretaries of Agriculture and the Interior shall monitor the operation of and access to water resource facilities within the areas described in sections 2, 5, 6, and 9 of this Act and take all steps necessary to implement the provisions of this section</p>

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 103-77 Sec. 2(a)(13). *Also, in Pub. L. 95-237 Sec. 2(e)	USFS	<i>Hunter-Fryingpan</i>		Facilities	Provided, That no right, or claim of right, to the diversion and use of waters by the Fryingpan-Arkansas Project shall be prejudiced, expanded, diminished, altered, or affected by this Act, nor shall anything in this Act be construed to expand, abate, impair, impede, limit, interfere with, or prevent the construction, operation, use, maintenance, or repair of the project facilities and diversion systems to their full extent.
				Prior	nor shall anything in this Act be construed to expand, abate, impair, impede, limit, interfere with, or prevent the construction, operation, use, maintenance, or repair of the project facilities and diversion systems to their full extent.
Pub. L. 103-255 (19-May-94)	USFS	<i>Hunter-Fryingpan</i>	<i>Collegiate Peaks</i> <i>Maroon Bells-Snowmass</i>	Silence	No specific reserved water rights language.
Pub. L. 105-75 (12-Nov-97)	USFS	<i>Eagles Nest</i>		Silence	No specific reserved water rights language.
Pub. L. 105-76 (12-Nov-97)	USFS		<i>Raggeds</i>	Silence	No specific reserved water rights language.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 106-76 Sec. 10 (a) (21-Oct-99)	NPS ----- BLM	Black Canyon of the Gunnison	----- Gunnison Gorge	Denied	EFFECT ON WATER RIGHTS.--Nothing in this Act shall-- (1) constitute an express or implied reservation of water for any purpose;
Pub. L. 106-76 Sec. 10 (a)				Prior	EFFECT ON WATER RIGHTS.--Nothing in this Act shall-- ... (2) affect any water rights in existence prior to the date of the enactment of this Act, including any water rights held by the United States.
Pub. L. 106-76 Sec. 10 (b)				State	ADDITIONAL WATER RIGHTS.--Any new water right that the Secretary determines is necessary for the purposes of this Act shall be established in accordance with the procedural and substantive requirements of the laws of the State of Colorado.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L. 106-353 Sec. (I) (24-Oct-00)	BLM	Black Ridge Canyons		Denied	<p>WATER RIGHTS.--</p> <p>(1) FINDINGS.--Congress finds that--</p> <p>(A) the lands designated as wilderness by this Act are located at the headwaters of the streams and rivers on those lands, with few, if any, actual or proposed water resource facilities located upstream from such lands and few, if any, opportunities for diversion, storage, or other uses of water occurring outside such lands that would adversely affect the wilderness or other values of such lands;</p> <p>(B) the lands designated as wilderness by this Act generally are not suitable for use for development of new water resource facilities, or for the expansion of existing facilities;</p> <p>(C) it is possible to provide for proper management and protection of the wilderness and other values of such lands in ways different from those utilized in other legislation designating as wilderness lands not sharing the attributes of the lands designated as wilderness by this Act.</p> <p>(2) STATUTORY CONSTRUCTION.--</p> <p>(A) Nothing in this Act shall constitute or be construed to constitute either an express or implied reservation of any water or water rights with respect to the lands designated as a national conservation area or as wilderness by this Act.</p>
Pub. L 106-353 Sec. (I)(1)(2)				Prior	<p>(B) Nothing in this Act shall affect any conditional or absolute water rights in the State of Colorado existing on the date of the enactment of this Act.</p> <p>(C) Nothing in this subsection shall be construed as establishing a precedent with regard to any future national conservation area or wilderness designations.</p>
Pub. L 106-353 Sec. (I)(3)				State	COLORADO WATER LAW.--The Secretary shall follow the procedural and substantive requirements of the law of the State of Colorado in order to obtain and hold any new water rights with respect to the Conservation Area and the Wilderness.
Pub. L 106-353 Sec. (I)(2)(D)				Compact	Nothing in this Act shall be construed as limiting, altering, modifying, or amending any of the interstate compacts or equitable apportionment decrees that apportion water among and between the State of Colorado and other States.

Law #	Agencies	Headwater WAs	Downstream WAs	Type of Language*	Statutory Language
Pub. L 106-353 Sec. (I)(4)				Facilities	<p>NEW PROJECTS.--</p> <p>(A) As used in this paragraph, the term "water resource facility" means irrigation and pumping facilities, reservoirs, water conservation works, aqueducts, canals, ditches, pipelines, wells, hydropower projects, and transmission and other ancillary facilities, and other water diversion, storage, and carriage structures. Such term does not include any such facilities related to or used for the purpose of livestock grazing.</p> <p>(B) Except as otherwise provided by section 6(g) or other provisions of this Act, on and after the date of the enactment of this Act, neither the President nor any other officer, employee, or agent of the United States shall fund, assist, authorize, or issue a license or permit for the development of any new water resource facility within the wilderness area designated by this Act.</p> <p>(C) Except as provided in this paragraph, nothing in this Act shall be construed to affect or limit the use, operation, maintenance, repair, modification, or replacement of water resource facilities in existence on the date of the enactment of this Act within the boundaries of the Wilderness.</p>
Pub. L. 106-456 (07-Nov-00)	USFS		Spanish Peaks	Silence	No specific reserved water rights language.
Pub. L. 107-216 (21-Aug-02)	USFS	James Peak <i>Indian Peaks</i>		Silence	No specific reserved water rights language.

* **Type of Language:**

Express: Express wilderness federal reserved water right

Silence: No specific reserved water rights language

Denied: Denial of wilderness federal reserved water right

Non-assertion: No one may assert wilderness reserved water rights based on the statute

Prior: Recognition and protection of prior rights

State: State processes recognized and sometimes required

Compacts: Compacts recognized and protected

Facilities: Facilities recognized and protected

** Platte River is primarily in Wyoming and is not discussed in the text.

** **Bold text for wilderness area names indicates a new designation; italic text indicates an addition/change to the wilderness area**

C. STATE WATER SYSTEMS

The data described in this report and agency efforts to protect wilderness water must be evaluated in light of each state's water rights system. Structural differences between the Arizona and Colorado systems, peculiarities of their electronically available data, and problems of state implementation make direct comparisons between the states difficult in a number of respects. The most significant limitations of the data and the difficulties of comparing wilderness areas in the two states are discussed in this section. See Appendix B for more detailed descriptions of Arizona and Colorado water rights systems.

1. Arizona

Arizona water law provides for establishing water rights through a state permit system administered by the Arizona Department of Water Resources (ADWR). Arizona recognizes several categories of filings, depending on how and when the water was put to use and through what process the claim was filed. Of principal interest here are active surface filings (ASFs) that include both pre-1919 and post-1919 claims to surface water, including instream flows.²² While acquiring a permit from ADWR is the only way to acquire a surface water right in Arizona, receiving a permit does not create a perfected water right. Water rights are perfected through a system of general stream adjudications that can alter or terminate permitted rights. Water right holders must make Statement of Claimant (SOC) filings to participate in this process. The water rights of the Gila and Little Colorado River systems are currently under adjudications being conducted by the Maricopa and Apache Superior Courts.²³

While most surface water rights in Arizona are permitted for consumptive use, water rights can also be obtained for instream flows. Arizona does not have an extensive statutory basis for permitting instream flows, but does have an active, if controversial, instream flow program.²⁴ In 1941 the Arizona legislature amended the purposes for which an appropriation of water could be made to include "wildlife, including fish." In 1962, it further expanded the acceptable appropriation purposes to include "recreation." The Arizona courts subsequently held that a diversion is not necessary to hold an appropriative water right in the state, thereby approving instream flow rights.²⁵ In Arizona, an instream flow right is defined as "a surface water right that remains in-situ or "in-stream," is not physically diverted or consumptively used, and is for maintaining the flow of water necessary to preserve wildlife, including fish, and/or recreation." In Arizona, private entities and federal government agencies can hold instream flow rights.²⁶ Instream flows are generally comparable to other water rights except that other rights may be severed and/or transferred with no loss of priority dates for most uses. Water transferred to

²² Arizona's Public Water Code was enacted in 1919. See Appendix B for more detail on the Arizona water system.

²³ Which wilderness areas are in active adjudication basins is indicated in large format Table 3, column L.

²⁴ For more detail, see Eric Potyondy, *Survey of Instream Flow Programs in 10 Western States*, Natural Resources Law Center, June 2005.

²⁵ *McClellan v. Jantzen*, 547 P.2d 494, 496 (Ariz. App. 1976).

²⁶ Phelps-Dodge just appealed their case opposing Forest Service instream flows to the Arizona Supreme Court.

recreation and wildlife purposes (for instream flows), must be transferred to the state or a political subdivision of it in order to maintain its priority date.²⁷

Arizona has a separate statutory regime for groundwater withdrawal. The 1980 Groundwater Management Code established three different levels of scrutiny applied to water management depending on the location and condition of groundwater withdrawal. Under all levels of scrutiny, a groundwater user must now (since 1980) register wells with the ADWR, and in many cases, a well user must receive a permit before the well can be drilled. Groundwater wells do not fit within the general priority system for surface water rights and are only briefly discussed in this report.

2. Colorado

Colorado is unique among the prior appropriation states in that it does not use a permit system to appropriate surface water.²⁸ Rather, Colorado water rights are determined by specialized water courts. The adjudication sets the priority date of the water right, its source of supply, amount, point of diversion, and type and place of use. Uses include consumptive uses that may adversely impact wilderness values (municipal, industrial, stock, irrigation, augmentation) as well as uses that are more likely to be neutral or protective of wilderness values (domestic, wildlife, livestock, recreation, maintenance of wetlands).²⁹ State adjudications also confirm that the new water right will not cause injury to existing water rights holders. While the surface water rights are determined by the water court, the Colorado Division of Water Resources (CDWR), which includes the State and division engineers, administer all the surface and tributary groundwater in the state of Colorado.

Colorado also has an instream flow program. In this program, established in 1973, the Colorado Water Conservation Board (CWCB) has exclusive authority to hold instream flow rights. Instream flow rights are those that "may be required for minimum stream flows or for natural surface water levels or volumes for natural lakes to preserve the natural environment to a reasonable degree" as determined by the CWCB. The CWCB may initiate new appropriations for instream flow rights or receive transfers of existing water rights for conversion to instream flows. In either case, the CWCB acquires the instream flow rights by receiving a decree from a Colorado water court. The public and agencies can also initiate new appropriations by petition to the CWCB. The CWCB may also acquire instream rights "by grant, purchase, donation, bequest, devise, lease, exchange, or other contractual agreement" from any person or government agency.

The CDWR also approves all well permits in the state, even though Colorado law generally views surface and groundwater as an interconnected system. Colorado recognizes two different types of groundwater wells. Exempt wells are limited to pump rates of 15 gallons per minute or less. While exempt wells are not administered under the priority system, they do require a permit from the State Engineer's Office. Non-exempt wells also require permits and are subject to the priority system.

²⁷ Arizona Revised Statutes 45-172.

²⁸ See Appendix B for a more detailed description of the Colorado water rights system.

²⁹ See Appendix C, Section 1.e for a complete list of uses.

III. COMPILATION AND ANALYSIS OF WATER RIGHTS DATA

In developing this study, we conjectured that differences in agency standards or methods for protecting wilderness water (potentially prompted by differences in water rights language), may be manifest in differences between pre- and post-wilderness designation water rights recorded by the states' water rights agencies. To evaluate this, we compiled data on water rights within and upstream of wilderness areas, identified categories of data that may indicate either an increased in threat to wilderness water values or protective action taken by wilderness managing agencies, and then compared these data for wilderness areas in the four reserved rights language categories.

A. COMPILATION OF STATE WATER RIGHTS DATA

In order to make the pre- to post-designation comparison, we extracted water rights data from the Arizona and Colorado databases (see Appendix C, Study Methods), compiled the data in large format Tables and summarized them for each wilderness area. See Map C-1 and C-2 and large format Tables C-1 and C-2 for sample maps and data sheets for Hassayampa Canyon (AZ) and Mt. Zirkel (CO).³⁰ We then extracted and summarized all data that might be indicative of important baseline conditions, threats to wilderness values, or protection of wilderness water resources in spreadsheets for Arizona and Colorado. See attached large-format Tables:

Large format Table 3. Summary of Arizona Wilderness Areas (large format, attached)

Large format Table 4. Summary of Colorado Wilderness Areas (large format, attached)

In large format Tables 3 and 4, wilderness areas are grouped by their statutory language within each state. For those wilderness areas with multiple designations, the large format tables indicate in which category the wilderness area is treated for purposes of data analysis and comparison.³¹ In most cases, data from both states could be readily compared. When this was not possible, for example, "large quantity" is defined differently for the two states due to differences in the quantity of water appropriated, the differences are explained in text and footnotes in the relevant sections of this report.

The Arizona Table includes:

- (Columns A – G) Wilderness Area identifying information, including applicable Public Law(s), designation date, acreage, management agency, and federal land unit. Information related to the original designation statute in these and other columns is in regular black text; additions and modifications are in colored text.
- (Column H) Applicable reserved right language from the designating statutes. See Section II.B and Table 1 for a summary of the legislative language.

³⁰ Maps and data sheets for all wilderness areas are available in electronic form on disc.

³¹ Nine wilderness areas in Arizona and 17 in Colorado have multiple legislative designations. Second and third designations added acreage to the exterior boundaries of areas, transferred inholdings or changed names. Statutory language was reviewed to eliminate minor changes to leave six areas in Arizona and 14 areas in Colorado with designations that expand the external boundary of the wilderness area. Of these, ten wilderness areas were designated with a mixture of reserved right language.

- (Column I) Categorization of the area as headwaters or downstream. See Section II.A for a discussion of “pure” versus “essentially” headwaters. Rows of data for all headwaters areas are shaded grey.
- (Column J) Water conflicts and developments identified through literature searches and interviews.
- (Column K) Instream flows within or in the vicinity of the wilderness area. While instream flows downstream of wilderness areas are included in this table, they are not included in the comparative analysis. See Appendix B, Table B-1 for a summary of Arizona instream flows associated with wilderness areas.³²
- (Column L) Adjudication basins – Basins in which general stream adjudications are in progress are indicated in **bold** text.
- (Columns M – O) Number of total water rights claims (active surface filings (ASFs) plus statement of claimant filings (SOCs)) and, in parenthesis, the number of ASFs.³³ Data are listed within the wilderness area (M), within or adjacent to the area with border impacts only (N) and upstream of the wilderness area (O). Claims are distinguished by BLM, USFS, state, municipal, private, and a few miscellaneous designations. The number of ASFs is used for most comparative analysis. “Potential for significant impacts” indicates that the water right is located such that its consumptive use could affect more than just the border area of the wilderness.
- (Columns P – R) Number of large quantity filings within the wilderness (P), either in or upstream, but with border impacts only (Q), and upstream of the wilderness (R). Claims are distinguished by BLM, USFS, state, Municipal, private, and a few miscellaneous designations. “Potential for significant impacts” indicates that the water right is located such that its consumptive use could affect more than just the border area of the wilderness.
- (Columns S – T) Number of active surface filings with appropriation dates subsequent to wilderness designation within (S) and upstream (T) of the wilderness areas.
- (Columns O, R and T) Water rights upstream of wilderness areas were only extracted from the data base within about 12 miles (two townships or ranges) of the wilderness area. Where this area does not encompass the entire watershed, the table indicates “Vicinity Rights” to indicate that additional upstream rights may affect the area.
- (Column U) Groundwater permits, listing total number of wells, total pump capacity of those wells, lowest pumping capacity of a single well, highest pumping capacity of a single well, and where applicable, the pumping capacity of any large wells within the wilderness area. Large wells are defined as greater than or equal to 62 gallons per minute (100 acre feet per year if pumped continuously).

³² A few CWCB rights may be missing from the data because instream flows are sometimes registered at the termination of the flow. If an instream flow originates in a wilderness area and terminates downstream of the wilderness boundary, it would not be recorded as only water rights within and upstream of wilderness areas were extracted from the CDWR database.

³³ The total water rights claims should be equal to the number of ASFs in basins without an active adjudication as the purpose of the SOC is to notify the court of claims for adjudication. In addition, there should be an SOC only if there is an existing ASF or if an ASF is filed concurrently. The data indicates that this is not the case, as ADWR has recorded the claims in their database regardless of whether these guideline have been followed. Furthermore, while existence of an ASF does not guarantee that there is a valid surface water right in the area, the meaning of an SOC is even more speculative as they merely represent the claims of the filer. Only the reported ASF rights are used in the analysis for this report because the SOC data is more suspect and because using it would make a comparison between rights in active adjudication basins and other areas difficult.

The Colorado table includes:

- (Columns A – G) Wilderness Area identifying information, including applicable Public Law(s), designation date, acreage, management agency, and federal land unit. Information related to the original designation statute in these and other columns is in regular black text; additions and modifications are in colored text.
- (Column H) Applicable reserved right language from the designating statutes. See Tables 2 for a summary of the legislative language.
- (Columns I – J) Categorization of the area as headwaters or downstream. See Section II.A for a discussion of “pure” versus “essentially” headwaters. Rows of data for all headwaters areas are shaded grey. Column J indicates if the designating legislation labeled the area as “headwaters.”
- (Column K) Water conflicts and developments identified through literature searches and interviews.
- (Column L) Instream flows within wilderness area.
- (Columns M – O) Number of water rights within the wilderness area (M), within or adjacent to the area with border impacts only (N) and upstream of the wilderness area (O). Surface and groundwater rights are listed separately. The few groundwater rights are indicated with “GW”. Claims are distinguished by BLM, USFS, state, municipal, private, and a few miscellaneous designations. “Potential for significant impacts” indicates that the water right is located such that its consumptive use could affect more than just the border area of the wilderness.
- (Columns P – R) Number of large quantity rights within the wilderness (P), either in or upstream, but with border impacts only (Q), and upstream of the wilderness (R). Rights are distinguished by BLM, USFS, municipal, state, private, and a few miscellaneous designations. “Potential for significant impacts” indicates that the water right is located such that its consumptive use could affect more than just the border area of the wilderness.
- (Columns S – U) Number of rights in the wilderness area with appropriation dates subsequent to wilderness designation. Data are listed within the wilderness area (S), within or upstream of the area with border impacts only (T) and upstream of the wilderness area (U). Surface and groundwater rights are listed separately. Rights are distinguished by BLM, USFS, municipal, state, private, and a few miscellaneous designations. “Potential for significant impacts” indicates that the water right is located such that its consumptive use could affect more than just the border area of the wilderness.
- (Columns O, R and U) Water rights upstream of wilderness areas were only extracted from the data base within about 12 miles (two townships or ranges) of the wilderness area. Where this area does not encompass the entire watershed, the table indicates “Vicinity Rights” to indicate that additional upstream rights may affect the area.

B. INDICATORS OF THREATS AND PROTECTIVE MEASURES

In order to compare pre- and post-designation water rights, the study identified three indicators of threats to wilderness values and three categories that may indicate that protective measures are being taken by land management agencies and others to protect wilderness values. Water resource data and the results of literature searches relating to these indicators of threats and protective measures are compiled in large format tables:

Large format Table 5A – 5I. Wilderness Water: Indicators of Threats and Protective Measures (large format, attached)

For each threat or protection measure, these tables list the name of the wilderness area, the number of water rights, and, where appropriate, the holder of the rights. Within the water rights language categories, data are organized by state, headwater/downstream category, and wilderness management agency. Large format Table 5A lists all wilderness areas included in the study. Large format Tables 5B – 5I include only those wilderness areas with data in the particular category.

Tables 6A-6D use the data from large format Tables 5B-5I to compare these indicators of threats and protective measures across the four types of statutory language. Data for each indicator is discussed below. The tables report absolute numbers of rights, number of wilderness areas affected³⁴ and the percentage of wilderness areas affected.³⁵ The descriptive summaries that follow the tables primarily report the percentages of wilderness areas affected by each potential threat or protective measure. We use numbers of areas affected rather than absolute numbers of rights to eliminate the effect, as much as possible, of differences in size among wilderness areas, which could otherwise account for much of the difference in numbers of rights among areas.³⁶ We primarily use percentages to compensate for the difference in numbers of wilderness areas in each language category.³⁷ Within each category of threat and protective measure, the data are tabulated and discussed as a whole and by state, agency, and separately by headwaters and downstream categories. Some of the clear patterns in the data are highlighted at the end of each section (General Trends) and explained where an explanation is plausible. A few of the peculiarities in the data are also mentioned to caution against too much reliance on these trends.

For ease of comparing the data, the most general comparisons (percentages marked in bold in Table 6A) of threats are compiled in Table 7A and Figures 1-3. General comparisons of protective measures are compiled in Table 7B and Figures 4-6. Large format Tables 7C and 7D provide a tally of all threats (large format Table 7C) and all protective measures (large format Table 7D) found for each area.

Before comparing indicators across language categories, a few caveats and reminders are in order. First, indicators are only indicators. If analyzed in detail, each “threatening” water right and the justification of each protective action might be verified or discounted. For example, imprecise location data may misrepresent private water rights as within a wilderness area; an upstream private right classified as a threat might actually be used downstream of an area and

³⁴ The three non-wilderness areas (Piedra, Roubideau and Tabeguache) are included with the reserved rights denial areas. Tabeguache, which is managed in part by both BLM and the Forest Service, is included as a Forest Service area.

³⁵ For example, in Table 6A: In the silence category, there are 34 post-designation water rights in 14 wilderness areas. Since there are 76 total wilderness areas in the silence category, 18 percent of silence category wilderness areas are affected.

³⁶ Size is not, however, always indicative of the number of water rights in an area. See large format Tables 3 and 4 for the size of each wilderness area (column E) and a summary of all water rights.

³⁷ For example, there are five areas in the denied language category versus 76 in the silence category (Table 6A), and one non-assertion language area managed by BLM versus eight non-assertion areas managed by Forest Service (Table 6C).

provide an instream flow through the area; a seemingly small quantity right in an arid wilderness area might be more problematic than a large right in a more mesic wilderness; and some rights will have negligible impact on wilderness values. While we try to explain a few individual rights in this section, Section IV discusses wilderness areas in more detail on an agency-by-agency basis in order to explain the factors driving agency action. Section IV discussions draw on the data of this section, but are based primarily on information obtained in interviews. In sum, Section III is not intended to explain individual rights in detail. Rather, the purpose of this section is to identify any broad patterns of potential threats and/or protective measures among the categories of water rights language. No attempt was made to statistically analyze the data, but only large differences between categories are likely to be significant and only these large differences are identified as meaningful in the discussion. Furthermore, we reiterate that patterns of these indicators may suggest but cannot prove any causal relationship between reserved rights language and agency action.

Second, the number of areas in each language category varies from five to 76. While using percentage of areas affected, rather than absolute numbers of areas affected, facilitates comparison among the categories, some categories – most notably the express rights category – lack representation by one of the states (Colorado) and agencies (Forest Service). This irregular distribution of wilderness areas among the language categories limits our ability to make generalizations about the influence of statutory language on protection of wilderness water.

Third, the analysis is only as good as the reliability of the data. This study primarily used electronic summary data from the states. From discussions with state and federal personnel, we know there are problems with some of this electronically available data, but cannot guess all of its implications.³⁸

Fourth, a related caveat is that the analysis is only as good as the depth of the query. Each question we asked suggested others that could refine the previous answer or improve confidence in its significance, but these additional inquiries were beyond the scope of this study. The most significant omission in the study was evaluation of the hydrology of wilderness areas. Without knowing the quantity and distribution of naturally occurring water in the areas, the pre-wilderness designation level of water appropriations, and the actual amount and timing of water used, it is impossible to actually evaluate the impact of either federal or state and private rights on wilderness values. In addition, water rights data were not gathered for all upstream areas for large watersheds. Where the watershed extended beyond 12 miles from the wilderness boundary, large format Tables 3 and 4 indicate "Vicinity Rights." For purposes of tabulating threats to areas, all areas with vicinity rights were assumed to have post-designation upstream rights (see parentheses in upstream data categories of Table 6A – 6D, e.g., (+number of additional areas affected, total % of areas affected).

³⁸ Examples of data problems include incomplete records on holders of Colorado water rights and near gridlock in aspects of Arizona water rights processing. In both states, researchers had difficulty in pinpointing the exact location of many of the water rights near the borders of wilderness areas. Judgment calls were also frequently necessary, e.g., is a wilderness area "affected" by a water development that has been cherry stemmed outside the wilderness boundary, but dewater an important stream? A few errors in the data bases could be corrected, e.g., that BLM has filed for post-designation rights in Black Ridge Canyons (see Tables 6A-6D).

And finally, a caveat specific to the emphasis on post-designation water rights: While we use post-designation rights as an indicator of both threats and protective measures (see the introductions to indicators, below), there is only a finite amount of water to claim on any stream system. The number of post-designation rights – initiated by either the federal government (a protective measure) or for state and private purposes (a threat) – might reflect more on the amount of water already appropriated prior to wilderness designation than on the zeal of either the agencies or the development community to appropriate more water. Without a hydrologic study of each area, it is impossible to tell. Consequently any patterns observed related to statutory language may be an artifact of how fully streams were appropriated before wilderness designation.

With these caveats in mind, we proceed with a comparison of indicators of threats and protective measures across statutory language to identify general patterns that may indicate if statutory language influences agency action to protect wilderness water values

Table 6-A. Water Rights in Statutory Language Categories: Overall Comparison

Indicators of Threats to Wilderness Water		Denied³⁹	Silence	Non-Assertion	Express
Wilderness Areas in Category (Table 5A)		2 + 3 4%	76 57%	9 7%	43 32%
Number of Wilderness Areas with Water-related Conflicts (Table 5B)		2 40%	18 24%	1 11%	5 12%
State, ⁴⁰ Private and Unknown Holder Post-Designation Water Rights	Within Wilderness Areas (Table 5C)	0	34 in 14 ⁴¹ 18%	0	1 in 1 2%
	Upstream of Wilderness Areas (Table 5D)	0 (+1, 20%) ⁴²	88 upstream of 11 14% (+7, 24%) ⁴³	0	16 upstream of 6 14% (+4, 23%)
State, Private and Unknown Holder Large Quantity Surface Water Rights within Wilderness Areas (Table 5E)	All Large Quantity Rights	8 in 2 40%	239 in 33 43%	18 in 3 33%	20 in 3 7%
	Post-Designation Large Rights	0	2 in 2 3%	0	0

³⁹ Denied category in each table includes two wilderness areas and three non-wilderness areas.

⁴⁰ "State" does not include the Colorado Water Conservation Board in Colorado in any categories.

⁴¹ There are 34 of these water rights in 14 wilderness areas. Since there are 76 wilderness areas in this category, 18% of them have this type of water right.

⁴² The number in parentheses is the number of additional areas affected and the total percentage of areas affected when all large watersheds area assumed to have post-designation rights. Areas are indicated with "Vicinity Rights" on large format Tables 3 and 4.

⁴³ There are 88 water rights upstream of 11 wilderness areas in this category. Since there are 76 wilderness areas in this category, 14% of them have this category of right upstream of them. Since large watershed were not surveyed for water rights beyond 12 miles of the wilderness boundary, 7 additional wilderness areas may have post designation rights upstream (+7), totaling 24% of the 76 wilderness areas.

Table 6-A continued

Indicators of Protection for Wilderness Water		Denied⁴⁴	Silence	Non-Assertion	Express
Wilderness Areas in Category (Table 5A)		2 + 3 4%	76 57%	9 7%	43 32%
Wilderness Reserved Water Rights Asserted or Adjudicated within Wilderness Areas (Table 5G)		0	10 in 2 3%	0	158 in 12 28%
Federal Non-Reserved Post-Designation Water Rights (Table 5H)	Within Wilderness Areas	?? in 1 ⁴⁵ 20%	111 in 15 20%	0	17 in 4 9%
	Upstream of Wilderness Areas	0	138 up of 9 ⁴⁶ 12%	0	7 up of 4 9%
Instream Flow Rights Associated with Wilderness Areas (Table 5I)	All Instream Flows	10 in 2 40%	500 in 41 54%	74 in 6 67%	6 in 4 9%
	Post-Designation Instream Flows	1 in 1 20%	219 in 33 43%	6 in 2 22%	0

⁴⁴ Denied category in each table includes two wilderness areas and three non-wilderness areas.

⁴⁵ CDWR database did not indicate post-designation rights for the Black Ridge Canyons area, but BLM staff noted an undisclosed number of filings.

⁴⁶ "up" or "up of" in this and subsequent tables means "upstream of"

Table 6-B. Water Rights in Statutory Language Categories: Comparison of Headwaters/Downstream Areas

Indicators of Threats to Wilderness Water									
		Denied⁴⁷		Silence		Non-Assertion		Express	
		H	D	H	D	H	D	H	D
Wilderness Areas in Category		1	1 + 3	38	38	9	0	16	27
Number of Wilderness Areas with Water-related Conflicts		1 100%	1 25%	6 16%	12 32%	1 11%	n.a. ⁴⁸	0	5 19%
State, Private and Unknown Holder Post-Designation Water Rights	Within Wilderness Areas	0	0	19 in 7 18%	14 in 6 16%	0	n.a.	0	1 in 1 4%
	Upstream of Wilderness Areas	0	0 (+1, 25%)	0	88 up of 11 29% (+7, 47%)	0	n.a.	0	16 up of 6 22% (+4, 37)
State, Private and Unknown Holder Large Quantity Surface Water Rights within Wilderness Areas	All Large Quantity Rights	0	8 in 2 50%	114 in 17 45%	125 in 16 42%	18 in 3 33%	n.a.	2 in 1 6%	18 in 2 7%
	Post-Designation Large Rights	0	0	1 in 1 3%	1 in 1 3%	0	n.a.	0	0

⁴⁷ Denied category in each table includes two wilderness areas and three non-wilderness areas.

⁴⁸ "n.a." is used in this and subsequent tables when there are no water rights because there are no wilderness areas in a particular category. "0" is used when there are no water rights, but there are wilderness areas.

Table 6-B continued

Indicators of Protection for Wilderness Water									
		Denied⁴⁹		Silence		Non-Assertion		Express	
		H	D	H	D	H	D	H	D
Wilderness Areas in Category		1	1 + 3	38	38	9	0	16	27
Wilderness Reserved Water Rights Asserted or Adjudicated within Wilderness Areas		0	0	2 in 1 3%	8 in 1 3%	0	n.a.	113 in 9 56%	45 in 3 11%
Federal Non-Reserved Post-Designation Water Rights	Within Wilderness Areas	?? in 1 ⁵⁰ 100%	0	41 in 9 24%	70 in 6 16%	0	n.a.	7 in 2 13%	10 in 2 7%
	Upstream of Wilderness Areas	0	0	1 up of 1 3%	137 up of 8 21%	0	n.a.	0	7 up of 4 15%
Instream Flow Rights Associated with Wilderness Areas	All Instream Flows	0	10 in 2 50%	251 in 19 50%	249 in 22 58%	74 in 6 67%	n.a.	0	6 in 4 15%
	Post-Designation Instream Flows	0	1 in 1 25%	124 in 15 39%	95 in 18 47%	6 in 2 22%	n.a.	0	0

⁴⁹ Denied category in each table includes two wilderness areas and three non-wilderness areas.

⁵⁰ CDWR database did not indicate post-designation rights for the Black Ridge Canyons area, but BLM staff noted an undisclosed number of filings.

Table 6-C. Water Rights in Statutory Language Categories: Comparison by Agency

Indicators of Threats to Wilderness Water											
		Denied		Silence			Non-Assertion		Express		
		FS	BLM	FS	BLM	NPS	FS	BLM	FS	BLM	FWS
Wilderness Areas in Category		3 Areas	2	61	8	7	8	1	0	39	4
Number of Wilderness Areas with Water-related Conflicts		0	2 100%	13 21%	0	5 71%	1 13%	0	n.a.	4 10%	1 25%
State, Private and Unknown Holder Post-Designation Water Rights	Within Wilderness Areas	0	0	27 in 11 18%	6 in 2 25%	0	0	0	n.a.	1 in 1 3%	0
	Upstream of Wilderness Areas	0	0 (+1, 50%)	84 up of 10 16% (+3, 21%)	4 up of 1 13% (+3, 50%)	0 (+1, 14%)	0	0	n.a.	16 up of 6 15% (+4, 26%)	0
State, Private and Unknown Holder Large Quantity Surface Water Rights within Wilderness Areas	All Large Quantity Rights	4 in 1 33%	4 in 1 50%	233 in 31 57%	6 in 2 25%	0	18 in 3 38%	0	n.a.	20 in 3 8%	0
	Post-Designation Large Rights	0	0	2 in 2 3%	0	0	0	0	n.a.	0	0

Table 6-C continued

Indicators of Protection for Wilderness Water											
	Denied		Silence			Non-Assertion		Express			
	FS	BLM	FS	BLM	NPS	FS	BLM	FS	BLM	FWS	
Wilderness Areas in Category	3 Areas	2	61	8	7	8	1	0	39	4	
Wilderness Reserved Water Rights Asserted or Adjudicated within Wilderness Areas	0	0	0	0	10 in 2 29%	0	0	n.a.	158 in 12 31%	0	
Federal Non-Reserved Post-Designation Water Rights	Within Wilderness Areas	0	?? in 1 50% ⁵¹	107 in 14 23%	4 in 1 13%	0	0	0	n.a.	17 in 4 10%	0
	Upstream of Wilderness Areas	0	0	126 up of 7 11%	12 up of 2 25%	0	0	0	n.a.	7 up of 4 10%	0
Instream Flow Rights Associated with Wilderness Areas	All Instream Flows	10 in 2 66%	0	481 in 38 62%	1 in 1 13%	18 in 2 29%	67 in 5 63%	7 in 1 100%	n.a.	6 in 4 10%	0
	Post-Designation Instream Flows	1 in 1 33%	0	219 in 33 54%	0	0	1 in 1 13%	5 in 1 100%	n.a.	0	0

⁵¹ BLM reports that it has filed for post-designation water rights in the Gunnison Gorge area, which would affect 50 percent of the areas in this small category. See discussion in Section IV.A.2.

Table 6-D. Water Rights in Statutory Language Categories: Comparison by State and Adjudication Basins

Indicators of Threats to Wilderness Water									
		Denied		Silence		Non-Assertion		Express	
		AZ	CO	AZ	CO	AZ	CO	AZ	CO
Wilderness Areas in Category		0	2 + 3 2 BLM 3 FS	47 8 BLM 35 FS 4 NPS	29 26 FS 3 NPS	0	9 1 BLM 8 FS	43 39 BLM 4 FWS	0
				Active adjud. ⁵² 32	Non-adjud. 15			Active adjud. 25	Non-adjud. 18
Number of Wilderness Areas with Water-related Conflicts		n.a.	2 40%	8 17%	10 34%	n.a.	1 11%	5 12%	n.a.
				5 16%				3 20%	
State, Private and Unknown Holder Large Quantity Surface Water Rights within Wilderness Areas	Within Wilderness Areas	n.a.	0	12 in 7 15%	21 in 6 21%	n.a.	0	1 in 1 2%	n.a.
				5 in 4 13%				7 in 3 20%	
	Upstream of Wilderness Areas	n.a.	0 (+1, 20%)	83 up of 8 17% (+7, 32%)	5 up 3 10% (+1, 14%)	n.a.	0	16 up of 6 14% (+3, 21%)	n.a.
			77 up of 6 19% (+3, 28%)	6 up of 2 13% (+3, 33%)			2 up 1 4% (+2, 12%)	14 up 5 28% (+2, 39%)	
State, Private and Unknown Holder Large Quantity Water Rights within Wilderness Areas	All Large Quantity Rights	n.a.	8 in 2 40%	57 in 13 28%	182 in 20 69%	n.a.	18 in 3 33%	20 in 3 7%	n.a.
				51 in 11 34%				6 in 2 13%	
	Post-Designation Large Rights	n.a.	0	0	2 in 2 7%	n.a.	0	0	n.a.

⁵² Wilderness areas split between adjudication and non-adjudication basins are considered as if they were in the basin under adjudication.

Table 6-D continued

Indicators of Protections for Wilderness Water											
		Denied		Silence		Non-Assertion		Express			
		AZ	CO	AZ	CO	AZ	CO	AZ	CO		
Wilderness Areas in Category		0	2 + 3 2 BLM 3 FS	47 8 BLM 35 FS 4 NPS	29 26 FS 3 NPS	0	9 1 BLM 8 FS	43 39 BLM 4 FWS	0		
				Active adjud. ⁵³ 32	Non- adjud. 15			Active adjud. 25	Non- adjud. 18		
Wilderness Reserved Water Rights Asserted or Adjudicated within Wilderness Areas		n.a.	0	11 in 3 6%		0	n.a.	0	158 in 12 28%		n.a.
				0	11 in 3 20%				158 in 12 48% ⁵⁴	0	
Federal Non-Reserved Post-Designation Water Rights		n.a.	?? in 1 20%	111 in 15 32%		0	n.a.	0	17 in 4 9%		n.a.
				101 in 11 34%	10 in 4 27%				7 in 2 8%	10 in 2 11%	
Upstream of Wilderness Areas		n.a.	0	138 up of 9 19%		0	n.a.	0	7 up of 4 9%		n.a.
				126 up 7 22%	12 up 2 13%				2 up 1 4%	5 up 3 17%	
Instream Flow Rights Associated with Wilderness Areas		n.a.	10 in 2 40%	25 in 14 30%		475 in 27 93%	n.a.	74 in 6 67%	6 in 4 9%		n.a.
				20 in 12 38%	5 in 2 13%				2 in 2 8%	11 in 5 28%	
Post- Designation Instream Flows		n.a.	1 in 1 20%	23 in 13 28%		196 in 20 69%	n.a.	6 in 2 22%	1 in 1 2%		n.a.
				19 in 12 38%	4 in 1 7%				0	1 in 1 6%	

⁵³ Wilderness areas split between adjudication and non-adjudication basins are considered as if they were in the basin under adjudication.

⁵⁴ BLM manages 23 of the 25 express language areas in active adjudication basins; FWS manages the other two express areas. BLM has filed for federal reserved rights in 52% of these areas according to the ADWR. According to BLM, they have also filed in Needles Eye, or 57% of BLM areas, but the data had not been completely recorded.

B. THREATS TO WILDERNESS WATER: COMPARISON OF LANGUAGE CATEGORIES

This study considered three indicators of water-related threats to wilderness values:

1. Water-related developments and other types of conflicts associated with wilderness areas;
2. Post-designation rights acquired by state, private and unknown holders in and upstream of wilderness areas;⁵⁵ and
3. Large quantity surface water rights in wilderness areas, both pre- and post-designation.

Table 7A summarizes these indicators of threats for the language categories with data from Table 6A. See large format Table 7C for the tally of these threats for all wilderness areas.

Table 7A. Summary of Threats - Totals by Language Category

Language Categories	Conflicts	Post-Designation Rights	Post-Designation Upstream Rights*	Large Rights	Post-Designation Large Rights	One or More Threat
5 Denial Areas	40%	0%	0% or 20%	40%	0%	60%
76 Silence Areas	24%	18%	14% or 24%	43%	3%	66%
9 Non-Assertion Areas	11%	0%	0%	33%	0%	44%
43 Express Areas	12%	2%	14% or 23%	7%	0%	30%
133 Total Areas	20%	11%	13% or 22%	31%	2%	53%

* The larger number in each category assumes that there may be additional upstream rights on streams where only vicinity rights were recorded. Compare Figures 1a to 1b and 2a to 2b.

For a bar chart comparing these data, see:

- Figure 1 for the distribution of threats across language categories;
- Figure 2 for percentage of areas affected by each type of threat;
- Figure 3 for percentages of wilderness areas in each language category affected by one or more threat.

Figures 1a and 2a report only actual data extracted from the Arizona and Colorado databases. Figures 1b and 2b are adjusted to assume that upstream rights also affect areas where only vicinity rights were actually tabulated.

⁵⁵ It was not possible within the scope of the study to check individual water rights records to determine holder names when they were not listed in the CDWR database. All Arizona water rights included holder names; some Colorado records did not.

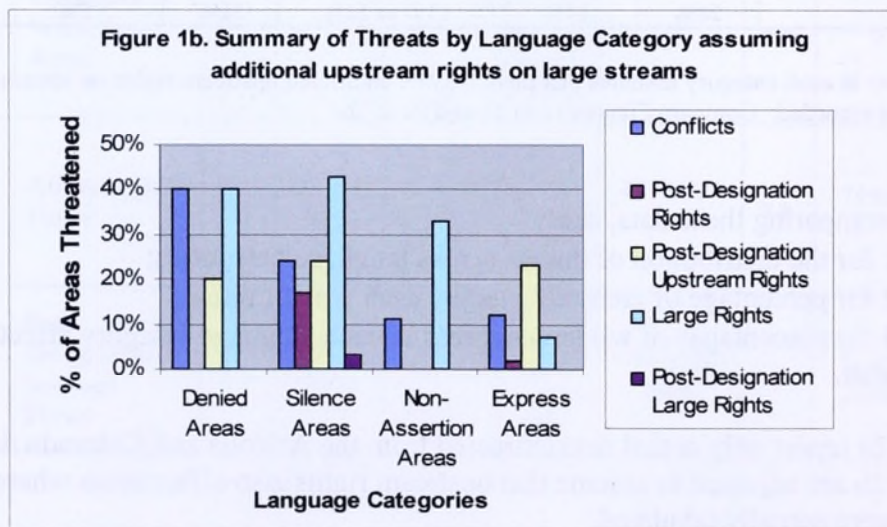
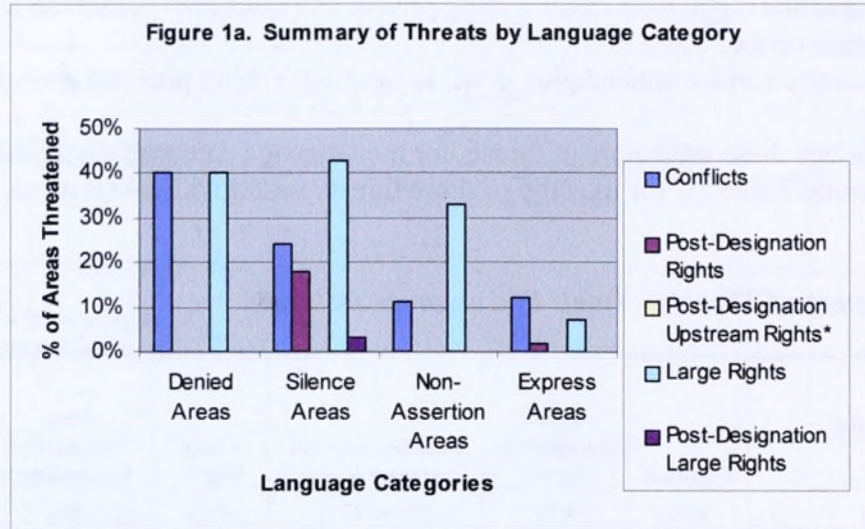


Figure 2a. All Areas Affected by Each Type of Threat

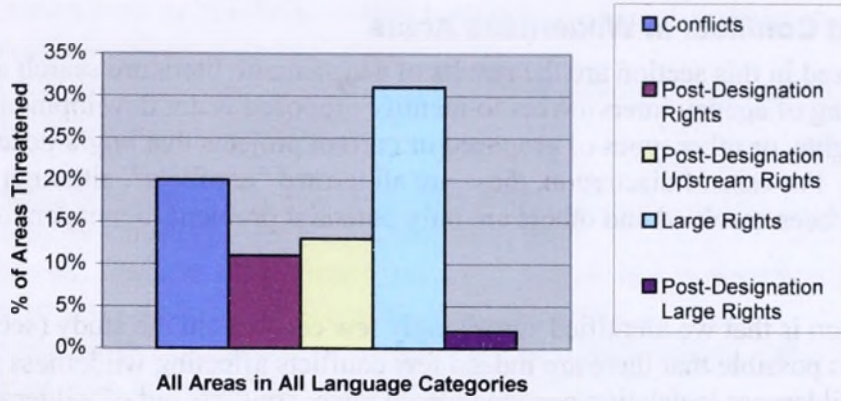


Figure 2b. All Areas Affected by Each Type of Threat, including additional upstream rights

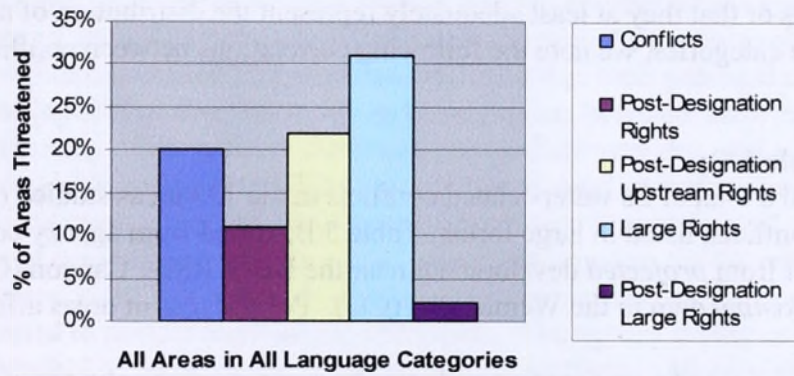
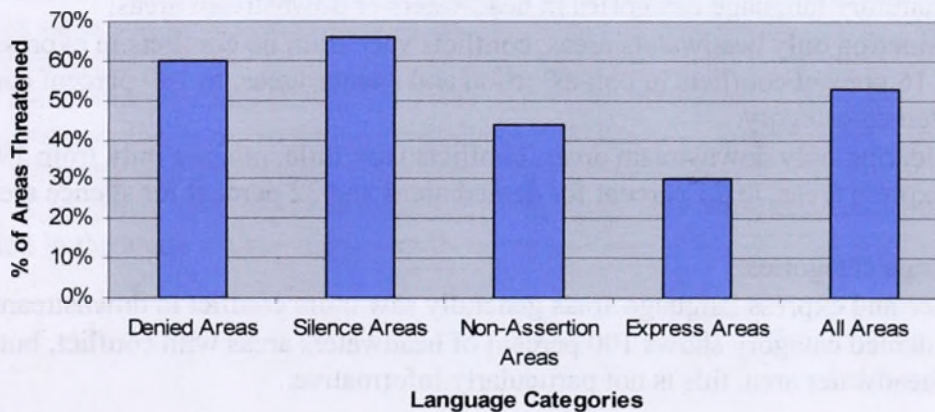


Figure 3. Areas Affected by One or More Threat, Including additional upstream rights



1. Water-related Conflicts in Wilderness Areas

The data summarized in this section are the results of a systematic literature search and an unsystematic polling of agency interviewees to identify proposed water developments, litigation regarding water rights, or other types of proposed or current projects that *might* pose threats to wilderness values. For ease of discussion, these are all termed “conflicts”, although some of them have already been resolved and others are only potential problems dependent on future events.

Our first observation is that we identified surprisingly few conflicts in the study (see Table 7A and Figure 2.) It is possible that there are indeed few conflicts affecting wilderness areas since compromises in wilderness legislation gerrymandered many conflicts out of wilderness boundaries and the least controversial areas may have been designated in the early wilderness bills. Alternatively, the data might underestimate the number of conflicts because: (1) literature describing developments might not tie the development to a wilderness area despite the potential impact on the area, and (2) agency personnel may have hesitated to identify “conflicts” in their jurisdictions, particularly if a potential conflict had been resolved. Assuming that there are indeed few conflicts or that they at least adequately represent the distribution of actual conflicts across the language categories, we note the following correlations between conflicts and statutory language.

Overall Data (Table 6A):

The study identified a total of 26 water-related conflicts in the 133 areas studied (20 percent of areas affected). Conflicts, listed in large format Table 5.B, varied from agency concern over the *potential* for impact from *projected* development near the Black Ridge Canyon (CO) to *active* litigation over an *existing* dam in the Weminuche (CO). Percentages of areas affected by conflict varied from:

- 11 and 12 percent of non-assertion and express areas, respectively; to
- 24 percent of silence areas; to
- 40 percent of denied language areas.

Headwaters versus Downstream (Table 6B):

Comparing statutory language categories in headwaters or downstream areas:

- Considering only headwaters areas, conflicts vary from no conflicts in express areas to 11 – 16 percent conflicts in non-assertion and silence areas, to 100 percent conflicts in the denied category.
- Considering only downstream areas, conflicts vary little, ranging only from 19 percent for express areas, to 25 percent for denied areas and 32 percent for silence areas.

Within language categories:

- Silence and express language areas generally saw more conflict in downstream areas.
- The denied category shows 100 percent of headwaters areas with conflict, but with only one headwater area, this is not particularly informative.

Agency Differences (Table 6C):

Comparing the types of statutory language within each agency:

- BLM varies from no conflicts in silence areas to 10 percent conflict in express areas, to 100 percent conflicts in denied areas;
- Forest Service varies from no conflicts in denied areas to 13 percent in non-assertion areas to 21 percent in silence areas.

State Differences, including Adjudications (Table 6D):

Comparing statutory language categories within each state:

- In Colorado, conflicts range from a low of 11 percent in non-assertion areas, to 34 percent in silence areas and 40 percent in denied areas.
- In Arizona, there is not much variation in conflicts with express rights and silence categories with 12 and 17 percent, respectively.
- In Arizona, there is more conflict outside of active adjudication areas for both express rights and silence categories, although the difference in the silence category is minimal.

General Trends:

As a whole, the overall trend in the data (an upward trend in conflict from express and non-assertion to silence to denied categories) makes intuitive sense. Congress explicitly designated Colorado areas with non-assertion language *because* there was little potential threat of future development. The legislative discussions on Arizona express language areas also indicated little controversy – with many of the areas in the headwaters, others very dry, and a few (mostly in the Bill Williams basin) with potential conflicts. Overall more conflict in denial areas is also understandable, conjecturing that the development community fought for and won denial language because of competition for area water – the likely scenario for Gunnison Gorge. Across the board less conflict in headwaters areas is also predictable as their position in the watershed is assumed to protect their wilderness values. The agency differences are also generally understandable except, perhaps, for the lack of conflicts in BLM silence areas. Lack of conflict in these areas of the Arizona Strip is plausible since the area is extremely dry and remote.

Looking at some of the other data in more detail, however, is more problematic for the overall pattern. The Black Ridge Canyons area, for example, was designated with denial language because it was supposed to be safe from conflict, yet it has a potential conflict; the three non-wilderness areas included in the denial category were denied reserved rights because they were downstream areas with potential demands on their water, yet they have no identified conflicts. Even these situations can be explained since the potential impact of groundwater pumping on the Black Ridge Canyons area was probably not anticipated in the pre-wilderness designation discussions. Also, water developments upstream of the three non-wilderness areas may not have been identified in the study if their impact on these “areas” was not widely recognized.

2. Post-Designation Surface Water Rights Acquired by State, Private and Unknown Holders

All water rights held for consumptive uses in and upstream of wilderness areas are a potential threat to wilderness values. The number of water rights currently claimed in wilderness areas ranges from none in Strawberry Crater (AZ), a Forest Service headwaters area silent as to reserved rights to 418 rights, including 163 private rights, in Sycamore Canyon (AZ), a Forest Service downstream area in the silence category. The largest number of rights in a Colorado wilderness area is 113 rights, including 82 private, municipal and unknown holder rights, in the Indian Peaks area, a headwaters area in the silence category that is managed by the Forest Service. While these rights potentially all affect wilderness values, neither wilderness designation nor any federal reservation of rights accompanying that designation ameliorates their impact because the appropriation date of the reserved right would post-date the pre-existing water rights.⁵⁶ Consequently, rights acquired after wilderness designation (post-designation rights) are a better measure of threats – at least threats that agencies might ameliorate or avoid – than are total numbers of rights.⁵⁷

Federal post-designation rights are not included in this category as a threat unless they are held by an agency other than the wilderness management agency. The headwaters/downstream dichotomy that we use in this report treats federal lands upstream of a wilderness area as problematic for protecting water resources (see Section II.A.). That is, in categorizing an area as downstream, we assume that the wilderness management agency cannot use its non-wilderness federal lands as a buffer area to protect wilderness areas from upstream water development. Instead, we assumed that upstream federal lands could be developed for consumptive water uses to the peril of the wilderness area. While that is a reasonable concern, here we assume that at least water rights acquired by the wilderness management agency both within and upstream of wilderness areas since designation is for the benefit of – or at least not to the detriment of – wilderness values. We do so both to give agencies benefit of the doubt and because acquisition of state appropriative rights by agencies has been touted by both the states and others as an alternative (to reserved rights) for wilderness water protection.⁵⁸ Federal agencies claim water rights in both Arizona and Colorado wilderness areas for various administrative purposes, stock, wildlife and recreation. While conservationists (both within and outside the agencies) may question agency intentions and the effectiveness of these alternative measures, we at least separate these federal agency rights from non-agency rights for the sake of evaluation. Consequently, we include here as an indicator of threats to wilderness values only those post-designation water rights that are held by state, municipal, private, unknown holders, and federal agencies other than the wilderness management agency.⁵⁹ Federal non-reserved rights are evaluated in Section III.C.2 as an indicator of protective measures.

⁵⁶ While all reserved rights would be junior to pre-existing rights, even junior rights give the agency a place at the table for protesting new or changes to other rights.

⁵⁷ There are many rights recorded in the ADWR system that have file dates subsequent to the wilderness designation but that do not have priority dates. These water rights are not included here because it is impossible to determine if there is a priority date without looking at individual records.

⁵⁸ See Lois G. Witte, *Still No Water for the Woods*, SG039 A.L.I.-A.B.A. 239 (2001) [hereinafter Witte].

⁵⁹ In this context, "state" does not include CWCB held instream flow rights in Colorado, but does not exclude other state held rights which might include stock watering, mining and other commercial purposes as well as those for wildlife. All "unknown holder" water rights specified for use as "minimum stream flow" are assumed to be CWCB

See Table 7A and Figures 1a and 1b for a summary of areas affected by post-designation rights for each language category. Figures 2a and 2b summarizes areas affected by post-designation rights for all language categories combined. The following comparisons use the data represented in Figures 1b and 2b, assuming additional threats from water rights in large upstream areas.

Overall Data (Table 6A):

Fourteen of 133 wilderness areas (11 percent) have post-designation rights within the wilderness area. There are post-designation rights upstream of 20 percent of all 133 areas and 39 percent of the 69 downstream areas.⁶⁰

- 18 percent of silence areas have post-designation rights **within the wilderness** – all but one of the post-designation rights is in an area silent on reserved rights; one is in an express area.
- There are no post-designation rights **within** either denied right or non-assertion areas.
- The distinction among categories lessens considering **upstream** rights as 20 – 24 percent of denied, silence and express areas have post-designation rights upstream of them.

Apparently the Congress was correct that there was little potential for development of the headwaters areas that it designated with non-assertion language, as there are no post-designation rights in these areas. Similarly, the legislation for one of the denied language wilderness areas (Black Ridge Canyons), justified denial of reserved rights because there was little potential for development in this headwater area.⁶¹

Headwaters versus Downstream (Table 6B):

Regarding post-designation rights **within wilderness areas**, while the silence category differs appreciably from all other categories, there is little apparent difference between headwater and downstream areas:

- Considering only downstream areas: the percentage of areas with post-designation rights is similar in denied and express categories (none in the denied category to 4 percent in the express category), compared to 16 percent in the silence category.
- Considering only headwaters areas: the only rights are in the silence category (18 percent of silence category areas are affected).
- Within the silence category, areas with post-designation rights are about equally divided between headwaters and downstream areas.

rights, but some CWCB rights may be inadvertently included with the unknown holder rights if they were designated for "other" uses in the CDWR database.

⁶⁰ Only the downstream areas are included in this calculation because there is no "upstream" of the headwaters areas. The percentage of areas with upstream rights reported in these tables may be artificially high. There were 22 areas in the study (four Colorado and 18 Arizona) for which only "vicinity rights" were tabulated – upstream rights within 12 miles of the wilderness area boundary. Upstream post-designation rights were not found in the vicinity of 12 of these areas, but it was assumed for these tables that all 22 of these areas might have post-designation state and private upstream rights. The same assumption was not made for federal post-designation rights used to indicate protective measures as we assumed that federal agencies filing for rights to protect wilderness values would file for these rights in the vicinity of the wilderness area.

⁶¹ See Table 2, P.L. 106-353.

Post-designation rights **upstream of downstream wilderness areas** vary from affecting 25 of denied right areas to 33 percent of express areas to 42 percent of silence areas.⁶²

Agency Differences (Table 6C):

In general, there is very little difference between Forest Service and BLM areas regarding post-designation water rights either within or upstream of wilderness areas.

Regarding post-designation rights **within wilderness areas**, the silence category differs appreciably from all other categories:

- BLM varies from no effect of post-designation rights in its non-assertion and denied areas and just three percent of its express areas affected to 25 percent of its silence category areas affected.
- The Forest Service sees no effect of post-designation rights in denied and non-assertion areas, but 18 percent of silence category areas affected.

Regarding post-designation rights **upstream of wilderness areas**:

- For BLM, the percentage of areas affected increases from 26 percent of express areas, to 50 percent of silence and denied areas with no non-assertion language areas affected.
- For Forest Service, the silence category with 21 percent of areas affected differs from all other categories with no areas affected.

State Differences, including Adjudications (Table 6D):

Regarding post-designation rights **within wilderness areas**, there is little difference between the states. Overall, 15 percent of Arizona areas are affected by post-designation rights within wilderness areas; 21 percent of Colorado areas are so affected

- In Arizona, the silence category has 15 percent of areas affected compared to only two percent of express areas affected.
- Overall, a slightly larger percentage of wilderness areas outside of adjudication basins are affected (20 percent outside to 13 percent within active adjudication basins).
- Areas outside active adjudication basins are affected more in both silence and express rights categories.
- In Colorado, only the silence rights category has post-designation water rights (21 percent of areas affected)

Regarding post-designation rights **upstream of wilderness areas**, Arizona has twice as many areas affected with 27 percent of Arizona areas and 12 percent of Colorado areas affected.

- In Colorado, the threat from upstream development is similar in denied and silence category areas with 20 and 14 percent of areas affected, respectively.
- In Arizona, silence and express language categories have 32 percent and 21 percent, respectively, of areas affected by upstream rights.
- About the same percentage of active (28 percent) and inactive (33 percent) adjudication basin areas in the silence category are affected; but

⁶² By definition, there should be no post-designation rights upstream of headwaters wilderness areas – and there are none.

- A greater percentage of areas outside active adjudication basins (39 percent compared to 12 percent) in the express category are affected.

General Trends:

Considering the areas as a whole, there are clear differences in post-designation rights among the categories of statutory language with silence category areas having an overwhelming majority of post-designation rights within wilderness areas. Even so, only 18 percent of silence category areas are affected by these rights.

When considering all wilderness areas, upstream post-designation rights are about equally distributed across language categories, with silence, express and denied rights areas sharing the effect of these rights about equally. However, when headwaters areas are eliminated, it appears that post-designation rights upstream of areas (i.e., upstream of downstream areas) differentially affect language categories, varying from affecting 25 of denied right areas to 37 percent of express areas to 47 percent of silence areas.⁶³

While the data summaries suggest that only a few Arizona and Colorado wilderness areas are potentially affected by post-designation water rights (11 percent by rights within wilderness areas and 22 percent by upstream rights), even fewer may actually be threatened or the threats may have already been thwarted. While the scope of this study did not permit a detailed analysis of each water right, a sampling of more detailed records and interviews suggest that some of the threats suggested by the data tabulation may not be actual threats or at least current threats.⁶⁴

Among the downstream Arizona wilderness areas, there are only five wilderness areas with a total of 10 private post-designation rights within or on the borders of the wilderness areas. None of these Arizona rights are as yet perfected. Three of the rights may actually be outside the wilderness areas;⁶⁵ an additional right may be pre-designation.⁶⁶ The five rights filed for wilderness area water within Paria Canyon-Vermillion Cliffs are for stock watering rights, but have been stalled by the ADWR pending lawsuits regarding the land. BLM has protested the right within the downstream Mount Nutt area because it was within the wilderness boundaries.⁶⁷

⁶³ There are no downstream non-assertion language areas.

⁶⁴ Rather than eliminating them from the data summaries, we chose to include them because each individual right could not be checked in the states' files.

⁶⁵ The two rights that appear to be on the border of Red-Rock Secret Mountain are actually outside of the wilderness area. The filing apparently associated with Cottonwood Point might or might not lie within the wilderness area. The stated cadastral for its diversion and point of use appears to be within the wilderness area, but the actual reservoir for which the expansion right was filed does not.

⁶⁶ The active surface filing within Sycamore Canyon (a statement of claim or "36 claim") appears in the ADWR database as post-designation, but the imaged records indicates a priority date claimed in the 1900s. "36 claims" are filed for water put to a beneficial use before March 17, 1995 per the Water Rights Registration Act. They are not adjudicated water rights, and therefore the priority dates listed in the Arizona database are subject to judicial modification.

⁶⁷ ADWR imaged records indicate that someone filed for a right to use water in the wilderness area for stock watering. There was already a prior private water user at the diversion point, and the BLM had filed for federal reserved water rights for the water source in question. The records indicate that both the BLM and the prior private party objected, and the person who filed for the right did not pursue his claim further.

The Forest Service protested the only Arizona headwaters post-designation private right, a stockpond claim filed in the Superstition area.⁶⁸

Similarly, some of the apparent threats to wilderness values in Colorado are not current threats. For example, while five private rights in the Indian Peaks area are recorded with post-designation priority dates, these rights are exchange rights rather than new rights and do not directly affect water in the wilderness area. Four post-designation rights in the Flat Tops may indeed be a threat to the area, but they are apparently on a private inholding.

3. Large Quantity Rights in Wilderness Areas

We also use large quantity surface water rights within wilderness areas as an indicator of potential threat to wilderness values. As was true of the other indicators, this indicator is also problematic. First, "large" is a relative term that cannot be precisely applied to wilderness areas without assessing the hydrology of each area. To evaluate the impact of water rights, their size should be defined relative to the hydrologic regime of the stream from which they are diverted, and relative to cumulative diversion amounts above the point of diversion. If size of right is to be useful, the type and period of use should also be evaluated as storage rights, year-around use of water for municipal or industrial purposes, and growing season use for irrigation may all differ as to impact on wilderness areas. Because this hydrological analysis was beyond the scope of the project, arbitrary "large" rights were chosen for Arizona (greater than 100 acre feet per year or 0.138 cubic feet per second (cfs)) and Colorado (greater than 5 cfs or 3622 acre feet per year) to provide a very general indicator of potential threat.⁶⁹ While using two standards for "large" makes state-to-state comparison difficult, it compensates, in part, for the overall higher aridity of Arizona sites.

Groundwater wells were also summarized for the study (see large format Table 3, column U, large format Table 4, columns M-U, and large format Table 5F) but groundwater is not analyzed in Table 6 because there are so few wells identified, because it is not clear from the data if groundwater withdrawal affects surface water in all instances, and because it is difficult to compare the data between Arizona and Colorado (see Appendix C, Study Methods). Only 17 of 133 wilderness areas (13 percent) have large groundwater wells within or upstream of wilderness areas (large format Table 5F) – six areas in Colorado and 11 in Arizona. The wells are fairly evenly distributed as follows: 7 wells associated with one denied area (20 percent of areas affected); 58 wells associated with 9 silence category areas (12 percent affected); 3 wells

⁶⁸ The stockpond was built in 1973, but the claim was not filed until 1979 (File #38-075696). The two-acre stockpond was built (or to be built) for both livestock and wildlife watering. Tonto National Forest protested this claim, stating that it was on Forest Service land and the right to use that water by a private citizen would interfere with the management and administration of the lands, but the protest was rejected by the ADWR for technical reasons. There is no mention of the wilderness area in the imaged records and it is unclear whether the claim was ever perfected.

⁶⁹ The sizes of large rights were chosen after separately evaluating the Arizona and Colorado data for "natural breaks" in the data. Most of the Arizona data were reported in acre feet per annum; the Colorado data were primarily reported in cfs. Large rights are highlighted in red on the data sheets for each wilderness area (See large format Table C-1 and Appendix C). While the threshold numbers were arbitrary, many of the large rights were well over the threshold size. In a few cases, one right holder had several rights on the same source. While this does not always result in a large diversion from the same point, it does occur. In most cases, at least some of these rights met the large right threshold and are included in this summary.

associated with 2 non-assertion areas (22 percent affected); and 5 wells associated with 5 express areas (12 percent affected). Most areas have one or two wells; the Indian Peak wilderness has 46 wells including two post-designation wells on the border of the area. Arizona does not record priority dates for groundwater permits so post-designation wells could not be identified.

Owing to many hydrologic and demographic factors, large water rights in the Arizona and Colorado wilderness areas are not evenly distributed. Compare large format Tables 3 and 4 and see large format Table 5E. Many areas have no large rights. Several areas have multiple large rights: four downstream areas have more than 10 large rights; five headwaters areas have more than 10 large rights. The greatest number of large quantity rights is in the Indian Peaks area – a Colorado headwaters area with 33 large rights including 5 municipal rights. Other concentrations of large rights are found in three downstream areas: Holy Cross (CO) (26 including 16 municipal), Flat Tops (CO) (25 rights), and Four Peaks (AZ) (21 Salt River Project rights).

While only post-designation rights were included as threats in the previous section, we discuss both total large rights and post-designation large rights in these comparisons. We do so to recognize at least some of the pre-existing threat to wilderness values and because some of the pre-existing rights have not as yet been put to use – their potential threat to wilderness values is, consequently, still very real. Furthermore, while large right water users may be more problematic for agency managers, dealing with them to protect wilderness water resources may also be more critical.

See Table 7A and Figures 1a and 1b for a summary of areas affected by large rights for each language category. Figures 2a and 2b summarize areas affected by large rights for all language categories combined.

Overall Data (Table 6A):

In evaluating **all large rights**, the statutory language categories can be divided into two distinct groups:

- Silence, denied and non-assertion categories have 43 percent, 40 percent and 33 percent, respectively, of their areas affected by large rights.
- In contrast, only seven percent of express rights areas are affected.

Overall, there are few threats to Arizona and Colorado wilderness areas from new, large rights and, consequently, no appreciable difference between the statutory language categories. The two **post-designation large rights within wilderness areas** (see large format Table 5E):

- Affect only silence category areas and only 3 percent of those areas;
- Affect only Colorado wilderness areas; and
- Affect only Forest Service areas.

There are also two large post-designation rights upstream of one wilderness area.⁷⁰ These rights:

- Affect only an express rights area (only 2 percent of all express areas);
- Affect only Arizona wilderness; and
- Affect only a BLM area.

Headwaters versus Downstream (Table 6B):

There appears to be little difference regarding presence of large water rights related to the headwaters – downstream distinction. Taken as a whole, large rights affect about 33 percent of headwater areas and 29 percent of downstream areas. Areas affected by large rights in both silence and express categories are split about equally between headwaters and downstream areas.

Comparing statutory language for **all large rights**:

- In downstream areas, there is appreciable difference between denied and silence categories (with 50 percent and 42 percent of areas affected) on one hand and the express category with only 7 percent affected on the other.
- In headwaters areas, silence and non-assertion categories (with 45 and 33 percent affected) can be contrasted with denied and express categories (with 0 and 6 percent affected).

Agency Differences (Table 6C):

There is an apparent difference between Forest Service and BLM areas in terms of both percentage of areas affected by **all large rights** and total number of large rights:

- Overall, 49 percent of Forest Service areas are affected by large rights;
- Only 14 percent of BLM areas are affected by large rights.
- A large majority (82 percent) of large rights (233 of 285 total large rights) are in Forest Service silence category areas.

Regarding **all large rights**:

- For BLM, percentages of areas affected range from none of the non-assertion category, to 10 with express language, 25 percent in the silence category, to 50 percent with denied rights.
- For Forest Service, denied and non-assertion categories have 33 and 38 percent respectively, compared to 57 percent of silence category areas affected.

State Differences (Table 6D):

Overall, over half of all Colorado wilderness areas are affected by **all large rights** (58 percent); while only 19 percent of Arizona areas are so affected.

- Large percentages of silence, denied and non-assertion categories are affected by large rights in both Arizona and Colorado:
 - The silence category has the largest percentage of areas affected in both Arizona and Colorado (28 percent and 69 percent, respectively).

⁷⁰ These upstream rights are not reflected in large format Table 5 or Table 6, but see large format Table 3, column T. T.K. Bar Ranch Investments filed two rights for a placer mining operation upstream of the Hassayampa River Canyon area to use almost 1000 acre-feet per year for washing rock (proposed as a non-consumptive use). The priority dates of the rights are two years after the wilderness area designation. BLM approved the mining operation without comment on the water rights. These upstream rights are not as yet perfected. (File ID #33-096184)

- In contrast, only 7 percent of express rights areas are affected; all of these are in Arizona.

Adjudication Areas (Table 6D):

Overall, 23 percent of areas in active adjudication basins are affected by large water rights; only nine percent of areas outside active adjudication basins are affected by large water rights.

- Considering only wilderness areas in active adjudication basins, a larger percentage of silence areas are affected (34 percent) than express rights areas (8 percent).
- The same is true considering only wilderness areas outside the active adjudication basins, although the percentage differences are much less (13 and 6 percent, respectively).

General Trends:

Overall, more of the differences in **all large rights** appear to be attributable to agencies and states than to language categories with Colorado and Forest Service seeing a larger potential effect of large rights than Arizona and BLM. If there is any difference based on statutory language, it is a low percentage of express language areas affected compared to all other areas. No pattern is evident from distribution of the few **post-designation large rights**.

4. All Indicators of Threats to Wilderness Water

We described the threats to wilderness water in the above sections primarily as a background to discussing agency action to protect wilderness water resources in the following section.

In general, the comparison of individual threat indicators across the range of reserved water rights language categories does not suggest consistently higher threat to areas in any language category:

- Literature searches and interviews identified conflicts associated with only 20 percent of Arizona and Colorado wilderness areas with an upward trend in conflict from non-assertion (11 percent) and express (12 percent) to silent (24 percent) and denial language (40 percent) categories.
- Water rights data indicate that only 11 percent of areas have private, municipal and state held post-designation rights within them, but a majority of these are in areas silent as to reserved rights (18 percent of silence areas affected).⁷¹ Upstream post-designation rights are more equally distributed across language categories, with silence, denied, and express language areas sharing the effect of these rights about equally (20-24 percent of each category affected).
- Overall, large water rights represent the greatest individual threat to wilderness areas with 31 percent of all areas affected. Large rights similarly affect non-assertion (33 percent), denial (40 percent) and silence language areas (43 percent), compared to only seven percent of express language areas. About 49 percent of Forest Service areas have large rights compared to only 14 percent of BLM areas. There are, however, only two large

⁷¹ A more detailed analysis of some of the post-designation rights suggest even less impact from post-designation rights as some of the rights filed have been successfully contested or were inaccurately mapped within the wilderness areas.

post-designation rights (in Colorado Forest Service areas silent as to reserved rights), affecting only two percent of all areas.

When indicators of threats are combined, however, it appears that silence and denied language areas are most affected by one or more threat (64 and 60 percent, respectively), non-assertion areas are less affected (44 percent of areas), and express language areas are least affected (30 percent). Overall, our indicators suggest that wilderness water is in some way threatened in 52 percent of all Arizona and Colorado wilderness areas.

C. PROTECTION FOR WILDERNESS WATER: COMPARISON OF LANGUAGE CATEGORIES

The study also evaluated three indicators that agencies and others have taken measures to protect wilderness values:

1. Wilderness reserved rights asserted;
2. Post-designation, non-reserved, federal water rights acquired; and
3. Instream flow rights associated with areas.

Table 7B summarizes these indicators of protective measures for the language categories with data from Table 6A. See large-format Table 7D for the tally of these protective measures for all wilderness areas.

Table 7B. Summary of Protective Measures - Totals by Language Category

Language Categories	Wilderness Reserved Rights	Other Reserved Rights	Post-Designation Non-Reserved Rights	Post-Designation Non-Reserved, Upstream	All Instream Flows*	Post-Designation ISF	One or More Protective Measure	One or More Alternative Protective Measure
5 Denial Areas	0%	20%	20%	0%	40%	20%	80%	80%
76 Silence Areas	4%	13%	20%	12%	53%	43%	75%	74%
9 Non-Assertion Areas	0%	0%	0%	0%	67%	22%	67%	67%
43 Express Areas	28%	5%	9%	9%	12%	0%	47%	26%
133 Total Areas	11%	10%	15%	10%	40%	27%	65%	58%

* Note that the "All Instream Flow" category includes "Post-Designation ISF", i.e., the categories are not additive.

For a bar chart comparing these data, see:

- Figure 4 for the distribution of protective measures across language categories;
- Figure 5 for percentage of areas protected by each measure;
- Figure 6 for percentages of areas in each language category protected by one or more protective measure.

Figure 4. Areas Protected by Various Measures by Language Category

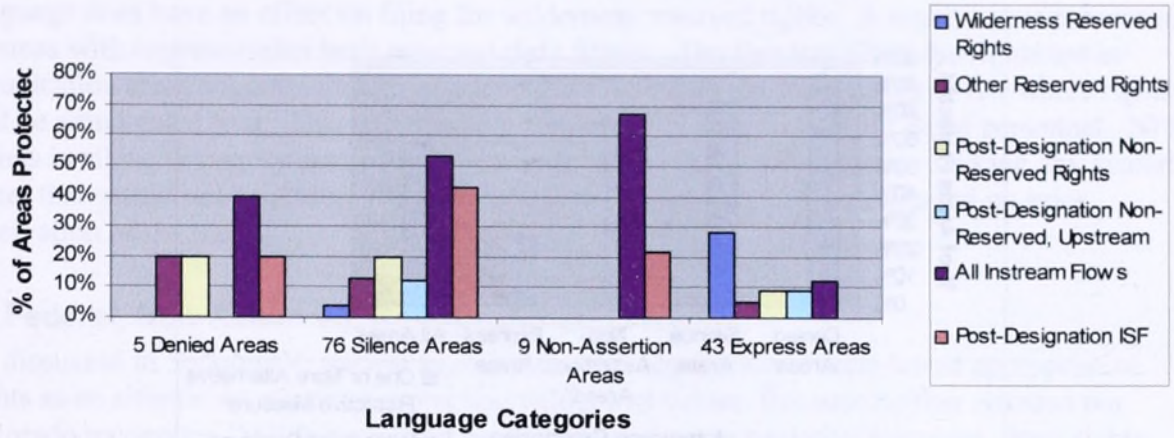
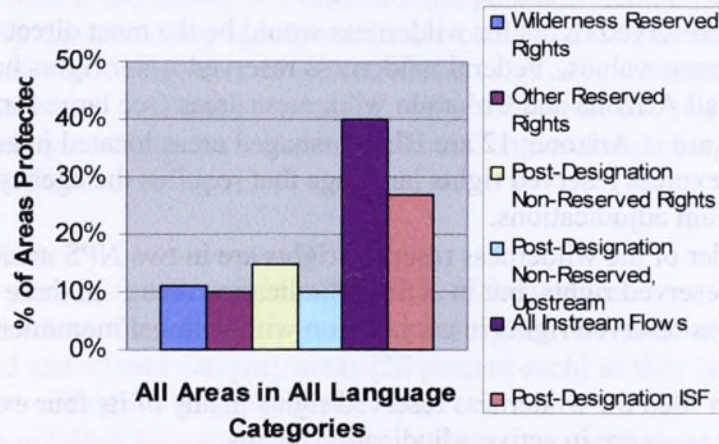
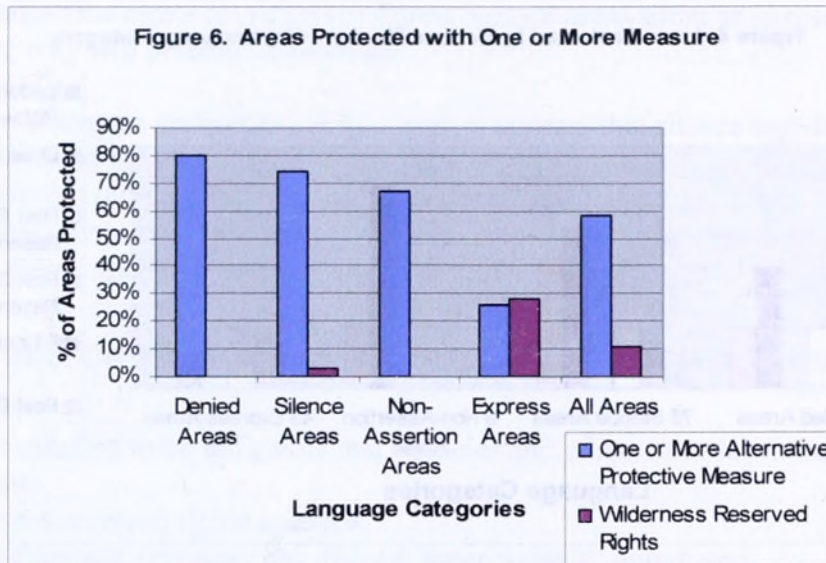


Figure 5. Areas Protected by Various Measures





1. Federal Wilderness Reserved Water Rights Asserted in Wilderness Areas

Assertion of federal reserved rights for wilderness would be the most direct means of protecting water-related wilderness values. Federal wilderness reserved water rights have been asserted for only 11 percent (of all Arizona and Colorado wilderness areas (see large format Table 5G):

- All 15 areas are in Arizona; 12 are BLM managed areas located in active adjudication basins with express reserved rights language that requires the agency to protect those rights in stream adjudications.
- The remainder of the wilderness reserved rights are in two NPS areas with language silent as to reserved rights, but in active adjudication areas. In these areas, NPS has filed for wilderness reserved rights in conjunction with national monument and park reserved right filings.
- FWS has not filed for wilderness reserved rights in any of its four express language areas; two of these areas are in active adjudication basins.

BLM has filed for wilderness reserved rights in over 50 percent of its express right wilderness areas that lie within adjudication basins; the agency has not filed any claims for wilderness reserved rights for areas in non-adjudication basins. These reserved rights are recorded as Program 45 filings in anticipation of the on-going adjudications. The filings have listed priority dates as of the date of the wilderness designation as the expected priority dates.

The NPS filings are not given any special designation in the ADWR database (like the BLM Program 45 filings), but the ADWR's imaged records indicate that the filings are for wilderness purposes to the extent that these purposes "exceed" the purposes of the national monument for which reserved rights were originally allocated. While the ADWR database does not evidence similar rights filed by Forest Service, interviews suggest that the Forest Service is preparing to participate in the adjudications by inventorying and otherwise readying their claims.

General Trends:

While there are express rights areas without reserved rights filings, the data suggest that statutory language does have an effect on filing for wilderness reserved rights. A much larger percentage of areas with express rights have reserved right filings. The fact that all of the rights are in adjudication areas suggests that the agencies are prioritizing their resources to file where rights will be adjudicated first. This conjecture is supported by interviews with BLM personnel. NPS filings in silence category areas appear to be for the sake of completeness – seeking any available water that would not be allocated to the agency or area in an adjudication based on prior reservation of the land.

2. Federal, Non-Reserved, Post-Designation Rights

As discussed in Section IV, federal agencies can use acquisition of state-based appropriative rights as an alternative means of protecting wilderness values. Because neither Arizona nor Colorado recognizes “wilderness” as a beneficial use for appropriative purposes, these rights supporting the purposes of the wilderness, could be listed for a variety of uses including wildlife and recreation in Arizona and stock and domestic (for administrative purposes) in either state.⁷² Instream flow rights held by federal agencies are not included here as they are discussed in the following section. As mentioned above, it is assumed that post-designation rights within wilderness areas held by the managing agency are for the benefit of wilderness uses and values, including recreation and wildlife or stock where permitted. The same assumption is made for post-designation federal rights obtained upstream of wilderness areas, although it is less likely to be true considering agency multiple-use mandates and the Congressional charge to avoid using multiple-use lands as buffer areas.⁷³

Overall Data (Table 6A):

There are 128 federal, post-designation rights **within** 19 wilderness areas:

- Federal agencies have filed for these non-reserved rights, within twice as many (by percent) denied and silence category areas (20 percent each) as they have in express areas (9 percent of express language areas).
- Agencies have not filed for non-reserved rights within any of the non-assertion rights areas.

⁷² In sampling background paperwork for some of these appropriative rights, we found that the wilderness status of the areas is not mentioned. For example, the BLM Safford office filed for water rights in Aravaipa Canyon Wilderness for the sole purpose of wildlife. There is no mention of the wilderness area in 45 pages of documents accompanying the claim and certificate materials even though the claim was made six years after the wilderness area was designated. (App. #33-095401) In Castle Creek Wilderness Area, Prescott National Forest received a water right for stock watering and wildlife with a priority date nine years after the wilderness designation date. Again, there was no mention of the wilderness area in any of the ADWR’s imaged records. (App. # 33-096259)

⁷³ The reader should remember that only upstream rights relatively close to wilderness areas are reported here. For example, federal rights on the Bill Williams River upstream of Rawhide Mountain wilderness (see Map 5) are not reported. While reporting only those rights in the vicinity of areas is obviously an incomplete listing of upstream rights, it increases the likelihood that the federally held rights reported are protective of, or at least not detrimental to, wilderness values. Consequently, we did not assume that areas with unsurveyed watershed areas (beyond 12 miles) have additional federally held rights protective of wilderness values. This is in contrast to our assumption that there may be more private and state rights that are a threat to wilderness values.

The data on **upstream** post-designation rights is similar for silence category and express areas, but with more individual rights and smaller percentages of silence category areas affected.

Headwaters versus Downstream (Table 6B):

Headwaters areas have a larger percentage of post-designation rights **within** them than downstream areas:

- 100 percent headwaters versus 0 percent downstream in the denied category
- 24 percent headwaters versus 16 percent downstream areas in the silence category
- 13 percent headwaters versus 7 percent downstream areas in the express category

For headwaters and downstream areas evaluated separately, the pattern of silence category and express area rights is similar, with a larger percentage of silence category areas affected:

- Considering only downstream areas, 16 percent of the silence category areas and 7 percent of the express areas have federal, post-designation rights within the areas
- Considering only headwaters areas, 24 percent of the silence category areas and 13 percent of the express areas have federal, post-designation rights within the areas

The pattern for **upstream** post-designation rights is similar:

- Considering only downstream areas, 21 percent of the silence category areas and 15 percent of the express areas have federal, post-designation rights upstream of them.
- By definition, headwaters areas will not have upstream rights. We find, however, there is one “essentially headwaters” wilderness area – Pine Mountains (AZ) – with one post-designation upstream right. Pine Mountain is in the silence category..

Agency Differences (Table 6C):

Only the silence category has both Forest Service and BLM federal, post-designation rights. Within this category:

- Forest Service has a larger percentage of areas with post-designation rights **within the wilderness areas** than does BLM (23 percent versus 13 percent)
- BLM has a larger percentage of areas with post-designation rights **upstream** of them than does Forest Service (25 percent versus 11 percent)

BLM is the only agency with denied, silence and express area post-designation rights. BLM shows the highest percentage of post designation rights in its denied language areas (50 percent affected) and similar percentages of **within area** rights for silence (13 percent) and express (10 percent) areas. There is a larger percentage difference in **upstream** post-designation rights than that seen in the overall data.

State Differences, including Adjudications (Table 6D):

Almost all of the federal post-designation water rights are in Arizona. Consequently, the Arizona pattern for post-designation rights **within wilderness areas** follows the overall pattern with a higher percentage of these rights in silence areas than in express areas (32 percent versus 9 percent).

Considering only areas within or outside of active adjudication basins, there is no appreciable difference between silence and express language areas in terms of percent of areas affected.

There is, however, a large absolute number of post-designation rights in silence category areas in active adjudication basins and much smaller numbers in all other categories.

General Trends:

Overall, a larger percentage of areas silent as to reserved rights have “protective” post-designation rights both within and upstream of them than all other language categories. Twenty percent of denied right areas also have post-designation rights, but this represents only one area with post-designation rights.

When Forest Service and BLM are evaluated separately, BLM express language and silence areas appear “protected” to about the same degree by post-designation rights within the areas. Overall, BLM areas are protected less than Forest Service areas, although Forest Service areas in Colorado are not protected at all by post-designation rights.

One observation that is counterintuitive is that there is a preponderance of post-designation rights in headwaters areas compared to downstream areas (24 to 16 percent, respectively, in silence areas; 13 to 7 percent in express areas, 100 to 0 percent in denied areas) (Table 6B). If post-designation rights are a protective measure filed on the basis of need and headwaters areas are, in fact, at less risk than downstream areas, one would expect fewer post-designation filings in headwaters areas. A hydrologic analysis of the areas would be necessary to try to explain this observation.

3. Instream Flows

Instream flow rights have been recognized as an alternative to assertion of federal reserved rights for protecting wilderness area water for decades. Indeed, the Arizona instream flow program was recognized in Congressional debates and testimony as an established – and to some extent a preferred – method of protecting wilderness water. Congressional debates for the 1993 Colorado wilderness act did not address instream flows for wilderness areas, but the premise of the non-assertion language was that there were “other means” available to adequately protect the headwaters areas. In a previous Colorado bill there had been discussion of creating a formal arrangement with the CWCB for protecting areas through instream flow rights.⁷⁴

For this study, instream flows “associated with a wilderness area” are those rights held for the purpose of maintaining minimum stream flows or lake levels and recognized as such by either the CWCB in Colorado or the AWRD in Arizona. In Arizona, the data includes both certificated rights and those still in the process of perfection.⁷⁵ All of the instream flows summarized for this comparison are either within (at least in part) or upstream of the areas.⁷⁶

The ADWR reports 40 applications for minimum stream flows for waters associated with Arizona wilderness areas. These applications are for water within, upstream, and/or downstream

⁷⁴ See Appendix A for a brief summary of legislative history.

⁷⁵ Thirteen of the 40 applications for instream flows have completed certified. Twenty-seven were filed, and will consequently have priority dates, subsequent to the wilderness area designation. Arizona’s certification process is on hold pending litigation and there is no reason to suspect that certification will be denied.

⁷⁶ See Appendix B for a description of the states’ instream flow programs and Appendix C for a description of study methods related to instream flows.

of 22 wilderness areas.⁷⁷ Most of these are held by federal agencies. Arizona instream flow rights range in size from 724 acre feet held by BLM on People's Canyon Creek in the Arrastra Mountain area to 164,580 acre feet, held by BLM on the Virgin River in and upstream of the Beaver Dam Mountains area. See Table B-1, Arizona Instream Flow Rights for a summary of the instream flow applications.

There are 559 minimum stream flows and minimum lake levels maintained by the CWCB in association with Colorado wilderness areas.⁷⁸ Three wilderness areas represent 39 percent of these – Holy Cross with 47 rights, Mount Zirkel with 50 rights, and Weminuche with 37 rights. Federal agencies hold only limited instream flow rights in Colorado: federal reserved rights for the Cache La Poudre Wild and Scenic River, and for purposes of the national forest on the entire Rio Grande National Forest; and a couple of state based instream flow rights on the White River National Forest, acquired in the early days of the state's program under provisions which have since been changed. While the majority of the CWCB minimum lake level and flow rights are relatively small, there are a number of large rights as well. For example, the CWCB maintains a 300 cfs minimum flow right on the Gunnison River through Black Canyon of the Gunnison Wilderness. Unfortunately, failure of this study to evaluate the hydrology of the wilderness areas makes it impossible to speculate on whether these rights are sufficient to protect wilderness values.

Overall Data (Table 6A):

There are 590 instream flows associated with 53 (40 percent) of the Arizona and Colorado areas studied.

- The absolute number of instream flows ranges from six rights in four express areas to 500 rights in 41 silence areas;
- None of the instream flows in denial areas are in wilderness areas, i.e, all instream flows in the areas with denial language are within the "special" areas, rather than within wilderness areas.

Considering **total instream flows** associated with wilderness areas:

- Silence, non-assertion and denial categories all have large percentages of areas with instream flows (40 – 67 percent).
- Only the express category has a low percentage of areas with instream flows (nine percent).

Post-designation instream flows – rather than total number of instream flows – should be a better indicator of protection related to wilderness designation. Much less than half of all instream flows were acquired after wilderness designation, supporting the conclusion that the principal reason for acquiring the instream flows was not the special status of the area. Only the silence category has a large percentage of areas with post-designation instream flows:

- About 43 percent of silence category areas have post-designation instream flows;

⁷⁷ Thirty-one Arizona instream flow rights are tallied in large format Table 5; some rights are recorded twice as they affect two wilderness areas.

⁷⁸ This study did not compare the procedures of each state to determine whether Colorado might simply establish more rights on multiple segments of a particular stream. Using percentages of areas with rights should, however, eliminate this type of bias.

- About 20 percent of both denial and non-assertion areas (20 and 22 percent, respectively) have post-designation instream flows;
- No instream flow rights have been acquired in express areas since wilderness designation.

The number of post-designation instream flows in Colorado are probably related, at least in part, to the number of pre-designation instream flows. That is, there may be a limited number of post-designation instream flows because flows had already been protected – albeit for non-wilderness reasons and to a minimum degree – prior to wilderness designation.

Headwaters versus Downstream (Table 6B):

The data do not suggest any differences from the overall pattern of instream flows considering only headwaters or downstream areas.

- Considering downstream areas, denied and silence category areas have high percentages of instream flows and express areas have low percentages.
- Considering headwaters areas, silence category and non-assertion areas have high percentages of instream flows and express areas have no instream flows. Headwaters denial language areas do not have any instream flows, but there is only one headwater denial area and there are no perennial flows in this one area (Black Ridge Canyons, CO)

Agency Differences (Table 6C):

The data suggest a difference by agency in instream flows associated with wilderness.

- All categories of Forest Service areas have high percentages of instream flows: silence (62 percent), non-assertion (63 percent) and denied (66 percent).
- Both BLM silence category and express areas have low percentage (13 percent and 10 percent, respectively) of instream flows. While 100 percent of BLM non-assertion areas have instream flows, there is only one BLM non-assertion area. Consequently, we still conclude that BLM areas have relatively few instream flows, regardless of language.

Considering only **post-designation** instream flows:

- All but one of the areas with post-designation instream flows are managed by Forest Service.
- 54 percent of Forest Service silence category areas have post-designation instream flows.
- Only 3 non-silence category wilderness areas have post-designation instream flows, including:
 - One Forest Service denied language area (33 percent of denied language areas);
 - One Forest Service non-assertion area (13 percent of non-assertion language areas).
 - One BLM non-assertion area (100 percent).

State Differences (Table 6D):

The data suggest that Colorado has a more robust instream flow program than Arizona – at least in terms of total numbers of instream flows and percentage of wilderness areas with instream flows.⁷⁹ Silence category areas have appreciably more total number of instream flows than other

⁷⁹ Because the study did not analyze the hydrology of wilderness areas, it is impossible to compare how well each program protects wilderness values or ecological values throughout the respective states.

categories in both states. This pattern holds for both **total** instream flows and **post-designation** rights.

- High percentages of each category of Colorado wilderness areas have instream flows:
 - 93 percent of silence category areas (total); 69 percent (post-designation).
 - 67 percent of non-assertion areas (total); 22 percent (post-designation).
 - 40 percent of denied areas (total); 20 percent (post-designation).
- In Arizona, the percentage of areas with instream flows is much smaller, with:
 - 30 percent of silence category areas (total); 28 percent (post-designation).
 - 9 percent of express areas (total); 2 percent (post-designation).

General Trends

Water rights data suggest that there are differences between categories of areas regarding instream flows, with all but express areas having high percentages of total instream flows and silent areas having a high percentage of post-designation instream flows. Despite these differences, it is doubtful that statutory language has had any influence on acquisition of instream flows in Arizona and Colorado. The Forest Service in Colorado rarely participates in acquisition of instream flows on national forest system lands in Colorado because it cannot hold instream flows under Colorado law. Further, while the agency might be able to influence acquisition by objecting to or commenting on CWCB acquisition of rights, it rarely does so. CWCB acquisition is influenced more by value of the water resource and threats to it, tempered by a desire to avoid controversy, rather than by statutory language. For more discussion of instream flows, see Section IV.B.2.

The Arizona instream flow program, on the other hand, is supported by both BLM and Forest Service. Unfortunately, a challenge to constitutionality of the program by Phelps-Dodge has put a damper on agency filings for instream flows and state certification of existing applications such that it is unlikely that the current number of instream flows in Arizona is representative of agency interest in their acquisition.

4. All Indicators of Protective Measures for Wilderness Water

Overall, federal and state agencies have used one or more measure to protect 65 percent of all areas studied (Table 7B). One or more measure, including assertion of reserved rights, protects:

- 80 percent of denied language areas;
- 75 percent of silence areas;
- 67 percent of non-assertion areas; and
- 47 percent of express language areas.

By far, it appears that instream flows and post-designation instream flows are the measures used most to protect wilderness water resources (see Figure 5). Figure 6 illustrates that express language areas are, compared to all other language categories, protected least by alternative measures and most by assertion of wilderness reserved rights.

Results of interviews discussed in the following section suggest explanations of some of these patterns. In general, however, it appears that legislative language only positively influences assertion of wilderness reserved rights.

IV. PROTECTION OF WILDERNESS WATER – FEDERAL AGENCY RESPONSE TO STATUTORY LANGUAGE

This study looked at several methods through which agencies can protect wilderness water resources. The previous section analyzed state water rights data in an attempt to observe any differences in use of these protective measures based on differences in statutory language. During the course of the study, interviews with a variety of agency personnel suggested that an agency-by-agency analysis would reveal problems with any apparent correlations as there are substantial differences among the agencies' approaches to water resource management.

A. BUREAU OF LAND MANAGEMENT

There are 47 wilderness areas in Arizona and three wilderness areas in Colorado managed completely or primarily by the BLM. The Tabeguache area in Colorado is also managed, in part, by BLM, but is treated as a Forest Service area. There are BLM areas in all four language categories and both states. Arizona wilderness areas represent two of the categories; Colorado areas populate the other two language categories. In 1984, Congress designated nine areas in Arizona with a bill that was silent as to federal reserved water rights. In the Arizona Desert Wilderness Act of 1990, Congress more than doubled the size of one of these areas (Aravaipa Canyon) and designated 38 additional areas as wilderness. These 39 areas have express federal reserved water rights language, including the requirement to protect those rights in appropriate Arizona general stream adjudications.⁸⁰ In three Colorado bills, Congress expressly denied wilderness water rights to two BLM wilderness areas and the Tabeguache (non-wilderness) area and designated one BLM wilderness area with non-assertion language. See large format Tables 3 and 4 for the wilderness areas in each language category; management agencies are indicated in column F in these tables. See also Tables 1 and 2, organized by designating statute, for both the managing agency and category of language for each wilderness area.

Water rights data described in Section III and interviews and literature search data, described in this section, suggest a difference between express reserved right language and all other categories of language regarding BLM protection of wilderness water.⁸¹ Express reserved water rights language requiring agency participation in state adjudications prompts BLM to file for wilderness reserved rights; no other language category has prompted reserved water rights filings. The data do not strongly suggest any other conclusion regarding the effect of water rights language on BLM protection of wilderness water resources. Where there is silence as to reserved rights, the agency has not, and is not likely to assert federal reserved rights. Further, regardless of an opportunity – or obligation – to assert express reserved rights, BLM appears to opportunistically use whatever other means are available to protect wilderness water, regardless of statutory language (see representation of all types of protective measures for express rights in Figure 5).

⁸⁰ Aravaipa Canyon is treated as an express language area.

⁸¹ Information on these areas was gathered through searches of the AWRD and CDWR databases and interviews with 11 Arizona and Colorado agency personnel. Determining how well particular agency actions protect water in wilderness was beyond the scope of this study.

BLM's use of alternatives to reserved rights to protect wilderness water could be influenced by the agency's preference for cooperation with state agencies over assertion of federal rights. This preference is evident in formal BLM policy and revealed in the legislative history of wilderness bills. The relative low percentage of express areas protected by alternative measures may be attributed in part to the agency's concentration of effort on reserved right filings and the problems with instream flow filings in Arizona.

1. Wilderness Reserved Rights

In Colorado, BLM has no opportunity to assert wilderness reserved rights as all BLM areas in Colorado have either non-assertion or denied rights language. In Arizona, BLM has a specific program for quantifying wilderness reserved rights – making Program 45 filings for wilderness reserved rights in anticipation of general stream adjudications. Following passage of the Arizona Desert Wilderness Act in 1990, BLM staff reportedly sat down with then Solicitor John Leshy who advised them to quantify rights within express rights wilderness areas and notify the state of claimed rights regarding them. BLM then coordinated with ADWR and devised the Program 45 filings to notify the state of previously unclaimed rights and to fit these federal reserved rights into Arizona's record keeping and adjudication process. In filing Program 45 rights, BLM files one form for each wilderness area with several water sources listed. Prior to filing for the wilderness reserved right, BLM checks ADWR records for certificated rights on the applicable waters to determine how much water has been allocated and conducts a field inventory of the waters in order to claim all remaining flows.⁸²

It appears that both legislative language and limitation on agency resources influence to what extent BLM makes these filings for its Arizona wilderness areas. With limited resources, the agency is concentrating its reserved right filings on areas where express reserved rights language requires participation in adjudications and where adjudications are currently occurring.⁸³ BLM has filed for wilderness reserved rights in slightly more than half (9 headwaters and 3 downstream areas) of their 23 express rights wilderness areas that are within active adjudication areas. See large format Table 5A for wilderness areas in active adjudication basins (these areas are listed with bold or italics type); see also large format Table 5G for wilderness areas with asserted federal reserved rights. Within these active adjudication basins, BLM is currently gathering the necessary hydrologic data and preparing filings for express rights areas that do not already have Program 45 filings. None of the 24 BLM wilderness areas outside of active

⁸² BLMs Program 45 filings include two groundwater claims in the North or South Maricopa Mountains wilderness area. The Arizona Supreme Court has determined that federal reserved rights extend to groundwater to the extent groundwater is necessary to accomplish the purpose of a reservation. *In re the General Adjudication of All Rights to Use Water in the Gila River System and Source*, 195 Ariz. 411, 989 P.2d 739 (1999), cert. denied sub nom. Phelps Dodge Corp. v. U.S. and Salt River Valley Water Users' Assn. v. U.S., 530 U.S. 1250 (2000) available at <http://www.supreme.state.az.us/wm/bulletin/InterlocutoryAppeals.htm>.

⁸³ As mentioned previously, the Arizona wilderness bill that designated BLM express rights areas included language requiring the agency to protect those rights in appropriate stream adjudications.

adjudication basins have Program 45 filings regardless of their language category.⁸⁴ However, interviews with staff indicate that BLM is also working on filings for these areas.⁸⁵

Because there are no Arizona silence category areas within active adjudication basins and only denied and non-assertion BLM areas in Colorado, it is not clear from the water rights data if BLM is driven more by explicit language creating the rights – language which requires protection of the rights in the adjudication process – or simply by the requirements and deadlines of an adjudication process coupled with inadequate resources to do more filings. Formal BLM policy, the legislative history of the Arizona Desert Wilderness Act, and interviews, however, suggest that BLM is not likely to assert federal reserved rights unless the area has an express right and it is politically easier for staff to assert these express rights when the agency is legislatively required to do so.

BLM has the most specific water policy of the agencies studied. In general, BLM's written policy provides that states have the primary authority over water resources and the BLM should cooperate with state governments in protecting water uses on public lands. The BLM is also directed to acquire and/or perfect water rights necessary for management of public lands through state law and administrative claim procedures, unless a federal reserved right is available and the purpose of the reservation is better served through assertion of the federal reserved water right.⁸⁶ To assert a reserved right where Congress has been silent on water rights would be counter to BLM's policy and tradition of working cooperatively within the state's water rights system and would require the agency to determine that the purposes of a wilderness reservation would be "better served" by asserting a federal reserved right.⁸⁷

The legislative history of the Arizona Desert Wilderness Act of 1990 suggests the same strong preference for cooperation with the state and avoiding, where possible, assertion of federal reserved rights.⁸⁸ In Senate hearings, BLM Director Cy Jamison opposed inclusion of express reserved water rights language in both the House and Senate bills, citing adequacy of Arizona law for protecting DOI's interests.⁸⁹ Jamison stated: "We think if a water right is needed BLM can apply under State law."⁹⁰ Barring complete deletion of the express water rights language,

⁸⁴ BLM has 16 express rights areas (two headwaters and 14 downstream areas) and eight silence category areas (two headwaters and 6 downstream) that are outside the active adjudication basins.

⁸⁵ For example, BLM is currently working on filings for Mt. Wilson, Upper Burro Creek and Arrastra outside of active adjudication basins.

⁸⁶ See Appendix D for a more detailed description of BLM wilderness and water policy.

⁸⁷ This conclusion is based on the Department of the Interior's (DOI) willingness to settle for a minimal federal reserved right for the Black Canyon of the Gunnison National Park and wilderness area in Colorado as well as a comment by DOI staff that BLM does not recognize wilderness reserved rights not associated with special reservations.

⁸⁸ For additional details on the legislative history of the Arizona Desert Wilderness Act, see Appendix A.

⁸⁹ S Hearing 101-998 at 117-118, BLM Director Cy Jamison testifying. While BLM opposed including express reserved water rights for wilderness areas, Jamison noted that reserved rights language would be "meaningless" as only 11 of the 39 express rights areas have water on them.

⁹⁰ S. Rep. 101-359 at 24-34 ("Arizona is the first State to proceed with this type of water rights language and we feel it would have adverse consequences if applied on a National Basis.")

Jamison suggested adopting House bill language (which was eventually adopted) that more specifically characterized how water rights should be acquired through state processes.⁹¹

Interviews further supported these indications from policy and legislative history that BLM is not likely to assert reserved rights for its Arizona areas silent as to reserved rights. The motivation for this inaction may be largely statutory language (or lack thereof in this case), but BLM's decision not to file for reserved rights in silence areas is also motivated by their location in the Arizona Strip region, with little or no available water, no current adjudication, and no adjudication in the foreseeable future.⁹²

2. Alternatives to Federal Reserved Water Rights

As Jamison alluded to in his testimony, agencies have several alternatives to the assertion of federal reserved rights for protecting wilderness water resources. We found no reason to believe, however, that statutory language influences use of these alternatives. First, the data described in Section III indicates little difference in use of two of these protective methods (federal post-designation rights or instream flow rights) between BLM silence category and express rights areas.⁹³ Because there are so few Colorado BLM wilderness areas (the only areas with non-assertion or denied rights language), it is impossible to reliably quantitatively compare the use of alternative methods for these language categories. In addition, discussions with BLM staff confirm that legislative language is not a driving force in choosing to apply these tools to protect wilderness water. Absent express reserved rights, BLM uses a variety of tools to protect wilderness water resources on a case-by-case basis. As described below, some of the factors that influence the choice of method are: risk to the areas from additional water development, availability of agency resources to gather and analyze data, the controversy of using the method compared to the benefit to be gained, cooperation with state agencies, and the particular hydrologic and water rights situation.⁹⁴

⁹¹ Both Jamison and Congress recognized, however, that an important value of the wilderness reserved right (or other water rights discussed in the following section) was for access into the state water process. In the few areas where there might be conflict over water, for example where there is no appurtenant water or where the water is fully appropriated, a reserved right would give BLM the ability to oppose senior rights or attempt to intervene in any change of use proceedings in state court. S Hearing 101-998 at 117-118 ("BLM could become a party to any future legal proceedings involving changes by other water right owners in points of diversion, uses or transfers of water or contests of validity of rights held or applied for by others.")

⁹² Staff comments on management of the Tabeguache area in Colorado suggested that only express reserved rights language would prompt assertion of these rights. Staff indicated that they consider it is unlikely that BLM would afford their portion of the Tabeguache non-wilderness area much different treatment if it had a wilderness designation with the same explicit denial of reserved water right or with non-assertion language. In contrast, if it were a wilderness area with express reserved rights language, staff indicated that it is likely that BLM would be busy quantifying that right as part of its planning process. These comments do not, however, specifically address the question of agency action for areas with silence as to reserved rights.

⁹³ See Table 6C, 10% of express and 13% of implied areas affected by both federal post-designation and instream flow rights. Some of the areas with post-designation federal rights also have Program 45 reserved right filings. Compare large format Table 5G and 5H in the express rights category.

⁹⁴ Two tools that BLM has considered, but not used to protect wilderness water in Colorado, are requiring by-pass flows as a condition of issuing land use permits needed for private water developments and Wild and Scenic River designation. BLM has asked for water to be left behind when approving new spring development, but the state objects to agencies adding requirements to leave water in streams to support purposes of the federal lands as a condition of reauthorizing existing development. The only situation in which BLM is likely to assert these after-the-fact by-pass flows is when required to protect endangered species. See also, Bennett Raley, et al., REPORT OF THE

In Arizona, BLM files for several other kinds of water rights on public lands, including wilderness areas:

- Public Water Reserve 107 (PWR 107) rights on springs and water holes, obtaining 1926 priority dates;
- Program 36 filings on water in use prior to 1919;
- Program 33 filings for new water uses, including on springs where there will be construction at previously undeveloped springs;
- Program 33 filings for instream flows; and
- Program 39 (Statement of Claimant) filings in anticipation of adjudications.

BLM's preference for using these tools, rather than reserved rights, was evident in BLM Director Jamison's testimony on the Arizona Desert Wilderness Act. Jamison noted that BLM was currently working within the Arizona water rights system, apparently in accord with the general policy described above. For example, in the Bill Williams basin, DOI had applied for instream flow rights that, if granted, would protect BLM's management objectives. The agency was also working to protect its water resources by objecting to allocation of water for competing uses, e.g., the City of Scottsdale's applications for all of the remaining unappropriated water on the Bill Williams River. If that application were to mature, wilderness area rights would have been subordinate to the City of Scottsdale right.⁹⁵

BLM's strategy for protecting water in specific wilderness areas is developed at the state level through the planning process for National Landscape Conservation System lands. In Colorado, the preference for working cooperatively with the state on water resources has been reiterated recently through a Memorandum of Understanding (MOU) between the state and BLM.⁹⁶ This Colorado – BLM MOU recognizes the respective authorities of both the State and BLM without mentioning federal reserved water rights. The MOU, which is not specific to wilderness areas, recognizes State authority to allocate water for appropriation and to hold instream flows. The document recognizes BLM responsibility for managing water resources on BLM lands and authority over rights of way for water infrastructure. In the MOU, BLM agrees to prevent impacts on the exercise of water rights while still meeting the requirements of federal laws and regulations. BLM also agrees to innovate ways to assure continued operation of water use facilities on public lands and undiminished historic use of water while protecting aquatic resources and developing new management prescriptions for existing structures.

FEDERAL WATER RIGHTS TASK FORCE CREATED PURSUANT TO 389(d)(3) of P.L. 104-127 (1997) [hereinafter Bypass Flows Report]. Another alternative to wilderness reserved rights is for BLM to recommend Wild and Scenic River (W&SR) status, for example on the Gunnison River, which would include a federal reserved right. While BLM is not currently recommending W&SR status for the Gunnison, it still lists the river as "suitable" for this designation in its planning documents. Apparently, the state is opposed to W&SR designation.

⁹⁵ Jamison also recognized that certain wilderness reserved rights, for example for the Rawhide and Swansea areas downstream of the Alamo Dam, would be subordinate to other existing federal purposes, e.g., the Army's flood control operations at Alamo Dam because the Alamo Dam Congressional Directive would pre-date any wilderness designation.

⁹⁶ Memorandum of Understanding Among the Colorado Department of Natural Resources (DNR), The Colorado Water Conservation Board (CWCB) and the BLM to Formalize a Framework for the BLM, the DNR and the CWCB to Work Together in a Cooperative Manner on Issues Regarding the Management of Water and Water Uses on BLM Lands in Colorado. September, 2005 [hereinafter Colorado-BLM MOU].

BLM's protection of water resources in its three Colorado wilderness areas and one non-wilderness area illustrates the agency's use of that state's processes to protect wilderness area water absent a federal reserved right or the ability to assert one. In Colorado, the agency works to actively tailor water resource management to the hydrologic conditions, risks to the resource, area uses, and state politics as it works within the limiting statutory language. Through its planning process, the agency has identified and used various means to protect water resources:

- Standard water court filings for beneficial uses for wildlife, stock and recreation;
- Instream flow rights;
- PWR 107 filings;
- Coordinating water use with other users; and
- Acquisition of inholdings and adjacent lands.

The BLM in Colorado is systematically filing for water rights on all of its lands, but wilderness areas "rise to the top of the pile." The extremely dry Black Ridge Canyons area illustrates BLM's use of the state's appropriation system to protect wilderness water. Black Ridge Canyons is essentially a headwaters area with denied language, adjacent to, but excluding, the Colorado River.⁹⁷ There are no perennial waters in the wilderness, and the wilderness itself is remote and not at direct risk of water developments. BLM has, however, identified and filed on springs through the state court system in an area that is fed by the same geology as springs in nearby Glade Park.⁹⁸ Without these rights, future ranchette development in Glade Park could deplete the water resources of Black Ridge Canyons. Had it been available, using a federal reserved right as a basis of their claims may have given BLM a slightly earlier (2000 instead of 2005) priority date for the spring rights. If available, PWR 107 reserved rights on springs would provide the even earlier priority date (1926), but these rights can only be claimed for domestic and livestock uses. In the wilderness context PWR 107 is only useful where grazing has been grandfathered in the area.

The more mesic Gunnison Gorge area illustrates BLM's dependence on and coordination with others to protect wilderness values. Water resources of the Gunnison Gorge, a downstream, denied language area, include the mainstem Gunnison, tributaries and springs. BLM already has state-based appropriative rights on critical springs. For the mainstem, BLM relies in part on flows of senior water users downstream of the wilderness area. Calls on senior downstream rights were useful in the recent drought to keep water in the Gunnison River through the canyon. Gunnison Gorge must also rely on water reserved for and passed through the National Park Service-managed Black Canyon of the Gunnison National Park and Wilderness Area (upstream of Gunnison Gorge) to protect its wilderness values. Based on a settlement that is currently being contested in court, BLM can only rely on a Park Service federal reserved right of 300 cfs of base flow and no peak flows. For shoulder flows needed to support the water-based recreational values of the Gunnison Gorge, BLM coordinates with other water users on the timing of water use.

⁹⁷ Obviously the Colorado River is an important feature of the wilderness area, but water rights on the river were not anticipated in designation of the area. This is a good example of where the headwaters – downstream distinction is of questionable value or at least subject to gerrymandering.

⁹⁸ The post-designation rights discussed here do not appear in the data summaries for this area. Apparently BLM's filings are recent and had not been incorporated in Colorado's on-line system when data were extracted.

BLM also protects wilderness waters through instream flows. In both Arizona and Colorado, BLM works with state agencies to identify and prioritize areas for acquiring instream flow rights. Powderhorn, a headwaters area authorized with non-assertion language and the wettest of BLM's Colorado wilderness areas, illustrates BLM's use of both standard state appropriative rights and instream flows to protect water resources. This relatively small area includes many filings on springs and seven instream flow rights held by the CWCB (see large format Table 4). The advantage of a federal reserved right over these instream flows would include an earlier priority date for five of the seven rights and, perhaps, a larger quantity right in all cases. The CWCB requests only the minimum water necessary to protect the environment to a reasonable degree, which is usually based on a fisheries evaluation. BLM could request that CWCB protect a larger flow, but to do so BLM would need more data to support that request. Since the threat to the area's water is low, BLM has not spent the time and resources necessary to pursue larger instream flows for the Powderhorn.

The balancing of priorities, risks and resources that BLM uses in developing and implementing a strategy for protecting wilderness water through instream flows is illustrated by the Gunnison Gorge. BLM does not currently have sufficient data on Gunnison River tributaries to support recommending instream flows for the Gunnison Gorge area, as these tributaries have not been a high priority for inventory and analysis. Even if data were available, the controversy that pursuing instream flows in this area would create may not be worth the effort or worth what little water could eventually be protected. Because the area is fully appropriated, there is little danger that additional development will injure the area's wilderness values absent instream flow protection.

In Arizona, BLM also uses land acquisitions through purchase and exchange to protect wilderness values. Acquisition of inholdings and adjacent parcels helps eliminate management and access problems and allows acquisition of senior water rights. Acquisitions occur in areas with willing sellers regardless of statutory language.⁹⁹

B. U.S. FOREST SERVICE

There are 35 wilderness areas managed by the U.S. Forest Service (Forest Service) in Arizona and 34 in Colorado.¹⁰⁰ The Forest Service also manages the Piedra, Roubideau and part of the Tabeguache areas in Colorado. Congress designated the Forest Service wilderness areas in Arizona in seven wilderness bills over a 30-year period with no specific federal reserved right language. Congress also designated twenty-five of the 34 Colorado areas in seven pieces of legislation (1964, 1975, 1976, 1978, 1980, 2000, and 2002) without specific reserved water rights language. Finally, in the 1993 Colorado Wilderness Act, Congress established eight new Forest Service headwaters wilderness areas with language that forbade assertion of a wilderness federal reserved right (non-assertion language.) The Colorado Wilderness Act also expanded nine existing areas under the non-assertion language, but because the acreage added with this

⁹⁹ BLM has acquired inholdings and adjacent lands for areas with both express reserved rights (e.g., Mt. Tipton and Wabayuma Peak) and silence as to reserved rights (Mt. Trumbull).

¹⁰⁰ Management of Kanab Creek Arizona is shared by BLM and Forest Service. Powderhorn, which includes some Forest Service land is treated as a BLM area; the Platte River, which is primarily in Wyoming, is not included in this total.

language is small compared to the size of the existing areas, we treat them in this report as areas without reserved rights language.¹⁰¹ In Arizona and Colorado, there are no Forest Service areas with either express reserved rights language or an explicit denial of reserved rights. See Tables 1 and 2, organized by designating statute, for both the managing agency and category of language for each wilderness area.

In Arizona, 15 of the areas are headwaters and essentially headwaters areas and 20 are downstream areas. In Colorado, there are 25 headwaters or essentially headwaters areas and 11 downstream areas, including the three non-wilderness areas. See large format Tables 3 and 4 for the wilderness areas in each language category; management agencies are indicated in column F in these tables.

Assessing both the water rights data described in Section III and the interviews and literature search data, described in this section,¹⁰² it does not appear that statutory language has as yet made any difference to the Forest Service for protection of wilderness water in Arizona and Colorado. While there are indications that express rights language *would* make a difference – *would* prompt the agency to file for reserved rights – this conjecture cannot be supported or refuted since there are no Forest Service express rights areas in the two states studied. Forest Service uses a variety of alternative measures to protect wilderness water, but, in general, these do not appear to be influenced by legislative language. Failure to file for reserved rights or to actively use alternative measures to protect wilderness water does not necessarily mean that wilderness water is at risk in either Arizona and Colorado or that the agency might not file for additional water rights in the future. There are many reasons for delaying filing for reserved rights or for not actively employing alternative measures – only some of which are related to statutory language. These include differences between state water rights systems, a preference for working cooperatively with the states, interest in avoiding the political controversy of filing for implied reserved rights, low risk to wilderness values with inaction, current adjudication schedules do not require immediate filing, limited Forest Service resources require prioritizing activities, and limited ADWR resources currently make additional filings almost futile.

1. Wilderness Reserved Rights

The water rights data described in Section III do not indicate any differences in agency action regarding wilderness reserved rights due to statutory language. The Forest Service has not asserted wilderness reserved rights for any of its areas.

But when asked to speculate if having expressly reserved water rights *would* make a difference, both legal and resources staff indicated that it would – the agency would work to quantify express reserved rights. While field staff do not usually have the time or opportunity to consider what statutory language applies to a particular wilderness area, even some of these staff indicated

¹⁰¹ See large format Table 4 (Implied and Non-Assertion Water Rights Language section) for the acreage designated under each bill. The non-assertion part of the area is generally less than 20 percent of the entire area. Only the Never Summer Wilderness is 30 percent non-assertion area.

¹⁰² Information on these areas was gathered through searches of the ADWR, CDWR, and CWCB databases, and interviews with 18 Arizona and Colorado agency staff and conservation group representatives.

that express language would make a difference,¹⁰³ although some were not sure if even express language could be asserted given the politics of the issue.

Unfortunately, it is difficult to support or refute these convictions since there are no Forest Service wilderness areas designated with express language.¹⁰⁴ One indication that express language would make at least some difference is that the Forest Service has filed Wild and Scenic river claims (e.g., on the Verde River) – a type of express reserved right which seems within reach since even Idaho has recognized them. Currently both Arizona and Colorado have a Wild and Scenic Rivers associated with a wilderness area – the Mazatzal in Arizona and the Cache La Poudre in Colorado.¹⁰⁵ The process of quantifying flows to support this designation is difficult, but staff feel there is, in general, more potential for getting rights quantified for these rivers than for wilderness areas where Congress has been silent on reserved rights.¹⁰⁶

Forest Service assertion of express wild and scenic reserved rights and staff speculation regarding assertion of express wilderness rights are consistent with published agency policy, although there is little in national Forest Service policy that directly addresses water rights in wilderness areas. The Forest Service does, however, have a very detailed policy regarding assertion of water rights generally. Applicable here is a charge for the agency to “rely on the reservation doctrine if the land was reserved from the public domain and for the reservation purposes identified in documents or legislation.” Second, if the reservation doctrine does not suffice, the Forest Service will assert water rights under State law.¹⁰⁷

Forest Service’s general policy is to claim all water arising on national forest system lands for the purposes of the reservation. While this “claim” of water does not necessarily translate into an immediate, formal assertion of either federal reserved or state appropriative rights, Forest Service has made claims for implied reserved rights based on the Organic Act in some, but not all of the Colorado Water Divisions and with mixed success.¹⁰⁸ Interviews also indicate that while the Forest Service is hesitant in pursuing Organic Act implied reserved rights in Arizona following the agency’s experience in Colorado, nevertheless, the agency has filed implied

¹⁰³ One opined that “language in the legislation is critical.” Everyone knows how far you can push this administration. If you have express language, you can get farther. Another commented that if there were an explicit reserved right staff would be more confident that their decisions to protect water would be upheld, whereas currently it is troublesome that the state controls the water.

¹⁰⁴ In the western states, only Nevada (P.L. 101-195 and P.L. 108-282) and California (P.L. 102-301, P.L. 103-433, and P.L. 107-370) have Forest Service wilderness areas designated with express language.

¹⁰⁵ Agency staff did not believe that adjacent or upstream development has as yet compromised the wilderness values on the downstream Mazatzal area, but as the area population grows, they fear that pressures will increase and affect the area.

¹⁰⁶ The Forest Service has also found Fossil Creek, which flows through the Mazatzal, eligible for wild and scenic river status (along with a number of other streams on the Tonto). If it is designated as a Wild and Scenic River, Forest Service staff anticipate making a reserved right filing based on the Wild and Scenic Rivers Act.

¹⁰⁷ For more detail on Forest Service policy and directives, see Appendix D.2.

¹⁰⁸ A settlement was negotiated in Colorado Water Division No. 3, Rio Grande National Forest, lost in Water Division No. 1 because Forest Service could not prove the quantity of the right, and only still open in Water Division No. 7, San Juan National Forest where the Forest Service filed for a reserved right in an adjudication in which water users sought to gain certainty regarding Forest Service water claims. Claims were not made at the appropriate time in Divisions 4, 5 and 6 (including the Grand Mesa-Uncompahgre National Forest). Any future claims to these rights would have a priority date as of the date of the adjudication rather than the reservation.

reserved rights claims for administrative sites and silvicultural purposes (road watering and fire fighting) based on the Organic Act on the Tonto National Forest.¹⁰⁹

In contrast, interviews indicate that the Tonto National Forest has not, and does not intend to file claims for implied wilderness reserved rights. Apparently the Forest Service has taken a different approach to federal reserved water rights in Arizona than BLM, which has actively recorded its claims for wilderness reserved rights through the Program 45 filing system they developed in conjunction with the ADWR (see Section IV.A.).

While the difference between agencies can largely be attributed to a difference in statutory language (as BLM's areas have express rights and Forest Service areas are silent as to reserved water), interviews with Forest Service staff suggested several other contributing factors.¹¹⁰ A couple of these apply equally to BLM action or inaction:

- Arizona adjudications are stalled ("going nowhere") so there is no reason to file immediately;¹¹¹ and
- ADWR is understaffed, so permit applications do not get processed even when filed ("they sit in a box").

Others are peculiar to the Forest Service:

- Currently, Forest Service only makes claims when the agency needs to;
- Field staff will not file for water rights without first contacting the Department of Justice (DOJ) and it is unlikely that they will file unless ordered to do so by a judge;¹¹²
- Forest Service would prefer not to participate in a state adjudication process, so there is no reason to voluntarily participate beyond what is required at any particular time;
- DOJ objects to paying the filing fee associated with Forest Service Statement of Claimant filings;¹¹³
- Some fear that DOJ will not vigorously defend agency filings as, in the past, DOJ has "traded" assertion of federal reserved rights in the Latir Peak Wilderness in New Mexico for instream flows on the Red River;¹¹⁴ and
- Reserved water rights associated with reservation of the forest would be more valuable than a wilderness reserved right as they would have an earlier priority date than any wilderness reserved right that might be obtained.

Overall the agency appears to weigh the fact that it need not assert federal reserved rights in order to maintain them – at least prior to being joined in a general stream adjudication – with the

¹⁰⁹ In the 1980s after *U.S. v New Mexico*, the Forest Service filed for many rights on national forests in Arizona, but they did not always follow up for certification of the rights.

¹¹⁰ The following list was gleaned from several interviews.

¹¹¹ Claims can still be filed in the adjudication despite the passage of the first filing deadline – a Statement of Claimant may be filed, without leave of the Superior Court, before the conclusion of hearings by the Special Master for a subwatershed or a federal reservation. See additional discussion of the Arizona adjudications in Appendix B.

¹¹² A Forest Service employee in California indicated that Forest Service would not assert water rights in that state unless there were an adjudication covering the area.

¹¹³ The fee associated with an SOC filing is \$20.00 for an individual claimant. The filing fee for a corporation, municipal corporation, the State of Arizona or any political subdivision, or an association or partnership is two cents for every acre-foot of water claimed or \$20.00, whichever is greater. There is no fee for Program 45 filings but a \$20 fee is paid for the SOC filing which accompanies the Program 45 claims.

¹¹⁴ Latir Peak Wilderness is located in Carson National Forest in Northern New Mexico.

risks of asserting them in court. The Forest Service has successfully contended that it need not assert wilderness reserved rights if it can protect wilderness water through other means.¹¹⁵ More recently, Forest Service and Department of Justice views on whether to file for implied wilderness reserved rights are influenced by their loss in the Idaho Supreme Court in the Snake River Adjudication.¹¹⁶ While not precluded from a similar filing for recognition of implied rights for wilderness areas in either Arizona or Colorado, the agency must consider whether their state courts would either be persuaded by the Idaho court or be similarly politically motivated to reject an implied wilderness reserved right. In considering its options, the agency must weigh the risk to wilderness values if it takes no action (a risk deemed relatively low for most existing wilderness areas) with both the potential return on the investment of agency resources (wet water) and the political risks of pursuing recognition of implied reserved rights in conservative western states.

Even if the Forest Service could prevail in an adjudication, the agency may hesitate to assert implied reserved rights as they try to work more collaboratively with the states.¹¹⁷ In Colorado Forest Service has developed a Memorandum of Understanding (MOU) with the Colorado Department of Natural Resources establishing a framework for cooperation regarding management of water and water uses on National Forest System lands.¹¹⁸ The MOU includes agreements to “explore creative ways to assure continued operation of water use facilities,” and to resolve conflicts through cooperation “not through unilateral regulatory action by the Forest Service.” While the MOU does not mention wilderness water rights, it appears to set a context for resolving any issues that might emerge about wilderness water in a cooperative rather than a confrontational manner.¹¹⁹

2. Alternatives to Federal Reserved Water Rights

Filing for reserved rights is not, however, the Forest Service’s only means of protecting wilderness water. Indeed, aside from the practical hurdles of Arizona state government, the Forest Service’s principal justification for not filing for wilderness reserved rights in both states is that the agency has alternative means of protecting water for wilderness. While water rights data discussed in Section III and below suggest that Forest Service takes more protective measures for wilderness areas silent on reserved rights than for any other category of language, we cannot conclude that the differences are the result of statutory language. Based on interviews and review of agency policy, the answer is much more complex. Forest Service appears to use

¹¹⁵ *Sierra Club v. Yeutter*, 911 F.2d 1405 (10th Cir. 1990) (Wilderness Act does not provide meaningful standards to review all land and water management decisions, therefore, Forest Service’s decision to use or not to use federal reserved water rights allegedly created by Wilderness Act is ‘committed to agency discretion by law,’ except where agency’s conduct cannot be reconciled with Act’s mandate to preserve the wilderness character of the wilderness areas.)

¹¹⁶ For a narrative on Idaho’s treatment of wilderness reserved rights, see Gregory J. Hobbs, Jr. *State Water Politics versus an Independent Judiciary: The Colorado and Idaho Experiences*, 5 U. DENV. WATER L. REV. 122.

¹¹⁷ Department of Agriculture staff noted that the Forest Service policy is to work with states collaboratively – “always our preference” – avoiding reserved rights and by-pass flows where possible.

¹¹⁸ Memorandum of Understanding between State of Colorado Department of Natural Resources and United States Department of Agriculture Forest Service, 04-MU-11020000-029, April 16, 2004 [hereinafter Colorado-Forest Service MOU].

¹¹⁹ One example of creatively addressing this occurred with the NPS in the recent designation of the Sand Dunes National Monument, where water rights were awarded under state procedures for federal purposes.

these “other means” regardless of statutory language and influenced by some of the same factors that influence the agency decisions regarding filing for reserved rights: limited threat to wilderness values, limitation on ADWR resources, limited Forest Service resources require prioritizing activities, and a preference for working cooperatively with the states.¹²⁰

Simply looking at the water rights data, it appears that at least part of the agency’s motivation to use alternative protective measures may be a response to the level of threat to wilderness water. As discussed in Section III.B, it appears that for Forest Service, threats to wilderness water (as indicated by conflicts, post-designation rights, and large rights) are greatest in wilderness areas silent as to reserved rights. See Table 6C. Regardless of the cause of this higher level of threat, if the agency responds primarily to perceived threat, we would expect to see the agency most active in implementing protective measures in this same category of areas. And indeed, Table 6C indicates more agency filings for post-designation water rights both within and upstream of areas in this category than for either non-assertion or denied reserved rights areas. But the correlation between indicators of threat and indicators of protective measures breaks down when we consider the states individually (see Table 6D) as Forest Service has not acquired any post-designation rights in its 26 Colorado areas silent as to reserved rights despite the high level of threat indicated for this category. The dearth of Forest Service post-designation rights in Colorado is offset – at least in number of rights – by the large number of instream flow rights established for these areas, discussed below.

There are also several factors, unrelated to language, that influence agency action or inaction. Slow progress of the Arizona stream adjudications is one factor: While the on-going general stream adjudications in Arizona will require the agency to eventually identify and defend or lose all its claims to water in the respective basins, no hard deadlines have yet forced filings. Available resources also affect agency action: On one hand, the agency is generally reactive rather than proactive regarding water rights in the face of limited resources.¹²¹ In Arizona, Forest Service files new state based water rights claims as the need for a new water right arises – either within or outside of wilderness areas. Needs are identified on a site specific basis rather than on some sort of systematic inventory of water sources on the Forest. On the other hand, the

¹²⁰ One tool that Forest Service has not used to protect wilderness water in Colorado, is requiring by-pass flows as a condition for issuing land use permits needed for private water developments. There is potential for this tool to be used if development were proposed upstream of a downstream wilderness area. The agency has only infrequently used by-pass flows in the past (in non-wilderness situations), and is likely to limit their use to “last resort” situations following signing of the Colorado-Forest Service MOU. See, By-pass Flows Report at IX-6 (minority views: “Without the availability of this tool, efforts to secure voluntary protective measures would be seriously undermined.”)

¹²¹ Limitation of resources is a factor in Colorado where Forest Service is using its limited resources, in part, to track and document what appropriative rights they have already been awarded so they can be administered properly. The Tonto NF has filed over 3,000 water rights claims of one sort or another (probably closer to 3,500 filings) based on the state appropriation system. These filings (36's, 38's, 33's, and 55's) lie both within and outside of wilderness areas. Approximately 1200 of these filings are certificates although none of them have been adjudicated. The agency has filed SOC's for all of their filings so that they can be included in the adjudication. The agency is currently conducting an inventory of all of their claims to verify the location and collect flow, water quality, riparian vegetation, and use data as well as the condition of the development. They have inventoried approximately 500 of these filings and are continuing to conduct the inventory in anticipation of the adjudication.

actions of individual employees has resulted in extraordinary progress on acquisition of non-reserved rights on certain forests.¹²²

While the indicators we use provide some measure of threat and protective measures, interviews suggest that the indicators do not adequately reflect all the threats to wilderness water or all the agency actions to protect water. For example, hydrologic characteristics of the areas, not evaluated in this study, may affect the level of threat to wilderness values and the ability of agency action to address that threat. One example of threat and response, not reflected in the water rights data is Forest Service's on-going work in the San Juan National Forest to file on springs where water is not fully appropriated in order to prevent others from doing so.¹²³

Similarly, all agency use of water may not be directly represented in the indicators of protective measures. While the agency can file for state-based appropriative rights for its lands, it need not file in order to use the water. Forest Service can consumptively use water within wilderness areas, just as on all national forest system lands, for fire fighting, spring boxes, livestock, wildlife, etc., without filing for it. How much the Forest Service uses the state appropriative system to file for rights varies considerably between states based on the state water rights system. In addition, there is no standard agency policy for filing for appropriative rights as some contend that agencies holding these rights give federal water better protection; others argue that it does not.¹²⁴ It is also likely that the agency's desire to use Arizona's appropriative rights system may not be necessarily reflected in the ADWR data. For example, ADWR has had a moratorium on issuing new certificates for water sources on federal lands where livestock is identified as a beneficial use pending litigation over who should hold grazing-related water rights on federal land.¹²⁵

The Forest Service has other alternative means to protect wilderness water that would not be reflected in the state water rights data summarized in Section III. First, the Wilderness Act precludes the Forest Service from allowing new water developments in wilderness areas, although it cannot prevent development in most areas if the project receives Presidential approval.¹²⁶ In addition, the agency can use its regulatory authority to control use and occupancy of federal lands to place conditions on water developments that might impact wilderness values.¹²⁷ Forest Service can also oppose filings for new rights if there is a potential injury to federally owned water rights or water dependent national forest system resources.¹²⁸

¹²² The unusually large number of post wilderness designation filings in the Mazatzal area may have been due to the good work of a particular, Forest Service employee.

¹²³ BLM in Colorado has a more active program of spring filings especially near borders of their lands. How much development at springs is necessary to establish a beneficial use in Colorado is a grey area.

¹²⁴ There has been a debate on this issue within the Forest Service.

¹²⁵ House Bills 2193 and 2276 provide that the water right for water sources on federal lands would go to the person who first put that water to beneficial use.

¹²⁶ New development in wilderness is the prerogative of the President in most wilderness areas (P.L. 88-577, sec. 4(d)(7)), although no President has exercised this option. In the Colorado non-assertion areas (P.L. 103-77(8)(c)) and in the Black Ridge Canyons denial language area (P.L. 106-353, sec. 6(l)(4)(B)), not even the President can authorize new water developments. See Wilderness Act language in Tables 1 and 2.

¹²⁷ In Colorado, Forest Service can prevent water appropriations needed for development by refusing a special use permit or easement because of Colorado's "can and will" doctrine. See Appendix B. Colo. Rev. Code, Section 37-92-305(9)(b): No claim for a conditional water right may be recognized or a decree therefor granted except to the extent that it is established that the waters can and will be diverted, stored, or otherwise captured, possessed and

The agency can also protect wilderness water through instream flow programs. The absolute number and percentage of Forest Service post-designation instream flows is highest for areas silent as to reserved rights (see the Table 6C), suggesting a potential connection between statutory language and agency action. We know, however, from interviews that statutory language has not influenced acquisition of instream flow rights associated with Forest Service wilderness areas in either Arizona or Colorado, although the reasons are very different for the two states.

Forest Service actively participates in the Arizona instream flow program, holding 17 of 20 instream flow rights associated with 11 of its 35 wilderness areas (see Table B-1 and large format Table 5I). All Forest Service areas in Arizona are silent as to reserved rights, however, so it is impossible to compare instream flow rights for different categories of language in Arizona. Nevertheless, interviews indicate that the current number of instream flows does not fully represent the agency's willingness to protect Arizona areas through this program. The Forest Service has many streams prioritized and several applications for instream flows ready to submit, but litigation contesting legality of the program has stalled processing of instream flow rights. The agency's prioritization of Arizona streams is based on threats, resources values and uniqueness of the area, not necessarily on its designation as wilderness or the language of its designation statute.

The situation is very different in Colorado, but similarly suggests no influence of statutory language on the acquisition of instream flows to protect wilderness water. In Colorado, there are over 400 instream flow rights associated with 25 Forest Service wilderness areas (see Table 6C and large format Table 5I), but the Forest Service rarely actively participates in the Colorado program for several reasons. These include ownership issues¹²⁹ and the scope of the state program, which is by statute much narrower than Federal purposes.¹³⁰ Some also question the agency authority to use federal funds to support development of a state owned water right on federal land.¹³¹ While these positions have not caused the Forest Service to actively oppose CWCB acquisitions, the CWCB has chosen the location and quantified the rights without regard

controlled and will be beneficially used and that the project can and will be completed with diligence and within a reasonable time. See also, *City of Thornton v. Bijou Irrigation Co.*, 926 P.2d 1 (Colo. 1996) ("whether an applicant has established a substantial probability of completing the intended appropriation necessarily requires an ad hoc determination in the light of the particular facts and circumstances of each case").

¹²⁸ Staff use the state's water rights resume to track new filings. Some of the water divisions (e.g., Division No. 6) will also provide the Forest Service with advance warning of applications.

¹²⁹ Forest Service holds 37 "minimum stream flow" rights associated with the La Garita, South San Juan, Weminuche, and Sangre de Cristo wilderness areas in the Rio Grande National Forest. These rights are held pursuant to a settlement agreement regarding reserved rights for purposes of the national forests. Through a conversion of rights, Forest Service also holds a couple of instream flow rights for the White River National Forest.

¹³⁰ Colorado's instream flow standards are to "protect the environment to a reasonable degree," with quantities usually based on fish requirements. This is generally a lesser percentage of flow than the Forest Service might want to claim to protect wilderness values and does nothing to maintain a natural hydrograph. Because this study did not analyze the hydrology of areas, it is impossible to determine whether the CWCB-initiated instream flows are sufficient to protect wilderness values.

¹³¹ The agency's objection is based in part on concern that the CWCB is not currently supportive of new instream flows and that it will not enforce existing instream flows. See e.g., Witte at 250-251.

to wilderness designation or specific statutory language.¹³² In interviews, the Colorado instream flow program staff gave no indication that they were motivated by or even aware of reserved rights language.¹³³

In the future, an emphasis on participating in collaborative processes and on cooperation between Forest Service and Colorado may increase the agency's participation in instream flow acquisitions in Colorado. At a minimum, the Colorado – Forest Service MOU provides that the agencies will “better integrate federal and state laws and activities concerning protection and management of instream flow resources” including evaluating the adequacy of currently held instream flows and monitoring and enforcing flow rights. However, greater cooperation does not necessarily mean any greater influence of statutory language on Forest Service action.

C. U.S. FISH & WILDLIFE SERVICE AND NATIONAL PARK SERVICE

Neither National Park Service nor FWS wilderness areas were analyzed separately in Section III. Neither agency has many wilderness areas in Arizona nor Colorado and both agencies have wilderness areas within only one category of reserved rights language precluding any within-agency comparisons. Nevertheless, a survey of these agencies' actions and policies regarding water rights reinforces our general conclusion that statutory language has relatively little effect on wilderness water protection.

1. U.S. Fish and Wildlife Service

There are four wilderness areas managed by the U.S. Fish and Wildlife Service (FWS) in Arizona and none in Colorado. Congress designated all four FWS areas in the Arizona Desert Wilderness Act of 1990. Consequently they all have express federal reserved water language.¹³⁴ Imperial Refuge is essentially a headwaters area, the other three are downstream areas. All of Cabeza Prieta and part of Kofa are within the Lower Gila River active adjudication area. The other two areas, Havasu and Imperial, are within the Colorado River subbasin and, consequently, are not included in an active adjudication.¹³⁵ See Table 1 and large format Table 3 for a summary of data on the FWS wilderness areas.

Because there are so few areas and all of them have express wilderness reserved rights, it is impossible to compare the impact of various types of statutory language on the agency's wilderness water protection. Formal agency policy, interviews and water rights data suggest, however, that wilderness statutory language has not influenced management of the areas. Even with express language, FWS has done nothing to assert wilderness reserved water rights for these areas. Further, there is no evidence that FWS has actively used alternative means to protect wilderness water. This inaction is not necessarily a failure to protect the areas, but rather a

¹³² Despite this uneasy partnership in instream flows, sometimes appropriative and instream flow rights are combined to protect an area, e.g., Spring Creek near the Raggeds Wilderness.

¹³³ The motivation of conservation groups that might recommend instream flow acquisitions was not investigated and can only be surmised.

¹³⁴ Cabeza Prieta Wilderness Area was also included in P.L. 106-65 in 1999, but no acreage was added at that time. While a federal reserved right was explicitly denied in that legislation, it did not affect the existing wilderness area acreage.

¹³⁵ Information on these wilderness areas was gathered through searches of the AWRD database and interviews with seven FWS personnel.

recognition that the more senior reserved rights associated with establishment of the refuges coupled with limited water that could be claimed with a wilderness reserved right reduces the utility of asserting a wilderness right or use of alternative measures.

a. Wilderness Reserved Rights

Wilderness water and reserved rights are not a major issue for refuge staff. Refuge field staff and hydrologists interviewed were not aware of any wilderness water rights issues or controversies related to their wilderness areas.¹³⁶ Most field staff were also unaware of the explicit federal reserved water rights language of the Arizona Desert Wilderness Act. Rather, staff were focused on reserved water rights allocated for wildlife refuge purposes. Since all of the refuges were designated before the wilderness areas included within them, refuge reserved rights have more senior priority dates than the 1990 express wilderness reserved water rights.

The general lack of concern for wilderness water in refuges may also be due in part to a lack of specific agency guidance on wilderness water. Aside from reiterating the Wilderness Act provision on state water law, FWS regulations do not specifically address the management of wilderness areas. Agency rules merely provide that the rules that govern the administration of the National Wildlife Refuge System will also apply to wilderness areas as long as the rules do not conflict with the Wilderness Act or other statutes.¹³⁷ The agency's current refuge manual also lacks direct guidance on wilderness water except for issues related to construction and maintenance of facilities.

On the other hand, FWS has directives which pertain more generally to water rights. These directives provide that the FWS's objective is to obtain an adequate quantity and quality of water supplies for development, use, and management of Service lands and facilities. Federal reserved water rights are to be established when they are necessary for the primary purpose of the reservation. Also, the agency must comply with state law and regulations whenever possible and water rights should be managed to guarantee that they are not degraded in quantity or quality or lost altogether. In this regard, the FWS is to maintain a system to identify all water rights associated with each facility.

While neither agency field staff nor hydrologists were aware of any agency wide policy on wilderness water, a new draft policy more directly addresses water rights for wilderness. This draft policy alludes to the possibility that purposes of the refuge are not synonymous with purposes of a wilderness. The draft policy reads in part:

We will protect water resources in wilderness areas by maintaining water quantity and water quality necessary to meet refuge purposes, including Wilderness Act purposes, and by seeking to acquire the necessary water rights under State law. We will apply the nondegradation principle to wilderness stewardship using each

¹³⁶ The role of field staff regarding water appears to be primarily inventory and development of water sources for refuge purposes. Refuge staff might make recommendations on filing for water rights and would work with the water rights staff to make recommendations to the regional director. This work would be done with assistance of the DOI Solicitor's Office.

¹³⁷ 50 C.F.R. § 35, Wildlife and Fisheries, Subchapter C--The National Wildlife Refuge System, Part 35--Wilderness Preservation and Management. See Appendix D for a more detailed description of FWS water policy. FWS directives are available at <http://www.fws.gov/directives/direct.html>.

wilderness area's level of naturalness and wildness at the time of designation as the standard against which we measure the impacts.¹³⁸

Some agency staff were in fact concerned that refuge federal reserved rights – the minimum water necessary to fulfill the purposes of refuge establishment – may be insufficient to fulfill the purposes of wilderness designations. For example, refuge purposes may be fulfilled with Colorado River water for Imperial and Havasu, but some staff felt that water rights should also be secured for upland areas of refuge wilderness.¹³⁹

Department staff did note, however, that there is no advantage to filing for wilderness reserved water rights in Arizona where there is no active adjudication since there is no need to protect a federal reserved right.¹⁴⁰ This understanding, coupled with existing refuge reserved rights, the paucity of water in Arizona refuges, and the perception that neither Arizona nor the Bush administration supports federal reserved water rights, appears to explain the agency's failure to file for wilderness reserved rights despite express reserved rights language.¹⁴¹

b. Alternatives to Federal Reserved Water Rights

Neither water rights data nor results of interviews suggest that FWS uses alternative methods to protect water in its Arizona wilderness areas. The ADWR database includes very few surface water rights for the FWS areas.¹⁴² None of these rights have post-wilderness designation priority dates and there are no instream flow rights associated with the Arizona FWS wilderness areas.

Interviews indicated a general sense that no additional protective measures were taken because none were needed to protect wilderness values. In Kofa (and likely other refuges) wilderness and non-wilderness areas are treated differently in terms of water developments (e.g., in

¹³⁸ Draft Wilderness Stewardship Policy Pursuant to the Wilderness Act of 1964, 66 FR 3708-3731, January 16, 2001, sec 2.4. According to a FWS librarian, this chapter is being routed for signature and is expected to be published in the near future. This policy, once published, will replace the refuge manual in guiding the FWS in wilderness management as directive 610 FW.

¹³⁹ While Havasu and Imperial have few filings with ADWR, they both have dual water rights (diversionary and consumptive) for the mainstem of the Colorado River which is outside the wilderness boundary. Because the mainstem rights are federal, water diversion and consumption is reported to the Bureau of Reclamation. The Bureau then reports to Arizona, which apparently does not include records of these diversions in its surface water filings database. The Colorado River right is used by the refuge in several ways – irrigation of crops for waterfowl, fish habitat, loafing areas for waterfowl, irrigation of native trees, etc

¹⁴⁰ Department of the Interior staff were perplexed by the Forest Service's concern with paying fees in Arizona adjudications as they considered it settled that the U.S. does not have to pay fees in McCarran related adjudications and that FWS should not be involved in non-McCarran dealings. An exception to avoiding non-McCarran proceedings – that might involve paying fees – would be if the agency were to participate in objections to upstream applications that might injure federal rights.

¹⁴¹ This sentiment can be compared with at least neutrality – if not support – for wilderness reserved rights voiced during the legislative hearings by both FWS and Arizona Department of Water Resources. S Hearing 101-998 at 121-28; S. Rep. 101-359 at 35-39. See Appendix A for a more detailed summary of the legislative history of the Arizona Desert Wilderness Act.

¹⁴² There are no surface water rights for Imperial, 3 private rights for Havasu, two for Cabeza Prieta and 12 for Kofa. In addition, Cabeza Prieta and Kofa both include multiple FWS (and Luke Airforce Base for Cabeza Prieta) Statement of Claimant (SOC) filings made in 1987 prior to wilderness designation. None of the surface rights within the wilderness areas are large rights. There is one large private well within Cabeza Prieta with a pump capacity of 1,000 gpm.

wilderness areas, minimum impact analysis is required for construction, NEPA analysis is conducted, developments may be preferentially located outside the wilderness area). There are, however, no water quantity conflicts over the minimal water resources in Kofa.¹⁴³ Cabeza Prieta is similarly situated: staff saw no impact of wilderness designation on water quantity, both because the refuge was established prior to the wilderness, and because there is so little water in the area, resulting in no active grazing and minimal water development except for wildlife (windmills and catchments).¹⁴⁴ At Imperial, the boundaries of the wilderness within the refuge were drawn to exclude most of the Colorado River floodplain. Upland wildlife (i.e., wildlife in the wilderness area) use the river and backwater areas of the non-wilderness part of the refuge. In contrast, water in the wilderness part of the refuge is generally very intermittent, consequently, there is no need to claim water resources in the upland wilderness area in order to protect it.¹⁴⁵ Even in Havasu, there was some sense that wilderness designation did not require any action as the area is extremely arid desert upland with little water development, including groundwater development, in the area that might affect the wilderness area.

2. National Park Service

There are seven National Park Service (NPS) wilderness areas, four in Arizona and three in Colorado, designated in four different statutes from 1970 to 1999.¹⁴⁶ All of these statutes are silent regarding federal reserved water rights.¹⁴⁷ Chiricahua National Monument and Saguaro in Arizona are pure and essentially headwaters areas, respectively, and the remaining wilderness areas are downstream areas.¹⁴⁸ See the silent language sections of large format Tables 3 and 4 for data on the NPS wilderness areas. Areas managed by NPS are indicated by "NPS" in column F in these tables.

Because all NPS areas are within the same language category, it is impossible to compare the impact of various types of statutory language on the agency's wilderness water protection. Review of water rights data and interviews with agency staff and others suggest, however, that wilderness designation itself may make little difference for protection of water in national park

¹⁴³ Old mining areas, including upstream and inholding areas, have water quality problems that affect the wilderness area.

¹⁴⁴ Development in Cabeza Prieta – at Tule Well near the southern boundary – had been an issue in early discussion of the wilderness bill. The area had been proposed for exclusion because of potential for development. Lack of demand for the development convinced the FWS to recommend the area as wilderness. Water development for wildlife has, however, been an issue regarding this and other refuges. S Hearing 101-998 at 104. Senator De Concinni, for one, wanted the wilderness bill and report language to be clear that wildlife management (e.g., creating water developments for bighorn sheep) was appropriate in wilderness.

¹⁴⁵ Rather, the main conflict regarding water is pressure to "use" all the water allocated to the refuge. "Use" is generally defined as what water passes through a pump despite the fact that the value of water to the refuge cannot necessarily be measured in "volume pumped" terms. Refuge staff fear that Congress will reduce the allocation to the refuge if water cannot be counted as "used."

¹⁴⁶ Petrified Forest in P.L. 91-504 in 1970; Black Canyon of the Gunnison, Chiricahua National Monument (NM), Great Sand Dunes, Mesa Verde, and Saguaro in P.L. 94-567 in 1976; Organ Pipe Cactus in P.L. 95-625 in 1978; and an addition to Black Canyon of the Gunnison in P.L. 106-76 in 1999.

¹⁴⁷ The 1999 addition to Black Canyon of the Gunnison, expressly denying federal reserved rights, added 4,419 acres to the 11,180 acres of the original silence category designation. This area is treated as a silence category area in data analysis and discussion.

¹⁴⁸ Information on these areas was gathered through searches of the AWRD and CDWR databases and interviews with eight Department of the Interior and conservation group personnel.

system areas. First, the Arizona parks or monuments containing wilderness areas have federal reserved rights associated with their original reservation. Consequently, the priority date for any wilderness reserved water right that might be claimed would be junior to a park or monument reservation right. Furthermore, since the “unimpairment” standard¹⁴⁹ for protecting NPS lands is comparable to the wilderness standard, the national park standard probably can, if applied, sufficiently protect a wilderness area.¹⁵⁰ In addition, there is little need or opportunity for direct actions to protect wilderness water in Arizona national parks as the areas are extremely arid with few water rights established or claimed, and few current conflicts.¹⁵¹ None of the surface water rights within or upstream of NPS wilderness areas are large and there is only one Arizona area, Organ Pipe Cactus, with two large groundwater permits.

In Arizona and Colorado, lack of explicit reserved rights language (i.e., silence) has made little difference in protection of wilderness water. NPS wilderness areas have been largely protected in conjunction with non-wilderness reserved rights filings and instream flows for the associated national park units. Through these means, NPS has protected 86 percent of its wilderness areas (Table 7B).

a. Wilderness Reserved Rights

Despite limited threats to area waters, and lack of express language establishing wilderness reserved rights, the NPS has actively asserted wilderness reserved water rights associated with the three Arizona wilderness areas in active adjudication basins.

The only reserved right associated with an NPS wilderness area in Arizona that has already been adjudicated is for Saguaro; this right is based on a settlement on the San Pedro River. The NPS is, however, also asserting reserved rights through the state permit system in and upstream of the three NPS areas within active adjudication basins. In all these areas NPS has made Statement of Claimant (SOC) filings in anticipation of the adjudications. The single filing for Petrified Forest, is upstream of the wilderness, but within the national park.¹⁵² In Organ Pipe Cactus, NPS has made 13 SOC filings – 8 for “other” uses and six for domestic purposes. None of these filings has a priority date listed. In Saguaro, the NPS has made SOC filings for domestic purposes and

¹⁴⁹ The NPS is authorized to manage units of the national parks, including wilderness areas under the National Park Service Organic Act of 1916. NPS regulations do not include specifics on management of wilderness areas as the NPS uses nearly the same regulatory structure for all of the lands that it manages. NPS management policies commit only to “manage as wilderness all waters included within wilderness boundaries, and the lands beneath these water (if owned by the United States), in keeping with established jurisdictions and authorities” and to “perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems.” National Park Service Management Policies sec. 6.3.11.3 and 4.6.1 (2001), respectively.

¹⁵⁰ In support of this view, Trout Unlimited has not seen a need to make a claim for a wilderness reserved right under the Black Canyon’s 1976 wilderness designation because the 1933 monument reservation for an “unimpaired” condition was sufficient. TU views the national monument water reservation as quantitatively comparable to any wilderness reservation for Black Canyon – although TU’s litigation has not addressed that issue.

¹⁵¹ The only water related conflicts identified in Arizona wilderness areas regard Organ Pipe Cactus, Petrified Forest and Saguaro. NPS interviewees noted impacts to Quito Baquito spring in Organ Pipe Cactus Wilderness due to Mexican groundwater pumping, a couple of springs in Petrified Forest where claims were filed to protect subflow in the Puerco River, and a dispute over the ability to appropriate subflow as surface water in the vicinity of Saguaro. An additional conflict over piping of a Saguaro spring to livestock outside the park was resolved several years ago.

¹⁵² Inexplicably, the asserted priority date for this filing is 1983, well after the area was designated as a national monument or a wilderness area.

two for "other" uses.¹⁵³ Filings for both parks were made in 1987, subsequent to establishment of the wilderness area, but a sampling of the ADWR's electronic imaged records for these filings indicate that "other" uses include "reservation purposes" and "natural flows." ADWR imaged records indicate that the NPS is asserting all its available options, claiming water both for purposes of the national monuments and for "whatever purposes might have been added by the designation of portions of [the] National Monument as wilderness areas." The claims are for all natural sources of water on and under the reserved lands rather than for specific surface or groundwater features. The NPS has not made similar wilderness reserved right claims in Chiricahua National Monument the agency's only wilderness area outside an active adjudication basin,

b. Alternatives to Wilderness Reserved Water Rights

NPS, DOI and the Congress have also protected wilderness water through alternative measures, but these measures have been largely incidental to existence of the wilderness area. According to NPS policy, water rights must be attained and used in accordance with legal authorities, but NPS will consider all available authorities on a case-by-case basis and pursue those that are the most appropriate to protect water-related resources in parks. To implement these policies, the NPS generally writes and revises wilderness plans every ten years in all parks that contain wilderness areas.¹⁵⁴ The wilderness plan guides the preservation, management, and use of the particular area.¹⁵⁵ The NPS also works alongside state administrators and participates in negotiations to resolve conflicts among multiple water claimants.¹⁵⁶

Like FWS, there is no evidence that NPS is using normal filings for appropriative rights to protect wilderness water in either Arizona or Colorado. All of the surface water rights within NPS wilderness areas predate wilderness designation except for one right held by Prescott National Forest in Organ Pipe Cactus.

There is, however, one instream flow on Rincon Creek, downstream of Saguaro that illustrates NPS *willingness* to use non-reserved rights to protect its lands when reserved rights are insufficient for the purposes of the reservation. Although it is downstream of the wilderness area, this instream flow is of special note because NPS filed for the instream flow in an area of the park that was acquired rather than reserved land. That is, NPS is using the instream flow where it does not have either an express or implied reserved water right associated with the original designation (reservation) of the park.¹⁵⁷

While NPS has not asserted wilderness reserved rights or state-based appropriative rights in any of its Colorado wilderness areas, the DOI and Congress have fashioned unique water agreements that include the NPS wilderness areas. The agreements protect wilderness water in the Great Sand Dunes and Mesa Verde areas, and, some contend, in the Black Canyon of the Gunnison,

¹⁵³ The NPS already has active surface filings for Saguaro with priority dates in 1907, 1951 and 1968.

¹⁵⁴ *The Wilderness Society v. Norton*, ___ F. 3d ___, (D.C. Cir 2006) No 05-5032, decided January 17, 2006 (NPS Management Policies are a non-binding, internal agency manual intended to guide and inform Park Service managers and staff, and not intended to be judicially enforceable).

¹⁵⁵ Director's Order #41, "Wilderness Preservation and Management" §6.3.1, 6.3.5.

¹⁵⁶ National Park Service Management Policies sec. 4.6.2 (2001).

¹⁵⁷ The instream flow protects the area from groundwater pumping by a water company exporting water for use outside the basin.

but none of the agreements can be construed as being affected by wilderness designation language. In Mesa Verde, a settlement agreement yielded eight rights within the wilderness and 5 additional national monument rights on the wilderness border and upstream in the park. The rights have appropriation dates of 1906, well before wilderness designation. Legislation protecting the Great Sand Dunes National Park and National Preserve does not specifically mention the pre-existing wilderness area, but protects wilderness water by allowing the Secretary of the Interior to appropriate water through Colorado's water rights system for purposes of the areas. For these purposes, the USA holds 12 minimum stream flow rights within and one upstream of the wilderness area. The most controversial water settlement is for the Black Canyon of the Gunnison. While the 2003 negotiated agreement ostensibly protects both park and wilderness water, the agreement is currently in litigation with Trout Unlimited contending that DOI erred in relinquishing claim to any federal reserved right over 300 cfs associated with the 1933 reservation of the national monument. Neither the settlement nor the litigation directly address wilderness reserved rights which would be junior to the national monument rights.

D. AGENCY SUMMARY

In this study of Arizona and Colorado wilderness areas, we could not observe any direct effect of *quantified* wilderness reserved rights, as there are none. In addition, interviews with agency staff overwhelming suggested that field staff (wilderness coordinators, refuge managers, and biologists) are largely unaware of or at least not directly involved with water rights issues. Rather, they are overwhelmed with the everyday crises of managing people, wildlife and stock. Agency hydrologists and legal staff, however, are dedicated to protecting wilderness water resources – regardless of statutory language. While express reserved rights language prompts them to assert wilderness reserved rights, they recognize political realities and hesitate to assert reserved rights where Congress has been silent as to a reservation. Agencies also use whatever alternative means are available to protect wilderness water resources.

V. FINAL OBSERVATIONS

In very general terms, there are differences for the multiple-use agencies (BLM and Forest Service) in how they protect water in wilderness compared to how they protect it on non-wilderness lands. These differences stem largely from the difference in the broad statutory standards for wilderness management versus standards for other categories of land. Wilderness areas are to be “left unimpaired” for enjoyment by present and future generations, while multiple-use lands, and to some extent FWS lands, are managed under more lenient standards.¹⁵⁸ In contrast, the NPS standard of conserving resources “unimpaired for the enjoyment of future generations” is applied to both wilderness and non-wilderness lands within the national park system.¹⁵⁹ Beyond these statutory requirements, review of agency regulations and guidelines reveals few directives specifically regarding water rights in wilderness especially as compared to agency directives prescribing methods of performing work related to water developments in wilderness areas.¹⁶⁰

¹⁵⁸ For example, BLM must manage the public lands to prevent unnecessary or undue degradation. Federal Land Policy and Management Act, Public Law 94-579, 43 U.S.C. 1732(b).

¹⁵⁹ Park Service Organic Act of 1916 (16 U.S.C. 1).

¹⁶⁰ See Appendix A for agency policies

Wilderness designation does, however, raise the profile of the area for identification and monitoring of water resources above that of multiple-use lands. Work plans and priorities may be set through a specific wilderness area planning processes (e.g., the Forest Service's Wilderness Implementation Schedule and NPS wilderness area plans) or through the agency's periodic planning exercises, but it does not necessarily produce any specific action regarding water rights.¹⁶¹ The planning process might identify a number of actions that are needed for protection of wilderness water, including inventory of waters for claiming expressly reserved rights and for actions to be taken through the state's appropriation system. The latter includes monitoring requests for state water appropriations in order to oppose projects that might negatively impact wilderness values.¹⁶²

Nevertheless, agencies do not interpret the Wilderness Act's non-impairment mandate to require affirmative action on their part. Interviews with agency staff revealed that agency action to protect water for federal purposes – within and outside of wilderness boundaries – is largely taken on a case-by-case basis in response to specific threats and based on the resources available to deal with those threats. The indicators of threats developed for this study support this observation. The measures indicate more threats to areas with denied, non-assertion and silence language than with express rights (Figure 3) and a similar pattern of agency use of protective measures (Figure 6).¹⁶³

Threats vary with a variety of factors, including the position of the wilderness in the watershed (indicated by whether it is a headwaters or downstream area), remoteness or potential for area development, and availability of water for which to compete. Interviews with FWS and BLM staff revealed, for example, that some of the driest areas (e.g., BLM areas in northern Arizona) are the least threatened. The perception of threat also varies with presence of other protective factors, such as a senior reserved right attached to a wildlife refuge that includes the wilderness area. This senior right might be sufficient for purposes of the wilderness or allow an agency to protest new developments that could threaten wilderness values.

Interviews also suggest that significant limitations on personnel and other resources at both federal and state agencies affect agency response to threats. Limitations on resources and day-to-day crises in agency operations push federal agencies to prioritize and re-prioritize their resource protection activity, and to reactively rather than proactively protect resources. While remoteness, coupled with poor access, can mean a low risk of development, (i.e., less threat), it

¹⁶¹ See e.g., U.S. Department of the Interior, Bureau of Land Management, Phoenix Area Office, Woolsey Peak Wilderness and Signal Mountain Wilderness Management Plan, Environmental Assessment, Finding of No Significant Impact and Decision Record. 2003. See also, Natural Resources Law Center, Special Uses in Wilderness: Management Survey, March 2005 and one of several case studies on wilderness and other protective status lands at <http://www.colorado.edu/law/centers/nrlc/projects/wilderness>. Wilderness legislation may also contain specific facilities-related language. See Tables 1 and 2.

¹⁶² Wilderness designation does not necessarily translate into increased funding for management.

¹⁶³ The motivations of Congress revealed in legislative history do not completely comport with the levels of threat indicated by our measures. For example, legislative history suggests that the level of threat in non-assertion areas should be low as lack of threat in headwaters areas prompted Congress to use non-assertion language in the Colorado Wilderness Act. Similarly, lack of threat and a headwaters location prompted Congress to deny reserved rights to Black Ridge Canyons (see Table 2).

can also make inventory of waters more difficult and costly and, perhaps, not worth the effort given other demands on time and resources. Tight state budgets also affect federal activities as federal agencies can be stymied by lack of state action, e.g., in processing water permits, establishing instream flows, or moving forward with adjudications regardless of the level of threat to an area.

While threats and resource constraints may be major factors in determining *whether* wilderness water is actively protected, our comparative analysis of water rights data and interviews suggest that statutory language affects *how* wilderness water is protected.

A. ASSERTION OF WILDERNESS RESERVED RIGHTS

At one end of the spectrum of statutory language, an express reservation of water that explicitly requires assertion of these rights prompts agencies to assert them. At the other end, language explicitly denying a reservation of water rights and non-assertion language both keep agencies from asserting reserved rights. The impact of language between these two extremes – wilderness designation with silence as to reserved rights – is less clear. It appears, however, that Congressional silence regarding a water reservation may at least discourage assertion of reserved rights as agencies recognize and respond to state, and sometimes federal, hostility to their assertion.

Unfortunately, our conclusion that express language prompts assertion of reserved rights is based primarily on evidence of BLM actions in Arizona as there are no Forest Service areas with express reserved rights in either state and no express rights areas in Colorado. That statutory language is the driving factor is bolstered by the fact that BLM seems to be, based on legislative history, the agency least likely to embrace federal reserved rights as the way to protect water resources for federal lands in Arizona.¹⁶⁴ For BLM, the statutory requirement that the agency participate in state adjudications to protect its reserved rights may facilitate agency action, although staff indicate that they would be filing for reserved rights even without this explicit requirement to do so.

Confidence in our conclusions is, however, tempered by the fact that express reserved rights language is neither a sufficient nor a necessary condition for reserved rights filings. BLM has not filed for reserved rights on all of its express language areas or even in all of the wilderness areas in basins undergoing adjudication.¹⁶⁵ Furthermore, FWS has failed to assert express wilderness reserved rights in any of its four express rights areas even though they are in active adjudication basins. In addition, NPS is asserting wilderness reserved rights for two of their silence category areas in conjunction with assertions of national monument/park reserved rights.

Only time and progress in the Arizona general stream adjudication is likely to tell whether language really makes a difference in assertion of reserved rights. On one hand, it appears that the same “priority factors” that influence any active management of wilderness water has also

¹⁶⁴ See Appendix A for discussion of BLM’s opposition to express reserved rights language in the legislative history of the Arizona Desert Wilderness Act.

¹⁶⁵ BLM has not filed in four of its headwaters and four of its downstream express language areas within active adjudication basins. The agency has not filed for reserved rights in two headwaters and 15 downstream express language areas outside of active adjudication basins.

influenced which express rights areas are prioritized for inventory and filing. In time, and if unappropriated water is available, BLM expects to file for reserved rights on all its express rights areas.¹⁶⁶ In contrast, both BLM and Forest Service indicate that they are not planning to assert a reserved right for their areas designated with silence as to reserved water rights, as that agency has been willing to assert implied reserved rights pursuant to the Organic Act.

B. USE OF OTHER PROTECTIVE MEASURES

Both water rights data and interviews revealed that agencies use a variety of measures besides wilderness reserved rights to protect wilderness water. As a whole, 58 percent of all areas are protected – at least in part¹⁶⁷ – by one or more of these alternative measures (Table 7B). Agencies have used these alternative measures in denied rights and silence areas to a similar extent (80 and 74 percent, respectively) and to a lesser extent in the non-assertion language category (67 percent of areas).¹⁶⁸ Express language areas have seen the least amount of protective action from these alternative measures. About 26 percent of express areas are protected by alternative measures with an additional 21 percent protected only by reserved right assertion.¹⁶⁹

Overall, instream flows protect water – at least to some degree – in a larger percentage of wilderness areas than any other type of alternative measure (see Figures 4 and 5). Taken together, assertion of post-designation rights within and upstream of wilderness areas also contribute significantly to wilderness water protection in all but the non-assertion category. When viewed in slightly more detail, data also suggest some differences between agencies and states regarding use of alternative measures. The effect of state law on agency action is exemplified by Forest Service assertion of post-designation non-reserved rights in a large percentage of its Arizona areas, but in none of the agency's Colorado areas. Interviews suggest that enough peculiar state- and wilderness-specific factors are at work (such as varying level of threat to wilderness areas; agency crises unrelated to wilderness; problems with state agency data systems; serendipitous location of proactive employees; and litigation over instream flows, etc.), that statutory language is not likely to be the driver for agencies taking or avoiding either specific alternative protective measures or any alternative measure at all.¹⁷⁰

¹⁶⁶ Availability of water on which to file claims is, of course, another factor that should be considered, but could not be controlled for in this study. Arizona BLM staff supported the conjecture that some of the driest express language wilderness areas did not currently have staff to work on any water filings.

¹⁶⁷ While interviews included questions on the quality of protection of wilderness water in various areas, no attempt was made to quantitatively evaluate whether protective measures applied were actually successful in protecting wilderness water.

¹⁶⁸ While denied and non-assertion areas were treated separately, we recognize that these categories could be combined, as the language is effectively the same in terms of asserting reserved rights – legally or practically precluding any assertion of federal reserved rights and forcing the agencies to protect wilderness water through alternative means.

¹⁶⁹ BLM has filed for wilderness reserved rights in 28 percent of its express rights areas, but some of these areas are also protected by alternative measures.

¹⁷⁰ We also note that we included the three non-wilderness areas in this study to determine whether their intermediate status (non-wilderness areas protected as wilderness) coupled with denied rights language has had any impact on their management. While our data on these areas is limited, interviews suggest there has been no special treatment of these areas – no less, no more than either wilderness or multiple-use lands. Protection of water resources of the downstream Tabeguache Area is the least advanced of Colorado areas in terms of planning and

C. THE BOTTOM LINE

The bottom-line question of our study is whether the intense conflict over water rights language in wilderness legislation has been worth it. Do battles for express language result in better protection of wilderness water resources? Do negotiations that produce denial or non-assertion language compromise the resource?

In drawing conclusions on the effect of statutory language on assertion of wilderness reserved rights, we first note that more than 40 years after Congress created the Wilderness Preservation System, no wilderness reserved water rights have been quantified in Arizona or Colorado.¹⁷¹ Further, there are still no quantified wilderness reserved water rights more than 15 years after Congress created wilderness areas in Arizona with express reserved rights. Whatever existing protection there is of wilderness water has not been a result of *quantified* reserved rights.

Unfortunately, inadequacies of this study prevent us from directly assessing the health of wilderness areas and answering these questions. Without hydrologic analysis of the areas, we cannot evaluate whether pre-designation rights had already significantly impacted wilderness values or whether there is unappropriated water for wilderness purposes. Whether asserted wilderness reserved rights or alternative measures (post-designation appropriative rights, instream flows, cooperative water management agreements, and reserved rights for associated refuges and national parks) are quantitatively sufficient for the purposes of the wilderness reservation is also a largely unanswered question. Furthermore, the uneven distribution of areas across language categories and by agency and the inaccuracies and limitations of the states' easily available electronic data leave us cautious in drawing conclusions from our comparison of pre- to post-designation water rights data.

Nevertheless, data and interviews suggest that express reserved right language generally induces agencies to assert reserved rights, at least when the language and state processes require the agencies to do so. Lack of express language, i.e., the other three types of reserved rights language used to establish Arizona and Colorado wilderness areas, prevents or discourages agencies from filing for reserved rights. Both denial and non-assertion language practically or explicitly preclude agencies from filing for reserved rights. Statutory silence contributes to agency hesitation to assert reserved rights. Interviews suggest that this hesitation is related to agency desire and policy to cooperate with states, agency understanding that immediate assertion of reserved rights is not necessary to preserve them, and to agency interest in avoiding the political controversy of asserting implied reserved rights. Regardless of whether agencies assert wilderness reserved rights, however, they use alternative measures to protect wilderness water. While state law influences what measures agencies can use to protect their resources, wilderness designation language does not appear to have any impact on use of alternative measures.

implementation of protection plans. There is no specific management plan for the area, but BLM is considering a reinventory for springs and evaluation of a couple of the creeks for instream flow protection.

¹⁷¹ There are a few examples of recognition of non-wilderness reserved rights in Colorado. Where these affect wilderness areas, they are listed in large format Table 5H. It is ironic that the jury is, literally, still out on whether quantification of an express reserved right for the Black Canyon of the Gunnison National Park has actually protected this area

APPENDIX A. LEGISLATIVE HISTORY OF ARIZONA AND COLORADO WILDERNESS LEGISLATION

Before 1990, there was very little controversy over water language – or lack thereof – in wilderness bills. Consequently, the legislative history summary which follows, focuses on the water rights language discussions of the 1990 Arizona Desert Wilderness Act, P.L. 101-628, and the 1993 Colorado Wilderness Act, P.L. 103-77.

1. ARIZONA

Congress designated the first five Arizona wilderness areas in 1964. Between 1964 and 1990, Congress added 41 areas without specific federal reserved water rights language. In 1989 the Arizona congressional delegation introduced House (H.R. 2570 and H.R. 2571) and Senate (S. 1080) bills to designate BLM lands and four U.S. Fish and Wildlife Service wildlife refuges as wilderness. By February 1990, most of the controversial elements of the legislation had been reconciled through negotiations and boundary modifications. At that time, the reserved water rights language of the Arizona Desert Wilderness Act, provided:

With respect to each wilderness area designated by this Act, Congress hereby reserves a quantity of water sufficient to fulfill the purposes of this Act. The priority date of such reserved rights shall be the date of enactment of this Act. The Secretary of the Interior shall file a claim for the quantification of such rights in an appropriate stream adjudication, and shall take all steps necessary to protect such rights in such an adjudication. The Federal water rights reserved by the Act shall be in addition to any water rights which may have been previously reserved or obtained by the United States for other than wilderness purposes.¹⁷²

The legislative history indicates that Congress did not want the Act to be construed as “constituting an abandonment or relinquishment of any part of such previously-obtained rights of the United States” or that it be viewed as precedent for or affecting any other wilderness designation.¹⁷³ The language regarding the role of the state was not sufficiently clear, however, and the House amended this language to explicitly recognize that rights would be quantified in state court adjudications.¹⁷⁴ In introducing the amendment, Representative Rhodes reiterated that:

[T]he question is not the existence of a Federal reserve water right. That has always been in the bill. It has always been agreed to by all parties to this debate. That is not the issue. The issue is how, where, and when should that right be quantified and adjudicated. Our concern has been the forum in which those rights should be determined. It has been our concern that they be done in Arizona, that they be adjudicated in the Arizona courts under the Arizona system.¹⁷⁵

¹⁷² House Report 101-405 [to accompany H.R. 2570] Providing for the Designation of Certain Public Lands as Wilderness in the State of Alaska [sic], 101st Cong., 2nd Sess. at 5 [hereinafter H.R. Report 101-405].

¹⁷³ H.R. Report 101-405 at 28-29.

¹⁷⁴ 136 Cong Rec H 532, 101st Cong., 2nd Sess., February 28, 1990 [hereinafter 136 Cong Rec H 532]. The amendment passed 356 to 45 with 30 not voting.

¹⁷⁵ 136 Cong Rec H 532 at 21.

Representative Miller of California, noted, however, that the new language did not amend the McCarran amendment: "This language does not prevent the Secretary from going to the Federal courts to protect the Federal reserved water rights, as the Secretary may do today, should that action be necessary."¹⁷⁶ Further Representative Vento noted that:

[T]he amendments would leave intact the existing law and practice in this area, specifically the McCarran amendment, which provides the basis for concurrent Federal and State court jurisdiction over adjudication of Federal water rights. ...[These amendments] would not change the jurisdiction of the Federal courts. They would not reduce the procedural options now available to officials of the national government to protect the rights of the United States. ...They would not require quantification in State courts...but would accurately reflect a congressional expectation that these the Federal reserved water rights will presumably be quantified in the State courts of Arizona in adjudications in which the United States has been joined under the provisions of the McCarran amendment.¹⁷⁷

The Senate Committee also discussed the intended procedures regarding the federal reserved right. Discussion between Senators McClure and DeConcini noted that the rights would be quantified by state authorities, on the recommendations of the federal agency, within the appropriate state processes. If the federal agency disagrees, they can take it to state court.¹⁷⁸ Senator Bumpers opined that if there were a future lawsuit questioning an adjudication, the Secretary must go into court and quantify under state law, but that could be in federal court.¹⁷⁹

Several members of Congress and agency representatives weighed in on whether the express water rights language would have any practical effect on water rights. Vento noted that:

These wilderness water rights will not necessarily be greater than any existing Federal water rights which the United States may have acquired for any other purposes. That will be determined in the State quantification process, and in any case, no existing Federal water rights are intended to be relinquished or diminished in any way under this amendment.¹⁸⁰

The House Report also recorded that members did not want "double-counting" of rights – in practical effect, the wilderness act should come into effect only if and to the extent that prior rights are insufficient.¹⁸¹ Further, the wilderness water rights would be "junior to all pre-existing rights, in order to protect rightholders from unwanted Federal intrusion or preemption."¹⁸²

Arizona, represented by Bill Plummer, Director of the Arizona Department of Water Resources (ADWR), supported including specific water language in the Arizona Desert Wilderness bill –

¹⁷⁶ 136 Cong Rec H 532 at 8. Rhodes (Arizona), Miller (California), Kyle, Kolbe, Vento (Minnesota) spoke in favor of the legislation; Craig (Idaho), Thomas (Wyoming), Stump (Arizona)

¹⁷⁷ 136 Cong Rec H 532 at 23.

¹⁷⁸ S Hearing 101-998 110. Senator DeConcini originally noted that it would be the land managing agency that would make the determination of the quantity of water sufficient to fulfill the purpose of the Act. He changed later to say that it is the state agency that makes the determination after the federal agency makes an assessment.

¹⁷⁹ S Hearing 101-998 at 114.

¹⁸⁰ 136 Cong Rec H 532 at 21.

¹⁸¹ H.R. Report 101-405 at 35 (Supplemental Views).

¹⁸² S Hearing 101-998 at 110 (McClure reading from McCain's written statement).

the matter should not be left for future determination by the courts. “[W]ater resources are an integral part of the wilderness area” and that creation of a federal reserved right is “not inappropriate.” The director noted, however, that there must have statutory limitations: the “quantity reserved must be limited to the amount sufficient to fulfill the purpose of the area” and “the priority date should not be earlier than the date of enactment of the law creating the wilderness area.” With those limitations, the director predicted that a federal wilderness reserved right would have “little or no impact” because essentially all of the proposed areas are in the “uppermost parts of the watersheds.” Maintaining the areas in a primitive state would have no impact on water rights or uses in the State and would, in fact further protect downstream senior rights. In general, the necessary water rights for wilderness purposes would be reserved without upsetting the existing distribution of water in the state. Areas proposed that are not in the headwaters are “generally located on streams which are fully appropriated” and creation of the wilderness right will have little if any impact on water development opportunities. Two notable exceptions are Swansea and Rawhide Mountains located on the Bill Williams River below Alamo Dam.¹⁸³

In his remarks, Plummer described two state processes for protecting wilderness water – the general stream adjudication process and the State’s instream flow program.

Water rights provisions in the Wilderness Act should not detract from the state’s opportunities to quantify these recreation and wildlife rights under state administrative law and should also support provisions to quantify the wilderness rights in a general adjudication process in the Arizona State Court system.¹⁸⁴

First, Arizona intended that the on-going Gila River and Little Colorado adjudications would provide the mechanism for quantification of wilderness water rights created by the legislation. These adjudications covered most of the areas designated in the Act (see large format Table 3, Summary of Arizona Wilderness Areas). Wilderness areas on the Bill Williams River – an area of still unappropriated water and no large-scale unquantified federal reserved rights, such as Indian water rights – were the exception. The state’s position was that the Bill Williams was not then ripe for general adjudication. Plummer believed that the appropriate time for an adjudication on the Bill Williams would be after the administrative process for granting state water rights had issued more rights on the Bill Williams and when the federal and state agencies had more resources available to undertake the adjudication process.

The Bill Williams also provided an example for use of the state’s instream flow process. The Swansea and Rawhide Mountains are located on the Bill Williams River below Alamo Dam. The dam was authorized for flood control purposes, but can also serve the purposes of wildlife, recreation, and water conservation. BLM had already applied for an instream flow right on the section of the river flowing through the proposed wilderness area. The director believed that the Arizona instream flow process should fulfill and satisfy all wilderness purposes even though wilderness is not recognized as a beneficial use in the state’s water law.¹⁸⁵

¹⁸³ S Hearing 101-998 at 121-28.

¹⁸⁴ S Hearing 101-998 at 121-28.

¹⁸⁵ S Hearing 101-998 at 121-28. Following his testimony, questioning by Senator McClure revealed that the state believed that the instream flow program would be the mechanism through which the wilderness federal reserved right would be protected. The State hoped that the courts would accept the determination of the ADWR as to

In April 1990, the Senate accepted the more precise house language that eventually became P.L. 101-628. This language had been negotiated with and was acceptable to both the State and environmental groups.¹⁸⁶ Jeff Menges, Arizona Cattle Growers Association, was the only witness that did not support federal reserved water rights for wilderness. He objected to the uncertainty as to quantity of water that it left the people of Arizona. Their proposal would require the Secretary of the Interior to claim water rights by a certain date and provide a mechanism for water quantification where no current adjudication was proceeding. The priority date would be the date on which the Secretary filed for quantification of present uses of water. Future uses would be claimed at a subsequent date – presumably with a subsequent priority date. This method would give more certainty to water users and keep federal officials from having to speculate on the total future use necessary for any wilderness area.¹⁸⁷

One of the lively debates on the Arizona Desert Wilderness Act was regarding the potential effect of the Act on the Colorado River since two wildlife refuges and their downstream wilderness areas (Havasu and Imperial) flanked the Colorado River. In H.R. Report 101-405, Congress recognized that the water situation in the Bill Williams basin was complex. Federal reserved rights on the Colorado River for the Havasu National Wildlife Refuge were quantified in the *Arizona v California*¹⁸⁸ litigation, but rights on the Bill Williams River for the refuge were not.

In July 1990, Senate Report 101-359 indicated that the boundaries of the two Colorado River refuges (Havasu and Imperial) had been drawn at the river's maximum high water mark – excluding the river from the wilderness areas with the result that the wilderness designations would not affect any existing Colorado River water allocations. The Senate was not, however, judging whether the existing rights would satisfy or fail to satisfy any requirements of the wilderness designation.¹⁸⁹ While report language was written to clarify that the wilderness bill was intended to create a federal reserved water right with respect to water arising upon, or flowing through the wilderness areas themselves, not to impact interstate water allocations,¹⁹⁰ Senators Wallop and Garn were still uncomfortable with the language. They were concerned

quantification of the right. Senator McClure pressed the director on why the state would be willing to open itself to uncertainty as to the quantity of the right or to the potential for someone to advocate federal condemnation of senior rights in order to serve the wilderness area. While Plummer indicated that the state was comfortable with the water rights language – based on negotiation of that language – it would help to add something to clarify that the courts were not expected to reach beyond the boundary of the wilderness areas to impose any flow requirements on the Colorado River. S Hearing 101-998 at 140-145.

¹⁸⁶ S Hearing 101-998 at 110; see also S Hearing 101-998 at 152 – 166. Craig Friesner, Arizona Wilderness Coalition supported the bill (although they recommended a much larger acreage) and adoption of the HR 2570 water rights language as it “merely codifies existing Arizona law.” James Norton, Southeast Regional Director, The Wilderness Society similarly supported the bill and inclusion of the House water rights language. Norton noted that TWS, Sierra Club and John Lesly had discussed potential conflicts between federal reserved rights and wilderness (and, presumably, other water rights) and found few if any, as the priority date of the wilderness rights would be junior to prior existing rights. Swansea and Rawhide Mountains were the exception and specific language was proposed to take care of these complex issues.

¹⁸⁷ S Hearing 101-998 at 146 – 151.

¹⁸⁸ 373 U.S. 546, 376 U.S. 340

¹⁸⁹ S. Rep. 101-359 at 14.

¹⁹⁰ S. Rep. 101-359 at 15.

that the express wilderness reservation would allow additional claims on Colorado River water. Their solution was to be explicit that any reserved water from the Colorado River would have to be satisfied at the expense of other water uses in the lower basin.¹⁹¹

Arizona Department of Water Rights, Director N.W. Plummer did not believe that any additional water would be needed for the Havasu and Imperial refuges because of the wilderness designation, but he was interested in working with Congress to make sure that the wilderness act did not change the law of the Colorado River.¹⁹² Michael Spears, Regional Director, Region 2, USFWS spoke in support of the wilderness legislation, including designation of the four FWS areas in Arizona. He did not, however, mention the water rights language in his remarks.¹⁹³

2. COLORADO

In 1980, Congress enacted a statewide RARE II wilderness bill for Colorado (P.L. 96-560) which designated approximately 1.4 million acres of National Forest lands in 15 areas as wilderness. In 1993, Congress passed a second statewide RARE II-based wilderness bill, which, for the most part, designated as wilderness the congressionally designated study areas from 1977, 1980 and 1983. The primary reason for the long delay between bills was that Executive Branch policies and judicial decisions prompted Congressional decisions on wilderness to explicitly include decisions on water and water law. While Congress recognized the importance of water in the 1990 bill, it did not consider specifically language necessary. Reagan Administration policy of effectively relinquishing claims to water rights in wilderness areas and the U.S. District Court decision in Colorado in 1985 prompted the Senate to insist on specific wilderness water rights language. A Senate bill in 1991 would have expressly disclaimed wilderness reserved rights, but required a contractual agreement between the Secretary of Agriculture and Colorado regarding instream flows in the Piedra area. A later Senate version was silent on water, but a 1992 House version included an express reservation of water for each wilderness area.¹⁹⁴

In 1993, the final bill resulting in P.L. 103-77 created "non-assertion language" which prohibits anyone from asserting or any court or agency from considering any claim to or for water based on the area's designation as wilderness in that act.¹⁹⁵ While a Department of Justice letter questioned the constitutionality of the non-assertion language and suggested substitute language, the bill was passed without significant change.¹⁹⁶ Congress was clear that the water section of

¹⁹¹ S. Rep. 101-359 at 44.

¹⁹² S Hearing 101-998 at 145.

¹⁹³ S. Rep. 101-359 at 35-39.

¹⁹⁴ Colorado Wilderness Act of 1993, House Report No. 103-181, July 19, 1993 [hereinafter H.R. Rep. 103-181] at 11.

¹⁹⁵ P.L. 103-77, section 8(b)(1). Congress was slightly less far reaching – prohibiting anyone from acting as agent for the U.S. in any such claim. S. Report 103-123 at 4 and H.R. Rep 103-181 at 19-20. Additional remarks by Representative Scott McInnis were more accurate that the bill language would prevent any person from asserting a claim. H.R. Rep 103-181, extension of remarks, July 26, 1993 at E1863

¹⁹⁶ S. Report 103-123 at 13-16 (based on First Amendment right to petition the government for redress of grievances and Congress' inability to prohibit officials of the Executive Branch from asserting claims under Article II, Section 3). Language in H.R. Rep 103-181 at 20 indicates that the House believed that it had cured the problem with carefully limited language. Senator Brown later explains this as having no effect on original jurisdiction of the U.S. Supreme Court and not creating a federal question by not expressly reserving water rights. August 4, 1993 at S10452

the bill – intended to protect wilderness values by means other than federal reserved rights – was “entirely premised on certain specific characteristics of the lands designated as wilderness” namely:

- Located in headwaters areas with few opportunities for diversion, storage or other uses of water that could occur outside the areas but adversely affect the wilderness values;
- Unsuitable for new or expanded water resource facilities; and therefore
- Suitable for protection and proper management in ways different from those employed for wilderness lands not sharing these characteristics.

The “thou shalt not assert” language for the wilderness areas was apparently not sufficient to deal with the downstream areas of Piedra, Roubideau and Tabeguache areas.¹⁹⁷ For these areas, a federal reserved water right was specifically denied.¹⁹⁸ While the legislation released the Piedra, Roubideau and Tabeguache areas from further study as wilderness, it required activities within the areas to be managed so as to maintain the present wilderness character of the areas and the potential for designation as wilderness until Congress determines otherwise¹⁹⁹ or area water rights questions can be resolved and the areas designated as wilderness.²⁰⁰

In its analysis of the water language during its testimony on the bill, Forest Service felt that limiting wilderness designations to headwaters areas and effectively limiting development of new or expanded water projects should provide adequate protection for wilderness water resources for the areas. In addition, it would complement existing Forest Service authorities, including the Organic Acts of 1897 and 1944, MUSYA, FLPMA, the Wilderness Act and NFMA, and mechanisms to protect water including:

1. Administrative control over placement of water diversion, storage and transmission structures on National Forest System lands;
2. Appropriation of water rights under State water laws;
3. Reserved water right claims under Federal law;
4. Acquisition of land or water rights; and as a last resort,
5. Condemnation of lands or water rights.²⁰¹

The Forest Service noted that they had studied the Piedra area and made joint recommendations with the Colorado Water Conservation Board for water rights to protect the area, but that the CWCB had not acted on those recommendations. Forest Service recommended completing that process and using a similar procedure to identify and protect water for Roubideau and Tabeguache noting that it was unlikely that the agency could protect the water-related values of the areas without water rights to maintain instream flows.²⁰²

¹⁹⁷ S. Report 103-123 at 9 (testimony of Mark Reimers, Deputy Chief, Forest Service).

¹⁹⁸ P.L. 103-77, sec 8(b)(2)(A).

¹⁹⁹ S. Report 103-123 at 7.

²⁰⁰ S. Report 103-123 at 9.

²⁰¹ S. Report 103-123 at 12.

²⁰² S. Report 103-123 at 13.

APPENDIX B. STATE WATER LAW: ARIZONA AND COLORADO

1. ARIZONA

a. Water Rights Permit System

Prior to June 12, 1919, a person in Arizona could acquire a surface water right simply by applying the water to a beneficial use and posting a notice of the appropriation at the point of diversion. On June 12, 1919, the Arizona surface water code was enacted. This law, now known as the Public Water Code, requires that a person apply for and obtain a permit in order to appropriate surface water in the state. Acquiring a permit through the ADWR through their established procedures is the only way to create a surface water right in the state of Arizona. However, receiving a permit does not create a perfected water right, because the ongoing general stream adjudications can alter or terminate the water right. Most of the water rights obtained in Arizona are obtained for consumptive use. However, water rights can also be obtained for instream flows, which are comparable to consumptive use rights in most respects. For most, uses, water may be severed and/or transferred with no loss of priority date. However, if the water is to be transferred to recreation and wildlife (including fish) purposes, it must be transferred to the state or a political subdivision thereof in order to keep its priority date.²⁰³

Arizona also has a statutory regime for groundwater withdrawal. The 1980 Groundwater Management Code established three different levels of scrutiny applied to water management depending on the location and condition of groundwater withdrawal. Under all levels of scrutiny, a groundwater user must register the well with the ADWR, and in many cases, a well user must receive a permit before the well can be drilled.

The ADWR recognizes several types of water rights filings.²⁰⁴

33 – Applications for Permit to Appropriate Public Water or to Construct a Reservoir

A “33” application is required in order to appropriate public waters or construct reservoirs in the state of Arizona. According to ADWR, “A permit from the state is necessary to use or divert surface water in this state unless one of the following applies:

- the water is from the mainstream of the Colorado river, in which case a contract with the Secretary of the Interior is required;
- the person or the person’s predecessor-in-interest, lawfully appropriated the water prior to June 12, 1919 and the person or the person’s predecessor-in-interest has filed a statement of claim (“36” filing) for the appropriation with the state; or
- the water is stored in a stockpond constructed after June 12, 1919 and before August 27, 1977.”

²⁰³ 45-172 ARS.

²⁰⁴ See http://www.azwater.gov/watermanagement/Content/WaterRights/surface_water_faqs.htm#05dot1

The ADWR is "required to approve an application made in proper form unless the proposed use conflicts with vested rights, is a menace to public safety, or is against the interests and welfare of the public." "If the application is approved, a permit to appropriate is issued to the applicant. A permit authorizes the permit holder to construct the diversion works and put the water to a beneficial use. After approval of a permit the permit holder has two years to construct the diversion works and one year to put the water to beneficial use, unless additional time is justified and allowed by the Department. After the permit holder submits proof of the appropriation, ADWR issues the permit holder a Certificate of Water Right (CWR) with a priority date that relates back to the date of the application. A CWR evidences a perfected surface water right that is superior to all other surface water rights with a later priority date, but junior to all rights with an earlier priority date. All permits and certificates are for specific uses at specific places and are endorsed with the priority date and extent and purpose(s) of the right(s). The right must be beneficially used or it may be subject to abandonment and forfeiture."

33 - Applications for Permit to Appropriate Public Water of the State of Arizona Instream Flow Maintenance

A "33" application is also required for an instream flow right. Instream flow is a "surface water right that remains in-situ or "in-stream," is not physically diverted or consumptively used, and is for maintaining the flow of water necessary to preserve wildlife, including fish and/or recreation." The ADWR is "required to approve an application made in proper form unless the proposed use conflicts with vested rights, is a menace to public safety, or is against the interests and welfare of the public."

If the application is approved, a minimum of one year of streamflow measurement data is required to be submitted by the applicant before the Department will issue a permit to appropriate. In addition, the applicant is required to submit a report of the results and conclusions of the study based on the methodology developed to determine instream flow requirements for the proposed beneficial use(s). The study should be submitted at the time of filing of the application, but must be submitted no later than two years after the filing date. After approval of a permit the permit holder has four years to demonstrate (unless additional time is justified and allowed by the Department) that the instream flow water right is being used in a manner consistent with terms of the issued permit. After the permit holder submits proof of the appropriation, the Department issues the permit holder a Certificate of Water Right (CWR) with a priority date that relates back to the date of the application. A CWR evidences a perfected surface water right that is superior to all other surface water rights with a later priority date, but junior to all right with an earlier priority date. All permits and certificates are for specific uses at specific places and are endorsed with the priority date and extent and purpose(s) of the right(s). The right must be beneficially used or it may be subject to abandonment and forfeiture." There are currently 92 instream flow applications on file. ADWR has certificated only 30.²⁰⁵ See Table B-1 at the end of this section for a summary of Arizona instream flow rights associated with wilderness areas.

36 - Statement of Claim of Rights to Use Public Waters of the State of Arizona

When the Public Water Code was adopted on June 12, 1919, it did not address surface water rights existing prior to its enactment. Under the Water Rights Registration Act a person who

²⁰⁵ Results of an ADWR data search requested by the NRLC.

before March 17, 1995 was using and claimed the right to use public waters of the state based on state law may file a "Statement of Claim" for both pre and post June 12, 1919 claims.

The act of filing a Statement of Claim does not create a water right nor does it constitute an adjudication of the claim. While the Statement of Claim itself is admissible in evidence as a rebuttal presumption of the truth and accuracy of the information contained in the claim, no judicial determination regarding the right and priorities of the claimant has been made. A claim made under the Water Rights Registration Act is subject to challenge. A Statement of Claim filed under the Water Rights Registration Act is assigned a number with the prefix "36".

39 – Statement of Claimants (SOC)

A Statement of Claimant (SOC) is filed for any surface water right or groundwater permit that is being used or claimed on lands drained by the Gila or Little Colorado River systems, as both watersheds are currently subject to on-going general stream adjudications. See the following section for more detail on the adjudications.

An appropriator must file an SOC so that the adjudication court will be aware that the appropriator is claiming a right to use water. Even though the appropriator may have already received a permit, certificate or other form of approval from ADWR for the water uses, an SOC must be filed for the adjudication process. Therefore, water claims in the Little Colorado and Gila Basins should eventually have both a "39" filing for the adjudication process, as well as a "33" or "36" filing for the active surface water permit or certificate. Further, a SOC should not be filed without a corresponding 33, 36 or other active surface filing or groundwater filing. As described below in Appendix C, Study Methods, the parallel system does not appear to be used entirely as intended.

45 – Federal Reserved Rights

Following passage of the 1990 Arizona Act, the Department of the Interior and the ADWR devised a special system, Program 45 filings, to record BLM claims in anticipation of the general stream adjudications. Any water right asserted by BLM claiming a federal reserved right for wilderness in the state of Arizona is assigned a 45 number. These "45" filings have been made for 12 of the wilderness areas in Arizona. None of these 45 filings have yet been perfected in the general adjudications. There is also no set process for filing or perfecting 45 filings for wilderness in Arizona.

55 – Wells and the 1980 Arizona Groundwater Management Code

The Arizona Groundwater Management Code was passed in 1980. This code requires every new well in Arizona to be registered with the Arizona Department of Water Resources. As well, every existing well in Arizona is required to be registered with the ADWR, but this requirement is considered voluntary. Over 130,000 wells have been registered in the state since the 1980, and an additional 400 to 600 well applications are received by the ADWR every month. Every registered well in the state is assigned a 55 number from the ADWR and is included in the ADWR database.

The 1980 Code also created three levels of groundwater management to respond to different groundwater conditions. The lowest level of management includes general provisions that apply

statewide. The next level of management applies to Irrigation Non-Expansion Areas (INAs). When an area is designated as an INA, a restriction is placed on increasing the number of irrigated acres in the area. The highest level of management, with the most extensive provisions, is applied to Active Management Areas (AMAs) where groundwater overdraft is most severe. Eighteen of Arizona's wilderness areas fall within or partially within an AMA. There are a total of three INA's and five AMA's in Arizona.

The 1980 Code also created two categories of wells. Wells with a pump-rate less than 35 gallons per minute (gpm) are considered exempt wells, and can be located anywhere in the state of Arizona (including inside AMA's) with only a permit from the ADWR. All non-exempts wells (wells with pump rates greater than 35 gpm) outside of the AMAs also require only a permit from the ADWR. Non-exempt wells inside an AMA are subject to special regulations in addition to receiving a permit from the ADWR.

b. General Stream Adjudications

The State of Arizona uses general stream adjudications, to determine the extent and priority of water rights in entire basins or subbasins. It is clear from the legislative history that Congress intended that the expressly provided wilderness reserved water of the Arizona Desert Wilderness Act of 1990 be quantified in this process. To date, the only federal reserved right adjudicated in Arizona is a right on the San Pedro River for Saguaro National Park.

Arizona is currently conducting two general stream adjudications. See Map B-1, General Adjudication Watersheds – Arizona, at the end of this section. The adjudications are judicial proceedings to determine the extent and priority of water rights in the Gila River and Little Colorado River systems.²⁰⁶ Any person or entity that uses water or has made a claim to use water, on property within the Gila River system or within the Little Colorado River system, is potentially affected by the adjudication. The final decrees of the Superior Court will establish the existence and ownership of claimed water rights as well as important attributes of the water rights including location of diversions, water uses, quantity of water used, and date of priority of water rights.²⁰⁷

The adjudication began with the service of summons on all potential claimants in the affected watersheds. Between 1979 and 1986, the ADWR (or its predecessor agencies) served approximately 960,000 summonses in both adjudications. Each water rights user should have filed a Statement of Claimant per the summons. Next, the ADWR prepared Hydrographic Survey Reports (HSRs). The HSR's include a general description of the hydrology of a watershed, a description of identified water uses in the watershed, and a set of maps setting forth the identified water uses. The HSR should also contain an investigation or examination of "the facts pertaining to the claim or claims asserted by each claimant."²⁰⁸ Next, the Special Master reviews the HSR's and hears objections filed to the HSR.²⁰⁹ A claimant can file an objection to

²⁰⁶ The adjudications are conducted pursuant to Arizona Revised Statutes §§ 45-251 to 45-264.

²⁰⁷ The following information is excerpted from *Rules for Proceedings Before the Special Master; Arizona General Stream Adjudications* available at <http://www.supreme.state.az.us/wm/pdfs/RulesRev053105.pdf>.

²⁰⁸ ARIZ. REV. STAT. ANN. § 45-256(A)(4).

²⁰⁹ The Special Master is a judicial officer appointed by the Arizona Superior Court to hear cases arising out of the adjudications and report on legal and factual issues referred by the Superior Court.

any part of the HSR, including the water file that describes their own water uses or the water uses of other claimants. After resolving the objections to the HSR, the Special Master will present a report and recommended final decree to the Superior Court judge assigned to each adjudication. After hearing and resolving any objections to the Special Master's report, the Superior Court will issue a final decree for each watershed.

Claims are asserted in the special adjudication by filing a Statement of Claimant (SOC) form with the ADWR. Every water user in an adjudicated watershed must file an SOC or risk losing the right. This loss may occur even if the water holder has received a permit, certificate, or other approval from ADWR. Although the filing deadlines have passed for each watershed, an SOC may still be filed, without leave of the Superior Court, before conclusion of hearings by the Special Master for the applicable subwatershed or federal reservation.

As described in the summary of legislative history, Congress was well aware of the Gila and Little Colorado adjudications in progress and the lack of on-going proceedings in the Bill Williams basin and other minor areas of the state. See Map B-1 for the wilderness areas in relation to the adjudication basins. Congress noted that "Some of the federal water rights reserved by this Act can be quantified in the context of those already ongoing proceedings [and] the Committee does not intend that the Secretary immediately initiate a general adjudication for the federal reserved rights pertaining to areas in the Bill Williams River drainage."²¹⁰ Further, Congress fully expected that claims for recognition of reserved rights in the adjudication process would only supplement existing rights held for the wilderness areas: "reservation in this Act will operate to protect water for wilderness purposes to the extent, if at all, that such protection is not provided by existing water rights held by the United States."²¹¹

Testimony by the Arizona Cattle Grower's Association opposing a federal reserved right for wilderness indicated their understanding that compliance with state procedures, as required in the Act, did not necessarily require the federal government to file for water rights where there was no active general stream adjudication or even to file immediately where there was an active adjudication. Compliance with rules of the state system did not provide sufficient certainty regarding federal water rights to the Association or other water users.²¹²

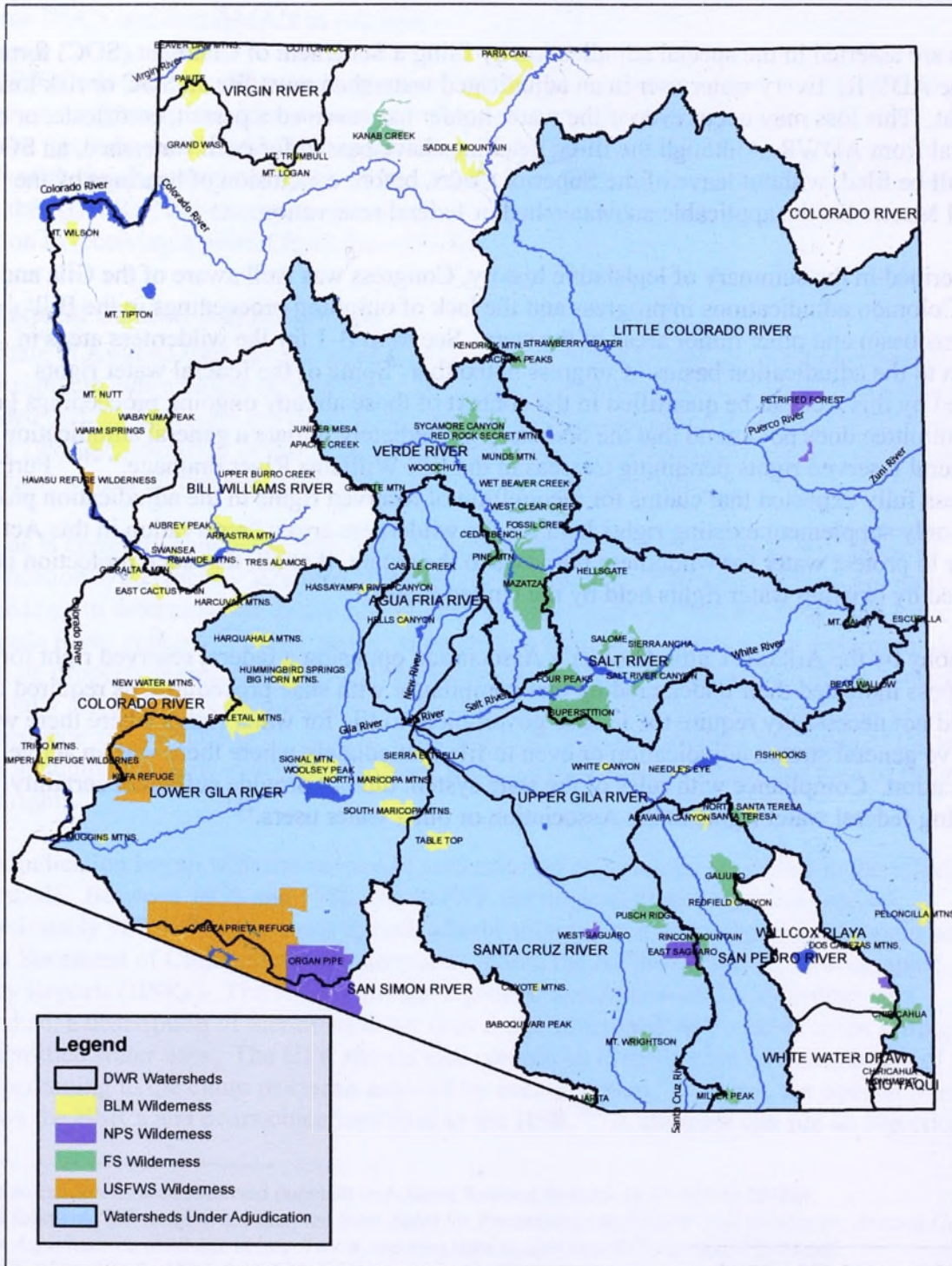


²¹⁰ H.R. Report 101-405 at 12-13.

²¹¹ H.R. Report 101-405 at 12-13.

²¹² S Hearing 101-998 at 149-151.

Map B-1. General Adjudication Watersheds – Arizona



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Table B-1. Arizona Instream Flow Rights Associated With Wilderness Areas.

Wilderness	ADWR Reg #	Right Holder	Water Rights Language	Wilderness Designation Date	Priority Date	Source	Watershed
Arrastra Mountain	33-090410	BLM Phoenix	Express	11/28/1990	24-Mar-86	People's Canyon Creek	Bill Williams River
Arrastra Mountain	33-096348	BLM Phoenix	Express	11/28/1990	8-Feb-94	Big Sandy River	Bill Williams River
Hassayampa River	33-092304	TNC	Express	11/28/1990	20-Jan-87	Hassayampa River	Lower Gila River
Hassayampa River	33-092304	TNC	Express	11/28/1990	20-Jan-87	Hassayampa River	Lower Gila River
Needles Eye	39-68705	BLM Phoenix	Express	11/28/1990	21-Oct-85	Mescal Creek	Upper Gila River
Redfield Canyon	33-094369	BLM Safford	Express	11/28/1990	1-Dec-88	Redfield Canyon	San Pedro River
Swansea	33-096300	FWS	Express	11/28/1990	13-Sep-93	Bill Williams River	Bill Williams River
Upper Burro Creek	33-089119	BLM Phoenix	Express	11/28/1990	3-Apr-84	Burro Creek	Bill Williams River
Upper Burro Creek	33-096510	BLM Phoenix	Express	11/28/1990	3-Apr-84	Francis Creek	Bill Williams River
Aravaipa Canyon	39-11159	BLM Phoenix	Silence*	11/28/1990; 8/28/1984	1-Jun-81	Aravaipa Creek	San Pedro River
Aravaipa Canyon	33-095488	TNC	Silence*	11/28/1990; 8/28/1984	31-Oct-90	Aravaipa Creek	San Pedro River
Aravaipa Canyon	33-095489	TNC	Silence*	11/28/1990; 8/28/1984	31-Oct-90	Aravaipa Creek	San Pedro River
Aravaipa Canyon	33-095490	TNC	Silence*	11/28/1990; 8/28/1984	31-Oct-90	Aravaipa Creek	San Pedro River
Aravaipa Canyon	33-095771	TNC	Silence*	11/28/1990; 8/28/1984	31-Oct-90	Aravaipa Creek	San Pedro River
Beaver Dam Mtns.	33-094819	BLM AZ Strip	Silence	8/28/1984	1-Jun-89	Virgin River	Virgin River

T	R	S	Finish	Amount (ac.ft)	Purposes	Location Relative to WAs	Notes
12N	10W	14	23	724	recreation	in WA	
15N	13W	24	11N/12W, 4	5,509.30	wildlife, fish & recreation	start U/; end D/	
7N	4W	20		1794.1	wildlife & fish	D/	
7N	4W	28		3244.1	wildlife & fish	D/	
4S	17E	1	3S/17E,19	139,639.79	wildlife, fish & recreation	start U/; end D/	Statement of Claimant
11S	20E	28	32	1612.4	wildlife, fish and riparian habitat	start in WA; end D/	
11N	16W	31	11N/17W, 18	42,397.10	wildlife, fish & recreation	D/	
							Record not found
							Record not found
6S	19E	19		10,860	wildlife, recreation, aesthetics	U/	Statement of Claimant
6S	17E	13	26	14,901.28	wildlife, fish & recreation	start in WA; end D/	
6S	19E	21	19	13,578	wildlife, fish & recreation	start U/; end U/	
6S	19E	35	28	11,212.17	wildlife, fish & recreation	U/	
6S	17E	3	4	10,432.68	wildlife, fish & recreation	D/	
42N	13W	33	41N/14W, 30	164,580	wildlife, fish & recreation	start U/; end in WA	

Fossil Springs / Mazatzal	33-096622	Tonto NF	Silence	Fossil 8/28/1984; Mazatzal 8/28/1984, 9/3/1964	1-Dec-99	Fossil Creek	Verde River	12N	7E	14	11N/6E, 25	57,074.71	wildlife, fish & recreation	start in Fossil; end in Mazatzal
Hellsgate	33-096571	Tonto NF	Silence	8/28/1984	31-Oct-97	Haigler Creek	Salt River	10N	14E	9	10N/12E, 14	3,147.30	wildlife, fish & recreation	start U/; end in WA
Hellsgate	33-096684	Tonto NF	Silence	8/28/1984	15-Nov-00	Tonto Creek	Salt River	12N	12E	33	7N/10E, 2	26,761.50	wildlife, fish & recreation	start U/; end D/
Mazatzal	33-090310	Tonto NF	Silence	8/28/1984, 9/3/1964	26-Nov-85	East Verde River	Verde River	11N	10E	17		2889.6	wildlife & fish	U/
Mazatzal	33-090310	Tonto NF	Silence	8/28/1984, 9/3/1964	26-Nov-85	East Verde River	Verde River	11N	7E	22		2894.3	wildlife & fish	in WA
Mazatzal	33-096743	Tonto NF	Silence	8/28/1984, 9/3/1964	18-Jun-03	Red Creek	Verde River	10N	5E	35	9.5N/6E, 34	1,384.10	wildlife, fish & recreation	U/
Mazatzal/borders Cedar Bench	33-090309	Tonto NF	Silence	Cedar 8/28/1984; Matatzal 8/28/1984, 9/3/1964	26-Nov-85	Verde River	Verde River	13N	5E	26	9N/6E, 35	18,045.00	wildlife, fish & aesthetics	start D/ Cedar Bench; end U/ Mazatzal
Mazatzal/borders Cedar Bench	33-094374	Prescott NF	Silence	Cedar 8/28/1984; Matatzal 8/28/1984, 9/3/1964	2-Dec-88	Verde River	Verde River	17N	1W	5	17N/R5E, 33	17,376- 43,440	wildlife, fish & recreation	start U/; end U/ of Cedar and Mazatzal
Mazatzal/borders Cedar Bench	33-096760	Phelps Dodge Corp	Silence	Cedar 8/28/1984; Matatzal 8/28/1984, 9/3/1964	3-Jun-04	Verde River	Verde River	16N	3E	8	22	61,233	wildlife & fish	start U/; end U/ of Cedar and Mazatzal
Paiute	33-094865	BLM AZ Strip	Silence	8/28/1984	20-Oct-89	Virgin River	Virgin River	40N	16W	26	35	166,566	wildlife, fish & recreation	start D/; end D/
Paiute	33-094866	BLM AZ Strip	Silence	8/28/1984	20-Oct-89	Virgin River	Virgin River	39N	16W	4	8	181,000- 217,200	wildlife, fish & recreation	start D/; end D/
Paiute	33-096133	BLM AZ Strip	Silence	8/28/1984	30-Oct-91	Virgin River	Virgin River	41N	15W	25		166,566	wildlife, fish & recreation	D/
Paiute	33-096134	BLM AZ Strip	Silence	8/28/1984	30-Oct-91	Virgin River	Virgin River	40N	15W	4		166,566	wildlife, fish & recreation	D/
Pusch Ridge	33-087168	Marco, Joseph & Lynette	Silence	2/24/1978	31-Jul-81	Sabino Creek	Santa Cruz River	13S	15E	22		1103.61	wildlife, fish & recreation maintain riparian habitat	D/

Pusch Ridge	33-093232	Sierra Club, et al	I Silence	2/24/1978	28-Jul-87	Sabino Creek	Santa Cruz River	11S	16E	31	13S/15E, 9	7,276.20	wildlife & recreation	start U/; end D/
Pusch Ridge	33-096551	Hidden Valley	Silence	2/24/1978	5-May-97	Sabino Creek	Santa Cruz River	13N	15E	16		4,008.10	wildlife, fish & recreation	D/
Red Rock Secret Mountain	33-090114	Coconino NF	Silence	8/28/1984	29-Jul-85	Spring Creek	Verde River	16N	4E	22	27	2171.9	wildlife & fish	D/
Saguaro (East)	33-096733	Saguaro NP	Silence	10/20/1976	10-Dec-02	Rincon Creek	Santa Cruz River	15S	17E	16	17	1,210	wildlife, fish & recreation	D/
Salome	33-096618	Tonto NF	Silence	8/28/1984	26-Oct-99	Workman Creek	Salt River	6N	14E	32	6N/13E, 32	1,932.40	wildlife, fish & recreation	D/
Salome	33-096570	Tonto NF	Silence	8/28/1984	31-Oct-97	Reynolds Creek	Salt River	6N	13E	12	10	1,109.80	wildlife, fish & recreation	start U/; end in WA
Sierra Ancha / Salt River	33-096742	Tonto NF	Silence	Sierra 9/3/1964; Salt 8/28/1984	18-Jun-03	Coon Creek	Salt River	5N	14E	23	4N/15E, 28	1,081.90	wildlife, fish & recreation	start in Sierra; end in Salt
Sycamore Canyon	33-090113	Coconino NF	Silence	3/6/1972; 8/28/1984	29-Jul-85	Sycamore Creek	Verde River	17N	3E	5	8	2389.09	wildlife & fish	start U/; end in WA
West Clear Creek	33-090110	Coconino NF	Silence	8/28/1984	29-Jul-85	West Clear Creek	Verde River	13N	6E	10	13N/5E, 13	8687.6	wildlife & fish	start in WA; end D/
West Clear Creek	33-096178	Johnson, James A.	Silence	8/28/1984	20-Mar-92	West Clear Creek	Verde River	13N	5E	13		1,448	wildlife, fish & recreation	D/
Wet Beaver	33-090112	Coconino NF	Silence I	8/28/1984	29-Jul-85	Wet Beaver Creek	Verde River	15N	6E	24	32	3909.42	wildlife & fish	start in WA; end D/

Notes:

* Aravaipa is a primarily express right language area, but the instream flows are located in the original area designated with silence regarding reserved rights. These instream flows are tallied with silence category rights areas in Table 5.

-**Bold Reg #** - certification for right is complete

-**Bold Wilderness Designations** - instream flow right exists within boundary of legislation

-**Bold Priority Date** - water right subsequent to wilderness area designation. For uncertified rights, the priority date listed is the expected priority date.

-Shaded listings are instream flows downstream of wilderness areas. These are not included in data summary tables as "associated with" the wilderness area.

-T (Township), R (Range), and S (Section) mark the beginning location of an instream flow right.

-Finish indicates the end of an instream flow right. If blank, the instream flow right begins and ends within T,R,S. of previous columns. Single number present indicates right ends within that section of T,R,S. New T,R,S indicates right ends in a different area than it began.

-Location - U/ = upstream of wilderness area; D/ = downstream of wilderness area

2. COLORADO

Colorado is unique among the prior appropriation states in that it does not use a permit system to appropriate surface water. Rather, Colorado water rights are determined by specialized water courts pursuant to a comprehensive statutory framework called the Water Right and Determination and Administration Act of 1969. This act created seven different water divisions in the state to correspond with the seven major watersheds. Each division has a water court with a judge, referee, and clerk that hear all surface water cases, as well as a division engineer that works with the water court. While the surface water rights are determined by the water court, the Colorado Division of Water Resources (CDWR), which includes the State and division engineers, administer all the surface and tributary groundwater in the state of Colorado. The CDWR also approves all well permits in the state, even though Colorado law views surface and groundwater as an interconnected system.

a. Appropriations for Consumptive Use

Colorado's prior appropriation system provides a legal procedure by which water users can obtain a court decree for their water rights. This process of court approval in Colorado is called adjudication, and is different from the Arizona general stream adjudications in that it only reviews non-adjudicated rights and not every water right in an area. Similar to Arizona, the adjudication sets the priority date of the water right, its source of supply, amount, point of diversion, and type and place of use. It also confirms that this water right will not cause injury to existing water rights holders. The Colorado water rights database contains appropriation dates and adjudication dates for each water right. Similar to Arizona, the appropriation date, or the time when the water was put to a beneficial use, represents the priority date. This determines the seniority of the water right on the river. The adjudication date represents when the rights were adjudicated by the Colorado water court, and does not generally bear on the seniority of the water right.

There are two basic forms of consumptive water rights in Colorado. Direct flow rights allow water from a stream to be put directly to a beneficial use. Storage rights allow water to be stored for a later use.

Although Colorado does not use a permit system to allocate surface water, an appropriator must go through a similar process to obtain a water right. First, an applicant applies for a conditional decree from the water court. The applicant must show there is still unappropriated water available, taking into account the historic exercise of decreed water rights, and must prove that he "can and will" put the water to a beneficial use. The state engineer will also review the application and perform field investigations into the claim. Assuming that there are no objections to the application from private parties or the state engineer, the applicant will receive a conditional decree. The applicant has a limited period of time in which to put the water to a beneficial use or lose that conditional decree. Once the water is put to a beneficial use, the applicant goes back into the water court to receive an absolute decree recognizing that the perfected the water right.

Colorado recognizes two different types of groundwater wells. Exempt wells are limited to pump rates of 15 gallons per minute or less. While exempt wells are not administered under the priority system, they do require a permit from the State Engineer's Office. Non-exempt wells also require permits and are subject to the priority system. The State Engineer also has the authority to adopt and amend regulations for tributary, nontributary, and Denver Basin groundwater, subject to judicial review.

b. Instream Flow Program

Colorado created its instream flow program by statute in 1973²¹³ and has modified it several times.²¹⁴ The Colorado Water Conservation Board (CWCB) has exclusive authority to hold instream flow rights.²¹⁵ The instream flow rights are those that "may be required for minimum stream flows or for natural surface water levels or volumes for natural lakes to preserve the natural environment to a reasonable degree" as determined by the CWCB.²¹⁶ The CWCB may initiate new appropriations for instream flow rights or receive current water rights for the purpose of instream flows. In either case, the CWCB acquires the instream flow rights by receiving a decree from Colorado's water courts.²¹⁷ New appropriations may be initiated by the CWCB itself, or by petition to the CWCB.²¹⁸ The CWCB may also acquire instream rights "by grant, purchase, donation, bequest, devise, lease, exchange, or other contractual agreement" from any person or government agency.²¹⁹

Colorado's instream flow program appears well established and has enjoyed some success. Although agricultural interests initially resisted instream flow legislation,²²⁰ the Colorado Supreme Court held the program constitutional.²²¹ Further, the Colorado legislature amended the

²¹³ Act of April 23, 1973, ch. 442, 1973 Colo. Sess. Laws 97.

²¹⁴ Cynthia V. Covell, *A Survey of State Instream Flow Programs in the Western United States*, 1 U. DENV. WATER L. REV. 177, at 184-185 (1998) [hereinafter Covell]. See also Steven J. Shupe, *The Legal Evolution of Colorado's Instream Flow Program*, 17 COLO. LAW. 861 (1988) [hereinafter Shupe].

²¹⁵ COLO. REV. STAT. § 37-92-102(3). See Colo. Water Conservation Board, *Rules Concerning the Colorado Instream Flow and Natural Lake Level Program*, at http://cwcb.state.co.us/isf/Work_Plan/2005/10-ISFRules.pdf (last visited Jan. 26, 2005) (listing 2 COLO. CODE REGS.).

²¹⁶ COLO. REV. STAT. § 37-92-102(3).

²¹⁷ COLO. REV. STAT. § 37-92-201 (creating the seven water divisions); COLO. REV. STAT. § 37-92-203 (creating and defining the water judges and their jurisdiction); COLO. REV. STAT. § 37-92-301 (discussing the administration and distribution of water).

²¹⁸ 2 COLO. CODE REGS. § 408-2 (Rule 5.a, Recommendations of Streams and Lakes for Protection, Rule 5.b, Method of Making Recommendations, 5.c, Board approval Process, 5.d discussing the CWCB's intent to appropriate).

²¹⁹ COLO. REV. STAT. § 37-92-102(3); 2 COLO. CODE REGS. § 408-2 (Rule 6).

²²⁰ See Covell at 185; See also Shupe at 861.

²²¹ *Colo. River Water Conservation Dist. v. Colo. River Water Conservation Brd.*, 594 P.2d 570 (Colo. 1979) (early version of instream flow legislation constitutional under COLO. CONST. Art. XVI §§5, 6 and not void for vagueness). COLO. CONST. Art. XVI §5 states that: "the water of every natural stream, not heretofore appropriated, within the state of Colorado, is hereby declared to be the property of the public, and the same is dedicated to the use of the people of the state, subject to appropriation as hereinafter provided."

COLO. CONST. Art. XVI § 6 states that: "[t]he right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied. (Emphasis added). Priority of appropriation shall give the better right as between those using the water for the same purpose; but when the waters of any natural stream are not sufficient for the service of all those desiring the use of the same, those using the water for domestic purposes shall have the

Colorado statutes to accommodate instream flows by: defining “appropriation” without requiring a “diversion,” explicitly stating that an appropriation “shall [not] affect appropriations by the state of Colorado for minimum stream flows,” and listing instream flows as a beneficial use.²²² The CWCB actively pursues new appropriations and acquisitions.²²³ The CWCB also promotes the use of storage for instream flows.²²⁴ The goal is to “[i]dentify and encourage state agencies and water providers to amend storage decrees to add instream flows to the potential uses of their water rights.”²²⁵ Further, the CWCB lists federal water claims as a policy implementation objective of water supply protection.²²⁶ The CWCB is considering developing their own priority list for instream flows, but currently the board relies on recommendations of private and government entities to prioritize acquisitions.²²⁷

preference over those claiming for any other purpose, and those using the water for agricultural purposes shall have preference over those using the same for manufacturing purposes.”

²²² COLO. REV. STAT. § 37-92-103(3)(a) (“appropriation” is defined without mentioning a “diversion”); (b) (stating nothing in subsection (3) or (4) shall affect instream flows); (4) (listing instream flows as a beneficial use).

²²³ See Colo. Water Conservation Board, *Status of Donations: December 2004*, at http://cwcb.state.co.us/isf/Work_Plan/2005/5-2004donationstabulation.pdf; Colo. Water Conservation Board, *Status of Instream Flow and Natural Lake Appropriations: December 2004*, at http://cwcb.state.co.us/isf/Work_Plan/2005/5-2004Status_%20ISFAppropriations.pdf; Colo. Water Conservation Board, *Status of Leases and Contracts for Water: December 2004*, at http://cwcb.state.co.us/isf/Work_Plan/2005/5-2004Status_LeasesContracts_Water.pdf.

²²⁴ Colo. Water Conservation Board, *Colorado Water Conservation Board Strategic Plan: Attachment B: Detailed Objectives*, at 6, at http://cwcb.state.co.us/isf/Work_Plan/2005/6b-CWCBStrategicPlan.pdf (last visited Jan. 26, 2005) [hereinafter *Attachment B*].

²²⁵ *Id.*

²²⁶ *Attachment B*, *supra* note 224, at 3. Regarding federal water claims, it states that the CWCB’s goal is to “[b]etter define water needed to fulfill federal land uses. Support efforts to determine reasonable and appropriate quantities of water needed to satisfy federal claims for water and federal lands and evaluate the impact of such claims on compact apportionments and development opportunities.”

²²⁷ Recommendations are evaluated and if approved, may be placed on an annual work plan and candidate stream list.

APPENDIX C. STUDY METHODS

1. GIS MAPPING AND WATER RIGHTS DATA COLLECTION

a. Arizona Mapping Data

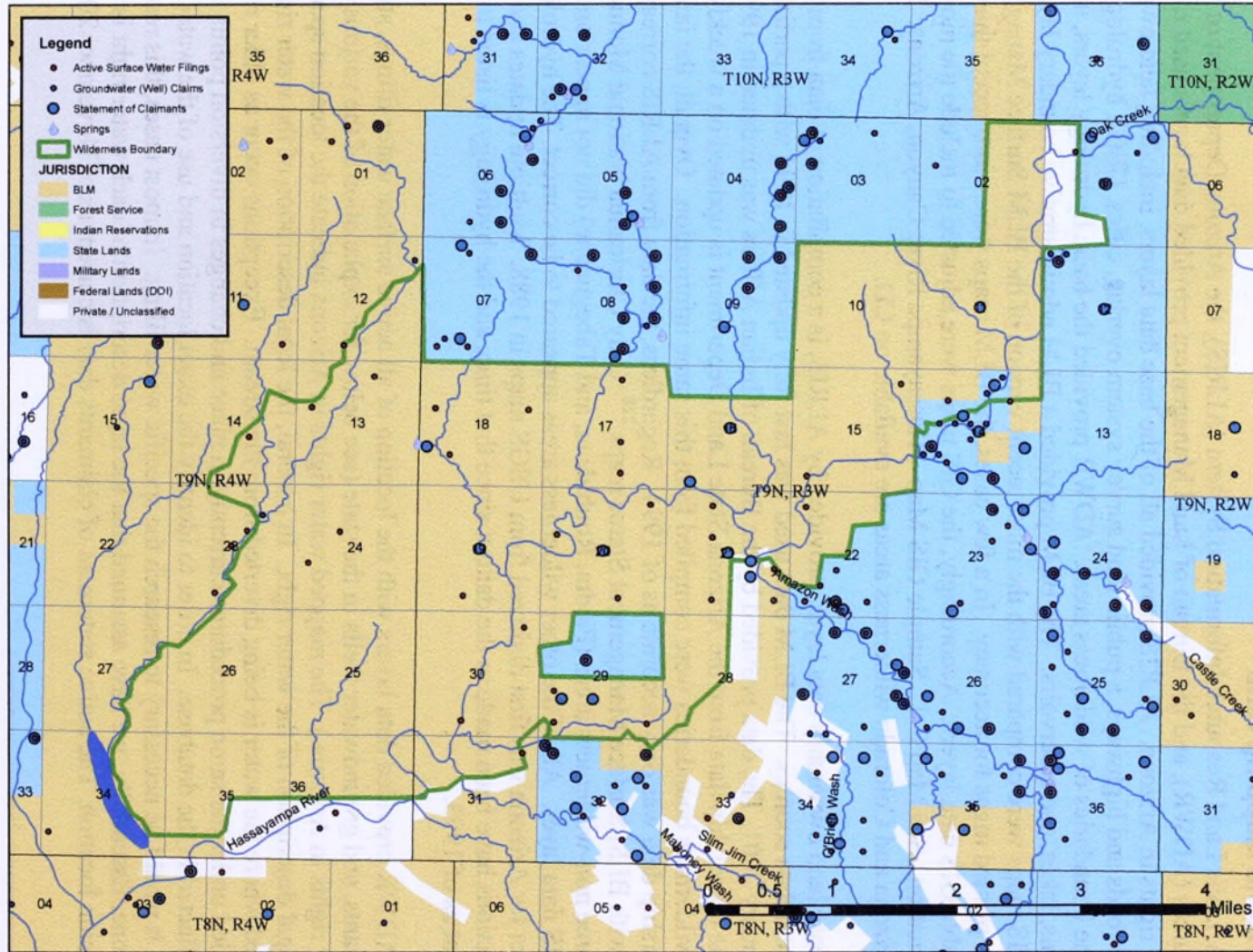
The Arizona Land Resource Information System (ALRIS), the Arizona Department of Water Resources (ADWR), and the Bureau of Land Management provided data layers used to map water rights in Arizona. ALRIS provided all of the base data layers, including land ownership, major roads and highways, a public land survey system overlay, cities, USGS hydrological units, and the boundaries of wilderness areas. ADWR provided the basic hydrology layers, including streams, lakes, and reservoirs. The BLM provided a BLM administrative boundary layer. All of the GIS maps were compared with the most recent version of the BLM Surface Management Status printed maps for accuracy. In a few cases, the BLM maps were more recent than the available GIS data layers. Accordingly, the GIS maps were adjusted to include the most recent information. See Map C-1. Sample GIS Map – Hassayampa River Canyon, Arizona. Maps for all Arizona and Colorado wilderness areas are available on CD.

The base land ownership data layer, provided by ALRIS, is a compilation of data from three different data sources. The BLM data used was last fully updated in 1994 with a partial revision in January 2001. The data provided by the Bureau of Indian Affairs was updated in 1997. The private ownership data from the Arizona State Land Department is updated on a weekly basis. The wilderness boundaries were compiled from this same information. Overall, the land ownership data was only accurate as of 1994. Regardless, the data from ALRIS corresponded well with BLM Surface Management Status maps.²²⁸ Only Chiricahua National Monument and the three non-wilderness areas (Piedra, Roubideau, and Tabeguache) did not appear on the ALRIS data layer. All of the other wilderness areas appeared to be correct. The hydrology dataset for Arizona was first digitized from USGS maps in 1988. Multiple updates and corrections have been made to the dataset since that time, and the hydrology is listed to be current as of 1993.

The ADWR provided data layers with the location of all active surface water filings, statement of claimants, and groundwater wells in the state (see below for explanation of the various kinds of water rights in Arizona.) The mapped water rights in Arizona indicate the location specified by the legal description of the water right. In general, the legal description of the water right is located where the water is being diverted from the stream. Exceptions occur as older rights were not filed under the same procedures currently in place and changes in diversion points may not be reflected in the database. In order to identify the exact location and use of the water for each right, it would be necessary to research the specific water filing. In most cases, this research was not done. Essentially, we have assumed that the legal description of each water right is the diversion location. The active statement of claimants data is current as of November 2003, the

²²⁸ Because the most recent land ownership data are reflected on the GIS maps, these maps do not necessarily reflect the number of inholdings that existed at the time of designation.

Map C-1. Sample GIS Map – Hassayampa River Canyon, Arizona



groundwater data is current as of April 2005, and the active surface water filings data is current as of March 2005.

b. Arizona Water Rights Data

The ADWR maintains two types of record databases – online imaged records and a searchable summary database. The imaged records are scanned versions, available online, of the original documents filed for each claim. In general, this includes the ADWR forms as well as maps and supplementary explanation of the filed water right. The searchable summary database, available in Microsoft Access database format and available from the ADWR bookstore, summarizes key information for each claim such as cadastral location, owner, quantity, use, and type of claim. The data in the searchable summary database comes from the same source as the GIS database and is therefore current as of the same dates (see above).

The searchable summary database served as the primary source of water rights information for this project. All of the water rights in and near the wilderness areas were extracted from this state database following analysis of the GIS maps (see below). The imaged records were only used when there was a question regarding specific water rights; for example, all of the imaged records for in-stream flows were reviewed to determine if they related to a wilderness area. As well, the imaged record of every private water right in a wilderness area with a priority date subsequent to the designation of the wilderness area was reviewed.

The Arizona groundwater data was provided by the Arizona Department of Water Resources. The data represents every permitted well drilled after 1980. Also, every well drilled before 1980 is required to be registered with the ADWR, but this registration is considered voluntary, so the only pre-1980 wells included in the database are those that were voluntarily registered by the well-owner. The groundwater wells database was current as of April 2005, and includes over 130,000 wells.

c. Compiling Arizona Data

First, a GIS map was created that included a base land ownership layer, wilderness boundary for each area, hydrological features including streams, lakes, and springs, major roads, and cities. The public land survey system was overlaid on this base map to help indicate the cadastral location of the water right and water rights were plotted on this base.

Second, the water rights data for the general area in and upstream of the wilderness area were exported from the large water rights database into a specific spreadsheet for the wilderness area. See large format Table C-1. Sample Summary Data Sheet – Hassayampa River Canyon, Arizona. Data sheets for all wilderness areas are available on CD. Each water right on the map was then examined to determine whether it was in, upstream, or outside of the wilderness area. The rights that did not affect the wilderness area (downstream rights) were removed from the data summary files, and the remaining water rights were classified as upstream or within the wilderness area. In most cases, the water rights location was identified to either a quarter-quarter-quarter section (10 acre) or quarter-quarter section (40 acre) detail. However, in certain cases, the location was only specified to quarter section (160 acre) or section (640 acre) detail. The basic rule of data

inclusion was that if a water right was located at section, quarter section, quarter-quarter section, or quarter-quarter-quarter section detail, and any portion of this total area was in or on the border of the wilderness area, the right was considered in. This meant that if the border of the

wilderness area only slightly crossed into a section and a water right located in that quarter-section was identified to quarter-section detail, it was considered "in" because it was impossible to tell whether the right was actually impacting the wilderness area or not.²²⁹ In a few cases, especially where large rights were involved, rights were categorized as "on the border" with potential for border impacts only. An example is in Kachina Peaks where it appeared that the wilderness boundary may have been carefully drawn to exclude land including water rights for the City of Flagstaff. Border impacts were recorded where a stream served as the boundary for the wilderness area or entered the wilderness for a short stretch. Nonetheless, the summary technique did lead to over-inclusion of water rights inside wilderness areas.

Similar rules applied to water rights upstream of the wilderness area. If an upstream water feature passed through a section with a water right, regardless of the location of the actual water right within that section, the water rights was considered upstream of the area. However, if it was clear that the water right in the section was not actually upstream of the wilderness area because it was located in a different watershed, it was excluded. Additionally, if a water right was in an upstream basin of the wilderness area, but no mapped surface water feature passed through that section, the water right was not considered upstream. This method may have over-included water rights in some and under-included rights for other wilderness areas.

Where the wilderness area was located well downstream in the watershed, e.g., on the Colorado, or Bill Williams Rivers, water rights data on the entire upstream area were not extracted from the database. Where there were extensive upstream areas, data were pulled for the upstream areas of the entire township associated with the wilderness boundary, plus the additional adjacent upstream township-ranges. In other words, for every wilderness area, water rights were summarized for upstream areas of up to twelve miles from the border of the wilderness area. While this method underestimates the upstream water rights that may affect some downstream wilderness areas, considering all upstream rights on these large rivers was beyond the scope of the project. For these 18 Arizona wilderness areas, summary large format Table 3 indicates "Vicinity Rights" in upstream water rights columns. Large format Tables 5D and 5H indicate the potential for these wilderness areas to be affected although the data are not complete.

Initially, both Active Surface Filing (ASF) and Statement of Claimant (SOC) data were exported and summarized. After reviewing the data, it became apparent that neither ASF alone nor ASF plus SOC filings necessarily accurately portray water used or rights claimed in an area. First, not all ASFs are permitted or certificated rights, i.e., valid rights. But looking only at certificated rights may grossly underestimate the pressure on water resources since, reportedly, the ADWR has a severe backlog in processing filings. Considering both the ASFs and SOC may, however, overestimate the pressure on water as SOC often duplicate the ASFs. Looking only at ASFs may be a reasonable compromise, but might still underestimate claims, as, in some cases, the

²²⁹ For example, if there was only one acre of wilderness in the far northwest corner of a section, and there was a water right located in the northwest quarter of the section but only specified to 160 acre detail, the right was included "in" even though it may not be inside the wilderness area.

database indicates SOC filings without corresponding ASFs or groundwater filings. Recognizing these deficiencies, we summarized both total ASFs (i.e., all surface filings regardless of whether they were permitted or certificated) and the combination of ASFs and SOCs. Both numbers are indicated in large format Table 3, Summary of Arizona Wilderness Areas (columns P – R).

Groundwater in Arizona was evaluated more generally than surface water. In order to evaluate the impact of wells in wilderness areas, the same base map used for surface water was used for groundwater. Groundwater data was extracted by township and range both within and upstream of the wilderness areas. The first step of the process was to identify the townships that the wilderness area occupied. If any portion of the wilderness area was within a township, the wells in that township were considered as having a potential impact in the wilderness. Without investigating the hydrology of the area, this was the most consistent and efficient way of determining areas that might be affected by groundwater pumping. Once the wilderness townships were identified, every registered well within the townships were summarized, including the total number of wells, the minimum and maximum pump flow, and the total pump capacity in the area. The minimum pump flow did not include pump rates listed as 0.

Large wells in the wilderness area were identified separately. Using the GIS program, all of the groundwater rights within the wilderness areas and with a pump rate 62 gallons per minute or greater were selected from the statewide database. This indicated that there are 17 large groundwater wells in Arizona. 62 gallons per minute was selected as a large well because pumping at a rate of 62 gallons per minute continuously will extract 100 acre-feet in one year.

There are a couple of sources of potential error in the groundwater database. First, because we did not look at the specific hydrology of the region, there is no way to determine the effect of the pumping on surface waters. As well, the actual effects on the underlying aquifers could not be assessed. Second, the pump rate does not indicate how much water was actually extracted from the ground, but only enumerates the amount of water that could be pumped out of the ground. While some wells may run continuously, others may run more sporadically. Third, because well registration for wells before 1980 is essentially voluntary, it is impossible to determine how many wells are excluded from the database.

d. Colorado Mapping Data

The Colorado water rights maps were created from a compilation of data sources. The Colorado Ownership, Management, and Protection project (COMaP) at Colorado State University provided the base layer for all Colorado maps, including land ownership, land management agency, and wilderness study areas. The Colorado Department of Transportation (CDOT) provided layers of the major roads and highways, cities, all hydrological features including streams, lakes, and reservoirs, and another version of the boundaries of wilderness areas. The Colorado Environmental Coalition provided a public land survey system overlay, as well as a third version of the wilderness boundaries in Colorado. A fourth version of wilderness boundaries was provided by the National Atlas dataset. Finally, the Colorado Decision Support System (CDSS), a joint effort of the Colorado Water Conservation Board and the Colorado Division of Water Resources, provided the data layers of all registered surface and groundwater diversions in Colorado. All of the GIS maps were compared with the most recent version of the BLM Surface Management Status printed maps for accuracy. In a few cases, the BLM maps

were more recent than the available GIS data layers. Accordingly, the GIS maps were adjusted to include the most recent information.

In general, the COMaP base layer was used to determine land ownership and wilderness boundaries in Colorado. This base layer, created by the Natural Resource Ecology Laboratory at Colorado State University, is a compilation of local GIS datasets provided by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service, as well as a number of state, county, city, and land trust entities. The overall base map is current as of January 1, 2005, but because of the array of primary data sources, the accuracy of any particular area is uncertain. Overall, due to the local nature of the primary data sources and the frequency of update, this map was considered the best choice as a base layer. Whenever possible, this was also used to illustrate the boundaries of the wilderness.

When there was a discrepancy between the COMaP layer and the BLM Surface Management Status Map, other data sources were consulted. In some cases, recent wilderness areas such as James Peak were not included in the COMaP layer. In that case, the layer from the Colorado Environmental Coalition was utilized to indicate the newer boundaries. In another case, the COMaP layer did not separate between wilderness areas and a "special management area" in the San Juan National Forest. The CEC layer was used to separate the two areas, as well as to determine the boundaries of the Roubideau and Tabeguache Special Management Areas in the Uncompahgre National Forest. In another case, the National Atlas dataset was used to map the Black Canyon of the Gunnison wilderness area, as none of the other maps contained this area. In situations where none of the data layers contained the wilderness area boundary, the boundary was hand-traced from the BLM Surface Management Status map onto a GIS created map indicating approximate water rights.

The hydrology data provided by CDOT is current as of December 31, 2004. The layer from the CDSS is current at of September 30, 2004.

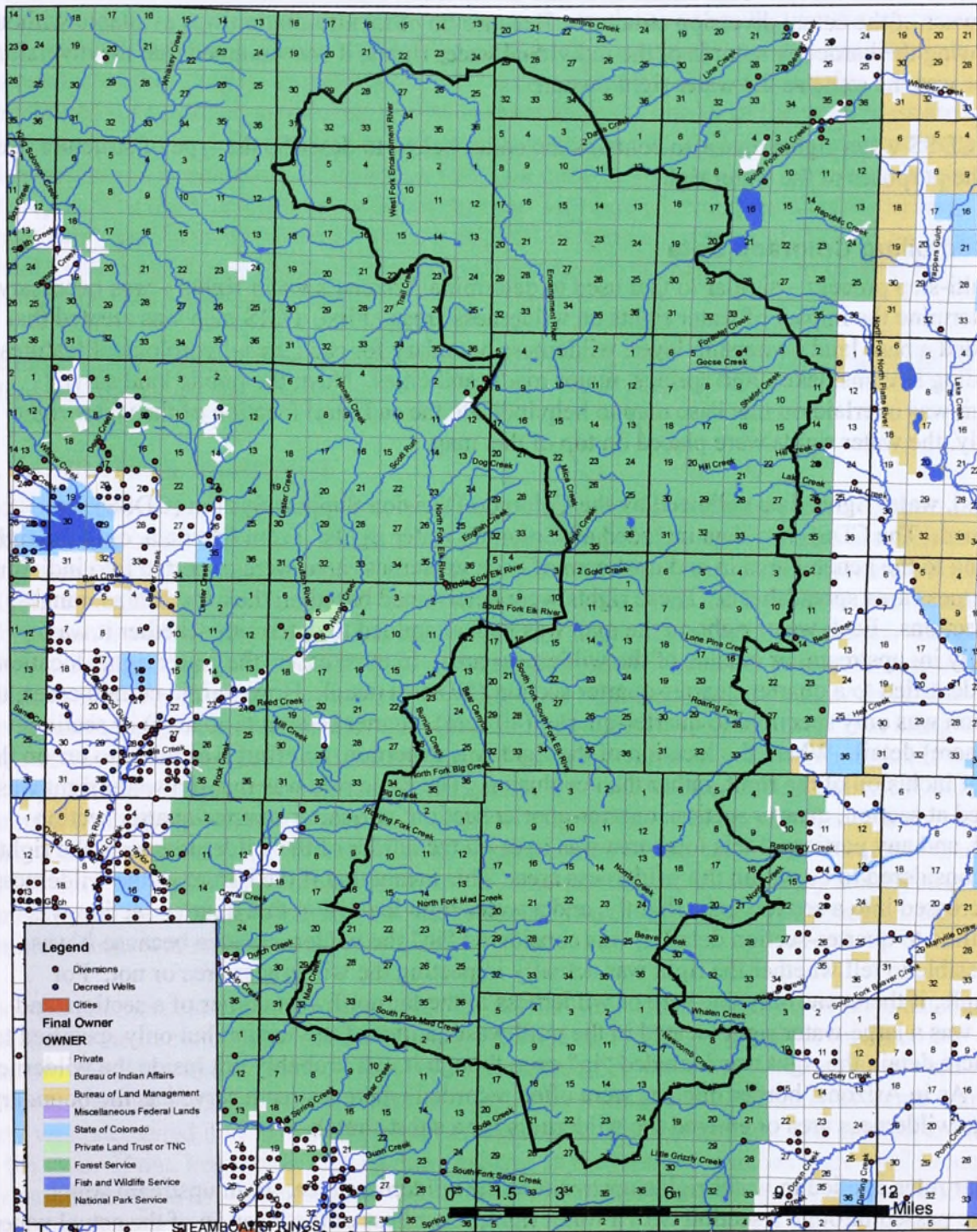
The Colorado maps show the location of water diversions in Colorado registered with the Colorado Division of Water Resources. In some cases, there is more than one water right associated with a particular diversion. The water right location displayed on the map is the same as that listed in the CDSS database. See Map C-2, Sample GIS Map – Mount Zirkel Wilderness Area, Colorado. Maps for all Arizona and Colorado wilderness areas are available on CD.

e. Colorado Water Rights Data

The Colorado Decision Support System (CDSS) was the primary source of all Colorado water rights information. The CDSS is in the process of being developed the Colorado Water Conservation Board (CWCB) and the Colorado Division of Water Resources (CDWR). In addition to general water rights information, the CDSS contains comprehensive information on water calls, groundwater pumping rates, diversionary structures, and real-time data of stream flows.

The CDSS water rights database is not as comprehensive as the ADWR database used to examine Arizona water rights. The water right records list the name and type of structure, name

Map C-2. Sample GIS Map – Mt. Zirkel Wilderness Area, Colorado



of source, location, net amounts, adjudication and appropriation dates, and the case and administrative number. There are no imaged records available online for Colorado water rights. Water right ownership information is not included in the primary CDSS database. In order to determine the owner of a water right, the diversion structure information had to be accessed via the CDSS online server. This online structure information indicated the contact information for the owner of the actual diversion structure. Because no other information was available without reviewing the hardcopy records of the individual water rights, it was assumed that the diversion owner was the same as the water right owner.

The CDSS water rights data also contains the codes below to describe the type of structure used and the purposes of the water right

f. Compiling Colorado Data

A multi-step process – similar to that used to determine Arizona’s water rights – was necessary to determine the impact of water rights on wilderness areas. First, a GIS map was created that included a base land ownership layer, wilderness boundary for each area, hydrological features including streams, lakes, and springs, major roads, and cities. Next, the public land survey system was overlaid on this base map to help indicate the cadastral location of the water right. Finally, the water rights were placed on top of this map.

Second, water rights data collected by the Colorado Decision Support System (CDSS) was obtained. The CDSS raw data included all Colorado water rights. From that data, only the rights relating to the general area in and upstream of each wilderness area were exported into individual wilderness area spreadsheets. These rights were determined based on their townships, ranges, and sections. Each water right on the map was then examined to determine whether it was actually in, upstream, or outside of the wilderness area. In most cases, the water rights location was identified to a quarter-quarter-quarter section (10 acre) detail. However, in certain cases, the location was only specified to quarter-quarter (40 acre), quarter section (160 acre) or section (640 acre) detail. Where the location of the right was uncertain, an effort was made to err on the side of inclusion of the right, rather than exclusion. The basic rule was that if a water right was located at section, quarter section, quarter-quarter section, or quarter-quarter-quarter section detail, and any portion of this total area was in or on the border of the wilderness area, the right was considered to be within the wilderness area. This meant that if the border of the wilderness area crossed into a section only slightly, and a water right located in that quarter-section was identified to quarter-section detail, it was considered “in” the wilderness area because it was impossible to tell whether the right was actually impacting the wilderness area or not. For example, if there was only one acre of wilderness in the far northwest corner of a section, and there was a large water right located in the northwest quarter of the section but only specified to 160 acre detail, the right was included “in” even though it was probably not inside the wilderness area. As in Arizona, border impacts were often recorded where a stream served as the boundary for the wilderness area or entered the wilderness for a short stretch.

Similar rules applied to water rights upstream of the wilderness area. If an upstream water feature passed through a section with a water right, regardless of the location of the actual water right within that section, the water rights was considered “upstream” of the area. However, if it

was clear that the water right in the section was *not* upstream of the wilderness area because it was located in a different watershed, it was excluded.

Where the wilderness area was located well downstream in the watershed, e.g., on the Gunnison or Cache la Poudre Rivers, water rights data on the entire upstream area were not extracted from the database. Where there were extensive upstream areas, data were pulled for the upstream areas of the entire township associated with the wilderness boundary, plus the additional adjacent upstream township-ranges. In other words, for every wilderness area, water rights were summarized for upstream areas of up to twelve miles from the border of the wilderness area. While this method underestimates the upstream water rights that may affect some downstream wilderness areas, considering all upstream rights on these large rivers was beyond the scope of the project. For the four Colorado wilderness areas with extensive upstream areas, the large format summary Table 4 indicates "Vicinity Rights" in upstream water rights columns. Large format Table 5 and Table 6 indicate the potential for these wilderness areas to be affected although the data are not complete.

See large format Table C-2. Sample Summary Data Sheets – Mt. Zirkel. Data sheets for all wilderness areas are available on CD.

2. LITERATURE SEARCHES

The goal of the literature searches was to identify water-related conflicts or developments that existed before or have arisen or been proposed within or upstream of wilderness areas since designation. The searches were conducted subsequent to completion of the wilderness area EXCEL spreadsheets and their respective summary sections. This made it possible to extract information from the spreadsheets and summaries that might help guide the searches. Large rights and rights appropriated after wilderness area designation dates, for example, were used as search terms. The searches were conducted using both legal databases (Westlaw and Lexis Nexis) and internet search engines (Google). Internet searches were performed first using the name of the wilderness area, and then adding to the name a series of search terms. Aside from the specific search terms extrapolated from the individual wilderness area spreadsheets, a list of common terms was searched, including "water developments," "wilderness area," "dam," "reservoir," "reserved water," "water rights," "surface water," "adjudication," "water claimants," "diversion," "instream flow," and "projects." If these searches produced party names, structure names, or water source information, those terms were searched as well. The process was continued until search terms were exhausted.

Once the internet searches were completed, the results were used in searches of legal databases, specifically Lexis Nexis and Westlaw. Using the same methods employed for the internet searches, the Lexis and West news databases were explored. After the news searches were completed the legal databases were searched for cases relating to the conflicts. If a case name or party was uncovered during any of the previous searches, that information was entered to bring up the case. If not, key words such as those utilized in the internet searches were used to look for any case relating to a wilderness area. Presence or absence of results from the literature searches are included in large format Tables 3 and 4.

CODE KEY

Use Codes

A – augmentation
B – basin export
C – commercial
D – domestic
E – evaporation
F – fire
f – forest
G – geothermal
H – household use only
I – irrigation
K – snowmaking
M – municipal
m – minimum stream flow
N – industrial
O – other
P – fishery
p – power generation
R – recreation
r – recharge
S – stock
W – wildlife
X – all beneficial uses

Units

C – cubic feet per second (cfs)
A – acre/feet

Structure Type

D – ditch
E – seep
L – pipeline
M – mine
O – other
P – pump
R – reservoir
S – spring
W – well
Z – power plant

Adjudication Type

AB – abandoned
AP – alternate point
C – conditional
CA – conditional made absolute
EX – exchange
O – original
S – supplemental
TF – transfer from
TT – transfer to

3. INTERVIEWS

The aim of the informal interviews was to help determine agency policy, but more importantly, to elicit staff perspectives on how statutory language might influence wilderness water management. A variety of individuals were contacted and informally interviewed by telephone. In general, an attempt was made to contact a variety of staff including:

- Local field office, forest, refuge or national park wilderness specialist or unit manager
- Local field office, forest, refuge or national park water specialist
- State wilderness coordinator for the agency
- State water rights coordinator for the agency
- Agency legal council (Department of the Interior Office of the Solicitor, U.S. Department of Agriculture Office of General Counsel)

Staff were asked a variety of questions ranging from clarifications of data to their opinions on whether wilderness water rights legislative language has made any difference to protection of water rights in wilderness areas to whether there is a difference in quantity of a wilderness reserved right and a park/refuge/forest reserved right.

A few state and environmental group representatives were also contacted regarding specific issues or conflicts.

APPENDIX D. AGENCY POLICIES

1. BLM WATER POLICIES

The general Bureau of Land Management (BLM) Water Rights Policy, as described in the United States Department of the Interior, BLM Manual Transmittal Sheet 7250 – Water Rights (1984),²³⁰ is that the States have the primary authority and the BLM should cooperate with State Governments in protecting water uses in public lands. The BLM is also directed to acquire and/or perfect water rights necessary for management of public lands through state law and administrative claim procedures, unless a federal reserved right is available and the purpose of the reservation is better served through assertion of the federal reserved water right. The Bush administration does not, however, recognize existence of wilderness area reserved rights simply because an area is designated a wilderness area. Reserved right claims may be made for wilderness areas within special designation areas like national parks or forests or natural resource conservation areas (citing the San Pedro) with the water claim made in conjunction with the park or forest. According to Department of the Interior staff, BLM does not assert wilderness reserved rights for generic BLM land which is designated as wilderness.

43 C.F.R. 6300 details the BLM policy for managing designated wilderness areas. It describes the definition of a wilderness area, where the wilderness areas are, how they can and cannot be used and the potential penalties for violating a wilderness regulation. 43 C.F.R. §6304.24 applies specifically to water resources in designated wilderness. It states that if the President has authorized it, the BLM will allow, “prospect[ing] for water resources and establish[ing] new reservoirs, water conservation works, power projects, transmission lines, and other facilities needed in the public interest, and to maintain such facilities.”

The 43 C.F.R. Part 6300 regulations replaced the 43 C.F.R. 8560 regulations in 2000.²³¹ Prior to this, BLM Manual Part 8560 guided wilderness management. With withdrawal of the C.F.R. Part 8560 regulations, the manual no longer reflects the proper file codes (and is no longer on the internet, but is still in effect. The manual includes very little guidance on water but briefly addresses both existing and proposed water resource facilities in wilderness and watershed management, including restoration, in wilderness. Most of the manual language relates to maintaining or restoring existing structures or building new ones with presidential approval. The latter language reflects § 4(d)(4)(1) of the Wilderness Act.

BLM Manual Handbook H 1741-2, Water Developments, includes a brief section on wilderness study areas and designated wilderness emphasizing that these lands should be managed so as not to impair the suitability of such areas for wilderness. The section refers to specific guidance on certain uses, minimum and acceptable tools and grazing management and improvement. It also notes that wilderness management plans must be prepared for all wilderness areas and would guide specific activities and action plans. The handbook reiterates the policy that States have the primary authority and responsibility for allocation and management of water resources, except as

²³⁰ Available at <http://www.blm.gov/nstc/WaterLaws/blmwaterpolicy.html>

²³¹ Wilderness Management, 65 Fed. Reg. 78358-01 (December 14, 2000).

otherwise specified by the Congress. In Colorado at least the strategy for protecting wilderness water is developed at the state level through the planning process for National Landscape Conservation System lands. The policy of working cooperatively with the state on water resources has been reiterated recently in Colorado through a Memorandum of Understanding (MOU) between the state and BLM.²³² The MOU recognizes the respective authorities of both the State and BLM and specifically:

- The BLM recognizes and respects the authority of the State to allocate water available for appropriation and the State recognizes and respects the authority of the BLM to approve and manage rights-of-way for water infrastructure located on BLM lands
- The State recognizes water rights adjudicated to the BLM.
- BLM agrees to administer rights-of-ways for water infrastructure on BLM lands to prevent impacts on the exercise of water rights while still meeting the requirements of federal laws and regulations.
- The parties recognize that the CWCB has exclusive authority to hold instream flow water rights under Colorado law, and the BLM is responsible for managing water resources on BLM lands.
- The parties will seek to integrate federal and state responsibilities into our mutual decision making processes
- Agree to explore innovate ways to assure continued operation of water use facilities on BLM lands and undiminished historic use of water while protecting aquatic resources and while developing new management prescriptions for existing structures.

Acquisition and protection of water rights in Arizona is implemented primarily on a Field Office basis, although all the field offices are not staffed with water rights coordinator/leads.

2. FOREST SERVICE REGULATIONS AND GUIDANCE

Forest Service regulations at 36 C.F.R. Part 293 pertain to all wilderness that is administered by the Forest Service. Section 293.2 lists the objectives of the Forest Service in administering wilderness areas, but does not specifically mention any water or watershed objectives. Regarding water rights, 36 C.F.R. § 293.11 reiterates § 4(d)(7) of the Wilderness Act that, "Nothing in the regulations in this part constitutes an expressed or implied claim or denial on the part of the Department of Agriculture as to exemption from State water laws."

The Forest Service has two relevant manuals that address either wilderness areas or water rights. The first is Forest Service Manual 2320 that concentrates on wilderness management. Section 2323.41 states that the objective of the Forest Service in maintaining wilderness areas is to preserve the "satisfactory natural watershed condition with wilderness" but their working definition of "satisfactory" is not provided. In the policy section of 2323.42, the manual states that "natural processes" should be allowed to dominate in managing the watershed. Section 2323.43c reiterates the Wilderness Act provision, § 4(d)(4)(1), that only the President can

²³² Memorandum of Understanding among the Colorado Department of Natural Resources (DNR), the Colorado Water Conservation Board (CWCB) and the BLM to formalize a framework for the BLM, the DNR and the CWCB to work together in a cooperative manner on issues regarding the management of water and water uses on BLM lands in Colorado. September 2005.

authorize new water development structures or projects to take place in a wilderness area. However, the maintenance of existing water structures is specifically allowed under § 2323.43d.

The second applicable manual is FSM 2540: Watershed and Air Management. This manual applies to assertion of water rights generally, and not specifically to water rights in wilderness areas. The Forest Service has a very detailed policy in regards to assertion of water rights. At § 2541.03, the four-pronged policy of the Forest Service is described. It is to first, "rely on the reservation doctrine if the land was reserved from the public domain and for the reservation purposes identified in documents or legislation." Second, if the reservation doctrine does not suffice, the Forest Service will assert water rights under State law. Third, the Forest Service will purchase any rights that are not otherwise available. Finally, the Forest Service should use all water in National Forest efficiently and frugally.

This manual also identifies staff responsible for asserting Forest Service water rights. Under § 2541.04b, the Regional Foresters are responsible for obtaining the water rights under State authority or purchasing them where necessary. The Regional Foresters are also responsible for reviewing water needs analyses and participating in relevant adjudications.

The Forest Service does not appear to have any nationwide directives relating specifically to wilderness area water, but they have developed more local guidance to help guide staff. Specific to wilderness, such local guidance includes "Wilderness Management Philosophy in the Rocky Mountain Region." Section 13 on watershed management indicates that preexisting structures that are either part of the public interest or part of an existing right may be maintained, but usually with nonmotorized equipment.²³³ More generally on water, the Forest Service has developed a Memorandum of Understanding (MOU) with Colorado Department of Natural Resources establishing a framework for cooperation regarding management of water and water uses on National Forest System lands in Colorado.²³⁴ The MOU includes agreements to:

- "explore creative ways to assure continued operation of water use facilities,"
- resolve conflicts through cooperation "not through unilateral regulatory action by the Forest Service," and
- "better integrate federal and state laws and activities concerning protection and management of instream flow resources" including evaluating the adequacy of currently held instream flows, and monitoring and enforcing flow rights.

3. U.S. FISH AND WILDLIFE SERVICE WATER POLICIES

The FWS regulations, at 50 C.F.R. 35, do not specifically address the management of wilderness areas, although 50 C.F.R. § 35.3 states that the rules that govern the administration of the National Wildlife Refuge System will also apply to wilderness areas as long as the rules and regulations do not conflict with the Wilderness Act or other statutes. The only section in the C.F.R. that explicitly mentions water rights is § 35.12 which reiterates §4(d)(7) of the Wilderness

²³³ Wilderness Management Philosophy in the Rocky Mountain Region, Aspen Ranger District, White River National Forest.

²³⁴ Memorandum of Understanding between State of Colorado Department of Natural Resources and United States Department of Agriculture Forest Service, 04-MU-11020000-029, April 16, 2004.

Act that, "[n]othing in the regulations in this part constitutes an expressed or implied claim or denial on the part of the Department of the Interior as to exemption from State water laws."

The Fish and Wildlife Service has a set of policy guidelines, called the Refuge Manual, which compiles the management policies and operating procedures of the FWS. Chapter Eight of this manual deals with management of wilderness areas. This manual addresses managing wilderness areas with more detail than the agency's C.F.R. It provides for the different responsibilities of managers, as well as gives definitions and rules for wilderness areas. It also explains the "minimum tool" concept, which states, "[t]he minimum action or instrument necessary to successfully, safely, and economically accomplish wilderness management objectives" is the tool that should be used. This "minimum tool" concept is common to most government agencies that manage wilderness. The Refuge Manual also provides a format for writing wilderness management plans and what should be included within these plans. While the Refuge Manual does not specifically address water, or assertion of water rights, it does state that temporary facilities needed for livestock, such as water tanks, may be maintained as long as they are necessary to meet refuge objectives.

On January 16, 2001, the FWS released a Draft Wilderness Stewardship Policy for public comment. This policy, once published, will replace the Refuge Manual in guiding the FWS in wilderness management and will become agency directive 610 FW, chapters one through seven. This draft policy discusses creating wilderness management plans, with goals, objectives and strategies for maintaining each wilderness area. According to Hope Grey, librarian for the FWS Division of Policy and Directives Management, this chapter is being routed for signature and is expected to be published in the near future.

The new draft policy, FWS Manual Part 610 Wilderness Stewardship, contains the following paragraph:

2.4 What is our general policy for wilderness administration and the stewardship of natural and cultural resources in wilderness? We administer refuge wilderness to conform with the Wilderness Act's purposes of securing "an enduring resource of wilderness," preserving wilderness character, and providing opportunities for public use and enjoyment and for "solitude or a primitive and unconfined type of recreation" in ways that will leave the wilderness unimpaired for future use and enjoyment as wilderness. We must document a minimum requirement analysis (MRA) for all proposed refuge management activities (see 610 FW 1.17) and commercial services (see § 2.12) whether or not they may involve any actions generally prohibited by the Wilderness Act. We will maintain or restore, where appropriate, the biological integrity, diversity, and environmental health (see 601 FW 3) of wilderness areas. We will protect water resources in wilderness areas by maintaining water quantity and water quality necessary to meet refuge purposes, including Wilderness Act purposes, and by seeking to acquire the necessary water rights under State law. We will apply the nondegradation principle to wilderness stewardship using each wilderness area's level of

naturalness and wildness at the time of designation as the standard against which we measure the impacts.

The FWS has three Agency Directives that pertain to water rights. The first is 403 FW 1, which states the policy, objectives and responsibility of the FWS in regards to asserting water rights. The objectives are to "obtain water supplies of adequate quantity and quality, and the legal rights to use that water, for development, use, and management of Service lands and facilities" The policy of the FWS is to comply with State laws and regulations whenever possible. Federal reserved water rights are to be established when they are necessary for the primary purpose of the reservation. Water rights may also be purchased if they are essential and not otherwise obtainable.

403 FW 1 also states the water rights responsibilities of the different organizational levels of the FWS, such as the Director, Regional Directors, Assistant Regional Directors, and Regional Water Rights Managers. The Regional Director is responsible for establishing Regional water rights policy and the Regional Water Rights Manager is responsible for quantifying and establishing the necessary water rights in the area.

The second Agency Directive pertaining to water rights is 403 FW 2, "Authorities and Definitions." This section lists statutes and cases that have established the law of water rights. It also provides definitions for relevant water law terms.

The third agency directive relating to water rights is 403 FW 3, "Acquisition and Protection." According to this section, water rights owned by the FWS should be managed to guarantee that they are not degraded in quantity or quality or lost altogether. The FWS must maintain a system to identify all water rights associated with each facility and identify new water rights that are associated with proposed projects as early as possible. Furthermore, the water should be used only for its designated use and waste should be avoided.

4. NATIONAL PARK SERVICE WATER POLICIES

The NPS is authorized to manage units of the national parks, including wilderness areas under the National Park Service Organic Act of 1916. NPS regulations at 36 C.F.R. Ch. I, "Parks, Forests, and Public Property" do not include specifics on management of wilderness areas. They lack this specificity as the NPS uses nearly the same regulatory structure for all of the lands that it manages. The same regulations that are applicable to national parks are also applicable to park wilderness areas, such as the prohibition of grazing unless specifically authorized by federal law, or by a reservation of use, or otherwise. 36 C.F.R. § 2.6.

However, the NPS issues a series known as "Management Policies" which provides more specific tools and information for NPS employees in dealing with management of wilderness areas. Chapter Six of 2001 NPS Management Policies²³⁵ deals with "Wilderness Preservation and Management" and provides guidelines for assessing and cataloging wilderness for inclusion under the Wilderness Act of 1964. The only section of Chapter Six that specifically pertains to water is 6.3.11.3, which states that the "NPS will manage as wilderness all waters included

²³⁵ Available at <http://www.nps.gov/policy/mp/policies.html>

within wilderness boundaries, and the lands beneath these water (if owned by the United States), in keeping with established jurisdictions and authorities.”

Chapter Four of the Management Policies series discusses water resource management and water rights. Section 4.6.1 states that the NPS “will perpetuate surface waters and groundwaters as integral components of park aquatic and terrestrial ecosystems.” Section 4.6.2 discusses water rights, and states that water must be attained and used in accordance with legal authorities. The NPS will “consider all available authorities on a case- by- case basis and will pursue those that are the most appropriate to protect water-related resources in parks.” The NPS is also required to work alongside state administrators and participate in negotiations to resolve conflicts among multiple water claimants. The NPS is required to purchase water that is “essential for NPS needs” if they can not obtain the water through other methods and consumption of the water is to be “efficient and frugal” at all times, but especially in areas with little water.

Section 4.6.2 of the Management Policies also provides that the NPS may sell or lease water to “persons, states, or their political subdivisions that provide public accommodations or services for park visitors outside the park . . . that have no reasonable alternative sources of water.” However, the NPS is only allowed to sell or lease this water if the removal of the water does not “jeopardize or unduly interfere with the natural or cultural resources of the park.” Director’s Orders #35A and #35B provide the requirements and procedures for the sale or lease of water by the NPS.

Director’s Order #41, “Wilderness Preservation and Management” supplements the policies contained in Chapter Six of the 2001 NPS Management Policies. It does not contain any policies on water or asserting water rights, but does direct in §6.3.5 that a wilderness plan be written and implemented every ten years in all parks that contain wilderness areas. This plan is to be completed by the superintendent of each park to guide the “preservation, management, and use of that area.” §6.3.1.

Reference Manual #41, “Wilderness Preservation and Management,” has been released as a supplement to Director’s Order #41. This manual contains applicable policies and Director’s Orders, and other information to assist field managers and staff in managing wilderness areas. The “Wilderness Resource Management” section of this manual states that the “NPS will manage all waters included within wilderness boundaries, and the lands beneath these waters (if owned by the United States) as wilderness, in keeping with established jurisdictions and authorities.”